

**ADVANCES IN  
SOCIAL SCIENCES  
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## Effect Of Planning On Performance Of County Governments In Kenya

**Wahinya Grace Njeri**

Jomo Kenyatta University of Agriculture and Technology (JKUAT),  
Nairobi Kenya

**Prof. Mukulu Elegwa**

Jomo Kenyatta University of Agriculture and Technology (JKUAT),  
Nairobi Kenya

**Prof. Waititu Anthony**

Jomo Kenyatta University of Agriculture and Technology (JKUAT),  
Nairobi Kenya

### ABSTRACT

The purpose of this study was to determine the effect of planning on performance of county governments in Kenya. Questionnaire was used to collect data from seven counties in Kenya drawn from 47 county governments in Kenya. Two tools of analysis were adopted by this study namely: correlation analysis and regression analysis. The correlation analysis was used to show the positive correlation between the predictor and response variables while regression analysis was used to explain the relationship between the predictor and response variables. R-squared was used to provide the strength of the relationship between the model and the response variable and determine its goodness fit. While F statistics was used to test the significance of the regression model. The study adopted correlational research design. The findings revealed that performance of county government is significantly influenced by planning. From the findings, the study concludes that the county governments should enhance on further improvement in the area of planning in order to enhance the benefit of planning on performance of county governance.

**Key Words: Planning, Performance, County Government**

### INTRODUCTION

Strategic management provides overall direction that involves formulation and implementation of the organizational goals. This involves specifying the organizational objectives and from them, develops plans and policies to enable the organization achieve its set objectives as well as allocate resources to implement the plans. This is done through the consideration of resources and assessment of internal and external environments in which the organizations functions. Strategic management incorporates all management hitches that may arise soon the strategic plans are developed, when other management process functions must be performed. Strategic management vividly states that a plan is incomplete by the time it has been implemented and evaluated and hence managers in strategic management are called to consider daily operations in the context of a longer period as well as change of external environment. In order to support new initiatives that spring from certain changes in the organizational environment, organizational structure and other fundamentals of management have to be adequate (24).

Planning refers to the act of developing broad plans of action necessary to attain the organization's goals as well as objectives, establishing and periodically confirming the organization's mission and its context for management. This means, allocating resources on a basis consistent with strategic directions and goals and objectives, and managing the various lines of business and deploying the organization mission and strategy that is, articulating and communicating it, as well as developing action plans at lower levels that are supportive of those at the enterprise level (18). Planning is a core variable as it gives organizations the direction they should take, what they wish to do in totality, where they are and where they wish to go. Strategic planning is the procedure of developing tactics, strategies, and organization objectives to achieve the mission of the organization. The organization produces short and long-term objectives by means of the mission statement. Objectives in the case of public sector may include, revenue collection goals and customer as well as citizen satisfaction reckonings. The next step in planning is developing strategies to help the organization in the accomplishment of the objectives. For instance, better training and monitoring of feedback scores are strategies that held in achievement of higher customer satisfaction. This is followed by development of actionable steps or tactics. A tactic tied to the customer satisfaction goal and the training strategy is hiring an external training consultant for a chain of service training sessions (27).

### **STATEMENT OF THE PROBLEM**

Strategic Management Practices: Planning, Governance, Quality Management and Innovation are central organization performance. Planning ensures that a calculated, well-organized effort to produce essential decisions and engagements that shape and monitor what it does and why it does it (6). County governments are vital vehicles for grassroots social-economic development in Kenya. Strategic management practices are therefore, important to county government's prudent management of resources for optimal performance. However, county governments face a number of challenges in executing their constitutional mandated functions. These challenges are as a result of poor strategic management practices. Studies by Ondigi (19), Korir (14) and Muli (17) indicate that poor planning in county governments has resulted to high levels of corruption. Planning within the county government in Kenya is wanting as envisioned by poor performance. It is, therefore, important that the County Government should improve their planning to enhance their performance. The challenges faced by the county governments as evidenced by the research can be attributed to poor implementation of planning. This study sought to establish the effects of planning on the performance of county government in Kenya and thus fill the knowledge gap.

### **RESEARCH QUESTION**

The study sought to answer a key question:

To what extent does planning affect the performance of county governments in Kenya?

### **LITERATURE REVIEW**

This study focused on Resource Based-View. Resource Based-View Theory (RBV) emerged in 1980s and 1990s, after the major works published by Barney and others on the Firm resources and sustained competitive advantage. It is argued by the supporters of this view that instead of the organizations looking competitive advantage from the external environment, they should look for them inside the company (Barney, (1). Despite the fact the RBV theory emerged in the early 1980s, it was progressively more visible in the 1990s. The RBV stressed out on the internal capabilities of an organization (2, 9, 21, 29). The foundation concept of the RBV is that no two organizations are the same because no two organizations have obtained the same position of organizational resources such as skills, capabilities, organizational culture and experiences (8). Thus, organizations must therefore own organizational resources with

characteristics that are uncommon, precious, valuable to imitable, and that cannot be substituted. This allows them to hold the potential of continued viable advantage over other competitors (2).

Resource Based-View Theory is a widely used theory of strategic management that examines how resources can drive competitive advantage. Competitive advantage is the ability to create more value than competitors, and therefore generate higher returns on investment. Sustainable competitive advantage requires enduring benefits through capabilities that are not easily imitated (13). The theory basically stresses the idea that an organization must be taken as a bundle of resources and capabilities to create value and hence gain competitive advantage (2). The concept of resources includes all assets, capabilities, organizational processes, organization aspects, information and knowledge controlled by an organization that enable the organization to conceive and implement strategies that improve its efficiency and effectiveness. This means that the starting point of the analysis is the internal environment of the organization.

Literature revealed expressed that Resource Based-View and the core competencies of any organization have their own limitations. The RBV principally focus on the internal characteristics of organizations (4, 5, 21) argue that RBV does not provide a holistic perspective for understanding how resources can be put into practice to create value for organizations. This is a limitation of the theory. As a theory of core competence, it views that the value of the brilliant people is more precious because it is component of an organizational system (16). In view of that, the significance of non-human characteristic of an organization, such as information communication technology (ICT), is often unnoticed. The strategic management process in public sector is more difficult (7) as an end result of the extraordinary characteristics of the organizations such as the amalgamation of volunteers and paid staff as well as responsibility of various sections of the government (25). Thus the theory of RBV for the purpose of acquiring core competence stress on the internal capabilities may not be able to provide an unbiased picture of how a public sector is performing. To overcome this limitation, knowledge management theory may be applied (30). In relation to this study, Resource-based-view theory is relevant as it brings out the initiatives and priorities that should be pursued by the county governments to enhance on their performance. Based on the RBV theory, it is, therefore, hypothesized that planning should improve the performance of county governments in Kenya.

Performance refers to the accomplishment of a given task measured against present known standards of accuracy, completeness, cost, and speed. In a contract, performance is deemed to be the fulfilment of an obligation, in a manner that releases the performer from all liabilities under the contract (12). Performance in the public sector has some general features which are accomplished in a performance measurement system that involves a relationship between inputs, process, outputs and outcomes which are then guided by two objectives that answers two questions: are we doing things right and are we doing the right things. The performance measurement system allows implementing some important actions and making some decisions based on quantifying the efficiency and effectiveness of past actions using appropriate information structure (18).

### **CONCEPTUAL FRAMEWORK**

The literature review revealed that strategic planning is a widespread and popular practice in both the public and private sectors. Planning is a way of overseeing the formulation and implementation of strategy. It is systematic in nature and denotes to reinforce processes to produce the data and analyses used as inputs for strategic thinking, which combines the data

resultant in the strategy. Planning may as well refer to regulator mechanisms used to implement the strategy once it is determined. It is a management and leadership tool that has productively been used for many years to support organizations in enhanced future preparation as well as upgraded long-term performance. Planning happens round the strategy formation process. There is increased acknowledgement that strategic planning is not sufficient by itself and that too many virtuous strategic plans have been left out to go to waste. Effective and efficient leadership is required to develop as well as implement strategic plans. This has led to the conception of strategic management which consist of the implementation and ongoing management of strategic plans not just their development (15).

Arising from the literature review, the following represents the conceptualization of the study.

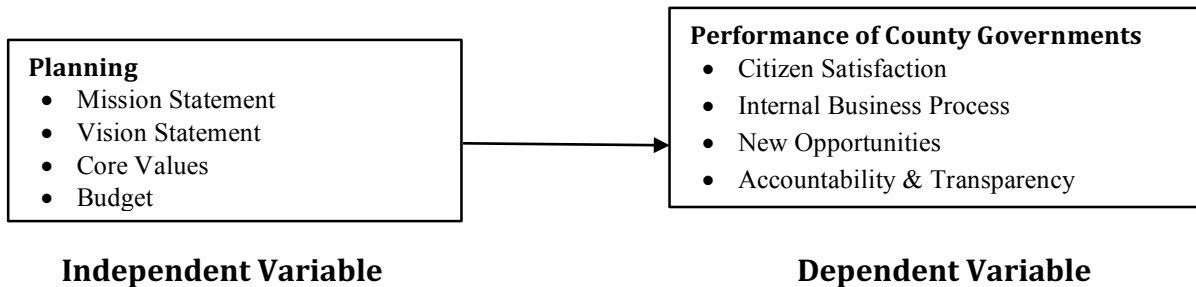


Figure 1: Conceptual Framework

### RESEARCH METHODOLOGY

To test the effect of planning on performance of county governments, this study adopted correlational research design. Data was collected once over a period of one month from a sample of seven counties in Kenya to represent Kenya as a region. The correlation analysis was used to show the positive correlation between the predictor and response variables while regression analysis was used to explain the relationship between the predictor and response variables. R-squared was used to provide the strength of the relationship between the model and the response variable and determine its goodness fit. While F statistics was used to test the significance of the regression model.

### MEASUREMENT OF VARIABLES

This study variables were measured using continuous indicators. Planning was measured by nine items namely: Mission statement is compatible with activities, county uses different strategies to generate resources, vision statement is relevant to county activities, vision statement is aspiring, inspiring and motivating, managers understand county's core values, county government embrace core values, county government is committed to providing financial resources to support strategic initiatives, county government ensure budget reflects strategic priorities and county government uses budget to ensure controls in projects. A five point likert scale ranging from one (Strongly agree) to five (Strongly disagree) was used. This measure has been adopted from previous research of (28). The Cronbach's alpha coefficient value was 0.77 and this is an indication that the internal reliability of the used scale was quite satisfactory. According to Cronbach, (10), for normal research, reliability that is as low as 0.7 is basically acceptable. The results, based on coefficient value indicates that the data has high level of internal consistency. Several parameters were used to measure county government performance. They include: new opportunities benefit all stakeholders, county arrangements ensure inclusion and fairness, county cake is shared among all county residents, employee satisfaction via involvement and empowerment, lead to efficiency in internal processes, efficient public procurement practices are pursued to ensure sound management of expenditure, county relates well with all stakeholders, good communication process ensure internal processes run smoothly, suppliers are satisfied with quality and level of information in

contracts and county emphasizes assessment of citizens needs and expectations. A five point likert scale ranging from one (Strongly agree) to five (Strongly disagree) was used. The Cronbach's alpha coefficient value for performance was 0.78 and this indicate that the internal reliability of the scale was satisfactory.

## RESEARCH FINDINGS AND DISCUSSIONS

### Descriptive Analysis for Governance

Planning was measured by Mission Statement, Vision Statement, Core Values and Budget. The respondents were asked to indicate whether the current mission statement is compatible with the activities being carried out by the county government. The majority of the respondents indicated that their mission statement is compatible with the activities being carried on by the county government as represented by a valid percentage of 88.2% while the remaining 11.8% reported that their mission statement is not compatible with the activities carried on by the county government. This is an indication that most counties are able to plan because they have mission statement. Ninety three percent of the respondents agreed that the county government uses different strategies for generating resources, while 7% reported that the county government do not use different strategies. This outlines that different strategies are used by county governments to generate resources. When asked to state if the vision statement is relevant to the county's activities and mandate, 90.6% responded that the vision statement is relevant to the county's activities and mandate while 9.4% of the respondents reported that the vision statement is not relevant to the county's activities and mandate. This gives a clear picture that vision statement is a very important drive in the county government activities and mandate.

The study revealed that county government vision statement is aspiring, inspiring and motivating as represented by a valid percent of 83%. However, 17% disagreed with the statement. This gives an indication that the county governments' vision statement is about the goals of the counties as well as provide life and direction to the counties' day-to-day work and provides a reason for the work the counties does. The study sought to establish whether managers of the counties understand the counties' core values. While 67.9% of the respondents indicated that managers of the counties understand the counties' core values, 42.1% of the respondents were for the opinion that the managers of the counties do not understand the counties' core value. This gives a perception that county managers will need more training on the core values of the county governments.

Further, the study sought to establish if the county governments embraces core values to ensure that the desired destination in growth and development is achieved. The majority of the respondents indicated that they embrace core values to ensure that the desired destination in growth and development is achieved as represented by a valid percent of 73% while the remaining 27% indicated that the county governments do not embrace core values. The results establish that most counties are guided well by the core value in their planning. The study findings revealed that 70.7% either agreed or strongly agreed their counties are committed to providing financial resources to support the implementation of the county strategic initiatives while 29.3% of the respondents disagreed that their counties are committed to providing financial resources to support the implementation of the county strategy. This is an indication that counties provide financial resources to support in strategic planning. While 76.5% of the respondents outlined that the county governments ensured that budget reflects the priorities established in the strategic plans, 23.5% of the respondents reported that county government budgets do not reflect the priorities established in the strategic plans. The findings therefore reflect that county governments honour priorities established in their strategic plans. The study revealed that, the county governments make use of the budget to ensure that there are

controls in the projects undertaken by the county. This is supported by the 79.7% of the respondents who either agreed or strongly agreed against 21.3% of the respondents who disagreed.

**Table 1: Descriptive Statistics for Planning**

	St.D	Sl.D	D	A	St.A	summary			
	%	%	%	%	%	Mn	Md	Mo	S.D
Mission statement is compatible with activities	1.6%	2.3%	7.8%	64.8%	23.4%	4	4	4	1
County uses different strategies to generate resources	0.0%	2.3%	4.7%	76.6%	16.4%	4	4	4	1
Vision Statement is Relevant to County activities	0.0%	2.3%	7.0%	74.2%	16.4%	4	4	4	1
Vision Statement is Aspiring, Inspiring and Motivating	0.0%	10.2%	7.0%	74.2%	8.6%	4	4	4	1
Managers understand county's core values	0.0%	24.2%	10.9%	46.9%	18.0%	4	4	4	1
County government embrace core values	0.8%	14.1%	11.7%	67.2%	6.2%	4	4	4	1
County government is committed to providing financial resources to support strategic initiatives	0.0%	4.7%	25.0%	62.5%	7.8%	4	4	4	1
County government ensure budget reflects strategic priorities	0.0%	6.2%	17.2%	69.5%	7.0%	4	4	4	1
County government uses budget to ensure controls in projects	0.0%	0.8%	19.5%	71.9%	7.8%	4	4	4	1

n=128

*St.D=Strongly Disagree. Sl.D=Slightly Disagree, D=Disagree, A=Agree, St.A= Strongly Agree, Mn=Mean, Md=Median, Mo=Mode, S.D= Standard Deviation*

Several factors were used to measure performance of County Governments in the study. The study findings showed that 81.2% of the respondents reported that their counties emphasized on assessment of citizen needs and expectations, whereas 18.8% reported that counties did not have any emphasize on assessment of citizen needs and expectations. This is an indication that needs and expectations of citizens in most counties were considered and met. Second, 51.6% of the respondents reported that the County cake is shared among all county residents, while 48.4% reported that the county cake is not shared among all county residents. The findings are an indication that the county government management should improve on sharing of county cake among citizens in their respective counties. Sixty Five point Seven percent (65.7%) reported that employee satisfaction, via involvement and empowerment lead to efficiency in internal processes as while 34.3% of the respondents disagreed with the statement. These results show that employees in most counties were involved and empowered in running of the county governments. When asked whether good communication process ensure internal processes run smoothly, 75% of the respondents agreed with the statement while 25% of the respondents disagreed with the statement a prove that good communication resulted to improved performance. Further, the respondents were asked if county arrangements ensured inclusion and fairness, 53.9% of the respondents reported that the arrangements included stakeholders and were fair while 46.3% reported non-inclusion and unfair. These results posed a platform where the county governments should improve on inclusion and fairness in their operation management to improve on performance of county governments.

When asked if county governments pursued efficient public procurement practices to ensure sound management of expenditure, majority of the respondents (65.7%) agreed to the

statement while 34.3% disagreed with the statement. The results show that most counties applied effective public procurement practices that ensured sound management of expenditure and this led to improvement in performance. The researcher further asked the respondents whether the suppliers are satisfied with quality and level of information in county government contracts and 55.5% reported that they were while 44.5% disagreed with the statement. The results communicate that county governments should consider improving the quality and level of information in county government contracts.

**Table 2: Descriptive analysis for County Government Performance**

	St.D	Sl.D	D	A	St.A	Mn	Summary		
	%	%	%	%	%		Md	Mo	S.D
County emphasizes assessment of citizen needs and expectations	0.0%	7.8%	10.9%	78.1%	3.1%	4	4	4	1
County cake is shared among all county residents	6.2%	23.4%	18.8%	47.7%	3.9%	3	4	4	1
Employee satisfaction, via involvement and empowerment, lead to efficiency in internal processes	0.8%	22.7%	10.9%	64.1%	1.6%	3	4	4	1
Good communication process ensure internal processes run smoothly	0.0%	11.7%	13.3%	67.2%	7.8%	4	4	4	1
New opportunities benefit all stakeholders	4.7%	26.6%	25.0%	42.2%	1.6%	3	3	4	1
County arrangements ensure inclusion and fairness	5.5%	19.5%	21.1%	51.6%	2.3%	3	4	4	1
Efficient public procurement practices are pursued to ensure sound management of expenditure	2.3%	10.2%	21.9%	64.1%	1.6%	4	4	4	1
Suppliers are satisfied with quality and level of information in contracts	0.8%	20.3%	23.4%	53.9%	1.6%	3	4	4	1
County relates well with all stakeholders	0.0%	21.1%	31.2%	43.8%	3.9%	3	3	4	1

n=128

*St.D=Strongly Disagree, Sl.D=Slightly Disagree, D=Disagree, A=Agree, St.A= Strongly Agree, Mn=Mean, Md=Median, Mo=Mode, S.D= Standard Deviation*

### Correlation Analysis

Performance had a positive and significant correlation with planning ( $r = 0.330$ ,  $p\text{-value} < 0.000$ ). This means, an increase in planning leads to an increase in county government performance.

**Table 3: Correlations Analysis**

	X	Y
Planning	Correlation	1
	Sig. (2-tailed)	330**
	N	0.000
		1
		128

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Key: Y=County Government Performance

X= Planning

### Regression Analysis

**H<sub>0</sub>1: There is no significant relationship between Governance and the Performance of County Governments in Kenya**

### Planning and County government performance Model Summary

The coefficient of determination (R squared) of 0.109 indicates that 10.9% of county government performance can be explained by planning. The adjusted R square of 10.2% explains that planning in the exclusion of the constant variable explain there is no change in county government performance. The remaining percentage can be explained by other factors not included in the model. The R indicates the correlation coefficient of the effects of planning, an R = 0.330 shows that there is a positive relationship between planning and county government performance. The standard error of estimate (0.50) shows the average deviation of the independent variables from the line of goodness fit.

**Table 4: Planning and County government performance Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.330 <sup>a</sup>	.109	.102	.50221

a. Predictors: (Constant), PLANNING

### Planning and County Government Performance

The F statistics was used to test for the model goodness of fit. Table 5 (F=15.350, p value = 0.000) indicates that there is a significant relationship between planning and county government performance and at least the slope ( $\beta$  coefficient) is not zero.

**Table 5: Planning and County Government Performance ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3.871	1	3.871	15.350	.000 <sup>b</sup>
Residual	31.780	126	.252		
Total	35.651	127			

a. Dependent Variable: PERFORMANCE

b. Predictors: (Constant), PLANNING

### Planning and County Government Performance Regression Weights

The study hypothesized that planning does not affect the performance of county governments in Kenya. The study findings showed that there was a positive and significant relationship between planning and county government performance ( $\beta=0.411$ , p-value=0.000<0.05). This means that a unit increase in planning leads to an increase in county government performance by 0.411. Since the p value was less than 0.05, the null hypothesis was rejected and the alternative hypothesis was accepted. The study therefore concluded that planning has a significant influence on performance of county governments in Kenya.

**Table 6: Planning and County Government Performance Regression Weights**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.826	.405		4.506	.000
	PLANNING	.411	.105	.330	3.918	.000

a. Dependent Variable: PERFORMANCE

## DISCUSSION

The findings of the study greatly contradicts the hypothesis that planning does not affect the performance of county governments in Kenya. The results of the regression analysis indicates that planning has significant effect on performance of county governments in Kenya. Planning was second compared to other variables and this is an implication that good performance by



county governments is highly influenced by effective planning. Similar conclusions were drawn by Gichunge (11), Rothaermel (22) and Theodore (26).

### SUMMARY AND CONCLUSION

The objective of this paper was to investigate the effect of planning on the performance of county governments in Kenya. It was established that through planning, the county governments have found a footing in terms of implementing the county integrated development plans. As such concerted planning efforts were necessary to improve county government performance. Based on the results of this study, it is concluded that planning as used by county governments is positive significant factor in relation to county government performance.

### RECOMMENDATIONS

From the findings of the study, it is recommended that the county governments should emphasize on implementing the county integrated development plans. In planning, duly clarified roles and responsibilities will ensure less duplication of duties and accountability which will help the counties in reducing wastage of resources meant for the implementation process. The study therefore recommends further improvement in planning to harness the benefits accrued from planning. While the objective of the study was successfully met, it is recommended that future research on planning may be conducted in other state bureaucracies that have better policies and practices than county governments.

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## Effect Of Innovation On Performance Of County Governments In Kenya

**Wahinya Grace Njeri**

Jomo Kenyatta University of Agriculture and Technology (JKUAT),  
Nairobi Kenya

**Prof. Mukulu Elegwa**

Jomo Kenyatta University of Agriculture and Technology (JKUAT),  
Nairobi Kenya

**Prof. Waititu Anthony**

Jomo Kenyatta University of Agriculture and Technology (JKUAT),  
Nairobi Kenya

### ABSTRACT

The purpose of this study was to determine the effect of planning on performance of county governments in Kenya. Questionnaire was used to collect data from seven counties in Kenya drawn from 47 county governments in Kenya. Two tools of analysis were adopted by this study namely: correlation analysis and regression analysis. The correlation analysis was used to show the positive correlation between the predictor and response variables while regression analysis was used to explain the relationship between the predictor and response variables. R-squared was used to provide the strength of the relationship between the model and the response variable and determine its goodness fit. While F statistics was used to test the significance of the regression model. The study adopted correlational research design. The findings revealed that performance of county government is significantly influenced by innovation. From the findings, the study concludes that the county governments should enhance on further improvement in the area of planning in order to enhance the benefit of planning on performance of county governance.

**Key Words: Innovation, Performance, County Governments**

### INTRODUCTION

Strategic management provides overall direction that involves formulation and implementation of the organizational goals. This involves specifying the organizational objectives and from them, develops plans and policies to enable the organization achieve its set objectives as well as allocate resources to implement the plans. This is done through the consideration of resources and assessment of internal and external environments in which the organizations functions. Strategic management incorporates all management hitches that may arise soon the strategic plans are developed, when other management process functions must be performed. Strategic management vividly states that a plan is incomplete by the time it has been implemented and evaluated and hence managers in strategic management are called to consider daily operations in the context of a longer period as well as change of external environment. In order to support new initiatives that spring from certain changes in the organizational environment, organizational structure and other fundamentals of management have to be adequate (24).

Planning refers to the act of developing broad plans of action necessary to attain the organization's goals as well as objectives, establishing and periodically confirming the organization's mission and its context for management. This means, allocating resources on a basis consistent with strategic directions and goals and objectives, and managing the various lines of business and deploying the organization mission and strategy that is, articulating and communicating it, as well as developing action plans at lower levels that are supportive of those at the enterprise level (19).

Planning is a core variable as it gives organizations the direction they should take, what they wish to do in totality, where they are and where they wish to go. Strategic planning is the procedure of developing tactics, strategies, and organization objectives to achieve the mission of the organization. The organization produces short and long-term objectives by means of the mission statement. Objectives in the case of public sector may include, revenue collection goals and customer as well as citizen satisfaction reckonings. The next step in planning is developing strategies to help the organization in the accomplishment of the objectives. For instance, better training and monitoring of feedback scores are strategies that held in achievement of higher customer satisfaction. This is followed by development of actionable steps or tactics. A tactic tied to the customer satisfaction goal and the training strategy is hiring an external training consultant for a chain of service training sessions (25).

### **STATEMENT OF THE PROBLEM**

Strategic Management Practices: Planning, Governance, Quality Management and Innovation are central organization performance. Innovation ensures that individual county government strives to ensure competitive edge. It ensures application of technology, protection, identification, selection and value creation (26). County governments are vital vehicles for grassroots social-economic development in Kenya. Strategic management practices are therefore, important to county government's prudent management of resources for optimal performance. However, county governments face a number of challenges in executing their constitutional mandated functions. These challenges are as a result of poor strategic management practices. Studies by Ondigi (21), Korir (10) and Muli (16) indicate that poor planning in county governments has resulted to high levels of corruption. Planning within the county government in Kenya is wanting as envisioned by poor performance. It is, therefore, important that the County Government should improve their planning to enhance their performance. The challenges faced by the county governments as evidenced by the research can be attributed to poor implementation of planning. This study sought to establish the effects of planning on the performance of county government in Kenya and thus fill the knowledge gap.

### **RESEARCH QUESTION**

The study sought to answer a key question:

To what extent does innovation affect the performance of county governments in Kenya?

### **LITERATURE REVIEW**

This study focused on General Theory of Innovation (GTI). This theory was innovated by Greg (9). His aim was to create a theory concerned with supporting machineries for emergence, survival and end of the artificial systems. GTI brings out the link between various organizations applications, which address the needs of real projects. General Theory of Innovation states that innovation in the area of strategic management is the identification of a transformation required for getting something in the right position in an organization with the determination of attaining economical advantage. This implies that innovation is massively more important in strategic management than in any other area of institutional activities such as product or

process innovation. Application of GTI to the strategic management supported creation of specialized tools such as Value Matrix, Generic Growth Strategies and Value Growth Templates (3).

Literature review on General Theory of innovation revealed that, though the theory has been developed for many years, it still has its own critics owing to the fact that there is no such a thing as perfect theory. To overcome this limitation of non-perfection, continuous improvement on the theory should be ensured. The theory should receive further improvement and evolution. The other limitation of the GTI theory is lack of enough skilled personnel to guide on the GTI theory operation. This may be overcome by continuous training of the personnel involved in the operation of the GTI theory (3). General Theory of Innovation is relevant to this study because it will help in anticipating new markets and the knowledge to apply in finding new sources of revenue, finding new markets for products and services, creating new powerful strategies and generating and controlling growth in order for the county governments to have significant advantage on the application of their strategic plans. Consequently, the General Theory of Innovation hypothesizes a positive relationship between innovation and performance.

Performance in the public sector has some general features which are accomplished in a performance measurement system that involves a relationship between inputs, process, outputs and outcomes which are then guided by two objectives that answers two questions: are we doing things right and are we doing the right things. The performance measurement system allows implementing some important actions and making some decisions based on quantifying the efficiency and effectiveness of past actions using appropriate information structure (18). Performance is no longer measured only on key performance indicators (KPI) such as return on investment (ROI), revenue, overhead and operational costs in modern years, but considered to involve not only financial considerations but also other factors including employee morale and productivity, social responsibility and reputation and innovation (2).

### **CONCEPTUAL FRAMEWORK**

Innovation is an action which leads to a first-hand generating function or a new product (Mc Daniel, 2000). Pearce and Robinson (2010) outlines innovation as an impressive strategy that seeks to obtain the exceptional margins connected with the conception and customer reception of a new product or service. The notion of innovation is defined as a new arrangement or management process, a new plan, a new policy, a program or a new product or service produced in an organization (12). Bessant and Tidd (1) defines the innovation as marketing a developed or new product or as technical, design, production, management and viable practices in the use of a developed or new process or equipment for the first time. An organization is challenged by innovation to look beyond its well-known organizational restrictions and intellectual models and to contribute in an unbiased, inspired consideration of the empire of opportunities and often involves varying or transforming organization models, the outline on how the organization is going to make money, to make an organization more competitive (14). The key concept behind the perception of innovation systems is that innovation is a collaborative process (13).

According to Porter (23), strategy is the existence of a set of actions that will empower the organization to distinguish itself from its competitors and to uphold its viable position. Lendel and Varmus (11) outlines that the results of research have shown that organizations applying innovation are more successful compared with the organizations that do not apply innovation. Innovation is a leader that makes organizations contemplate on why they renovate before endeavoring to make an innovation. Innovation empowers top management to follow the

activities of their counter parts, to reach customer market information, to use organization resources efficiently and to make effective funds in research and development (20). These activities have been found to confidently impact organization performance (28). Managers will strategize and allocate resources appropriately to improve firm innovation performance under the environmental conditions of an increasingly competitive environment and constantly changing customer needs. The presentation of innovation in an organization can ensure the execution of successful innovations by lessening acute interior and exterior eventualities (5).

Arising from the literature review, the following represents the conceptualization of the study.

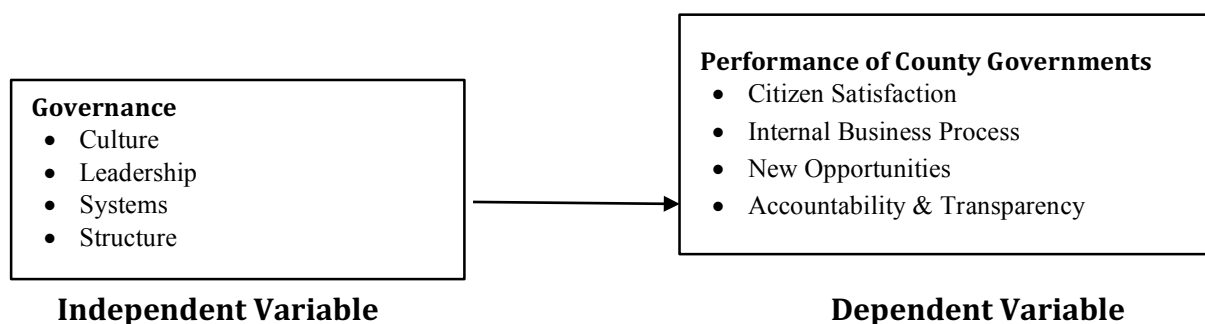


Figure 1: Conceptual Framework

### RESEARCH METHODOLOGY

To test the effect of innovation on performance of county governments, this study adopted correlational research design. Data was collected once over a period of one month from a sample of seven counties in Kenya to represent Kenya as a region. The correlation analysis was used to show the positive correlation between the predictor and response variables while regression analysis was used to explain the relationship between the predictor and response variables. R-squared was used to provide the strength of the relationship between the model and the response variable and determine its goodness fit. While F statistics was used to test the significance of the regression model.

### MEASUREMENT OF VARIABLES

This study variables were measured using continuous indicators. Innovation was measured by nine items namely: Innovation culture is well developed in county, county handles innovation obstacles well, county has embraced internet in communication and exchange of data and information, county ensures new technology machines and equipment are serviceable, innovation portfolio process is effective in managing innovation risk, county innovation process is synchronized with strategy, use of IT enable coordination and integration of activities, county uses different communication devices in operations, county government use technology to improve value addition. A five point likert scale ranging from one (Strongly agree) to five (Strongly disagree) was used. This measure has been adopted from previous research of (27). The Cronbach's alpha coefficient value was 0.91 and this is an indication that the internal reliability of the used scale was quite satisfactory. According to Cronbach, (4), for normal research, reliability that is as low as 0.7 is basically acceptable. The results, based on coefficient value indicates that the data has high level of internal consistency. Several parameters were used to measure county government performance. They include: new opportunities benefit all stakeholders, county arrangements ensure inclusion and fairness, county cake is shared among all county residents, employee satisfaction via involvement and empowerment, lead to efficiency in internal processes, efficient public procurement practices are pursued to ensure sound management of expenditure, county relates well with all stakeholders, good communication process ensure internal processes run smoothly, suppliers are satisfied with quality and level of information in contracts and county emphasizes

assessment of citizens needs and expectations. A five point likert scale ranging from one (Strongly agree) to five (Strongly disagree) was used. The Cronbach's alpha coefficient value for performance was 0.78 and this indicate that the internal reliability of the scale was satisfactory.

## RESEARCH FINDINGS AND DISCUSSIONS

### Descriptive Analysis for Governance

Innovation was measured by Technology, Protection, Value Creation and Identification. The respondents were asked to indicate whether county governments use technology to improve value addition and 66.4% of the respondents agreed that county governments use technology while 33.6% disagreed on the use of technology to improve value addition in the counties. The study further sought to establish whether counties' use of IT enable coordination and integration of activities and 62.5% of the respondents agreed while 37.5% disagreed. The study further sought establish whether counties embrace internet in communication and exchange of data and information and 50.8% of the respondents indicated that counties for sure embrace internet in communication while 48.2% disagreed. Further 49.2% of the respondents indicated that counties ensures new technology machines and equipment are serviceable while 50.8% reported that counties do not. The study results show that most counties embrace technology and protection in their operations. However, this should be improved. Further, the study sought to establish whether county uses different communication devices in operations where 76.6% of the respondents agreed while 23.3% disagreed. 44.6% indicated that county innovation process is synchronized with strategy while 55.4% disagreed. Asked on whether portfolio process is effective in managing innovation risk, 43.7% agreed while 56.3% disagreed. To respond to whether innovation culture is well-developed in county, 31.2% agreed while 68.8% disagreed and further asked whether county handles innovation obstacles well, 32% agreed while 68% disagreed. The results indicate that, for innovation to be effective, county governments should improve on value creation and identification.

**Table 1: Descriptive Statistics for Innovation**

	St.D	Sl.D	D	A	St.A	Summary			
	%	%	%	%	%	Mn	Md	Mo	S.D
County government use technology to improve value addition	1.6%	5.5%	26.6%	57.8%	8.6%	4	4	4	1
Use of IT enable coordination and integration of activities	1.6%	9.4%	26.6%	50.8%	11.7%	4	4	4	1
County has embraced internet in communication and exchange of data and information	3.1%	28.9%	17.2%	37.5%	13.3%	3	4	4	1
County ensures new technology machines and equipment are serviceable	3.1%	23.4%	24.2%	38.3%	10.9%	3	3	4	1
County uses different communication devices in operations	0.0%	11.7%	11.7%	66.4%	10.2%	4	4	4	1
County innovation process is synchronized with strategy	3.1%	26.6%	25.8%	43.8%	0.8%	3	3	4	1
Innovation portfolio process is effective in managing innovation risk	3.9%	22.7%	29.7%	40.6%	3.1%	3	3	4	1
Innovation culture is well developed in county	3.9%	35.9%	28.9%	28.1%	3.1%	3	3	2	1
County handles innovation obstacles well	3.9%	32.0%	32.0%	28.9%	3.1%	3	3	2	1

Several factors were used to measure performance of County Governments in the study. The study findings showed that 81.2% of the respondents reported that their counties emphasized on assessment of citizen needs and expectations, whereas 18.8% reported that counties did not have any emphasize on assessment of citizen needs and expectations. This is an indication

that needs and expectations of citizens in most counties were considered and met. Second, 51.6% of the respondents reported that the County cake is shared among all county residents, while 48.4% reported that the county cake is not shared among all county residents. The findings are an indication that the county government management should improve on sharing of county cake among citizens in their respective counties. Sixty Five point Seven percent (65.7%) reported that employee satisfaction, via involvement and empowerment lead to efficiency in internal processes as while 34.3% of the respondents disagreed with the statement. These results show that employees in most counties were involved and empowered in running of the county governments. When asked whether good communication process ensure internal processes run smoothly, 75% of the respondents agreed with the statement while 25% of the respondents disagreed with the statement a prove that good communication resulted to improved performance. Further, the respondents were asked if county arrangements ensured inclusion and fairness, 53.9% of the respondents reported that the arrangements included stakeholders and were fair while 46.3% reported non-inclusion and unfair. These results posed a platform where the county governments should improve on inclusion and fairness in their operation management to improve on performance of county governments.

When asked if county governments pursued efficient public procurement practices to ensure sound management of expenditure, majority of the respondents (65.7%) agreed to the statement while 34.3% disagreed with the statement. The results show that most counties applied effective public procurement practices that ensured sound management of expenditure and this led to improvement in performance. The researcher further asked the respondents whether the suppliers are satisfied with quality and level of information in county government contracts and 55.5% reported that they were while 44.5% disagreed with the statement. The results communicate that county governments should consider improving the quality and level of information in county government contracts.

**Table 2: Descriptive analysis for County Government Performance**

	St.D %	Sl.D %	D %	A %	St.A %	Mn	Md	Mo	S.D
County emphasizes assessment of citizen needs and expectations	0.0%	7.8%	10.9%	78.1%	3.1%	4	4	4	1
County cake is shared among all county residents	6.2%	23.4%	18.8%	47.7%	3.9%	3	4	4	1
Employee satisfaction, via involvement and empowerment, lead to efficiency in internal processes	0.8%	22.7%	10.9%	64.1%	1.6%	3	4	4	1
Good communication process ensure internal processes run smoothly	0.0%	11.7%	13.3%	67.2%	7.8%	4	4	4	1
New opportunities benefit all stakeholders	4.7%	26.6%	25.0%	42.2%	1.6%	3	3	4	1
County arrangements ensure inclusion and fairness	5.5%	19.5%	21.1%	51.6%	2.3%	3	4	4	1
Efficient public procurement practices are pursued to ensure sound management of expenditure	2.3%	10.2%	21.9%	64.1%	1.6%	4	4	4	1
Suppliers are satisfied with quality and level of information in contracts	0.8%	20.3%	23.4%	53.9%	1.6%	3	4	4	1
County relates well with all stakeholders	0.0%	21.1%	31.2%	43.8%	3.9%	3	3	4	1

n=128

*St.D=Strongly Disagree. Sl.D=Slightly Disagree, D=Disagree, A=Agree, St.A= Strongly Agree, Mn=Mean, Md=Median, Mo=Mode, S.D= Standard Deviation*



### Correlation Analysis

Performance had a positive and significant correlation with planning ( $r = 0.606$ ,  $p$ -value  $< 0.000$ ). This means, an increase in innovation leads to an increase in county government performance.

**Table 3: Correlations Analysis**

		X	Y
Planning	Correlation	1	606**
	Sig. (2-tailed)		0.000
	N	1	128

\*\* Correlation is significant at the 0.01 level (2-tailed).  
\* Correlation is significant at the 0.05 level (2-tailed).

Key: Y=County Government Performance

X= Innovation

### Regression Analysis

**H<sub>0</sub>1: There is no significant relationship between Innovation and the Performance of County Governments in Kenya**

#### Innovation and County government performance Model Summary

The coefficient of determination (R squared) of 0.367 indicates that 36.7% of county government performance can be explained by innovation. The adjusted R square of 36.2% explains that innovation in the exclusion of the constant variable explain there is no change in county government performance. The remaining percentage can be explained by other factors not included in the model. The R indicates the correlation coefficient of the effects of innovation, an  $R = 0.606$  shows that there is a positive relationship between innovation and county government performance. The standard error of estimate (0.42) shows the average deviation of the independent variables from the line of goodness fit.

**Table 4: Innovation and County government performance Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.606 <sup>a</sup>	0.367	0.362	0.42323

a Predictors: (Constant), Innovation

#### Innovation and County Government Performance

The F statistics was used to test for the model goodness of fit. Table 5 ( $F=73.030$ ,  $p$  value  $=0.00$ ) indicates that there is a significant relationship between innovation and county government performance and at least the slope ( $\beta$  coefficient) is not zero.

**Table 5: Innovation and County Government Performance ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	13.081	1	13.081	73.030	.000 <sup>b</sup>
Residual	22.570	126	.179		
Total	35.651	127			

a. Dependent Variable: PERFORMANCE

b. Predictors: (Constant), INNOVATION

#### Innovation and County Government Performance Regression Weights

The study hypothesized that innovation does not affect the performance of county governments in Kenya. The study findings showed that there was a positive and significant relationship between innovation and county government performance ( $\beta=0.452$ ,  $p$ -value $=0.000<0.05$ ). This means that a unit increase in innovation leads to an increase in county

government performance by 0.452. Since the p value was less than 0.05, the null hypothesis was rejected and the alternative hypothesis was accepted. The study therefore concluded that innovation has a significant influence on performance of county governments in Kenya.

**Table 6: Innovation and County Government Performance Regression Weights**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.908	.179		10.658	.000
INNOVATION	.452	.053	.606	8.546	.000

a. Dependent Variable: PERFORMANCE

## DISCUSSION

The findings of the study greatly contradicts the hypothesis that innovation does not affect the performance of county governments in Kenya. The results of the regression analysis indicates that innovation has significant effect on performance of county governments in Kenya. Innovation was first compared to other variables and this is an implication that good performance by county governments is highly influenced by innovation. Similar conclusions were drawn by Eleanor (8), Walker, Damanpour and Devece (29) and Mwangi (17).

## SUMMARY AND CONCLUSION

The objective of this paper was to investigate the effect of innovation on the performance of county governments in Kenya. It was established that through innovation, The study revealed that counties are handling innovation obstacles through the integrated systems like IFMIS and IFMIS e-procurement system which are enhancing efficiency in planning, budgeting, procurement, expenditure management and reporting in both levels of National and county governments in Kenya. As such, innovation was concerned with technology where the use of technology to improve value addition enables coordination and integration of activities and allows the users to embrace internet in communication and exchange of data and information that eventually leads to great positive effect on the performance of county governments in Kenya. Based on the results of this study, it is concluded that innovation as used by county governments is positive significant factor in relation to county government performance.

## RECOMMENDATIONS

From the findings of the study, it is recommended that the county government managers should enhance further improvement to harness the benefit of innovation on performance of county governments. While the objective of the study was successfully met, it is recommended that future research on innovation may be conducted in other state bureaucracies that have better policies and practices than county governments.

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# A Theoretical Model for the Relationship between Perceptions, Metaperceptions, and Relational Outcomes

H. Paul LeBlanc III

The University of Texas at San Antonio

## ABSTRACT

Perception is based on sense experience (Hume, 1748). Whereas, metaperception is perceptions (or ideas) about perception. Relationships are comprised of individuals who develop perceptions of self, perceptions of the relational partner, and perceptions of the relational partners' perception of self and partner (metaperceptions). This article defines perception and metaperception and describes the cognitive components which shape individual's meaning of their experience, and reviews research on perception, metaperception, co-orientation and the impact of these cognitions on relationships and relational quality. This article further reviews more current research on couple construction based upon combinations of perceptions and metaperceptions, then provides a theoretical model for describing relational dynamics as a consequence of communication emanating out of the degree of agreement of perceptions and metaperceptions between relational partners. Finally, this article further provides a direction for future research on improvement of relational outcomes. It is hoped that this theoretical model may prove useful for scholars and practitioners.

**Keywords:** Perceptions. Metaperceptions. Relational outcomes. Cognition. Co-orientation.

## INTRODUCTION

All relationships involve individuals who interact and transact with others based on their knowledge and perceptions of each other, their surroundings, and events. Indeed, all relationships are built on these individual perceptions. Relational outcomes may include degree of trust, level of conflict, and relational satisfaction. With these potential effects, a greater understanding of the influence of relational perceptions and metaperceptions (perceptions about perceptions) is warranted. This paper defines the constructs of perception and metaperception within the context of relationships, and provides a theoretical model explaining the relationship between perceptions, metaperceptions, and the dynamics of relationships.

## REVIEW OF LITERATURE

### Foundational Research and Theory on Cognition and Perception

Perception is a human cognitive process by which sense experience is converted into meaning by individuals. This relationship between sense experience and perception was first formalized by the British philosopher David Hume in his *A Treatise of Human Nature* (1738) and then expanded upon in his *An Enquiry Concerning Human Understanding* (1748). Taking Hume's approach, along with the epistemology of Thomas Aquinas, Lonergan (1957) further described the process of human knowledge as comprised of four subprocesses: Perception, thought, question, investigation. Meaning is consequent to these four subprocesses.

Psychologists in the early to mid-twentieth century began looking more closely at the processes of cognition and perception. In the early twentieth century, psychologists conceived of cognitive structures for organizing ideas. Bartlett first labeled these hypothesized cognitive

structures as schema. According to Bartlett (1932), schemas are not persistent but constantly developing. When new information is received, that information is encoded into the previously existing memory structures. However, advance relevant contextual knowledge is a necessary prerequisite for understanding that new information (Bransford & Johnson, 1972). The authors demonstrated that when relevant contextual information was provided after new information was provided, comprehension and recall was much lower. More recently, van Kesteren, Ruiter, Fernandez, and Henson (2012) found that information that is congruent with existing knowledge (a schema) is usually better remembered than less congruent information.

Schemas are organized according to expectancies, self-evaluations, rules, and memories (Beck & Haigh, 2014). Ghosh and Gilboa (2014) posited that cognitive schemas are built upon multiple observations and adaptations to structures of interrelated units, where the detail of the units is less important than the relationships between them. In a recent study, Tse and colleagues (2007) found that memory encoding and consolidation of new information happens very quickly when associative cognitive structures (schema) already exist. Given these findings, a reasonable and justified assumption regarding individuals within interpersonal relationships may be that these individuals develop and adapt perceptions about their relational partners over time.

Communication scholars working within this psychological and epistemological context understand that meaning within individuals is co-constructed through transactional processes with others. The transactional model of “relational” co-constructed meaning was first posited by Barnlund (1970). In Barnlund’s transactional model, individuals’ perceptions are influenced by messages sent by their relational partners. However, it might be more accurate to describe the co-construction of meaning as a process by which perceptions are modified through transactions with others; that initial perceptions are created through sense experience whether that sense experience occurs through observation or hearing of symbolic exchanges. In other words, perceptions are not created solely through interaction with others but may be subsequently modified through transactions with others.

Indeed, according to McLeod and Chaffee (1973, p. 470):

*“a key assumption underlying an interpersonal approach to studying human communication is that a person’s behavior is not based simply upon his [sic] private cognitive construction of his world; it is also a function of his perception of the orientation held by others around him and of his orientation to them. A further assumption is that under certain conditions of interaction, the actual cognitions and perceptions of others will also affect his behavior.”*

### **Current Research on Perception and Relational Outcomes**

The possibility of modification of perceptions through transactions with others implies that perceptions are malleable. Indeed, LeBlanc argued that “perceptions derive from individual experiences,” and that “individuals process information from their experiences to arrive at or construct meaning” (2017, p.1). However, that meaning can be co-constructed through transactional processes suggests that individuals’ initial perceptions are not set (see Bartlett, 1932). These perceptions, therefore, are constantly changing. The fact that perceptions change demonstrates that a distinction between what is and what is thought or “known” about what is are distinct.

Effective communication occurs when two-way communication produces high accuracy (Verčič, 2015). In a germinal article, Kenny and Albright (1987) demonstrated that individual accuracy and dyadic accuracy may not match. In describing individual accuracy, the authors

contend that individuals may behave in reference to their partners based upon their judgements of others. According to Kenny and Acitelli (2001), close relational partners can be both accurate and biased in their perceptions of each other, such as the bias of assumed similarity. The authors found that bias effects were strong when the object of the partner perceptions were related to the relationship itself.

Lack of individual accuracy thus may have relational consequences. In describing dyadic accuracy, the authors contend that individuals may more accurately judge how their partners may interact following co-construction. Increased accuracy in perceptions thus relies upon transaction. These findings support the conclusions of Dornsuch and colleagues (1965) who found that understanding increased between common perceivers, compared to understanding derived at independently between known perceivers, or understanding derived through common cultural experiences.

Biesanz (2010) demonstrated that individuals may be differentially accurate in their perceptions of others. Additionally, individuals may be differentially perceived more or less accurately depending on their self-presentations. These perceptions, accurate or not, may be influenced by characteristics that are observed, but not transactionally shared between relational partners. As Trahan (2011) pointed out, individual identities lying at the intersection of “observable” demographic characteristics influence their experiences and therefore perceptions of the world around them. However, Tagiuri, Blake and Bruner (1952) found that individuals have a greater than chance ability to achieve accuracy in determining the perceptions of others about themselves, and a greater than chance ability to achieve congruency between themselves and others.

### **Metaperception**

Metaperception, in short, is perception about perception. In relational terms, individuals have perceptions about their relational partners’ perceptions. These metaperceptions can be either intrinsic or extrinsic to the relationship. For example, a relationally intrinsic metaperception may include what partner one (A) perceives partner two (B) thinks about partner one or his or her relationship with partner one. A relationally extrinsic metaperception may include what partner one perceives partner two thinks about some external event.

According to Carlson (2016), individuals both initiate and maintain social bonds through metaperceptions. In four separate studies involving new acquaintances, peers, friends and romantic partners, Carlson found that individuals preferred accuracy in metaperceptions from their partners regardless of the positivity of the metaperceptions but enjoyed the relationship more when the metaperceptions were positive. In a related study, Cook and Douglas (1998) found that young adults were generally accurate in their metaperceptions of their fathers’ assertiveness and in their parents’ cooperation.

In intimate relationships, the importance of positive bias towards the relational partner becomes more pronounced. Boyes and Fletcher (2007) found that individuals perceived that their own partners were positively biased towards them. Additionally, the authors found that metaperceptions of positive bias were more pronounced for partner traits most relevant for evaluation of their mates. Boyes and Fletcher posited that positively biased metaperceptions are a normative feature of intimate relationships. This argument relates well to the findings of Carlson (2016) in how individuals’ perception of their partners’ positive bias towards them was more enjoyable. Indeed, accurate and positive metaperceptions can significantly impact the maintenance of personal relationships.

## Co-orientation

Metaperceptions, although occurring when an individual is in a relationship with another, are in the mind of the individual. For interpersonal relationships to continue, some degree of agreement between perceptions and metaperceptions between relational partners must occur. Co-orientation involves relational partners' interdependent perceptions about each other (Newcomb, 1953). According to Clarke (1971), co-orientation requires knowledge about how others evaluate an event. Co-orientation is an interdependency struggle.

Co-orientation between two partners in a relationship involves two sets of perceptions: Direct perceptions and metaperceptions of each individual (Laing, Phillipson, & Lee, 1966). According to the authors, co-orientation involves three dimensions: a) agreement or actual similarity in direct perceptions; b) comparison between one partner's direct perceptions and the other's metaperceptions, yielding understanding; and c) comparison between one partner's direct perceptions and his or her metaperceptions, yielding congruence. These three dimensions may be described as empathic accuracy, actual and assumed similarity.

Given Laing and colleagues (1966) conceptualization of perceptions involved in relational co-orientation, agreement of direct perceptions between relational partners (A) and (B) can be formulized as:  $A_p = B_p$ . Understanding between one relational partner's direct perception ( $A_p$ ) and the other partner's metaperception ( $B_{mp}$ ) can be formulized as:  $A_p = B_{mp}$ . Congruence between one partner's direct perceptions and his or her metaperceptions can be formulized as:  $A_p = A_{mp}$ .

Stamm and Pearce (1971) argued that when perception of inaccuracy in the co-orientation process occurs, exchange of information is initiated between partners either by a request for more information, or by giving more information. According to Stamm and Pearce (1971, p. 212), accuracy is defined "as the communicator's discrimination between his [sic] expectations and his perception of what the other said." In other words, a perception of disagreement might motivate initiation of communication.

Interestingly, Kenny and Kashy (1994) found that co-orientation effects (consensus, assimilation, self-other agreement, and assumed similarity) are more pronounced in friendship dyads compared to acquaintance dyads. However, as Burgess (1926) implied, the cultural background or type of relationship may have little influence on psychological process of meaning making. For example, coach-athlete relationships may be characterized as involving co-orientation towards relational closeness, commitment and complementarity (Jowett, 2006). Similar relational characteristics may exist in other quasi-professional/personal relationships. Indeed, all interpersonal relationships may be characterized as requiring transactional co-construction of meaning about the relationship.

## Impact on Relationships

In same-sex platonic friendships, according to Arroyo and Segrin (2011), perceptions of partners' communication competence were related to relationship satisfaction and commitment. Interestingly, the effect of these perceptions was moderated by metaperceptions of the partner's communication competence. On the other end of the spectrum, McLaren and colleagues (2011) found that relationship uncertainty and perceived interference from a relational partner increased reported relational difficulties. It is important to note that perceived interference from the other implies a judgment of motive. Such judgments are necessarily metaperceptions. Indeed, the individual perceives the partners' motive as intentionally hurtful. A motive is in the mind of the partner (a perception), as judged by the

individual. As discussed above, a perception of the other persons' perception is a metaperception.

Such judgments about what is in the mind of the other impact all manner of relational characteristics. For example, in a study by Rempel, Holmes and Zanna (1985), interpersonal trust was broken down into three distinct components based upon the individual's judgments about their partner's motives: predictability, dependability and faith. According to the authors, results indicated that all three forms of trust were strongly associated with metaperceptions of the partner's motives. Similarly, Sciangula and Morry (2009) found that self-esteem (a perception about self) influenced individual's perception of their partner's regard (a metaperception). In this sense, perception and metaperception serve as feedback loops for relational maintenance.

Relatedly, Francis, Self and Noble (1982) demonstrated that contextual factors influence communication development between mothers and infants. In particular, the authors note that mutual gaze and visual co-orientation play a significant role in language acquisition. In adult relationships, Rosenbaum and Rosenbaum (1975) found that prior perceived similarity of values between a communicator and listeners more strongly influenced attitude change in listeners, when the congruence of values was particularly salient.

These relational effects of perception and metaperception are not limited to healthy individuals. Rather, perception and metaperception influence all relationships. In one study, Sleep, Lavner and Miller (2017) found that individuals with maladaptive personality traits tend to be attracted to potential romantic partners with similar traits. One such trait could be perceived trustworthiness. In a similar study, Miano and colleagues (2017) investigated perceptions of trustworthiness in romantic relationships involving a partner diagnosed with borderline personality disorder (BPD). In a controlled experiment, comparisons between healthy couples and couples with one partner with BPD showed no significant difference in metaperceptions about neutral conversational topics between couple types. However, significant differences between couple types were found in the metaperceptions of trustworthiness of partners when conversations involved threatening situations, such as separation. The researchers concluded that metaperceptions of trustworthiness were more greatly influenced in patients with BPD in threatening situations.

### **Couple Constructs**

In long-term personal, intimate relationships, couples are typically construed as familial. The essential characteristics of families are the same despite individual differences and differences attributable to various cultural groups (Burgess, 1926). Families grow out of relationships between intimate partners, and between parents and children (Burgess, 1926). These relationships can be unitized as a dyad. Communication creates relationships within these family-based dyads.

From a communication perspective, relationships are initiated and maintained through the feedback loop created between individuals during symbolic transaction. Put another way, couples are constructed through communication. Communication about perceptions helps individuals construct more accurate metaperceptions about their relational partners' internal motivations toward them and the relationship. This transactional process helps build trust. Lack of transaction tends to have the opposite effect. Indeed, coupleness is created through transaction about perceptions and metaperceptions.



Recent attempts to investigate couple construction have been gaining ground among scholars in social scientific fields outside of communication. For example, medical scholars Martinez and colleagues (2015) argued that increased interest in couple construction demands a precise method for assessing processes of couple construction. The authors offer an assessment tool for measuring perceived similarity, commonality and sociality. In a more recent study, psychologists Freeman, Cassidy and Hay-Smith (2017) conducted a qualitative study utilizing Interpretive Phenomenological Analysis to demonstrate coupleness through communicative activities.

In order to advance the research on relational dynamics as it relates to communicative influences on couple construction which can be utilized by scholars in various fields of social science, a theoretical model for understanding the relationships between perception, metaperception, communication, relational impact, and couple construction must be proposed. Given previous research on co-orientation, the focus on individual perception and metaperception of the relational partner failed to consider the transactional nature of couple construction. In communication research, according to McLeod and Chaffee (1973), the unit of analysis is the dyad. Analysis of any interpersonal relationship must focus on the response of each individual to his or her partner and the perception each individual has of the partner's response (Taguiri, 1952). Indeed, mutual understanding is achieved through effective communication. Therefore, guidance for methodological investigations of relational dynamics will be offered below.

## **A THEORETICAL MODEL**

### **The First Law of Relational Dynamics**

All communication ( $T_{COM}$ ) entails both effective ( $E_{COM}$ ) and ineffective ( $I_{COM}$ ) communication.

Effective communication ( $E_{COM}$ ) occurs when, and only when, both of the following conditions apply: 1) the meta-perception of person A ( $A_{mp}$ ) equals the perception of person B ( $B_p$ ), and 2) the meta-perception of person B ( $B_{mp}$ ) equals the perception of person A ( $A_p$ ).

Ineffective communication ( $I_{COM}$ ) occurs when either of the following conditions apply: 1) the meta-perception of person A ( $A_{mp}$ ) does not equal the perception of person B ( $B_p$ ), or 2) the meta-perception of person B ( $B_{mp}$ ) does not equal the perception of person A ( $A_p$ ).

The First Law of Relational Dynamics thus can be formally stated as:

$$T_{COM} \models \{ [E_{COM} \models (A_{mp} = B_p) \ \& \ (B_{mp} = A_p)] \ \& \ [I_{COM} \models (A_{mp} \neq B_p) \ \vee \ (B_{mp} \neq A_p)] \}$$

### **The Second Law of Relational Dynamics**

All relationships (R) entail some degree of both effective ( $E_{COM}$ ) and ineffective ( $I_{COM}$ ) communication.

The Second Law of Relational Dynamics thus can be formally stated as:

$$\text{All } R \models E_{COM}^\circ \ \& \ I_{COM}^\circ$$

### **The Third Law of Relational Dynamics**

Positive relational change ( $+R\Delta$ ) occurs when the degree of effective communication ( $E_{COM}^\circ$ ) is greater than the degree of ineffective communication ( $I_{COM}^\circ$ ) and is not the case when the degree of ineffective communication ( $I_{COM}^\circ$ ) is greater than or equal to the degree of effective communication ( $E_{COM}^\circ$ ).

The Third Law of Relational Dynamics thus can be formally stated as:

$$+RA \models \{E_{COM}^{\circ} > I_{COM}^{\circ} \ \& \ \sim I_{COM}^{\circ} \geq E_{COM}^{\circ}\}$$

### PROPOSED HYPOTHESES

Given these three laws of relational dynamics, several hypotheses can be proposed to test the relational outcomes based on degree of agreement between perceptions and metaperceptions in relational couples.

**H<sub>1</sub>:** Interpersonal relationships entail varying degrees of both effective and ineffective communication as assessed by both partners.

**H<sub>2</sub>:** A global assessment of communication within an interpersonal relationship can be assigned along a continuous scale from effective to ineffective by both partners.

**H<sub>3</sub>:** Individuals within an interpersonal relationship may differ in their global assessment of communication along a continuous scale of effective to ineffective.

**H<sub>4</sub>:** Individuals within an interpersonal relationship who have assessed the communication as mostly effective will report higher levels of relational satisfaction.

**H<sub>5</sub>:** Individuals within an interpersonal relationship who have assessed the degree of ineffective communication to be equal to or greater than the degree of effective communication will report lower levels of relational satisfaction.

**H<sub>6</sub>:** Positive relational change directly influences relational satisfaction.

These hypotheses are not exhaustive.

### METHODOLOGIES FOR INVESTIGATION OF RELATIONAL DYNAMICS

Communication is the means by which relationships are built and maintained (Knapp, 1978). The symbolic-transactional process of communication is rich with data. According to Smith (1988), human interaction is "marvelously complex." This complexity requires investigation from multiple modes of inquiry (Bochner, Cisna, & Garko, 1991). For example, any study into the complexities of relationships should begin inductively by observing the behaviors and reactions between individuals engaged in communication.

However, simply observing behavior tells researchers nothing about the internal processes of meaning making for communication participants. In this realm of data collection, interview techniques and methods of textual data analysis must be employed. Scholars, minimally, should conduct interviews with individuals separately and couples together. Through these types of inductive methods, researchers can build categories of potential variables and factors that can be gathered and tested utilizing quantitative approaches. It is not necessary in all cases that data gathering follow the order of observation, interview and survey.

### DISCUSSION

A deeper understanding of the mechanisms of couple construction is required for any study of relationships. As Ruesch and Bateson (1987) argued, the individual is comprised of multiple levels of connection (intrapersonal-psyche, interpersonal-communicative, social-contextual, and anthropological-human). The purpose of this essay is to demonstrate the necessity of a theoretically-grounded, multi-methodological approach for studying relational dynamics.

The fundamental basis for studying relational dynamics, which would include those aspects of relationships which contribute to or detract from positive relational outcomes, is the distinction between effective and ineffective communication. Effective communication occurs when there is agreement among the perceptions and metaperceptions of relational partners, resulting in understanding. Ineffective communication occurs when the degree of

disagreement among the perceptions and metaperceptions of relational partners is greater than the degree of agreement. If the relational partners share the goal of relational maintenance, then positive relational change should be the desired outcome. Positive relational change could be conceptualized as increases in trust, intimacy, and inclusiveness.

Future research on improvement of relational outcomes should focus on the communicative mechanisms which bring about those outcomes. Previous and current research in the field of communication focuses on these communicative mechanisms. However, research in allied scholarly fields within the social sciences have not yet caught up to the theoretical foundations in the field of communication. As previously stated, relationships are built and maintained through communication which is transactional in nature. Although early communication models described communication as a linear, then interactional process of sending and receiving symbolic messages, as early as 1970, communication scholars began to understand communication as transactional: that communication is mutually and simultaneously influential. Scholars and practitioners in other social science fields will be well-served to utilize this insight.

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## APPENDIX

Logic symbols:

- ⊨ entails (subsumes within)
- & conjunctive (and)
- ∨ disjunctive (or)
- = is equivalent to (equals)
- ≠ is not equivalent to (does not equal)
- ~ negation (is not the case)

## **The Book Evaluation Procedure of Educational Materials in Zambia and its Challenges.**

**Jane Chavula**

School of Education,  
Department of Mathematics and Science  
University of Zambia

### **ABSTRACT**

This paper highlights the evaluation procedure of materials at the Curriculum Development Centre in Zambia based on lived experiences and literature review on the subject. The quality of education in Zambia has been demonstrated by low student achievement in national and international assessments. Many factors have contributed to undermining the standards and quality of education and one of the factors is a dearth of textbooks and other learning materials. Hence there is dependence on the materials available, therefore there is need to ensure that the materials which are used in schools are of high standards. The Ministry of Education, Science, Vocational Training and Early Education came up with the Evaluation Criteria to make sure that once materials are evaluated and approved or recommended then, they will be good enough for use in Schools. But this is not the case as some of the books found in schools are of low standards and with shallow content. This is so because some good evaluators shun evaluating materials because the payments involved are not attractive. Some publishers supply materials which have mistakes instead of printing the final copy which was approved. Therefore, there is need to strengthen the evaluation committees and to make follow-ups over the final copies being published by the publishers.

**Key words;** Evaluation, Evaluation Criteria, Evaluator.

### **INTRODUCTION**

Zambia's education system consists of Early Childhood Education (ECE), primary, secondary and tertiary levels. ECE provides education for children aged 3 to 6 years, while primary level runs from grades 1 to 7 for children aged 7 to 13 years. Secondary level runs from grade 8 to 12 (14-18 years old). Tertiary education level includes universities and college (Ministry of General Education, 2015)[4]. The Zambian Government places education at the centre of the development process. Over the years, many factors have contributed to undermining the standards and quality of education in Zambia of which one of the factors is the dearth of textbooks and other learning materials (Ministry of Education, 1996) [3]. The Educating Our Future document (1996) [3] states that quality education requires the availability and use of textbooks and other educational materials. Without these aids to the learning process, effective teaching and learning in the modern sense cannot take place.

Provision of quality education requires the supply of books, writing materials and educational items in sufficient quantity to meet the needs of all learners. The availability and use of these materials have a positive effect on the teaching and learning. In the absence of these materials, teaching and learning occur only with difficulty. In order to ensure that the materials being developed are of quality, the Ministry of General Education through the Curriculum Development Centre (CDC) has the Research and Evaluation faculty to monitor the education materials used in schools and to carry out research on the teaching and learning in schools. The Research and Evaluation (R&E) faculty cuts across all other faculties which include; Languages,

Natural Sciences, Combined Services and Social Sciences by working with the principals and specialists of all the faculties to ensure that materials being produced are of high quality.

According to the Ministry of Education Science Vocational Training and Early Education (Education, 2013) [6] in the past the Curriculum Development Centre, working on its own or with donor assistance, developed many textbooks used in Zambia's schools. However, with the adopting of democratic governance in 1991, textbook publishing was liberalized so that the private sector comes on board to participate in publishing school textbooks. In keeping with Zambia's espousal of an open and free market economy, the Ministry has seen the establishment of a fully liberalized school-book industry where publishers assume responsibility for book initiation, development, production and marketing (Ministry of Education, 1996) [3]. This has brought about a lot of dependence on the textbook on both the teacher and the learner and seems to have influenced self-esteem on both groups (Consortium for International Development Mississippi, 2009) [1]. All educational materials being developed, published or marketed for use in Zambia are submitted to Curriculum Development Centre for evaluation, recommendation and approval. Approved materials cover all the learning outcomes in the syllabus while recommended materials do not cover all the learning outcomes in the syllabus but has relevant content to supplement as other teaching and learning materials (Ministry of Education S. V., 2015)[8]. Course books are subjected to being approved while supplementary materials are subjected to being recommended. However, the supply of textbooks brought some challenges to the Ministry as the policy of liberalizing and decentralizing the procurement of textbooks was problematic (Ministry of General Education, 2016) [5]. According to the 2006 National Assessment Survey report, the majority of the pupils (59.9% in English and 58.4% in Mathematics) shared a textbook between 3 and 4 pupils. This meant that the targeted book/pupil ratio of two pupils per textbook was not achieved (Ministry of General Education, 2016) [5].

According to the Educational Statistical Bulletin (2015) [4] the total number of books in primary schools for English, mathematics, life skills and Zambian languages was 2, 924 628 in 2015 against a total of 3, 215 723 pupils national wide. The pupil-book ratio (PBR) calculated as total number of regular students divided by the total number of books, for English was at  $\frac{1}{4}$ , mathematics  $\frac{1}{4}$  life skills  $\frac{1}{8}$  and Zambian languages  $\frac{1}{4}$ . The overall PBR for the whole country was at  $\frac{6}{7}$  for primary schools. For secondary schools the PBR for English was at  $\frac{1}{4}$ , mathematics  $\frac{1}{6}$  life skills 0 and Zambian languages  $\frac{1}{9}$ . The PBR national wide was at  $\frac{3}{5}$  as shown in the table below.

**Table 1: Total Number of books and the Pupil-Book Ratio**

Subjects	English	Maths	Life skills	Zambian Languages	Total No. of books	Total No. of pupils	Overall PBR
<b>Primary PBR</b>	871 804 $\frac{1}{4}$	800 120 $\frac{1}{4}$	403 240 $\frac{1}{8}$	849464 $\frac{1}{4}$	2, 924 628	3 215 723	$\frac{6}{7}$
<b>Secondary PBR</b>	188 473 $\frac{1}{4}$	127 307 $\frac{1}{6}$	35 822 0	88 234 $\frac{1}{9}$	439 836	802 341	$\frac{3}{5}$

**Source: 2015 Educational Statistical Bulletin.**

The table shows that there is need for books more especially at secondary level, particularly for life skills. The shortage of books continues to constrain the quality of education, thereby adversely affecting the educational outcomes.

### **IMPORTANCE OF TEXTBOOKS**

The Ministry of Education Science Vocational Training and Early Childhood Education (2014) [7] states that a textbook is a link between the intended curriculum and the implemented one. The text books for the Zambian school curriculum are important materials for embodying curriculum objectives, content, specific outcomes, skills and values in the syllabus. Textbooks are important to aid the teaching and learning for teachers and learners respectively. A textbook is one of the primary sources of teaching materials. Sidhu (2006) [10] states that a good textbook adds knowledge to the teacher to teach effectively with quality content. This is in line with (Kochhar, 2013) [2] who said that teachers mostly think that the use of textbooks is important. A textbook assist managing a lesson. It saves time, gives direction to lessons, guides discussion, facilitates in giving homework making teaching easier, better organized and more convenient. It is a core resource and source of supplementary material such that teachers report that they rely almost entirely on textbooks for their teaching (Park, 2006)[9].

Suitable materials enable pupils to acquire and apply knowledge, to learn at their own pace and to assess their own progress (Ministry of Education, 1996) [3]. Textbooks enable pupils to acquire the needed information speedily. The pupils can even work independently at the at revision stage. It helps pupils understand things completely at home from textbooks, even if on certain occasions class work brings only partial understanding (Sidhu, 2006)[10].

Looking at the importance of a textbook and its dependence on it for both the teacher and the learner, the material should be of good quality and outcome based according to the requirements of the syllabus. Therefore, it is important for all textbooks and learning materials used in schools to meet and exceed the National Curriculum Standards as set by the Ministry of Education.

### **EVALUATION PROCEDURE**

According to the Ministry of Education, Science, Vocational Training and Early Education (2015)[8] evaluation of educational materials takes five trained evaluators in a particular field to look at each material as the Book Approval Committee. The publisher sends four copies of the book to be evaluated together with the evaluation fee. On receipt of material for evaluation, the research and evaluation faculty liaise with the relevant principal who selects three evaluators from the trained panel of subject evaluators. The evaluators are contacted formally in writing. Their identities are confidential and should be only known by Research and Evaluation faculty and relevant sections. They use a document known as Evaluation Criteria to assess the strengths of the materials. The evaluation criteria are also availed to the book authors, and publishers to follow when writing their materials. The educational materials for use in schools which must be evaluated, include books, maps, tablets, educational audios and videos just to mention a few. The evaluators are given a maximum of four weeks in which to submit approval reports. The evaluators basically concentrate on nine categories of the Evaluation Criteria specifications which are content, language, teaching methodology, cultural and crosscutting issues, activities, exercises and testing, layout, illustrations and continuous assessment and other supplementary materials submitted (Ministry of Education S. V., 2015) [8].

The content in the material is the type of knowledge, skills and values in a specific discipline prescribed for learners at a specific age and grade level. The coverage of the syllabus topics in the material is checked to make sure that all the intended outcomes are tackled in the material. The scope and sequence of the content is supposed to be in line with the requirements of the syllabus. The depth and appropriateness of material is supposed to be designed for a specific age or grade level and should ensure a well-arranged sequencing of the knowledge, skills and



values. The evaluators also check the length of time indicated for learning the content and the correctness of the concepts and principles. The weighting for content carries 30%.

The teaching methodology should provide teacher with variety of teaching methods which encourage learner centred methods of teaching. Usually in course books the teaching methodologies are mainly placed in the teachers' guide. The evaluators check to verify that the methodology provided in the material is clear and easily understood. The methodology should be suitable to the intended readership and the proposed teaching and learning materials should be in line with the available resources. The suggested methods of teaching should have a balance between theory and practice and there should be provision of remedial and revision work with adequate coverage of topics. The weighting for this is 20%.

The language used in the material should be clear and precise. The material should have correct grammar and spellings. The introduction of new terms should be gradual and there should be consistency in using them. The occurrence or proportion of gender terms in the material should be almost equal. The glossary should be provided as it helps learners to understand new concepts used in the material. The weighting for this is 10%.

The evaluators are also interested in challenges that affect a cross section of society which are known as cross cutting issues. These cross-cutting issues include HIV/AIDS, poverty, child abuse, drug and substance abuse, human rights, health and nutrition, reproductive health and sexuality, population and family life, life skills, gender sensitivity and environmental degradation. It is a requirement that there is representation of authentic life of Zambia in the material so that learners can relate the text with their daily lives. In addition to the above issues, the textbooks developed should be completely culturally sensitive and integrate life skills appropriate to the children of Zambia. The weighting for this is 10%.

There should be enough activities in the material to allow the learners to learn easily. These should be from simple to complex following the blooms taxonomy raking. The activities are supposed to stimulate the learners and they are supposed to be relevant to real life situations. The weighting for this is 5%.

A material should have enough exercises and tests for the learners to have individual assessments on what has been taught in a particular lesson. Exercises should encourage learners to learn more on their own and should be written from simple to complex to cater for all the different types of learners. Tests can be placed after a number of topics have been covered so as to assess the acquisition of the content by the learners. The weighting for this is 5%.

The material should have a very good layout. The type face and font size should be appropriate for the grade level and the page organization should be checked to ensure that the illustrations are properly placed. The headings should be clear and the material should have uniform format throughout the chapters. The pages should be used adequately and the book should be durable and portable. The weighting for this is 5%.

The material should have clear illustrations. There should be a balance between illustrations and the text. The illustrations should depict what the text says and this should help to say less in the text. The material should aid at bridging the gap in terms of presentation of male and female. The colour used in the material should be communicative according to the age of the intended readership. The weighting for this is 5%.

The Continuous Assessment in the material should help the teachers to gather information on different decisions on teaching and learning process. Thus, evaluators ensure that there are adequate questions on continuous assessment provided. These need to be relevant, suitable and valid in the material. The items in the continuous assessment should reflect on the three domains in learning which are; cognitive domain dealing with thinking; affective domain dealing with feelings and the psychomotor domain dealing with muscle movement. This should evenly be spread out to bring out intended outcomes based on curriculum. This should also take into the account the Blooms Taxonomy. The weighting for this is 5%.

There are course books which are evaluated with supplementary materials such as graph papers, science apparatus, play materials, maps, globes, puppets, films, dictionaries, charts, general readers and many others. These items are also evaluated to ensure that they are suitable for the learners. The weighting for this is 5%.

After each evaluator has gone through the material, the four evaluators discuss their findings about the material and come up with one evaluation report. This happens when the evaluators are in the same place. If they are in distant places the reports are sent to the faculty where a report is compiled by the book approval committee. If the book is not approved the authors are requested to work on the concerns and re-submit the book for verification if the score is from 85 to 99 percent with minor corrections. If the material scores less than 85 percent but greater than 75 percent then it will not be approved but maybe considered to be a supplementary material. For the scores less than 75 percent it means the material has failed. The material has to be elevated to the intended status for use in the school. After the approval of the book the authors are requested to submit the final book as a sample of the material which is supposed to be used in schools.

#### **CHALLENGES FACED BY THE FACULTY OF RESEARCH AND EVALUATION.**

The publishers usually deposit money in a government account for evaluation of the materials to take place. Once the books are enough for evaluation to take place the principal (R&E) through the Chief Curriculum Specialist writes to the permanent secretary for the authorization of the money for evaluation purpose. This usually takes long, hence the delay for evaluation to take place. In some instances, publishers delay to pay evaluation fees on time hence delaying the evaluation process.

It has been observed that some books submitted for evaluation are not edited by the authors hence giving so much work to the evaluators as some authors expect the evaluators to edit their materials. Teachers and pupils have complained about the low standards of material being taken to schools. This is so because some approved books are printed wrongly when they are delivered to schools failing the whole evaluation process. Other challenges are as follows;

- The trained evaluators especially for local languages are not enough, therefore there is need to train more.
- The evaluation fee is not enough for some evaluators hence they shun to do the work.
- Evaluations which take place by sending of materials to evaluators out of town usually take longer and some reports go missing through postage. Evaluations which are done through workshops are more effective than the ones which are done in different places.
- Some textbook copies which go to the schools are not the final copies which were approved.

## CONCLUSION AND RECOMMENDATIONS

A lot of time should be put into the writing of the teaching and learning materials. A more realistic schedule must factor ample time for identification of authors, training, planning, writing, editing, pre-testing and post-testing, field testing, revision, evaluation and feedback, additional revision, final approval processes, printing, distribution and post monitoring and evaluation. It is the duty Curriculum Development Centre to provide a suitable curriculum for the learners and also provide appropriate materials to go with it. They need to provide quality course books and supplementary materials to aid the teaching and learning. The evaluation procedure should be followed by the evaluators to ensure that the quality of the materials being approved and recommended is according to the required standards.

The evaluation criteria should have independent specifics for each subject on the categories of content, language and teaching methodology. The science-based subjects should have detailed specifics to look at especially on the content to suit the requirements of teaching science through inquiry. This will set as a guide to the book writers to write materials in a scientific way to help learners develop scientific inquiry skills through good questioning and using real life situation-oriented tasks.

The government should improve and increase the funding on evaluation of educational materials. The composition of the evaluation committees should be revised to ensure that only credible and experienced subject practising teachers; specialist and standard officers sit on book evaluation committees to avoid approving books with a lot of mistakes. Follow-ups should be made to make sure that the final books printed by the publishers are the exact copies which were approved or recommended. Subject specialists should work closely with the publishers to ensure that the concerns raised by the teachers are attended to and the books are revised accordingly. The research and evaluation faculty human resource needs to be beefed up for better management of activities as they are always overwhelmed with work.

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## **Applications Of Strategic Management Practices In Public Sector: Cases From Some Middle East Countries**

**Saleh A. A. Tamimi**

Universiti Utara Malaysia

**Assoc. Prof. Dr. Samihah Khalil**

Universiti Utara Malaysia

**Prof. Dr. Haim Hilman Abdullah**

Universiti Utara Malaysia

### **ABSTRACT**

The aim of this research paper is to investigate Strategic Management (SM) practice in Public Organizations (POs) within some Middle East (MEt) countries. This is an archival-desktop research paper reviewing available literature on SM in the last two decades. Fundamentally, this paper posts a question of; “How do POs in MEt countries practice SM?” The answer of this investigation is being based on the extent of the available literature from SM theory and application within public sector in some MEt countries. This paper is one of the first attempts to analysis and interpret SM practices within MEt region. This analysis used content analyses techniques, the researcher found four variables that contribute in the effectiveness of SM existence conditions within POs. These variables are; public reform, and SM elements (strategy formulation, implementation, and evaluation) situations and challenges. Finally, this paper discussed the implication and lessons learned for improvement. Findings indicate that even though there are some countries practice SM in this area in various degrees, but it also shows that most of these countries are struggling in practicing SM for various reasons. While, results showed a positive impact of SM tools practices on POs performance. Outcomes also indicate that there are other issues needs to be considered in these countries which are public-reforms and decentralization successes within POs in each case. However, relying on data from literature review limits the in-depth discussion but at least offer critical analysis on achievements of SM implementation in MEt countries.

### **INTRODUCTION**

In the last few years, it has been noticed that many MEt countries tend to adopt SM concepts within their public organizations for several motives and reasons. In an overview of the current situation in some MEt countries (United Arab Emirate, Jordan, Lebanon, Tunisia, Algeria, Palestine, Saudi Arabia, and Sultanate Oman), it can be said they might have various drives, but mostly concentrated to overcome the economic decline, needs to perform in a business-like model, and to face rapid changes public sector upcoming challenges within MEt Region (OECD, 2010).

MEt countries had been facing many changes where some are disposing unique characteristics to themselves. Countries such as Jordan, Tunisia and Morocco are experiencing some public reforms, but still suffering many other public administrations issues (Devarajan, 2016). Similarly, rich oil countries within this region are also experiencing similar challenges or problematic administrations issues. While, Polidano and Hulme (1999) concluded that in developing countries public reform normally fails, which cause serious problems in POs

managements systems. Indeed, POs long-standing management strategies in this area is more complicated and suffering from many difficulties and shortfalls, Actually they suffer from various difficulties and challenges in their public administrative issues, such as poor productivity, corruption, and lack of development (OECD, 2010), which implicates the needs for SM practices in POs to face these issues.

POs managements always need some changes or reforms as their working conditions has a changing nature. Though, private sector in MEt countries has succeeded to adapt many changes to accommodate upcoming changes within its working environment and succeeded to embrace SM much earlier than their public sector counterpart. This due to some realities facing their survival or development, but with less urgency for the public sector. While, SM plays a vital role in the organizations future, and it deals more effectively with these realities and working environment variables (Hunger & Whaleen, 2003). This management system uses current trends to foresee the future for all organizations.

While, SM in public sector is based on the organizations pre-conditions or suitable reforms. Though, it consolidates the organizations objectives and formulate their strategies to survive fluctuating conditions (Durh & Judh, 2012). That supports the successive management operations such as the implementations and evaluations of all organizations managements actions and activities. This process increases the POs performance effectiveness and efficiency. SM is a set of decisions and actions implemented in subsequent phases designed to achieve the organization objectives (Pearce & Robinson, 2000). So, SM is the art and science of POs strategic decisions initiation and structure, because SM mechanisms promote managers long-term vision and create effective decision-making process conditions, and SPing process constructs the organizations strategy to assure POs stability and dependency at long run.

Considering the fact that POs in MEt countries are unique and vary in their management characteristics for different reasons. SM characteristics are demanded to be highlighted in this paper. As, current global and regional conditions facing MEt countries require some SM aspects to be adopted. On this basis, the author uses content analysis to find variables that describe the practice of SM applications by POs in MEt countries. The researcher examined the available published literature in Middle East countries through official universities websites and some known journals websites, he examined all available literature regarding public administrations related to the foundations of SM and its existed tools and techniques within public-sector in MEt region. The researcher identified four main variables contribute in the effectiveness of SM applications and enhance POs performance. These variables are public-sector reforms, strategic planning, strategy implementation, and evaluation.

This paper tries to answer an important question; "How do POs in MEt countries practice SM?". This study will investigate the main components of SM practices( Formulation, Implementation, and evaluation) and some of its foundations for SM occurrences. This paper reviewed the available published SM literature in the last 20 years. Also, it analyses some other related literature to draw better conclusions. Relevant literature review is fundamental for any research paper (Sekaran, 2003), it facilitates the creation of the foundations of the current article. An effective critical review creates a solid foundation for any article and very essential for knowledge building (Webster & Watson, 2002).

### **PUBLIC REFORM AND STRATEGIC MANAGEMENT**

Government reform can be defined as the identification and classification and distribution of all government tasks and roles to all government organizations to enhance their complementarity work, and to address the overlaps and duplication in the implementation of

the required tasks to grantee the execution of all necessary activities to achieve the PO objectives, it also define the responsibility of implementation for each set of activities to ensure the implementation of all organization strategy aspects; technical, managerial and organizational levels (Instructions Guide for Government Organizations Reform In Jordan, 2015). Thus, public reform is not just to make POs more efficient, but to build some SM capabilities. As, POs reform creates the proper conditions for the organizations SPing and strategic decisions making capabilities, which are essential SM tools. SM can be defined as a continuous series of decisions and actions that lead to the development and formulation of the appropriate POs strategy, also the implementation and evaluated of this strategy in light of the POs environmental variables analysis. It is an integrated system of interrelated processes, activities, and decisions related to the POs working conditions analysis.

In 1950s SM was first used in public-sector, where it was widely applied in Western countries, then quickly moved to developing countries (Magrebi, 1999). The term "strategy" was initially used in military operations, means a plan. After then, this term was imported to businesses in late 20<sup>th</sup> century, where strategy is acceptably used to refer to a plan for interacting with the organizations environments to achieve its objectives (Daft and Willmott, 2010; Paret& Gilbert, 1986). SM is not about planning and strategy formulation only. Though, it assisted businesses to asses all possibilities, but it deals with potentials before occurrences and enable organizations to adapt and interact with them (Durh, & Judh, 2012). It helped businesses victories and sustainability because it deals with businesses strategy. Strategy is the cornerstone of SM system in all organizations, whether its military or private or public. Hence its importance came from its essential role for organizations success, stability, and capabilities enhancement (Hunger, Whaleen, 2011).

Nevertheless, SM had shaped public-sector with a strong positive impact on various aspects of this sector performance, it also generated many changes across POs to enhance their performance (Pollitt & Bouckaert, 2011; Andrews, Boyne, Law, & Walker. 2012). While, the drive for worldwide public reforms is the performance of POs (Kloot& Martin, 2000; Meier, O'Toole, Boyne& Walker, 2006). However, SM had been triggered long time ago, but it is relatively new in public sector. While, all forms of public sector modifications (New Public Management (NPM), Collaborative Management (CB), Decentralization, and E-government and others) have contributed in establishing the foundations of SM (Ansell & Gash, 2008), and SM existence had dramatically grown within this sector over the past few years (Andrews, Boyne, Law& Walker, 2011; Elbanna, 2013; Elbanna, Fadol, 2016; Kay, McKiernan, & Faulkner, 2003; Ketchen, Boyd& Bergh, 2008; Johnsen, 2016). SM had become an important part of the administrative system thinking process in both sectors public or businesses. This process includes strategy identification, design, implementation, and evaluation, which constitutes the organization SM (Ktameen, 2009). In businesses SM seeks to increase profitability, while in POs it seeks to increase the value of the organization through the effectiveness of its activities and performance efficiency (Bryson, 1999; Moore, 1995).

Interestingly, from political standpoint, Rosenberg and Ferlie (2016) noted that public organizations are more influenced by political scenarios. Yet, SM activities considered many factors including political factors. SM considers and incorporates all external and internal factors regardless the nature of the organization involved (Poister& Streib, 1999). Thus, SM in POs administration make them compatible with their national priorities, by increasing their adaptation and interaction with their working environments issues, it improves public managers ability to respond to these environments influences, and contributes in the development, and growth of future ideas (Al-Salm, 2005; Poister& Streib, 1999; Durh& Judh, 2012). SM coordinates and unify all departments efforts to improve the organizations long-

term performance and reduces the rejection of changes by enhancing stakeholders' participation (Hunger & Whalen, 2011).

### **SM APPLICATIONS IN SOME MIDDLE EAST COUNTRIES**

In MEt area, most countries have done several public administration reforms and tried to adapt decentralization concept in some of their POs or institutions. Although, both reforms and decentralization conversion meant to develop public sectors performance and adopt modern management practices depends strategic planning and POs performance evaluation and monitoring, but both processes were not the end objectives. These management means had increased public management efficiency and reduced some public-sector old fashion problematic issues. Yet, decentralization and reforms changes were labelled to create more suitable conditions for SM applications (Plant, 2009). Therefore, the researcher considered these two concepts or variables as an essential foundation for SM practice in POs. Thus, while these two concepts emphasize more autonomy POs officials decisions, they resolve POs decisions complexity and increase the speed rate required for some public decisions, though this process should enhance POs transparency and accountability.

Consequently, these reforms or changes in POs management indicted that countries are interested in some aspects of SM within this sector. Whereas, all countries in this region are interested in SM within business sector. In fact, most businesses now are interested in worldwide environment and competition, but public organizations still struggling with these issues. However, public sector had taken many steps forward (Elbanna, 2013). Therefore, the researcher measured the effectiveness of SM practice through the challenges facing its main elements existence within these countries, and those important steps toward SM effectiveness which are public reforms and decentralizations changes.

The researcher presented the collected results and their analyses country by country in the following paragraphs. Elbanna (2013) examined SM process and its impact on (UAE) public organizations performance, based on his analysis there is a regular and standard practice of SM within UAE POs, and it has a positive impact on these organizations performance. Some of these results contradict Al-Shaikh (2001) previous conclusions within the same sector in this country. However, Elbanna indicated that UAE public sector has been reformed many times to encounter upcoming challenges in the last few years. Elbanna (2013) argued that SM can be practiced through three stages "plan to archive, plan to act, and plan to act effectively and positively impact on organizational performance and the quality of public services" (p. 428). His study showed that SM elements had a positive impact on POs performance, and it improves the government services capability. Moreover, he found that SPing and balanced scorecard tools were mostly used as a SM framework.

Also, Elbanna and Fadol (2016) exhibited that the comprehensiveness of SM implementation is obviously affected by three major factors; strategy formulation, managers participation, and political behavior or government policy. Also, their results demonstrated that there is a positive relationship between the comprehensiveness of SM implementation and the effectiveness of strategy formulation, which lead to more effectiveness and efficiency in the PO performance. This result support Katheeri (2016) study on semi-government organizations in UAE ; He founds that there is a positive relationship between organizations performance and SM elements practice (strategy formulation, implementation, and evaluation). These results came in line with other studies perspectives findings from other part of the world (Andrews, Boyne & Walker, 2006; Andrews, Boyne, Law & Walker, 2009; Andrews, Boyne, Law & Walker, 2011; Ajila, Akanni & Ekundayo, 2012).

Whereas, in Jordan case showed many public administrations reforms. But, Jreisat (1989) results showed that these reform efforts have not been efficiently articulated or accomplished. Also, despite the administrative autonomy enjoyed by the municipal councils, decentralization principles have been subject to the custody of the central government (Al-Ani & Al-Shbatat, 2016). while, other scholars recommend that “political cultural reform” to assist in liberating the decentralized concept among the local governance multi-layered governmental system (Al-Rabady & Abu-Khafajah, 2014). Yet, these conclusions showed clear problematic issues in Jordanian public reform and decentralization concepts process, which negatively impacted the SM practice pre-conditions. Nevertheless, Saif & Suliman and Tail (2004) concluded that Jordanian municipalities didn't have a long-term strategy. So, it was recommended that municipalities must have their own strategy, and this strategy must consider various political, economic, and social dimensions. This shows that there is a weakness or absence of SM practice within the public sector. On the other hand, other results showed that there is some interest in SM within the Jordanian private sector; vast majority of Jordanian scholars in SM were focused on the private sector to include, banking or financial services, communication firms, pharmacy industries, and hotels. These findings from Jordanian private sector revealed a fair use of SM tools within this sector, and they indicate a positive impact on their respective organizations performance (Aldehayyat & Anchor, 2008; Aldehayyat & Al Khattab, 2013; Aldehayyat & Twaissi, 2011; Al-Abdullat & Al-Najjar, 2015; Maryan, 2012; Dudin, 2013; khawaldah, 2014; Sharabati & Fuqaha, 2014).

However, there are some strategic tools and techniques are used and popular in Jordanian private sector (Aldehayyat & Anchor, 2008). Unfortunately, in the public sector the situation remains the same. Shuqair (2015) study assured that SM issues in Jordan did not resolve, and some POs still struggle with their SPs. He recommended to institutionalize POs resources allocation to create a suitable condition for SM implementations. Although, Jordanian constitution stated that all government organizations and ministries must produce their own SP. But Shuqair results indicated that produced plans are not supported by adequate or proper resources, and there are no proper implementation and evaluation foundations for these plans. SM is not about planning only, it includes many other activities that helps in translating these plans into actions and events. SM includes all necessary tools to harmonize, prioritize, allocate suitable resources, and evaluate all management actions and activities based on real budgets and pre-settled objectives. These objectives must be integrated with a holistic long-term vision for each PO. Although, long-term planning has been introduced in Jordanian public administrations since 1950s (Shuqair, 2015), but he mentioned that government still struggle with some critical issues in this management process. These outcomes came in line with Zabin (2016) results, he stated that most Jordanian public hospitals did not pay much attention to strategic planning. Zabin assured that SM outputs should be linked with public hospitals performance, as SM outputs have a real impact on the efficiency of the organization institutional performance.

In Lebanon, Saleh (2011) revealed that public administration development and reforms in Lebanon are not easy to be implemented. It has two main obstacles; bureaucratic culture and political resistance. Although, the simplification of government procedures is an easy tool in public administrative reform, but it is complex and difficult in the implementation process phase. In a such case change into a comprehensive SM in public administrative structure and organizational behavior became more difficult and complicated (Saleh, 2011). Also, Jafer (2017) stated that the current services delivery and public administration in Lebanon needs to be developed and expand; Which contributes in transferring public administrative services reality from the stage of sagging and weaknesses to a better stage, this stage of services should be based on a knowledge planning, wide base information, and better communication



mechanisms. These issues create and serve SM applications and the integrated development of the public sector. He added that SM comprehensiveness cannot happen without updating the state legislations policies. These policies, legislations, and plans must support each other, and SP must be based on pre-settled strategic objectives. This process must also consider the importance of human resources capacities and capabilities development (Jafer, 2017). While, a former study by the office of the Minister of State for Administrative Development dated 11<sup>th</sup> January 2011 recommended to prepare a practical mechanism to follow up and evaluate the implemented of governments projects, on the basis of which to verify the good implementation of these projects in accordance with their related developed strategic and operational plans (Lebanon Minister of State for Administrative Development, 2011). This indicates the existence of weakness or absence of proper implementation and evaluation activities of the available SPs in POs. Also, it shows the continuation of the PO problems existence, and it indicates weaknesses in all SM phases; planning, implementation, and evaluation, but its more dominant in the implementation and evaluation stages.

While in Palestine case, it is a government with special status. It has been occupied for many decades, which deprived Palestinian public organizations administrations. The existing problem between the West Bank and Gaza Strip, and the inability to develop clear and integrated Palestinian legislation had weaken the exercise of the mandated functions of public organizations. Which make SM more difficult and much more complicated. However, there are some POs interested in SM practice, in public universities Dijani (2011) recommended that universities strategic decisions and related activities must be based on integrated databases. This data base should cover all essential data and documents to support senior managers strategic decision-making, that enhance SM practice within this sector. He also added that special attention to strategic alternatives must be considered when preparing for strategy implementation as the environment instability or uncertainty is the most dominated factor in Palestinian case. This environment uncertainty causes a large number of political and economic changes that affect the SM implementation. Therefore, it is compulsory to use SM tools and techniques (such as strategic planning, balanced scorecard, ...etc.) to utilize a management model that stresses on SP modeling at all stages, to enhance these organization performance (Dijani, 2011). On the other hand, Al Shobaki & Naser (2016) study at Islamic University in Gaza revealed some different conclusions from the previous study within the same sector. This study showed a real understanding of the importance of SM practice from the top management. Also, their findings indicate the existence of a relationship between the decision support systems and SM in the Islamic University in Gaza. Their results revealed that there are some influences on the SM practice from the existing capabilities for the usage of strategic decisions support structures, as well as the type of decision support systems used. This indicate the importance of strategic decision mechanisms to SM system effectiveness, and also indicates that environments changes had exaggerated the implementation problem or issues.

Whereas, Non-Governmental Organization (NGO) study results in Palestine indicated some positive results in SM practice. Analoui and Samour (2012) study revealed that the utmost NGOs in Palestine was using SM tools, and they perceived that the practice of SM is a vital tool for the quality of services delivery enhancement. Their results came in line with Al Shobaki & Amuna and Naser (2017) results, which indicated that there are some SM tools mainly SP and operational planning are practiced in the "United Nations Relief and Works Agency for Palestine Refugees in the Near East" (UNRWA), and it has apposite results on their performance. Yet, UNRWA initially were intended to deliver the functions of public works such as; direct reliefs, health care, education services, and any other required social services. Which assured the essential role for SM in in the public domain functions. More

importantly, their results indicated that there is a relation between SM tools and crises management operations, which assures the importance of SM in crises management to overcome the variation in the organization conditions.

While, In Algeria, it was noted that Algerian legislature has violated the principle of decentralized bodies independence, through strict public administrative control (Hamdi, Blhaj, & Bn-Ali, 2017). Although, the legislator linked the intervening at the organizational level to the central authorities, but organizations administrations have been relatively independent (Hamdi, Blhaj, & Bn-Ali, 2017). While, in the education sector within public universities; Kuryshi and Zoebi (2014) concluded that strategic analysis and strategic option have significant effects on performance at Biskra University, and there was no effect for the strategic vision, mission and goals of the university. This indicates the existence of SM practice within this sector and the importance of strategy formulation process and its implications on the organization performance. Also, their results and findings are consistence with other result from other countries within this region and in different sectors such as public hospitals or others. These results assure the positive relationship between the use of SM tools and techniques and the POs performance. It also, indicate the ability to practice SM in some government organizations, even though they might have some issues with their decentralization system concept.

Whereas, in Saudi Arabi, Common (2008) stated that "despite the apparent vibrancy of these international trends ... Gulf states appear to be highly resistant to administrative modernization ... such as Saudi Arabia", which make serious challenges to public reform and decentralization concepts issues. Also, Al Otaibi, (2015) concluded that Saudi Arabia had consumed large amounts of money on modernizing their bureaucratic public management systems, but developments were very slow with some POs cultures and structures drawbacks. This resistance and drawbacks will create unsuitable environment for SM implementations. Hashm and Aamery, (2006) found that most of the central government agencies in Saudi Arabia do not exercise SM. Their study concluded that the application of SM concept faces lack or absence of SM specialists, that reduces the presence of motivation to prepare a strategy. This in addition to absence of a written mission and vision statements in most POs (Hashm& Aamery, 2006), which exaggerated the problem and enlarged the management gap. Therefore, it can be said that these results are largely consistent with Abu Naem (1994) and (2000) studies results. These studies concluded that most important reasons for lack of SM implementation is weak training, lack of competencies capability of future thinking, and lack of competition within government agencies. This showed weaknesses in SM practice and its related activities.

However, these studies emphasized the importance of establishing a comprehensive data base to assist in adopting some effective strategies aimed to achieve the organizations objectives. This data base reduces the obstacles that prevent successful SM implementation, and it ensures an effective strategic information accumulation and analysis. While, Al-Ghamdi (2005) examined the use of SP tools within (72) Saudi organizations, his work indicated that only 10% of the target organization in his study used planning tool, and 17% of these organizations used these tools frequently. While Al-Ghamdi found that the "analysis of critical success factors, followed by benchmarking, and then what if analysis" are that most frequently SM used analysis tools and techniques.

Whereas, In Sultanate Oman, Common (2008) investigation disclosed that public administrations in Oman is highly resistant to reform tendencies for many reasons mainly; political systems are highly centralized and there are some public administrations cultures

enhance resistances for changes or reforms. These two issues complicate the conditions for SM in POs and decrease SM tools utilization at the organization level. Although, other studies revealed that managers were generally aware of some SMs tools and practices, but most managers didn't use these tools frequently, and there was a great difference in the managers awareness of these tools and techniques within the same organization (Rajasekar & Al Raei, 2014). However, their findings indicate that 30% of their targeted organizations were rarely or never used SM tools, while most organizations were using SP management tools and techniques to some extent. But most importantly they found that most organizations are moving toward strategic thinking and future plans using various types of SM tools and techniques.

It is noted that not only MEt countries did not pay much attention to SM, but other developing countries have almost similar problem in this regard. For example, Nigeria is considered one of the largest and richest countries in Africa (Odularu, 2008), It was revealed by some scholars that Nigeria POs did not apply SM tools in their public administrates. Olaleye and Afinotan (2014) investigated the SP practice in local government management system in Nigeria; they recommended a total review of the constitution and the federal system structure aspects, a need to evaluate intergovernmental relations and decisions powers allocation. This recommendation showed a lack of public administration reforms and a weak SM pre-conditions within government departments, which cause weak institutional public management system and lack of long-term vision. These results go in line with Gideon and Georgina (2016) investigation, they investigated SM practices as a comprehensive management system in Abia State/ Nigeria local government. Gideon and Georgina (2016) pointed out that there is a lack of organizational policy which is very essential to guide or give the proper direction to public strategies. They also found other reasons behind the weakness of SM such as; lack of training, improper leadership style, and a weak focus on top management interest. Which implies weak organizations performance and blurred organizations visions and relations.

### **IMPLICATIONS AND LESSONS LEARNED**

The analysis above showed that there are many obstacles and challenges to SM applications in POs, though they can be classified into three main areas; strategy formulation, implementation, and evaluation phases, but these phases applications in POs requires a certain degree of basic requirements. These requirements are embodied in state policies, legislations, POs decision-making mechanism, and a developed administrative system with qualified human resources capable of supporting the overall SM elements practices. Therefore, the researcher focused on SM elements and their foundation bases, which is public reform variable. As, POs performance was the main objective for all public reforms, while SPing was the main tool to achieve this objective, and results showed that SPing is the core axes of the comprehensiveness of SM.

Nevertheless, conclusions or results showed that SM elements have many positive effects on POs performance, and also results indicated that there are some failures in public reforms in some of these countries, which negatively impacted the conditions for SM practice, consequently, it negatively impacted POs performance in MEt countries. Yet, results showed there are three major issues faces SM applications in MEt countries POs; First legislations, all public administrations restructuring, and managements processes are affected and influenced by legislations governing the functioning of POs and they have no power to amend them. Second, human and material resources availability, POs strategic objectives cannot be achieved without a real government's commitment and enough resources. Third, government policies and real commitments, since SM practice requires long period for implementation and

its always association with the government's strategic plans and cultures from one side and POs administrations capacities and capabilities from the other side.

Therefore, SM effectiveness in POs is linked with other public-sector management developments and constrains. Whereas, MEt countries Public-sector is extremely resistant to worldwide reform trends and when it renewed its more adapted to local issues rather than the international basis (Al Otaibi, 2015; Common, 2008). Public reforms and decentralized in MEt countries were varied, but they were mainly focused on two main matters; economic difficulties issues and public administrative sagging problematic issues. Whereas, linking these improvements or reforms to resolve administrative sagging and economic problems is wrong and flawed. As, public reform and decentralization are two scientific management approaches aimed to bring radical changes in the prevailing administrative conditions and practices, which contributed in transforming traditional public administrations into more effective strategic administrations. These improved administrations characterized by strategic thinking, authorities and responsibilities decentralizations, research, initiatives and innovations based on long-term planning processes. These processes are fundamental for SM practices and mandated for the authorities to ensure efficiency in performance, they also increase transparency and to get rid of routine in public administrations work. These processes balance the authorities and responsibilities with rationalize resources allocations at all levels.

Even though, public management reform and decentralization concepts had taken many forms in developing countries, but results were mixed. While, the core of these processes was to decentralize strategic planning and public organizations responsibilities. However, these efforts created more efficient and effective organizations managements. But, all countries were confronted many difficulties mainly in the implementation stage (Rondinelli, Nellis & Cheema, 1983). These difficulties were varied from insufficient political and bureaucratic support to the failure of transferring sufficient authorities and responsibilities. And lack of coordination between institutions, which infringement central plans, and lead to weakness in the implementation of strategic public plans or policies.

Therefore, the aforementioned issues and the ongoing Middle East instability situation have complicated SM practice or existence in POs. As, SM does not remove instability or resolve public policies or economic or even administrative problematic issues, but it deals with them systematically and effectively create many positive implications on these organizations performance (Andrews & Van de Walle, 2013; Johnsen, 2016; Elbanna, 2013; Katheeri, 2016). It helps in putting public organizations in proactive mode rather than reactive or defensive mode. It unifies and harmonize all management's efforts.

However, SM in public is grounded on many factors, while managers participation or stakeholder's participation is very important, therefore some scholars concluded that available studies are suitable for democratic society only (Todorov, 2014; Johnsen, 2016), as these scholars focused on this axis only. Although, other scholars claimed that SM is to enhance democracy and increase citizens participation in some POs decisions-making processes (Marshall & Sproats, 2000; Todorov, 2014). Hence, states should look at all aspects of this management process to include trends towards democratic values and other essential issues such as legislative changes, human resources rehabilitation, and any other issues related to these organizations cultures and structures that restrict SM existence in POs.

While, The researcher agrees about the importance of stakeholder participations in SM, and it essential role in enhancing the democratic values and improve strategic decisions quality, but

he disagrees that SM suits democratic societies only. Stockholders or managers participations facilitate strategy implementation and evaluation (Hanger & Whaleen, 2011; Magrebi, 1999) and it increases decisions effectivities and efficiencies. These participations enhance and energize the process itself, it doesn't tailor this management process to a particular organization with a specific political set-up. Hunger and Whaleen (2011) stated that SM belongs to all organizations types and all managerial levels. It fits all organizations sizes, regardless their nature or complexity or originality (Butnaru & Balcan, 2012).

Thus, some scholars concluded that strategy is a result of an ongoing processes based on stakeholders' collective understanding and efforts (Armstrong, 1982). SM is an inclusive management system built on many features and dimensions. Actually, it's a collective effort based on the capability and cooperation of all managers or stakeholders, but it also deals with the organization current and future status. It is built on various inputs from the organization internal and external influences, it's not limited to the social, economic, political, and legal external factors. Its also influenced by internal factors such as; structures, cultures, inter managerial levels relations, and various resourcing mechanisms.

In sum, available literature in some MEt countries support the above discussions and the availability of many factors affect the exitance of SM in POs. Besides there are some important conclusions indicated some usage of SM tools and techniques within POs in these countries. Although this usage varied between these targeted countries, but the core of these conclusions showed a positive relation between SM tools usage and POs performances. These conclusions were in line with other world-wide studies results. Putting in mind that SM is not a single-phase management system, it is multi-phase complex in nature system and fits all organizations (Butnaru & Balcan, 2012; Magrebi, 1999). Therefore, it fits all public organizations, and the failure in one stage at any managerial level might cause a serious problem in the overall management process. However, there are some usage of SM tools in techniques in these countries, but they are facing with some constraints in this management process application; First, training on strategic management importance and its usage within POs to include all managerial levels (Abu Naem, 2000; Dijani, 2011; Hashm & Aamery, 2006; Jafer, 2017). Second, some implementations and evaluations breakdowns (Al Shobaki & Naser, 2016; Elbanna & Fadol, 2016; Shuqair, 2015; Saleh, 2011; Jafer, 2017; Dijani, 2011). Third, political instability and unsuitable constitutional/ legal bases (Saleh, 2011; Elbanna & Fadol 2016; Bovaird & Loeffler, 2016; Rosenberg & Ferlie, 2016). This in addition to some malfunctions in SM preconditions which is a proper reform and suitable decentralization systems. Besides lack managers or stakeholders participations, which deepen the SM application problematic issues.

However, most governments in MEt area have applied various strategies to advance their decentralization issue and reform their public administration systems, with different results in each case. Putting in mind the complexity and other political interests' issues in MEt region, it is hard to make generalization in such a diverse region (Kim, 2009). This in addition to the complex nature of public sector itself in practicing SM, and its high dependence on government policy, which make more risks to be failed than those encountered by the business sector (Al-Khoury, 2014; Bovaird & Loeffler, 2016; Bovaird & Loeffler, 2016; Fixari & Pallez, 2016; Baloria & Mamo 2015).

Despite the fact, that political stability, political will, and stakeholders participations are some crucial issues for SM accomplishment in POs (Hussey, 2007). This region is facing serious problems in these matters, its mostly unstable and suffers from lack of democratic values that should have boosted strategic decisions-making participations. This in addition to the other

management factors such as training weaknesses and the nonexistence of the necessary data bases to support the decision-making process will exaggerate the problems.

Consequently, it is not easy to generalize of this study for some reasons mainly the difference in the degree of these challenges facing SM implementations, and this region diversity with some political and economic differences issues. While , their policies instabilities and cultures have deepened the problem of SM applications in POs within this region. These countries had many serious political and economic problems in the last two decades, which jeopardize any strategic plans formulations and implementations. This reduces the chances for the success of inclusive SM systems and its SPing backbone in POs management system; SPing is highly linked with the political, economic, cultural, and legal status in any state. Still, SM approach is the best key approach in an unstable environment, and the most suitable tool to unify public managers' effort and overcome all types of challenges, as it can make use of the existed POs strengths and avoids their weaknesses.

**Table 1 summarizes the most important results from each country.**

MEt Countries	Conditions; Public reform & Decentralization	Used SM Tools	SM tools usage vs. Performance	Challenges
UAE	Effective public-reform, <b>Gulf states appear to be highly resistant to administrative modernization.</b>	SPing and balanced scorecard tools were mostly used as a SM framework, formulation, Implementation, and evaluation	SPing to act effectively and positively impact on organizational performance, Positive relationship between Org Perf. and SM elements	POs faces more difficulties in strategy implementation.
Jordan	Reform not efficiently articulated or accomplished, decentralization subjected to the custody of central government.	SPing, SOWT analyses, Balance Score Board.	SPing has appositive impact with POs performance, SM outputs have a real impact on the efficiency of Perf.	Problems in public-reform, Inadequate Resources, no proper Impl& Eval foundations, no strategy, didn't consider SPing
Lebanon	Public admin development and reforms are not easy to be implemented.	SPing.	SPing has positive results on performance.	Public-reform obstacles; bureaucratic and political resistance - No proper laws and policies for SM, Absence of Impl& Eval tools. no Info bases.
Palestine	Public reforms& Dec difficulties.	SPing, Balanced Scorecard,	Positive relation decision support system and SM, relation between SM tools& crises Management operations, strategic options considered in instability Impl, SM importance in crises management	Inability to develop clear and integrated legislation. Instable situation, Lack of decisions-making data base,
Algeria	Violated Dec, strict public administrative control	Strategy Form., Impl& eval	strategic analysis& option have effects on POs performance, no effect for strategic vision, mission	legislator linked intervening at the organizational level to the central authorities,
Saudi Arabia	POs reform& development were very slow with some POs cultures& structures drawbacks	SPing, analysis of critical success factors, benchmarking, what if analysis		lack or absence SM specialists, written mission& vision absence, weak training on SM Impl, Lack future thinking, Lack of competition in Govt agencies
Oman		SPing	organizations moving toward strategic thinking and future plans using various types of SM tools.	difference in Mngrs awareness of SM tools, 30% rarely or never used SM tools, Gulf states resists changes
SPing: Strategic Planning, Impel; Implementation, Eval: Evolution, Mngrs: Managers.				

## CONCLUSION

SM in POs is the process which strategies and policies are put into practice through POs management programs, plans, budgets, rules, and procedures. It is a clear and dynamic scientific management process approach, which represents new administrative thoughts and techniques within a relatively stable political system. Though, It is an inclusive and multipart management system uses a diverse combination of management, social, economic, and political tools and techniques to survive rough environments. It creates a practical management model that is initiated at the top management, but it involves and motivates all management levels. Therefore, this management process helps to boost the overall public management system.

Although, it is difficult to make generalization in such an unstable and diverse region, but findings show that governments in MEt Area are still struggling with SM practice and they face many challenges. This struggle come from two foundations; lack of proper political and legal foundations for SM, and some breakdowns in the SM elements system itself. But its more prominent in the implementation and evaluation phases. These interruptions are impeded in POs structures and cultures, and resources availability or suitability . It is clearly that, they have some serious problems in their political will and stability, besides the availability of laws or legislations that imply and regulate all phases of SM process within these countries POs. As well as they have serious problems in the implementation phase central factors, which jeopardize the overall SM process and its existence in the public sector. Though, it is optimistic to say that some countries succeed in using some SM tools in their POs. Finally, The researcher recommends future studies to investigate the degree of the relation between policy stability and SPing practice in POs within this area.

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## **Tobati Enggros Village Tourism Development Model In Community Income Increasing Strategy In Jayapura City**

**Yohanis Rante dan Westim Ratang**

Universitas Cenderawasih Papua

**Andika Rante**

Universitas Cenderawasih Papua

### **ABSTRACK**

Tobati Village and Enggros Village can only be reached by using sea transportation, because it is located in the middle of Youtefa Bay, while transportation is provided by the community traditionally, and only limited to meeting daily needs, so that if there are tourists who want to visit the area of Youtefa Bay attractions must first contact the local community to prepare the boat. There are several alternative wharves to reach the Youtefa Bay area, namely: Jetty at Hamadi Beach, Muara Sungai Hquiry, Vim Beach, Abe Beach and Tanah Hitam. The purpose of this study are as follows: (1) To find out and analyze the inhibiting factors and supporting factors in improving the tourism of Tobati Enggros Village in Jayapura City. (2). To produce a strategy in developing tourism potential of Tobati Enggros Village in Jayapura City. (3) To produce a tourist model of Tobati Enggros Village in Jayapura City and (4). To find out the income of the people in Tobati Enggros Village in Jayapura City. Data analysis techniques are three analytical tools, namely, qualitative descriptive analysis (liker scale) to quantitative descriptive analysis and SWOT analysis through approaches commonly known as Strength Analysis, Weaknesses, Opportunities and Threats or SWOT Analysis (Strengths, Weakness, Opportunities and Threats). The results showed that the strategy for Tobati Enggros village tourism was a strategy: (1) With special autonomy the government was able to increase the availability of human resources who understand tourism potential and how to develop tourism and can increase the allocation of funds. (3) Technological progress must be able to be utilized to develop tourism governance and the quality of human resources. (4) The development and progress of the tourism sector in Indonesia is able to become an important capital to improve tourism promotion that is still lacking. (5) The strategic location and distance between villages that are increasingly integrated make a great opportunity so that the government is able to allocate funds to improve roads and improve governance. (6) Increasing economic growth can make opportunities to be able to increase competitiveness so that it will be able to increase the quantity and quality of human resources. There are 4 (four) models for the development of Tobati and Enggros tourist villages, namely: the development model of villages (1) cultural tourism, (2) water sports tourism, (3) natural tourism, and (4) historical tourism.

**Keywords:** Model of Development, Tourism, Tobati Enggros, SWOT, Strategy

### **BACKGROUND**

Tobati Village and Enggros Village can only be reached by using sea transportation, because it is located in the middle of Youtefa Bay, while transportation is provided by the community traditionally, and only limited to meeting daily needs, so that if there are tourists who want to visit the area of Youtefa Bay attractions must first contact the local community to prepare the boat. There are several alternative docks to reach the Youtefa Bay region, namely: Jetty at Hamadi Beach, Estuary of the River Hquiry, Vim Beach, Abe Beach and Tanah Hitam. One of the most basic tourist needs is to eat drink, currently in Tobati Enggros village there is no place to

eat provided by the community, but if there are orders from visitors in advance the community is prepared to prepare it, this is due to the fact that tourists have not routinely visited Youtefa Bay attractions, as for local foods that can be provided by the community are: papeda, grilled fish, squid, shrimp, crabs, satay bia and others. All these food ingredients are available in this area. Objects and Tourist Attractions of Tobati Enggros Village (Youtefa Bay region) has historical tourism objects in the gospel in Tabi which has now been built into the Gospel Entry Monument in Jayapura City, a heritage tourism object of the Second World War, tourists can also watch or together people fishing traditionally, playing ball in water, the field arises sinking at times when low tide can be used as a place to play football.

With the establishment of Tobati & Enggros village as a tourist village and supported by community conditions that are friendly to visitors, the community consciously understands the benefits of tourism development by reflecting SAPTA PESONA, then slowly this village will begin to be visited by tourists. This of course will be able to move the economy of the village community, along with the program launched by the Governor of Papua, namely building communities starting from the village.

Tourism activities in the Youtefa Bay area will later be an activity that can be used as a stimulus (stimulation) for regional development on a cross-sectoral basis, because of the tourism assets that have a rare influence or presence, especially at the regional level for tourism development in this area which is accompanied and supported by activities. Other activities appropriately and in an integrated manner, the benefits of tourism activities will be felt by all regions, especially participating in filling in regional development programs, although development plans cover only the area, these assets in general and overall are regional development plans with tourist objects as components - the main component.

What is desirable from a regional development is that tourism objects that have been developed will later stimulate sectoral activities starting from the surrounding area and then at the regional level. In accordance with the limitations and characteristics of tourist villages, the product model that can be offered must reflect the rural atmosphere that is attempted as much as possible with the original atmosphere. Some types of attractions that might be developed. Activities of fishermen: tourists are directly involved with fishing activities on the beach after going to sea, such as pulling nets, fishing by boat or catching fish with arrows.

Tourist attractions related to village community art activities such as dance, sculpture, carving, music that really originated and took place in the village. Tourist attractions related to traditional activities or village ceremonies, tourists involved / participate (active / passive) in the preparation or implementation of village ceremonies with certain requirements without reducing the sacredness and cultural values or religious of the ceremony. Tourist attractions related to sports, in this Youtefa Bay tourism area can also be developed several water sports activities such as: jet sky, canoeing, banana bout, water bikes and at certain times where the sea is receding to Debi Island attractions activities can be carried out by sports such as footballs, volleyball, kites and others.

## RESEARCH METHODS

Grouping and Data Sources In this research using primary data and secondary data. 1) Primary data, collected through monitoring, surveys, observations and semi-structural interviews with local communities by distributing questionnaires, namely, serving people (fishermen, community leaders, ondoafi, chiefs, government). 2) Secondary Data, collected from literature related to this research in the form of data on the profile of the local area, and utilization of

fisheries and natural tourism products. Secondary data were also obtained from the statistical office, the local Tourism Office, the Fisheries and Maritime Service of Jayapura City.

## Number of Samples and Method of Sampling

### *Total population*

Enggros Village, the number of households is 120 families and Tobati village, the number of family heads is 87 families. The number of family heads of indigenous people (Fishermen) who utilize fisheries and natural tourism is 307 heads of households are the population.

### *Number of samples*

Of the 307 heads of households, 15% will be taken, then Enggros Village is 120 families, so the sample is 18 families and Tobati Kampong is 87 families, so the sample is 14 as a sample, totaling 32 respondents

## Analysis Method

**1) Qualitative analysis**, used to evaluate, identify and explain with descriptions and tables above:

### **2) Quantitative Analysis**

This analysis is used to measure the views, income, perceptions or responses of the public about the utilization of fishery products and natural tourism in order to increase the income of the Tobati Enggros community.

### **3) Variable measurement scale**

Measurement scale using a Likert scale. The lowest score was given a scale of 1 and the highest was given a scale of 5 with levels

### **4) SWOT analysis**

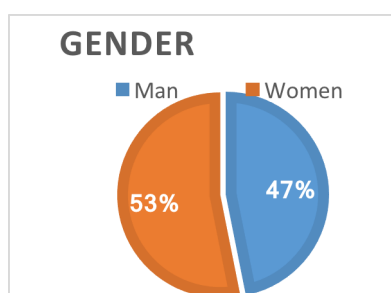
Using the SWOT analysis will be able to obtain an overview of the strengths / strengths of what is owned by the Tobati and Enggros Village communities for fisheries or natural resource potential and the weaknesses they have in developing fisheries and natural tourism businesses.

## RESULTS AND DISCUSSION1.

### Characteristics of Respondentsa. Tobati Village

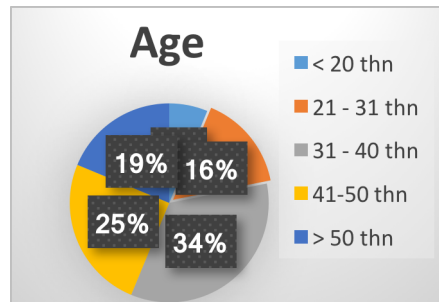
#### **1) Based on Gender**

Characteristics of respondents based on gender from questionnaires distributed as many as 32 questionnaires, it appears that women as much as 53% or amounting to 17 people and men as many as 47% or amounting to 15 people.



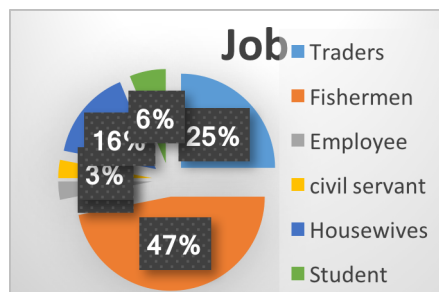
**2) Based on Age Group**

Characteristics of respondents based on age groups showed that age 31-40 years were 34% or 11 people.



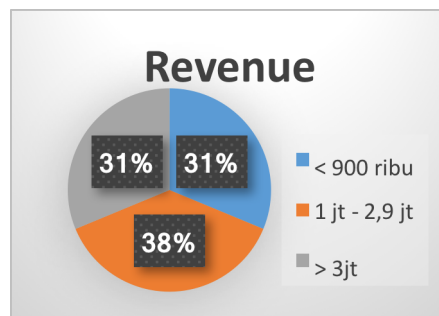
**3) Based on Job**

The people in Tobati village generally work as fishermen, which are 15 people, 8 traders, 5 housewives, 1 employee, 1 civil servant and 2 students.



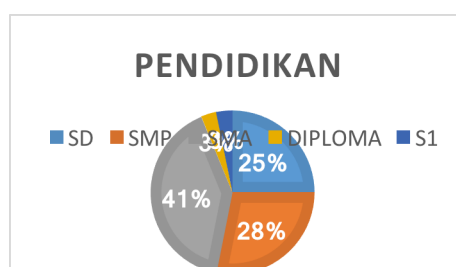
**4) Based on Revenue**

In general, the people in Tobati Village are fishermen because the people live in the sea. In general, community income is in 1 month Rp.1,000,000 - Rp.2,900,000, which is 12 people,



**5) Based on Education Level**

Based on the questionnaires collected from 32 respondents based on the highest level of education, the level of high school education was 13 people.



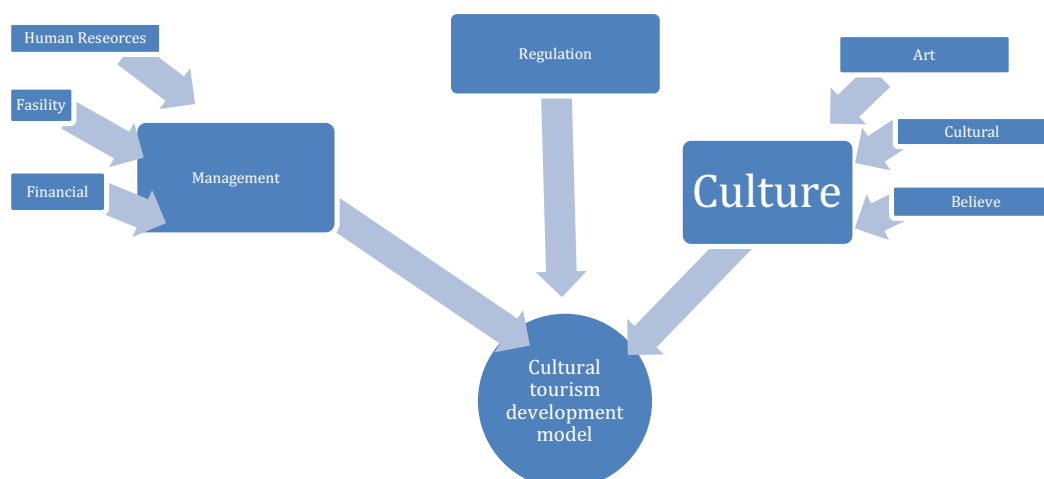
## Development Model of Tourist Village

### a) Cultural Tourism Development Model

Cultural tourism is a trip that is carried out on the basis of a desire to broaden one's life view by making a visit or review elsewhere or abroad, studying the condition of the people, their customs, their way of life, their culture and art. Along with this trip, it is united with opportunities to take part in cultural activities, such as art exposition (dance, drama, music, and sound art), or historical motives and so on.

Tobati Enggros Village cultural tourism, this area has a strategic location for tourism development. The strategic location of this area is very potential in attracting domestic and foreign tourists, especially supported by the ease of sea accessibility which will primarily provide infrastructure that is in accordance with standards. Tourism activities in this region tend to occur intra-region. Promotion and marketing have not focused on the international tourist market, but are temporarily limited to local and regional markets for recreational and pilgrimage activities. In tourism development in this region, the concept of cultural tourism development must be a reference. With this concept, tourism is expected to show the identity of the community of Tobati Enggros village.

With this cultural tourism development model mindset, it can be analyzed the direction of tourism development with a directed and integrated various aspects of regulation, objects, and management into important aspects. On the regulatory aspect, it is necessary to issue Regional Regulations, Jayapura Mayor Regulations, and Jayapura Mayor's Decree as a concrete manifestation of concern in developing cultural tourism as an asset that can improve PAD and people's economic life in a good direction. Thus the policy direction for developing cultural tourism objects with cultural and environmental perspectives will lead to the preservation of cultural elements as superior objects in the development of tourism. For this reason, development in various supporting aspects such as art (dance, music, painting), unique customs, and also matters relating to aspects of trust in various environments, nature, rivers, trees, or various other customary activities sacred can be developed in various tourism development programs in Tobati Enggros village.



Likewise with management aspects as one aspect that needs to be considered in the effort to develop tourism. Management aspects play an important role in supporting the development of tourism, especially in relation to human resources, facilities and finance. The programs will be well directed with good management in the effort of developing human resources both at the level of the apparatus of culture and tourism as well as community resources as



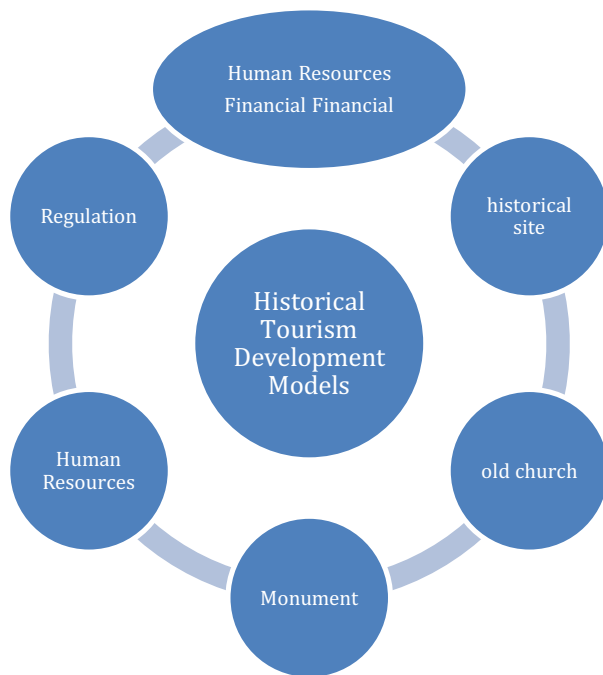
stakeholders of cultural customs as cultural tourism objects. Management aspects related to facilities are very important because related to the efforts to develop a cultural studio, traditional houses can be well realized as concrete steps in implementing tourism development by looking at the importance of cultural tourism.

The important things in management related to finance are the supporting elements that need to be considered and arranged properly. Financial management is well formulated in managing efforts to find financial resources, financial allocation and financial management in a transparent, accountable and unqualified manner (WTP) is good support in the operationalization of cultural tourism development as a tourism development target in Tobati Enggros village. With this framework, the efforts to develop programs in accordance with the regional tourism development master plan can be realized well and directed.

### ***b) Historical Tourism Development Models***

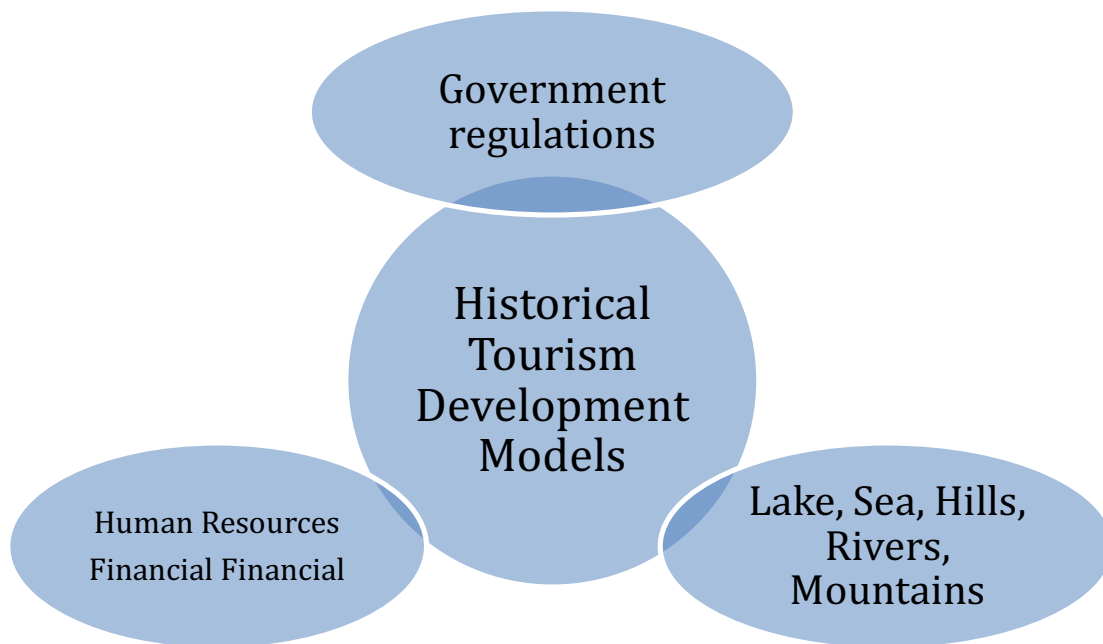
This tour is more or less associated with religion, history, customs and beliefs of people or groups in society. Pilgrimage tours are mostly carried out by individuals or groups to holy places, to the tombs of great people or leaders who are honored, to a hill or mountain that is considered sacred, a place of burial of a figure or leader as a magical human full of legends. This pilgrimage tour is much associated with the intention or desire of the tourists to obtain blessings, inner strength, determination of faith and not infrequently for the purpose of obtaining blessings and abundant wealth. With accommodation facilities and transportation facilities that are given attractive reductions to these places.

With this model, elements of management, regulation and objects become important targets in the development of historical tourism, so the policy direction is focused on several important elements. The management element needs to be an increase in human resources both in the Culture and Tourism Office, as well as the community that owns the tourism assets. The main support is also the financial aspect as the wheel of the policy that is proclaimed, as well as the aspects of supporting historical tourism development facilities need to be well organized and prepared. In connection with regulatory elements, the government in this case the governor and mayor need to issue regional regulations, mayor regulations, and mayor's decree as official documents in an effort to raise the development of historical tourism properly. The element of the object becomes the main holder of the role in the development of historical tourism, especially in the effort to organize, restore, and maintain historical sites well.



**c. Natural Tourism Development Model**

Nature tourism is mostly organized by agents or travel agencies that specialize businesses by arranging tours to places or areas of nature reserves, protected parks, mountainous forest areas and so on whose conservation is protected by law. This nature reserve tour is mostly carried out by fans and nature lovers in relation to the penchant for photographing animals or genera of colorful animals and flower trees that do get protection from the government and society. This tour is often associated with the passion for natural beauty, the fresh air in the mountains, the wonders of the lives of animals and clans of rare animals and plants that are rarely found in other places.



## **Development Strategy of Tobati Enggros Tourism Village in Jayapura City**

The strategy for the Tobati Enggros village tour is the WO Strategy:

- a. With special autonomy the government is able to increase the availability of human resources who understand tourism potential and how to develop tourism and can increase the allocation of funds.
- b. The government must be able to streamline expenditure costs.
- c. Technological progress must be able to be utilized to develop tourism governance and the quality of human resources.
- d. Development and Progress of the tourism sector in Indonesia is able to become an important capital to improve tourism promotion that is still lacking.
- e. The strategic location of the region and the distance between villages that are increasingly integrated make it a great opportunity so that the government is able to allocate funds to improve roads and improve governance.
- f. Increasing economic growth can make opportunities to be able to improve competitiveness so that it will be able to increase the quantity and quality of human resources.

### **CONCLUSIONS AND RECOMMENDATIONS**

1. The profile of the population in the Tobati Enggros village generally works as fishermen, the average level of education is high school, and the income of the community that most of the fishermen are 1,000,000 to 2,000,000 per month.
2. The strategy for the Tobati Enggros village tour is the WO Strategy:
  - a. With special autonomy the government is able to increase the availability of human resources who understand tourism potential and how to develop tourism and can increase the allocation of funds.
  - b. The government must be able to streamline expenditure costs.
  - c. Technological progress must be able to be utilized to develop tourism governance and the quality of human resources.
  - d. Development and Progress of the tourism sector in Indonesia is able to become an important capital to improve tourism promotion that is still lacking.
  - e. The strategic location of the region and the distance between villages that are increasingly integrated make it a great opportunity so that the government is able to allocate funds to improve roads and improve governance.
  - f. Increasing economic growth can make opportunities to be able to improve competitiveness so that it will be able to increase the quantity and quality of human resources.
3. There are 4 (four) models for the development of Tobati and Enggros tourism villages, namely: the development model of villages (1) cultural tourism, (2) water sports tourism, (3) natural tourism, and (4) historical tourism.

### **Recommendations**

1. Development of Tourism Resources need to do education and training, open vocational schools, diplomas and S1, foreign language courses and management in the field of tourism.
2. For the local government it is necessary to have a master plan for the preparation of synergies between the provincial, city, sub-district, and village governments in the development of a tourist village development strategy.
3. For the local government there needs to be a regulation that regulates the implementation of tourist villages with certain parameters to avoid the emergence of tourist villages that are not in accordance with the rules of the tourist village itself.

4. For the community there needs to be a consideration that the determination of the area as a tourist village area should not result in a decrease in environmental quality.
5. Need to promote with the aim of building awareness, increasing knowledge, and increasing public understanding of tourism villages along with tourism potential, especially the beauty of nature, art and culture.

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## **SME Finance and Economic Development Paradox: The Case of Fish Industry in The Gambia**

**Seeku A. K. Jaabi**

### **ABSTRACT**

While the literature on enterprise finance focuses largely on manufacturing industry and in developing countries concerns enterprises in clustering industry, this study attempts to fill the gap by examining enterprise financing experiences in the fishing industry of The Gambia. Despite SMEs as spring board of industrialisation and development in most developing countries, they continue to face acute formal financial constraints. It is argued that the controversy in the empirical literature on the financing decisions on SMEs is based on the failure to take into account the degrees of information opacity, enterprises' capabilities and needs at specific stages of their life cycles. Fish as an agricultural commodity is perishable requiring capabilities and institutional developments to maintain freshness, and quality standards to boost production, processing and exports to lucrative markets and these require considerable financing requirements. The study adopted a mix approach using qualitative questionnaire survey and quantitative approach to assess the source and challenges of fish SME financing. The findings revealed that fish enterprises' access to formal financial credit is limited to supporting its production, processing and exports in The Gambia. The developmental role of government, innovative lending technologies of financial intermediaries and leasing firms can be instrumental in addressing the SMEs' persistent financing difficulties to enhance overall socio-economic developments. This makes fish SME financing study unique and complex in enterprise financing literature.

**Key Words:** Finance, Enterprise, Capital, Gambia

### **INTRODUCTION**

The importance of SME financing in the economies of developing countries has been extensively researched in development economics literature (Berger & Udell, 1998, 2006, Beck et al., 2006, Demirguc-kunt, 2007, Stiglitz & Weiss, 1981), though very little if any on the experiences of low-income economies. SMEs and fish SMEs in particular contributes immensely to socio-economic development in terms of job creation, income for fishermen, foreign exchange through exports and provision of animal proteins to vast people who depend on it for livelihood support. Despite SMEs importance as a spring board of industrialisation and development in developing economies, it is paradoxical that they continue to face acute formal financial constraints.

The importance attached to fish SMEs in the economy is crucial making their access to formal external credit and equity vital for growth. This is corroborated by Storey (1994) that enterprise growth is constrained by cost of funding, availability and access to financial credit as investment is important for SMEs' viability and sustainability. SMEs capital structure financing differ from the large corporate bodies resulting to varying financing decisions and behaviours.

Several important distinguishing factors between small from large businesses<sup>1</sup> is linked to informational opacity (Berger and Udell, 1998, 2006). Information asymmetries do affect small firms' formal access to external debt and equity finance. As a result, the lack of access to external finance may not be due to the low demand for it but the difficulties of accessing it (Djankov et al 2007; Fafchamps, 1995 and Bigsten 2003). Accordingly, SMEs effective demand for formal finance depends on their ability to resolve asymmetric information (Beck *et al.* 2002<sup>2</sup>; Rocca et al, 2011; Stiglitz and Weiss, 1981).

After financial reforms in most developing countries, SME financing attracted much attention due to their vital role in boosting socio-economic and industrial development in both developed and developing economies (Djankov, 2007, Fafchamps *et al.*, 1995; Beck *et al.*, 2006; Biggs 2006). However, despite its developmental role, fish SMEs continue to experience acute lack of access to formal finance due to various inherent internal and external constraints. Thus, in spite of the high risk profile, exposure to asymmetric information, lack of collateralised assets and informality that characterise most fish SMEs, policymakers and banks must formulate appropriate strategies to finance the needs of this important industry. Fish SMEs in The Gambia have access to a wide range of financing avenues including personal, family and friends, trade credit, microfinance, savings and credit cooperatives, government credit schemes and a more formal commercial bank financing.

Fish SMEs' importance in the economy depends to a greater extent on their unrestricted access to external finance. To understand fish SMEs' financing determinants at different stages of business life cycle can be crucial for financial intermediaries to appropriately support their financing needs. Fish SMEs lending decision-making has to take into account enterprises' characteristics, information opacity and their specific needs along the different stages of their life cycle, (Rogers et al, 2009:231; Fulgencio, 2009:434). SMEs acute lack of formal credit has resulted to the emergence of Non-governmental organisations (NGOs) and other informal financing to fill the gap by addressing difficulties in financial access. However, several studies including Ledgerwood (2000), Robinson (2001), Rhyne and White (2003) and Hulme and Mosley (1996, 1998) highlighted their serious limitations in addressing the long-term fish SME sustainable financing due to high donor dependence, limited funding capacity, weak management information systems and other corporate governance issues. These funding sources are not significant enough to support business expansion and growth potentials of fish SMEs. In this regard, governments in most developing economies have in the past assumed direct responsibility to extend financial credit to key sectors of the economy. They have therefore been in the forefront of promoting carefully crafted financial access in terms of direct allocation of funds to micro, small and medium-sized enterprises (SMEs) and the agricultural sector under various institutional arrangements (Jaabi, 2004). However, some of these interventions were short-lived due mainly to high non-performing loans, political hijacking, limited outreach and considerable losses. In most cases, the targeted people never received the funds.

Fish is a perishable commodity requiring technological capabilities and institutional building to enhance quality and hygiene fish handling along supply chains to boost production, processing and exports to lucrative markets. Fish industry is faced with stringent technical

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<sup>1</sup> Large businesses use various financing options including stock markets, while small enterprises use external loans and owner's equity or support from family and friends. Small enterprises do not participate in stock markets due to high costs and too much formality.

<sup>2</sup> Beck, Demirguc-Kunt, and Maksimovic (2002) found that small businesses are severely credit constrained under weak local financial sector.

barriers and strict sanitary standards requiring huge financial investment, skilled human resources, state-of-the-art equipments and other capabilities to participate and compete in global markets where sophistication of products matter. This makes fish SME financing study unique and complex in enterprise financing literature quite different from SMEs in other industries requiring public policy support, in building the right systemic pillars to address collective action problems. Literature on enterprise financing largely focus on manufacturing industry and in developing countries concerns enterprises in clustering industry. This paper attempts to fill the gap by examining enterprise financing experiences in the fishing industry of The Gambia.

The continued lack of access to formal credit from commercial banks has been identified as a major constraint to enterprise operations and growth prospects (Becks et al., 2006; Storey, 1994; Berger and Udell, 1998, 2006). While empirical on enterprise financing focused largely on manufacturing and clustering industries in developing economies, this study examines the source of finance of fish SMEs and analyses its impact on fish exports and R&D in Uganda's fish industry. What are the main financing sources and challenges of fish SMEs and its impact on exports in The Gambia's fishery industry? The latter form the research questions of the study. The paper begins with introduction and tracing the background of The Gambia fishery industry followed by a detailed literature review on the subject. This section also discusses the methodology and analytical approach adopted followed by the findings of the study. The paper concludes with a review of important findings and implications for the industry.

### **BRIEF BACKGROUND OF THE GAMBIA'S FISH INDUSTRY**

The fisheries waters of The Gambia are characterised by marine Atlantic Ocean and an in-land fresh water of the River Gambia. It has territorial sea extending to 12 miles with an Exclusive Economic Zone (EEZ) of 200 miles long and 40 miles wide from the geographical baseline (Department of Fisheries, 2010). The continental shelf area of The Gambia is approximately 4000 square kilometres and an EEZ of nearly 10,500 square kilometres.

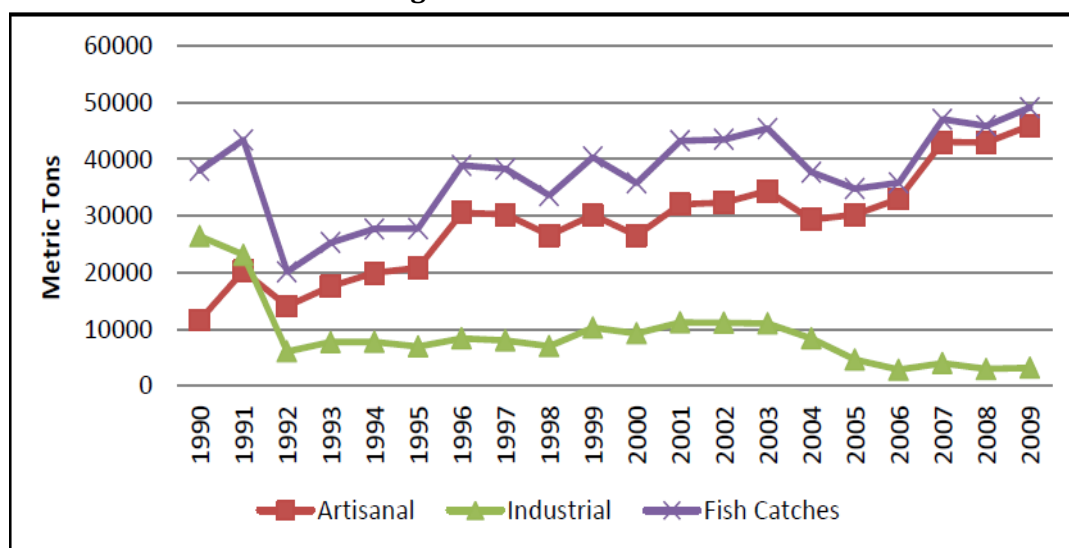
The River Gambia is an estuary with its source in the Fouta Djallon highlands in the Republic of Guinea Conakry, has a total length and its tributaries of 2,500km and the river's length in The Gambia is 480 km (Department of fisheries, 2011:2). In The Gambia, over 200,000 people depend on fish for livelihood support and employing over 40,000 people in the industry in 2009 (FAO, 2010; Department of Fisheries, 2009). Fish remains a vital source of animal protein in the country.

The sea corridor has over 500 marine fish species in demersal and pelagic in Gambian waters and about 70 fish species of commercial significance (Department of Fisheries, 2009). The fish resources are estimated to range from 300,000-350,000 metric tons (Mendy, 2009:3) with shrimps, catfish, cephalopods, cuttlefish, tilapia and tuna species making up the fish export basket. The fish resources of The Gambia are under-exploited and improvements in fishing technology and techniques, fish landings and exports are expected to increase into many folds. Commercial fishing started in early 1960s in The Gambia with both foreign and artisanal fisheries accessing coastal marine waters and inland river resources. The declaration of EEZs in 1982 law of the Sea enabled most West African coastal states including The Gambia to enter into fishing agreements with foreign countries – EU, South Korea, China, Greece, Spain, Italy, among others. This resulted to an intensive exploitation of fisheries resources through joint venture with local entrepreneurs. The commercialisation of fisheries products encouraged players to seize new opportunities by investing in modern fleets and processing plants in response to the growing global demand for fish and fish products. The fishing fleets have grown rapidly and equipped with relevant technologies which increased their catching power.

It is important to note that foreign fishing fleets came in through the EC/Gambia fishing agreements (1987-96), bilateral agreements with Japanese, Reciprocal Maritime Fishing Agreement with Senegal and through joint ventures with local firms.

Fish production is dominated by artisanal fishermen in The Gambia<sup>50</sup> with severe limitations due to sanitary conditions and supply-side constraints including weak infrastructure, limited industrial fishing, weak meso-organisational support, low human resource skills, poor equipments and weak government policy support, among others. Fish catch recorded 39,970 metric tons on 1990 with 26,397 tons (66%) captured by artisanal fishermen declining to 27,736 tons in 1995 (75% artisanal fisheries). It rose to 35,762 tons in 2000 dropping marginally to 34,785 tons in 2005 (see Figure 4.3) before increasing to 49,063 tons in 2009 (Mendy, 2009). Artisanal fishermen capture equalled 74.1% in 2000.

**Figure 1: Fish Production**



**Source: The Gambia Bureau of Statistics**

The low export volumes are also associated with Sanitary Phyto-sanitary (SPS) and Hazard Analysis Control Critical Points (HACCP) requirements which artisanal fishermen find difficult to comply with. Export values also show erratic levels from USD2.33 million in 1990 declining to USD1.68 million in 1995. It grew to USD3.35 million in 2000 falling to its trough at USD0.34 million in 2006 (due mainly to fish exporters targeting high value fish coupled with weak artisanal capabilities) before rising further to USD5.93 million in 2010 (GBOS, 2011).

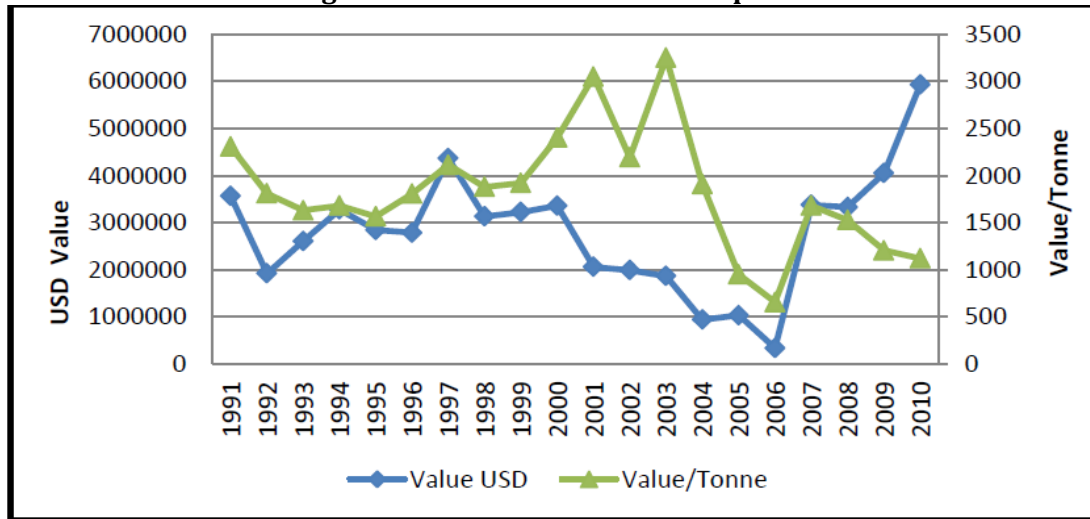
The Gambia does not have a dedicated fish landing site for industrial fisheries<sup>52</sup> until 2009, as a result high value fish are transported to neighbouring Senegal and overseas ports where such facilities are available and when processing firms in The Gambia could not absorb all the fresh fish captured. With no EU certified laboratory, fish products are taken to neighbouring Senegal for testing before exports to overseas markets. This is very expensive for many fresh fish exporters. The dried shark fish are exported to Ghana and most West African sub-region while smoked and salted fish are exported to Guinea, Mali and Cameroon. A Shark fin and fish maws are sent to Asia, mainly Hong Kong.

Industrial fish exports target shrimps, sole, snappers, tuna, cuttlefish, octopus, tilapia among others, have plummeted over the years as shown in Table 4.4 and Figure 4.9 due mainly to four key problems (Department of Fisheries, 2009):



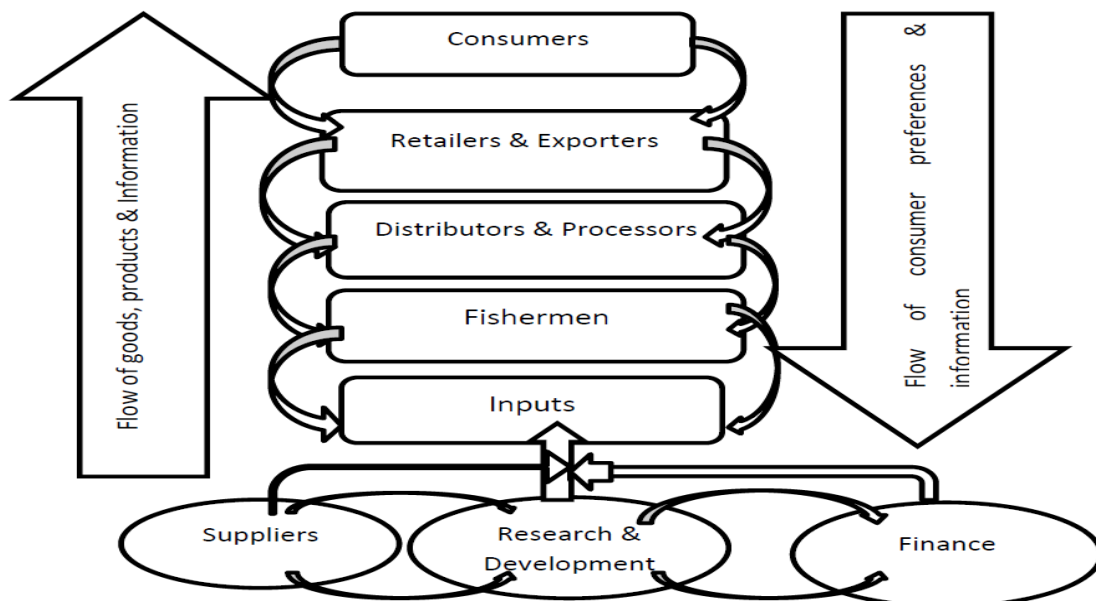
- i. The demersal fish stocks are threatened by over-exploitation associated with bilateral fish agreements with Senegal and EU, higher licence fees restricting legal industrial vessels establishments and the increasing illegal fishing
- ii. Fish processing is constrained by increasing cost of electricity and finance
- iii. The lack of dedicated fishing port for industrial fisheries and poor facilities at landing sites undermine efforts to meet EU SPS standards.
- iv. Poor surveillance and an ineffective policing of The Gambia"s EEZ encouraged illegal and irresponsible fishing.

**Figure 2: Fish Production and Exports**



The fishing industry is crucial in the economy of The Gambia, with sector contributing significantly to Gross Domestic Product (GDP), household incomes, food security, tax revenues and employment. Over 200,000 people depend on fish industry for livelihood in The Gambia and remain a major source of animal protein, foreign exchange earnings through exports and fish food security.

**Figure 3 : Fishery Supply and Value Chain**



Adapted from Jaabi & Rasiyah (2014)

Fish is a highly perishable commodity which, in principle, should have the shortest possible distribution chain with little involvement of intermediaries. However, in reality, the commodity goes through a complex distribution chain from fishermen to the consumer (see Figure 2). The requirement of sanitation and hygiene involved in fish handling are complex and costly, demanding huge access to finance, investment in equipment, human skills, plant layout, cooling systems and other technologies in the entire processing and export supply chain.

As shown in Figure 2 above, financing is needed for R&D and suppliers of inputs. Steady financing and long-term commitment to R&D are vital to maintain high standards and hygiene in an effort to produce high quality fish products enabling them to compete effectively in international fish markets.

## **THEORETICAL CONSIDERATIONS**

In this section, we review past studies in enterprise literature relevant to our study to show the contribution to global literature on SMEs and fish SMEs in particular. Key issues touched here included asymmetric information, demand-side and supply-side constraints, pecking order theory and financial and institutional developments in relation to financial access.

### **Asymmetric Information**

The Asymmetric Information Theory (AIT) argues that entrepreneurs do not have full information of the business income streams and growth opportunities which are not readily available to external financiers - equity investors and creditors. The AIT further argued that smaller and younger firms tend to report higher financing obstacles than larger and older firms (Berger & Udell, 1998:615-618, 2006 and Becks et al 2004, 2006). Imperfect information and high transaction costs are factors driving the limited access to external formal finance by fish SMEs (Stiglitz & Weiss, 1981:393). Due to limited access to information on enterprises' income streams by external financiers, it became difficult to appraise loan applications and monitor them efficiently to avoid non-performing loans. The problems of adverse selection and moral hazard are relevant in SME financing in developing countries; as a result, credit is rationed with the possibility that some eligible enterprises are denied credit (Stiglitz & Weiss, 1981:393-405),

Formal financial information requirements in the form of audited financial statements and business plans are difficult for most SMEs to provide, or even if provided often lack detail, quality and rigor (Berger & Udell, 2005:1-3 and Michaelas et al, 1999:116). Most fish small enterprises are often not registered with the authorities and do not keep proper record of transactions to facilitate efficient appraisal and monitoring. The situation is further compounded with low collateralised assets to relax information asymmetries (North, 1990; Rocca et al, 2009:12). As a result, external financiers had no option but to limit their financing to vulnerable fish SMEs to control the incidence of non-performing loans. Under this situation, most external financiers either reduce the amount of financing sought, ration or deny access altogether (Stiglitz and Weiss, 1981: 393-394).

The problem of SMEs is more acute in LDCs like The Gambia with high risk profile, volatile rates of return and high incidences start-up failure (Storey, 1994), constrains of capital and skilled human resources to exploit potentials of growth and increase contribution to the economy. This is aggravated by the lack of accurate and reliable information, poor business environment, weak security of transactions and property rights protection problems (Djankov et al, 2007:299-305; Marcel, 1994:2-3; Fafchamps et al, 1995:1-5).

Studies have shown that business start-ups are generally more informationally opaque constraining their access to external funding (see Beck et al, 2006; Berger and Udell, 1998, 2005 and Stiglitz and Weiss, 1981). Smaller and younger enterprises are less leveraged due to their high information opacity compared with larger and older enterprises. This has inhibited young and small enterprises from accessing external finance as they find it difficult to raise positive cash flows at initial stages of their existence<sup>3</sup> to service loan interest payments.

### **Pecking Order Theory (POT)**

The Pecking Order Theory (POT) developed by Myers (1984) argues that enterprises finance their businesses in a hierarchical manner. Myers (1984), Myers & Majluf (1984) argued that the choice of financing is based on the relative costs of the various financing sources. In this regard, the theory suggests SMEs prefer to choose internal financing sources (personal funds and retained earnings and profits) with relative lesser costs and they will only turn to external finance (debt and equity) when internal funds are inadequate. Therefore, POT showed that enterprises due to opacity problems tend to prefer retained earnings as the lesser information sensitive security (Rocca et al, 2009:5-9; Myers, 1984:576 and Myers & Majluf, 1984) before external debt and equity capital<sup>4</sup> in the later stages through to maturity. External debt is also preferred to equity as the latter dilutes ownership with subsequent takeover of the business. As shown in Table 4, small enterprises suffered acute formal financial access instead relies on informal financing sources.

### **Supply-Side Constraint**

Supply-side constraints are factors that limit the economy's ability to produce or export more goods to global markets. Efforts to address weaknesses in public sector policies and regulatory frameworks, governance, physical and financial infrastructural development, human resource skills and market information will effectively stimulate enterprise increasing access to formal external finance and enhance their global market participation and competitiveness (UNCTAD, 2006) (also see Fulgencio, 2009; Rogers, 2009; Chandra & Kolavalli, 2006; Lall, 1992:168).

Most development economists have expressed doubts over free markets and global trade benefits to developing SSA economies, in particular its agricultural export sector which is beset with severe supply-side constraints<sup>5</sup> (UNCTAD, 2006; Fulgencio, 2009:436-441). Inefficiencies at firm level, lack of requisite human and financial resources, weak business environment (Gelb et al, 2007), weak creditor right protection and costly doing business indicators in The Gambia (see Global Economic Forum, 2011) have to a greater extent undermined sustainable financial access and growth of fish SMEs to integrate fully in global markets (Rogers et al, 2009 and Marco, 2004). Accordingly, the ability of economies to address supply-side constraints are able to benefit from increased production, exports, rapid growth, increase employment, value addition and wealth creation (Rasiah, 2007).

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<sup>3</sup> Tarinyeba (2009) among other authors argued that majority of small enterprises opt for other forms of finance particularly informal credit due to high costs, information asymmetric and other constraints in accessing formal finance.

<sup>4</sup> Pinegar & Wilbricht (1989) showed that financial debt is relatively preferred to equity as a way to raising funds and keeping control of the business.

<sup>5</sup> Despite some concessionary schemes such as the U.S' African Growth and Opportunities Act (AGOA) and the EU's Everything But Arms (EBA) most African economies failed to benefit from these opportunities due to inherent difficulties in accessing finance, low productive capabilities, lacking technologies, non-conformity with product standards and poor connectivity in global trade.

The severe supply-side constraints have resulted to weak SSA industrial sector turning the region into world's least developed economy (Sachs, 2007:827-830, Lall et al, 2005, 1992). Calls for joint corrective action suggest various policy measures including crucial infrastructural development. The adequate supply of infrastructural services (water, telecommunication, power generation capacity, roads, transport, marketing and other enabling institutions) has long been viewed both in policy debate and academic literature (World Bank, 1994) as key pre-requisite for economic development. Consensus has emerged on related empirical literature (World Bank 2006) that under favourable conditions, infrastructural development can be critical in promoting economic growth and equity.

### **Demand-Side**

Several studies including Becks et al (2005, 2006, 2008), Ayyagari et al (2003) and Fafchamps et al (1994, 1995) have argued that capital shortage is a major problem militating against SME growth. However, it is argued that financial institutions do often have excess liquidity to lend than SMEs were willing to borrow (Osei-Assibey, 2011:153). This is blamed on slow industrial growth of SMEs (low institutional developments) and their low absorptive capacities coupled with low capabilities and scale to meet lending requirements of commercial banks (Berger & Udell, 1998, 2006). As a result, most SMEs in LDCs face difficulties in accessing formal external finance, forcing many to resort to informal financing sources, such as, personal, family, non-governmental organisations (NGOs) and trade credit to address their financing need.. However, these informal sources are often limited to meet enterprise growth financing requirements.

### **Financial and Institutional Development**

There is a general consensus among many development economists (Becks, Demirguc-Kunt, Laeven & Levine 2005; Levine 1997; Demirguc-kunt, 2008; Hussein & Demetriades, 1996) that financial and institutional developments relieve constrains on enterprise financing obstacles. Accordingly, Levine (1997) argued that financial sector development is an important ingredient as it makes credit available for SME financing, thus enhancing economic growth. Enterprises' lack of access to credit has been identified as one of the factors that not only engender poverty and income inequality (Demirguc-Kunt & Levine, 2008) but also constrain economic growth and development (see Flessig, 1996). There is general consensus among many researchers on a positive finance-growth nexus and substantial empirical evidence exist that supports this trajectory (Levine, 1997; Hussein & Demetriades 1996 ; DemirgucKunt 2008) The works of Hussein & Demetriades (1996) and Levine & Demirguc-kunt (2008) are indeed robust on financial sector development on enterprise access to finance. However, in SSA where financial sector is shallow and underdeveloped, commercial banks have over the years failed to show much presence in financing small enterprise market. This coupled with market imperfections; institutional weaknesses and poor infrastructure make SME financing a huge challenge in developing African countries. Addressing these issues may require a long-term solution. In the short-run, much collaboration in the form of financial linkages, institutional innovation, adoption of technologies in financial products delivery, addressing collective action problems and crucial role of public sector agencies can be valuable in increasing fish SMEs' financial access.

Institutional development is an important country characteristic that explains enterprises financing patterns. SME financing may be enhanced with enhanced competition, buoyant financial sector and the eradication of restricted policies such as interest rate ceilings and forced sectoral lending (Guiso et al., 2004). Credit protection and judicial effectiveness in loan recovery makes credit available to SMEs.

## METHODOLOGY

This section presents methodologies adopted to analyse data on fish enterprise formal financial access. This section covers the sample size, specifications of equations and the dependent and independent variables. The study covered both inductive and deductive approaches on fish SMEs financing. Eviews version 7 is used to test levels of correlation and significance between independent and dependent variables.

### **Sample Size**

The sample was randomly selected<sup>6</sup> as there is no comprehensive data on the population of fish enterprises in The Gambia. The sample of 130 respondents is administered on fish SMEs in survey locations from urban areas of Banjul, Bakau and semi-urban and rural Tanji, Gunjur and Kartong in The Gambia from August – December 2015 due to high concentration of fishing activities in these areas. The study focused on fish industry players in the sample including fishermen, distributors, processors, exporters and traders. The structured questionnaire served as the main survey instrument coupled with one to one personal interviews conducted employing local languages to ease communication with some illiterate dealers.

### **Specification of Variables**

The main focus of this paper is on the financing sources and constraints faced by fish SMEs at different business phases - start-up and existing businesses. Data on the following variables were collected, processed and analysed as shown below.

### **Enterprise – level Variables**

The variables used in the analysis include financial access, size, age and export incidence. Eviews version 7 is used to conduct the tests to assess the correlation and levels of significance between dependent and independent variables. We dropped ownership test from the analysis due to the low incidence of foreign firms in the sample.

### **Access to Finance**

A key question was asked as to whether fish enterprises had attempted to access external finance. Enterprises that do not access external finance reported a number of constraints that limit their access ranging from high interest rates, lack of collateral and guarantors, fear of defaults, among others. Request for finance was then examined against those that were approved and the ones rejected.

Access to Finance (FA) was estimated as:

FA Approved = 1, FA Rejected = 0

### **Source of Finance**

Wide range of financing sources are identified to assess fish SMEs' sources of finance including: personal, support from family and friends, commercial bank, trade credit, microfinance, internal funds, equity, savings and cooperative credits organisations (SACCOs) and government credit schemes. These were assessed at both start-up and existing businesses.

### **Size Variable**

Size is measured by full time number of employees of fish enterprises. Due to informality of many SMEs in keeping proper records, total assets and total sales may prove difficult hence,

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<sup>6</sup> Within the definition of small and medium enterprises of employing 6-100 employees

making use of number of employees as the best proxy of size. A dummy variable was used to classify size into two categories – small and medium enterprises.

Small Enterprise ( $S_1 = 6 - 20$  employees)

Medium Enterprise ( $S_2 = 21 - 100$  employees)

#### 4.2.5 Age Variable

Age is measured as:  $A_i =$  Number of years of establishment

#### 4.2.6 Export Incidence

Fish enterprises were asked whether they participate in fish export market. Many of them do sell to local markets for consumption; some sell to processing and exporting firms while others do export directly to sub-regional and European markets

Export Incidence (EI) was estimated as:

(EI) 1 = Yes, (EI) 0 = No

#### Specifications of Statistical equations

The section introduced methodologies and data in identifying the financing sources, types and funding structures and economic performance of fish SMEs in The Gambia. Data is analysed using logistic regression to assess the level of correlation and levels of significance of the dependent and independent variables. First, we examine the influence of size on access to finance with Age as a control variable. The second exercise examines size, firm Age and financial access of the fish firms on export incidence (EI) as shown in the following logistic equations.

#### Specification of Equations:

Logit:  $FA = C + \beta_1 \text{Size} + \beta_2 \text{EnterpriseAge} + \text{Industry\_Actors} + \mu$  (1)

Logit:  $EI = C + \beta_1 \text{Size} + \beta_2 \text{EnterpriseAge} + \beta_3 \text{FinAccess} + \text{Ind.}_\text{Actors} + \mu$  (2)

Industry Actors include fishermen, distributors and processors

#### DATA

The section focuses on the primary data on fishing industry showing the players captured in the sample comprising of fishermen, distributors, processors, exporters and traders as shown in Table 1. Fish small and medium enterprises form 85 (65.4%) and 45 (34.6%) across key players as shown in Table 1.

**Table 1: Types of Fish SMEs**

	<b>Small Enterprises</b>	<b>Medium Enterprises</b>
Fishermen	34 (40%)	18(40%)
Distributors	9 (10.6%)	10 (22.2%)
Processors	16 (18.8%)	10 (22.2%)
Exporters	0 (0.0%)	2 (4.4%)
Traders	26 (30.6%)	5 (11.1%)
Total	85 (100%)	45 (100%)

**Source: Author's Survey (2015)**

Fishermen form the highest proportion of the sample in both categories followed by traders and processors among small enterprise and processors and distributors under medium

enterprises. Exporters recorded the least among both small and medium enterprises due mainly to stringent quality standard requirements on fresh fish exports to EU markets.

### Financial environment

The section examines sources and constraints of finance face by fish SMEs in The Gambia. The analysis in this section is interpretative. Further analysis of the financial variables against performance is assessed in the next section.

### Sources of finance

The sources of finance are analysed at two different periods – start-up and working capital financing of existing fish enterprises showing different financing structures.

#### *Start-ups*

Fish small enterprise start-up financing sources are dominated by personal and family funding with 74.1% mainly among small fish enterprises. However, informal financing declined significantly for medium enterprises due mainly to more visibility, increase asset size and formality. Government credit schemes financing is lower among small enterprises relative to medium enterprises as many small enterprises are not registered with the authorities. Bank financing was the least among small enterprises due probably to high asymmetric information, collateral constraints and reputation at start-up as highlighted in the literature.

Government project financing of fish SMEs in collaboration with international development agencies such as The African Development Bank (AfDB), International Fund for Agricultural Development (IFAD), UNIDO and The Food and Agriculture Organisation (FAO) are prominent at start-up financing but targeted largely medium enterprises. Many small enterprises rely mainly on personal, family and trade credit financing at start-up compared with medium enterprises on various financing sources - bank, microfinance, SACCOs and government financing as shown in Table 2. The funds managed by donor projects are retailed to fish SMEs through financial institutions licensed by The Central Bank of The Gambia.

**Table 2: Start-up sources of finance of fish SMES in The Gambia, 2015**

	Small Enterprises	Medium Enterprises
Personal	46 (54.1%)	7 (12.7%)
Family	17 (20%)	0 (0%)
Bank	0 (0%)	3 (5.5%)
Trade credit	9 (10.6%)	10 (18.2%)
Microfinance	0 (0%)	14 (25.5%)
Equity	1 (1.2%)	5 (9.1%)
SACCOs	7 (8.2%)	6 (10.9%)
Government credit schemes	5 (5.9%)	10 (18.2%)
Total	85 (100%)	55 (100%)

**Source: Author's Survey (2015)**

#### *Working Capital Financing*

Table 3 shows working capital financing sources with formal financing skewed away from informal personal and family financing sources to more formal external financing. Informal financing declined from 74.1% informal financing sources to 33.8% at working capital category. Formal financing became prominent at working capital financing associated with more visibility, track record and accumulation of collateralised assets. It is interesting to note that government schemes financing has reduced from 18.2% at start-up to just 13.6% at working capital among medium enterprises suggesting that more of government fish SME

financing target enterprises at start-up. It also declined among small enterprise working capital financing at 4.6% from 5.9% at start-up. However, external financing is still a problem in the fisheries industry with many small enterprises opting for retained earnings and informal credits due to difficulties of accessing formal financial credits in line with the works of Djankov et al (2007); Bigsten et al (2003), Chittenden et al (1996; Fafchamps et al, 1994, 1995) .

**Table 3: Working capital financing sources of fish SMES**

	<b>Small Enterprises</b>	<b>Medium Enterprises</b>
Personal	28 (32.6%)	0 (0.0%)
Family	1 (1.2%)	0 (0.0%)
Bank	0 (0.0%)	10 (22.7%)
Trade credit	9 (10.5%)	0 (0.0%)
Microfinance	3 (3.5%)	16 (36.4%)
Internal funds	39 (45.3%)	2 (4.5%)
SACCOs	2 (2.3%)	10 (22.7%)
Government credit schemes	4 (4.6%)	6 (13.6%)
<b>Total</b>	<b>86 (100%)</b>	<b>44 (100%)</b>

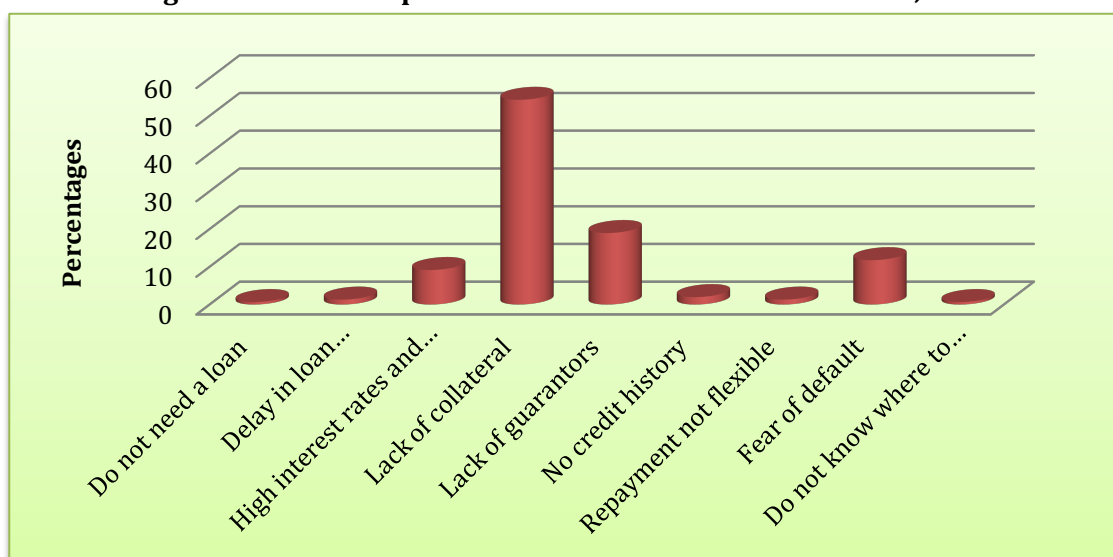
**Source: Author's Survey (2015)**

The findings show that external financing is bias against smaller and younger enterprises with larger and older firms being prominent in bank and microfinance lending as corroborated in SME financing literature(Rocca et al, 2009; Michaelas et al, 1999; Beck, 2006; fafchamps et al 1995; Daniel 1994; Bigsten et al 2003).

### **Financing Constraints**

Figure 4 shows financing constraints of fish SMEs in The Gambia. From the sample of 130 respondents, 59.2% reported access to formal external finance difficulties. It is noted that financing constraints existed only among small fish enterprises with medium enterprises accessing one form of external financing or the other.

**Figure 4: Fish Enterprises Constraints To Financial Access, 2015**



**Source: Author's Survey (2015)**

Figure 4 show constraints in accessing external finance, prominent among the obstacles are lack of collateral, lack of guarantors, fear of loan default and high loan interest. Lack of



collateral constitutes the highest at 55.8% followed by lack of guarantors (14.3%), fear of default (14.28%) and high interest charges (9.1%).

### STATISTICAL RELATIONSHIPS

This section attempts to establish analytically the relationship between dependent variables of financial access and export incidence with host of independent variables. First, we examine with relationship between financial access and size with enterprise age as control variable. Second, we examine enterprise age, size and financial access on export incidence of fish enterprises.

#### Financial Access, Enterprise Size and Age

In this section we examine the relationship between financial access and enterprise size with firm Age as control variable. The model fit (LR-stats) for the Logit estimation is positive and significant at 1%. The relationship between financial access and enterprise size is also positive and significant at 1% suggesting that size is relevant in accessing formal external finance in the fisheries industry in The Gambia.

**Table 4: Access to Finance and Firm Size, Age**

Logit: $\text{FinAccess} = C + \beta_1 \text{Size} + \beta_2 \text{Age} + \text{Industry\_Actors} + \mu$			
	<b>Coefficient</b>	<b>Std Error</b>	<b>Z</b>
Constant	-4.3204***	0.5163	-5.0315
Size_EM	0.3680***	0.0724	5.0808
Age	0.235**	0.045	1.995
Fishermen			
Distributors			
Processors			
LR- Stats	104.7899***		
N	130		

**Source: Author's Survey 2011. Note \*\*\* and \* refer to statistical significance at 1% and 5%**

Enterprise Age also reported a positive and significant relationship with financial access suggesting that enterprise finance grows with age in line with the literature (see Rocca et al, 2009, 2011; Michaelas et al, 1999; Berger and Udell, 1998, 2006). The results show that the larger the enterprise, the greater the probability of accessing formal external financial credit. Despite government credit schemes of providing special assistance to fish SMEs, small-size and young enterprises continue to face constraints in accessing external financial debt.

#### Export Incidence and Financial Access

The model fit of logit regression show export incidence and financial access statistically positive and significant suggesting access to formal finance matters in participating in export market.

**Table 5: Export Incidence and Firm Age, Size and Financial Access**

$$\text{Logit EI} = C + \beta_1\text{Size} + \beta_2\text{FirmAge} + \beta_3\text{FinAccess} + \mu$$

	<b>Coefficient</b>	<b>Standard Error</b>	<b>Z Score</b>
C	-1.374***	0.3688	-5.2318
Enterprise_Age	0.027*	0.0044	1.8363
Size_EM	0.088***	0.0354	4.9586
FinAccess	0.1897***	0.7643	2.8053
Fishermen			
Distributors			
Processors			
LR Statistics	102.7815***		
N	130		

**Source: Author's survey (2011). Note \*\*\* and \* refer to statistical significance at 1% and 10%**

Fish being perishable agricultural commodity requires greater financing possibilities in terms of maintaining fish quality, sanitary conditions, acquire equipments and plants at factory level. Enterprise age and size also reported positive and significant relationship to export incidence manifesting size and age matter in fish export market participation. Those that cannot export directly sell to local markets and processing and exporting enterprises to supplement their export tonnage target for overseas markets.

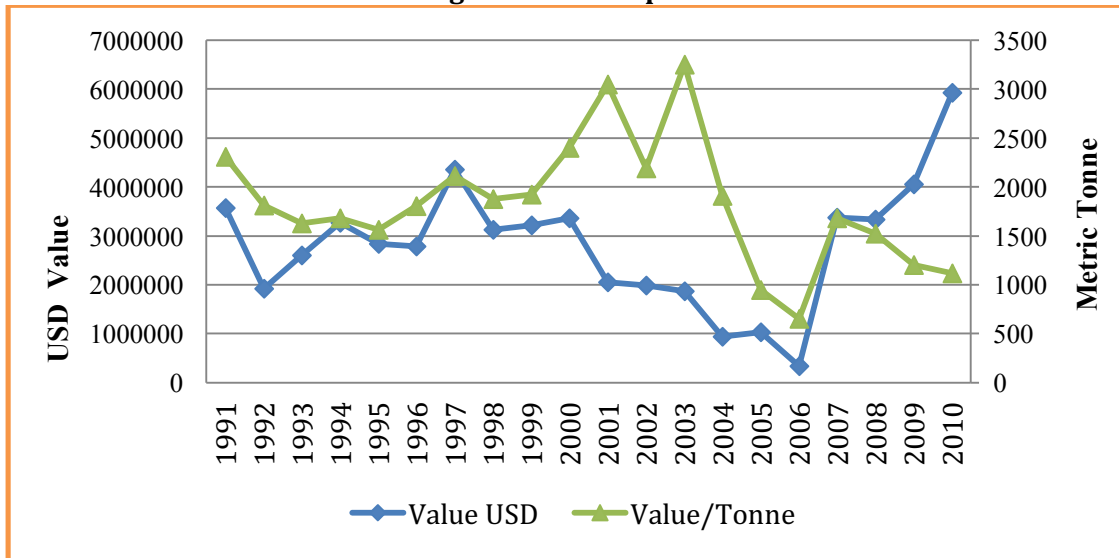
From Table 5, the relationship between Export Incidence and Financial Access is statistically positive and significant meaning participating in export market depends on fish enterprises' access to external finance. The Gambia's fisheries sector is dominated by artisanal fisheries with very few industrial enterprises coupled with the lacking vital public support, capabilities at enterprise level constrain the industry's participation in export market. With these weaknesses, age, size and financial access undoubtedly become statistically positive and significant relationship with export incidence.

### IMPACT OF FISH CATCHES AND EXPORTS

Figure 3 shows the value dropping consistently from 1997 through to 2006 before increasing to 2010 associated with targeting fish pieces with higher value prices in global markets and difficulties in meeting overseas sanitary and quality standards. The catches also show similar inconsistent trend due mainly to the dominant artisanal fisheries in the sector with considerable weakness to capture fish in large quantities and the capabilities of exporting to sophisticated markets. The lack of finance and institutional capabilities have limited fish enterprises productivity in terms of fish production and exports as shown in Figure 5.

Fish export is the second largest agricultural export commodity after groundnuts constituting 15% of merchandise export earnings (Central Bank of The Gambia, 2011). Fish exports were high at USD4.36 million in 2000 dropping considerably thereafter through to its lowest of USD0.33 million in 2006 due mainly to weak export volumes, explained by fish exporting enterprises targeting high valued fish in overseas markets. It rose again from USD3.37 million in 2007 through to USD5.93 million in 2010.

Figure 5: Fish Exports



Source: The Gambia Bureau of Statistics, (2011), Department of Fisheries, (2011)

### CONCLUSION

We examined enterprise financing in the fisheries industry of The Gambia with empirical data. The results show that despite government support, enterprise size matters in access to external financial credit. Small fish enterprises are mainly financed by microfinance, SACCOs, government projects, personal and family finances with exclusively marginal financing from commercial banks due mainly to information asymmetries and collateral issues. The findings manifest small enterprise financing constraints reflecting a positive correlation between access to finance and enterprise size. With acute financing constraints, many fish SMEs do conveniently access trade credit (see Fafchamps 1994, 1995; Bigsten et al, 2003; Djankov et al, 2007; Mead and Liedholm, 1998), leasing of equipments and support from overseas importers in pre-financing arrangements.

Due mainly to high risk profile of small enterprises and by extension private sector coupled with adverse business environment, asymmetric information and state of property rights protection, public sector tend to dominate formal bank financing. With agricultural sector face with high risk, formal bank financing remains quite low at its highest of 4.1% of total private sector financing in The Gambia despite being the food basket, majority share of jobs and its export potentials. The business infrastructural constraints go to undermine fish SMEs access to external finance, hence limit their performance, growth and contributions to the economies. To address this situation requires a medium to long-term measures. However, in the short-run, the banking sector must strategise using innovative lending methodologies to finance this vital sector in the presence of adverse business environment.

The role of government in fish SME financial access is crucial. However, despite its interventions with credit schemes targeted at fish SMEs, this has not reduce their acute lack of external finance as majority of fish enterprises reported access to external finance as a major obstacle. Therefore size matters in external financial access.

Despite its importance in the economy in terms of employment, household income for fishermen and processors, export revenue, rates and taxes, formal financing to the fisheries industry is miniscule retarding growth and development (*paradox*). Efforts to address constraints in fish enterprise financial access, build capabilities, acquire right equipments, upward and downward linkages in the sector are urgently required if the industry is to contribute immensely to the economy of The Gambia.

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## How is the United States's international HIV prevention programme evolving?

Christine Evain

### ABSTRACT

The President's Emergency Plan For AIDS Relief (PEPFAR) is a 1998 United States governmental initiative to prevent the spread of AIDS, primarily in Africa. The PEPFAR program has provided antiretroviral treatment to over 11 million HIV-infected people in Africa and it has been called the largest health initiative ever initiated by one country to address a disease, with a budget exceeding \$70 billion since its creation. While PEPFAR has been praised for having saved millions of lives, diminishing media attention to AIDS as well as potential policy changes are likely to negatively impact the progress of the organization in the future. Thus a number of questions arise: How has PEPFAR's policy been driven and assessed so far? What are the key factors which have led to PEPFAR's success? How does it measure its own efficiency? How does PEPFAR compare to other international organizations? What are its links with local organizations? How does it relate to its partners? The aim of this paper is to consider these important questions and to map out the shifting balance of HIV prevention in the next decade. This study is based on the institutional documentation, press articles as well as on a series of interviews conducted with local members of HIV/AIDS Disease Control and Prevention programmes in Africa.

**Key words:** President's Emergency Plan For AIDS Relief (PEPFAR), AIDS Relief, United States, Foreign aid, HIV prevention, Uganda

### INTRODUCTION

The President's Emergency Plan For AIDS Relief, known as PEPFAR, is a United States governmental initiative to prevent the spread of AIDS, primarily in Africa. The initiative for this programme dates back to 1998, when presidential candidate George W. Bush, in collaboration with Condoleezza Rice, chose to focus on Africa and foster public sympathy which resulted in the creation of PEPFAR (Varmus 2013).

Today, the PEPFAR documentation and website show that the program has provided antiretroviral treatment to over 11 million HIV-infected people in Africa. HIV testing and counselling (HTC) is available in resource-limited settings in many African countries and has been beneficial to millions people. PEPFAR has been called the largest health initiative ever initiated by one country to address a disease, with a budget exceeding \$70 billion since its official creation in 2003.

While PEPFAR has been praised for having saved an estimated 11 million lives, diminishing media attention to AIDS as well as potential policy changes are likely to negatively impact the progress of the organization in the future. Furthermore, some critics contend that foreign aid is generally inefficient and are therefore in favour of an American withdrawal (Alcorn 2015).

In this context of change a number of questions arise: How has PEPFAR's policy been driven and assessed so far? What are the key factors which have led to PEPFAR's success? How does it measure its own efficiency? How does PEPFAR compare to other international organizations? What are its links with local organizations? How does it relate to its partners? What type of

local initiatives could replace PEPFAR in the future? Are these local institutions capable of playing the same role as PEPFAR? What is PEPFAR likely to offer in the present presidential context? The aim of this paper is to consider these important questions and to map out the shifting balance of HIV prevention in the next decade.

The press largely report cries of alarm, for example the much-quoted Bill Frist, former Republican Senate leader, known for his famous urgent plea for continuing the PEPFAR program. The U.S. Global AIDS Coordinator and U.S. Special Representative for Global Health Diplomacy, Ambassador Birx, has never missed an opportunity to defend the programme publicly. This collaborative advocacy in favour of PEPFAR has not been in vain, as we will show in the present article.

Our study is based on the documentation previously quoted as well as on a series of interviews conducted with local members of HIV/AIDS Disease Control and Prevention programmes in Africa.

We will first describe the programme up to the Trump election. We will look at the results of the programme and its assessment methods. We will then analyse the ambivalence of both President Trump and Trump's supporter in relation to the programme. Finally, we will explore some of the uncertainties of the future.

### **DESCRIPTION OF PEPFAR, PEPFAR RESULTS AND ASSESSMENT METHODS**

When the broad public became aware of the AIDS epidemic in the 1980s, the world was in shock. The disease was revealed to be gruesome and deadly, and there was no medical cure in sight. Famous actors, musicians, and other celebrities in the world helped to raise the public's awareness about the threat of the disease. Many Internet pages serve as a testimony to their activism: dozens of famous people who are living with AIDS or who died of AIDS, are listed online, offering hyperlinks to well-documented records and reports which include pictures, biographical information and quotes (Provost 2012, Firger 2016, Crossan 2017, Davis 2017).

It was thanks to this activism, which signed up the support of the many associations and groups coming to the defence of stigmatized communities, that the US government was spurred to take action. Campaigners stood up for the rights of the patients and for the rights of the community that were being infected. In that same decade, the scientific research community, including the famous Institut Pasteur team, gradually made headway into finding the first leads for treating the disease (Mugenyi 2012), soon followed by prominent scientists around the world (Rushton, 2015). Indeed, "activism led to an awareness", says Ambassador Mark Dybul, executive Director of "The Global Funds to Fight Aids", "And then there was scientific advance" (Tehrani, Noble 2016).

While it was Clinton who started the Clinton Foundation's Health Access Initiative (CHAI) in 2002, thus demonstrating his strong interests in improving health in the developing world, he was not the president who created PEPFAR. One may ask: why wasn't the programme launched under his presidency? The answer to that question is simple: it was only in the later years of the Clinton administration, that effective therapy against HIV came into common practice. Back then, even in advanced economies, the costs of such therapy favoured limiting efforts in poor countries to less expensive preventive measures. Furthermore, the political landscape of the time, with President Clinton in the midst of impeachment proceedings, did not favour the passage of ambitious programs that he had initiated. As a result, although Clinton did strongly support research on HIV/AIDS and even developed small exploratory programs in

three African countries, the PEPFAR plan did not come into being before 2003, under Bush's presidency.

PEPFAR was created in a moment of crisis: it had been known, since the late 1990s, that H.I.V./AIDS was the No. 4 killer worldwide, and No. 1 in Africa, but it was only in the spring of 2002, that Mr. Bush sent Mr. Thompson and the government's top AIDS expert, Dr. Anthony S. Fauci, to Africa "to try to scope out anything we could do in a humanitarian way," Dr. Fauci said. (Stolberg 2008)

The experts came back and proposed \$500 million to prevent mother-to-child transmission of the disease. The president approved the budget, Dr. Fauci said, but told them to think bigger. "He wanted to do something game-changing," Mr. Bolten said. "Something that, instead of at the margins assuaging everybody's conscience, might actually change the trajectory of this disease which, from the reports we were getting, was headed to destroy a whole continent." (Stolberg 2008)

In effect, PEPFAR's objective was to commit approximately \$15 billion from 2004 to 2008 to assist with the reduction of the HIV pandemic worldwide. The majority of the PEPFAR policy and funding focused on 12 countries in sub-Saharan Africa: Botswana, Cote d'Ivoire, Ethiopia, Kenya, Mozambique, Namibia, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zambia. (Chin and al. 2015)

The press expressed surprise at a Republican president making such a decision<sup>1</sup>: "The story of how a conservative Republican president became a crusader against global AIDS is an unlikely one." (Stolberg 2008). However, it is important to move beyond bipartisan commentaries and to simply stress that, ever since its creation in 2003, PEPFAR has received strong support from American presidents (McGreal 2008) through different administrations, including, as stated on the PEPFAR website "two reauthorizations with significant majorities." It is thanks to this bipartisan support that the United States became, as stated on the PEPFAR website "the world's leader in responding to the global HIV/AIDS crisis."

According to Bill Frist<sup>2</sup>, the programme aims "to bring reliable, proven measures like antiretroviral drugs, counselling and prevention services to underserved communities around the world." (Varmus 2013) Year after year, the PEPFAR reports have demonstrated the efficiency of the programme and the need for continued efforts.

### **PEPFAR RESULTS**

The impact of the programme is presented using the World Health Organization (WHO) health system six building blocks<sup>3</sup>. The reports show that the PEPFAR program has indeed improved the delivery of prevention and care services for people living with HIV/AIDS (PLWHA). The most important measure of PEPFAR's success is the availability of free antiretroviral therapy (ART) in focus countries for people living with HIV/AIDS. ART figures only become meaningful when related to an understanding of the spreading of the disease in focus countries. PEPFAR's role is to gain insight into such questions.

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<sup>1</sup> Much of the credit can be given to Condoleezza Rice whose help and guidance were invaluable.

<sup>2</sup> Bill Frist is a former Republican Senate majority leader from Tennessee, is the chairman of the executive board of the health care investment firm Cressey & Company, a senior fellow at the Bipartisan Policy Center and a co-chairman of the center's work on health innovation.

<sup>3</sup> These include service delivery, health workforce, health information, medical products, vaccines and technologies, financing and governance.



Analyzing PEPFAR's results also implies assessing the programme's impact on increasing political awareness of public health by governments and civil society. Does the programme actually raise the priority given to public health issues and does it lead government to scale up its response to HIV/AIDS?

The scaled-up program has direct benefits on the health workforce by preserving HIV-infected health personnel's lives so that they can live longer – as the PEPFAR report figures indicate – and that implies they can return to their jobs, which inevitably enhances the country's workforce. Moreover, the training and retraining in PEPFAR HIV/AIDS programmes have improved both the morale and the skills of the health workforce. Considerable resources have been brought into focus countries on a scaled-up HIV/AIDS treatment by PEPFAR.

The results of the programme are easily accessible, in an extensive report, on the PEPFAR website. They are also presented at international conferences on AIDS mainly by Ambassador Deborah Birx, who is the U.S. Global AIDS Coordinator and U.S. Special Representative for Global Health Diplomacy.

To summarize PEPFAR'S main accomplishments, in a few bullet points:

- When PEPFAR began, only 50,000 people in sub-Saharan Africa were receiving antiretroviral treatment. That number is now 11.5 million, which represents a 50 percent increase since just 2014. As a result, one of the most dramatic aspects of PEPFAR's success is the effect on life expectancy: "After the arrival of the HIV/AIDS epidemic in the 1980s and prior to the initiation of PEPFAR in the early 2000s, life expectancies had been falling precipitously in African countries with a high prevalence of HIV infection. But the number of deaths in such countries fell steeply after the start of PEPFAR. Effects like these explain why PEPFAR has such high visibility in many African countries and has inspired so much gratitude toward the United States. Moreover, unlike previous programs that may have had a paternalistic taint, PEPFAR also achieved solid bilateral partnerships, thereby building and strengthening U.S. ties in that region." (Varmus 2013)
- Nearly 2 million babies have been born free of HIV who otherwise would have been infected. (PEPFAR website)
- Among the secondary victims of AIDS are the orphans of those who died in the epidemic. PEPFAR provides care and support for 6.2 million orphans. (PEPFAR website)
- More than 74.3 million people, including more than 11.5 million pregnant women, received HIV testing and counselling through PEPFAR. (PEPFAR website)
- PEPFAR supports training for nearly 220,000 new health care workers. In addition to responding to AIDS-related issues, this training has enhanced health systems' responsiveness to outbreaks of Ebola, Cholera, and other diseases. (PEPFAR website)

According to the PEPFAR report, entitled, "Strategy for Accelerating HIV/AIDS Epidemic Control (2017-2020)", recent data from PEPFAR's Population-based HIV Impact Assessments (PHIAs), show that "five high-burdened African countries are approaching control of their HIV/AIDS epidemics, demonstrating the remarkable impact of the U.S. government's efforts together with partner countries. With support from the U.S. government, seven additional high-burdened countries will complete PHIAs on a rolling basis through 2017-2019, providing the latest data to chart and validate their progress toward reaching epidemic control by 2020." (PEPFAR report 2017)

These results have been highlighted by PEPFAR (mainly through dozens of reports presented to Congress and posted on their website) and echoed in the American press (Harris 2017, Lee

2017, Leonhardt 2017, Levey 2017, Russell 2017, Saldinger 2017, Shelbourne 2017, etc.) as well as the international press which is concerned about potential budget cuts (Kim and Whang 2017, Mbanje 2017a and b, Seib 2017, etc.<sup>4</sup>). Both Birx and the press underline that the programme has been able to expand, without a significant change in its budget, because it leverages the latest scientific innovations and reductions in drug prices: "PEPFAR, with a \$6.8 billion annual budget covering 31 countries, has played a key role in controlling HIV since 2003. But with stagnant funding, more efficient use of resources is required, Birx said. 'Funding has plateaued and the real challenge is how do we apply the tools that have been given to us through the scientific method and how do we do that in a budget-neutral environment.' It's important, she suggested, to focus on the 'right things, right places, right now.'" (Kristiansen 2016)

Science & Diplomacy point out that the program has been "enlarged (for instance, to include some research on implementation of medical assistance), the roster of PEPFAR countries has grown (to include eighty countries, forty-two of which are major beneficiaries, compared with the original fifteen), and spending plans have not been exceeded." (Varmus 2013)

It is too complex, in this article, to describe the ways in which PEPFAR's missions have been carried out in collaboration with US and local agencies, academic institutions, and contractors. Suffice to say that the spending patterns can be readily summarized as follows: "about 55 percent of the funds have been used for treatment (delivery of antiretroviral medications and the detection and monitoring of HIV infection), about 35 percent for prevention (e.g., provision of information and condoms), and about 10 percent for other kinds of care (such as antibiotics and orphanage support)." (Varmus 2013)

The very structure of PEPFAR's organization aims at maximum efficiency and I will focus on giving three of the reasons which are crucial to this efficiency:

- PEPFAR operates within the American Embassy framework, which is the best way of ensuring that the programme doesn't fall prey to practices of corruption which are the burden of many African countries.
- PEPFAR organizational structure includes four key branches: prevention, treatment, care and statistics. This organizational structure is repeated in all PEPFAR countries, and professional methods and tools are shared between the different PEPFAR location to maximize efficiency and impact.
- The programme is well up to speed on scientific innovations and seeks reductions in drug prices. The latest innovation is the introduction of a vaccine which is now being tested (Doshi and al. 2017, Nyaoke and al 2017, O'connor 2017, Opeyemi 2017 Senthilingam 2017a and b).

Finally, let us stress the importance of the high standards of PEPFAR employees as well as the efforts put in to create a harmonious collaboration between American and local employees. Both share the same goals, dedication and public health service values – beyond any cultural and professional differences.

### **CRITICISM OF PEPFAR**

When examining academic papers which analyse PEPFAR's results, one comes across harsh, and unfair criticism of the programme (Chin and al. 2015). While it is generally acknowledged

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<sup>4</sup>This concern is not new. For a number of years, international aid groups have expressed fears that the international economic downturn threatens AIDS funding (Bryson 2009, Barton-Knott 2016, etc.).

that PEPFAR has underlined the negative role of stigma in fueling the HIV epidemic, several researchers claim that the programme has, according to Hagopian et al. “so far, missed opportunities to explicitly address the role of the criminalization of homosexuality in feeding stigmatizing attitudes” (Hagopian et al. 2017). Their analysis concludes, however, that “mechanisms like PEPFAR Partnership Framework agreements could be ideal vehicles to call for removal of anti-homosexuality legislation”. Similarly, Kim and Whang focus on the effects of the programme on the economies and domestic politics of focus countries and find that their “results show that PEPFAR did improve economic conditions in focus countries but had a limited impact on political conditions, that is, on democracy and human rights.” (Kim, Whang 2017).

All beneficiary country reports and testimonies run contrary to such findings. While, in the past, PEPFAR has indeed been criticized for directing a portion of its budget to abstinence education (Rosenthal 2008)<sup>5</sup>, the programme is now clearly stating the limits of the abstinence-only approach –from *Le Monde* back in 2005, to today, all over the world (La Depeche 2017, Rabesandratana 2016, Osi 2017, Adekemi 2017, etc.)<sup>6</sup>.

As for PEPFAR’s impact on the political situation in focus countries, the question is complex. PEPFAR’s programme is a non-political one, focusing on public health issues. While these issues cannot be dissociated from social issues, Hagopian et al. are merely stating the obvious when they write: “Laws that penalize same-sex intercourse contribute to a cycle of stigma, homonegativity and discrimination. In many African nations, laws criminalizing homosexuality may be fueling the epidemic, as they dissuade key populations from seeking treatment and health care providers from offering it.” (Hagopian et al. 2017). PEPFAR clearly does not miss “opportunities to explicitly address the role of the criminalization of homosexuality in feeding stigmatizing attitudes” (Hagopian et al.) and evidence of such public address is given in the many reports, conferences, and interview videos of the U.S. Global AIDS Coordinator Ambassador Deborah Birx.

The impact of PEPFAR’s work is visible: “PEPFAR has helped stabilize much of Africa” claims Frist (2017). In a 2015 extensive report for the Bipartisan Policy Center, entitled “The Case for Strategy Health Diplomacy: A Study of PEPFAR”, Frist and Senate colleague Tom Daschle report the findings of researchers who compared countries that received PEPFAR assistance and, as a control, similar countries that did not. The results were dramatic: “From 2004 to 2013, political instability and violence fell by 40 percent in countries that received PEPFAR

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<sup>5</sup> A study was carried out to look at trends in behaviour prior to the introduction of PEPFAR funding of the abstinence-related measures: no significant change was found in PEPFAR countries relative to non-PEPFAR countries over time for any of the abstinence measures: “Nearly US\$1.3 billion spent on US-funded programmes to promote abstinence and faithfulness in sub-Saharan Africa had no significant impact on sexual behaviour in 14 countries in sub-Saharan Africa, an analysis of sexual behaviour data has shown. [...] The researchers looked at trends in sexual behaviour derived from national Demographic and Health Surveys in 14 PEPFAR focus countries before and after the beginning of PEPFAR funding in 2004, and compared these to a counterfactual: trends in eight other African countries – largely in West Africa – where PEPFAR funding was not determining the content of prevention campaigns.” (Alcorn, 2015) As for antiabortion policies, the Trump administration claims they need to be expanded in order to have an impact on the global HIV/AIDS epidemic although previous research runs contrary to such claims (McKay 2017). Meanwhile, lifetime risk of HIV Diagnosis continues to rise in the United States: “If current HIV diagnoses rates persist, about 1 in 2 black men who have sex with men (MSM) and 1 in 4 Latino MSM in the United States will be diagnosed with HIV during their lifetime, according to a new analysis by researchers at the Centers for Disease Control and Prevention (CDC)” (Villarosa 2017)

<sup>6</sup> It is clearly still problematic to steer away from the abstinence discourse in several African countries for religious reason (Tocco 2017). The anti-gay culture only creates further difficulties (Sieff 2016).

assistance versus just 3 percent in similar countries that did not. Measurements of the strength of the rule of law increased 31 percent versus just 7 percent.

And it has paid dividends for America's image abroad. In 2007, just as PEPFAR was taking hold, both PEPFAR and non-PEPFAR countries in Africa gave the United States approval ratings of about 40 percent, but by 2011 the rating in PEPFAR countries had risen to about 80 percent, while in non-PEPFAR nations it had risen only to around 50 percent." (Frist 2017)

Furthermore, Deborah Birx stresses that the success of the programme depends largely on the success of the collaboration with local authorities. This implies a collaboration and a quality of communication which branch directors at PEPFAR greatly value and promote.

### **STRATEGIC PLANNING AND ASSESSMENT METHODS**

The assessment methods of the programme are not only essential to evaluate the success of the programme but they are also essential to the very success of the programme: the data informs strategic planning and operational development and therefore the data is where everything begins.

Assessment methods were put into place and built into the legislation, since the inception of the programme: "Bush asked for accountability in foreign assistance programs, and regular assessments by the Institute of Medicine (IOM)" (Varmus 2013). PEPFAR's annual reports are organized thematically or by country<sup>7</sup>. They not only map out the achievements, but also highlight the milestones on the road ahead.

Building on their tremendous progress, PEPFAR is now "poised to accelerate progress toward reaching epidemic control, something that was unimaginable just a decade ago. (PEPFAR website)

The PEPFAR Strategy for Accelerating HIV/AIDS Epidemic Control (2017-2020) ("Epidemic Control Strategy") focuses specifically on 13 priority, high-burdened countries. In those countries, the number of new infections each year is still alarmingly high.

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<sup>7</sup> These reports include: PEPFAR Country/Regional Operational Plans (going back to 2007), for over 30 countries; "Annual Reports to Congress", the PEPFAR Dashboards, messages from PEPFAR's Leadership and other reports such as:

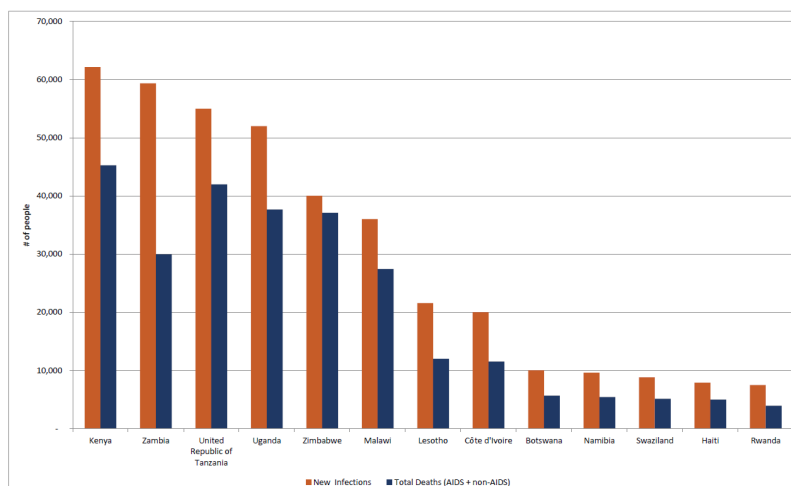
"PEPFAR 3.0 – Controlling the Epidemic: Delivering on the Promise of an AIDS-free Generation" "Accelerating Children's HIV/AIDS Treatment Report",

"Building on Firm Foundations: The 2015 Consultation on Strengthening Partnerships",

"Between Faith-based Organizations and PEPFAR to Build Capacity for Sustained Responses to HIV/AIDS",

"The PEPFAR Consultation on the Role of Faith-based Organizations in Sustaining Community and Country", "Leadership in the Response to HIV/AIDS(2012)". (PEPFAR website).

Comparing annual new HIV infections and annual total deaths among HIV-positive individuals in 13 high-burden countries



Source: PEPFAR Strategy for Accelerating HIV/AIDS Epidemic Control (2017-2020)

Reducing the number of new infections will be accomplished in partnership with and through attainment of the UNAIDS 90-90-90 framework. This framework is built on the well-known fact that every epidemic has a tipping point. For H.I.V. there are 3 targets that must be met for that tipping point to be reached: that 90 percent of people with the virus are aware they have the virus, that 90 percent of that group are receiving treatment and that 90 percent of those taking antiretroviral medicine control the virus to the point where it cannot be transmitted. Such a strategy is the goal of UNAIDS, which hopes to achieve the 90-90-90 tipping point everywhere in Africa by 2020, which would be the death knell of the HIV/AIDS epidemic.

While this strategy is working, stubborn challenges remain. As the above graph shows, people continue to be infected, and the broad public has perhaps little knowledge of the subject because it is poorly reported in the press. A few articles have recently come to raise awareness, and the public's awareness about the subject : "Around one million still die from the virus every year and while 53% of PLWHA now have access to treatment, a significant number still do not." (Purvis 2017). These claims are supported by the figures to be found in PEPFAR reports.

At present, the global HIV community of researchers, policymakers and healthcare providers is working towards UNAids' 90-90-90 targets. PEPFAR has won the support of partner countries who are now helping to adopt and implement the World Health Organization (WHO) Guidelines for "Test and START", as well as more efficient service delivery models.

According to Varmus, the WHO guidelines will "prevent more new HIV infections, save more lives, and accelerate progress toward the UNAIDS "90-90-90" goals.

Most high-burdened countries have already eliminated mother-to-child transmission with a coverage of HIV-positive pregnant and breastfeeding women on ART of 98%, and an early mother-to-child HIV transmission rate lower than 5%. In Uganda, for example, the success of the prevention of mother-to-child transmission (PMTCT) program resulted in achieving the first and second elements of the 90-90-90 framework in the children-under-15 age group: 91% of children were diagnosed and 82% were put on treatment. In that same country, the first 90 objective has also been achieved in women, with 90% being diagnosed; of these, 79% are on treatment, making the achievement of the second 90, among women, likely by the end of 2017

One of the success factors of PEPFAR is that the programme capitalizes on the latest scientific breakthroughs and reductions in drug prices. The evolution of the medicine has been significant in the last 15 years. The treatment is now not only cheaper and more effective, but also easier to administer: it has moved from being 3 pills, 3 times a day to one pill a day. However, there are complications with the HIV virus as it continuously replicates: this means the treatment is not as effective when people come to care at a very late stage in their illness. Early detection processes include routine screening. In some heavy-burdened countries, the law has changed from opt in to opt out screening, and the objective is now to run several million tests a year (for example, 8 million tests a year in Uganda).

Regular screening is quick, unlike DNA testing which involves sending a sample to a lab and getting it back a month later. In the case of babies, when their mothers are HIV positive, they will test HIV positive as well, because they inherit their mothers' antibodies, but that does not necessarily mean they are infected. A subsequent test needs to be carried out to determine whether or not they are HIV positive. When they are 18 months old, the babies no longer carry their mothers' antibodies. Testing can be easily organized with women because almost every woman receives care during a pregnancy and most women have early pregnancies. With men, the testing coverage rate is much lower. High-burdened countries have started introducing systematic testing in prison because prisons are a good opportunity to test men. But even when such measures are introduced, it takes time before all institutions are operationally on board.

The PEPFAR prevention program includes an ambitious circumcision objective as circumcision reduces HIV contamination by 60%. In most countries, there are as many men circumcised as people in treatment.

Deborah Birx, previously mentioned. Deborah Birx is the person who determines how the Country Operational Plan (COP) needs to be carried out. She also sets the periodicity of the surveys to be conducted. A yearly survey objective is set in most PEPFAR countries – which is quite an ambitious objective given the extent of the survey. Typically, the COP involve more than 1000 facilities. For each of the facilities, specific targets are set on large spreadsheets handled by a team of statisticians.

The collaboration between local institutions and the Americans is the result of hard work in order to overcome the difficulties of having different approaches (Chidza 2017, Downie 2017). The American teams have built experience because 15 of these surveys are being done simultaneously, on a regular basis, across Africa. The local teams are good at determining the clusters – they usual have census experience recently and they know how to go about it. Challenging surveys, which typically include several million people, have been carried out in all high-burdened countries (see reports on PEPFAR website). A new sampling method has recently been introduced by CDC in order to gauge the population size and it has been tested within the sex worker community. This method is similar to the wildlife tagging methodology whereby surveyors catch a sample, tag the animals, and throw them back into their wild habitat. On the next round of sampling surveyors can estimate the population size which relates to the number of tagged animals which were caught on the second round. This method, when transferred to humans, does not involve tagging them but giving them a few objects that they will then pass around to their friends (these objects are relatively cheap, but their perceived value is high enough for the sex workers to pass them around). Although this method works quite well, it is always difficult to determine the population size of sex workers because there are different classes of sex workers which do not mix: the higher classes frown upon the lower ones. Regardless of the sample characteristics, it's important to do the tests

even when people say they are not infected. The issue is that people may not know their status and, furthermore, some people who know they are positive may self-report as negative due to stigma. Because of this inaccurate self-reporting, health information systems (EHIS), PEPFAR supports the introduction of electronic EHIS. These systems assist with patient and program management, disease surveillance, and strategic use of information for overall quality improvement. Thus Electronic EHIS are more responsive and more efficient than previous non-electronic information systems and they are central to strong health systems (Moucheraud and al. 2017)

### **FOREIGN AID PROGRAMS AND THE TRUMP ADMINISTRATION**

While Trump's electoral discourse was largely in favour of PEPFAR, the post-election discourse seeks to exploit scepticism about foreign aid. It was soon after the election that Trump had a change of heart in relation to PEPFAR. The press were quick to notice and to report back on it: a few days after Trump was sworn into office, The New York Times wrote that "the Trump transition team was asking questions about the value of humanitarian aid in general and PEPFAR in particular. For example, transition officials asked, 'Is PEPFAR worth the massive investment when there are so many security concerns in Africa?'" (Frist 2017). Ms. Muyangwa said the queries signaled "a dramatic turn in how the United States will engage with the continent." (Cooper 2017).

Scepticism about the value and effectiveness of foreign aid programmes is not new and it is often fuelled by misperceptions about the figures and the percentage of Federal expenditure that foreign aid actually accounts for. Some Americans, when asked, have imagined that foreign aid accounts for 25% of Federal expenditure, when in fact it only accounts for 1%. (Cooper 2017)

A case in point is how much the American government has spent on hunting for Mr. Kony, who, according to both Ugandans and national authorities has now completely disappeared and is no longer a threat to the country. (Okiror 2017)

Another misconception is the amount of American aid spent in Africa, in relation to other countries: In 2015, America spent far more on other critical allies: "[The budget spent on] Afghanistan (\$5.5 billion), Israel (\$3.1 billion), Iraq (\$1.8 billion) and Egypt (\$1.4 billion) (...) far exceeded the approximate \$8 billion for all of sub-Saharan Africa. (Cooper 2017)

There is no doubt that there is genuine concern among many Americans, that foreign aid budgets are too high, and that money is often squandered, and that is precisely what Trump is capitalizing on when he announces budget cuts.

Another criticism, which is sometimes juxtaposed against the exaggerated drain on the national budget of foreign aid programmes, is that these programmes are merely sticking plasters and that they don't actually address the systemic and root causes of many of the problems in these countries, which relate to a lack of resources and infrastructure, poor and corrupt government and social stigma against the illness that inhibit progress. In other words, foreign aid is said to be wasted, ill-spent: it fails to find its way to those who need it or for whom it was intended, but rather is siphoned-off for corrupt purposes and in the worst cases, falls into the hands of warlords and corrupt regimes that use the money for personal advantage and/or to buy armaments, rather than food and medication.

In many African countries, corruption is both endemic and routine. It is a well-known fact that some foreign aid agencies are party to that day-to-day corruption, in order to get things done.

For example, when goods are shipped to African countries in need, if shipment is not handled by an Embassy, they are likely to fall into the hands of corrupt customs officers, and bribes need to be paid for the goods to be released to the NGO they are intended for.

Finally, the American people's ambivalence is also motivated by conflicting questions: on the one hand, Americans want to defend their economic interests in Africa, on the other hand, they are worried about spending too much public money on humanitarian projects in Africa.

Cooper echoes such economic concerns: "How does U.S. business compete with other nations in Africa? Are we losing out to the Chinese?" (Cooper 2017) However, concerns about the programme being a public expenditure that the American economy cannot afford leads to queries about humanitarian assistance money. "With so much corruption in Africa, how much of our funding is stolen? Why should we spend these funds on Africa when we are suffering here in the U.S.?" (Cooper 2017)

The response to that argument is that the concern of America and Western countries has never been purely altruistic in relation to Africa. The initiative and desire to slow and stop the spread of HIV/AIDS was, and still is partly, driven by a desire to stop the spread of the disease in other parts of the world and not least, in the United States. It should be noted that Trump hailed and commended the work of PEPFAR during his presidential campaign, but is now taking a different stance in office. Journalists express their frustration with Trump's approach. Shingirai Huni in the Herald Zimbabwe entreats the world to stop "this village bully" (in other words, Trump) who uses health interventions to "guarantee America of a strong market for its finished goods and services" (Huni 2017). Nicholas Kristof exclaims: "it's maddening to see world leaders posturing in the spotlight and patting themselves on the back while doing so little to tackle humanitarian crises that they themselves have helped create" (Kristof 2017). Kristof's point is that poverty has fuelled AIDS in Africa, and most Western Nations – through slave trade or colonization – have fuelled that very poverty which greatly contributed to the spread of the virus. Therefore, both America and Western countries should consider AIDS not just as an African problem but as a world problem, not only in its causes, but also in its consequences.

#### **ADVOCACY FOR THE PROGRAM AND THE TRUMP ADMINISTRATION'S AMBIVALENT ATTITUDE TO THE PROGRAMME**

In May 2017, journalists covering the debate issued out a warning cry: "If Trump gets his way, development aid would be cut by nearly one-third. This is a severe blow, but not surprising, given how slow the Trump team was to engage with USAID, the main government aid body" (Anderson 2017). During the presidential transition, Trump's repeated election statements were that he would "stop sending foreign aid to countries that hate us" and instead invest at home in schools and infrastructure. (Anderson 2017) More virulent comments included: "Trump "simply Does Not Care" about HIV/AIDS" (Wang 2017) or Trump Budget Would Set Back Global AIDS Fight Just When We're on Track to Win It (Warren 2017).

Perhaps PEPFAR was victim of its own success, as the depth of investment and organization in sub-Saharan Africa – where rates of HIV infection were the highest in the world and were increasing at an exponentially faster rate than anywhere else in the world – had enabled PEPFAR to come pretty close to halting the spread of the disease and thus many imagined, the threat was now over. This perception of a 'job done' and the grim austerity measures of a post-financial crisis world, did prompt Trump's supporters to argue that it is right and legitimate to rein in expenditure on such costly foreign aid programmes.



However, as the most recent chapter in this saga has shown, it is not the President that has the final say, but Congress which decides on the budget. Strong advocacy in favour of maintaining PEPFAR's budget paved the way for the Congressional decision in Autumn 2017: "Many politicians and global actors have opposed the proposed cuts. More than 100 retired admirals and generals penned an open letter arguing that aid and diplomacy are essential to national security." (Anderson 2017). These advocates demonstrated that the budget US President Donald Trump had submitted to Congress would throw PEPFAR's progress into reverse. As Rosenberg underlines, Trump "proposed a cut of \$2.5 billion to America's global health budget – \$1bn less for PEPFAR and \$ 225 million less for the Global Fund. Millions of people would have lost their treatment, and the epidemic would have once again picked up steam". (Rosenberg 2017a) As a result, both the House and Senate appropriations committees ignored Trump's budget cuts, and approved funding at the same level as the previous year. It must be noted, however, that "Senator Patrick Leahy, a Democrat from Vermont, proposed adding \$500m, but it was voted out, along party lines." (Rosenberg 2017a)

However, while Congress votes on budgets, the Trump administration still shapes how aid is delivered and therefore advocates of the programme are still following the developments of this affair closely. Journalists reporting back have warned "It is at least possible that the Trump administration could experiment with new ideas like cash transfers – the direct payment of money to a beneficiary – an approach that is supposed to 'bypass corrupt officials and crafty middlemen' and get money straight to individuals. Recent studies find that cash-based programmes perform better than other kinds of aid." (Anderson 2017) However cash transfers are heavily criticized within the aid community, and are said to generate new forms of inefficiency and waste. Meanwhile proponents of Trump's measures claim that "the skeptics are just worried that a shift to cash would leave aid experts without work to do." (Anderson 2017)

Although the issue of PEPFAR's funding needs to be followed closely, the programme's advocates have made their point which has been heard by Congress. If funding had been withdrawn the projections show that there would have been an immediate and exponential spread of the disease, which would not only be catastrophic in terms of infection and mortality, but would then imply an even greater investment in the future to bring the disease back under control again. In its new report, Secretary of State Rex W. Tillerson speaks on behalf of the Trump administration to say announce the new PEPFAR Strategy for the next three years (2017-2020):

*"This strategy includes investing in more than 50 countries with three concrete goals in mind. First, to maintain life-saving treatment for those we currently support, while making essential services like testing linked to treatment more accessible. Second, to provide even more services for orphans and vulnerable children – those who are immediately and permanently affected when a parent or caretaker is lost to this disease. Finally, to accelerate progress toward controlling the pandemic in a subset of 13 countries, which represent the most vulnerable communities to HIV/AIDS and have the potential to achieve control by 2020." (PEPFAR website)*

It is perhaps a little ironic to hear the Trump Administration say that it remains "deeply committed to the global HIV/AIDS response and to demonstrating clear outcomes and impact for every U.S. dollar spent", after having proposed budget cuts, and lobbying communities therefore remain cautious. However, the main point is that the Trump administration is now united in delivering an official statement: "We want to look back together and recognize that it was here, at this point in time, that our accelerated focus led to a world free of HIV/AIDS. We are proud to partner with many others in this endeavor. Our support – and our commitment –

are unwavering as we work together to control and ultimately end this pandemic, once and for all." (Lavers 2017).

### CONCLUSION

As the data in this article shows, we have not reached the end of the AIDS epidemic in both Africa and, potentially, throughout the world. PEPFAR's goal has always been to shift the financial responsibilities from the U.S. to the host countries in need, and close collaboration with host countries' institutions were put into place. However, their financial autonomy to fight the disease has, in practice, been hard to achieve. It has been equally difficult to find other sources of funding internationally, but progress has been made.

The moral and political case for PEPFAR has always been strong, ever since the creation of the programme by President Bush. Both Bush and Obama have managed to rally bipartisan support for the program's funding: in spite of the American public's sometimes ambivalent support of international aid, the press has repeatedly pleaded in favour of the program, and helped raise awareness in favour of the continuation of PEPFAR. Shortly after his election, President Trump pointed both to an expanding list of beneficiaries and to the present US budgetary crises, in order to justify significant budget cuts. Thus, concern about PEPFAR's future – its dimensions, governance, funding, and activities – has been broadly expressed in the American press before and after Trump's election.

In the fall of 2017, the projections of an impending epidemic in Africa if funding was withdrawn was balanced by some optimism since Trump's budget cuts were eventually refused by his own administration. However, it is still a fact that the man in The White House does not see the battle against AIDS in Africa as a priority.

While the country data transmitted to Ambassador Birx proves that a fast-track strategy to eradicate the disease is feasible within five years, PEPFAR must continue to work within a budget that, through efficient targeting, provides steady, but sure and constant progress towards that goal. Recent research identifies populations at risk (Jordan, Edwards 2016, Onovo and al. 2017) and provides high-resolution maps of estimates of HIV prevalence in Sub-Saharan Africa which help to strategically target "geographic areas and populations where resources can achieve the greatest impact" (Cuadros et al. 2017). Ambassador Birx herself has proven to be extremely determined to not only ferociously defend the PEPFAR budget, but also to use data and technology and innovation to wring every last bit of value and salvation from the resources she is given. She is also seeking to extend international partnerships to complete the funding of the programme. We can trust that the American press, who have followed Trump's budget cut announcements since his election, will not allow the issue of AIDS prevention to drop off the radar and will continue to support the funding of PEPFAR. Furthermore, having closely examined the PEPFAR reports and country data, we can most certainly trust that Birx's team and partners will not take their foot off the gas pedal, until the epidemic is under control. As for us Europeans, if we believe in the importance of PEPFAR, now is the time to think about how our institutions can support the programme, not only vocally, but financially as well.

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## **The Effect Of Job Characteristics On Job Satisfaction And Its Impact On Employee Performance**

**Sugianto**

Departement of Business Administration Padjadjaran University,  
Bandung, Indonesia

**Bambang Hermanto**

Departement of Business Administration Padjadjaran University,  
Bandung, Indonesia

**Herwan Abdul Muhyi**

Departement of Business Administration Padjadjaran University,  
Bandung, Indonesia

**Margo Purnomo**

Departement of Business Administration Padjadjaran University,  
Bandung, Indonesia

### **ABSTRACT**

**Research the effect of job characteristics on job satisfaction and its impact on employee performance highlights the influence of job characteristics on job satisfaction and whether it has an influence on employee performance by taking the location of research on cooperatives in Solo, Central Java. Cooperatives face several problems, namely high levels of employee turnover. This study uses quantitative methods using a descriptive approach. For data collection the method used is by giving questionnaires to employees and interviews with informants who then analyzed the data using smart PLS. Based on the results of the study found that job characteristics have a positive but not significant relationship to employee performance, the next job characteristics have a positive and significant relationship to job satisfaction and the last job satisfaction has a positive and significant relationship to employee performance.**

**Keywords: Job Characteristics, Job Satisfaction, Employee Performance**

### **INTRODUCTION**

According to Robbins (2007) job characteristics are one of the factors that can affect employee performance. Job characteristics determine the suitability of a person with a particular field of work and enable a person to be more successful in the field of his work. Hackman and Oldham (1980) job characteristics have five factors: variety skills, task identity, task significance , autonomy and feedback.

Nimalathan (2009) employee job satisfaction is related to employee expectations of superiors, co-workers and the work itself. Luthans (2006) states that there are five factors that affect job satisfaction, namely income, co-workers, opportunities to develop, the work itself, and the supervisor. According to Simamora (2004) Employee performance is something that influences how much they contribute to the organization. According to Simamora (2004) there are several factors that affect performance, among others: personal characteristics, job descriptions, the purpose of performance evaluation, and the attitudes of workers.

Based on the results of preliminary interviews with employees at the Solo City Cooperative, there is a tendency that employees do the same job, are simple, and tend to be repetitive. This condition will obviously cause a sense of boredom. In addition there are also indications that the cooperative management does not fully give freedom to its employees to handle complex and varied tasks, so that employees cannot demonstrate initiative and independence in completing their work. Based on information from the Cooperative Supervisory Board of Solo City Riyadi, the cooperative turnover of employees is still very high, especially for staff level positions because the salary received by cooperative employees is still very far compared to the Solo City regional minimum wage.

**Table 1**  
**Cooperative employee turnover rate at Slamet Riyadi University Solo**

Years	Job Level					
	Manager			Staff		
	In	Out	Percentage	In	Out	Percentage
2013	2	1	50%	5	15	33%
2014	2	3	67%	5	10	50%
2015	2	2	50%	3	17	18%
2016	3	2	67%	10	15	67%

**Source : Riyadi Solo City Cooperative**

The low job satisfaction can certainly have a negative impact, such as suspended cooperatives, slow completion of work and high turnover of employees. Even though cooperatives with more satisfied employees tend to be more effective than cooperatives with unsatisfied employees. Therefore, the company is important to pay attention to and maintain the level of employee satisfaction to get the best employee performance.

### **RESEARCH METHODS**

This study uses a human resource management science approach. This study was designed with the aim of analyzing the relationships between variables. The design of this study includes correlational research, namely research conducted with the intention of analyzing the relationships between variables. The variables used are job characteristics, job satisfaction, and employee performance with an approach using quantitative methods.

Quantitative research is an approach for testing the relationships among variables. These variables, in turn, can be measured, typically on instruments, numbered data can be analyzed using statistical procedures (Creswell, 2014). Collecting data obtained from this study is by observing, recording and collecting various information and data found in the field through case studies and surveys. To collect various information needed in this case, the questionnaire used in the direct visit to the research location at the Solo City Cooperative.

### **RESULTS AND DISCUSSION**

Analysis of the description of the data taken for this study is a questionnaire given to employees of the Solo City Cooperative with a total of 55 samples are as follows:



**Table 2**  
**Description of Research Variables**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
Job Characteristics	55	1	5	0.77020	0.19875
Job Satisfaction	55	1	5	0.06356	0.02539
Employee Performance	55	1	5	0.68396	0.19340

**Source : results of data processing**

Based on the table above it can be seen that during the observation period the job characteristics variable shows an average value of 0.77020 with a standard deviation of 0.19875 so that the standard deviation is smaller than the average. This indicates that the average distribution of data will be the respondent's answer to the good variable. Job satisfaction has an average value of 0.06356 and a standard deviation of 0.02539 so that the standard deviation is smaller than the average. This indicates that the average distribution of respondents' answers to the variables is good. Based on the above table it can be seen that during the observation period the performance variable shows an average value of 0.683961 with a standard deviation of 0.19340 so that the standard deviation is smaller than the average. This indicates that the average distribution of data will be the respondent's answer to the good variable.

There are three criteria in using data analysis techniques with SmartPLS to assess the outer model, namely Convergent Validity, Discriminant Validity and Composite Reliability (Ghozali,2008). Convergent validity of the measurement model with reflexive indicators was assessed based on the correlation between the item score / component score estimated by PLS software. Individual reflexive measures are said to be high if they correlate more than 0.70 with the construct measured.

**Table 3**  
**Outer Loadings (Measurement Model)**

<b>Matrix</b>	<b>Employee Performance</b>	<b>Job Characteristics</b>	<b>Job Satisfaction</b>
X1.1		0.857	
X1.2		0.869	
X1.3		0.761	
X1.4		0.746	
X1.5		0.791	
X2.1			0.815
X2.2			0.718
X2.3			0.791
X2.4			0.780
<b>Matrix</b>	<b>Employee Performance</b>	<b>Job Characteristics</b>	<b>Job Satisfaction</b>
Y1.1	0.828		
Y1.2	0.860		
Y1.3	0.775		

**Source : results of data processing**

The results of processing with smartPLS can be seen in table 3 shows that all loading factors have values above 0.70, so that the construct for all variables is no longer eliminated from the model.

Furthermore, it is calculated that the value of Discriminant Validity. Discriminant validity is done to ensure that each concept of each latent variable is different from other variables. The model has good discriminant validity if each loading value of each indicator of a latent variable has the largest loading value with other loading values against other latent variables. The discriminant validity test results are obtained as follows:

**Table 4**  
**Nilai Discriminat Validity**  
**(Cross Loading)**

	<b>Employee Performance</b>	<b>Job Characteristics</b>	<b>Job Satisfaction</b>
X1.1	0.495	0.857	0.661
X1.2	0.466	0.869	0.598
X1.3	0.525	0.761	0.513
X1.4	0.512	0.746	0.641
X1.5	0.439	0.791	0.677
X2.1	0.508	0.803	0.815
X2.2	0.559	0.567	0.718
X2.3	0.666	0.514	0.791
X2.4	0.585	0.477	0.780
Y1.1	0.828	0.514	0.614
Y1.2	0.860	0.502	0.691
Y1.3	0.775	0.477	0.507

**Source : results of data processing**

From table 4 it can be seen that several loading factor values for each indicator of each latent variable have a loading factor value which is the most large compared to the loading value if it is associated with other latent variables. This means that each latent variable has good discriminant validity where some latent variables still have a gauge that is highly correlated with other constructs.

Criteria for validity and reliability can also be seen from the reliability value of a construct and the value of Average Variance Extracted (AVE) from each construct. The construct is said to have high reliability if the value is 0.70 and AVE is above 0.50 (Creswell,2014). In table 4, the values of Composite Reliability and AVE will be presented for all variables.

**Table 5**  
**Composite Reliability dan Average Variance Extracted**

	<b>Composite Reliability</b>	<b>Average Variance Extracted</b>
Employee Performance	0.862	0.675
Job Characteristics	0.903	0.650
Job Satisfaction	0.859	0.603

**Source : results of data processing**

Based on table 5 it can be concluded that all constructs meet reliable criteria. This is indicated by the composite reliability value above 0.70 and Average variance extracted above 0.50 as recommended criteria. In assessing the model with PLS begins by looking at R-square for each dependent latent variable. Table 6 is the result of R-square estimation using SmartPLS.

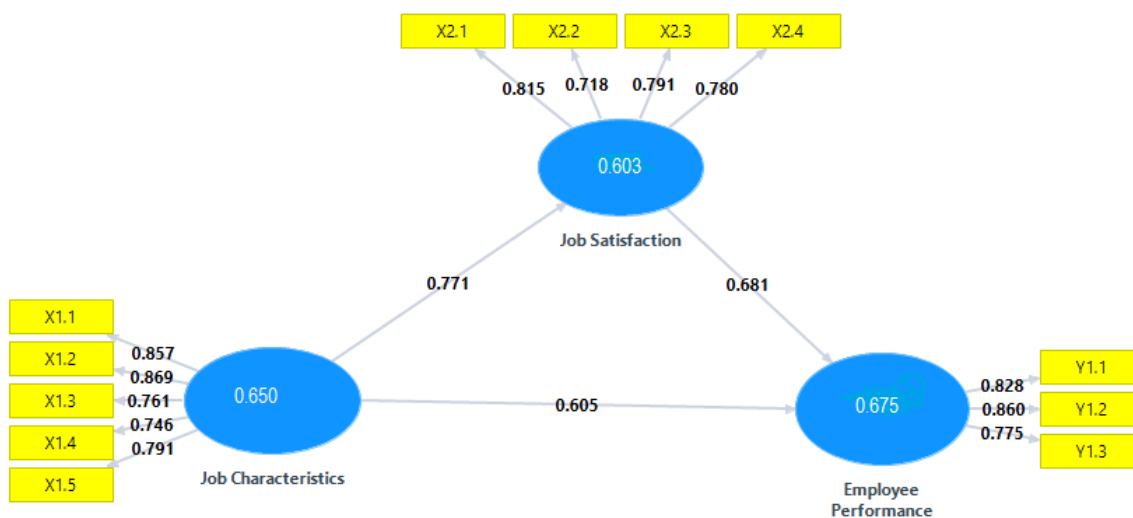
**Table 6**  
**R-Square Point**

Var	R- Square
Job Characteristics	
Job Satisfaction	0.555
Employee Performance	0.594

Source : results of data processing

Table 6 shows the R-square value for the variable job satisfaction obtained at 0.555, for the performance variable obtained is 0.594. These results indicate that 55.5% of the variables of job satisfaction can be influenced by the variables of job characteristics and 59.4% of performance variables can affect job characteristics and performance.

**Figure 1**  
**Structural Model**



Source : results of data processing

**CONCLUSION**

1. The results of testing the first hypothesis shows that the relationship between job characteristics and employee performance shows a path coefficient of 0.080 with a t value of 0.427. this value is smaller than t table (1,960). This result means that job characteristics have a positive but not significant relationship to employee performance which means that it is not in accordance with the first hypothesis where job characteristics have an impact on employee performance directly. This means that Hypothesis 1 is rejected, thus indicating that job characteristics do not have a significant direct influence on employee performance. The reason for rejecting this hypothesis is because cooperative employees feel that they have accepted the existing conditions. This is strengthened based on interviews with employees and Unsiri Savings and Loans

Cooperative Manager who stated that employees were accustomed to doing various jobs, so employees did not need to develop their skills.

2. The results of testing the second hypothesis shows that the relationship between job characteristics and job satisfaction variables shows a path coefficient of 0.771 with a t value of 11.634. this value is greater than t table (1,960). This result means that job characteristics have a positive and significant relationship to job satisfaction which means that it is in accordance with the second hypothesis where the characteristics of work encourage job satisfaction. This means that Hypothesis 2 is accepted so that the job characteristics (occupational mastery) owned by employees are high. This is due to the high awareness of employees in doing the work that is charged to them so that the work is done in a structured manner giving rewards and bonuses given by cooperatives to employees very well, besides that employees work with mutual respect in carrying out their duties.
3. The results of testing the third hypothesis shows that the relationship of job satisfaction variables with employee performance shows a path coefficient of 0.681 with a t value of 3.482. this value is greater than t table (1,960). This result means that job satisfaction has a positive and significant relationship to employee performance which is meaningful in accordance with the third hypothesis where job satisfaction has an impact on employee performance. This means that Hypothesis 3 is accepted so that the higher the job satisfaction that employees receive, the higher the performance of their employees. Conversely, employees who feel dissatisfied in their work tend to have thoughts of not being serious and evaluating alternative work, and are eager to get out of the current work location because they hope to find a more satisfying job. Performance is closely related to the level of worker satisfaction and one of these factors is the satisfaction of supervision carried out by the leadership. Satisfaction with the leader will be explored, if the supervision is carried out in accordance with work procedures, discipline and sanctions for employees who do not have good work performance.

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## Analysis of Eighth-Grade Students Failure in Solving Mathematical Problems

**Ani Minarni**

Mathematics Education Program, Post Graduate School  
Universitas Negeri Medan, Indonesia

**E. Elvis Napitupulu**

Mathematics Education Program, Post Graduate School  
Universitas Negeri Medan, Indonesia

### ABSTRACT

This research aimed to investigate the ability of eighth-grade students and types of error they made in solving mathematical problems. To obtain data, as many as 102 PJHS students are included in mathematical problem solving (MPS) test. The aspects of MPS ability used in this research consisted understanding the problem, proposed and used the strategy to solve the problem and conclude the solution in accordance to the initial problem. Results of the research: First, students MPS ability belong to the low category. The second one, types of error the students made in solving MPS consisted lack of algebra knowledge including algebra manipulation, lack of mathematical concept, and lack of informal and formal strategy including creating a picture. The third one, results of the interview reveal that the students view algebra as complicated material and does not have a definite pattern to conquer. Meanwhile, the students could not make a picture because they confuse in understanding words problems.

**Keywords:** mathematical problem solving

### INTRODUCTION

It is mentioned in NCSM (Wilson et al., 1997) that mathematical problem-solving ability (MPSA) is important because it is the main purpose of learning mathematics. In addition, the MPSA provides an important context that allows students to learn a variety of mathematical topics and enable students to learn new concepts (Kilpatrick, et.al, 2001). Problem-solving can be used by students to produce new mathematical knowledge because through solving problems students apply their knowledge, experience, and skills in new or unknown situations. Unfortunately, according to TIMSS report, Indonesian students achievement in mathematical problem solving is still low; that is 397 in 2007 and get score 386 in TIMSS 2011, while the standard average score is 500 (Provasnik, 2012), so it needs to be improved. Kind of problem from TIMSS related to problem-solving is attached here. This problem relating to ratio number where most students face difficulty. Here is kind of problem from TIMSS 2007.

#### Problem

There are 30 students in a class. The ratio of boys to girls in the class is 2:3. How many boys are there in the class?

Problems similar to TIMMS problem along with four other problems has been tested on students at several public junior high school students (PJHS) in Bandung. The results show that the percentage achievement of PJHS students in mathematical understanding and representation ability as components of MPS is only 32.46% (Minarni, Napitupulu, Husein,

2016). In addition, the ability of mathematical representation of grade VIII students in Medan and its surrounding areas is also low, that is 7 out of 20 or 35%, likewise, students' mathematical comprehension (understanding) skills, meanwhile, the ability of mathematical understanding is also the foundation for problem-solving (Minarni, 2017a).

The ability to solve mathematical problems is the ability to apply ideas/procedures/mathematical facts to solve mathematical problems. The aspects of MPSA including understanding the problem, choosing a strategy and using it to solve the problem, and summarizing the solution in accordance with the initial problem. A person may be able to understand the problem, but could not find a solution strategy, or someone may understand the problem and be able to use the problem-solving strategy but unable to deduce the solution as per the initial problem. When using a mathematical problem-solving strategy we will find algebraic forms, images, graphs, or mathematical equations, in which one student often experiences difficulties that lead to making mistakes.

Some students made mistakes in solving mathematical problems because of limited mathematical understanding ability (Minarni, 2017b), low ability in math understanding and representation (Minarni et.al, 2016). Fortunately, the mathematical problem-solving ability could be generated through the learning process (Minarni, 2017a). Problem-solving skills also increased by learning errors in solving the problems since learning can occur through mistakes. On the other side, teachers can reflect through errors that students make in solving problems. Then, knowledge of the types of mistakes made by students in solving problems is important to investigate deeply. The researcher eager to elaborate students MPSA as well as some kinds of mistakes made by the students in solving MPS.

### **THEORETICAL FRAMEWORK**

Problem-solving refers to cognitive processing directed at achieving a goal when the problem solver does not initially know a solution method. D'Zurilla (1988) defined problem-solving as a cognitive-affective behavioral process through which an individual (or group) attempts to identify, discover, or invent effective means of coping with problems encountered in everyday living". Schoenfeld (Grouws, 1992) states that problem-solving has used in multiple meanings (from knowledge about one's thought of processes to self-regulation during problem-solving). Problem-solving defined as a higher-order cognitive process (high order thinking skills-HOTS) and intellectual function that requires the modulation and control of more routine or fundamental skills (Backmann & Guthke, 1995), it has two major domains: mathematical problem solving and personal problem-solving. Both are seen in terms of some difficulty or barrier that is encountered (Berry & Broadbent, 1995).

Problem-solving must be the focus of school mathematics (NCTM, 1980). Inferred from NCTM (2000) that high order thinking consisted of mathematical reasoning, comprehension, representation, communication, connection, creative & critical thinking, and metacognition. Problem-solving is the heart of mathematics because various concepts, principles, and procedures are searched for and used in problem-solving (Lester & Kroll, 1990). Problem-solving is doing mathematics that produces mathematical objects.

Major cognitive processes in problem-solving are representing, planning, executing, and monitoring. Meanwhile, in mathematics, the process including understanding the problem proposed the strategy, execute the strategy, and looking back (Polya, 1987). The major kinds of knowledge required for mathematical problem solving are facts, mathematical ideas, concepts, procedures, strategies, and beliefs. Example of fact are math symbols, the example of math concept is all definition.

On the other hand, (mathematical) problem exists when someone has a goal but does not know how to achieve it. Problems can be classified as routine or non-routine, and as well defined or ill-defined from which appropriate solutions are to be made. Ill-defined problems are those that do not have clear goals, solution paths, or expected solutions. On the contrary, well-defined problems have specific goals, clearly defined solution paths, and clear expected solutions. These problems also allow for more initial planning than ill-defined problems (Altshuller, 1994).

There are two types of mathematical problem, real-world and abstract (pure) mathematical problems. The first type is used in mathematics education to teach students to connect real-world situation to the abstract language of mathematics. At school, to cultivate students' ability to think deeply, mathematical problems are designed in such a way that students are required to link their knowledge to the problems at hand, find useful knowledge to solve problems and think through the strategies and procedures required. Not all school math topics can be designed to be real-world mathematical problems. Here is an example of a question related to the topic of algebra, which could not be a simple real-world problem but grade eight students must master it.

<p><b>Problem</b></p> <p>Simplify the following algebra form:</p> $\frac{x - 1}{x - 5} + \frac{2(x^2 - 7x + 17)}{x^2 - 7x + 17}$
--

Misconception that often occur in solving this problem is just adding the denominator and multiplying the nominator as follow:

$$\frac{x - 1}{x - 5} + \frac{2(x^2 - 7x + 17)}{x^2 - 7x + 17} = \frac{(x - 1) + 2(x^2 - 7x + 17)}{(x - 5)(x^2 - 7x + 17)}$$

The student has not understood yet the concept of adding fraction number. A mathematician does solve a mathematical problem for their own sake, by doing so, results may be obtained that suitable for application outside the realm of mathematics. Many abstract problems can be solved routinely, others have been solved with great efforts, some have unsolved yet until now. The process of problem-solving includes understanding the problem, plan the strategy, execute the strategy and looking back (Polya, 1987). But, it is not claimed that these are MPS indicators. In line with Polya's idea, mathematical problems from TIMSS are matters designed so that students are required to understand the problem but are not asked to write down what is known and what the questions are asked. The students are required to use problem-solving strategies but not instructed to write strategies that he will use, as well as mathematical problems in Tong & Hiong (2006).

Mathematical problem solving underpinned by mathematical comprehension, representation, and mathematical reasoning. Mathematical comprehension consists of the ability to make a math connection and the ability in math representation (Carpenter & Lehrer, 1999). The difficulty in recalling knowledge in cognitive structures is a matter of understanding (Hiebert & Carpenter, 1992). Research on solving mathematical word problems suggests that students may perform better on a problem closed to real-life problem representation of the problem situation than on word problems (Hoogland et.al., 2018). Inferred from Minarni (2017) that the students with good math representation performed better in solving mathematical problems.



It is alleged that conventional learning approach with expository methods could not develop mathematical problem solving because the teacher is the center of the teaching-learning process. There is no time for the student to solve a challenging mathematical problem since too many topics should be acquired. Meanwhile, problem-solving could be increased through implemented joyful problem-based learning (Minarni & Napitupulu, 2017).

### Research aim

The objectives of the research are to investigate:

1. Mathematical problem solving ability of the students.
2. Types or error the students made in solving mathematical problems.
3. Cause of error the students made in solving mathematical problems.

## METHOD

### Research design

This research is stage I of developmental research. According to Thiagarajan, et.al. (1974), this stage is the design phase which is aimed to investigate students profile, one of the profile is student mathematical problem-solving ability. At this stage, an MPSA test is carried out to measure student MPSA. Then observations were made during the test, followed by interviews after the tests were completed. Interviews and observations are also used to reveal the learning approach used by the teacher in the classroom. Because there are allegations that certain learning cannot foster mathematical problem solving (Ronis, 2008).

### Subject of the Research

Developmental research stage I is not aimed to generalize the population, so the researcher used the subject of the research that is chosen purposively. Consideration of choosing this subject is data about the need to improve high order thinking of the students. The mathematical problem-solving ability of eighth-grade students at public junior high school (PJHS) in Medan City and District Deli Serdang is low. As many as 102 students are included in this research.

### Instrumentation

The instrument used in this study consist of two types. The first one is the instrument test used to measure students mathematical problem-solving ability (MPSA). Type of the test is essays test that consists of five items. Some examples of the problems are presented here.

#### Problem No. 1

In an arithmetic sequence, the fifth term is 35, the sum of the seventh and ninth term is 100. Determine sum of first and third term.

Problem number 1 used to measure the student ability in solving a mathematical problem related to a pattern of a sequence. The student should use their reasoning to determine the  $n$ -th term of a given sequence.

#### Problem No. 3

Mia types a book step-by step. The first day, she types  $\frac{1}{5}$  part of that book. In the second day, she types  $\frac{1}{2}$  part of the rest. If she types 30 pages on the first day, then determine the number of pages that have not typed yet.

Problem number 4 used to reveal the student ability in solving a mathematical problem related to algebraic factorization. Problem 2 and Problem 5 are not attached here. Problem 2 related to

the concept of line, problem 5 related to the concept of the Pythagorean rule in association with a beam.

**Problem No. 4**  
Simplify the following algebraic form:

$$\frac{cx + cx - c - 1}{x - 1}$$

Problem number 4 used to reveal the student ability in solving a mathematical problem related to algebraic factorization. Problem 2 and Problem 5 are not attached here. Problem 2 related to the concept of line, problem 5 related to the concept of the Pythagorean rule in association with a beam.

Score for each item of MPSA test is four. The total score of five items is 20. Classification of MPSA in accordance with total score (X) presented in Table 1.

**Table 1 Classification of Students' MPSA Score (n=102)**

MPSA Category	Criteria
Excellent	$16 < X \leq 20$
Good	$12 < X \leq 16$
Enough	$8 < X \leq 12$
Low	$X < 8$

**Note: Ideal total score = 20**

To reveal the causes of mistakes made by students in solving mathematical problems, researchers conducted an interview. The content of the interview is designed to reveal the student's mistake on each question. Type of questions in the interview will vary because the answers and mistakes made by students in solving problems also varied.

**Method of Data Analysis**

The techniques of analysis used were descriptive statistics such as means and standard deviation used to summarize MPSA data and summarize the result of observation and interview. These statistics are used to classify the MPSA test score and students failure in solving mathematical problems. Types of error may occur are:

Wrong in implemented math principle, for example,

1. Wrong in implemented math principle, for example:
  - a.  $5-3 \times 2 = (5-3) \times 2 = 2 \times 2 = 4$  : wrong in implemented the order of algebraic operation.
  - b.  $\frac{3}{4} + \frac{1}{2} = \frac{4}{6}$ . Used multiplication rule for adding up fraction.
2. An error occurred related to using strategy. For example, the student uses the elimination technique to solve a system of linear equation, but he did not eliminate one of the variable included in the system.
3. Fail to recall mathematical prior knowledge.

**FINDINGS AND DISCUSSIONS**

This section consists of three parts: the first part deals with mathematical problem-solving ability. The second part presents the type of error/failure the students made in solving mathematical problems. The third part presents the cause of the failure students made in solving mathematical problems. Data in the first part gathered through the MPSA essays test.

Meanwhile, data for second and third part gathered through analysis students' worksheets and interview. Observation is used to reveals learning approach the teacher used in the classroom.

### Mathematical problem solving (MPS)

This result is obtained from the second sample that consist of 102 students, the result of the first sample that consists of 40 students is presented at an international seminar. The result of the MPSA test from the second sample is summarized in Table 2. It can be seen that the maximum MPSA average score belongs to PJHS 17, that is 8.29, even though this score is just categorized enough (sufficient), far below the ideal score. This school is located at the capital city of North Sumatera Province, so it is hypotheses that the students at this school are easier to get information and access source of knowledge at the internet than other students whose school located at rural area.

**Table 2 Statistic of Students MPSA**

School	N	Mean	Std. Deviation
PJHS-17	29	5.86	2.371
PJHS-4	17	8.29	3.531
PJHS-1	26	7.42	3.733
PJHS-2	29	4.28	.591
Total	101	6.22	3.065

**Note: Total ideal score = 20**

The students' MPSA average score at other schools belong to the low category. In addition, the standard deviation of students MPSA at each PJHS is large enough. It means students' ability is very diverse. Based on Table 1, the average score of each school is categorized low. MPSA average score based on each item test can be seen in Table 3. The result of observation and interview shows that learning the approach the teacher used in the classrooms is a conventional approach with the expository method. Then, low of students MPSA is predicted because of the learning approach used in the classroom. This prediction is in line with the statement of Ronis (2008).

The following table shows that Problem number 4 (item test 4) is the hardest one. No one doing this problem. The task in this problem is to simplify an algebraic form. This problem is more abstract than other problems. It showed that it is hard enough for the students to think formally, they still need concrete matter. So, in the next learning process, the teacher should give contextual problems that include mathematical representation, i.e.picture, to aid the student to solve the problems as proposed by Hoogland (2018).

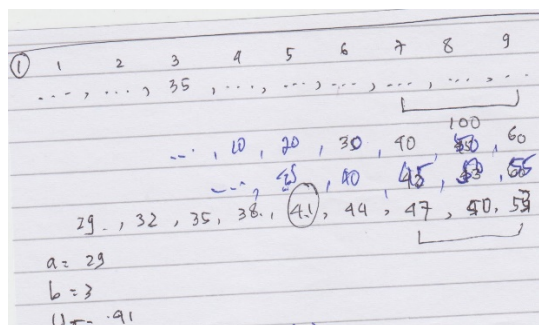
Descriptive statistic of students MPSA at each item score is presented in Table 3.

**Table 3 Average score of each item test**

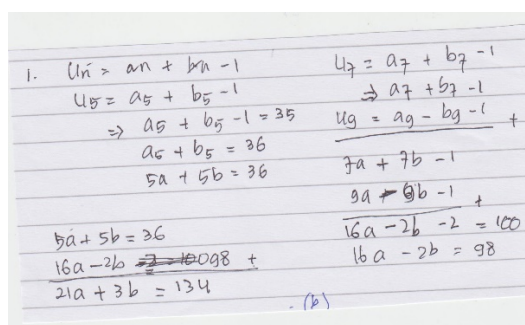
Item test	Mean	Std. Deviation
1	1,375	0,9439
2	1,263	0,7769
3	1,618	0,4079
4	0	0
5	2,170	0,6648
Average	1,285	0,5587

Table 3 showed that problem number 4 is the hardest problem for the students. This problem related to algebraic form and the students should make factorization to solve this problem. Obviously, the students have not proficient in factorizing algebraic form.

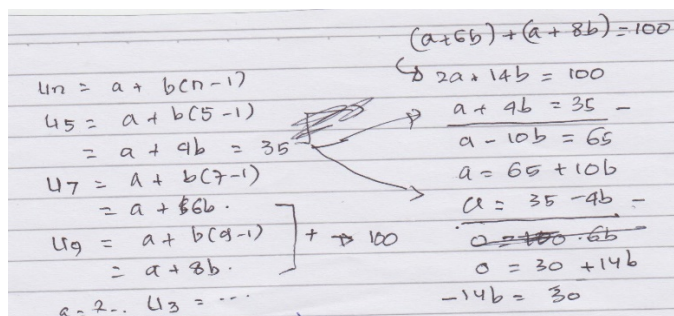
Example of student performance in doing Problem number 1 MPSA test is presented in Figure 1.



(a)



(b)



(c)

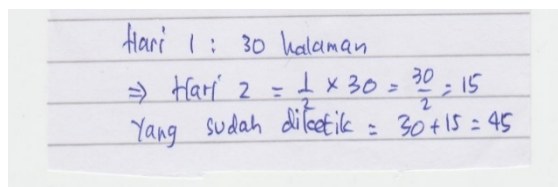
Figure 1 Student Answer Sheet for Problem 1

Figure 1 (a) shows that the student is able to think informally, i.e, guess the possible sequence where the 3rd, 7th, and 9th term of the sequence are known. At first, he guessed the 7th, and 9th term were 40 and 60 respectively, so the difference between the two terms was 10. Then, he lowered the difference to 5. Finally, he guessed the difference between the two terms becomes 3 and this guess leads to the correct solution. However, the guessing technique only applies if the number of terms is limited. If he asks to determine a 100th term of a sequence, does not know the formula for determining the nth term or does not remember how to determine the nth term of a sequence, the guessing technique will be time-consuming or boring. This student's performance shows that he has not been able to make generalizations. Figure 1(b) tells us that the student proposed a formula of the nth term as  $u_n = b^n - 1$ , but it is not right. So, he could not attain the solution. Actually,  $u_n = a + (n-1)b$ . From Figure 1(c), the

student exactly proposed a right formula to determine un, he could determine u5, u7, and u9. Unfortunately, he does not remember a substitution or elimination technique, or other technique to solve a system of linear equation of two random variables. Then, he does not get the solution. Overall, the majority of the students could not solve this problem because of does not know how to determine the nth term of a sequence based on the number pattern in the sequence. So, when they forgot the formula, they can do nothing to solve the problems at hand.

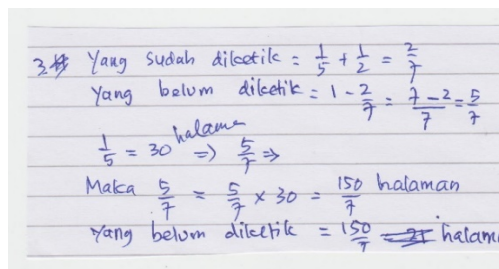
**Types of error in Solving MPS**

As a first step in investigating students' mistakes in solving mathematical problems is to analyze student performance in completing the MPSA test. We have seen student performance for problem 1 in Figure 1. The type or error student made in solving Problem 1 is the inability to recall mathematical prior knowledge such as techniques to solve a system of linear equation of two random variable. It also indicated as lack of mathematical connection, component of mathematical understanding (Carpenter & Lehrer, 1999). Other types of error the student made could be reviewed in Figure 2. This figure displays student performance in solving problem number 3.



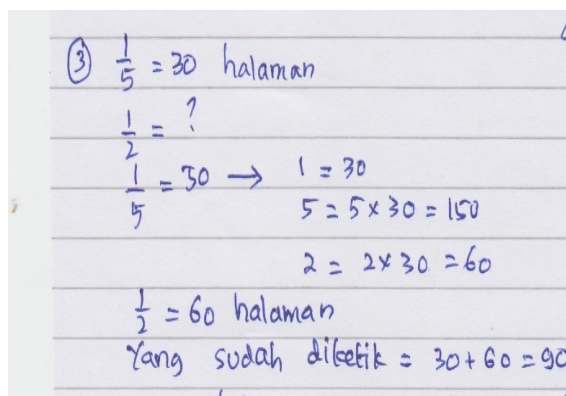
(a)

Explanation:  
 Day 1: 30 pages  
 Day 2:  $\frac{1}{2} \times 30 = \frac{30}{2} = 15$   
 So, the book that has been typed is  $30 + 15 = 45$



(b)

Explanation:  
 The book that has been typed =  $\frac{1}{5} + \frac{1}{2} = \frac{7}{7}$   
 The book that has not been typed =  $1 - \frac{2}{7} = \frac{5}{7}$   
 $\frac{1}{5} = 30$  so  $\frac{5}{7} = \frac{5}{7} \times 30 = \frac{150}{7}$  pages



(c)

Explanation:  
 $\frac{1}{5} = 30$  pages  
 $\frac{1}{2} = \dots?$   
 $\frac{1}{5} = 30$  then  $1 = 30$   
 $5 = 5 \times 30 = 150$   
 $2 = 2 \times 30 = 60$   
 $\frac{1}{2} = 60$  pages  
 The book that has been typed is  $30 + 60 = 90$  pages

**Figure 2 Student work sheet for Problem 3**

Figure 2(a) showed that students cannot capture information that 1/5 is 30 pages. He thought that the second day Mia typed half the part of what he did on the first day. This assumption

makes students unable to solve this problem. In general, this student has not been able to understand the problems they face. Therefore, the error lies in misunderstanding the problem. Figure 2 (b) shows that this student is correct in stating the number of parts that Mia has typed up to day 2, which is  $1/5 + 1/2$  parts, but he does not understand the concept of adding fractions. Therefore, he did not arrive at the correct answer.

Figure 2(c) showing that a student's fatal error was that when he wrote  $1/5 = 30$  then  $1 = 30$ , he looked at the nominator as a determinant of the number of pages. Then, he writes  $2 = 2 \times 30 = 60$  so  $1/2 = 60$  pages, in this case he considers the denominator as a determinant of the number of pages. Overall, this student really does not understand the concept of fractional multiplication.

From 102 students whose follow the test, there are 80 students face the difficulties in making a picture or sketch a problem, or transferring the problem into their own perception. Most of the students make a picture for problem 5, a picture of a beam, but incorrect. Some of them do not think to make drawings, sketches or translate the problem into a form that could make them understand better. Although there are several students thought, but could not make it because they do not know how.

There are 86 students could not make connection between the problem at hand with mathematical prior knowledge. This problem is occurred do to the ability of math connection (Carpenter & Lehrer, 1999). For example, they have learned fractions, addition and subtraction of fractions, but they could not link it or apply it to problem number 3. In this case, they add up the nominators also add up the denominators.

For problem 2 and 5, as many as 89 students are wrong in creating mathematical model as a tool to solve the problem. The cause of this failure is due to mathematical concept they have. The concept of line and the concept of Pythagorean rule have not been stored firmly in their cognitive structure so it is hard to recall and apply in new situation. It means, they have not understand this concept yet (Marzano & Kendall, 2007). In order to understand, one should learning with understanding (Hiebert & Carpenter, 1992) so that knowledge/information embedded in the cognitive structure in a strong and durable manner and makes it easy to be recalled when needed in solving problems.

Some students still remember the concept of the line, planning to use the elimination technique to solve it but most of them are wrong in executing the technique because they do not understand elimination technique. For example,  $(a + 5b) - (3a + 9b) = -2a - 4b$ . Of course, there is no variable eliminated so that the result is still in equation form, not attain the value of each variable.

The problem of algebraic manipulation also complicates students. All students in this study could not solve Problem number 4, that is the problem related to algebraic manipulation. Most of the students were not able to make algebraic factorization. For this problem, students should factorize  $(cx^2 + cx - c - 1)$  to  $[(x - 1)(cx - (c - 1))]$  so that the factor  $(x - 1)$  in the nominator can be divided by factor  $(x - 1)$  in the denominator so that it produces a value of 1. So, the solution is  $[(cx - (c - 1))]$ .

Analysis towards all work sheets of the students reveal some types of mistakes they made as presented in Table 4.

**Tabel 4. Students Error in solving Math Problem**

No.	Type of Failure
1	Make a picture or sketch a problem.
2	Connecting the problem to prior knowledge.
3	Create a mathematical model for the problem at hand.
4	Adding up and subtracting variables
5	Algebraic manipulation.

**Cause of error**

The following is an example of an interview with one of the students whose answer problem 3 is incorrect as depicted at Figure 2.

Interviewer (I): Fikri, would you tell me how many sections of the manuscript did Mia make on the first day?

Fikri (F): 1/5

I: How many pages did Mia have on the first day?

F: 30

I: Can you calculate how many pages of the entire book text?

F: 15

I: How do you get 15?

F: I don't know. Just guessing.

I: Okay. How many parts have been done until the 2nd day?

F:  $\frac{1}{7}$  and  $\frac{1}{2}$

I: Tottaly?

F:  $\frac{1}{7}$

The following conversation also discusses Problem 3.

Interviewer (I) : Tia, tell me why your answer is 6 page for 1/5 part of the book?

Tia (T): Because  $\frac{1}{5} \times 30 = 6$

I: Why you say part of the book has been typed after two days is  $\frac{1}{7}$ ?

T: Because  $\frac{1}{2}$  and  $\frac{1}{5}$  is  $\frac{1}{7}$

I: If  $\frac{1}{5}$  parts of the book is 30 pages, then how many pages for 2/5 part of a book?

T:  $\frac{2}{5} \times 30 = \frac{60}{5} = 12$

I: How is  $\frac{5}{5}$  part of a book?

T:  $\frac{5}{5} \times 30 = 30$

I: Tia, look at the problem, isn't it say that 30 pages is typed at the first day and  $\frac{1}{5}$  is part of a book that is typed at

the first day. Isn't it means  $\frac{1}{5} = 30$ ?

T: hm.....

Based on the interview, it is revealed that the students had not understood the concept of part and the whole number. Then, students are not yet proficient in adding up fraction number where each fraction has a different denominator. Analysis of all interview revealed the following results:

1. Could not make a generalization as student' performance in Problem 1(a).
2. Could not recalling information/knowledge that store in their cognitive structure, for example, could not recalling formula of the  $n^{\text{th}}$  term and the number of  $n^{\text{th}}$  term of a sequence. They do not remember how to get the formula because the teacher told them the formula. Indeed, there are students who remember the formula for determining the  $n^{\text{th}}$  term and the sum of the 3<sup>rd</sup> and 7<sup>th</sup> term of the sequence, but they have difficulty in determining the values of variables searched through elimination or substitution techniques so that they do not reach a solution.
3. Related to question 2, the students view algebra as a complex material and does not have a definite pattern to conquer. They call it difficult and make dizzy. Of the 102 students who took this test, no one can solve this problem.
4. Related Problem number 3, students consider fractional problems is difficult to determine the connection between part and the whole part number. Difficulties are increasing as they do not creating picture to represent the problem or create other representations that make the problem become more obvious.
5. Could not create mathematical model for the problem at hand.

Overall, some mistakes students made in solving mathematical problems are due to lack of:

- (1) capability in algebraic operation
- (2) mathematical prior knowledge
- (3) mathematical connection and representation as component of mathematical understanding.

### CONCLUSION

The conclusions obtained from the results of this research data analysis are:

1. In general, mathematical problem solving ability of the students belongs to low category.
2. Failures students make in solving mathematical problems:
  - a. Make a picture or sketch a problem.
  - b. Connecting the problem to prior knowledge.
  - c. Create a mathematical model for the problem at hand.
  - d. Adding and subtracting variables
  - e. Algebraic manipulation.
3. Causes of failure the student made in solving MPS are due to:
  - a. inability in algebraic operation
  - b. insufficiency mathematical prior knowledge
  - c. lack of mathematical connection and representation as component of mathematical understanding.

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## Assessment of Management Strategies for Selected Forest Reserves in Ibadan, Oyo State, Nigeria.

**Agbi T. T.**

Department of crop and environmental protection,  
Ladoke Akintola University of Technology, Ogbomosho, Oyo state.

**Alamu L. O.**

Department of crop and environmental protection,  
Ladoke Akintola University of Technology, Ogbomosho, Oyo state.

**Oladiti A. A.**

Department of general studies,  
Ladoke Akintola University of Technology, Ogbomosho.

### ABSTRACT

Forests reserve management strategies should provide comprehensive forest working plan for each Forest Reserve, consolidate the existing forest reserves, carry out periodic National Forest Resources inventory, Involve communities in the management of forest reserves with clearly defined roles and responsibilities, promote equitable benefit sharing and designate roles and responsibilities amongst stakeholders, protect the Forest Estate from fire and encroachment, encourage multiple-use concepts in the management of forest reserves. Most of these management strategies are mostly only protected on paper, as the forest continues to be subjected to official and unofficial unsustainable logging, and virtually unrestrained firewood and plant collecting. This study assessed the management strategies for selected forest reserve schemes in Ibadan, Oyo state, Nigeria. The study analyzed the respondents' socio demographic characteristics, their level of knowledge on the forest reserve management and level of agreement on the identified Government policies for forest reserve maintenance. Forty (40) questionnaire packs were administered on the workers of Onigambari forest reserves (10), Oluyole Local Government Area, Oso forest reserve (5) and Ijaye forest reserve (5), Akinleye Local Government Area, Moniya, the staff and students in the university of Ibadan, department of forest and forest products (4), the neighboring communities around the forests (4) and the staff in the ministry of Agriculture, Natural resources and Rural development, Ibadan (12). Likert scale was used to rank the knowledge level of the respondents, simple descriptive statistics such as frequency mean and percentages was used to describe the socio-demographic characteristics of the respondents. To test the hypothesis, Pearson correlation demographic analysis was used to test the significant relationship between the selected demographic variables and the dependent variables. The result of the findings showed that some of the selected demographic variables such as marital status ( $r = 0.670^{**}$ ;  $p < = 0.01$ ), occupation ( $r = 0.544^{**}$ ;  $p < = 0.01$ ) and years of occupational experience ( $r = 0.382^{*}$ ;  $p < 0.05$ ) respectively exhibited a significant relationship with the dependent variable that is perception of level of knowledge on the forest resource management). This implies that all the demographic variables have decisive influence on the dependent variable. Furthermore, the status of management of selected forest reserves in Ibadan was discovered to be inadequate and the stakeholders have proper knowledge of the forest resources management and the policies. There is need for incentives so that stakeholders and other practitioners can adequately use their knowledge to improve on forest management in the study area.

**Keywords:** Forest reserve, management strategies, forest, policies, forest management

## INTRODUCTION

The objectives of forest management are embodied in National Forest Policy of the country which states that Nigeria's natural resources and environment is to be conserved and used for the collective benefit of the people and to be replenished for the benefit of future generations (Adeyolu, 2001). Forest management is the branch of forestry concerned with the overall administrative, economic, legal, and social aspects and with the essentially scientific and technical aspects, especially silviculture, protection, and forest regulation. A major strategy adopted to ensure that the country's tropical forests are not completely lost has been the establishment of Forest Reserves in different parts of the country. Forest reserves are ecological sites set aside primarily for the conservation of flora and fauna. They are used to protect genetic diversity and enhance the production of forest products such as poles, saw logs, pulp and paper, timber, leaves and herbs, among others (Isichei, 1995; Adesina, 2001). They help to preserve the genetic pool of the forest ecosystems (Salami, 1999) and are important in the scientific studies of the tropical forests (Okali, 1991; Isichei, 1995).

Public concern regarding forest management has shifted from the extraction of timber to the preservation of additional forest resources, including wildlife and old growth forests, protecting biodiversity, watershed management, and recreation, protecting areas with fragile ecosystems, maintaining the diversity of life and developing new natural products for medicines (FAO, 2001).

Across the country, and based on the forest type and ecological conditions, forests are managed for the overall interest of the people. In mangrove areas, forests are managed to help moderate soil, hydrological and aquatic systems. This includes to maintain clean water including e.g. healthy fish populations, as well as to reduce risks or impacts of floods and erosion. In the savannah area, forest management comprises of plantings for various purposes such as shelterbelt, watershed conservation, rehabilitation of degraded sites, desertification control, and mitigation of drought effect. The forests provide the raw materials for both primary and secondary industries while generating employment for a sizeable number of the people. Some of the forest reserves in Nigeria are Olokemeji forest reserve, Oyo state, Onigambari forest reserve, Oyo state, Akure/Ofosu forest reserves, Ondo, Idanre forest reserve, Osun, Ifon/Owo forest reserves, Ondo, Oba hills forest reserve, Osun, Oluwa forest reserve, Ondo, Ngel-Nyaki forest reserve, plateau, Afi River Forest Reserve, Cross river state, IITA forest reserve, Ibadan, Okumu forest reserve, Benin, Edumanom forest reserve, Niger delta, Akassa forest reserves, Niger delta etc. There are in place 32 game reserves/sanctuaries and 7 National Parks covering a total of about 4,293,800 hectares scattered in different areas of the country; 12 Strict Nature Reserves; 13 proposed Game Reserves/National Parks covering about 372,000 hectares located across the country. About 445 forest estates located in different ecological zones of the country covering a total of about 9,652,000 hectares have been legally constituted (FAO, 2000).

Several studies (Alao, 2005; Akindele, 2008; Akande et al, 2009) affirm that most state forestry services charged with the responsibility of managing the forest estate are underemployed or understaffed. Productivity is therefore generally low. In a similar vein, Popoola (2014) noted that in the last 20 years, forest and park rangers, guards, and other technical staff who were adequately equipped and lived within and around such forests, have all vanished due to inept governance, thus exposing the forest estates in many parts of Nigeria to encroachment and other vices. He also observed that where forest guards and rangers exist sparsely, they are poorly kitted, inadequately armed and poorly remunerated, hence they easily compromise.

## **MATERIALS AND METHODS**

A 5- level likert scale questionnaire was used for this study and was divided into three (3) parts which included: The socio-demographic characteristics of the respondents, the level of knowledge of the respondents on the forest reserves management and the level of agreement of the respondents on the Government policies for forest reserve management.

Purposeful sampling was employed when selecting the respondents. It is a technique widely used in qualitative research for the identification and selection of information (Patton, 2002). It is also said to be a sampling technique in which the researcher relies on his or her own judgment when choosing members of population to participate in the study (Saunders, 2012). The questionnaire were administered to the workers of: Onigambari forest reserve, Oluyole LGA, Oso forest reserve and Ijaye forest reserve , Akinyele LGA, Moniya, the neighboring communities around the forests, the staffs and students in the university of Ibadan, department of forest and forest products and the staffs in the ministry of Agriculture and natural resources, Ibadan.

Likert scale was used to rank the knowledge level of the respondents, simple descriptive statistics such as frequency mean and percentages was used to describe the socio-demographic characteristics of the respondents. To test the hypothesis, Pearson correlation demographic analysis was used to test the formulated hypothesis of the study.

## **RESULTS AND DISCUSSION**

### **Socio-economic characteristics of the respondents**

This section explains the socio-economic variables measured in this study and result in Table 1 reveals that 75.0% of the respondents sampled were male, while 25.0% were female. This suggests that majority of the respondents are male compared with the female counterparts. This may be due to the nature of the research work. Majority (65.0%) of the respondent are between 41-50 years with respect to age, while 20.0% are between 31-40 years of age, 12.5% are between 20-30 years of age and only 2.5% are above 50 years of age. This implies that most of the respondents are adult and it is expected that they would have more knowledge on the forest and likely government reserve policies schemes.

Majorities (92.5%) are married and 7.5% are single. Also, 80.0% are civil servant, 7.5% are farmers, 5.0 are artisan and 7.5% have other occupation. This implies that majority of the respondent are elite and it is expected that they would be conversant with the forest land and government intention and associated policies to forest reserve. The result implies that all the respondents sampled are not novice and indicates that they should be knowledgeable on the forest reserve and government attitude towards its maintenance and associated reserve policies especially among the government official and the forest neighboring communities' inhabitants. The result further revealed that more than half (55.0%) of the respondents have tertiary education, while 25.0% have secondary education and only 20.0% have primary education. This implies that majorities (55.0%) are foresters; while the others are non-foresters i.e. those that stay in the forest reserve neighboring communities.

Again all the respondents have certain number of years of experience associated with their different occupation i.e. as foresters and forest neighboring communities occupants (farmers), while the mean years of experience is 42. This implies that the respondent's years of experience is expected to have impact on their level of knowledge on the forest resources management and their perception of identified government policies for forest reserve maintenance.

**Table 1: Distribution of respondents by socio-economic characteristics**

n=40

Socio-economic variables	Frequency	Percentage
SEX		
Male	30	75.0
Female	10	25.0
AGE		
20-30	5	12.5
31-40	8	20.0
41-50	26	65.0
Above 50	1	2.5
Mean	42	-
MARITAL STATUS		
Single	3	7.5
Married	37	92.5
Divorced	-	-
OCCUPATION		
Civil servant	32	80.0
Farmer	3	7.5
Artisan	2	5.0
Others	3	7.5
LEVEL OF EDUCATION		
Primary education	8	20.0
Secondary education	10	25.0
Tertiary education	22	55.0
YEARS OF EXPERIENCE		
11-20	12	30.0
21-30	14	35.0
31-40	7	17.5
Above 40	7	17.5

Source: Field survey, 2018.

### Level of knowledge on the forest resources management

For this objective 5 level likert scale of very high (VH); high (H); moderate (M); low (L); and very low (VL) respectively. Mean was also computed which was eventually used for ranking to determine the knowledge level of the respondents on the forest resources management.

The result in table 2 revealed that the permit fees are paid to the Government for the use of forest products; punishment i.e. payment of fines, imprisonment are given to those that violates the law and the forest workers and guards are always available to keep the forest from trespassers and unauthorized grazers respectively have highest weighted mean score (WMS) of 4.05 each and they were ranked 1<sup>st</sup>, followed by the statement that the forest resources are sufficient to meet the demand of the wood raw materials i.e. fuel wood, log wood etc. by industries and mills ranked 4<sup>th</sup> (WMS = 3.85). The statement that there is a record for every activities going on in the forest i.e. number of trees fell, species of the trees replanted etc. (WMS= 3.78; 5<sup>th</sup>), the Government (local, state and federal) is committed to the maintenance of the forest reserves (WMS=3.15; 6<sup>th</sup>) were ranked in similar order, while the statement that trees that are fallen are replanted had the least weighted mean score of 2.35 and was ranked 10<sup>th</sup>.

The result above implies that the respondents' knowledge level on the forest resources management varied. The variation in their knowledge level may be due to difference in their age, years of working experience and educational level.

**Table 2: Distribution of respondent by their level of knowledge on the forest resource management.**

PERCEPTIONAL STATEMENT	Frequency (percentage)						
	Level of knowledge						
	VH	H	M	L	VL	WMS	RANK
Trees that are fallen are replanted again.	6(15.0)	2(5.0)	6(15.0)	12(30.0)	14(35.0)	2.35	10 <sup>th</sup>
The forests workers and guards are always available to keep the forest from trespassers and unauthorized grazers.	19(47.5)	11(27.5)	4(10.0)	5(12.5)	1(2.5)	4.05	1 <sup>st</sup>
Fallen leaves (litters) are swept away or burnt early to keep the trees away from forest fires.	9(27.5)	7(17.5)	4(10.0)	6(15.0)	12(30.0)	2.98	7 <sup>th</sup>
In case of forest fires there is a provision for alert, and there are equipment used to stop the fire.	3(7.5)	9(22.5)	6(12.5)	9(22.5)	14(35.0)	2.45	9 <sup>th</sup>
There is a program designed to educate the public living especially around the forest areas about what the forest schemes entails.	4(10.0)	5(12.5)	14(35.0)	4(10.0)	13(32.5)	2.58	8 <sup>th</sup>
Permit fees are paid to the Government for the use of forest products i.e. felling of trees.	21(52.5)	7(17.5)	6(15.0)	5(12.5)	1(2.5)	4.05	1 <sup>st</sup>
Punishment i.e. payment of fines, imprisonment are given to those that violates the law.	20(50.0)	9(22.5)	7(17.5)	1(2.5)	3(7.5)	4.05	1 <sup>st</sup>
The forest resources are sufficient to meet the demand of total wood raw materials i.e. fuel wood, log wood, etc. by industries and mills.	19(47.5)	8(20.0)	6(15.0)	2(5.0)	5(12.5)	3.85	4 <sup>th</sup>
There is a record for every activities going on in the forest i.e. number of trees fell, species of trees replanted etc.	15(37.5)	14(35.0)	8(20.0)	3(7.5)	-	3.78	5 <sup>th</sup>
The Government (local, state and federal) is committed to the maintenance of the forest reserves.	11(27.5)	3(7.5)	10(25.0)	13(32.5)	3(7.5)	3.15	6 <sup>th</sup>

**Source: Field survey, 2018.**

**Perceived roles of government policies for forest reserve management.**

For this objective, five level likert scale of strongly disagree (SA); agree (A); undecided (U); disagree (D); and strongly disagree (SD) respectively. Weighted mean score was calculated which was used to determine the ranking order of perceptual statement regarding the roles of government policies for forest reserve maintenance.

Table 3 revealed the statement that the development and conservation of national timber forest products (NTFP) in all the ecological zone for the benefits of the present and future generations and to increase NTFP's contribution to the national economy had the highest weighted mean score (WMS) of 4.43; followed by the statement that maintenance of competent forest administration manned by efficient forest officers (WMS = 4.33; 2<sup>nd</sup>), reformation of the forest reserve system in order to create an enabling environment for sustainable forest management (WMS = 4.25; 3<sup>rd</sup>) and the statement that promotion of forestry in order to provide aesthetics, recreational, social and economic values and benefits to the people (WMS=4.13;4<sup>th</sup> )respectively. Again the statement that partnership with rural communities for the sustainable management in forest resources to ensure the supply of goods and services from the forest for the present and future generation (WMS=4.10); to prevent water and wind erosion, the government recognizes and emphasizes the protective role of forests in watersheds, buffer zones around rivers (WMS=4.00) and activity involving women in forestry policy enunciation, implementation and sustainable management of forest resources

(WMS=3.95) were ranked 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> respectively, while the statement that effective and efficient measures for prevention, control and management of forest fires had the least WMS of 3.88 and was ranked last (10<sup>th</sup>).

This implies that all the respondents have different perception on the government policies for forest reserve maintenance. The variation in their level of agreement on the identified policies may be due to differences in their perception and knowledge level of individual on the various roles of government policies as it affects forest reserve management and this is responsible for the different ranking order as indicated in Table 3.

**Table 3: Distribution of respondents by level of agreement on the identified Government policies for forest reserve maintenance.**

PERCEPTIONAL STATEMENT	Frequency(percentage)						
	Level of agreement						
	SA	A	U	DA	SA	WMS	RANK
Promotion of forestry in order to provide aesthetics, recreational, social and economic values and benefits to the people.	22(55.0)	13(32.5)	3(7.5)	2(5.0)	-	4.13	4 <sup>th</sup>
To prevent water and wind erosion, the government recognizes and emphasizes the protective role of forests in watersheds, buffer zones around rivers.	13(32.5)	19(47.5)	4(10.0)	3(7.5)	1(2.5)	4.00	6 <sup>th</sup>
Actively involving women in forestry policy enunciation, implementation and sustainable management of forest resources.	11(27.5)	20(50.0)	6(15.0)	2(5.0)	1(2.5)	3.95	7 <sup>th</sup>
The development and conservation of National Timber forests products (NTFP) in all the ecological zones for the benefits of the present and future generations and to increase NTFP's contribution to the national economy.	15(37.5)	15(37.5)	4(10.0)	4(10.0)	2(5.0)	4.43	1 <sup>st</sup>
Government promotes the rehabilitation and conservation of forests that protects the soil and water in the nation's key watersheds and river system.	16(40.0)	10(25.0)	9(22.5)	5(12.5)	-	3.93	8 <sup>th</sup>
Partnership with rural communities for the sustainable management in forest resources to ensure the supply of goods and services from the forest for the present and future generations.	19(47.5)	12(30.0)	2(5.0)	4(10.0)	3(7.5)	4.10	5 <sup>th</sup>
Sustainable management and utilization of forest resources to guarantee and encourage the perpetual supply to raw materials to the forest fires.	17(42.5)	8(20.0)	11(27.5)	3(7.5)	1(2.5)	3.93	8 <sup>th</sup>
Reformation of the forest revenue system in order to create an enabling environment for sustainable forest management.	24(60.0)	7(17.5)	5(12.5)	3(7.5)	1(2.5)	4.25	3 <sup>rd</sup>
Effective and efficient measures for prevention, control and management of forest fires.	17(42.5)	10(25.0)	7(17.5)	3(7.5)	3(7.5)	3.88	10 <sup>th</sup>
Maintenance of competent forest administration manned by efficient forest officers.	28(70.0)	4(10.0)	4(10.0)	1(2.5)	3(7.5)	4.33	2 <sup>nd</sup>

**Source: Field survey, 2018.**

### Test of the hypothesis

Test of the significant relationship between the selected demographic characteristics of the respondents and their perception of knowledge on the forest resource management in the area.

For this hypothesis, Pearson correlation demographic analysis was used. The demographic variables used in the analysis includes sex, age, marital status, occupation, years spent in school and years of occupational experience respectively.

According to the result of the analysis in Table 4, some of the selected demographic variables such as marital status ( $r = 0.670^{**}$ ;  $p < 0.01$ ), occupation ( $r = 0.544^{**}$ ;  $p < 0.01$ ) and years of occupational experience ( $r = 0.382^*$ ;  $p < 0.05$ ) respectively exhibited a significant relationship with the dependent variable (perception of level of knowledge on the forest resource management). This implies that all the aforementioned demographic variables (sex, occupation and years of occupational experience) have decisive influence on the dependent variable.

Therefore, the null hypothesis ( $H_0$ ) is rejected; hence alternative hypothesis ( $H_a$ ) is accepted in the like manner.

**$H_a$ :** There is significant relationship between the selected demographic variables and their perception on the level of knowledge on the forest resources management.

**Table 4: Test of significant relationship between the selected demographic variables and the dependent variables (perception of level of knowledge on the forest resources management).**

Demographic variables	Correlation coefficient	r - value	Decision	Remark
Sex	-0.079	0.629	NS	Accept $H_0$
Age	0.042	0.795	NS	Accept $H_0$
Marital status	0.670**	0.000	S	Reject $H_0$
Occupation	0.544**	0.000	S	Reject $H_0$
Years spent in school	-0.127	0.436	NS	Accept $H_0$
Years of occupational experience	0.382*	0.015	S	Reject $H_0$

#### Source: Data analysis, 2018

\*\* : Correlation is significant at the 0.01 level (2- tailed)

\* : Correlation is significant at the 0.05 level (2- tailed)

S: Significant

NS: Non significant

$H_0$ : Null hypothesis

### SUMMARY AND CONCLUSION

The study in its specific objectives described the socio-economic characteristics of the respondents, the level of knowledge on the forest resource management and examined the level of agreement on the identified role of Government policies for forest reserve maintenance.



Results showed that all the respondents have certain number of years of experience associated with their different occupation i.e. as foresters and forest neighboring communities' occupants (farmers), while the mean years of experience is 42. This implies that the respondent's years of experience is expected to have impact on their level of knowledge on the forest resources management and their perception of identified government policies for forest reserve maintenance.

The results also revealed that the respondents' knowledge level on the forest resources management varied. The variation in their knowledge level may be due to difference in their age, years of working experience and educational level. All the respondents have different perception on the government policies for forest reserve maintenance. The variation in their level of agreement on the identified policies may be due to differences in their perception and knowledge level of individual on the various roles of government policies as it affects forest reserve management and this is responsible for the different ranking order as indicated in Table 3.

It was concluded that the status of management of selected forest reserves in Ibadan was discovered to be inadequate. Though the trespassers are convicted by the laid down measures according to the gravity of their offences but all measures needed to secure the proper management of the reserve are not well implemented. It also showed that the government's involvement in the development of the forest was discovered to be inadequate or not sufficient.

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## Reflections on Political Ecology of Mount Cameroon's *Prunus Africana*

**Ayonghe Akonwi Nebasifu**

PhD Researcher of Sociology

(Anthropology Research Group, Arctic Centre)

University of Lapland, Finland

### ABSTRACT

This paper written for World-Ecology Research Network Conference at University of Helsinki, August 2018, reflects upon developments in capitalism of *Prunus Africana* within a theoretical framework of co-management critique. On the case of Mount Cameroon in Sub-Saharan West Africa, I argue processes of commercialization and socio-economic repercussions surrounding *Prunus Africana*: a plant that serves for treatment of prostatic diseases - interwoven with bureaucratic initiatives of sustainable management. By reviewing published literature, I argue the involvement of stakeholders in capitalist arrangements from the 1990s to periods following the establishment of Mount Cameroon National Park - significantly scrutinized by Convention on International Trade in Endangered Species (CITES), European Commission, and the International Union for Conservation of Nature (IUCN). Major actors include Mount Cameroon *Prunus* Management Company (MOCAP) endorsed by the state; state subsidiaries Cameroon Development Corporation (CDC) and Limbe Botanic Garden (LBG); collaborate buyers - Plantecam and Afriquia Medicament (AFRIMED); and *Prunus Africana* Harvesters' Unions in nearby villages. Analysis demonstrate benefits in sustainable harvesting of *Prunus*, whilst raising ontological concerns of resource-appropriation, elite control, unsatisfactory labour wages, and vulnerabilities of traditional ecological knowledge to commercialization.

**Keywords:** Political Ecology, Capitalism, *Prunus Africana*, Mount Cameroon

### INTRODUCTION

Where natural resources locate near communities, dynamics of extraction is of relevant discourse in a context of medicinal plants. [9] highlighted that, according to World Health Organization (WHO), 80% of world population rely on traditional medicine of which 85% pertains to plants. This perpetuates global dependence on sustainable management to meet market demand and supply. A typical example is the *Prunus Africana* plant in Cameroon: once the biggest global exporter of *Prunus Africana* (UNEP WCMC, 2008). On Mount Cameroon, *Prunus* grows up to 30 meters in height and a diameter of about 1.5 meters, in altitudes between 700 to 3000 meters of the montane forest [9]. Extract from *Prunus* bark is of medicinal value not just for local communities, but also to Western communities as a treatment for prostatic hyperplasia, malaria, stomach-pain, and fever. Before 1970s, Bakweri people of Mount Cameroon for many years extracted *Prunus* traditionally for medicinal need.

However, following 1970s, intensified exports in trade endangered *Prunus* on Mount Cameroon, stimulating IUCN categorize *Prunus* as vulnerable species. This equally impelled CITES assigning quota for *Prunus* extraction extended to 2006 [3]. CITES further suspended Cameroon from exportation of *Prunus* in 2006. Still, in 2007, the European Commission (EC) banned imports of *Prunus* from Cameroon. In 2009, Mount Cameroon National Park (MCNP) was created, and in 2010, CITES uplifted all quotas. Since 2009, Mount Cameroon *Prunus*

Management Company Ltd. (MOCAP) was in charge of sustainable management of *Prunus* on Mount Cameroon. By 2009, a participatory approach of capitalism had emerged constituting three commercial actors: state induced company MOCAP; state subsidiaries Cameroon Development Corporation (CDC) and Limbe Botanic Garden (LBG); collaborate buyer *Afriquia Medicament* (AFRIMED); and *Prunus Africana Harvesters' Unions* in nearby villages [4, 2, 5]. Socio-economic significances of these processes vary – ranging from income benefits to imbalanced compensations. In this paper, I shall elaborate on capitalist initiatives, various implications, while suggesting a way forward for the sustainable extraction of *Prunus*.



**Figure 1: Mount Cameroon (Bellewang, 2006: 30)**

### **THEORETICAL FRAMING**

Co-management theory examines collaboration between stakeholders and local community. Two writings are of interest, [6] and [8]. [6] addresses co-management of natural resources from a standpoint of sharing power. Here, a distinction occurs between social progress and destructive change i.e. implementing co-management activities by means of force without careful assessment of slow progress and its benefits – depicted by local communities alienated from natural resources, and lack of trust on bureaucratic regimes. Causal to such ambiguity is what [8] argued as difficulties in integrating Science with traditional knowledge. In Nadasdy's study of Ruby Range Sheep Steering Committee (RRSSC) in Southwest Yukon Canada, he found that efforts by Yukon government biologists, to limit sheep hunting resulted to legitimization of biologists' position in decision making at detriment of first nation Kluane elders and hunters. An outcome attributed to disagreement and ignorance on the part of government biologists to include Kluane proposals in final plans for management of Ruby Range Sheep – what I call ineffective participation.

### **REVIEW OF LITERATURE**

Several studies are relevant for this section. For instance, [5] identified MOCAP as a stakeholder in co-management of *Prunus* on MCNP – by effective introduction of new management schemes in 2009, following suspension of local Pharmaceutical company, Plantecam. MOCAP provides (and sells) seedlings of *Prunus* to collaborate communities for

cultivation, deals directly with a buyer AFRIMED, and shares *Prunus* revenues with partner communities. [9] examined Production-to-Consumption Systems (PCS) of *Prunus* on Mount Cameroon. This report showed that between 1994 and 2000, Mount Cameroon Project engaged 500 farmers in cultivation of *Prunus* in the area. In addition, while Cameroon Development Corporation (CDC) established 9 hectares with 10 000 *Prunus* planted, some 20 000 seedlings were made available for planting at Limbe Botanic Garden and Plantecam nurseries. Furthermore, government lands constituted 90% of *Prunus* in the year 2000. In 2008, a report [9] identified Cameroon as the largest global exporter of *Prunus*.



**Figure 2: Freshly debarked *Prunus Africana* tree, Bokwaongo Forest [2]**

Although Betti *et al* [3] indicated an estimate of 79 660 *Prunus* trees on Mount Cameroon, a preliminary report by [1] showed that inside MCNP, *Prunus* had its highest density of 34 885 exploitable trees, and 6 157 outside MCNP. In terms of annual quota estimates for *Prunus* extraction, a total of 205.21 tons recorded, of which 174.42 tons a year inside MCNP, and 30.7 tons a year outside MCNP. Hence, the importance of protected area in sustaining *Prunus* is crucial for the Mount Cameroon area. [2] analysed socio-economic impact of *Prunus* management on Mount Cameroon targeting a case of *Bokwaongo Prunus Africana Harvesters' Union*: an initiative introduced in collaboration with MCNP management authorities. Findings showed that members of the union gained employment, financial security, and promoted sharing of benefits among members. Amidst *Prunus* management, critiques [4, 7] argued the adverse effects of commercialization, regarding significant revenues made by capitalists at detriment of local harvesters.

## METHODOLOGY

I reviewed published materials about *Prunus* management on Mount Cameroon. These were then analysed using discourse analysis. My objective seeks to highlight processes of capitalism in *Prunus Africana* trade and elaborate on possible implications for local communities around Mount Cameroon. Specifically, my questions are; how has the commercialization of *Prunus*

*Africana* evolved between 1970s to present? What measures promote sustainable *Prunus* extraction? Are there any benefits or setbacks? If so, what possible remedies are suitable for improvements?

## RESULTS AND ANALYSIS

Historical narratives about commercializing *Prunus Africana* in Africa associates with 1960s visit of a German medical doctor, in Kwazulu Natal, South Africa [4]. By watching Zulu men use *Prunus* to treat difficulties of urinating, he then encouraged a search for potential wider use of *Prunus* in Africa to treat Benign Prostatic Hypertrophy. In Cameroon, Western demand for *Prunus* increased significantly after 1970s leading to intensified exports [4]. Between 1990s and 2008, Plantecam and an Industrial company (SESPO SARL) were prominent buyers of *Prunus* – though replaced in 2009 with the coming of MOCAP's responsibility for managing *Prunus* on MCNP, and the rise of new buyer AFRIMED. These were part of wider state initiatives to ensure sustainable *Prunus* management [5]. Moreover, following 1990s, a Mount Cameroon Project included CDC and LBG into *Prunus* diversification through plantation agriculture and *Prunus* nurseries [9]. The period 2000s witnessed the rise of *Prunus* Harvesters Unions in many villages [1]. By 2008, an EU report highlighted Cameroon as the largest global exporter of *Prunus*, with France and Spain as dominant markets [10].

Attempts to ensure sustainable extraction of *Prunus* pertains to eras 1990s, 2000s, and 2009. Firstly, use of sanctions and quotas, in response to uncontrolled harvesting of *Prunus*. These measures include IUCN's classification of *Prunus* as vulnerable species and CITES' imposition of a quota for *Prunus* extraction (minimum diameter of 30 cm) and exploitation (maximum of 2000 tons per year for its dried barks) in 1990s. Also, Cameroon's suspension by CITES in 2006 from exporting *Prunus* due to allegations of unsustainable harvesting by Plantecam, EU banned imports of *Prunus* from Cameroon in 2007 [4]. From 2005 onwards, villages of Mount Cameroon began to have harvesters unions that enhance benefit sharing [1], which increased after 2009. Lastly, designation of Mount Cameroon as a protected area in 2009 coupled with the placing MOCAP in charge of *Prunus* management facilitated *Prunus* growth.

Thus, Mount Cameroon sub-divided into five blocks of *Prunus*, harvested on a rotational interval of five years. MOCAP signed a memorandum of understanding with partner villages of MCNP that led to training of villagers as harvesters. Harvesting occurs all year round accounting for an average of 15 500kg (15.5 tons) in a single sale and an average revenue of 5 425 000 FCFA [5]. Consequently, a capitalist system of commercializing *Prunus* extraction comprises participation between three entities – Cameroon's government through a representative arm MOCAP, responsible for *Prunus* management on Mount Cameroon. Secondly, Pharmaceutical and Industrial companies (previously Plantecam and SESPO SARL) with AFRIMED being the current sole buyer of *Prunus* from MOCAP. Additionally, state subsidiaries like CDC and LBG promoting sustainable growth of *Prunus* on hectares of land out of Mount Cameroon. Lastly, Village Harvesters' Unions formed by local communities. Each of these actors benefit in one way or the other.

## DISCUSSION

Socio-economic implications of capitalism in the extraction of *Prunus* on Mount Cameroon vary greatly on viewpoints. For instance, the state allegedly gains an annual average revenue of 65 100 000 FCFA from selling 188 tons of *Prunus* [5]. While significant revenues generate from trading between state organizations, pharmaceutical, and industrial companies, there are equally benefits to local communities –with revenue partly utilized in fostering community development. However, observations of this kind appear limited to villages with *Prunus African Harvesters' Unions*. Bellewang's study [1] of Bokwaongo's *Prunus* harvesters' union showed

that earnings from *Prunus* facilitated purchasing of drugs for healthcare, and union members often gained education on sustainable methods of *Prunus* extraction through capacity building workshops organised by the government. In addition, most members spoke of their ability to sponsor kids at school using income from *Prunus* activities.

Whilst youths in the union mentioned employment gained from *Prunus* schemes, there are gains in financial security, as most members are encouraged to open bank accounts for savings. Another issue is the emergence of transparency in equitable benefit sharing, as oppose to dubious transactions and conflicts with intermediaries that existed years before creation of unions. In contrast, critics show setbacks of capitalism in *Prunus Africana* extraction. [4] argued that hopes of any decentralized governance of *Prunus*, were undermined by elite capture and market monopolies. This viewpoint mirrors the idea that in 2012, Cameroon allegedly made above US\$3.9 million from a *Prunus* bark quota of 658.675 tons, of which most went to a single company. Furthermore, 48 harvesters in MCNP received below US\$1 per day of harvest, attributed to a net bark price of US\$0.33 per kilogram [4]. Similarly, the exposure of traditional knowledge on medicinal plants, by means of discriminate commercialization. This widens criticisms on capitalism for its tendency to alienate local communities through commercial exploitation and discriminate compensation [7].

### CONCLUSION

I examined capitalism in the ecology and extraction of *Prunus Africana* on Mount Cameroon using a review of published material. Four issues were analysed including the historical basis for capitalism in *Prunus Africana* trade, influenced by western demands. I then illustrated measures adopted for sustainable extraction of *Prunus* on Mount Cameroon. Particularly, this constituted regulatory measures imposed by CITES, EC, and Cameroon government between 1990s and 2008 – aimed at restoring populations of *Prunus*. Results identified three groups of actors involved in the entire capitalist arrangement. This includes government arm (MOCAP) in charge of managing *Prunus* on Mount Cameroon, pharmaceutical and industrial companies that buy *Prunus* from the state. In addition, the role of state subsidiaries CDC and LBG in diversification of *Prunus*, and the development of *Prunus Africana* Harvesters' Unions in villages.

My analysis show socio-economic impacts of capitalist arrangements to local communities. For instance, transparency brought by accountability in unions and reduction in conflicts with intermediaries. Other benefits include; income security, education, and healthcare supplies. Amid these advantages, criticisms arise from ambiguities of elites legitimizing market monopoly, and fears of minimal decentralized governance of *Prunus*. Other worries include chances for commercial operators exploiting traditional knowledge without fair compensation to local people. This suggests that, amid industrial initiatives for sustaining *Prunus* production, there is need for effective participation – achievable by legalizing on-farm production among local farmers, and improving upon compensation mechanisms with better labour wages for local harvesters that rely on *Prunus* schemes for employment.

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## Bringing Child-Friendly Village into Reality through Community Empowerment in Indonesia

**Eva Agustinawati**

Department Development Extension /Community Empowerment Study Program  
Postgraduate Program of Sebelas Maret University, Surakarta, Indonesia.

**Ravik Karsidi**

Department Development Extension /Community Empowerment Study Program  
Postgraduate Program of Sebelas Maret University, Surakarta, Indonesia.

**Drajat Tri Kartono**

Department Development Extension /Community Empowerment Study Program  
Postgraduate Program of Sebelas Maret University, Surakarta, Indonesia.

**Kusnandar**

Department Development Extension /Community Empowerment Study Program  
Postgraduate Program of Sebelas Maret University, Surakarta, Indonesia.

### ABSTRACT

The problem befalling child appears more frequently in many social media with a very variety of complex causes and effects. Government issued child-friendly city policy in some regions called child-friendly village. Public participation is needed for implementing program through community empowerment. This research aimed to find out how child-friendly city can be brought into reality through community empowerment in Indonesia. This research employed Grounded Theory approach with purposive sampling and snowball sampling being the sampling techniques. Data analysis was conducted using *domain analysis, taxonomic analysis, componential analysis, and discovering cultural themes*. The result of research showed that child-friendly village program was initiated by people from idea, planning, implementing to monitoring and evaluating. This program was helped by PT. Sari Husada through *CSR (Corporate Social Responsibility)* and successfully brought child-friendly village into reality.

**Keywords:** child, empowerment, community

### INTRODUCTION

Individual are categorized into children when they are below 18 year age, including those still in their mothers' womb. Child is a part of citizen entitled to benefit from development process. Child problems in Indonesia increase quantitatively. Violence, negligence, child worker, trafficking, and now the more hazardous one, terrorism cases have affected child. Children still under their parents' caretaking will be "poisoned" easily with terrorism. These children are in endangering condition and need protection from the State.

Article 28b clause (2) of the 1945 Constitution (*Undang-Undang Dasar 1945*) states that every child shall have the right to live, to grow and to develop, and shall have the right to protection from violence and discrimination". Similarly, Article 34 mentions that "Impoverished persons



and abandoned children shall be taken care of by the State". Those articles indicate that every child living Indonesia is under the State's responsibility and no child should live abandoned.

One of policies issued by government as the attempt of accelerating the child protecting effort is Child-Friendly City (CFC) program. CFC program was originally based on Law No.23 of 2002 that was then amended with Law Number 35 of 2014 about Women Empowerment and Child Protection No.2 of 2009. Meanwhile, guideline of CFC development at province level has been governed in Minister of Women Empowerment and Child Protection's Regulation Number 13 of 2010. The realization of CFC program requires support from many parties including (national and local) legislative institution, judicative institution, and governments from central to village/kelurahan levels. Those involved in this program are business (company), academician and most importantly, community including individuals, children, adults, and families (Rosalin, 2011). The policy organized by bureaucratic apparatuses in practice should involve participation through community empowerment. CFC policy has not involved community's active participation completely. Government still focuses on the program implemented by the service for CFC implementation. People are still on level of uncaring about the implementation of CFC. Many problems ignoring the right of child occur at community level. This study will consider how to bring CFC or Child-Friendly City into reality through community empowerment.

### METHOD

This research was taken place in Yogyakarta formerly called "*Kampung Preman* (Village of hoodlums) and now becoming child-friendly village. This research was conducted in Badran Village, particularly in RW 11 located in the western part of Yogyakarta city adjacent directly to one of big rivers crossing, Winongo River. The approach employed was Grounded Theory, the expansion of inductive theory from the data available to explain a social phenomenon (Sarosa, 2012). Data source of research consisted of two: primary and secondary data. Primary data was community including elders and children in Badran Village and RT/RW (neighborhood) administrators. Secondary data consisted of document and archive.

The sampling techniques employed were purposive sampling and snowball sampling ones. *Purposive sampling* is the sampling technique with certain consideration, in which the informants are considered as most knowledgeable about what expected, such as RW administrators and community leaders of Badran village. Meanwhile, snowball sampling is the technique of sampling data source originally small in number to the large one (Sugiyono, 2013). An informant became key informant, RW administrator, who would designate other informants according to the author's need. Data collection was carried out using interactive method including in-depth interview, participatory observation, and Focus Group Discussion (FGD). Meanwhile, non-interactive method included questionnaire, document or archive recording, and participatory observation.

Data validation was carried out using source triangulation in which, according to Patton in Sutopo (2006), the author employed varying data sources, meaning the same or similar data will be more valid when it was extracted from some different sources. Data analysis was carried out using *domain analysis*, *taxonomic analysis*, *componential analysis*, *discovering cultural themes*.

### RESULT AND DISCUSSION

The main idea about friendly-child city has been developed during the 2<sup>nd</sup> UN's Conference on human settlement (2<sup>nd</sup> HABITAT) held in Istanbul in 1996. Child-Friendly City is based on four principles: (1) fair treatment for everyone, regardless ethnic, sex, religion, and social-economic

background, (2) the child's best interest becomes priority, (3) the right of children to better life and development, (4) respecting the right of children (Nour, 2013).

Children protection is any activity conducted to ensure and to protect children and to fulfill their rights in order to live, grow, develop, and participate optimally according to humanity dignity and prestige, and be protected from violence and discrimination. Child-Friendly City (CFC) is regency/city's development system integrating government's commitment and resource, comprehensively and sustainably planned business realm into development policy, program and activity, and development intervention in the form of development policy, program and activity to fulfill the right of children. The objective of CFC is to build regency/city's government leading to the attempt of transforming the Convention of the Right of the Child from legal framework into definition, strategy, and intervention of development in the form of development policy, program, and activity in the attempt of fulfilling the right of the child in a regency/city area dimension (Rosalin, 2011).

Child-Friendly City generally has an objective to ensure the children's right to access basic quality service through sustainable development (Rismanchian, 2007). Government and non-government institutions intervene in the problem of child aiming to build many parties' response. It particularly pertains to the problem of child related to social issues such as street children, children with legal problem, and many more problems occurring around community (Onwong, 2015).

Child-Friendly City is constructed to ensure that children have an opportunity of growing with potency they have. Another opportunity equally important is that of accessing resources they need. Family, community, and other institutions such as school, healthcare institution, and other protection institution contribute to CFC. They become partners and serve to uphold the right of the child in urban life.

CFC development can be conducted using several approaches: firstly top-down system in which idea, program and implementation, as well as evaluation are conducted from government and then going down to community. Secondly, it is bottom-up approach, the idea and program of which comes from community. Thirdly, it is the combination of both of them in which community has had an idea to realize CFC supported by government requiring location to develop CFC. Community's responsibility is a unity that should be implemented in balance so that the process of protecting the right of child will be realized immediately.

Yogyakarta City welcome Child-Friendly City program by calling it Child-Friendly Village. Child-Friendly Village is neighborhood (RW)-based development, unifying local commitment and resource, community and business realm existing in local environment in the attempt of respecting, ensuring, and fulfilling the right of the child, protecting children from violence, exploitation, sexual abuse, and discrimination, and listening to child's opinion, planned consciously, comprehensively, and sustainably (Pemerintah Kota Yogyakarta, 2013).

Community is a group of people interacting with each other continuously so that there is a patterned and organized social relation. Community attempts to meet the need and to solve social problem, leading to life process and changing effort to occur continuously (Sutomo, 2011). Community becomes the main actor in utilizing its surrounding environment to achieve the sustainable development. This activity is the manifestation of process called community empowerment. Community empowerment is related to sustainable development that will bring community into a sustainable economic, social, and ecological development.

Community empowerment is defined as the attempt of fulfilling individual's, group's, and public's needs in order to have ability of choosing and control environment to meet any wishes including accessibility to resource related to occupation and social activity. The main elements of community empowerment are community authorization and capacity development. To get authority and capacity in managing development, community should be empowered through empowerment process (Sutomo, 2011).

Community empowerment is a process aiming to make the community independent in order to improve their standard of life by using and accessing local resource as well as possible. This community empowerment process put people to be main party or the center of development (people or community-centered development) (Delivery team in Mardikanto, 2014).

Community empowerment is generally the process of empowering a group existing in community both economically and socially. Empowering process enables the community to analyze and to deal with the problems they encounter, to meet their life need and to live independently.

The goals of community empowerment are: (1) improved institution: it is expected that through improving activity/action the needs of institution can be met, (2) improved business: the improvement of accessibility and institution can improve the business ran, (3) improved income: the improved business can improve income including family's and community's incomes, (4) improved environment: improved income is expected to improve (physical and social) environment because environment damage is often due to poverty, (5) improved life: good income and environment condition are expected to improve life condition of family and community, (6) improved community: better life condition supported with better (physical and social) environment is expected to realize the better community life (Mardikanto, 2011).

In empowering process, it is community that becomes the actor to define development. Community (people) is told to study and to analyze need, problem encountered and opportunity of dealing with the problem. In addition, community can identify the problem easily and appropriately, and can access resource internally and externally.

So many cases affecting children such as child exploitation, child trafficking, child worker and other unrevealed cases will affect the quality of children. Those cases will end up with the negligence of children's rights that should be the state and community's responsibility. The problems of children occurring within community lead to a consciousness that children are on marginalized position. Children have distinctive problem that should be solved by all elements, including community. Children are a part of community requiring distinctive management by both government and community. Children can be not only the object of empowerment conducted by community but also the object of empowerment process.

In 1970s, Badran Village in Yogyakarta was known as *kampong preman* becoming the heavy burden for those living in it. This stigma also affected children's psychology. Label of hoodlum's offspring or *anak preman* became a negative stigma for children. Considering this condition, people of Badran Village began to try to get out of such condition. In 2010, people of Badran Village started to establish a forum called "children-friendly village". They involve children, early age child education cadre, integrated service post cadre, community leader, religion leader and local government apparatus. This forum activity initially identified the problems arising around the village, particularly the ones affecting children. It is community that understands what becoming the source of problem and how to get out of the problem. The

people's agreement to change hoodlum village into child-friendly village focuses more on non-physical children development.

In this stage, empowerment process starts with involving social process and action in which the members of a community organize themselves in planning and taking collective action to solve social problem or to meet social needs according to their own ability and resource (Suharto, 2010). Empowerment as a process is an activity of reinforcing and or optimizing the powerfulness (in the sense of competitive ability and or advantage) of weak group within community, including individuals having problems. Community empowerment is a process in which community, particularly those with limited resource, women, children, and other marginalized groups, is supported in order to improve their wellbeing and to be independent.

Most of Badran villagers live in Winongo River bank with entrepreneur being their livelihood and with lower-middle economic class. A variety of businesses flourish in the village, such as *bakpia*, *yangko*, and *onde-onde* sellers. Fish breeding is also promoted using *karamba* (basket put in a stream for raising fish) system in the river around the village. Save-loan cooperatives with members of society being the members flourish in Badran Village neighborhood. Meanwhile, the activity that can be a model to surrounding neighborhood is rubbish bank. People collect domestic rubbish once a week to be exchanged with money saved in one of administrators that can be withdrawn later in certain period of time.

The characteristics of people with any problems and activities become a capital to bring child-friendly village into reality in community empowerment. Badran Village is an urban area located along Winongo River and in black area. Viewed from education, social, economic and health aspect, this village still highly needs to be empowered to remove negative stigma and to change it into a more productive and child-friendly village. Community and religion leaders' commitment becomes the main capital in establishing child-friendly village. The key to community empowerment process lies on the community and its leaders. Such the process can be called top-down process, the one arising from community level.

The appearance of cadres within community in education and health sectors become a capital of community empowerment as well. They are the starting point of any activity aiming to make a village child-friendly. Cadres fight for making the children' right to education and health fulfilled without reasonable return to their work. The existence of health cadre supports integrated service post (*posyandu*) program conducted once a month to monitor the health of children, particularly under-five age children. Meanwhile education cadre focuses more on promoting Early Age Child Education (*PAUD*) held routinely in Badran Village.

Community activity the Badran Village has had becomes a capital in community empowerment process to make it a child-friendly village. Community leaders along with the community with any social-economic activities and cadres struggling in health and education sector have been able to change the mindset of hoodlum village into child-friendly village. Another party playing equally important is PT. Sari Husada Yogyakarta with its CSR (Corporate Social Responsibility) program. This program is the result of collaboration between PT. Sari Husada and PKPU (*Pos Keadilan Peduli Umat* or in English "Justice Post Caring about Religious Community"). So, the implementation of CSR by PT. Sari Husada was not conducted directly by the company but delegated to third party, PKPU.

PT. Sari Husada's CSR program contributed to realizing child-friendly village by establishing *rumah Srikandi* (Srikandi House). *Rumah Srikandi* is intended (1) to improve the quality of nutrition for under-five age children, (2) to revitalize Early Age children Education institutions,

and (3) to empower the women economically. To improve the quality of nutrition for under-five age children, *Rumah Srikandi* through empowering *posyandu* at RW (neighborhood) level can give mothers with under-five age children an independency in providing balance nutrition thereby mitigating the problems of malnutrition and nutrition deficiency. Through *posyandu* held in *Rumah Srikandi*, community particularly nutrition cadres are built and given knowledge about nutrition for child and under-five age child. Facilitator team from PKPU holds training and facilitation to local women in order to be nutrition cadres by giving them knowledge on exclusive breastfeeding, demonstrating how to cook food correctly to prevent the nutrition content from being lost. Cooking demonstration is also held by PKPU facilitator to enable the women to cook food varyingly, to prevent children from feeling bored with the food. In addition, through *Rumah Srikandi*, community is invited to plant vegetables and fruits in their house yard. It is intended to give the family the knowledge on healthy nutrition for baby and under-five age children. Another activity supporting under-five age children health program is a gathering to discuss how to deal with children with malnutrition and nutrition deficiency condition.

The empowerment in education sector is conducted by revitalizing Early Age Children Education (PAUD) institutions. The beginning step is taken by making the parents aware of enrolling their children in PAUD. PT. Sari Husada has also established a PAUD to facilitate the children to study in the school around the village. In addition, PAUD cadres are also authorized to manage and to develop PAUD.

To support the women empowerment program economically, PT. Sari Husada emphasizes more on reinforcing the capacity of community in cooperatives and micro-economic institutions. Productive business is also operated by developing batik craft, snack, and souvenir businesses. To meet the need for business capital, save-loan cooperatives begin to be developed. Another activity conducted for empowering the community in economic sector is the presence of rubbish bank.

During 2009-2014, *Rumah Srikandi* had been able to solve many problems in health, education, and economic sectors in Badran Village. At the same time, PT. Sari Husada provided some facilities such as funding and facilitator personnel corresponding to its core business. *Rumah Srikandi* successfully achieves the main objective to create independency and to empower the community. After PT. Sari Husada exited from the program, the community is expected to have been able to empower itself with program independency in inventorying problem, arranging program, implementing, and monitoring and evaluating the program. Child-friendly village program is a program resulting from Badran village community empowerment. This program still runs until today and to maintain the program, people should pay dues of IDR 500.00 (five hundreds rupiah) monthly as the substitute of operational cost.

Company should not only be responsible to shareholders and investor but also give answer to the question of people in which it operates and that of all community members. Corporate Social Responsibility aims to cater to community rather than serves to be a means of push the business forward financially (Kincaid, 2012). CSR conducted by company should hold on 3 principles: profit, people, and planet (Mardikanto, 2014). A perfect company not only seeks for profit but also cares about environment conservation (planet) and people's welfare (people). Company's mission and ethical code usually define initiative, form, strategy, and size of social responsibility. Those values are internalized into three ideas: moral, rational, and economic cases. Moral case is what the organization believes to be its obligation to the people (community); rational case attempted to work proactively to minimize the limitation of community (people) business by imposing it to the company; economic case aims to increase

the financial value of company by maintaining its reputation among the stakeholders (Kincaid, 2012).

### CONCLUSION

The problem of child increases quantitatively. That is why government has launched a program, Child-Friendly City (CFS) or child-friendly village. This program needs participation of many parties including community. Community that can identify the problem the children encounter and how to utilize the resource owned to solve the problem. This process is called community empowerment. Planning, implementation and evaluation and monitoring are all conducted by community (people). In addition to featuring the community empowerment process, child-friendly village program in practice is also supported by CSR (Corporate Social Responsibility). Partnership between community and company results in child-friendly village.

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## Role of Institutional Interaction for Financial Stability in the context of Inflation Targeting

**Abderrazak El Hiri**

Professor at University Sidi Mohamed Ben Abdellah. Director of the Laboratory for Coordination of Studies and Research in Economic Analysis and Forecasting (CERAPE)

**Salwa Habiby**

PhD student at University Sidi Mohamed Ben Abdellah, CERAPE.

### ABSTRACT

The Moroccan authorities are aiming for the implementation of an inflation targeting policy. However, the economy has a number of handicaps, including a high level of debt and modest financial stability. The purpose of this article is to analyze how the interaction between institutions could enhance financial stability and manage risks that could disrupt the smooth functioning of the market as part of an inflation-targeting regime, across two empirical studies. After studying the interaction between policies, we have developed a model of structural equations that integrates the specificities of the Moroccan economy and its institutions into a predictive vision. We found that the weight of debt influences negatively the financial market, but an application of inflation targeting can mitigate the severity of the financial and debt crisis on financial stability while keeping inflation and production close to their objectives. The results of this study encourage the transition in a medium-term to inflation targeting policy, since reducing the level of debt influence positively the expectations of economic agents.

**Keywords:** financial stability, fiscal policy, inflation targeting, structural equation model.

### INTRODUCTION

In recent years, the emphasis on financial stability has grown. It should be noted that inflation-targeting countries are facing new challenges. On the one hand, they must combine the two objectives of monetary and financial stability- without forgetting the interdependence between the two policies- and the risk arising from the integration of the two objectives in the monetary policy rule. On the other hand, they must take into account the tax objective. However, opinions on the fallout from fiscal instability differ. For some, the application of a fiscal rule is necessary since a large fiscal deficit could lead to an overreaction of inflation expectations and therefore to higher inflation. For others, the introduction of the fiscal target will have no impact on financial stability and may even degrade it.

The discussions that followed the latest financial crisis have shown that the dichotomy between monetary policy, financial stability policy, and fiscal policy may not exist since they are intrinsically linked.

It is in the context of these discussions and the increase in the number of countries adopting the targeting and fiscal rule policy that this work is taking place.

Indeed, Morocco wants to adopt an inflation targeting policy, but the economy suffers from a high level of debt and relative financial stability.

The issues that arise and to which we will answer are: can Morocco adopt a targeting policy without having fiscal stability? Will the level of debt deteriorate financial stability? What is the combination, in the context of inflation targeting, between fiscal and monetary policies to ensure financial stability?

To answer these questions we will perform two empirical analyzes. The first is an analysis of the interaction between fiscal, monetary, financial and social policy. The second is a study of the possible implementation of the inflation targeting policy in Morocco, using a structural equation model.

### **INTERACTION BETWEEN INSTITUTIONS FOR FINANCIAL STABILITY: LITERATURE REVIEW**

The question of interaction between financial stability and monetary policy has attracted the interest of several theorists. Indeed, Cogley [1] has shown that since it is almost impossible for policymakers to check speculative activity around asset prices, any attempt to break through asset bubbles would instead destabilize the economy. Contrary to this result, Stone [2] asserts using a New Keynesian model that the central bank should consider asset prices when designing monetary policy, the reaction to asset prices will not induce additional volatility in the economy. Borio et al. [3] have listed the indicators that have a predictive value to be included in the rule to improve our ability to measure the risks of a financial crisis.

For Woodford [4] the real issue is not whether assets are under / over-rated, but rather the regulators need to monitor the extent to which positions taken by leveraged institutions pose a risk to financial stability. The most worrying issue is the likelihood of a poor common outcome that could trigger a systemic crisis. The central bank must balance financial stability objectives with its goal of price stability in a flexible inflation targeting commitment. This can be done by directly adjusting how central banks targeting inflation already envision the short-term trade-off between price stability and production stability.

Svensson [5], meanwhile, proposes that monetary and macroprudential policies should be conducted separately. The impact of each goal on the other should be unforeseen and weak. In addition, coordination with other macro-prudential instruments is important to avoid negative interaction effects, especially if they serve different intermediate objectives. This will allow the achievement of the Nash equilibrium, namely low inflation and acceptable financial stability.

However, the integration of the objective of financial stability into the loss function poses the problem of independence of the central bank, a legitimate notion in the sharing of monetary and fiscal responsibilities, as well as in the conduct of micro and macro-prudential measures [6].





Success [14], and could have a significant, robust and quantitative effect on the limitation of the public deficit [15]. However, for others, the implementation of fiscal rules has had no positive impact on country performance; measured by the volatility of the primary fiscal balance; who adopted it compared to those who did not [16]. For a fiscal rule to be effective and adapt to unforeseeable situations, it must be complemented by strong political commitment or by national budget institutions [17].

For Mishin, the doubt over the implementation of measures and regulations to conduct a sound and responsible fiscal policy was decided after the financial crisis [18]. In a difficult economic environment, the central bank will not be able to control the target level of inflation without long-term fiscal sustainability. When the banking and financial system is underdeveloped, the government exerts a tax burden on monetary policy to finance the public deficit. This can lead to either fiscal dominance, the production of a state default, or financial disruption and a contraction of the economy.

Co-ordination between fiscal and monetary policy can therefore lead to a stable financial system, but at the same time respecting a certain proportion, since excessive public debt can deteriorate the financial and economic sphere and lead to a crisis.

### **ASSESSMENT OF THE INTERDEPENDENCE BETWEEN FINANCIAL, MONETARY, MACROECONOMIC, FISCAL AND SOCIAL STABILITY**

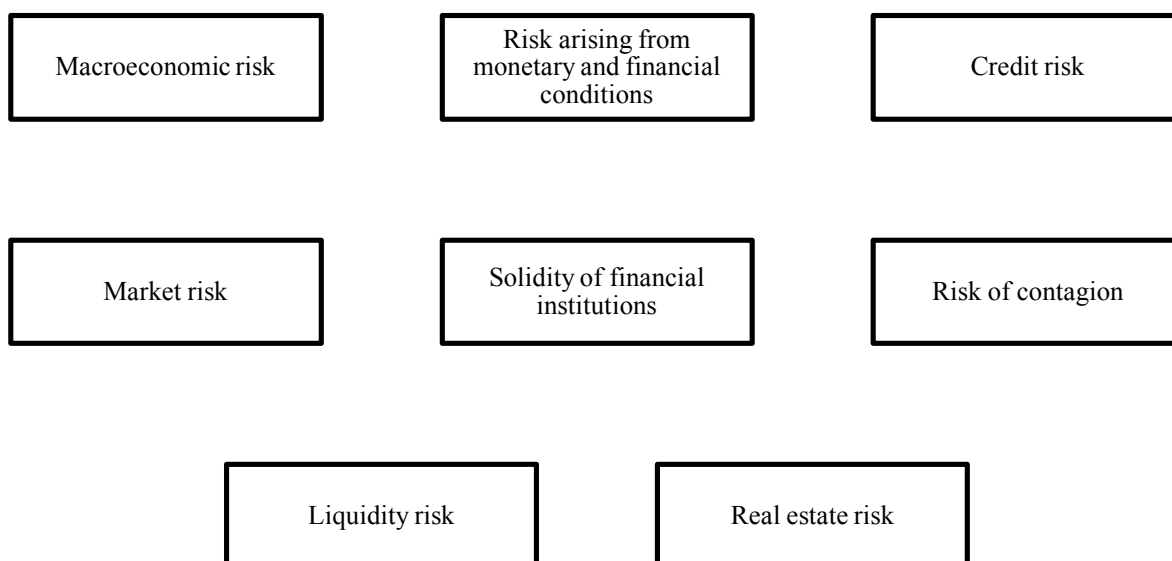
The possible implementation of inflation targeting in Morocco leads us to perform an analysis of the interaction of price stability, financial and budgetary stability to assess the challenges and issues to be addressed for the transition to the new regime.

The depth of the financial sector and the level of the budget deficit have improved considerably in the last decade. We will outline some indicators to assess this improvement and identify weaknesses to be overcome for effective implementation of the inflation targeting policy.

#### **Risk specification**

Financial stability risk mapping is composed of indicators from financial institutions, macroeconomic and financial conditions as well as economic actors.

**Figure 2: Mapping of risks to financial stability.**



**Source: Bank Al Maghrib.**

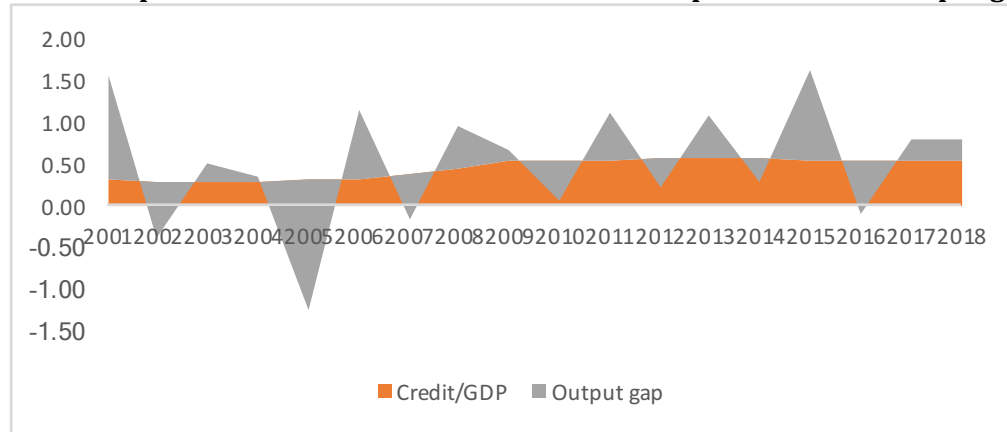
## Results and discussion

We will simultaneously present the results and discussion of interactions between policies.

### *Financial stability Vs macroeconomic stability Vs social stability*

The comparison between the credit / GDP ratio and the output gap allows us to compare between financial and economic development. The figure below shows that the long-term trend in the credit / GDP ratio goes with the output gap, which means that there is no conflict of objectives between financial and macroeconomic stability.

**Figure 3: Comparison between financial market development and the output gap.**



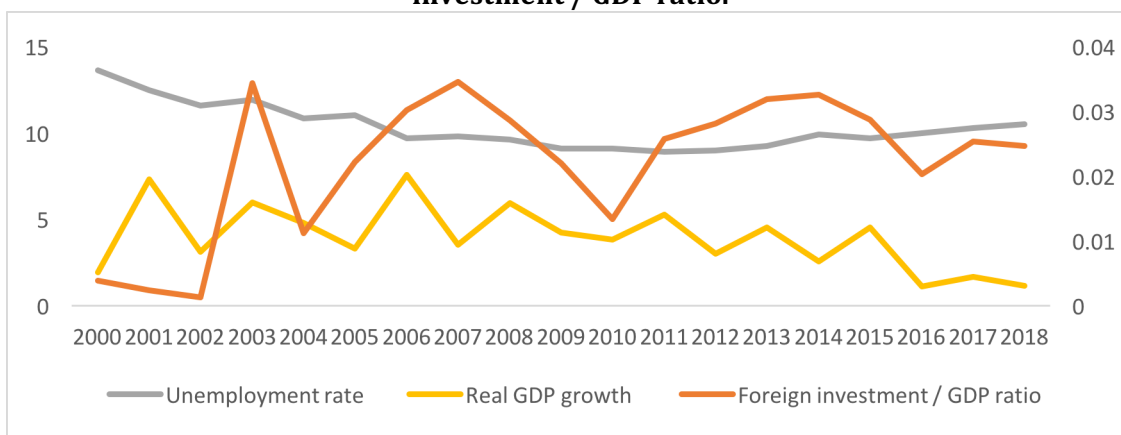
**Source: Bank Al Maghrib and author's calculations.**

The undeveloped financial markets are often located in emerging countries. Indeed, if we compare the ratio foreign direct investment / GDP with the unemployment rate and real GDP growth, we find that they have the same trend.

Well-functioning financial systems provide quality and easily accessible information, which can reduce transaction costs and, subsequently, improve resource allocation and stimulate economic growth. Banking systems and stock markets reinforce growth, the main factor in reducing poverty.

Without forgetting the impact of legislative and political stability (investment risk) that made the existence and development of financial markets possible. Investors are starting to have more and more confidence in investing in our country.

**Figure 4: Comparison of real GDP growth in percentage, the unemployment rate, and the foreign investment / GDP ratio.**

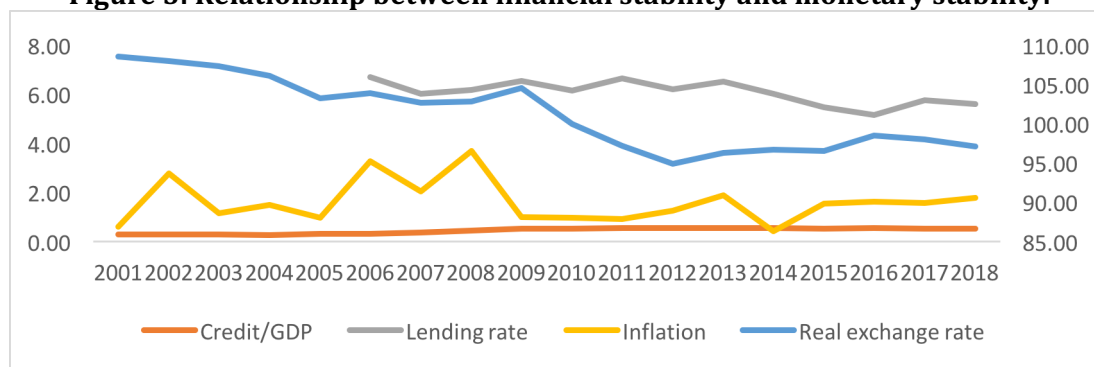


Source: World Perspective and World Bank.

**Financial stability Vs monetary stability**

In countries where monetary policy is unstable, financial markets are not developed. Indeed, a monetary policy based on controlled inflation, a balanced exchange rate, a stable and lower credit rate ensures access to loans and the capital market, hence the development of the financial market.

**Figure 5: Relationship between financial stability and monetary stability.**

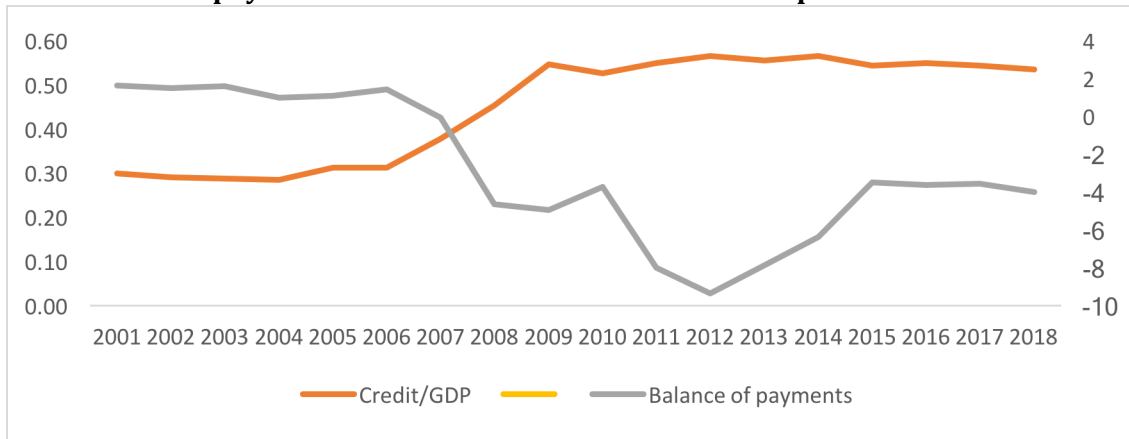


Source: Bank Al Maghrib.

**Financial stability Vs fiscal stability**

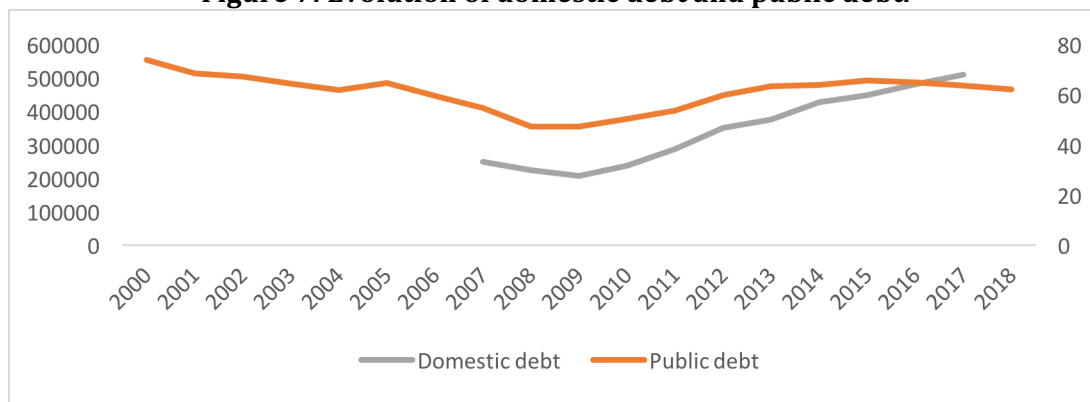
The balance of payments reflects the health of an economy since it summarizes a country's economic transactions with the rest of the world. It shows the balance of a country's international payment and its international investment position. A country where the financial market is developed, and where there is an investment flow, presents a healthy economy.

**Figure 6: Balance of payments in billion dirhams and the development of the financial market.**



Source: IMF.

**Figure 7: Evolution of domestic debt and public debt.**



Source: Ministry of Economy and Finance.

Despite the efforts made in terms of public finances, the budget deficit worsened as it went from 2% of GDP in 2006 to 4% of GDP in 2017. While national savings improved by 14% in 2017 to ensure self-financing and investment expenditures.

Public debt and domestic debt account respectively for 62% and 40% of GDP. The growth of domestic debt is dangerous because of the crowding out effect. In addition, the level of indebtedness in currency is very high; it remains one of the big challenges to be taken up for the passage towards a policy of inflation targeting [19].

**ECONOMETRIC STUDY OF THE IMPACT OF GOVERNMENT DEBT ON FINANCIAL STABILITY UNDER THE INFLATION-TARGETING REGIME**

Since the State's debt is a hindrance to the adoption of an inflation targeting policy in Morocco, the aim of this paragraph is to analyze the influence of the budget deficit on the occurrence of financial and economic crises, and to investigate to what extent flexible targeting monetary decisions with debt and credit spread objective could influence financial stability.

To address this issue, we will develop a structural equation model built in steps underperformed Schumacker and Lomax [20].

**Model specification**

Based on the theories already advanced, we will build a model of structural equations (SEM) that will allow us to trace the linear relationships between the objectives of flexible targeting

(inflation and production), fiscal stability and financial stability, as well as the verification of the hypotheses of interactions in a predictive vision.

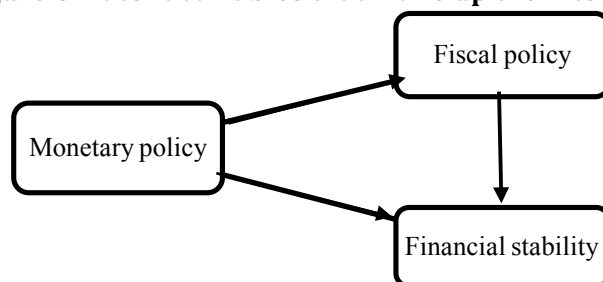
The variables of the research model concern:

- Monetary policy: the variable that reflects the shift of monetary policy is the interest rate. It is calculated according to prospective Taylor rule which includes real interest rate, inflation target, production ( $x_t$ ), and credit spread:  $i_t = p i_{t-1} + (1-p) r^* + \alpha (\pi_t - \pi^*) + \beta x_t + \varphi CS$ .

Credit spread measures the severity of credit frictions. Adding this variable to the Taylor rule means adding the purpose of reducing the incidence of financial crises.

- Fiscal policy: the stability of fiscal policy is measured by the public debt percentage GDP. The financing of the budget deficit is made through borrowing from the financial market or seignorage.
- The stability of the financial market measured by domestic credit percentage GDP. We chose this indicator since it could be coordinated with the stabilization of inflation and output [21]. Banks' ability to cope with extreme shocks is measured by the stress test.

**Figure 8: Latent variables that make up the internal model.**



In this figure, fiscal policy has a mediating effect. In the next section, we will also test its moderating effect when we include the tax objective in the Taylor rule. The objective is to know whether the strength of the relationship between monetary and financial policy depends on the target level of fiscal stability. In other words, the balance between monetary and fiscal policy to financial stability.

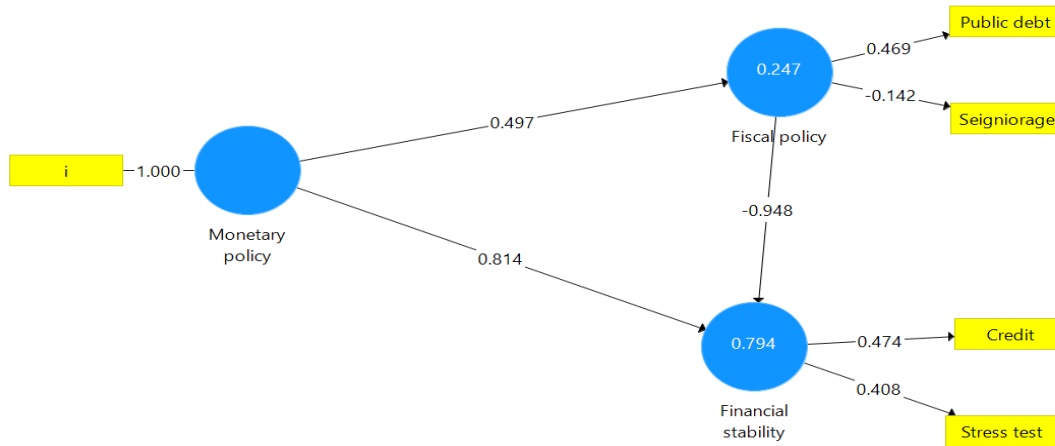
Note that the manifest variables (the external model or measurement) are standardized and related to the latent variable in a reflective way.

We have opted for partial least squares (PLS) for two main reasons: the sample size is less than 100 (quarterly data from Q1.2000 to Q2.2018); and since we want to test the impact on the stability of asset prices if Morocco is part of an inflation targeting policy with fiscal policy.

### Results of estimates

Following the method described by Chin [22], Tenenhaus et al [23], we estimated latent variable scores with an iterative logarithm, and then we used multiple regression.

**Figure 9: Causal PLS model (structural and external model).**



The results of the causal model are summarized in the following tables:

Latent variable	Manifest variables	Correlation
Monetary Policy	Interest rate	1
fiscal Policy	Public debt% GDP	0,469
	seigniorage	-0,142
Financial stability	Credit% GDP	0,474
	Stress test	0,408

**Table 1: Results of external model estimation.**

- For the financial stability variable, we have  $R^2 = 0.794$  and the  $R^2$  Bootstrap = 0.798.
- All the Collinearity Statistics (VIF) are less than three.
- The path coefficient (internal model) is:

Latent variable	Path coefficient	P-value
Monetary policy - financial stability	0,814	0,006
Monetary policy - fiscal policy	0,497	0,035
Fiscal Policy - Financial Stability	-0,948	0,013

**Table 2: Results of Internal Model Estimation.**

After introducing the tax objective into the Taylor rule, we calculated the PLS interaction. The result is:

Latent variable	Coefficient	Probability
Monetary policy - financial stability	0,944	0,047

**Table 3: verification of the moderating effect of the public debt % GDP.**

**Discussion**

At the end of our analysis, we can make the following conclusions:

First, the weight of monetary financing (seigniorage) is lower than borrowing from the financial market, which means that the Moroccan government does not use the net income from money creation to bridge the transitional gap between income and expenditure flows. This level of deficit poses no threat to an independent monetary policy operated by the central bank. In parallel with fiscal consolidation measures, monetary policy is in most cases neutral or

expansionary in order to reach the target level of inflation and encourage the granting of credit. However, to avoid fiscal dominance and tax-based inflation, government financing from the financial market must not be exuberant.

Second, fiscal policy has a negative and relatively strong effect on financial stability. For a successful transition to the inflation targeting policy, we must reduce the debt level to preserve stability.

Finally, monetary policy may have a slight impact on the dynamics of the public debt, in particular by its influence on the interest rate, but it has a strong and positive influence on financial stability.

Based on these findings, we tested the impact of the combination of monetary and fiscal policy on financial stability. The result is promising. Indeed, because the inflation target is set in principle in coordination between Bank Al Maghrib and the Ministry of Finance, the independence of the central bank is ensured. In addition to this coordination, there is a balance between expected inflation, production, and prevention of financial crises.

### **CONCLUSION AND RECOMMENDATION**

The financial crisis has shown that to avoid persistent economic shocks, enhance financial stability and macroeconomic conditions, the central bank must consider the macro-prudential measures in the formulation of monetary policy. But the success of this process depends heavily on the level of public debt since it determines the level of agreement between institutions and the possible combination of objectives.

Bank Al Maghrib invested increasingly to introduce the issues of financial stability in its monetary behavior. Besides the latest reform of the statutes focused on strengthening the openness of the economy to limit the severity of financial crises.

In this article, we analyzed the interaction between institutions to strengthen financial stability and manage risks that could disrupt the proper functioning of the market under an inflation-targeting regime.

In a first study, we analyzed the interaction between policies. We have demonstrated the importance of financial stability and its link to fiscal, monetary and economic growth. On the one hand, financial stability facilitates the transfer of capital that is necessary for growth. On the other hand, good economic conditions ensure good investment returns and reduce the risk of financial destabilization. Thus, a country where the financial market is developed, the volume of the investments increases which facilitates the increase of the production and the consumption. This growth leads to the reduction of the unemployment rate. We have also raised the problem of public debt and the size of the balance of payments on financial stability. In a second study, this time econometrically, we tested the desirability of applying an inflation-targeting regime in light of the lessons of the 2009 financial crisis. An application of inflation targeting can mitigate the severity of the financial crisis and debt on financial stability while keeping inflation and production levels close to their objectives. The results of this study encourage the transition to a medium-term inflation targeting policy, since reducing the level of indebtedness is desirable before targeting influence positively the expectations of economic agents.



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## APPENDIX: COUNTRY AND YEAR OF APPLICATION OF PUBLIC DEBT TARGETING

Antigua and Barbuda	1998	Hungary	2004
Argentina	2000	Indonesia	2004
Armenia	2008	Ireland	1992
Australia	1998	Italy	1992
Austria	1995	Kenya	1997
Belgium	1992	Latvia	2004
Benin	1999	Lithuania	1997
Brazil	2001	Luxembourg	1990
Bulgaria	2003	Mali	1999
Burkina Faso	1999	Malta	2004
Cameroon	2002	Mauritius	2004
Canada	1998	Namibia	2001
Central African Republic	2002	Netherlands	1992
Chad	2002	Niger	1999
Congo, Rep.	2002	Pakistan	2005
Cote d'Ivoire	1999	Panama	2002
Czech Republic	2004	Poland	1997
Denmark	1992	Portugal	1992
Dominica	1998	Romania	2007
Ecuador	2003	Senegal	1999
Equatorial Guinea	2002	Slovak Republic	2004
Estonia	2004	Slovenia	2004
France	1992	Spain	1992
Finland	1995	Sri Lanka	2003
Gabon	2002	St. Lucia	1998
Germany	1992	St. Kitts and Nevis	1998
Greece	1992	St. Vincent and the Grenadines	1998
Grenada	1998	Togo	1999
Guinea-Bissau	1999	United Kingdom	1992

Source: Altunbaş, Y., & Thornton, J. (2017). Why do countries adopt fiscal rules?. *The Manchester School*, 85(1), 65-87

## Technological Applications of the Grand Unified Theory

**E. E. Escultura**

Research Professor(Honorary),

GVP – Professor Lakshmikantham Institute for Advance Studies

GVP College of Engineering, JNT University Kakinada, Vishakhapatnam, AP India

### ABSTRACT

This paper presents the fundamentals of quantum gravity, one of the two pillars of the grand unified theory (GUT) and its technological applications. GUT is a physical theory, i.e., a mathematical space where the basic premises or axioms are laws of nature. Therefore, GUT inherits the rigor of mathematics, its language, as a deductive system. Proposed by Albert Einstein in the 1920s to unify the four forces of nature – gravity, electromagnetism and the weak and strong forces of quantum physics – it did not materialize until the discovery of the superstring, fundamental building block of matter (1997) as a necessary step to solve the 200-year old gravitational n-body problem. The solution yielded 9 natural laws of GUT beyond the four laws of thermodynamics, Newton's three laws of motion and his universal law of gravitation. True to its name, what started with the narrow objective of unifying the four forces of nature, GUT now unifies the natural sciences in the sense that every natural science field is an extension of GUT plus natural laws specific to that field. Moreover, every natural phenomenon (appearance of nature) is explained by natural laws. Most of all, GUT explains how nature works which makes it the basis for designing a class of technologies called GUT technologies. We focus on two of them:

(1) Technology for massive generation of electric power

(2) Magnetic charger for battery cars and vehicles.

Both technologies run on the free, clean, indestructible and inexhaustible dark matter that is abundant everywhere around us using magnets alone. Moreover, the paper offers improvement on the magnetic train which also runs on the clean, free and indestructible dark matter using magnets alone. Only China, Japan and South Korea own and operate magnetic trains.

**Key Words.** Magnetic Engine, Generalized Fractal, Primum, Quantum Gravity, Quark, Superstring.

### INTRODUCTION

Originally proposed by Albert Einstein in the 1920s with the narrow objective of unifying the four forces of nature – gravitation, electromagnetism, the weak force and the strong forces – by a single set of equations that describe them; the project did not materialize during the next 85 years until the discovery of the superstring in 1997 [1]. The superstring is the fundamental building block of matter. The reason for the failure is two-fold: (1) the theory of relativity which Albert Einstein tried to use to pursue the project was critically flawed by the premise of empty space beyond the observable bodies in the cosmos and (2) inadequacy of the traditional method of computation and measurement. The existence of electromagnetic waves alone contradicts this premise because a wave needs a medium to propagate itself.

Science – the study of nature – has two components: the science itself, and its language – mathematics. A field of science is defined by its subject matter. The traditional method of mathematics has been computation and measurement. It is inadequate for complex situation that often arises in mathematics. This is the reason traditional mathematics failed to solve or

resolve long standing problems such as the 360-year-old Fermat's conjecture (popularly known as Fermat's last theorem [2]) and the 250-year-old Goldbach's conjecture [3]. That is why the author had to apply a new methodology for mathematics that he introduced in [4] called qualitative mathematics to make a critique-rectification of the underlying fields of FLT that started in 1992 and culminated in its resolution in 1998 by way of a counterexample that proved FLT false [5].

Qualitative mathematics, the mathematical model of rational thought [6] and the complement of computation and measurement, was applied to physics in 1996 to devise a new methodology – qualitative mathematics and modeling – that yielded the solution of the gravitational n-body problem [1]. Qualitative mathematics involves the following activity:

*Making conclusions, visualizing, abstracting, thought experimenting, learning, creating concepts for building mathematical a space, intuition, imagination, trial and error to sift out what is appropriate, negating what is known to gain insights into the unknown, altering premises to draw out new conclusions, thinking backwards, finding basic premises for a mathematical space and devising techniques that yield results.*

Qualitative mathematics releases thought from constraint in the pursuit of knowledge. However, since it also raises the chance of error, flaw and ambiguity creeping in, it must provide safeguards against this possibility. It does by making every field of mathematics a mathematical space built on consistent basic premises or axioms. A mathematical space consists of concepts (e.g., symbols, words, figures), operations and relations where every concept, operation and relation is defined by the axioms. It is a deductive system, i.e., every conclusion (e.g., theorem) is supported by and follows from the axioms. Reference [7] enumerates the known sources of ambiguity, some of which inherent in certain concepts (e.g., infinity), and how to contain them.

In science the traditional method of quantitative modeling (formerly called mathematical modeling) describes natural phenomena (appearances of nature) mathematically and uses reasoning by analogy which is unreliable. This method is inadequate and left long standing problems of physics unsolved. The author applied qualitative mathematics and modeling to physics for the first time to solve the n-body problem and launch, at the same time, the development of the grand unified (GUT). To avoid error, flaw and ambiguity we build every field of science as a physical theory, i.e., a mathematical space where the axioms are laws of nature. This way, science inherits the precision of mathematics as a deductive system.

### **OVERVIEW OF THE GRAND UNIFIED THEORY**

We provide a sweeping summary of quantum gravity (details and explanation in [8]), one of the two pillars of GUT, the other macro gravity concerned with cosmological bodies.

#### **The Superstring**

We first introduce partial definition of physical concepts until the discovery of appropriate natural laws that define them are found. *Energy* is motion of matter. Therefore, *matter* and energy are never separate and neither pure matter nor pure energy exists. Thus, there is no massless piece of matter and the photon has mass. Once the superstring is discovered, matter is known and everything else is. The semi- and non-agitated superstrings comprise *dark matter*, one of the two fundamental states of matter, the other ordinary or *visible matter*. Dark matter is not directly observable because its constituent superstring has wavelength less than that of visible light (less than  $10^{-16}$  meters). *Flux* is motion of matter with direction at each point. *Wave* is suitably synchronized sequence of resolution of contending forces in the medium that results in suitably synchronized vibration of the medium. In the case of water

wave the water molecules are the medium and the contending forces are gravity and pressure. *Chaos* is mixture of order none of which is identifiable. For example, chaos occurs at the onset of a hurricane. When a huge solid *el niño* forms on the ocean surface (a region of warm surface due to under-ocean volcanic eruptions) the lower atmosphere above it heats up causing low pressure (depression). Heat raises kinetic energy and motion, pushes the molecules apart, lowers density and reduces the pressure. The atmospheric depression sucks the air molecules around it by the trillions. At this phase in the evolution of this phenomenon it is impossible to identify the path of a single molecule among the trillions due to their collision (chaos) but every molecule is subject to natural laws (order). This is the first formal definition of chaos. Since chaos is energy dissipating due to collision, Energy Conservation pushes this phase towards a global order, a coherent vortex in the atmosphere called *hurricane* which is *turbulence*. *Electromagnetic wave*, one of the two basic cosmic waves, is generated by the natural vibration of atomic nucleus and propagated across dark matter. The natural vibration of the atomic nucleus is due to the impact of electromagnetic waves coming from all directions in the cosmos. Thus, every piece of matter has natural vibration.

### The Laws of Nature

We include Newton's three laws of motion [9] and the four laws of thermodynamics [10] among the laws of nature but we introduce more natural laws that we need. We first state the fundamental natural law, a modification and extension of the first law of thermodynamics [11] to dark matter.

**Energy Conservation Law.** *In any physical system and its interaction, the sum of kinetic (visible) and latent (dark) energy is constant, gain of energy is maximal and loss of energy is minimal.*

This law is fundamental because all other natural laws and principles are expressions of it. We express this as a natural law.

**Energy Conservation Equivalence.** Energy conservation has many expressions or forms: order, symmetry, economy, least action, optimality, efficiency, stability, self-similarity (nested fractal), coherence, resonance, quantization, synchronization, smoothness, uniformity, motion-symmetry balance, non-redundancy, non-extravagance, evolution to infinitesimal configuration, helical and related configuration such as circular, spiral and sinusoidal and, in biology, genetic encoding of brain wave vibration characteristics, reproduction and order in diversity and complexity of functions and configuration that provides optimal capability.

Each component of this law is called physical or mathematical principle. Being circular, sinusoidal and symmetrical are universal (natural) configurations of matter according to the Energy Conservation Equivalence law. That is why the profile of a wave is sinusoidal, not triangular or trapezoidal. Consider a piece of rock thrown into the water. It pushes molecules of water down with it. However, pressure pushes them upwards and above the water surface due to momentum (product of mass and speed). Gravity pulls them down below the surface due to momentum. Pressure pushes them up again, etc., causing oscillation about the water surface. Water viscosity induces formation of advancing circular molecular oscillation (vibration) around the point of impact causing a sequence of concentric circular waves propagated away from the point of impact. Water viscosity has a damping effect on the molecular vibration, dissipates the energy imparted by the impact of the falling rock and soon the waves vanish. Similarly, electromagnetic wave is suitably synchronized vibration of the medium. This definition rules out wave in empty space. The characteristic of nuclear vibration is determined by the nuclear structure in accordance with this natural law:

**Internal-External Factor Dichotomy Law.** *The interaction, dynamics and physical characteristics of a physical system are shaped by internal and external factors; in general the internal is principal over the external and the latter works through the former.*

Heat is kinetic or visible energy due to vibration of atoms and molecules of a body. Its propagation through heat conduction is in accordance with the Resonance Law [11] that says, **Resonance Law.** *Maximum resonance between waves, oscillation or vibration occurs when they have exactly the same characteristics with wavelength or frequency as the principal factor. The degree of resonance declines with the difference between wave characteristics and orders of magnitude of their wavelengths. However, at suitably high order of magnitude of wavelength the infinitesimal effect of resonance by orders of magnitude nearby rises to significance.*

The next natural law is crucial for the study of turbulence.

**Flux-Low-Pressure Complementarity Law.** *Low pressure sucks matter around it and the initial chaotic rush of matter towards a region of low pressure stabilizes into local or global coherent flux called turbulence; conversely, coherent flux induces low pressure around it.*

This natural law was inspired by a simple high school experiment many years ago.

One error of traditional physics that delayed the resolution of the ancient quest for the superstring is the failure to identify the requirement for the fundamental building block of matter which is indestructibility. Otherwise, our universe would have vanished long ago which did not for it has existed for 8 billion years (corrected value) [12].

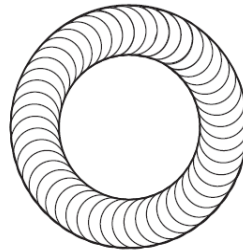
It is a fact that matter appears steadily and rapidly, especially, in certain regions of the cosmos called star nurseries [13,14]. By Energy Conservation, it must have come from somewhere and that is what we have called dark matter consisting of non-agitated and semi-agitated superstrings. The only force that resonates with the superstring is electromagnetic wave which is fractal being generated by the fractal atomic nucleus [15]. Hit by suitable electromagnetic wave a non-agitated superstring is (a) thrown by its impact; bounces with others and comes to rest in dark matter when the imparted energy dissipates or (b) gets close to its path and sucked by it, by Flux-Low-Pressure Complementarity, and forms a loop the original superstring becoming its toroidal flux. By Energy Conservation and Energy Conservation Equivalence, its path shrinks and evolves to energy-conserving form: closed circular helical spiral loop with a superstring traveling through its cycles at  $7(10^{22})$  cm/sec [16] called toroidal flux; this value is a constant of nature for toroidal and induced vortex fluxes. Energy Conservation Equivalence requires this structure be repeated in every toroidal flux from which follows the fractal sequence structure [17] of the superstring which makes it indestructible. We identify the semi-agitated first term with the superstring itself because it is the term involved in its interactions. (c) Hit by suitable electromagnetic wave the first term of the superstring expands and becomes semi-agitated, by Energy Conservation. In both cases (a) and (b) the superstring is a nested generalized physical fractal sequence of superstrings [17]. Its latent energy is super huge due to its fractal structure. The non-agitated superstring is mathematically modeled by the d-sequence of the dark number  $d^*$  [18].

We summarize our findings as a natural law.

**Existence of Fundamental Building Block of Matter and its Generalized Nested Fractal Structure.** *The fundamental building block of matter is the superstring, a non-agitated superstring traveling at  $7(10^{22})$  cm/sec through its helical circular loop and nested fractal*

*sequence of superstrings with itself as first term, each superstring except the first is contained in and similar to the preceding term in structure, behavior and properties; each superstring except the first is contained in and similar to the preceding term in structure, behavior and properties; each superstring except the first is contained in and similar to the preceding term in structure, behavior and properties, etc., ...*

The figure described is called nested generalized physical fractal sequence [17], the structure that makes the superstring indestructible (Figure 1).



**Figure 1: A semi-agitated superstring; its dark toroidal flux travels through its cycles at  $7(10^{22})$  cm/sec. (Figure taken from [19])**

The superstring is non-agitated if its cycle length (CL) is less than  $10^{-16}$  meters, semi-agitated if  $10^{-16} < CL < 10^{-14}$  meters and agitated if its  $CL > 10^{-14}$  meters. Dark matter consists of non-agitated superstrings.

### THE PRIMUM

When suitable electromagnetic wave hits a semi-agitated superstring a pair of mutually exclusive events occurs: (d) the first term of its fractal superstring bulges to retain the toroidal flux speed despite the energy imparted by the electromagnetic wave, by Energy Conservation, turning it into an agitated superstring called *primum*, unit of visible matter, its toroidal flux non-agitated, or (e) the first term breaks, its toroidal flux remaining non-agitated and dark. The *primum* has dark superstring component that attaches it to dark matter through resonance. The basic *prima* are the electron, charge  $-1$ ; +quark, charge  $+2/3$ ; and -quark, charge  $-1/3$  [20]. They are basic because they comprise every atom of our universe.

The next law articulates our findings.

**Dark-to-Visible-Matter Conversion.** *When suitable electromagnetic wave hits a semi-agitated superstring one of these occurs: (i) the outer superstring breaks, its toroidal flux remaining non-agitated superstring; (ii) a segment bulges into a *primum*, an agitated superstring and a unit of visible matter.*

When a suitable electromagnetic wave hits a superstring the first term of the sequence breaks, by Resonance, leaving the rest intact and nested fractal sequence of superstrings, i.e., a superstring. Thus, this structure insures its indestructibility. It is neither created nor destroyed; it only goes through an endless cycle. It follows that the *Universe* of dark matter has no beginning and no end (timeless). By Flux-Low-Pressure Complementarity, it has no boundary, i.e., unbounded and infinite, and our universe is a finite local bubble in it among other universes.

The next natural law is central to primal interaction. We first state its broad form.

**Flux Compatibility\*.** *Two fluxes of the same direction attract but two fluxes of opposite directions repel each other.*



**Figure 2: A simple primum, bulged segment of a semi-agitated superstring. Its toroidal flux pulls and spins the non-agitated superstrings around it (by Resonance) into its magnetic flux. Its polarity conforms to the right-hand-rule of electromagnetism: when the index finger points in the direction of its toroidal flux, the thumb points to the north pole. (Figure taken from [19])**

We state a special form of the Flux Compatibility\* law that applies directly to vortex fluxes of superstrings.

**Flux Compatibility.** *Two prima of opposite toroidal flux spins attract at their equators but repel at their poles; otherwise, they repel at their equators but attract at their poles. Two prima of same toroidal flux spin connect equatorially only through a primum of opposite toroidal flux spin between them called connector.*

A physical system is observable through the medium of light if its size is comparable with the wavelength of the latter; this follows from the Resonance Law. Thus, a semi- or non-agitated superstring is not observable since its cycle length is less than the finest wavelength of visible light in order of magnitude which is about  $10^{-14}$  meters.

### **The Induced Vortex Flux of the Primum**

What really is a primum? When the toroidal flux along its cycles is hit by cosmic waves coming from all directions it is thrown into erratic motion due to collision with other superstrings turning it into a *spike* with the centroid traveling through the cycles at  $7(10^{22})$  cm/sec. It pulls the superstrings around the primum into its induced vortex flux (simply referred to as *vortex flux*), by Flux-Low-Pressure Complementarity, with its axis coinciding with the axis of the primum inside the cylindrical eye making it a magnet, its polarity in accordance with the righthand rule of electromagnetism. The primum in Figure 2 is actually wrapped by the spinning vortex flux which is not shown being dark. The vortex flux is counterclockwise for a positive primum, by convention, negative otherwise. By Newton's action-reaction law [9] a free positive primum has the opposite spin (spin of quantum physics and a measure of angular momentum, e.g., the electron has spin  $+1/2$  [21]; distinguished from vortex flux spin). The plane passing through the apex of the primum's profile normal to its axis is the equatorial plane, its intersection with the primum the equator.

The energy of the vortex flux of a primum is measured as charge; the energy of the electron is  $(1.6(10^{-19})$  coulombs). Charge is a property of the vortex flux of the primum that follows from Flux-Low-Pressure Complementarity. The energy of the induced vortex flux of a primum is measured as charge its unit the electron's charge:  $-1$ . Seismic waves generated by the micro component of turbulence at its interfaces and at the spinning cores of a cosmological vortex [22,23] convert dark to visible matter in and around it as cosmic dust. They congeal into stars.



The primum's toroidal and vortex fluxes as well as its natural vibration endow dark matter huge latent energy partially convertible to kinetic energy. The latent energy density of dark matter is  $10^{26}$  joules/cubic ft. according to de Broglie [24],  $8(10^8)$  volts/cm says Seike Jr [24] and the equivalent of 18 kg/cu meter according to Gerlovin [20] using relativistic conversion.

### PRIMAL INTERACTION

The proton consists of two +quarks joined by -quark equatorially, by Flux Compatibility (Figure 3). By Energy Conservation, their axis are coplanar; the proton's charge:  $2/3 - 1/3 + 1/3 = +1$ . Thus, the proton has net coherent counterclockwise vortex flux around it. Since a simple primum is charged, the neutral neutrino must be a coupled pair of simple prima of numerically equal but opposite charges, say,  $+q$  and  $-q$ , so that its charge is  $+q + -q = 0$ , neutral.



**Figure 3. The proton is a cluster of two +quarks joined by a -quark at their vortex flux's rims by Flux Compatibility, left. The neutron (right) consists of a proton, electron and neutrino (represented by the horizontal figure 8 at the center of the right figure). Thus, the two +quarks of the proton are joined separately by the electron and -quark (by Flux Compatibility). The coherent flux at the center of the neutron (same direction of spin at interfaces) creates suction, by Flux-Low Pressure Complementarity, that pulls the neutrino in. (Figure taken from [19])**

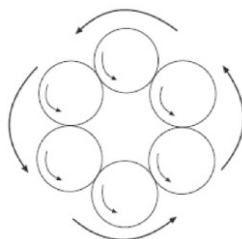
By Flux Compatibility the electron can attach itself to a positive quark of the proton but Energy Conservation and the optimality principle of the Energy Conservation Equivalence law require that it attaches to both +quarks beside the negative quark as the most stable position but pushes the -quark a bit by Flux Compatibility so that their centers viewed from the north pole form the vertices of a quadrilateral. In its interior are the coherent vortex fluxes of the +quarks, -quark and electron that make it a region of low pressure or depression. By Flux-Low-Pressure Complementarity its interior sucks a neutral primum around it since charged primum is repelled by the -quark or +quark. Therefore, only suitably light neutral primum fits in and that is the neutrino. Thus, we have just reconstructed the neutron consisting of a proton, electron and neutrino. Its charge:  $+2/3 - 1/3 + 2/3 - 1 + 0 = 0$ , i.e., neutral, and there is no net coherent vortex flux around it. The vortex flux of a charged coupled primum is extended along the equatorial plane due to greater centrifugal force there [16].

### THE ATOM, MOLECULE, HEAVY ISOTOPE

The protons are the first to form the nucleus of the atom (Figure 4). When there is only one proton it coincides with the eye of its vortex flux. If there are more their vortex fluxes add up to form the vortex flux around it. The protons are joined pairwise by -quarks. Clearly, the nucleus is fractal; therefore, the electromagnetic waves generated by its natural vibration is also fractal and endowed with huge energy. As positive coupled primum the nucleus is a magnet of positive polarity with the vortex flux around it providing the magnetic field. Viewed from the north pole the vortex flux of a free atom spins counterclockwise (right hand rule of electromagnetism). The electrons being negatively charged are attracted to the vortex flux away from the eye but being light, they are swept into orbit by the vortex flux. By centrifugal force, the most energetic orbital electrons are those closest to the equatorial plane; they form the outermost subshells [16]. The least energetic ones cluster near the poles and form the

lowest orbital shells. A stable atom has orbital electrons equal to the number of protons in the nucleus. Otherwise, it is a positive or negative ion and reacts with other prima. Moreover, the eye sucks non-agitated superstrings that accumulate steadily in the nucleus as mini black hole [16], the principal source of nuclear energy in nuclear fission. In fact, every charged primum, simple or coupled, sucks and accumulates a mini black hole in the eye of every charge component. This was confirmed at CERN [25] by the great burst of energy attributed to the Higgs boson released when two protons collided at great speed. The neutron, being neutral, is the only primum sucked by the nuclear eye to form heavy isotope.

The usual molecular formation has one valence electron and a  $-$ quark, from each of the two atoms at their outer subshells that serve as double connector [16] so that the molecule has two electron connectors. Particularly strong bonding like the carbon molecule involves two subshells with double connectors.



**Fig. 4: Light nucleus viewed from the north-pole. The neutron is not indicated as it has no vortex flux being neutral. (Figure taken from [19])**

Primal interaction is governed by Flux Compatibility and Flux-Low-Pressure Complementarity.

Since the masses of the neutron, proton and electron are known [26] and the composition of the neutron is known, the mass of the neutrino is computed as follows:

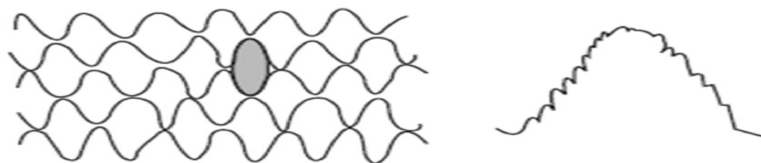
(1) neutron:  $1.674(10^{-27})$  kg; proton:  $1.672(10^{-27})$ kg; electron:  $9.611(10^{-31})$ kg.

Converting to atomic mass unit (amu) their masses are:

(2) neutron: 1.0087 amu; proton: 1.0073 amu; electron:  $5.486(10^{-8})$  amu.

The mass of the neutrino is:  $\eta = 8.5(10^{-8})$  amu or 1.55 times the electron's mass (that of the electron is  $1/1840^{\text{th}}$  that of the proton's). Ironically, the mass of the neutrino is still a subject of hot pursuit, [27,28].

A primum in flight rides and is lodged between tangent arcs of two electromagnetic waves at half-phase difference (Figure 5), its envelope. In cylindrical coordinates the primum has the equation  $x = t, y(t) = \beta(\sin^n \pi t)(\cos^m k \pi t)$ ,  $\theta = n \pi t, t \in [-1/k, 1/k]$ ,  $n, m, k$ , integers,  $n \gg k, m$  even [30]. Its cycle energy is the Planck's constant  $h = 6.64 \times 10^{-34}$  joules. Scooped up and carried by cosmic wave, its cycles flatten to the rapid oscillation,  $z = 0, x = t, y(t) = \beta(\sin^n \pi t)(\cos^m k \pi t)$  due to dark viscosity. Thus, a primum in flight is a fine sinusoidal arc embedded between a pair of electromagnetic waves (Figure 5). It becomes the photon,  $z = 0, y(t) = \beta(\sin^n \pi t)(\cos^m k \pi t)$ , when it breaks off from its loop; the energy of one full cycle of the primum or one full arc of photon (its projection on the plane) is  $h$  and its toroidal flux speed along the arc is  $7(10^{22})$  cm/sec.



**Fig. 5. A primum or photon lodged between two arcs of parallel electromagnetic waves, left. An arc of electromagnetic wave, right, fractal being generated by the natural vibration of the fractal nucleus. The fractal structure of electromagnetic wave endows it with huge energy that it can penetrate concrete wall, e.g., radio waves.**

Since the photon has energy, it has mass converted from the mass of the primum it comes from; its speed equals the speed of its electromagnetic wave carrier which is  $3(10^{10})$  cm/sec after adjusting for the effect of dark viscosity. Not being a loop, the photon collapses when it leaves the carrier wave envelope its toroidal flux remaining dark. This is the reason it has no rest mass. This happens when the photon is blocked by opaque substance; its toroidal flux breaks away from its carrier (which goes through) and remains dark and non-agitated. In large quantity the combined kinetic energy heats up the opaque medium. In translucent medium some of the photons go through and remain in their carriers. When the photon is knocked off by another cosmic wave or reflected by a mirror it switches to another electromagnetic wave carrier in the direction of transit.

### QUANTUM PHENOMENA

We present some of the unexplained natural phenomena in traditional physics.

#### Wave-particle duality

The wave-particle duality of quantum physics applies to any primum or photon that is embedded between adjacent parallel electromagnetic waves their ends half-phase apart, e.g., electron or photon (Figure 5). That the electron is a particle is well established. That it is a wave is supposedly confirmed by shooting a beam of electrons through slits in a thin plate where they become waves emanating from the slits on the other side of the plate [30], an electron in the beam supposedly becoming a wave.

The notion that a particle is both wave and particle is a contradiction. A particle is an autonomous physical system independent of the medium while a wave is suitably synchronized vibration of the medium with a sinusoidal profile expanding radially from its source (analogous to the “motion” of neon lights due to synchronized sequence of switching); each vibrating element remaining in place. That medium is dark matter which is unknown in traditional physics including quantum physics. Therefore, this contradiction cannot be resolved there. With dark matter as medium the contradiction is removed. The wave characteristic is provided by the carrier electromagnetic wave and the particle characteristic by the primum it carries.

#### Matter-anti-matter interaction

Two simple prima are anti-matter to each other if they are mirror images of each other with respect to a plane between them normal to their common equatorial plane. For example, the electron and positron are anti-matter of each other. Their toroidal flux spins are symmetric and have opposite directions. Therefore, they attract each other. When they get close, the momentum of their attraction forces their cycles to overlap and their fluxes to repel (since their overlapping cycles have opposite toroidal flux spins) leading to explosion, by Flux Compatibility, that throws them as photons into opposite directions parallel to their respective axis. The logic of GUT says that every simple primum has anti-matter. However, primal polarity and the Earth’s gravitational flux separate matter from its anti-matter. Free negative anti-

matter, e.g., the electron and  $-$ quark, remains on the ground while light free positive anti-matter remain in the upper atmosphere from the mesosphere to the fringe of the Earth's gravitational flux.

A simple primum has anti-matter. Does a coupled primum have anti-matter? Yes when it has suitable symmetry. For example, since the two  $+$ quark and the  $-$ quark of the proton are linearly arranged, a coupled primum consisting of two  $-$ quarks joined by a  $+$ quark is its anti-matter. Then they are attractive and when close, the momentum of their approach forces their cycles to overlap and mutually throw each other in opposite direction. Such occurrence is minimized by the Earth's gravitational flux which separates them, the negative prima on the ground and the positive prima at the fringe of the Earth's gravitational flux. Neutral prima, of course, have no anti-matter but their charged components have. However, a simple primum even if coupled with other prima may be annihilated by its anti-matter. This applies to charged components of the neutron. In fact, individual simple primal component of a coupled primum have anti-matter that can mutually destroy each other.

### **The Higgs boson**

The recent experiment at CERN released powerful burst of energy upon head-on collision of two protons at great speed, each close to the speed of light, and this was attributed to the Higgs boson within the proton. To be precise, what the experiment revealed was the destruction of that so-called Higgs boson. Therefore, the Higgs boson cannot be the fundamental building block of matter. It is actually one of the three mini black holes in the eyes of the  $+$ quarks and  $-$ quark that comprise the proton [16] and the result of the experiment can be examined to check if one, two, three, four, five or six Higgs bosons were exploded by the collision since the two  $+$ quarks and the  $-$ quark of each proton have their respective mini black holes. The experiment confirms the existence of a mini black hole in a simple primum. When suitably agitated it converts to huge burst of kinetic energy, e.g., photons. The experiment is also an independent verification of the mini black hole as source of tremendous energy released by nuclear explosion.

### **Primal Polarity**

We look at the primum as it pops out of dark matter. Since the dark superstring has infinitesimal induced vortex flux, it has no polarity and does not interact with anything except cosmic waves and it is oriented randomly. When a dark superstring is agitated by suitable cosmic wave and pops out of dark matter as free positive primum and its equatorial plane is oblique to the direction of the gravitational flux it rotates suitably due to the *coriolis* effect [22.31], its north pole pointing North and equatorial plane parallel to the Earth's equatorial plane making its vortex flux a counterclockwise eddy in the gravitational flux (which spins from West to East), its optimal energy-conserving alignment. By Flux Compatibility, free positive prima are pushed up so that there is abundance of free positive prima in the upper atmosphere. Free neutral prima are oriented randomly but free positive ions are counterclockwise eddies in the Earth's gravitational flux; they are pushed upwards by Flux Compatibility. However, the protons being heavy remain in the lower atmosphere. The free electrons as clockwise eddies in the Earth's gravitational flux whose equatorial plane is parallel to the Earth's equatorial plane are pushed downwards, by Flux Compatibility. Thus, there is abundance of free electrons on the ground. Other free negative prima including the  $-$ quarks should be abundant on the ground also but we do not know where they are and no study has been done on them. When the voltage between the positive ions in the lower atmosphere and the electrons on the ground reaches critical level they rush towards each other, collide and explode as lightning. Lightning, being at the interface of turbulence

generates seismic waves that convert dark matter to earthlights in the mesosphere called sprites, elves, blue jets and gamma rays [32]

### **Brittle and malleable materials**

Brittle material, e.g., ceramics, has no free electrons; therefore, it is good electrical insulator and does not vibrate and transfer heat. That is why it is heat insulator. Malleable material like metal has free electrons; therefore, it is good electrical conductor. When bent valence electrons are expelled but when released free electrons replace them, the material restored to its original form the essence of elasticity. Therefore, malleable material vibrates as synchronized sequence of distortion and “restortion”. When heated at a point malleable material vibrates there since heat is vibration of molecules and, through resonance, vibration spreads outward along concentric circles (if its elasticity is homogenous) and heat is similarly conducted outwards. Therefore, malleable material is good heat conductor.

When metal vibrate beyond a critical point and the rate of expulsion of valence electrons is greater than the rate of replacement it may soften or even melt. Valence electrons may also be expelled by the impact of seismic waves. The softening of metal attachments of building foundations and concrete reinforcement due to high intensity seismic waves during earthquake knocks off buildings and cracks or pulverizes concrete [22]. It is not due to the usual gentle rocking action during earthquake that causes destruction but the impact of seismic waves. There is technological possibility here: making suitable alloy resistant to the softening impact of seismic waves and composite resistant to cracking and pulverization by them. It offers the possibility for constructing earthquake-proof structures.

### **Metal fatigue**

An American Airlines plane’s pylon broke and the engine fell off just after take-off from O’Hare International Airport in Chicago in the 70s causing the plane to crash and kill all 392 passengers aboard. Bridges suddenly collapse and metallic casing of a train’s wheel breaks off, gets stuck dangling under the train and caught at rail junction causing terrible derailment accident (this happened in Germany three decades ago).

Metal is not perfectly elastic; when subjected to repetitive distortion like vibration, the net loss of valence electrons accumulates over time, reaches a critical point and the metal snaps. This explains the cause of the above accidents involving repetitive motion. This is illustrated by a metallic paper clip that snaps when bent back and forth. Infinitesimal but progressive deterioration of vibrating metal is not detectable. Therefore, test of material should be made at appropriate conditions for its use to determine when metal fatigue sets in to avoid accident.

The greater elasticity of carbon relative to other gases due to stronger bonding raises its normal vibration frequency and absorption of excess heat in the atmosphere coming from the Sun contributes significantly to the Greenhouse effect [33].

## **ELECTROMAGNETISM**

Every minute of one’s life depends on electricity and magnetism and every engineer knows their relationship: magnet produces electricity and electricity produces magnet. Today, we lift technology into a new domain and resolve the burning issue of the moment: climate change.

### **Magnet**

Recall that the atom is a magnet with a vortex flux of superstrings powered by the protons in the nucleus. Its polarity is in accordance with the right-hand rule of electromagnetism. Denote by N and S its north and south poles. Using the right-hand rule of electromagnetism the spin of

its vortex flux is counterclockwise looking at it from the north pole N. In ferromagnetic material, e.g., iron, most atoms can be aligned and joined N-to-S or S-to-N to form a string. Then the string can be joined equatorially with other strings through their component atoms by  $-$ quarks to form a bundle, the maximum number of strings depending on the material, by quantization. In ordinary magnet each bundle determines a line of force whose induced vortex fluxes are subject to the righthand rule. Both N and S poles of a bar magnet have little N and S poles corresponding to the poles of the bundles. They show when iron filings are dropped sparingly on a piece of thin paper placed over the magnet. The coherent vortex flux of the bundles creates a magnetic field. In a magnet the bundles induce their extensions beyond the N-pole to form extensions of their strings (by Flux Compatibility) that go around to join their respective south poles. The bundles form the lines of force in a magnet. They can be mapped by dropping iron filings sparingly on a piece of thin paper placed over the magnet.

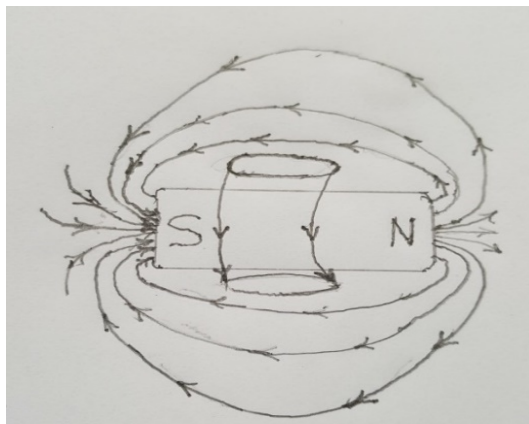
### **Electric Current**

When a live conductor (malleable material like metal) cuts across the magnetic lines of force, vortex flux of superstrings flow through it at speed of  $7(10^{22})$  cm/sec. In a malleable material there are free electrons because it has low ionization energy. This means that orbital electrons are knocked off their orbits by electromagnetic waves. They ride on the flux of superstrings. When they collide with atoms of a resistor, e.g., the filament of an electric bulb, they produce heat or light. When the temperature of the conductor is reduced to  $110^\circ$  K or less, the ionization energy rises so that free electrons vanish, i.e., there is electric current (flux of superstrings) without resistance because there are no electrons to collide with the atoms of the resistor. This phenomenon is called superconductivity [34].

In a conventional power plant a live conductor (closed circuit) is coiled around an armature and rotated so that the coils cut magnetic lines of and generate electricity. Alternating current is produced. Currently, fossil, nuclear and geothermal fuel run the motor that rotates the armature. In a conventional car battery, the electrolyte ionizes the cathode (positive terminal) and the released electrons move to the anode (negative terminal). The terminal marked negative is the source of electrons that when connected to an external circuit will flow and deliver energy to an external device. When a battery is connected to an external circuit, electrolytes are able to move as ions within, allowing the chemical reactions to be completed at the separate terminals and deliver energy to the external circuit.

### **Making a magnet**

To make a bar magnet, one wraps a coil around it connected to an alternating current. Then another coil is wrapped over the first and connected to direct current. When power is turned on for both the first coil shakes the atoms, the second coil aligns and joins them polarly to form strings;  $-$ quarks join strings to form bundles and the iron bar becomes a magnet. A strong magnet can be made by raising the voltage and duration of the process. The alternating current is turned off first when the charging is done.



**Figure 6. A bar magnet and its magnetic lines of force. It has a cylindrical eye in its magnetic flux around it. But the main eye is where the magnet is.**

Magnets of the same polarity cannot be placed side by side due to repulsion between them according to

Coulomb's law:

$$(3) \quad F = \mu q_{m1} q_{m2} / 4\pi r^2,$$

where

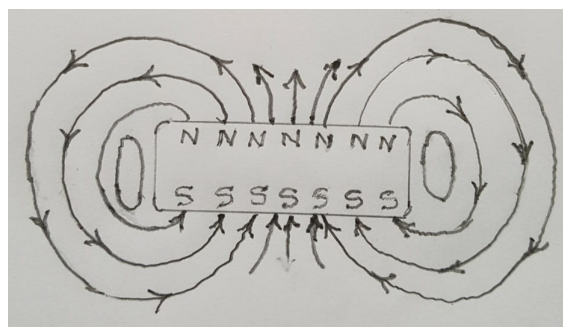
$F$  is force (SI unit: newton);

$q_{m1}$  and  $q_{m2}$  are the magnitudes of magnetic poles (SI unit: ampere-meter);

$\mu$  is the permeability of the intervening medium (SI unit: newton per ampere squared);

$r$  is the separation (SI unit: meter).

Therefore, to put them side by side requires magnetic insulators between adjacent magnets.



**Figure 7. Fat bar magnet. A bar magnet has little north poles of their bundles at its north pole. Each bundle extends beyond the north pole and if strong enough goes around as shown by the arrows to connect with its south pole. For the magnetic train (maglev) elliptical magnets are used.**

Magnets in general have many industrial uses and fat bar magnets are particularly useful to hold and guide high-speed train like the maglev.

### **Magnet Insulator**

A magnet insulator consists of thin narrow strips of ferromagnetic material scattered randomly (with respect to direction or orientation) but evenly on a flat surface heater. It is pressed by a similar flat surface heated just enough to weld the strips together.

## THE MAGNETIC TRAIN OR MAGLEV (MAGNETIC LEVITATION)

The author is not privy to the construction of the magnetic train or maglev (magnetic levitation). Therefore, this is only a recommendation for making the safest, most efficient and comfortable maglev based on GUT.

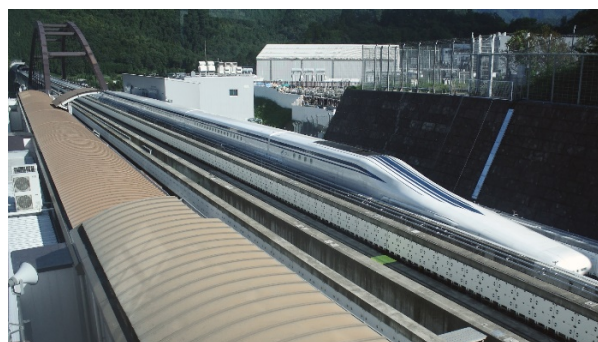
The ultimate in technology is one that uses the clean, free, inexhaustible and indestructible dark matter that comprises 95% of the cosmos and is abundant everywhere around us. In the case of technology for treatment of diseases the ultimate one has further requirement that it does not harm normal cells, i.e., it has no side effect. The pace-setter in ultimate technology is the maglev (Fig. 8). Here is how to construct it.

An array of parallel elliptical bar magnets is placed at the center of the track (length of magnets to fit between the track lids, see Figure 10), normal to and on the track, and line the full stretch of the track. The north pole of each magnet points to the left side of the track. Under the platform of each car are two elliptical bar magnets, 3/4 the length of the car apart at the middle, same length as the track magnets and directly above them, with the same polarity as the ones on the track. Since the track and platform magnets have the same polarity they are repulsive, i.e., the fluxes of the platform magnets and those of the track magnets push against each other, by Flux Compatibility. In effect, when the lateral axes are parallel to those of the track magnets, the train floats on the magnetic fluxes of the track magnets so that there is no friction when the train is pulled by the train's engine.

The maglev's "engine" is an elliptical bar magnet with the same polarity as the track magnets its planar axis horizontal when the train is at rest (Fig. 9).

When the magnetic engine is tilted downward the horizontal component of the repulsive force of the track magnets pulls the train forward. Since the maglev floats on magnetic flux there is no friction and its potential maximum speed is  $1.4(10^{23})$  cm/sec without load [16]. China has the fastest maglev which runs at 431 kph and Japan has tested one that runs at 581 kph. For optimal safety the passengers and crew are insulated from the magnetic fluxes at least by magnetic fabric insulators.

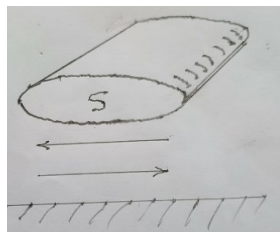
Ordinary bearings to minimize friction between the train and the track (Figure 7) are impractical as they wear out quickly due to the great speed of the train.



**Figure 8. A 5-car long nosed maglev (for least aerodynamic resistance). The magnetic engine is in the lead car.**

Instead, fat bar magnets line the inner surfaces of the full length of the latch on each side of the train's car. Opposite them, an array of magnets of the same poles is placed on both edges of the track (Figure 10).





**Figure 9. The maglev engine is an elliptical bar magnet. Its lateral axis is parallel to the track when the train is at rest. The first arrow points in the direction of the magnetic flux of the maglev's engine and the second arrow points in the direction of the magnetic fluxes of the magnets on the track (not shown). Since the two fluxes are opposite they repel each other.**

They are spaced  $1/3$  the length of each car and line the full stretch of the track so that for each car there is at least one pair of repulsive magnets near its ends.



**Figure 10. The maglev showing the track as the guide and holder at the same time.**

The magnets serve as frictionless bearings, springs, stabilizers and shock absorbers all at once and provide the passenger fast, smooth, quiet and comfortable ride. The magnetic flux of a magnet does not erode unless it is dropped into a hard surface. This does not happen to the magnets in the train and the track. There is no wear and tear in the maglev and the track because there is no moving part and no friction. Therefore, maintenance and operational costs equal zero since the train floats on the magnetic fluxes without friction. Only the force of inertia in starting and stopping needs to be overcome by the magnetic engine and the break mechanism. Corrosion is mainly superficial and does not affect the internal structure of the magnet. But still, it is a problem in the long haul. The remedy is non-ferromagnetic anti-corrosive coating for the magnets. Putting the magnets next to each other on the track is impossible due to Coloumb's law. Therefore, magnetic insulators must be placed between them. This avoids, at the same time, magnetic deterioration due to magnetic interpenetration.

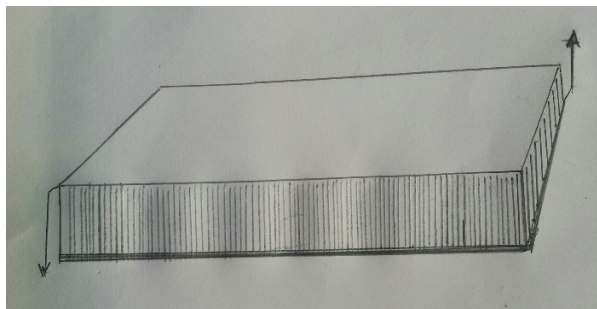
### **Break Mechanism for Maglev**

At one km from the train station, cut the length of each track magnet by 6.25" at each end (see Figure 10). Insert an array of elliptical magnets 6" thick, of opposite polarity as the track magnets, on both ends of the track magnets from one km away from the station to the far end of the platform. We call them track brake pads. Insert magnetic insulator between the track magnets and the track brake pads. On the train and in front of the magnetic engine, place a pair of elliptical magnets aligned with the ends of the magnetic engine. We call these pair of magnets train brake pads. When the train is running, the train brake pads' lateral axes are horizontal. At 1.5 km from the station the magnetic engine's lateral axis is pulled up to horizontal position. The train will continue to run at the same speed due to inertia. When the pair of train brake pads hits the one-km mark from the station, the brake pads' back sides are tilted downward gradually to pull back the train to a stop at the train station.

Being powered by the free, clean and indestructible dark matter – magnetic fluxes – the maglev is the ultimate in technology. But there is a drawback: the cost of construction is prohibitive: \$50 billion for a 150-km track. The technology proposed here will recover the cost quickly and generate electricity huge enough to do away with fossil, nuclear and geothermal fuel and still export electricity worldwide.

### **ELECTRIC POWER GENERATOR RUN BY DARK MATTER**

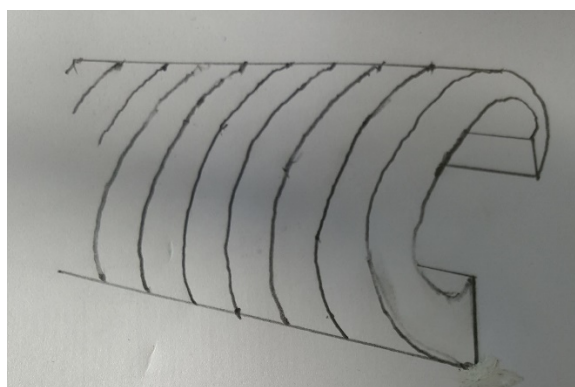
Mount a system of parallel vertical conductors on the roof of any train along the full length of the train (Figure 11). They should be close together as much as possible but safely apart from each other to accommodate huge number of conductors covering the entire roof. They may be grouped into blocks or groups to generate desired voltage.



**Figure 11. Parallel conductors are mounted on the roof of a train; they cut magnetic lines of force (magnetic flux) provided by an array of C-magnets as the train moves along the track and generate electricity.**

Install an array of C-magnets of the same polarity over the track through the entire stretch of the track at the right height above the track so that the conductors of Figure 11 cut across their magnetic lines of force as the train passes through to generate huge electric power for the power grid. Magnetic insulators should be inserted between the C-magnets to break magnetic flux coherence and counter the repulsion between the magnets due to Coulomb's law and neutralize the interpenetration between them that tends to degrade their strength. The outlet is connected to a reverse rectifier to convert DC to AC before connecting to the power grid.

If we install such power generators on all track systems, maglev or conventional, country and city rails, huge electric power can be generated for local use and still accumulate surplus that can be exported worldwide through power cables.



**Figure 12. An array of C-magnets mounted above the railroad track along its full stretch at a height so that, as the train passes through, the parallel conductors on the train's roof (Figure 8) cut across the magnetic lines of force provided by the C-magnets and generate DC current. It is converted to AC by a reverse rectifier and connected to the power grid.**

Then we can do away with power plants run by the dirty fossil, nuclear and geothermal fuel. This way we can liberate planet Earth from the impending environmental disaster it now faces. Moreover, left alone, nature heals itself and reverses the negative legacy of fossil-, nuclear- and geothermal-powered technologies within limits. Furthermore, this is the only way for the Third World to liberate themselves from underdevelopment faster than the developed countries and the NIC did.

### **MAGNETIC CHARGER RUN BY DARK MATTER**

A modification of the maglev can be devised at smaller scale for motor vehicles. Mount parallel conductors on the roof of a car (or under the chassis). The magnetic charger consisting of an array of C-magnets can be constructed along a highway by-pass so that the parallel conductors cut across their magnetic lines of force as the car passes through. The direct current generated is stored in a parallel tandem of lithium batteries to power the car for the next hundred kilometers or so depending on the number of magnets in the array. As in conventional motor vehicles a charger may be installed every 30 km. Chargers for trucks and busses may be installed separately.

Alternatively, the magnetic charger can be replaced by electromagnetic charger run by the power grid whichever costs less.

Super magnets can power cargo ships and ocean liners. The author has seen a small prototype of six 2-inch diameter disc magnets that yields 720 watts of electricity. If so many of these prototypes are connected parallel to each other tens of thousand megawatts of power can be generated. The author has also a sketch of a potential magnetic engine for space vehicle (e.g., UFO) using the Searle effect.

### **NOTE**

Magnets last forever unless they are dropped or pounded vigorously neither of which occurs in these cases. Corrosion is superficial and does not affect the internal arrangement of the atom. Even corrosion can be minimized with effective non-ferromagnetic coating.

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## Research on the Construction of Corpus-based College English Network Teaching Resources Platform and Its Teaching Model

**Zhenying Li**

Associate Professor

School of Foreign Languages

Guangxi Normal University for Nationalities

### ABSTRACT

**This research attempts to construct a corpus-based college English network teaching resources platform and a testing corpus by using network and information technology. And it is expected to improve college English teachers' ability of teaching and research and students' Data-Driven Learning capability.**

**Keywords: Corpus; College English Teaching; Network Resources Platform; Data-Driven Learning**

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### INTRODUCTION

Since the beginning of the 21st century, the level of information technology has been greatly improved. And the concept of internet plus education has been deeply rooted in the hearts of the people. The traditional teaching mode of teacher-led, textbook-based and passive learning of students has been unable to meet the needs of the development of the information age. A lot of teachers from colleges and universities have increasingly realized the importance of obtaining the information from internet. And with great concentration, they are studying how to use the internet source to change the methods of learning and teaching (Johnson, 2001). *Guidelines on College English Teaching* (hereinafter referred to as *Teaching Guidelines*) (NFLTAB, 2016) states: " All colleges and universities should incorporate online courses into the curriculum, attach importance to the construction of online courses, and put related courses on the network teaching platform, so that classroom teaching and network-based learning can be seamlessly integrated and integrated."

Nowadays it becomes the remarkable field of applied linguistics that the application of corpus linguistics research results and software technology in foreign language education and teaching and it has unique advantages. On the one hand, the corpus language material is real, large and rich in content, which can reflect the most vivid use of language and is also extremely convincing to the usage paradigm of language. On the other hand, corpus research tools (such as Word Concordance Lines, Word Frequency List and Keyword List, etc.) provide technical support for inquiry learning and facilitate the implementation of autonomous learning (He, 2010).

According to the *Teaching Guidelines*, this research intends to apply computer and network information technology to English language teaching and research based on corpus. A College

English teaching corpus and self-test corpus will be designed and created mainly based on the usage of computer technologies in PHP and SQL Server in order to build a college English network teaching resources platform system on the basis of web-based campus network. Through the application of information retrieval technology, the corpus and college English teaching are closely combined to carry out teaching experiments and to explore new teaching models based on corpus. Furthermore, it will mobilize the subjective initiative of teachers and students. In the students-centered teaching process, teachers will make roles of guidance and supervision into full play and develop students' Data-Drive Learning (DDL), discovery-based learning and autonomous learning ability.

Meanwhile, gradually develop students' English application ability, enhance cross-cultural communication awareness and communication skills, improve comprehensive cultural literacy, and meet the needs of national, social, college and individual development (NFLTAB, 2016).tBased on the research of corpus-based foreign language teaching research at home and abroad, this paper probes into the construction of corpus-based college English network teaching resources platform, designs a corpus-based college English teaching model, and explains the specific application effects.

### **THE RESEARCH STATUS OF CORPUS-BASED FOREIGN LANGUAGE TEACHING**

There are many corpus-based research on foreign language teaching and autonomous learning at home and abroad. A Corpus is a collection of naturally occurring language text, chosen to characterize a state or variety of a language (Sinclair, 1991). The emergence of corpus not only marks the technological progress of language research methods, but also marks a major shift in language research thinking. It represents a new linguistic thinking and a new cause (Leech, 1997; Granger, 1998). After applying corpra into teaching, learners may access real language use rather than fabricated examples, and teachers can use corpra through various ways, such as exercises design, grammar difference demonstration, synonyms discrimination, collocation analysis and reliable responses to the learners questions, etc.

Corpus-based foreign language teaching research mainly includes three aspects abroad: (1) The Construction of Language Teaching Corpus. Sinclair (1991: 81) believes that spoken language can reveal the basic mechanism of language organization more than written language. In 2002, Simpson et al. set up "Michigan Corpus of Academic Spoken English (MICASE)", the purpose of which is to analyze the characteristics of academic English and to improve and develop the oral English course and listening test materials. In addition, *Touchstone* is one of the first series of comprehensive textbooks based on corpus research. The language in the *Touchstone* series is taken from the Cambridge International Corpus North American Corpus (CICNAE) with a capacity of 700 million spoken and written vocabulary (McCarthy, McCarten, & Sandiford, 2005). (2) Data-Driven Learning Research. Tim Johns (1991) represented a new method of learning foreign languages named "Data-Driven Learning" (DDL) based on corpus data, and it was the challenge to the traditional foreign language teaching centered on teachers and textbooks. Corpu-based autonomous learning is an effective way for a individual learner to acquire language knowledge through network information resources (Benson, 2005). (3) The Development of English Teaching Resources. Coxhead (2000) used the corpus to develop an Academic Word List for the design of word list and reading, writing materials of English for Academic Purposes (EAP). Accordingly, corpus-based language teaching has become a new trend in foreign countries.

At home, corpus linguistics used in the study of teaching began in the early 1980s. It was marked by the Jiao Da English for Science and Technology (JDEST), which was hosted by Renjie Huang and Huizhong Yang of Shanghai Jiaotong University in 1982. However, it was not until

the late 1990s that scholars began to apply corpus to foreign language teaching practice in China (Xie, 1996; Li, 1999; He, 2001). Li and Pu (2001) introduced data driven learning methods earlier. Naixing Wei, Wenzhong Li and Jianzhong Pu have realized the online query, retrieval and free sharing of corpus resources in China for the first time. The Database Learning System was developed for the online conversion and real-time transmission and sharing of the KWIC network from text resources of 4 corpora about 7,000,000 words (Zhen, 2010). In addition, Chinese language educators also used results of corpus linguistics study in the compilation of textbooks. For example, *21st Century College English* edited by Xiangjun Zhai was based on a large corpus (Yao, 2005). Some scholars (Zhang, & Chen 2008; Zhang, et al., 2008) explored the use of network or online corpora in college English teaching. Even more scholars (Zhang, & Zhou, 2009) use the corpus in college English classroom teaching, which proves that the corpus can greatly improve the effect of classroom teaching. It is not difficult to see that the corpus provides a new way of thinking for foreign language learning and teaching.

Even so, the current corpus-assisted language teaching is far from the expected results. The existing corpora are mainly designed and built for the investigation and research of language. They have large scales, a wide variety of topics and domains, but the contents are usually not directly linked to language teaching requirements (He, 2010). In addition, due to the differences in teaching conditions at home and abroad, the current application of domestic corpus in college English teaching is limited to vocabulary, grammar and reading teaching. The research on corpus-based college English network teaching resources platform construction and teaching model is relatively rare. It is necessary for college English educators to make new attempts and explorations based on corpora and technology.

#### **THE RESEARCH ON THE CONSTRUCTION OF CORPUS-BASED COLLEGE ENGLISH NETWORK TEACHING RESOURCES PLATFORM AND ITS TEACHING MODEL**

This research intends to establish a college English network teaching corpus and self-test corpus including listening, speaking, reading, writing and translation, by means of independent design and creation of a corpus according to the goals set in *the Teaching Guidelines*. And we will create college English network teaching resources platform system through computer and network technology. Meanwhile, it will explore a corpus-based college English network teaching model combined with classroom teaching. The corpus-based college English network teaching resource platform consists of two modules: module one is the construction of the teaching resource platform based on campus network, and module two is the application of the corpus-based college English network teaching resource platform. Module 1 "Web-based teaching resource platform based on campus network" was constructed in six steps as follows: 1. Collecting and organizing corpus; 2. Processing corpus; 3. According to the training objectives of the three types of students, Liberal Arts, Science and Engineering, and Arts & Sports, we constructed a corpus entry system using computer programming language design, entered the corpus into the corpus, and built the following corpora: General English Corpus, Special English Corpus and Intercultural Communication English Corpus; 4. Establishing different levels of Audio-visual Sub-corpus, Spoken Sub-corpus, Reading Sub-corpus, and Translation Sub-corpus for three types of students; 5. Constructing college English network teaching corpus and self-test corpus 6. Developing a Web-based teaching resource platform system based on campus network through PHP and SQL technology, and building a corpus-based college English network teaching resource platform.

Module 2 "Application of corpus-based college English network teaching platform" includes the following two aspects: 1. Classroom teaching based on the platform for college English teachers; 2. Students' DDL and autonomous learning based on the platform. Teachers can fully play a leading role by using the online teaching resources platform in classrooms: guiding and

supervising students to learn English; selecting corpus material resources suitable for teaching tasks according to the teaching contents; setting teaching goals and applying appropriate strategies in order to improve teaching level. Students can fully play the main role based on the resources of the network teaching resources platform: DDL and self-learning; self-testing for students through self-test corpus and timely feedback to teachers through the platform in order to facilitate the change of teachers' teaching strategies in classroom; Students can also conduct extracurricular collaborative learning based on task-based teaching, and ultimately achieve the improvement of students' general English, specialized English and intercultural communication abilities at different levels.

The two modules are specifically explained as follows.

### The Design and Development of Corpus

In the design of online teaching corpus, we follow *the teaching Guidelines* of the three levels of teaching requirements, "Basis, Improvement, and Development", to realize the ultimate goal in cultivating students' General English Ability, Special Purpose English Ability and Intercultural Communication Ability (NFLTAB, 2016). In order to adapt to the principle of individualized teaching, students can choose appropriate learning content according to their own characteristics, level and time, and they can carry out DDL and independent learning in a targeted manner. In terms of network corpus construction, we have built three network teaching corpora: General English Corpus; Special Purpose English Corpus; Intercultural Communication Corpus.

### The Construction of General English Corpus

We built a General English corpus, which is mainly open to first and second-year students of Liberal Arts, Science and Engineering, and Arts & Sports. The goal focuses on cultivating students' abilities of listening, speaking, reading, writing and translation & interpreting at different levels. The specific design is shown in Table 1.

**Table 1 The General English Corpus Design of College English Network Teaching Corpus**

Sub-corpra	Corpus contents and Categories				Ratio(%)
<b>Audio-visual</b>	Listening	Comprehensive	Films and TV	Classical Songs	30%
	Comprehension (10%)	Listening (10%)	Programs (5%)	(5%)	
<b>Spoken</b>	Sigle Sente (5%)	Conversation (5%)	Speech (5%)	Self-introduction (5%)	20%
	<b>Reading</b>	Blanks Filling (5%)	Reading Long Passages (5%)	Reading in Depth (10%)	
<b>Writing</b>	Ordinary Writing (8%)		Practical Writing (7%)		15%
<b>Translation &amp; Interpreting</b>	English to Chinese (7%)		Chinese to English (8%)		

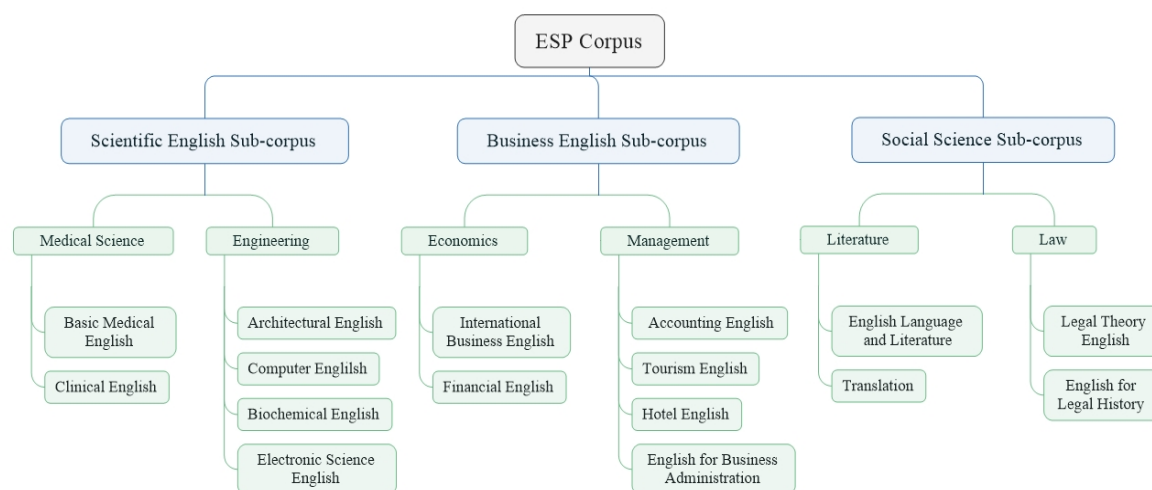
Table 1 shows that the College English General Corpus contains five sub-corpra of Audiovisual, Spoken, Reading, Writing and Translation & Interpreting, accounting for 30%, 20%, 20%, 15% and 15% of the total corpus respectively. In the selection of Audio-visual and Speaking sub-corpus, we choose a large number of audio and video materials such as news, films and television programs, and songs, etc., especially the selection of listening materials, according to the principle of combining knowledge and interest. In the selection of Spoken, Reading, Writing, Translation and Interpreting sub-corpra, In the selection of spoken and written translation materials, we have increased the proportion of spoken and reading corpra, focusing



on the diversity of questions (the spoken sub-corpus contains Spoken Sentences, Conversations and Self-introduction; the reading sub-library includes Blanks-Filling, Reading Long Passages, Reading in Depth). Meanwhile, we select Writing, Translation and Interpreting corpora, both of which account for 15% of the General Corpus, aiming to cultivate students' comprehensive English application ability.

### ***The Design and Construction of Special Purpose English Corpus***

The main purpose of the Special English Corpus is for the students of grade two and three. Special Purpose English courses are oriented towards the use of English to enhance students' ability to use English for professional and academic exchanges, work, and academic and professional accomplishment (NFLTAB, 2016). The corpus we selected mainly comes from the original textbooks, general academic journals and academic papers in the field, and less popular journals or monographs. Then, using British National Corpus (BNC) as a comparative corpus, and referring to the US General List (common vocabulary, containing 2186 words), the selected corpus statistics are automatically shielded by computer software (such as shielding all frequency in all corpora, such as: the, of, his, etc.) and manual screening, extraction and merging (Zhang, et al., 2009). On the basis of Hutchinson & Waters' (1987) classification of Special Purpose English (ie, Scientific English, Business English, and Social Science English), and 12 subject categories announced by the Ministry of Education, this study is specialized in the construction of medicine, engineering, economics, management, literature, law, and other professional corpora. As shown in Figure 1:



**Figure 1 The Design of ESP Corpus and the Sub-corpora**

As shown in the above figure, according to the classification of Hutchinson & Waters (1987), the ESP corpus contains three sub-corpora of Scientific English, Business English and Social Science English. The six disciplines of medicine, engineering, economics, management, literature, and law are classified into three sub-corpora. Then these six disciplines are subdivided into 16 majors as follows: Basic Medicine, Clinical Medicine, Architecture, Computer, Biochemistry, Electronic Science, International Business, Finance, Accounting, Tourism, Hotel, Business Administration, English Language and Literature, Translation, Legal theory and Legal history.

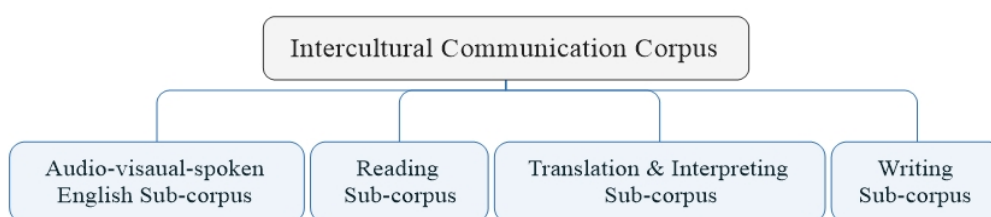
Because ESP lies between general English and professional English, it is a bridge between them. The content of ESP tends to general subject knowledge. And it has greater generality than professional English, therefore the content is close to popular science articles. To cultivate students' academic skills, the training objective is to improve students' comprehensive

language quality and provide support for students to use English for professional learning (Zhang, 2011).

In view of the above characteristics, the selection of corpus must follow the principles of scale, representativeness, pertinence and openness in order to integrate English teaching with professional knowledge. The main sources and proportions of the corpus are as follows: original textbooks and books (40%), general academic journals (20%), academic papers (20%), open courses of famous foreign universities (15%) and a small number of professional monographs (5%). In addition, the corpus will be expanded in size and capacity over time and as needed for teaching.

### ***The Design and Construction of Intercultural Communication Corpus***

The Intercultural Communication Course is designed to provide intercultural education to help students understand the differences in world views, values, and ways of thinking between China and foreign countries, foster intercultural awareness among students, and improve students' social and verbal communication skills. The Intercultural Communication Corpus is mostly for the students of grade three and four. The corpus of the design and construction of this research includes four sub-corpora of Audio-visual-spoken, Reading, Translation & Interpreting and Writing. As shown in figure 2.



**Figure 2 The Design of Interecultural Communication Corpus**

As shown in the above figure, the contents of the four sub-corpora of the Intercultural Communication Corpus include: English film and television appreciation, English speech, US Presidential inauguration speech, English poetry, British history, Bible and Greek mythology, Western culture, English-speaking society and culture, and Anglo-American Literature, American society and culture, American diplomacy, international business English translation, EU legal text translation, English and American legal text translation, international business English writing, etc. After the materials were selected, we used annotation software and manual form to annotate all the corpora.

In order to facilitate teachers' teaching and students' DDL, autonomous learning, we have established a special intercultural communication case corpus under each sub-corpora. The construction of the case corpus adheres to the student-centered, full use of the students' initiative, enthusiasm and creativity, and allows students to participate in all aspects of building the corpus. Teachers cite out theoretical points of intercultural communication in teaching. One theoretical point corresponds to 2-4 cases, of which 1-2 cases are collected and organized by students, and 2-3 cases are collected and arranged by teachers. The construction of the case corpus adheres to the principle of typicality and reality, uses scientific methods to collect cases, and refuses to use fictional cases to explain relevant theories. On sources of the case: Part of the selection is from intercultural communication textbooks and related works, and the rest is selected from news reports, documentary works, film and television works,

online videos and other materials. On annotation of the case corpus: Text headings of all cases, including the case title, the source of the case, the location of the case, the characters (name, gender, age, nationality, occupation) in the case, and the type of the case, should be tagged. The contents of the case corpus can be retrieved through the text retrieval softwares PowerGrep and AntConc.

Through the use of Intercultural Communication Corpus, teachers can better cultivate students' intercultural communication awareness, and improve their intercultural communication skills as soon as possible to achieve good practical teaching results; meanwhile students can actively conduct DDL and autonomous learning based on the Corpus, and improve their intercultural communication skills ultimately.

In the design of self-test corpus, we referred to the study of Yan Jin and Jiang Hao (2009) that they presented the design principles of online CET4 and CET6 : mainly referred to the test paper and system design principles, that is, the test objectives are set according to the Teaching Guidelines, and the test tasks have typical characteristics of real language communication activities. It can maximize the automatic scoring of the machine; the system meets the design requirements of the test: it is reliable, stable, safe, and it has operability and universality , etc.. It aims at strengthening the detection of development status of language application ability in the learning process of students. And it will develop the backwash effect of testing in teaching, further improve the testing and evaluation system, and help tudents to adapt to online CET4 and CET6 as soon as possible, and eventually improve students' abilities of DDL and autonomous learning. The content and scale design of the sub-corpra included in the autonomous test corpus are shown in Table 2.

**Table 2 The Design of College English Autonomous Test Corpus**

<b>Sub-corpora</b>	<b>Question Types</b>	<b>Purposes</b>
<b>Listening Comprehension (25%)</b>	Multiple Choices	Subject, Details and Deduction
<b>Comprehensive Listening (35%)</b>	Words, Phrases and Passage Dictation	Dictation, Summary and Comment
<b>Reading Comprehension (40%)</b>	Blanks Filling, Multiple Choices and Questions Answering	Reading Long Passages, Reading in Depth and Grammatical Structure

Table 2 shows that the college English autonomous test corpus contains three sub-corpra: Listening Comprehension, Comprehensive Listening and Reading Comprehension. In terms of Question Types design, the autonomous test corpus is basically the same as the online CET4 and CET6. In addition to the regular questions, the listening test is highlighted, and the proportion of Comprehensive Listening is increased (about 35% of the test corpus), mainly including words, phrases and passage dictation.

However, in the early stage of research, whether it is the teaching corpus or the selection of autonomous test corpus, we mainly select listening and reading corpus, supplemented by oral, writing and translation corpus, to build an open corpus, and timely update the corpora related subjects and language materials according to the development of the eras.

The corpus sources mainly include audio-visual and speaking products, related listening textbooks, English learning websites, VOA website, BBC website, and the materials of the CET4 and CET6 past examination papers and simulation examination papers since 2010. The

subjects cover current affairs, characters, occupation, history, education, and tourism, economy and trade, science and technology, sports, health, culture, literature and society etc.. In addition, we insisted on no negative guidance when choosing corpus, and the materials did not involve religions and sensitive political issues.

On the basis of collecting a large amount of original corpus, we systematically organize the corpus materials and draw up the contents and ways of the annotation, as shown in Table 3.

**Table 3 Corpus Annotation**

Tagged Content	Tagged Symbol	Tagged Content	Tagged Symbol
<b>Title</b>	<TITLE>...<TIT>	<b>Video</b>	<VIDEO>...<VID>
<b>Spoken English</b>	<SPOKEN ENGLISH>...<SE>	<b>Audio</b>	<AUDIO>...<AUD>
<b>Short Conversation</b>	<SHORT CONVERSATION>...<SC>	<b>Keys</b>	<KEYS>...<KEY>
<b>Long Conversation</b>	<LONG CONVERSATION>...<LC>	<b>Script</b>	<SCRIPT>...<SCR>
<b>Passage</b>	<PASSAGE>...<PAS>	<b>Topic</b>	<TOPIC>...<TOP><
<b>Passage Dictation</b>	<PASSAGE DICTATION>...<PD>	<b>Source</b>	SOURCE>...<SOU>
<b>Reading Long Passages</b>	<READING LONG PASSAGES>...<FR>	<b>Type</b>	<TYPE>...<TYP>
<b>Reading in Depth</b>	<READING IN DEPTH> ...<RI>	<b>Time</b>	<TIME>...<TIM>
<b>Songs</b>	<SONGS>...<SON>	<b>Size</b>	<SIZE>...<SIZ>
<b>Movies</b>	<MOVIES>...<MOV>	<b>Writings</b>	<WRITINGS>...<WRI>
<b>Culture Talks</b>	<CULTURES TALKS>...<CT>	<b>Translation</b>	<TRANSLATION>...<TRA>

Table 3 shows that this study involved 22 items such as titles in terms of corpus content annotation. We use the first three letters of a single English word or the acronym of two English words to avoid repetition and place the notation in the international common angle brackets <>. For example, <TITLE> *title* is identified by <TIT>; and <SPOKEN ENGLISH> means short spoken English, using the acronym <SE> of the two words.

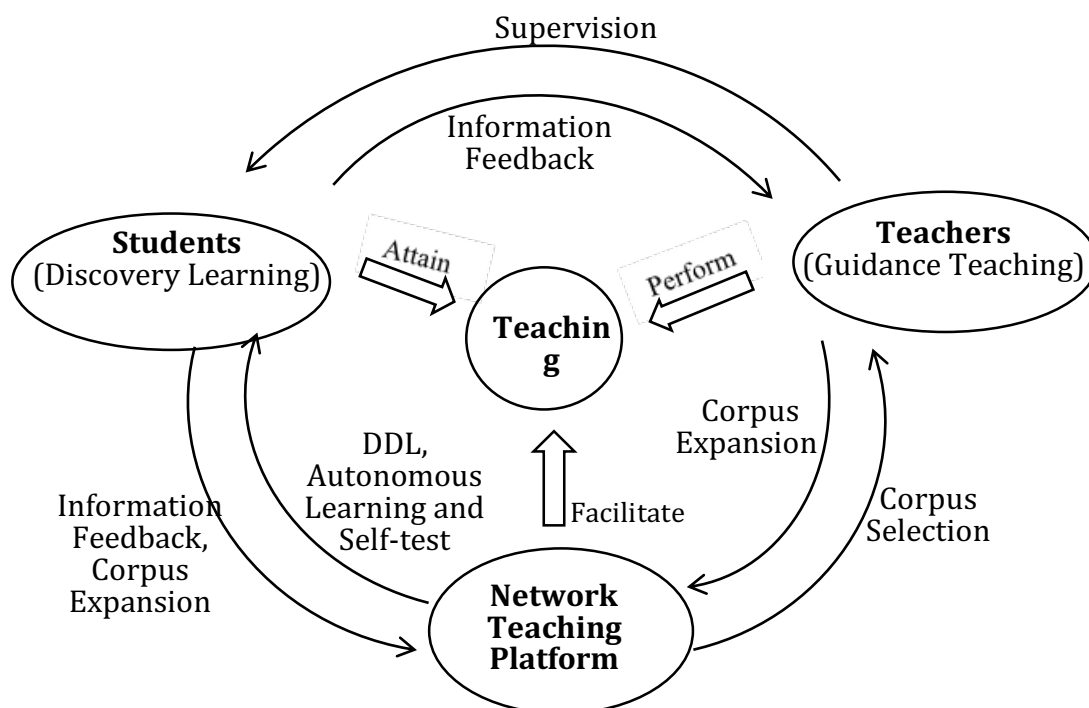
### **The Construction of Corpus-based College English network teaching resources platform**

After the initial establishment of the corpus, designed a Web-based college English network teaching resources platform. The platform publishes an application system on the campus network through a dedicated network server to ensure the service quality of the teaching platform and the security of platform data.

We use different methods of judgment for different corpora and question types. Because objective questions (mainly including the traditional Reading Comprehension and Blanks Filling etc.) have the character of unique key, we store the test questions in the database and give students score through comparing the students' keys with standard keys by the program design. While subjective questions (including Words, Phrases and Passage Dictations, Writings and Translation, etc.) have the characters of diversity and flexibility of keys, so we use the parser, *Link Grammar Paser 5.5* (developed by computer linguists at Carnegie Mellon University of the United States, which has strong capability to recognize and analyze English syntax), to analyze subjective questions in College English Testing. (ie, correlative grammar and syntax parser).

### Research on Corpus-based College English Network Teaching Model

On the basis of the platform built, we combine the classroom teaching of our university to explore the corpus-based college English teaching mode. The Network Teaching Mode Layout is shown in Figure 3.



**Figure 3 Corpus-based College English Network Teaching Model Layout**

This model can be summarized as "1+2+1" Teaching Mode, that is "One foundation, Two platforms, One purpose": the Teaching Mode constructs two platforms of Interactive Teaching in class and online DDL & Autonomous Learning out of class based on the corpus. Teachers may achieve the ultimate purpose of improving students' comprehensive English application ability and cultivate modern application talents with international perspectives.

This model follows the teaching principle of "Teaching Students according to their Aptitude", aiming to fully mobilize the enthusiasm of college English teachers and students, and to play the leading role of teachers and the subjectivity of students. On the one hand, teachers can use the corpus system platform to select rich and real teaching resources, and better carry out teaching design and teaching resources development, in order to give full play to the leading role of teachers in the classroom English teaching, supervisors and facilitators. Guidance teaching is conducted to guide students to observe, summarize and generalize the phenomenon of language use in the corpus, and to conduct self-discovery English learning. At the same time, teachers can also expand corpus according to the feedback from students' teaching information and the needs of the times in order to facilitate future English teaching.

On the other hand, under the guidance and supervision of the teachers and the help and cooperation of the students, the students can select the learning content on the corpus resource system platform based on the unit theme of the textbooks according to their own learning needs, and carry out related information retrieval. Furthermore, students can conduct DDL and autonomous learning to consolidate the effect of students' classroom learning, and finally achieve the goal of cultivating students' self-learning ability and improving students' English application ability.

## CONCLUSION

In short, the corpus-based college English network teaching resources platform, constructed based on the information technology, can not only make college English teaching and learning free from the limitations of time and space, but also better play roles of developmental, retrievable, and researchable features of corpus resources in the teachers' teaching and students' learning process.

This study will provide teachers with the possibility to implement personalized teaching for different levels of students, while providing students with interesting and targeted learning tools and learning resources. Students can conduct DDL and autonomous learning according to their actual level and time. And the skills of students' English language application, ESP application and intercultural communication will be improved rapidly.

This paper mainly conducts preliminary research and design on the construction of corpus-based college English network teaching resources platform. In the next stage, based on the network platform, we will conduct a large number of teaching practice researches according to the requirements of the *Teaching Guideines* and the university English teaching reform program. And we will strive to further promote the reform of college English teaching.

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**The author's Profile:**

**Zhenying Li** is an associate professor in the School of Foreign Languages at Guangxi Normal University for Nationalities, Chongzuo Guangxi, China. He got his M. A. from China West Normal University. His research fields include: Corpus Linguistics, English Pedagogy and Translation Studies.

## Climate Change and the Niger Delta Region

**A. A. Adewumi**

Dept. of Zoology and Environmental Biology,  
Ekiti State University, Ado Ekiti

**O. R. Agunbiade**

Dept. of Zoology and Environmental Biology,  
Ekiti State University, Ado Ekiti

**O. O. Longe**

Dept. of Crop Production and Health,  
Ekiti State University, Ado Ekiti

**O. O. Fadiya**

Dept. of Zoology and Environmental Biology,  
Ekiti State University, Ado Ekiti

**I. K. Adewumi**

Dept. of Civil Engineering,  
Niger Delta University, Amasoma

### ABSTRACT

The Niger Delta is located in the Atlantic coast of southern Nigeria where River Niger divides into numerous tributaries. It is the second largest delta in the world with a coastline spanning about 450 kilometres. It is the richest wetland in the world, highly diverse and supportive of numerous species of terrestrial and aquatic flora and fauna and human life. The Niger Delta is faced with myriads of environmental problems caused by climate change and the activities of multinational oil companies operating in the region. The occurrence of coastal erosion, rise in sea level, renewable resource degradation had been reported. Climate change has affected rainfall pattern with the consequent effect on vegetation and thus agriculture. Sea-level rise and repeated ocean surges will not only worsen the problems of coastal erosion that are already a menace in the Niger Delta, the associated inundation is increasing problems of floods, intrusion of sea-water into fresh water sources and ecosystems destruction thus destabilizing the mangrove, and affecting agriculture, fisheries and general livelihoods. Coastal erosion is the most important impact of sea level rise in the region and should be given high priority attention. With the disruption/destruction of the coastal ecosystem, loss of habitat and the climate getting warmer, the fish population is affected. Coastal erosion and flooding moulder the fertilizing eggs and fry of fishes thus affecting recruitment into the population. Several roads have been made impassable. Settlements in the coastal region, especially in Forcados, with some oil wells, have been uprooted by coastal erosion. It is predicted that Nigeria will lose about \$9 billion as a result of the sea level rise while at least 80% of the people of the Niger Delta will be displaced due to the low level of the region. A participatory, integrated approach to development is the solution. Government-private-sector partnership as well as partnership with other actors should be an integral part of the integrated approach.

**Keywords:** coastal, erosion, fry, fish, smouldering,



## INTRODUCTION

Nigeria is one of the countries expected to be most affected by the impacts of climate change, through sea level rise along our 800 km long coast line, intensified desertification, erosion and flooding disasters and general land degradation. One prediction is that 'Nigeria will lose close to \$9 billion as a result of the catastrophe while, at least, 80 per cent of the inhabitants of the Niger Delta will be displaced due to the low level of the oil-rich region. ..' (Guardian, Monday September 17, 2001, p.80). As Nigeria's economy improves, its per capita greenhouse gas emissions may approach those of the developed nations of the world today. This, combined with continued gas flaring and a large population, will further worsen Nigeria's standing as a key emitter of greenhouse gases global (<http://www.climatenetwork.org/profile/member/nigerian-environmental-studyaction-team-nest>).

The Niger Delta is located in the Atlantic Coast of southern Nigeria where River Niger divides into numerous tributaries. It is the second largest delta in the world with a coastline spanning about 450 kilometres terminating at the Imo River entrance. The region spans over 20,000 square kilometres and it has been described as the largest wetland in Africa and among the three largest in the world. About 2,370 square kilometres of the Niger Delta area consist of rivers, creeks and estuaries and while stagnant swamp covers about 8600 square kilometres. The delta, with mangrove swamps spanning about 1900 square kilometres has the largest mangrove swamps in Africa. The region falls within the tropical rain forest zone. The ecosystem of the area is highly diverse and supportive of numerous species of terrestrial and aquatic flora and fauna and human life. It is the richest wetland in the world (Iyayi, 2004). The region is divided into four ecological zones namely coastal inland zone, mangrove swamp zone, freshwater zone and lowland rain forest zone.

Politically, the Niger Delta area cuts across nine states in southern Nigeria which include Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and Rivers States. The region has emerged as one of the most ecologically sensitive region in Nigeria. Resources (oil and gas) from the region are the main source of revenue for the Nigerian state, accounting for about 97% of the country's total export. Like in other parts of the world, the climate change is already having its toll on the Niger Delta which is economic bedrock of the nation. This paper examines some of the glaring impacts and suggests possible mitigation measures. .

### Coastal Erosion and Flooding

According to the International Federation of Red Cross (IFRC, 1999), sea level rise and flooding are already affecting millions of people worldwide. IFRC report revealed that an estimated 10 million people are at constant risk of coastal flood and floods in general are making 3 million people homeless every year, and that the number of people affected by sea level rise is on the increase annually. The occurrence of serious flooding and coastal erosion has been reported in the Niger Delta (Figs. 1 and 2) by Okon and Egbon (1999). The report of Udofa and Fajemirokun (1978) showed a rise in sea level along Nigerian coastal water. They did a mechanical analysis of tide data from 1960 – 1970 and reported mean sea level rise to be 0.462m above zero level of the tide gauge.



**Fig. 1: Flooding in the Niger Delta region, causing solid wastes to be washed into a river body**



**Fig. 2: Flooding causing drowning of cars and houses.**

Agboola and Olurin (2003) reported that the World Bank ranked coastal erosion as needing moderate priority attention in the Niger Delta. Also, the Nigerian Environmental Study/Action Team (NEST), reported that sea-level rise and repeated ocean surges will not only worsen the problems of coastal erosion that are already a menace in the Niger Delta, the associated inundation is increasing problems of floods, intrusion of sea-water into fresh water sources and ecosystems destroying such stabilizing system as mangrove, and affecting agriculture, fisheries and general livelihoods (NEST, 2004).

**Table 1: Ranking of Environmental Issues in the Niger Delta by World Bank**

Category	High Priority	Moderate Priority	Lower Priority
Land Resource Degradation	Agricultural Land Degradation, Flooding (Moderate high)	Coastal Erosion, River bank erosion	Sea level rise
Renewable resource degradation	Fisheries depletion, Biodiversity loss	Water hyacinth expansion	Fisheries habitat degradation
Environmental pollution,.	Sewage, Vehicular emission, Municipal solid wastes, Toxic & hazardous substances	Oil pollution, Industrial effluent, Industrial air emission, Industrial solid wastes	Gas flaring

The most important environmental problem facing the Niger Delta is coastal erosion. Although the World Bank has rated coastal erosion as needing moderate attention in the region, it is the most important impact of sea level rise in the region and should be given high priority attention. Flooding of low-lying areas in the region has been observed. Settlements in the coastal region have been uprooted by coastal erosion. In some places, especially in Forcados, some oil wells have been lost to the ocean due to erosion.

The Niger Delta could lose over 15000 square kilometers of land by the year 2100 with a one meter rise in sea level. Calculations have also shown that a 20cm rise in sea level will inundate 3400 km<sup>2</sup> of the Nigerian coast land (Table 2) (Onofeghara, 1990). It is estimated that with a sea level rise of 30cm, about 1 to 2 million people will be affected. In all this, it is predicted that Nigeria will lose about \$9 billion as a result of the sea level rise while at least 80% of the people of the Niger Delta will be displaced due to the low level of the region.

**Table 2a: Total land loss (Km<sup>2</sup>)**

	Low Estimate				High Estimate			
Sea Level Rise	0.2m	0.5m	1.0m	2.0m	0.2m	0.5m	1.0m	2.0m
Land Area	2,846	7453	15,125	18,398	2,865	7,500	15,332	18,803

Source: Onofeghara (1990)

**Table 2b: Estimated number of people (in millions) displaced by sea level rise at different scenarios of sea level rise**

Sea Level Rise	0.2m	0.5m	1.0m	2.0m
People	0.10	0.25	0.47	0.21

Source: Onofeghara (1990)

The salinization of underground water will lead to shortage of fresh water. Inhabitants of the region depend on underground water as their main source of water for drinking and for other domestic use. Other impact of sea level rise on the region is the emergence of health-related hazards.

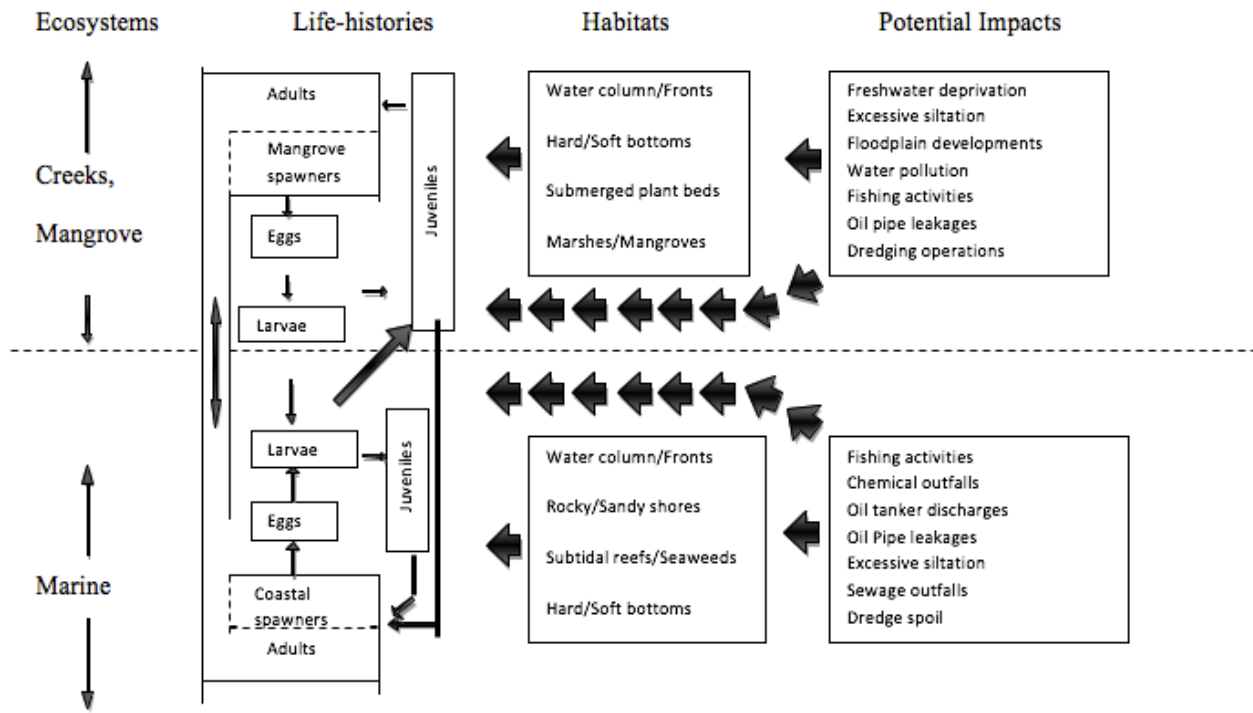
### Impacts on Agriculture and Fisheries

Coastal erosion poses serious problem for the economic activities in the Niger Delta especially natural sectors such as farming and fisheries. Fisheries and aquaculture are vulnerable to climate change with profound impacts on the communities that depend on them. However, their vulnerability depends on the potential impact (sensitivity plus exposure) and the adaptive capacity of the systems and African fisheries, including Nigeria, are more vulnerable due to ecological (semi-arid and coastal locations) and social (large dependence on fish for protein, low adaptive capacity, weak economies and low human capacity development) factors (Worldfish Center, 2007). In Nigeria, the livelihood of about 26million people in fishing

communities in coastal areas and their socio-cultural ties with lacustrine habitats. About 300 000 fish farmers, consumers depend on fish for protein supply and the present 4% contribution of the fisheries sub-sector to agricultural sector's contribution of 40% to the GDP. About 50% of the fish consumed in Nigeria is from the Niger Delta. Coastal vegetation especially the mangroves have been lost to coastal erosion (Awosika, 1995). The Niger River/delta is an important ecosystem that needs to be protected, for it is home to 36 families and nearly 250 species of fish, of which 20 are endemic, meaning they are found nowhere else on earth (Chidumeje *et al.*, 2015). It is common knowledge that scientists have estimated that 3/4 of the tropical world's fish catch is dependent on mangrove forests for food or habitats.

Mangrove forests serve as nurseries and breeding grounds for both near-shore and off-shore marine species. Again, studies have shown that about 60% of the fishes in the Gulf of Guinea breed in the mangrove of the Niger Delta (Odieta, 1999). Fishes scatter eggs in leaves of aquatic thicket, bury eggs in sediments, guard eggs and juveniles in excavated nests (Bolarinwa, 2016). The shoreline along the Niger River is important in maintaining the temperature of the water because the slightest change in water temperature can be fatal to certain marine species of fish. Trees and shrubs provide shade and habitat for marine fish species, while reducing fluctuation in water temperature. With the disruption/destruction of the coastal ecosystem, loss of habitat and the climate getting warmer, the fish population is affected. Coastal erosion and flooding smoulder the fertilizing eggs and young of fishes thus affecting recruitment into the population. These habitats, and subsequently the fish assemblages associated with them, are potentially affected by a number of anthropogenic influences, some of which are depicted in Fig. 1. As most freshwater and marine fishes are cold blooded, the physiological and biochemical processes of the body function according to the dictates of the prevailing water temperature.

Other adverse effect of sea level rise in the Niger Delta is increased salinity of both surface and underground water due to the intrusion of sea water. This will lead to the death of aquatic plants and animals that cannot tolerate high salinity. The brackish water is the home of several species of fishes and it is the breeding sites for several others. The ecology of the brackish waters will greatly be affected by this phenomenon and this may lead to loss of species. Some terrestrial plants that have low tolerance for high salinity will also be affected. Sea water rise will have serious impact on food security in the region; because of it impacts on coastal agriculture.



**Fig. 1: Diagram (adapted from Hoss and Thayer, 1993) showing potential environmental modifications to fish habitats and life history stages, as can be applied to the Niger Delta area.**

**Socio-economic Impacts**

While climate change will lead to increased aridity and desertification in northern Nigeria, it will lead to increase in flooding in the southern part especially in the coastal regions. Adverse impact resulting from the phenomenon will increase if sufficient effort is not made globally to tackle the problem.

Apart from coastal erosion, flood in general has impacted negatively the livelihood of many communities in the region. Flood and erosion remove top soil, destroy roads, affect fresh water resources and threaten lives and properties. Many people have been rendered homeless by floods and several roads have been made impassable or even washed off. The usefulness of several roads has become seasonal, only passable during the dry months of the year. In Egor and Ogida communities in Edo State, several houses have been abandoned by the owners due to floods and many more areas in the region are vulnerable to floods. Owners of the affected houses did not anticipate the problem they now find themselves when their houses were being built. For occupants of some of the affected houses who are unable to relocate for financial reason will have to cope with the situation. This makes them vulnerable to different kinds of water-related disease such as malaria, dysentery, cholera, and diarrhea. Trauma resulting from the problem can lead to non-pathogenic diseases such as hypertension and diabetes. In some other instances, some areas are cut off from other parts of the community as a result of flood.

Floods paralyze economic activities in many towns and cities in the region. Major roads, some linking states are flooded causing hardship to motorists. When these roads were constructed, the flooding problems were not there, and the companies that constructed the roads probably did not anticipate the problem. One common consequence of flooding is increase in transport fare. Commercial drivers, to make up for the distance they drive to avoid flooded roads, usually increase their fare putting the burden on their passengers causing the general increase in the cost of goods and services.

### **Change in Vegetation**

One important feature observed in the region is the almost complete absence of primary forests. This may be partly due to climate change and partly due to human activities. Uncontrolled logging, agricultural activities, acid rain, oil exploration and exploitation, urbanization and mining activities contribute to loss of vegetation. The vegetation of some part of the Niger Delta is dominated by grasses, sedges and shrubs with few scattered trees and they were mainly palm trees. In other parts, trees grow close to one another to form thick canopy over undergrowths.

The changes in vegetation will have great implication for biological productivity consequently affecting biomass production. It will lead to the impoverishment of biodiversity and various plant species presently growing in the region may die off. The regeneration rate of biomass may also decline significantly affecting the amount of fuel wood available for local people. Fall in the availability of biomass for local energy generation will bring more hardship to local people. Many will have to travel long distance in search for fuel-wood, women and children will be affected the most since they are traditionally charged with the responsibility of fetching fuel wood for the house.

### **Change in Rainfall Pattern**

Meteorological data have shown that rainfall pattern in Nigeria has changed in the past decades. Oladipo (1995) reported that the decline in rainfall in Nigeria started at the beginning of the 1960s when a decade of relatively wet years ended. According to him, the persistence of below-mean rainfall in the last two decades in Nigeria is an indication of an abrupt change in climate. The Niger Delta lie predominantly in the tropics having two seasons – the wet and dry seasons. The wet season occur from May to September, while the dry season begins in October and ends in April.

Food security has been defined as the ability of people to grow and obtain food (Sarah La Trobe, 2002). The agricultural sector in Nigeria is highly sensitive to rainfall pattern especially in southern Nigeria where rain-fed agriculture is mainly practiced. It has been predicted that climate change will pose serious threat to food security. Climate change creates uncertainty in the rainfall pattern (timing and amount) and affects agricultural activities.

Agriculture in the Niger Delta is highly dependent on rain; and irrigation is seldom practiced. The changes in the rainfall pattern have greatly affected the agriculture in the region (Uyigwe and Agho, 2007). Farmers in the region begin cultivation at the end of the dry season, when the rain begins to fall. They plant their crops after the first or second rain in the month of March, and sometime in April. After the first rain, the rain falls periodically till the months of June/July (the peak of the rainy season), when rain fall more or less continually. The periodic rainfall pattern before the peak in June enables farmers to cultivate various crops.

Because of the change in rainfall pattern, farmers who plant after the first or second rain in run into huge loss when the rains are delayed beyond the usual due to climatic changes. The crops are scotched causing huge economic loss. Before this time farmers can predict the rain and they know precisely when to plant their crops. The crops after they are planted are watered periodically by rain before the peak of the rainfall in June. The amount of rainfall within the period before the peak is necessary for the optimum performance of many crops most especially the maize which is widely consumed in every part of Nigeria. In an investigation (Onwuemele, 2015), it was reported that more than 80% of households have diversified their livelihoods into the non-farm sector with serious implications for food security. There is

therefore, need for support for local farmers to enhance their capacity to adapt to climate change to improve their agricultural practices.

### **Integrated Approach to Developing the Niger Delta**

The Niger Delta is faced with myriads of environmental problems caused by climate change and the activities of multinational oil companies operating in the region. We therefore propose an integrated approach in solving the problem in the Niger Delta. By an integrated approach, we mean a combination of several development strategies packaged into one piece in a way that it will be more effective. The integrated approach must be participatory. The local people are the primary targets of development and development can only be precisely defined by them. It is only the definition of the local people to whom development strategies is directed at, that is acceptable. Thus every development strategic must seek to view development from the perspective of the local people. The United Nations Declaration on the Rights to Development of 1986 recognized that the human person is the central subject of the development process and that development policy should therefore make the human being the main participant and beneficiary of development.

The integrated approach must x-ray the needs of the local people and design an all-encompassing strategy to address these needs. The needs of the local people vary from community to community and among the different groups in the society – the men, women and youths. An integrated approach will target the different groups. It is of utmost importance to conduct detailed studies to ascertain the priority needs of communities before embarking on any project. The needs of the various communities should be addressed in order of priority, starting from the most important to the least. For example, if the priority need of a particular community is the provision of portable drinking water, the people may feel dissatisfied if they are provided with electricity.

Integrated approach must also seek to understand the existing coping strategies of the local people to changes in their environment and build on them through policy formulation with adequate participation of the local people. An effective coping strategy will reduce vulnerability to climate change and other changes in the environment. An in-depth understanding of how individuals, communities and natural system can prepare for and respond to changes in climate and non-climate shocks is important to reducing vulnerability to adverse changes in the environment.

In this integrated approach, all actors should be involved – the government, international organizations, civil society based organizations, non-governmental organizations, the private sector, academia, agencies of the United Nations, financing organizations like the World Bank and the communities. The government as a primary developmental partner should work closely with grassroots organizations that are privileged to have good knowledge of the communities. Government-private-sector partnership as well as partnership with other actors should be an integral part of the integrated approach.

While it is a palpable truism that industrialization enhances socio-economic development, it is important to note that industrialization without the right technologies is unsustainable and may become inimical to the local people. This is the case in the Niger Delta. Industrial development should be accomplished with technologies that are environmentally friendly. The multinational oil companies operating in the region should develop technologies that will minimize the impact of their activities on the environment. For instance, old-fashioned flaring of gas can be replaced by converting the gas into other useful products. Chemical experts are on the opinion that instead of flaring gas, it can be converted to alcohol and put into diverse

uses. The government and the multinational companies should be involved in environmental restoration activities. Such activities may include afforestation, support for sustainable agriculture and fishery, establishment of environmental management institutions and research institution, and policy formulation for the preservation of wildlife and other endangered species.

There cannot be enjoyment of any resources if the people do not have control over their resources. It is a case of forcefully taking from the people what belongs to them and given it to somebody else. This is unethical and legislations supporting such acts are criminal. If resources are discovered in any community that are of commercial value for the state, the government should carry out adequate consultation with the community and enter into agreement with them before the exploitation of the resources. The consultations and agreements should be well documented. The provision in the Nigerian constitution vesting the control of all resource in Nigeria solely in the states should be repealed. The constitution should therefore allow the local people gain control of the resources from their land.

In the Nigerian constitution, at the bridge of environmental rights, there is no provision for individuals, agencies and communities to sue for enforcement of environmental rights. The power to sue for environmental rights is vested only in the state. The question is what happens when the state or its collaborators are the one directly involved in the bridge of environmental rights? Therefore, provision should be given in the constitution to allow individuals, communities and agencies to sue for enforcement of environmental rights. When there is a breach in environmental rights, individuals, groups and communities are the ones affected. For sustainable development to be achieved in the Niger Delta, the region must gain control of their land and mineral resources taken away from them through military decrees that have been enacted into laws in the Nigerian constitution.

## CONCLUSION

The Niger Delta is faced with myriads of environmental problems caused by climate change and the activities of multinational oil companies operating in the region. A participatory, integrated approach to development is the solution. Government-private-sector partnership as well as partnership with other actors should be an integral part of the integrated approach.

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## **Eeffects Of Occupational Strain Among Police Officers To The General Security Of A Community: A Case Of Murang'a Town, Murang'a County, Kenya.**

**Felix Kimotho**

**Wokabi Mwangi**

**John Omboto**

### **ABSTRACT**

Strain at work in any profession negatively affects the people working and overall performance of employees. This in turn has a negative impact on production or quality of services being offered. This applies to police officers especially those working in major towns in Kenya where crime rate is too high and cost of living is unimaginably high. According to GOK crime report of 2014, Murang'a town being one of the Kenyan major towns has been rated as having highest crime levels culminated by illegal groupings like Mungiki and Gaza boys. Among the major crimes recorded in Murang'a include violent robberies, theft of motor vehicles, house breakings and burglary, kidnapping, bank robberies, homicides and gender violence among others. Reasons behind high crime rate in Murang'a town have not been clearly established so far. Many scholars have tried to establish causes of crime in Murang'a town and among the listed causes include poverty levels, population growth and proximity to Kenyan capital Nairobi among others but none has considered effects of occupational strain among police officers in the course of performance of their duties. Occupational strain among police officers could be having adverse effects on performance by police officers and in turn negatively affect services they render to the public and this may lead to high crime rate and general insecurity. Failure to address causes of occupational strain among police undermines effort to curb insecurity in our major towns in Kenya. Strained officers are poorly motivated and generally demoralized hence poor service delivery. The focus of this paper, therefore, is to build greater understanding of the causes of occupational strain among police officers in Murang'a town, effects of such strain to general security of Murang'a town and possible measures that can be undertaken to address the problem of occupational strain among police officers working in Murang'a town. The paper briefly presents findings of research conducted in Murang'a town over the same topic and recommendations thereto, in order to address the problem of occupational strain among police officers and improve their welfare and wellbeing. All this is aimed at motivating them to provide good services and to make them more effective which in turn will improve security of Murang'a town.

**Key words:** Strain- challenges, difficulties, obstacles or undesirable feeling either physical or psychological. Security Management- identification of community's overall assets and risks followed by the development, documentation, and implementation of policies and procedures to protect the community and its assets and the strategic application of resources to monitor, minimize and control the probability or impact of identified risk. Insecurity- feeling of uncertainty and lack of confidence or assurance. Occupational Strain- physical or psychological problems, challenges or undesirable feeling associated with an occupation that hinders performance. Strain Management Efforts- wide spectrum of techniques and psychotherapies aimed at controlling a person's level of strain for the purposes of improving everyday functioning. Causes- overall predisposing conditions that brings about, generate, prompt, induce, promote or trigger emergence of strain. Effects- positive or negative results, consequences,

**repercussions or impacts emanating from strain. Stress- physical, physiological, or psychological disorder associated with occupational strain.****INTRODUCTION**

This paper examines the effects of occupational strain among police officers working in Murang'a town and the effects of such strain to general security of Murang'a town. The paper also explores major causes of occupational strain among police officers in Murang'a town and suggests possible solutions to the problem. It is motivated by the concerns by the high level of insecurity recorded in Murang'a town culminated by illegal groups still operating within the town despite efforts by security agencies to curb the menace. While the Government is managing to subdue these violent groups of criminals in Kenya towns like wakali wale and sungusungu in Mombosa, Kamjesh in Kisumu and Kayole boys in Nairobi, their activities within Murang'a town still persists unperturbed. Security agencies in Murang'a seem to be overwhelmed leaving these criminals to thrive at the expense of security of the citizens living in Murang'a town and its environs. These groups operate in areas of Mukuyu and Mujini in Muarn'g'a and rob people as early as 6.30 pm in the evening. Membership of these groups comprise of young boys who have dropped out of school aged between thirteen to twenty five years but are commonly coordinated by a more older persons who are more experienced in crime. They are known to carry knives and threaten people walking within those areas. Many cases of violent robberies, rape and defilements, homicides and many more have been reported recently. These groups' activities are spreading fast to other parts of town leaving everybody in Murang'a generally insecure. Many victims of these criminal gangs do no report after attack even if they were able to identify the criminals due to fear of further victimization.

Despite deployment and constant patrols by police, no positive results are achieved. Their strategies and action to curb this problem are seemingly not working. Reasons has to why the security agencies are unable to tackle the issue are not know. Probably police are working hand in hand with these criminals though this has not been confirmed. This therefore leads to the question of motivation by agencies to end the menace and neutralize the gangs. Police are strained and demoralized due to many factors that are highlighted in this paper to the extent of being unable to handle this situation. Among the factors mentioned in this paper include poor handling of police welfare, poor salaries, lack of proper equipments, and lack of support by seniors and political interference. This paper has also noted that number of police officers deployed in Murang'a town is low as compared to recommended numbers. This leads to long working hours to cover the shortage further straining the officers. The research that was conducted on the same topic indicate that a police officer in Murang'a works for at least twelve hours per day and have no weekend off duty. The issue of occupational strain among police officers therefore takes the centre role in escalating crime rates in Murang'a town. It also immensely contributes to rising cases of corruption to compensate for low salaries. It also contributes to emerging case of police brutality which could probably be a reaction to fatigue, stress, stress and feeling of hopelessness. In Murang'a, cases of suicide by police officers, and shooting of police seniors have been witnessed which could as well be as a result of stress emanating from occupational strain. Measures to curb this situation have been proposed in this paper which include management of police welfare and allocation of enough resources to police.

**PROBLEM ANALYSIS**

Occupational strain among police officers in Kenya has escalated despite many measures being put in place to curb the situation. Strain among police officers who provide security services may lead to occupational stress and adversely affect security management. In the recent past there have been many cases of police officers turning their guns on themselves, their colleagues or their superiors and others shooting their spouses and their children dead. In all these ugly incidents involving the police, there has been no proper explanation or reason for it.

Many police officers especially in Murang'a town are also in record for absconding duty, desertion, low motivation, addiction to drugs and alcohol, resignation seeking green pastures and others engaging in crime, corruptions, violations of human rights and general impunity. All these are manifestations of occupational stress which probably emanate from occupational strain. Murang'a town has been in record for a long time for having highest crime levels which reason has not been properly established. Research conducted in Murang'a town indicated that police officers working there are labouring under serious occupational strain which could be hindering their performance of duty leading to high crime levels. It was therefore necessary to highlight this situation in this paper in order to build greater understanding of the causes of occupational strain among police officers in Murang'a town, effects of such strain to general security of Murang'a town and possible measures that can be undertaken to address the problem of occupational strain among police officers working in Murang'a town.

### **METHODOLOGY**

This paper is informed by a study that was conducted in Murang'a town which was intended to establish major causes of occupational strain among police officers in Kenya and the effects it has on security management. The study sort to examine the major causes of occupational strain among police officers in Murang'a town, explore the effects it has on security management and assess the efforts being made by relevant authorities and organizations to manage strain. The study focused on police officers attached to Murang'a town. It employed social strain theory by Robert K Merton and Robert Agnew and general systems theory by Ludwig von Bertalanffy. Cross-sectional research design was used during the study and the target population of the study comprised of 120 police officers drawn from both Administration Police and Regular Police attached to Murang'a. The sample size was 60 respondents comprising of 40 respondents selected randomly from the two groups of the police which will be 33% of the entire population and 20 key informants drawn from businessmen in Murang'a town, experts, administrators, and senior police officers. Stratified sampling was used to select the respondents. Primary data was collected through in depth interviews using interview schedules and focus group discussions. This was corroborated with secondary data which was obtained from police records, archive documents, books and other written materials. Data collected was analyzed using SPSS (Statistical Package for Social Sciences). Descriptive statistics was used to interpret the data and inferential statistics to draw conclusions.

### **RESULTS AND DISCUSSIONS**

The findings of this study revealed that most police officers find their job stressful. In addition, most police officers are not satisfied with their job hence if they got an opportunity they would not hesitate to change. The findings have also shown that most police officers work for long hours which could be straining them. The findings confirm Ostermann's (1999) assertion that strain is often related directly to the work situation. Most police officers are dissatisfied with their salaries and do not consider it proportionate to their labor.

The study revealed that most police officers consider their profession dangerous. They put their life on the line as they carry out their duty. The findings have shown that there is poor cover for police officers when injured in line of duty. These findings confirm that as Jones et al. (1995) observed, organizational demands are possible cause of strain at work. While there are some observed, organizational demands are possible cause of strain at work. While there are some senior police officers who are supportive to their juniors, many others are not supportive which make the work of their juniors hard and straining. The findings are in agreement with observations by Hart et al, (1995) that hostile work cultures that are characterized by mistrust, poor communication and lack of control can be a source of strain.

Most police officers do not have adequate apparatus or tools to do their work properly. This not only has the potential to expose them to danger but also make their work straining. The findings have also shown that while most promotions in the National Police Service are largely fair, there could be significant incidents of unfairness. Disciplinary cases in the National Police Service are largely handled fairly with only a few cases of unfairness. The study has revealed mixed reactions in regard to involvement of police officers in decision making. While most police officers are involved in decision making a significant proportion are not included in decision making and therefore feel that their opinions do not matter.

The findings have shown that most police officers are regularly transferred from one work station to another which affects them and their families. This can be a source of strain as demonstrated by Parker (1998) who argued that harassment at work and a heightened sense of anxiety can be a source of strain that eventually affects performance. The study revealed a poor relationship between the police officers and the media. The results further demonstrated a breakdown of relations between the community, civil society and police officers. Working in such an environment can be a source of strain for police officers. The findings confirm observations by Hart et al. (1995) that hostile work environment, mistrust and poor communication can be a source of strain at workplace.

According to the findings of this study, current laws and regulations do not give police officers a good environment to work in and this could make them strain in their work. The study has shown that most police officers view IPOA unfavorably. The long working hours, risky nature of police work, and frequency of transfers make police job stressful and this can explain why many police officers would wish to change their profession. The situation is exacerbated by salaries that are not commensurate to work that police officers do, perceived unfairness of IPOA by the police officers, lack of media support as well as lack of support from the public and civil society and lack of proper cover when police officers are injured in the line of duty. Issues touching on resource allocation and welfare of police officers largely lead to occupational strain among police officers. These findings are contrary to observations by Ganster and Schaubroeck (1991) that personal characteristics are the major factors that lead to occupational strain.

The findings have shown that strain related illnesses are common among police officers. A high proportion of police officers drink alcohol, smoke or abuse substances which perhaps could be due to strain emanating from their work. The findings confirm observations by Jex (1998) who pointed out that occupational strain and stressful working conditions can lead to behavioural stress, physical stress and psychological stress. The study revealed a high prevalence of homicides among police officers which perhaps could be linked to stressful work.

Although a small number of police officers resigned, deserted or absented themselves from duty when looked at from employee turnover perspective, this is a high rate that should raise concerns about police officers' welfare. If left unattended strain among the police officers can eventually significantly affect police work and productivity. The findings confirmed that unless there is adequate intervention to resolve the problem of strain among police officers, the security sector will be affected. Security services delivery will diminish and insecurity will increase. Strain at work is a factor that affects performance of security services at both management level and community level.

The findings have shown that additional efforts to curb strain among police officers are necessary. In addition, there is need for more proactive strategies to curb strain among police

officers as well as a review of the existing strategies to make them work. As Lazarus and Folkman (1984) pointed out intervention can reduce the risk of health associated with strain in the workplace. The study has revealed that the issue of managing strain among the police officers have largely been left to the government with only a few other organizations assisting to address the problem.

The contribution of a few other organizations in management of strain among police officers has not done much to address the problem. This is contrary to individual and organizational approaches for intervention proposed by Lazarus and Folkman (1984). There are strategies that have not been explored that could have significant impact on curbing strain among police officers. These include primary, secondary and tertiary as advocated by Worker Compensation and Rehabilitation Commission (2000). The findings revealed that there are no tangible strategies for curbing strain among police officers. Despite there being police officers who are already adversely affected by strain at work, there are no tangible strategies such as case management advocated by Ganster (1995) for such situations.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Introduction**

This is the summary of findings, conclusions and recommendations of the study.

### **Summary**

The findings revealed that police officers find their job stressful and most police officers were not satisfied with their job. If most police officers got an opportunity they would not hesitate to change their profession. The cause of strain at work emanates from long working hours, salaries that are not proportionate to police officers' work and the dangerous nature of police work. The findings also show poor cover for police officers when injured in line of duty and lack of support from some senior police officers make the work of their juniors straining. The police officers do not have adequate apparatus or tools to do their work properly hence endangering the officers and causing them strain.

The findings revealed that while most promotions in the National Police Service are largely fair, there could be significant incidents of unfairness. Similarly, disciplinary cases in the National Police Service were largely handled fairly with only a few cases of unfairness. The findings have shown that while most police officers are involved in decision making a significant proportion are excluded in decision making and their opinions do not matter. The findings revealed regular transfers from one work station to another among police officers. The results revealed a poor relationship between the police officers and the media as well as the community and the civil society. The results have shown that current laws and regulations do not give police officers a good environment to work and police officers perceive IPOA as not fair to them.

The findings shows that strain related illnesses are common among police officers. The results also show that a high proportion of police officers drinking alcohol, smoking or abusing substances which perhaps could be due to strain emanating from their work. There is also a high prevalence of homicides among police officers which perhaps could be linked to stressful work. This has led to increased employee turnover among police officers as some resigned, deserted or absented themselves from duty. The results have shown that if left unattended strain among the police officers can eventually affect police work and productivity. The findings show need for intervention to resolve the problem of strain among police officers so that security services delivery is not interrupted.

The findings show need for additional efforts to curb strain among police officers but the issue have largely been left to the government with only a few other organizations assisting to address the problem. The contributions of the few other organizations that assist in management of strain among police officers have not done much to address the problem. The findings have shown that there are unexplored strategies that could have significant impact on curbing strain among police officers.

### **Conclusion**

Many sources of strain among police officers are job related. Long working hours, risky nature of police work, and frequency of transfers make police job stressful and this can explain why many police officers would change their profession if they got a chance to do so. The situation has been exacerbated by salary that is not commensurate to work that police officers do, perceived unfairness of IPOA against police officers, lack of media support as well as lack of support from public and civil society and lack of proper cover when police officers get injured in the line of duty. Issues touching on resource allocation and welfare of police officers seem to largely contribute to occupational strain among police officers.

The effects of occupational strain among police officers are manifested in many aspects such as stress related illnesses, a high proportion of police officers drinking alcohol, smoking or abusing substances and a high prevalence of homicides. These incidents raise concerns about police officers' welfare. They show that unless there is adequate intervention to resolve the problem of strain among police officers, the security sector will be affected. Security services delivery could diminish creating a room for insecurity to increase. Based on the findings of this study, strain at work is seen as a critical factor that affect performance of security services at both management level and community level.

Proactive strategies to curb strain among police officers are needed. The government alone cannot adequately address the problem of strain among police officers hence need for assistant from other organizations and stakeholders in security sector. The unexplored strategies for curbing strain among police officers could have positive impact and there is need to explore and exploit available means to establish tangibles strategies to curb strain among police officers.

### **Recommendations**

The study recommended that the government, National Police Service Commission and other stakeholders in the security sector should address concerns relating to police officers' welfare and resource allocation to mitigate strain among police officers. The sources of strain that are job related such as long working hours, nature of work and transfers could be addressed by the National Police Service Commission. Addressing other sources of strain among police officers, such as resource allocation for better remuneration, adequate equipment to work with and support need collaboration among stakeholders such as NPSC, government, the media civil society and the community. These organizations should work together to assist the police officers deal with occupational strain.

The study recommended that NPSC should work with counseling psychologists and other stakeholders to address strain related illnesses, alcoholism, substance abuse and a high prevalence of homicides. These illnesses have not only affected police officers' performance and productivity but also their general welfare and that of their families. This shows the need for immediate remedial efforts as long term strategies are put in place.

The study recommended that the NPSC should be proactive in developing and reviewing strategies to not only address strain among police officers but also welfare of the police officers. NPSC should allocate resources for research on how well to motivate police officers in their work despite the challenges that come with the nature of their job. Such efforts should be comprehensive covering social, political, economic and environmental conditions that affect police officers work.

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## The non-financial determinants of the financial derivatives' usage within SME businesses in Pakistan

**Muhammad Nawaz**

School of Economics, Finance and Banking  
University Utara Malaysia, Malaysia

**Professor Dr. Mohd Amy Azhar Mohd Harif**

School of Economics, Finance and Banking  
University Utara Malaysia, Malaysia

**Senior Lecturer Dr. Adilah Binti Azhari**

School of Economics, Finance and Banking  
University Utara Malaysia, Malaysia

### ABSTRACT

It had been recognized that the financial derivatives' usage enhanced the financial performance of the firms despite larger and smaller firms. Many studies had been conducted on larger firms but very none of the studies had been conducted on financial derivatives' usage within SMEs in the context of Pakistan. This space created thirst for the current research in exploring the non-financial determinants of the financial derivatives' usage within SMEs in Pakistan. This research was aimed at pursuing the research problem: "how and why the non-financial determinants of the financial derivatives' usage could be established within SMEs in Pakistan?" A qualitative research was conducted in order to investigate this research issue. Respondents of this research were identified by utilizing purposive snowballing sampling technique. Total nineteen (19) convergent interviews were conducted to establish the literature and to confirm the non-financial determinants of the financial derivatives' usage within SMEs. Thematic analysis technique was used to analyze the data. The findings of this research confirmed twelve (12) non-financial determinants of the financial derivatives' usage, i.e. growth opportunities, risk reduction, management incentives, corporate governance, risk attitude, risk perception, decision making unit, lack of awareness, lack of expertise, risk appetite, lack of established markets, time horizon. Three (3) newly discovered financial determinants of the financial derivatives' usage were risk appetite, lack of established market and time horizon, which revealed the current research contribution to the existing literature. This research built a revised theoretical framework, which provided ground for future research.

**Keywords:** financial derivatives, qualitative research, convergent interviews, snowball sampling, SMEs, Pakistan

### INTRODUCTION

The importance of Small and Medium Sized Enterprises (SMEs) cannot be ignored in most of the countries around the world (Ayyagari *et al.*, 2007; Burgstaller and Wagner, 2015). For example in the Asian region, a large portion of the economic activities can be traced back to SMEs. On average, SMEs account for 63% of all jobs in the private sector, contribute 25% in export and 32% in GDP (Gross Domestic Product) of the countries in Asian region (Yoshino & Wignaraja, 2015). According to Small and Medium Enterprises Development Authority (SMEDA), SMEs constitute 90% of all the businesses in Pakistan. In addition SMEs in Pakistan, contribute 30% in GDP, 25% in export and 78% in employment of the country. Pakistan's

exports are decreasing from last few years due to which their foreign reserves are decreasing and the government is facing a deficit in its annual budget. The export performance of Pakistan decreased from 3.54% to -12.17% in last five years from 2012 to 2016. There are many reasons of poor performance of exports other than poor financing and expertise. The vision 2025 is formulated by the government of Pakistan to defeat the export low performance of the country and to bring foreign reserves in the country so that deficit gap could be filled. In vision 2025, it is decided by the Ministry of Planning, Development and Reforms (MPDR) to increase country's exports to US\$ 150 billion from US\$ 25 billion by considering all the sectors as well (MPDR, 2014).

After acknowledging the key role of SMEs and their contribution in export, employment and GDP of the countries, the government of Pakistan accentuated the significance of SMEs and took them in the vision 2025. What is the purpose of vision 2025? Its rationale is to envision Pakistan upper middle income country and among the top twenty five economies around the world till 2025. The contribution of SMEs is expected to increase to PKR 16 trillion in national GDP, PKR 5.4 trillion in export and 25 million in employment of the country by 2025. It needs to bring radical changes in SMEs' policies based on the importance of statistics given above. It is critical for the SMEs to focus on their expansion, competitiveness and performance both globally and domestically by using different financial instruments. Therefore, it is important for the SMEs to understand and identify the determinants of the usage of the financial derivatives for their improvement.

From the above discussion based on the SMEs' performance and evaluation regarding their contribution in GDP, employment and export, it is apparent that the current performance is not adequate to congregate the vision 2025. Therefore, it is a major challenge for SMEs to improve their performance and its constant growth, which identifies a gap to be filled.

### **LITERATURE REVIEW**

In this globalized competitive financial environment, financial derivatives' contracts including futures, options, forwards and swaps are widely used by firms to alleviate exposure from fluctuations in interest rates, currency and commodity prices,. As firms activities regarding risk management become more complicated, the use of these financial derivatives' instruments also show perceptible signs of flexibility and creativity. Nevertheless, it is a huge improvement in the worth of transactions and the increasingly important task in managing risk that financial derivatives have established in the world financial markets. In 1994, the total value of derivatives' contracts outstanding around the world was about USD\$ 18 trillion (McAnally 1996). However, this figure had increased significantly to USD\$ 543 trillion by 2016 (Bank for International Settlement, 2016).

According to Modigliani and Miller (MM) approach the usage of financial derivatives do not add value if markets are perfect. On contrary, modern finance theorists added that hedging, using financial derivatives can add value in certain circumstances. Furthermore, Geczy, Minton and Schrand (1997) and Nance, Smith and Smithson (1993) asserted that generally hedging is value adding activity if there is presence of financial distress, agency cost, progressive tax codes and underinvestment costs. At a distance from the current disasters of derivatives, which imposed scrutiny upon the usage of financial derivatives, the empirical research studies outcomes show that a company can get significant results regarding risk management by using financial derivatives if these financial derivatives are used in a very lucid approach.

Usually it is seen that SMEs are very simple firms as compared to large firms, as a result, SMEs are rapid responding, acclimating to transformation and more flexible (Lavia Lopez and Hiebl,

2014). In the same way, SMEs are regularly confronting main challenges as compared to larger firms. In addition, SMEs very few have access to an extensive range of always earn less profit from economies of scale and resources (Burgstaller and Wagner, 2015; Lavia Lopez and Hiebl, 2014). Generally SMEs have low equity ratio, these firms are quite inclined to external incidents as compared to larger firms (Altman et al., 2010). This demonstrates that SMEs face various types of risks same as larger firms and these firms have more threat to their survival due to low level of financial and non-financial resources.

SMEs' Managers can recognize significant risks by using risk management practices, which could imperil the existence or success of the firm in time to cope with these risks efficiently (Miller, 1992; Brustbauer, 2014). Though, SMEs do not use risk management techniques adequately, mostly due to their constraints as they cannot afford to rededicate resources (Marcelino-Sádaba *et al.*, 2014). Even though in recent years, literature on risk management specific in SMEs is increasing but still it is inconsistent, and no organized literature review has been carried out on this topic.

Now the usage of financial derivatives is available and accessible to the SMEs and it is not limited to larger organizations. SMEs' performance is being improved by the usage of financial derivatives (Hrubosova & Kamenikova, 2007). Pakistan Mercantile Exchange (PMEX) deals in financial futures and commodity derivatives in Pakistan. SMEs in Pakistan which are involved in export and import at huge level, use Karachi Interbank Offer Rate (KIBOR) future contracts that PMEX deals (PMEX, 2016). Therefore, the scarcity of literature on the topic of financial derivatives' usage in SMEs businesses in Pakistan motivates the researcher to explore this issue widely.

The main purpose of this research is to investigate the determinants of the usage of the financial derivatives within SMEs in Pakistan. It is somewhat under explored area in the literature. We contribute in doing so to the existing body of knowledge in two ways. We make available qualitative evidence on the comparative importance of the determinants of the usage of the financial derivatives in SMEs. The data will be examined to check whether the outcomes are identical with the evidence and theories, which found in the existing literature

### **Definitions of Small and Medium Enterprises (SMEs)**

It is important to define SME first and what makes up SME, even the researcher is fervent to know about the financial derivatives' usage in SMEs (Harif & Hoe, 2016). Therefore, it is decisive to compare the SMEs' definition in Pakistan with other business acquaintances in South Asia. SMEs' definition criteria varies country to country. There is very impulsive remoteness among the large, medium, micro and small firms. The issue is that, researchers compare identical and equal with identical and equal in the economies. In order to make comparison among different classes, similar magnitudes are needed (Hall, 2002). Along with their specific differences SMEs' definitions of Asian countries are shown in table 1 below.

**Table 1**  
**Synthesization of SME's Definitions in Asian Countries**

SMEs' Definitions in Some Asian Countries							
Country	Sector	Number of Employees		Annual Sales (in millions) Home country currency		Total Assets/ Investments (in millions) Home country currency	
		Small	Medium	Small	Medium	Small	Medium
India *	Manufacturing					2.5 - 50	50 - 100
	Services/Trade					1.0 - 20	20 - 60
Malaysia**	Manufacturing	5 - 75	75 - 200	0.3 - 15	15 - 50		
	Services/Trade	5 - 30	30 - 75	0.3- 3	3 - 20		
Pakistan****	Manufacturing	20 - 50	51 - 250	75 - 150	150 - 800		
	Services/Trade	20 - 50	51 - 100	75 - 150	150 - 800		
Indonesia ***		5 - 19	20 - 99	<0.344	<17.20		
Thailand ***		<50	51 - 200			< 2.305	<11.524
Cambodia ***		11 - 50	51 - 200			<0.250	<0.500
Vietnam ***		<30	31 - 200				
Philippines ***		<99	100- 199				
Loas ***		<19	<99				

Legend:

\* Micro, Small & Medium Enterprises Development (MSMED) Act, 2006

\*\* National SME Development Council (NSDC) 2013

\*\*\*Harif and Hoe (2016)

\*\*\*\*SMEDA (2017)

**Source: developed for this research**

Every country has its own definition for SME. There are different measures to define an SME, which are used by different countries. In Pakistan, Small and Medium Enterprises Development Authority (SMEDA) is the authority, which directly deals only SMEs in Pakistan. Along with SMEDA (2017), State Bank of Pakistan (SBP) defined SMEs in May 07, 2016 as shown in table 1 above. There is no hard and fast rule for the SMEs' definitions around the world. From table 1 above, it is concluded that Malaysia's SMEs' definition is identical with the Pakistan's SMEs' definition based on measures used by both of the countries. Definition of SMEs in Malaysia provides platform for the definition of SMEs in Pakistan. Only medium size firms are used by this research, which are directly involved in import and export businesses. The new definition of SMEs used by this research is shown in table 2 below.

**Table 2**  
**Definition of SMEs Used for This Research**

Medium Size	Employees	Sales turnover
<b>Manufacturing sector</b>	Full time employees 51-250	Annual sales turnover PKR 150-800 million
<b>Services sector</b>	Full time employees 51-100	Annual sales turnover PKR 150-800 million

**Source: developed for this research**

From the table 2 above, those manufacturing firms, which are medium size and their number of employees not exceeding from 250 employees and sales turnover not exceeding from PKR 800 million, are used in this research.

After thorough searching of the literature, researcher did not find even a single study on the determinants of the usage of the financial derivatives within SMEs in Pakistan. Very few studies worked on the usage of financial derivatives in large firms only.

### **The non-financial determinants of the financial derivatives' usage within SMEs**

What are the determinants that SMEs in Pakistan think about before going to use financial derivatives in order to manage their different types of risks? The past literature on the non-financial factors, which persuade the usage of financial derivatives in all businesses, is synthesized. It is necessary to take global view by literature through structured approach precisely.

There are many researches, which have been conducted in developed as well as developing countries in the gap of the usage of the financial derivatives. These studies are conducted in the past one and half decade, which include Ayturk, Gurbuz & Yanik (2016); Rogers (2002); Dadalt, Gay & Nam (2002); Anderson, Makar & Huffman (2004); Yip & Nguyen (2012) and Borokhovich, Brunarski, Crutchley & Simkins (2004). After thorough literature practice 11 related articles have been selected based on three characteristics, which are fit to the definition of financial derivatives, the most recent articles of last one and half decade and all articles are published at least in referred journals. Total nine (9) determinants of the usage of the financial derivatives have been synthesized, extracted and recognized as shown in table 3 below.

The first non-financial determinant of the usage of the financial derivatives in any business is the *management incentives*. Management incentives are the mechanisms of compensation policy in order to minimize the issue of conflict of interest (Jensen & Murphy, 1990). From the literature, many researchers found that management incentives have significant influence on the usage of financial derivatives (Bartram, Brown & Fehle, 2009; Benson & Oliver, 2004). Two (2) out of eleven (1) selected articles confirmed this determinant as shown in the synthesized table 3 (row 1, column frequency). Therefore, based on its importance this determinant is taken to be investigated in this research. The second determinant of the usage of the financial derivatives is *growth opportunities*. This determinant refers to the availability of the internal and external funds to be used for growth opportunities. Availability of funds has positive influence on the firm decision to use financial derivatives (Lin & Smith, 2007). This determinant has been reported in three (3) out of eleven (11) selected articles (Nguyen & Faff, 2002; Rossi, 2013; Fantini, 2014) as shown in the synthesized table 3 (row 2, column frequency). Therefore, due to its frequent use, this determinant has taken to be used in this research. The third most reported and prominent determinant is *risk reduction*. The risk reduction refers to the protection against the adverse movements in the prices of the assets (Froot, Scharfstein & Stein (1993). Five (5) researchers out of eleven (11) selected articles provided significant evidences as shown in synthesized table 3 (row 3, column frequency). Therefore, this determinant is considered important to be explored in this research.

**Table 3**  
**Synthesization of Non-Pakistan Literature on the Determinants of the Usage of Financial Derivatives in Larger and SME Firms**

	The Determinants of the usage of the Financial Derivatives	1	2	3	4	5	6	7	8	9	10	11	Frequency	To be used for this research
1	Management Incentives	✓	x	✓	x	x	x	x	x	x	x	x	2	✓
2	Growth Opportunities	x	✓	x	x	x	✓	x	x	x	x	✓	3	✓
3	Risk Reduction	x	x	✓	✓	✓	x	x	✓	✓	x	x	5	✓
4	Corporate Governance	x	x	x	x	x	✓	✓	x	x	x	x	2	✓
5	Risk Attitude	x	x	x	x	x	x	x	x	✓	x	x	1	✓
6	Risk Perception	x	x	x	x	x	x	x	x	✓	x	x	1	✓
7	Decision Making Unit	x	x	x	x	x	x	x	x	✓	x	x	1	✓
8	Lack of Awareness	x	x	x	x	x	x	x	x	x	✓	x	1	✓
9	Lack of Expertise	x	x	x	x	x	x	x	x	x	✓	x	1	✓
	<b>Total</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>1</b>		<b>9</b>

Legend:

- |                                      |                                   |
|--------------------------------------|-----------------------------------|
| 1= Bartram, Brown & Fehle (2009)     | 2= Nguyen & Faff (2002)           |
| 3= Benson & Oliver (2004)            | 4= Bartram, Brown & Conrad (2011) |
| 5= Mallin, Ow-Yong & Reynolds (2010) | 6= Rossi (2013)                   |
| 7= Fauver & Naranjo (2010)           | 8= Alnassar & Chin (2015)         |
| 9= Pennings & Garcia (2004)          | 10= Bank & Weisner (2012)         |
| 11= Fantini (2014)                   |                                   |

**Source: developed for this research**

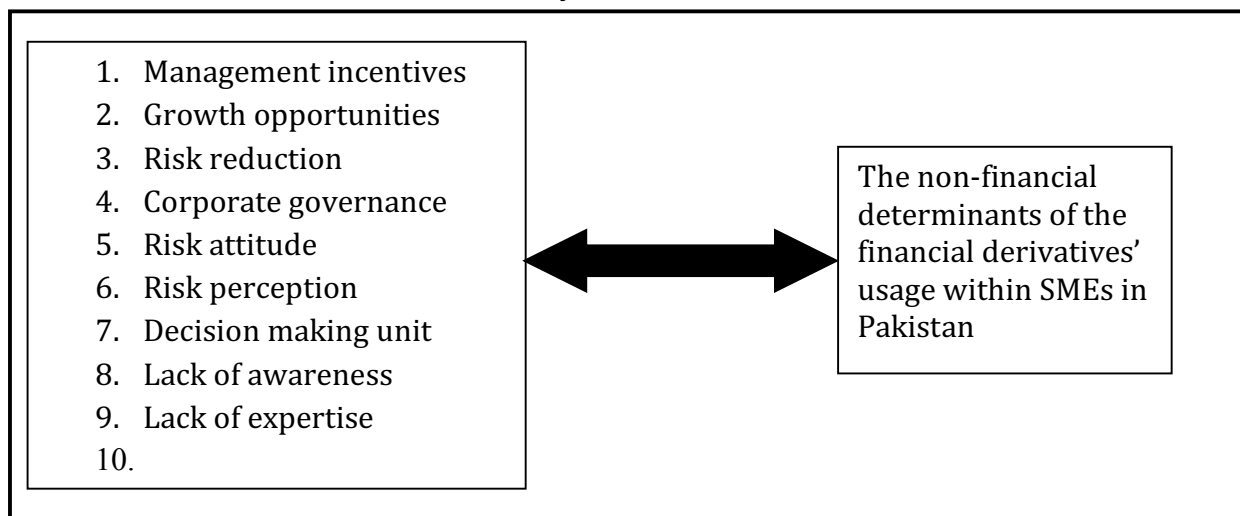
The next determinant taken from the non-Pakistan literature is *corporate governance* as shown in the synthesized table 3 (row 4, column frequency). Corporate governance is the set of codes, mechanisms, practices, rules and processes by which firms are monitored and directed (Lel, 2012). Two (2) studies (Rossi, 2013; Fauver & Naranjo, 2010) confirmed it as the non-financial determinant of the financial derivatives' usage. Therefore, this determinant could be further examined in this research. The fifth (5) determinant of the usage of the financial derivatives is *risk attitude*. This determinant states that managers have different risk behaviors while making financial decisions. Are managers risks averse or risk takers it depends upon their attitude (Johnson & Powell, 1994). Only one study (Pennings & Garcia, 2004) out of eleven (11) selected articles reported it as the non-financial determinant of the financial derivatives within SMEs as shown in the synthesized table 3 (row 5, column frequency). Therefore, based on its significance, this determinant is taken to be investigated in this research. The next sixth (6) important determinant of the usage of the financial derivatives is *risk perception* as shown in the synthesized table 3 (row 6, column frequency). Risk perception is defined as the subjective finding about the harshness of risk what people make (Wright, Pearman & Yardley, 2000). Out of eleven (11) selected articles, one study (Pennings & Garcia, 2004) indicated that the usage of financial derivatives is inclined to the risk perception. Thus, it is taken for further investigation in this research in the perspective of Pakistan SME businesses.

The next determinant extracted from the non-Pakistan literature is *decision making unit* as shown in the synthesized table 3 (row 7, column frequency). Decision making unit generally states the level to which the important persons around the managers that have influence on

the managers can suggest the managers to use financial derivatives (Nance et al., 1993). From the literature, one study (Pennings & Garcia, 2004) showed the significance of decision making unit in the usage of financial derivatives. Therefore, this determinant is considered to be examined in this research due to its significance. The next eighth (8) succeeding determinant in the synthesized table 3 (row 8, column frequency) is *lack of awareness*. The lack of awareness refers to the situation when the investors, who are concerned to the financial derivatives, are not fully aware about the pros and cons and their usage (Arnell & Delaney, 2006). There is only one study (Bank & Weisner, 2012) out of eleven (11) selected articles, which had shown the significance of this determinant. Thus, it is taken to be investigated in this research due to its importance. The last ninth (9) determinant is the *lack of expertise*, which has been extricated from the non-Pakistan literature. Lack of expertise refers to the low level of abilities and skills of the management to use financial derivatives. Those investors who are well skilled and have abilities can use the financial derivatives efficiently and effectively (Pennings & Garcia, 2004). From the literature review, one researcher (1) researcher out of eleven (11) selected articles confirmed the correlation between the usage of financial derivatives and interest rate exposure as shown in the synthesized table 3 (row 9, column frequency). Thus, this determinant is taken to be inquired in this research.

In conclusion, total nine (9) non-financial determinants of the usage of the financial derivatives have been rationalized for this research from the eleven (11) selected articles from the non-Pakistan literature as shown in the last column of the synthesized table 3. The preliminary theoretical framework is prepared to further investigate the non-financial determinants of the financial derivatives' usage within Pakistan SMEs. The preliminary theoretical framework is shown in figure 1 below.

**Figure: 1**  
**Preliminary Theoretical Framework**



**Source: Developed for this research**

**Research Issue**

What are the non-financial determinants for the SMEs businesses in Pakistan to use financial derivatives?

**RESEARCH METHODOLOGY**

This study explores the financial derivatives' usage, hence choosing a realism paradigm to expose the "realities" on primary non-financial determinants that could persuade the financial derivatives' usage within SMEs in Pakistan.

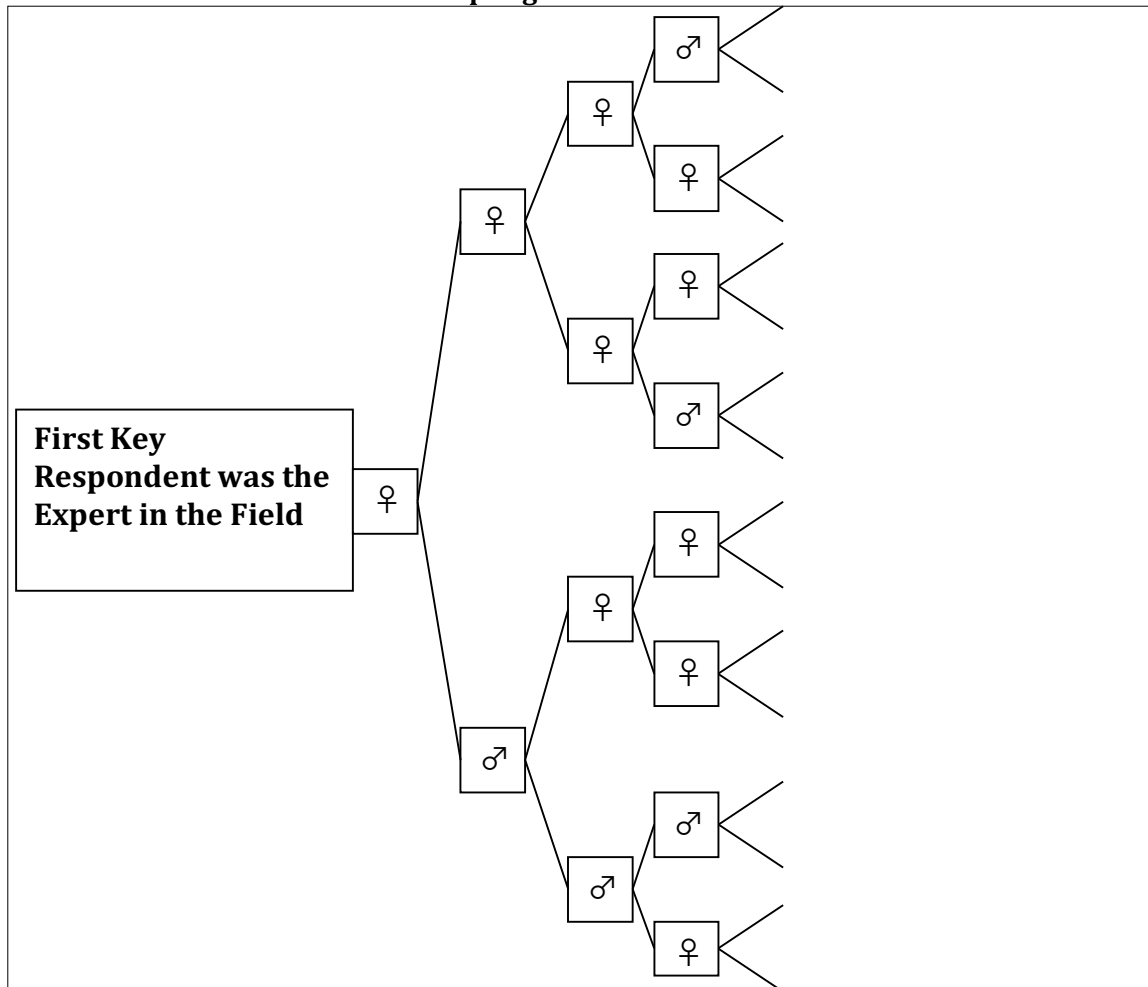
Realism paradigm was considered appropriate for this research based on the truth, which is useful, uses convergent interviews and solves the problem. Qualitative research methodology approach was utilized in this research. There are three (3) reasons due to which qualitative research methodology is used in this research. The objective of the research was the first and foremost reason to use qualitative research in this research (Parkhe, 1993). The strength of the qualitative approach lies in its ability to provide rich data (Jack & Anderson, 2002). It provides a more realistic feel of the real world and flexible ways of collecting, analyzing and interpreting data of the phenomenon under investigation (Lee, 1992). The type of information required was the second reason for this research. It is difficult to understand complex phenomenon without using detail and in-depth qualitative data, which can be achieved by bringing psychologically close to the subject matter under study (Carson & Coviello, 1996; Guba & Lincoln, 1994). Sample size was the final reason of using qualitative research for this research. A large number of SMEs in Pakistan are working, a small sample was used based on convenience sampling to gather data as qualitative methodology requires in the marketing area (De Ruyter & Scholl, 1998).

For this study, data was collected using the converging interview technique. There are four convergent interviews' strengths that justified and supported its utilization for this research. First, it can significantly aid for improving the credibility of the qualitative findings (Dick, 1998). Secondly, it allows the relative structured approach for categorizing about what essentially needs to be incorporated within its reach in an initializing stage (Harif, Chee, Hussain, Mohd Isa, Othman & Din, 2011). Thirdly, it is data driven and emergent approach that provides a reliable, valid and rigorous data collection process (Harif & Hoe, 2016). Lastly, it permits the researchers deep data collection than several other interview types as they make effort to gain insight into the understanding of informant's situations.

The validity and reliability issue is much vital and usually cannot be ignored in convergent interview and qualitative research without having any exception (William & Lewis, 2005). The validity and reliability provide effective examination about the fitness of measure, which is reflected as essential element for addressing the research. Both reliability and validity depend upon the quality of research design. The reliability of convergent interviews was attained by two different approaches in this research. In first approach, reliability was achieved by using structured interview administration process while conducting convergent interviews. In second approach, a structured process was planned to attain reliability, which include recording, writing and interpretation of data. Construct validity of this research was obtained by two famous approaches namely triangulation of interview questions and flexibility of interview protocol. This research used internal validity for sample selection and information richness was obtained from the financial experts in their field in SME businesses in Pakistan. External validity in this research was obtained by sample selection in terms of generalizeability, which was possible by theoretical replication (Yin, 1989).



**Figure: 2**  
**Snowball Sampling Process for This Research**



**Source: developed for this research**

Therefore, medium size firms in Pakistan were taken as population for this research, which fall under the SMEs definition of this research. Sampling approach or strategy explains how respondent’s convergent interviews were identified and selected. The information related to the phenomenon of interest or subject matter is obtained from the financial experts in SME businesses. It shows that, sample was selected carefully with purpose in this research. Thus, this qualitative research deployed the purposive sampling technique. Moreover, this qualitative research used snowball sampling. A purposive snowballing technique resulted when the above described two sampling techniques were combined and this purposive snowball sampling technique was used in this research.

It is necessary to determine sample size in addition to sampling strategy. This research determined sample size based on the saturation principle. Using snowball sampling technique more interviewees were added until an agreed stable pattern, saturation, and divergence on the determinants was obtained. Interviews were stopped when stability was reached, agreement about the previous interviewees’ questions was achieved and disagreement was explained (Naire & Riege 1995).

This research used convergent interview protocol as its research instrument. The convergent interview protocol contained a set of semi structured and pre-defined interview questions. Various issues were decided before going for every next interview. There was a combination of open ended research questions including opening questions, probe questions and ending

questions. Thematic analysis technique was used to identify, analyze and report the themes or patterns within interview data collection (Braun & Clarke, 2006). This technique cleanly organized and explained the data in detail. It also interpreted many facets of research phenomenon under study very frequently. This technique had six phases while doing analysis, which had been suggested by the researcher and were used in this research (Braun & Clarke, 2006). These six phases included; become familiar with the data, initial codes' generation, search themes, review themes, define and name the themes and generate the report.

### FINDINGS OF THE RESEARCH

This section presented a brief profile of the respondents participated in this research. All of them held top management position of Chief Finance Officers (CFOs) in their respective firms. Each of the respondents was in manufacturing industry specialties. Total nineteen firms were under the classification of medium-sized. The number of full-time employees hired by these firms was ranging from fifty one (51) to two hundred and fifty (250) registered workers. The profile of respondents contributed in this research is shown in table 5 below.

**Table 5**  
**The Profile of Interviewees Contributed in This Research**

Respondents	Code of Respondent	Position of Respondent	SMEs Sector	Year of Establish	Annual Turnover PKR'mil	Number of Employees
1	MGCF01	CFO	Manufacturing	1998	713.00	234
2	MGCF02	CFO	Manufacturing	1992	761	247
3	MGCF03	CFO	Manufacturing	1987	743	199
4	MGCF04	CFO	Manufacturing	1995	573.0	219
5	MGCF05	CFO	Manufacturing	1992	651.0	187
6	MGCF06	CFO	Manufacturing	1999	423.00	200
7	MGCF07	CFO	Manufacturing	1993	685	196
8	MGCF08	CFO	Manufacturing	1993	711	224
9	MGCF09	CFO	Manufacturing	2001	614.0	237
10	MGCF10	CFO	Manufacturing	1988	779	201
11	MGCF11	CFO	Manufacturing	1995	627.0	217
12	MGCF12	CFO	Manufacturing	1998	537.0	241
13	MGCF13	CFO	Manufacturing	1983	691	211
14	MGCF14	CFO	Manufacturing	1997	744	207
15	MGCF15	CFO	Manufacturing	1995	781	213
16	MGCF16	CFO	Manufacturing	1993	683	180
17	MGCF17	CFO	Manufacturing	1998	796	245
18	MGCF18	CFO	Manufacturing	2002	588.0	161
19	MGCF19	CFO	Manufacturing	2000	723	177

**Source: Developed for this research**

In total, 19 respondents from 19 firms participated in this research, which indicated the stability or saturation was reached at this point. For the purpose of this research, all 19 respondents fulfilled the criteria of the SME definition adopted in this research. The actual snowballing of 20 respondents was followed as explained, which was according to the snowballing technique described in the research methodology above. These conditions implied that the data collected from these respondents were valid in regard to this research, hence, established a solid foundation to proceed with data analysis. The results of thematic analysis of

financial determinants of financial derivatives' usage taken from transcription of interviews were shown in Appendix 1.

**Table 6**  
**Summary of Data Analysis of the Core Financial Determinants of the Financial Derivatives' Usage with Respect to the Preliminary Theoretical Framework**

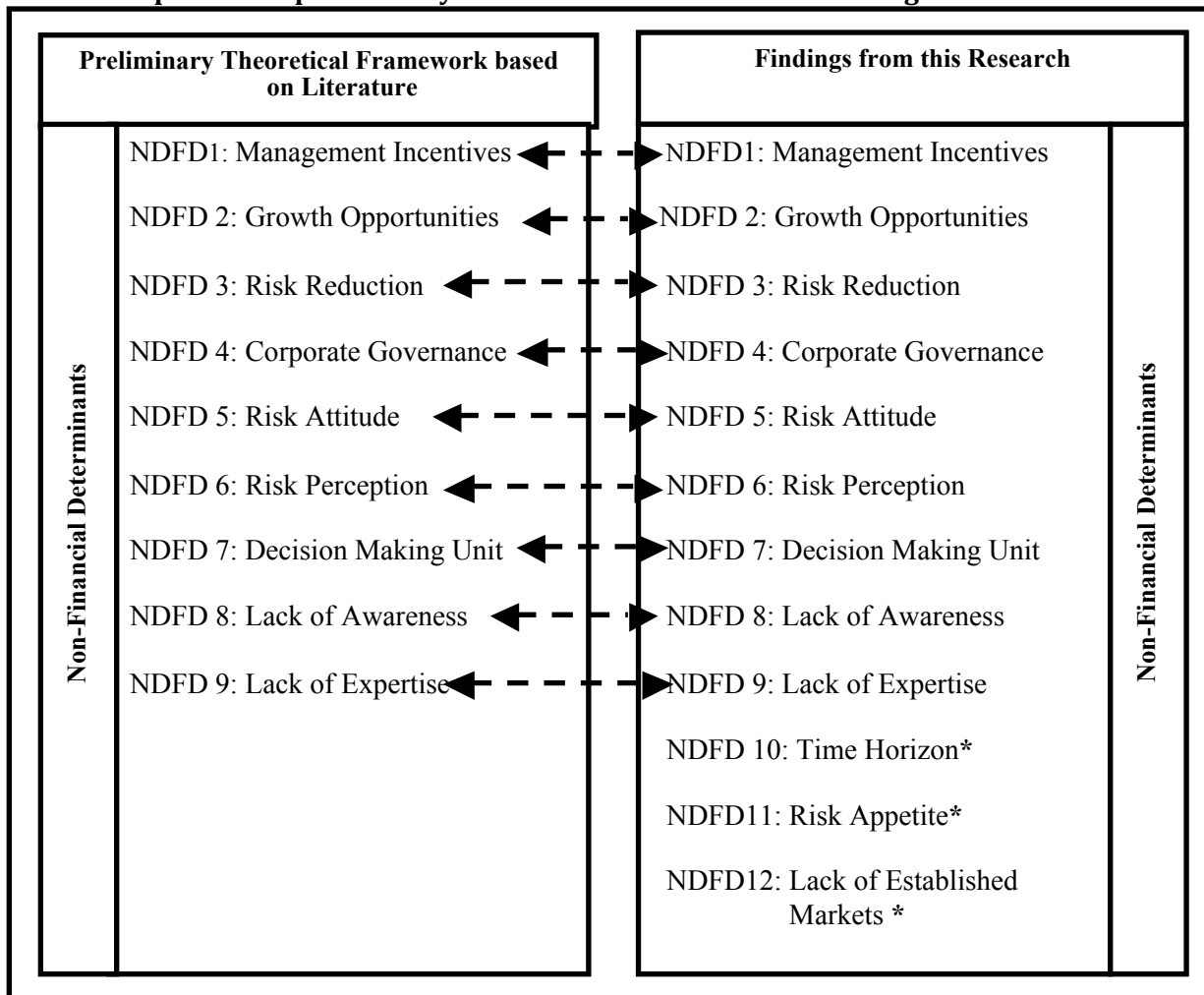
Non-Core Non- Financial Determinants of Financial Derivatives' usage from Theoretical Framework (Refer to Figure 2.10)		Respondents from SMEs Business in Pakistan																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Frequency
		MGCF01	MGCF02	MGCF03	MGCF04	MGCF05	MGCF06	MGCF07	MGCF08	MGCF09	MGCF10	MGCF11	MGCF12	MGCF13	MGCF14	MGCF15	MGCF16	MGCF17	MGCF18	MGCF19	
1	Growth Opportunities	x	✓	✓	✓	✓	✓	x	x	✓	✓	✓	x	✓	✓	x	x	✓	✓	✓	13
2	Risk Reduction	✓	x	✓	✓	x	✓	✓	x	✓	✓	✓	✓	✓	x	✓	x	✓	x	x	12
3	Management Incentives	x	x	x	x	x	x	x	✓	x	x	✓	x	x	x	x	x	x	x	x	2
4	High Corporate Governance	✓	x	✓	✓	x	✓	x	x	x	✓	✓	✓	✓	x	x	x	✓	✓	x	10
5	Risk Attitude	✓	x	x	✓	x	✓	✓	✓	x	✓	✓	✓	✓	✓	x	✓	x	x	x	11
6	Risk Perception	x	✓	x	x	✓	x	✓	x	x	✓	x	x	✓	✓	x	x	x	x	✓	7
7	Decision Making Unit	x	x	x	✓	x	x	x	x	x	x	✓	x	x	x	x	x	x	x	x	2
8	Lack of Awareness	x	✓	x	✓	✓	✓	✓	✓	✓	✓	x	x	✓	✓	✓	✓	✓	✓	x	14
9	Lack of Expertise	✓	x	✓	✓	✓	✓	✓	✓	x	✓	✓	x	x	✓	✓	✓	✓	✓	x	14
10	Time Horizon*	✓	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	1
11	Risk Appetite*	x	x	x	x	x	x	x	x	✓	x	x	x	x	x	x	x	x	x	x	1
12	Lack of established market *	x	x	x	x	x	x	x	x	x	x	x	x	x	x	✓	x	x	x	x	1

**Legend:**  
 ✓ Determinant considered by interviewees  
 X Determinant not considered by interviewees  
 \* Newly discovered financial determinant

**Source: Developed for this research based on analysis of field data**

In summary, total twelve (12) non-financial determinants of the financial derivatives' usage inclusive of three newly discoveries management incentives, growth opportunities, risk reduction, corporate governance, risk attitude, risk perception, decision making unit, lack of awareness, lack of expertise, time horizon, risk appetite and lack of established market are confirmed by interviewees. Therefore, the findings of interviews have answered the issue of this research. The comparison of prior research findings and current research findings is shown in figure 3 below.

**Figure: 3**  
**Comparison of preliminary theoretical framework and findings of this research**



**Legend:** ← - - - - - → Similar determinants in preliminary theoretical framework and findings of this research  
 \* Newly discovered determinants

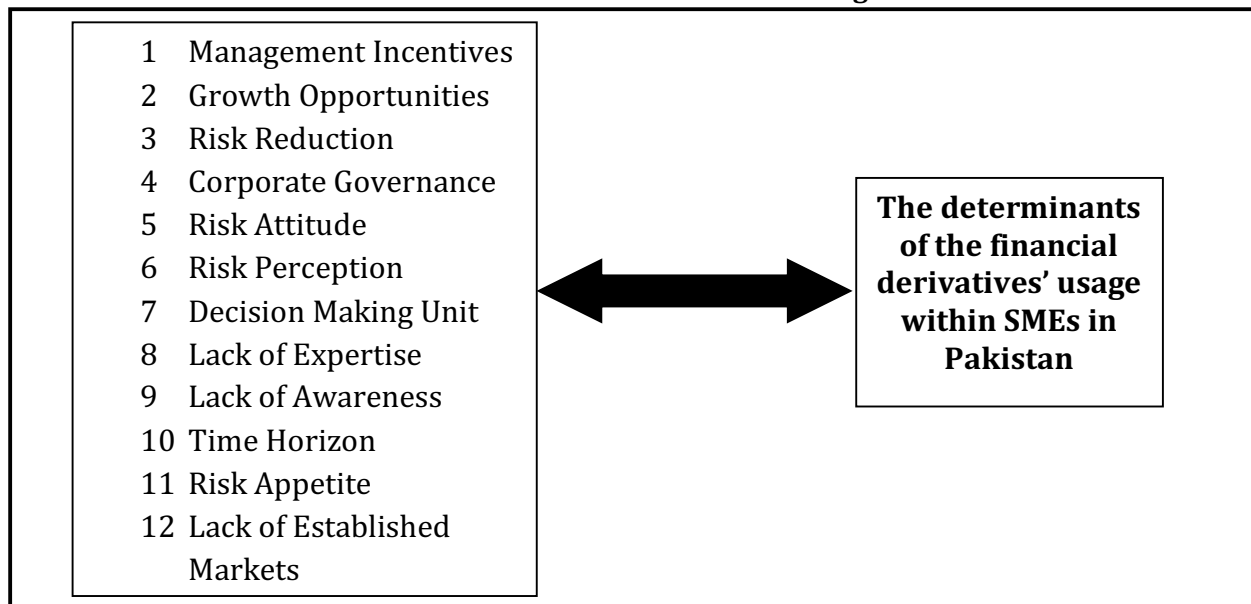
**Source: Developed for this research**

**CONCLUSION**

Due to unique features of SMEs as compared to large firms, this research was conducted to understand the non-financial determinants of the financial derivatives' usage within SME businesses in Pakistan. Similarly, the non-financial determinants of the financial derivatives' usage within SMEs were recognized. The preliminary theoretical framework was formulated based on the past literature, which was found in general business settings. In the preliminary theoretical framework total nine (9) non-financial determinants were listed. Though, the literature did not divulge sufficiently the non-financial determinants of the financial derivatives' usage within general business settings. In reality, this research found twelve (12) non-financial determinants; firm management incentives, growth opportunities, risk reduction, corporate governance, risk attitude, risk perception, decision making unit, lack of awareness, lack of expertise, time horizon, risk appetite and lack of established market including three newly emerged non-financial determinants of the financial derivatives' usage within SMEs in Pakistan. There was a slight difference between the prior literature and current research findings due to some reasons. These differences may be due to different research methodology

used in this research, because prior researches used quantitative research methodology. This research used qualitative research methodology, which facilitated this research to explore the problem deeper and generated findings, which were not established earlier due to which there was a slight difference between two findings. In conclusion, a minor amendment was made in this preliminary theoretical framework of this research after the whole discussion. This revised preliminary theoretical framework provides a foundation for discussion to conclude the research problem of this research: "How and why the non-financial determinants of the financial derivatives' usage could be established within SMEs in Pakistan". The revised preliminary framework is shown in figure 4 below.

**Figure: 4**  
**Revised Theoretical framework based on findings of this research**



**Source: developed for this research**

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## APPENDIX 1

### Results of Thematic Analysis of Non-Financial Determinants of the Financial Derivatives' Usage

Level of risk involved (NDFD5) | Potential investment (NDFD1) | To reduce the risk (NDFD5) | Growth opportunities (NDFD1) | Growth determination (NDFD1) | Hedge against the risk (NDFD5) | Emerging projects (NDFD1) | Growth of the firm matter (NDFD1) | Risk reduction is the main purpose (NDFD5) | Reduce risk exposure (NDFD5) | Risk mitigation (NDFD5) | Major opportunities (NDFD1) | Growth opportunities (NDFD1) | To reduce the risk (NDFD5) | Risk reduction (NDFD5) | Firm growth opportunities (NDFD1) | Risk Reduction (NDFD2) | Growth opportunities to avail different contracts (NDFD1) | To reduce risk (NDFD5) | Growth opportunities (NDFD1) | How much risk it will reduce (NDFD5) | Potential to grow (NDFD1) | To reduce the firm risk (NDFD5) | See the growth perspectives (NDFD1) | Future opportunities or firm potential growth (NDFD1) | Purpose is to reduce the risk (NDFD5) | Unavailability of regulations regarding FDs (NDFD2) | Risk Attitude (NDFD3) | Lack of Expertise (NDFD7) | Awareness about the usage of FDs (NDFD9) | Perception about the risk matters (NDFD8) | Policies, governance and SOPs (NDFD2) | Expertise matter (NDFD7) | Management awareness (NDFD9) | Their attitude toward risk (NDFD3) | Expertise of management (NDFD7) | Firm corporate governance (NDFD2) | Availability of intermediaries (NDFD6) | Lack of awareness (NDFD9) | Non-expertise of management (NDFD7) | Management perception influence them (NDFD8) | Management risk attitude (NDFD3) | Awareness (NDFD9) | Expertise (NDFD7) | Regulations and policies (NDFD2) | Lack of awareness (NDFD9) | Management experience (NDFD7) | Management risk attitude (NDFD3) | Perception also matter (NDFD8) | Management benefits (NDFD4) | Their attitude toward risk (NDFD3) | Awareness is the major factor (NDFD9) | No expertise (NDFD7) | Awareness about derivatives (NDFD9) | Personal expertise (NDFD7) | Their awareness (NDFD9) | Attitude (NDFD3) | Perception (NDFD8) | Corporate governance (NDFD2) | Management attitude toward risk (NDFD3) | Availability of experts (NDFD7) | Management incentives (NDFD4) | Decision making units (NDFD6) | Corporate regulation (NDFD2) | Overall attitude toward risk (NDFD3) | Corporate governance (NDFD2) | Attitude to accept risk (NDFD3) | Management perception (NDFD8) | Awareness about the usage (NDFD9) | Regulations about FDs (NDFD2) | Owners' awareness (NDFD9) | Depend upon their attitude (NDFD3) | Depend upon their knowledge (NDFD7) | Perception matter very much (NDFD8) | Awareness (NDFD9) | Awareness would be at top (NDFD9) | Quantity of expert people (NDFD7) | Attitude (NDFD3) | Awareness (NDFD9) | Expertise (NDFD7) | Availability of regulations to use FDs (NDFD2) | Awareness matter a lot (NDFD9) | No expertise the management have (NDFD7) | Non availability of regulations (NDFD2) | Perception about the risk matters a lot (NDFD8) | Awareness is important factor (NDFD9) | Lack of expertise (NDFD7) | Management perception toward risk (NDFD8) | Risk attitude (NDFD3) |

NDFD1: Growth	NDFD2: Corporate	NDFD3: Risk
NDFD4: Management	NDFD5: Risk	NDFD6: Decision making
NDFD7: Lack of Expertise	NDFD8: Risk perception	NDFD9: Lack of awareness

**Source: developed for this research**



## Dating Violence and Help-Seeking Behaviour among Adolescent Undergraduates of Obafemi Awolowo University

**Oluwatosin S. A.**

Department of Educational Foundations and Counselling,  
Obafemi Awolowo University, Ile-Ife, Nigerian.

**Akinwale A. A.**

Department of Educational Foundations and Counselling,  
Obafemi Awolowo University, Ile-Ife, Nigerian.

### ABSTRACT

The study investigated dating violence and help-seeking behaviour among adolescent undergraduates of Obafemi Awolowo University. Using descriptive survey, an instrument, "Dating Violence and Help-Seeking Behaviour" was used to collect data from 591 students and data collected were analyzed using descriptive and inferential statistics. The study concluded that undergraduate adolescents experience dating violence and mostly in the form of emotional violence and they seek informal source of help which may account for under-reporting and hinder provision of appropriate formal source of help such as counselling intervention. It is recommended that school counsellors should try and sensitise the students about dating violence. University authorities need to implement strategies that encourage reporting of dating violence and ensure that reports are managed appropriately.

**Keywords:** Dating Violence, Help-Seeking Behaviour, Adolescents, Undergraduates, University

### INTRODUCTION

Dating violence among adolescents is escalating rapidly and is a public health issue all over the world. The Michigan Department of Human Services (2001) has defined dating violence as a pattern of assaultive and controlling behaviours that one person uses against another in order to gain or maintain power in the relationship. The abuser intentionally behaves in ways that cause fear, degradation and humiliation in order to control the other person. Forms of this abuse can be physical, sexual, emotional or psychological. Dating violence happens to people of all races, cultures, income and education levels. It can happen to both young and old, and in heterosexual or same-sex relationship. Generally, adolescents experience the highest rates of dating violence in form of emotional violence. It can happen on a first date, or as the relationship progresses. Adolescents engage in heterosexual activities and relationship (such as dating relationship) due to their developmental and physiological responses.

Thus, adolescence is a period of life between childhood and adulthood. It is a developmental stage during which a growing individual makes the transition to adulthood. The period is characterized by psychological and social changes as well as biological. In fact, the biologist, sociologists and psychologists have different conceptualizations of the period of adolescence across culture. Though, the biological implication of the adolescence period seems to be widely accepted. The physical attributes of the adolescent during this period determine to a large extent some forms of the attendant problems, strains and stresses that individual encounters at this age (10-19years). As adolescents develop emotionally, they are heavily influenced by

their relationship experiences. Healthy relationship behaviours can have a positive effect on a teenager's emotional development. Unhealthy, abusive or violent relationships can cause short term and long term negative effects, or consequences to the developing teenagers. Victims of teen dating violence are more likely to perform poorly in school, and report binge drinking, suicide attempts, and physical fighting. Victims may also carry the patterns of violence into future relationships. Adolescents receive messages about how to behave in relationships from peers, adults in their lives, and the media. However, Intimate Partner Violence (IPV) which is commonly referred to as Dating Violence among adolescents is a prevalent problem in some societies and has traditionally been thought of as a man physically aggressive against a woman (Hickman, 2001), it is now widely recognized that both men and women can be perpetrators and victims and that there are many forms of dating violence (i.e. physical, sexual, psychological/verbal). Violence is never acceptable. But there are reasons why it happens. Thus, the reason for dating violence cannot be overemphasized because violence is related to certain risk factors. Risks of having unhealthy relationships increase for adolescents who: believe it is okay to use threats or violence to get their way or to express frustration or anger, hang out with violent peers, have multiple sexual partners, have a friend involved in dating violence, are depressed or anxious, have learning difficulties and other problems at school, do not have parental supervision and support, witness violence at home or in the community and have a history of aggressive behaviour or bullying.

Dating relationships among adolescents are constructed in socio-cultural contexts through gender role socialization and cultural values (Pimlott-Kubiak, 2003). Though, successful dating can be a crucial ingredient in developing self-esteem and peer-group belonging; nonetheless the risks which adolescents could get involved in, especially when experiencing violence in dating relationship should not be overlooked. In adolescence, primary influence shifts from the family, which has been dominant since childhood, to peers. This change places adolescents at risk from much harmful behaviour owing to their increased sense of independence and susceptibility to peer pressure. Attitudes and beliefs about interpersonal relationships that form in adolescence are carried on later in life. In fact, violence in adult intimate relationships can often be traced to earlier manifestations in adolescent dating behaviour. However, being in an abusive relationship as an adolescent "is a risk factor for adult dating violence" and later in life, the abuse can become more serious. Hence, being a perpetrator or victim of dating violence does not mean an adolescent will become a victim or abuser later in life. "Given the right information and space, adolescents can make other choices in their relationships since they just begin to make their way in the world, have a sense for consequences, boundaries and figuring out their sexuality.

Meanwhile, seeking assistance of others has obvious instrumental benefits for the person in need; for example, it is likely to hasten the solution of one's problem. Help-seeking may lead to three categories of social support or help: (a) emotional support (concern, acceptance, understanding, or encouragement). This will go a long way in solving problems that arise in dating relationship; (b) information support (advice to aid problem-solving), information from adults knowledgeable about healthy dating relationship behaviour may improve the adolescent's understanding of a dating partner as a person and of the adolescent's role as a dating partner. Also, information received from help-givers may improve conflict negotiation and anger management skills; and (c) instrumental assistance (aid with tasks and contribution of material resources). Instrumental assistance may be vital for adolescents to ensure self-protection, reduce the severity or frequency of violence and injuries, or obtain medical care.

Studies suggest that adolescents typically do not seek help for problems. The few that do, sex, age and family structure have been found to influence their help-seeking behaviours for

problems such as family, interpersonal relationships, health, education, emotional, and mental health (Weidmr, 2007; Vogel, 2005). As adolescents mature, they develop the ability to generate hypotheses and predict outcomes to possible solutions which may or may not work out well. Some may even seek help from the wrong source which may worsen the case. It must be noted that there are two sources of help from which adolescents seek help; and these include informal and formal sources of help (Moore, 2006). Informal source of help includes friends, family and non-professionals while Formal source of help include doctors, nurse, psychologists and counsellors. There are some barriers to adolescents' help-seeking behaviour which include stigma attached to problems requiring help and to the associated help-seeking process, concerns about privacy, value placed on self sufficiency, poor knowledge of resources, low self-awareness related to the need for help, and an external locus of control. Nevertheless, there are many benefits of help- seeking to individual's wellbeing such as: getting support during tough times that helps to feel less stressed and relieved through sharing feelings, finding solutions and ways to cope, gain perspective, reduce ones sense of isolation and loneliness, building stronger relationships with family and friends, preventing problems from getting worse or leading to more serious issues and assisting others when they need it.

It could be noted that majority of male adolescents do express anger and aggression than female adolescents and will prefer seeking help from informal source of help even if they experience dating violence. Also, one's family structure such as monogamous or polygamous may determine the extent to which adolescents endorse dating violence and the source from which they see help from. Age may also be a determinant of dating violence and the victim's choice of helping source. In view of this, it is the concern of this study to investigate the forms and prevalence of dating violence among undergraduates in Obafemi Awolowo University, examine the patterns of help seeking behaviour of the victims, ascertain the influence of sex, age and family structure on the victims' choice of help and determine the counselling intervention strategies in managing dating violence. In developing countries, dating violence is prevalent among universities students' relationships, and dating violence being associated with negative outcomes, and in Nigeria, students experiencing or perpetrating dating violence are not properly denoted probably because of under-reporting of the incidence and for not seeking counselling. Therefore, understanding and promoting help-seeking behaviours of adolescents involved in dating violence is important for improving psychosocial and health outcomes. Moreover, identifying correlates of adolescent help-seeking in dating violence is important for developing interventions to reduce the incidence of dating violence among adolescents (White, 2001).

Dating Violence which consists of acts such as punching, strangling, name calling, forcing partner to have sex and unwanted touching and kissing can result into psychological trauma, injuries and even death for either the victim or the perpetrator (Straus & Ramirez, 2004; Wolfe, 2001). Dating Violence has been found to be associated with a number of negative outcomes for male and female undergraduates such as higher rates of psychological distress (Harned, 2001; Kaura & Lohman, 2007), depression (Gerlock, 1999), decreased relationship satisfaction, lower Grade Point Average (Bergman, 1992), absenteeism, interrupted studies, inability to concentrate on studies, loss of self confidence and higher academic withdrawal (Straus, 2008). According to Ikeola, Joseph and Olufunmilayo (2014), girls' and women's exposure to dating violence has been associated with increased morbidity and is documented as the third leading cause of mortality among women of reproductive age. This means that dating violence is a life-threatening problem primarily affecting women and men; and if care is not taken, it may go out of hand in future causing barrenness or death. Therefore, does sex influence adolescent's dating violence and help seeking behaviour? Does age affect adolescent's involvement in help-seeking for dating violence and does adolescent's family structure make

them get involved in dating violence and seeking help from the right or wrong source? The need to provide answers to these questions motivated this study.

### **Purpose of the Study**

The specific objectives of the study are to:

- a. investigate the forms and prevalence of dating violence among undergraduate students in Obafemi Awolowo University;
- b. examine the patterns of help-seeking behaviour of victims
- c. ascertain the influence of sex, age and family structure on the victims' choice of help;
- d. determine the counseling intervention strategies in managing dating violence.

### **Research Questions**

In order to achieve the objectives of this study, three research questions were generated to be answered; these are:

1. What form of dating violence is relatively more prevalent among adolescent undergraduates of Obafemi Awolowo University?
2. Which help-seeking behaviour do adolescents demonstrate most?
3. What counselling intervention strategies would be appropriate for ameliorating dating violence among adolescent undergraduates?

### **Research Hypothesis**

There is no significant influence of demographic variables (age and sex) on students' help-seeking behaviour

## **METHOD**

### **Research Design**

The study adopted survey research design. Based on the fact that all undergraduates cannot be possibly reached, the study was conducted using samples among adolescent undergraduates in the selected faculties and the result obtained from this are used to generalize for the entire population.

### **Sample and Sampling Techniques**

According to statistics provided by the University Computer Centre, there were 23, 425 students in the University at the commencement of the 2013/2014 Harmattan semester. Sample for the study were therefore 591 students, representing 2.5% of the population from Obafemi Awolowo University. The sample comprised 274 males and 317 females between the age range of 10 and 19. The sample was selected using snowball sampling technique. First, five faculties were selected from the 13 faculties in the university using simple random sampling technique (balloting system). Three departments were randomly selected from each of the selected faculties which gave a total of 15 departments. Forty students were selected from each department using snowball sampling technique.

### **Research Instrument**

An instrument tagged "Dating Violence and Help-seeking Behaviour" (DVHSB) was used to collect data for the study. The validity of the instrument was ascertained by two lecturers in the department of Educational Foundations and Counselling (both Tests and Measurement and Guidance and Counselling).

The questionnaire was made of five sections. Section A contains items on demographic variables such as: age, sex, religion, family structure and recent state of the family. Section B contained 40 items on patterns of adolescents' dating violence; Section C contained one item

on the forms of dating violence. Section D contained 11 items on help seeking behaviour for dating violence while Section E contained one item the counselling strategies in managing dating violence. The instrument has 53 items spread across patterns of dating violence, forms of dating violence, help-seeking behaviour and the counselling strategies in managing dating violence. Some of the items in the instrument was structured along “Strongly Agree (SA), Agree (A), Disagree (D) to Strongly Disagree (SD)” response pattern, others provided many options from which the respondents picked their choices.

### Data Collection

The Researcher started by going to a class immediately the lecturer in each of the selected classes or departments left so as to meet a good number of students in the class on which to administer the questionnaire. In some of the classes, the researcher found out from some of the students to know who has experienced dating violence; the researcher then gave the questionnaire to the first student who indicated that he has experienced it; the student pointed to another student who was also experiencing it. This continued until the number assigned for each department was reached. The researcher then distributed the questionnaire to the students, giving them enough time to fill and assured the respondents that their responses shall be treated with utmost confidentiality. To aid the level of confidentiality, the researcher asked the respondents not to put their names on the questionnaire. Six hundred copies of the questionnaire were administered, out of which the researcher retrieved five hundred and ninety-five copies of the questionnaires from the field. Four of them were rejected because they were not properly filled and some of the pages were torn either by the respondents or at the point of collection. Five hundred and ninety-one copies of the questionnaires were then found useful. The data collection process lasted four weeks.

### Data Analysis

The data collected were analyzed using t-test, chi-square, simple percentage and frequency counts to answer the three research questions generated for the study.

## RESULTS

**Research Question 1:** What are the forms and prevalence of dating violence experienced by undergraduates of Obafemi Awolowo University?

To determine the prevalence of dating violence, the students’ responses to section B of the questionnaire was subjected to Factor Analysis. The result is as follows:

**Table 1: Forms of Dating Violence among the Adolescents.**

Factor	Items	
1	22,23,24,25,26,27,28,29,30	Socio-Psychological aggression
2	16,18,20,21	Emotional abuse
3	1,2,3,4,5,6,7,8,9	Physical abuse
4	9,10,11,12,13,14,15,16,17,18,19	Socio-emotional abuse
5	31,35,36,37,38,39,40	Sexual abuse

It can be seen from the table that five factors were extracted and the forms of dating violence experienced by the respondents were identified. In order to determine the form of dating violence experienced by each of the respondents, the constituting items under each factor (form) was summed up and further subjected to cluster analysis. A student is identified with any particular form of dating violence where he/she had the highest rating. The summary of the result is presented in Table 2.

**Table 2: Major Forms of Dating Violence among Adolescents.**

	<b>Frequency (F)</b>	<b>Percentage (%)</b>
Physical Abuse	51	8.6
Sexual Abuse	117	19.8
Emotional Abuse	423	71.6
Total	591	100.0

From Table 2 above, through the method of cluster analysis, it was shown that 51(8.6 %) experienced Physical Abuse, 117(19.8%) experienced Sexual Abuse while 423(71.6%) experienced Emotional Abuse. This implies that Emotional Abuse is more prevalent among adolescents in Obafemi Awolowo University Ile-Ife than other forms of dating violence identified among them.

**Table 3: Socio-Demographic Information of the Adolescents experiencing dating violence**

<b>Variable</b>	<b>Levels</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Age</b>	14 – 15	19	3.2
	16 – 17	185	31.3
	18 – 19	387	65.5
	Total	591	100.0
<b>Sex</b>	Male	274	46.4
	Female	317	53.6
	Total	591	100.0

Furthermore, to expatiate more on the research question, the students’ responses were also treated to a descriptive analysis to present a general view of dating violence those students experience. The result is shown in table 4 above.

**Research Question 2:** What are the counselling strategies that adolescents prefer in managing dating violence?

**Table 4: The Counselling Strategies for Managing Dating Violence**

	<b>Frequency (F)</b>	<b>Percentage (%)</b>
Assertiveness Training	246	41.6
Creating a Safety Plan	182	30.8
Suggesting legal options	163	27.6
Total	591	100

To answer this research Question, the Section E of the questionnaire was given a descriptive analysis and the result is presented in Table 4.

Table 4 revealed the counselling strategies preferred by adolescents in managing Dating Violence. It was reported that 246(41.6%) of the adolescents preferred Assertive Training, 182(30.8%) preferred Creating Safety Plan while 163(27.6%) preferred Suggesting Legal Options. There is an indication from the result that majority of adolescents preferred Assertiveness Training.

**Research Question 3:** Which of formal and informal help-seeking do adolescents demonstrate more frequently?

To answer this question, the items in the sections on formal and informal help seeking efforts were scored as pre-stated, the constituting items were summed up and the resulting scores were compared. Respondents are said to demonstrate more frequently the type of help seeking in which s/he scores highest. The summary is shown in table 5, 6 and 7

### The Help-Seeking Approaches Adolescents Adopt when they Experience Dating Violence.

**Table 5: Informal Source of Help-Seeking Behaviour of the Adolescents**

	STATEMENTS	Strongly Agreed		Agreed		Disagreed		Strongly Disagreed	
		F	%	F	%	F	%	F	%
1.	I would talk to a friend to help resolve the conflict.	79	13.4	135	22.8	219	37.1	158	26.7
2.	I prefer discussing any dating violence experience with my parent	112	19.0	156	26.4	157	26.6	165	27.9
3.	My relatives would be the best source to seek help from	92	15.6	185	31.3	129	21.8	185	31.3
4.	I think it is better for me to disclose the issue and seek help on the internet(on-line conversation) hiding my identity	97	16.4	135	22.8	158	26.7	200	33.8
5.	I would take decision based on my own opinion	131	22.2	131	22.2	139	23.5	190	32.1

Table 5 shows the responses of the students about the informal source of help they prefer to seek in managing dating violence. It can be seen from the table that most of the adolescent undergraduates would take decision on their own opinion in managing dating violence.

**Table 6: Formal Source of Help-Seeking Behaviour of the Adolescents**

		Strongly Agreed		Agreed		Disagreed		Strongly Disagreed	
		F	%	F	%	F	%	F	%
6.	I would talk to someone I trust on campus (e.g., a professor, advisor, coach, lecturer, porter) to learn more about what to do.	145	24.5	169	28.5	147	24.9	135	22.8
7.	I would call the police.	110	18.6	131	22.2	129	21.8	221	37.4
8.	I would talk to health services to learn more about what to do.	115	19.5	167	28.3	127	21.5	182	30.8
9.	I would go to a doctor or general practitioner.	123	20.8	176	29.8	136	23.0	156	26.4
10.	I would prefer to discuss it with a counsellor (school counsellor or counselling centre)	139	23.5	173	29.3	130	22.0	143	24.2
11.	I would rather sue the perpetrator to court or invite a lawyer to intervene	84	14.2	121	20.5	159	26.9	227	38.4

**Table 7: Informal and Formal Source of Help-Seeking**

	Frequency(F)	Percentage (%)
Formal	265	44.8
Informal	326	55.2
Total	591	100.0

Table 7 revealed that 265(44.8%) adolescents demonstrated formal help-seeking behaviour while 326(55.2%) demonstrated informal help-seeking behaviour. This implies that larger percentage of adolescents employ informal help-seeking behaviour whenever they are faced with dating violence.

**Hypothesis 1:** There is no significant influence of sex on adolescents’ help seeking behaviour for dating violence.

To test this hypothesis, the students’ sex was cross-tabulated with the students’ help seeking behaviour for dating violence. The t-test statistic was also obtained and a Yates continuity correction analysis was also undertaken as presented in Table 12.

**Table 8: Influence of sex on adolescents’ help seeking behaviour for dating violence**

Sex	HSB		Total	t test			Yates Continuity correction		
	Informal	Formal		T	Df	P	T	Df	P
Female	174 (54.9%)	143(45.1%)	317(100.0%)	.144	1	0.000	11.720	1	.001
Male	152(55.5%)	122(44.5%)	274(100.0%)						
Total	326(55.2%)	265(44.8%)	591(100.0%)						

Table 8 shows the influence of the sex of the respondents and the help seeking behaviour they adopt in times of dating violence. It can be seen from the table that t-test statistic obtained in the test was (11.720, at p = 0.005) and since the p-value fails to attain the 0.05 threshold, the hypothesis cannot be accepted. Even when the Yates continuity correction was applied, the t-test statistic obtained was 11.720 at p = 0.001 such that the p-values still fails to attain the 0.05 threshold. It can therefore be concluded that there is a significant influence of the students’ sex on the informal and formal help seeking behaviour they adopt in times of dating violence.

**Hypothesis 2:** There is no significant influence of age on adolescents’ help seeking behaviour for dating violence

To test this hypothesis, the students’ age was cross-tabulated with their help-seeking behaviour in times of dating violence. The t-test statistic was also obtained and the result of the analysis is presented in Table 9.

**Table 9: Influence of age on adolescents’ help-seeking behaviour for dating violence**

Age	HSB		Total	Chi Square test		
	Informal	Formal		$\chi^2$	df	P
14 to 15yrs	12	7	19	4.325	2	.115
16 to 17yrs	89	96	185			
18 to 19yrs	164	223	387			
Total	265	326	591			



Table 9 shows the relationship between the age of the respondents and the help seeking behaviour they adopt in times of dating violence. It can be seen from the table that chi-square statistic obtained in the test was 4.325 at  $p = 0.115$  ( $\chi^2=4.325$ ,  $p>.05$ ) and since the  $p$ -value is greater than the 0.05 threshold, the hypothesis can therefore be accepted. It can therefore be concluded that there is no significant relationship between the students' ages and the help seeking behaviour they adopt in times of dating violence.

## DISCUSSION

The primary goal of this study was to determine the prevalence of dating violence and the help seeking behaviour of adolescent undergraduates experiencing it and to ascertain if some demographical factors (age and sex) could influence students' help-seeking behaviour for dating violence. One of these findings showed that most of the undergraduates in Obafemi Awolowo University experienced dating violence; and this shows that the prevalence of dating violence in the institution is high. What could have accounted for this high prevalence rate of dating violence among adolescents could be the nature of adolescence stage, family background or environment in which they are brought up. At adolescence stage, there is a high tendency of experimenting diverse risky behaviour which may lure the adolescents into violence in their relationship. Many adolescents who were brought up in a hostile family or environment especially university where violence is rampant, may not see anything bad in experiencing violence in relationship (they tend to accept violence as the norm).

Emotional, physical and sexual victimization are serious problems affecting young women in high school and college. This finding corroborates the finding of Hickman and Shook who found out that Psychological/Emotional Dating Violence, which includes hurtful comments to a partner, is perpetrated by young women and young men (Hickman, 2004; Shook, 2000). Emotional form of violence may be very germane because it is hardly noticed by a third party and this cannot be repeated easily. Also, because students are not allowed by regulation to fight or engage in physical combat, they may result to emotional abuse to settle their differences. It often starts with threatening to hit or throw something at one's partner (emotional abuse) and may eventually lead to throwing something at the partner; pushing, grabbing, pinching; hitting or attempting to hit one's partner with a hand, fist or something hard (physical abuse). However, the prevalence of physical violence obtained was lower than what was reported by White and Koss (2001). It was observed in this study that girls inflict more physical violence than boys; though some females use violence at times as self-defense or in response to male physical violence. Most of the time, females prefer verbal confrontation (emotional abuse) or talking to the senses of their partners. But in the case of the males; most of them prefer different forms of physical abuse like hitting and giving their partners scars when they are annoyed.

In terms of how helpful adolescents thought the various sources of help would be, they reported the informal sources of help as most helpful, especially parents. The percentage of adolescents who reported that formal source of help such as police, lawyers, counsellors, or teachers at school would be quite a bit or extremely helpful was somewhat lower, while adolescents rated friends, family and other informal sources of help were of higher percentage. Fewer than half of participants thought that a doctor or other health professional, or school nurse could be quite a bit or extremely helpful to them. Thus, adolescents ranked sources of support as more helpful than they reported that they would likely to seek help from them, indicating some possible reluctance to seek help for problems related to dating violence. This instigates that adolescents are aware of sources of help but will not seek help maybe because of cultural or personal reasons inhibiting the disclosure of such events. Even if they want to seek help, they may hesitate to seek help from professionals for fear of retaliation or

embarrassment; fear of being stigmatized and self-blame. Some may not even know how or where to get help from after being violated. Several of the students also reported that they would seek help from family members or friends. This is consistent with African traditional norms that consider intimate relationship as family issue and not an individual affair. It must be noted that even with friends, they have to be careful about whom they confide in; due to the fact that people might divulge sensitive information that could embarrass them or even make an abusive situation worse. Some students preferred to talk to their parents especially their mothers. Still other students worried that their parents would get upset or mad at them or blow things out of proportion and that they would lose control over the situation by confiding in their parents. It must be noted that professional help is trusted if young people know what trust in people in general means; and if they are aware of their feelings and can handle or communicate them. Professional help needs to be publicized, and made more accessible to everyone and everywhere when needed. More so, professional help and reliable information about it should be more readily accessible in schools and other settings for the young people.

It was also indicated by most of the respondents that they would prefer assertiveness training to creating a safety plan and suggesting legal options. Through assertiveness training, adolescent undergraduates will be taught how to be self-assured and confident without being aggressive. Also, they will be taught how to Say "No" and develop the ability to resist or sidestep being manoeuvred into doing something they do not really want to do; without actually using the word. Many adolescents have a real problem with having to tell other people they cannot do something. Of course, there will always be times when saying no is absolutely necessary. But there may be so much anxiety about the consequences of saying no; in fact, unassertive people just do not say no. They either say nothing at all, or agree to things they do not want to, or end up in mess. Thus, it is necessary for counsellors to start assertiveness training even in Obafemi Awolowo University and other institutions to assist the students and schools in controlling the prevalence of dating violence. This will go a long way in teaching victims of dating violence to clearly communicate what they want and also stand up for their rights.

Another finding of this study is that more female students seek for formal source of help than the males do. Thus, it found a significant influence of sex on help-seeking behaviour of the students (both formal and informal). One can deduce from the analysis that female students are easily prone to dating violence (being victimized) because they are more flexible and always put all their trust, mind and lives in any relationship they are involved in than male students; and also seek help from other sources than males and even formal source of help. It is therefore noteworthy that sex stands out of the independent variables tested. Sex had the strongest influence on students' help seeking behaviour of all the demographical factors that were tested in this research. Boys and girls were similar in their report of help seeking, with the exception that more girls than boys reported that they would talk to counsellors, teachers and health practitioners (formal source of help) about the situation. Females are more emotional and usually the victim, powerless and culturally submitted to males, or weak to defend themselves. It is in contrast with masculinity for male to keep things to themselves and consider it as a sign of weakness to report to others, what they have suffered from ladies not to talk of seeking help. This might account for the difference in help seeking with regard to sex. About half of participants said they would try to stop the situation on their own. Some sex differences were apparent, with girls rating school nurses, police officers, counsellors and lawyers as more helpful than boys rated them. That is, males reported that they prefer seeking help from informal source such as friend, family, internet and other informal source of help while more of the females reported that they prefer seeking help from formal source like counsellors, health professionals, teachers and other formal source of help.

Another reason why boys would not seek much of formal source of help might also be that they needed to feel close to and trust the person they told, and believe that the person understood them and care for them. Also, the male students who would have reported the case of their relationship violence to their teachers; but because they feared that the teachers would report the abuse to counsellors, their family, or other school staff and that the situation would escalate beyond their control (fear of stigma also relates to fears regarding the confidentiality of professional services); they rather go to friends or internet to seek help. Also, many of the students might have very negative perception of law enforcement officials; that they do not trust them, and felt that the police and other law enforcement or emergency service personnel do not care about them. The students also seemed to feel that the police would not take their complaint seriously because they are just adolescents and stated that unless they had physical evidence that indicated that they had been abused, the police were unlikely to do anything about it. When examining the survey responses from the students' survey in terms of actual help sought, the percentages of adolescents who sought help related to violence out of the entire sample were examined. The percentage of those who seek help from informal sources most often (friends, parents, siblings, and other relatives) is more than those who seek help from formal sources of support. To this effect, a word of encouragement from teachers and counsellors who must have understood the pros and cons of dating violence to their students; goes a long way in facilitating the magic and wonders of saving the students who are victims from its (dating violence) trauma and even to prevent it. Also, the teachers are encouraged to get closer to their students, care for them, know and understand them.

Another major finding of this study was the hypothesis tested that there was no significant influence of age on the help-seeking behaviour of the students. The results showed that age had no significant influence on students' help seeking behaviour. From this finding, one can deduce that irrespective of the age of the student or how exposed he or she is; to life beyond his or her family. He or she could seek help from the only source, comfort zone or a place of convenience which he/she thinks can proffer solution to his or her problem. This connotes that no matter how old or young the student is, it does not make any difference in the decision made on which source to seek help from. This indicates that the age could not influence the help seeking behaviour of undergraduates which in turn could either mar or make his or her academic performance. An example of how study variability leads to seemingly discrepant findings is the association between age and DV perpetration found by Cyr, McDuff, and Wright (2006) compared to Moore, Elkins, McNulty, Kivisto, and Handsel (2011). Cyr found a positive relationship between age and DV, while Moore found the opposite. The variability in these findings is likely due to the age differences between study samples. Participants in the Cyr's study were between the ages of 13 and 17, whereas the participants in Moore's study were 18 years old or older. Meanwhile, this study agrees with the findings of Moore but in contrast with the findings of Cyr. It also agrees with Lamm, 2010 who found out that dating violence is a significant issue affecting today's youths, regardless of age, ethnicity, intelligence, and socio-economic status. The motive of seeking help depends on the person's view about help seeking and not on the age of the student. Hence, rates of DV perpetration and victimization generally peak in young adulthood, which would be consistent with both study findings. Thus, the equivocal nature of the findings can be attributed both to inconsistency in measurement and methodology.

Thus, efforts to prevent dating violence should commence early when individuals are of school age and before behaviours become fixed. Also, acts of emotional, sexual and physical violence should not be tolerated and should be punished among young people. The society should not blame victims believing they have called for the experience or they should not be in relationship.

## CONCLUSION AND RECOMMENDATIONS

This study indicated that dating violence is greatly pronounced among adolescents due to the fact that adolescence is a particularly risky time for dating violence and most victims experience it (dating violence) majorly in form of emotional abuse. Thus, those who sought help for dating violence chose friends and family members which are known as informal source rather than professionals which are known as formal source. However, this may be the reason for under-reporting and delay in provision of formal source; such as counselling intervention. The study also concluded that sex could enhance undergraduate students' experience of dating violence and help-seeking behaviour. This is because, female victims who sought help especially formal source of help were more than male victims who chose formal sources of help.

On the basis of the findings of this study, these recommendations are given as subsequently as thus:

1. All young people have the right to be safe in their relationships. Dating violence affects young people in a unique way and can have long-lasting negative physical and psychological consequences. Providing young people with the communication and conflict resolution skills, support, and resources to avoid or end unhealthy and violent relationships is a key to their well-being. Meanwhile, underlying causes such as poverty, and violence as a social norm, must be addressed in order to bring an end to relationship violence.
2. All students should receive education about healthy relationships in as a part of health education. These lessons should include understanding and identifying healthy and unhealthy relationship patterns; effective ways to communicate relationship needs and manage conflict; and strategies to avoid or end an unhealthy relationship. Education could provide each partner with the knowledge and skills needed to improve his or her assertiveness in a relationship thereby decreasing his or her likelihood of experiencing dating violence.
3. Interventions targeting perpetration and victimization of intimate partner violence among adolescents can be effective. Those interventions are more likely to be based in multiple settings, and focus on key people in the adolescents' environment.
4. Since physical violence often arises during conflict, multi- prolonged interventions that target youth experiencing physical dating violence should address communication and conflict resolution skills within relationships.
5. Dating violence occurs within relationships and needs to be addressed in that context. Anti-violence campaigns and education should acknowledge how unhealthy intimate partner dynamics might result in violence and provide young people with the tools to navigate conflict effectively and avoid violent behaviour. Campaigns that simply condemn perpetrators of violence are less effective.
6. Adolescent clinics can serve as a critical site for identifying adolescent dating violence, and for offering resources, referrals, and otherwise intervening to assist young women in danger. Experiencing dating violence may result in particular health concerns that affect care-seeking patterns, such as need for pregnancy testing or sexually transmitted infection treatment.
7. While health care professionals should not assume that patients will disclose abuse, even when asked directly, they should make information about dating violence hotlines and assistance for assault patients available to all visitors. School Counsellors should try and sensitise the students about dating violence. University authorities need to implement strategies that encourage reporting of dating violence and ensure that reports are managed appropriately. There is, therefore, need to encourage both adolescents to identify and establish such protective relationships, and professionals to

reach out to adolescents to facilitate the building of such relationships. In the nutshell, professional help-seeking services need to be taken to adolescents; help needs to be very easy to access, in fact, put in their pathway, as young people will not go out of their way to seek professional help themselves.

8. Teachers and parents should also act as guidance to students through proper monitoring and care with listening ears.

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## Mentoring For Professional Development In Universities In Rivers State, Nigeria

**Kenneth K. Obasi, Ph. D**

Department Of Educational Management  
University Of Port Harcourt  
Port Harcourt, Nigeria

**Adanna N. Ohia, Ph. D**

Department Of Educational Management  
University Of Port Harcourt  
Port Harcourt, Nigeria

### ABSTRACT

The study investigated the level of mentoring for professional development in the universities in Rivers State. The study adopted the descriptive survey design. Four research questions guided the study. The population of the study comprised all the three universities in Rivers State. All the lecturers in the three universities constituted the population of the respondents. The sample size of the respondents was 120 lecturers (30 HODs and 90 other lecturers). The instruments for the study were questionnaire and structured interview. The questionnaire was validated and tested for reliability with Crombach Alpha with reliability indices of 0.86, 0.84, 0.88 and 0.89 respectively. Mean and Standard Deviation were used to answer the research questions. The study revealed that the only official policy on mentoring was the directive of the National Universities Commission on the use of the recommended staff - mix - ratio for mentoring. In the three universities, there is no formalized platform or framework for mentoring for staff development, except in some cases where research assistants are assigned to professors to guide them and supervise their thesis. There is little or no institutional provision for mentoring. It was therefore recommended that the NUC and the individual universities should come up with more realistic and effective polices on mentoring. Each department should have a mentoring committee or coordinator for effective packaging and implementation of mentoring.

### INTRODUCTION

University education is an arm of tertiary education which is saddled with some critical responsibilities in the drive for socio-economic development. It is strategic to national development. The goals of university education as enunciated by the Federal Republic of Nigeria (2004) in her National Policy on Education, inter alia, include contributing to national development through high level relevant manpower training, developing the intellectual capacity of individuals to understand and appreciate their local and external environments, the acquisition of both physical and intellectual skills which will enable individuals to be self-reliant and useful members of the society to promote and encourage scholarship and community service. These goals are therefore to be pursued through teaching, research and development, generation and dissemination of knowledge, virile staff development programmes, among others. University education therefore stands for the totality of general and specialized knowledge and skills that enable its beneficiaries to solve problems that they encounter in industry or in carrying out scientific research in a specialized area of knowledge. (The Free Dictionary, 2014)



The tide of changes sweeping across the globe in the different spheres of life have continued to raise the bar of performance, compliance and relevance of university education in the 21st century. To that extent, UNESCO (1998) cautioned that in this age of technology, technology must be used in the service of teaching and research. Also, it should contribute to a more efficient management of higher education systems. Higher education is therefore expected to train citizens to think clearly, analyze problems, make choices, act ethically and assume their responsibilities. One important factor in this whole process of ensuring that the universities live up to these statutory responsibilities is the teacher. In this process, the university lecturer is basically involved in teaching, research and development, community service and also administration. These are the fundamental aspects of university education that can either make or mar the very essence of its establishment. Hence, the lecturers, just like other teachers at the different levels of education, are critical to the effectiveness of university education. The quality of university teaching manpower is therefore an administrative responsibility in this arduous task of human capacity building.

The increased competitiveness occasioned by technological advancements in the global market space has its corresponding demand on university education, precisely in its statutory responsibility of developing high level relevant human capital for the world of work. Ipso facto, the continued professional development of the teaching manpower is an imperative. Great teachers help to create great students. According to research an inspiring and informed teacher is the most important school – related factor that influence student achievement. Hence, it is critical to pay close attention to how we train and support both new and experienced teachers. It is critical for veterans and young teachers to have ongoing and regular opportunities to learn from each other. Ongoing professional development keeps teachers up-to-date on new research, emerging technology tools, new curriculum resources (Edutopia, 2008). Professional development entails many types of educational experiences related to an individual's work. Through it, they learn to apply new knowledge and skills that will improve their performance on the job. Hence, for teachers to be as effective as possible, they continually expand their knowledge and skills to implement the best educational practice (Mizell, 2010). One of the strategies for professional development is mentoring.

Mentoring is a process that involves two people, an experienced and less experienced person in which the more experienced person guides, supports, nurtures and encourages the less experienced to grow and develop in the area of life. It often takes place in organizations. It is relationship based, built and founded on trust and openness. Anderson, in The Alberta Teachers Association (2008) described mentoring as a nurturing process in which a skilled person serves as a role model, teaches, sponsors, encourages, counsels and befriends a less skilled or experienced person for the purpose of promoting the latter's professional development. It involves a caring relationship between the mentor and the protégé. Mentoring could be formal or informal. The Association provided two models for the two types. In the informal model, the mentor provides teaching materials, classroom teaching strategies for the benefit of the protégé. This could be referred to as the apprenticeship model in which the competence level of the mentor does not increase. Hence, neither reflective practice nor action research takes place and professional growth is restricted. Under formal mentoring, the mentor goes beyond sharing of materials and moves into the development of materials within a collaborative team. It entails reflective practice, collaborative planning and action research coupled with a joint action plan by the mentor and the mentee. Through this process, both the mentor and the mentee rise to new heights of professional growth and competence.

Mentoring enhances professional competence and confidence. Career development mentoring provides the employees the platform for goal congruence and the ability to advance professionally. The collaboration gives the employee a feeling of engagement. Informal mentoring takes place where it is not formally organized, in which case, the organization only encourages the more experienced persons to accept mentoring requests from the less experienced members of the organization. However, in a formal setting, organized mentoring programmes are packaged, both the mentor and the mentee complete a mentoring profile. The mentoring profile are completed and documented. The protégés are matched with a mentor by a programme administrator or a mentoring committee (Daloz, 1990). The specific issues that the mentor should consider include the frequency of contact (face to face, phone calls, emails), the duration of the partnership, the review of the partnership, the skills, knowledge and experience to be offered to mentee and confidentiality of partnership information. In developing a mentoring partnership, it is important that boundaries are properly delineated on what the mentor can and cannot offer the mentee (Mind Tool, 2016).

The task of mentoring is relationship based and must be carried out within the limits of professional demand. The mentor is therefore expected to prepare and implement a joint mentorship growth plan with the protégé, maintain a relationship consistent with the Code of Professional Conduct, observe and provide feedback to the protégé, assist the mentee in identifying personal strengths and planning for further professional growth and development (The Alberta Teachers Association, 2008). The need for the organization of formal mentoring in schools has become imperative because new teachers juggle an overwhelming number of unfamiliar issues such as classroom management, instruction, curriculum, school culture and operations and administration. Left to themselves, they may develop counter productive behaviours. With extra support, the less experienced teachers will learn more effective practices to apply to daily challenges (Mizell, 2010).

### **Statement of the problem**

University education is strategic to national development when analyzed from the point of view of its statutory responsibility of developing high level relevant manpower for the national economy. This critical role is carried out through teaching, research and development and community service. At the centre of this process is the teacher who is a significant factor in the process of human capacity building. The quality of the teacher significantly determines the quality of the products of the system. One critical factor in ensuring this quality is continuous teacher professional development of which mentoring is one of the strategies. Hence, a close study of some Nigerian universities reveal that there are issues and cases that are at variance with what they stand for and at the same time, a grave obstacle to the realization of the statutory goals and objectives of teaching – learning task, poor management of critical issues that concern both the staff and students, poor quality research, malpractices in research related issues, unethical practices and professional misconduct. The concern of this study is: could it be that mentoring is not utilized to support the less experienced teachers? Could it be that mentoring is not given adequate attention in the universities? Could it be that there are no administrative provisions for formal mentoring? Is it only carried out at the informal level?

### **Aim and objectives of the study**

The aim of the study was to determine the level at which mentoring is carried out in the universities in Rivers State. Specifically, the objectives of the study were to determine the following:

- the level of institutional provision for mentoring in universities in Rivers State
- the level of mentoring activities that take place in universities in Rivers State
- the attitude of the lecturers of the universities in Rivers State towards mentoring

- the challenges that impede mentoring in universities in Rivers State

### Research Questions

The following research questions guided this study

- What is the level of institutional provision for mentoring in universities in Rivers State?
- What is the level of mentoring activities that take place in universities in Rivers State?
- What is the attitude of the lecturers of the universities in Rivers State towards mentoring?
- What are the challenges that impede mentoring in universities in Rivers State?

### METHODOLOGY

The study adopted the descriptive survey design. The population of the study comprised all the three universities in Rivers State. The respondents were all the Heads of Departments and all the lecturers in the three universities. The sample size of the respondents was 120 (HODs = 30, lecturers = 90). Stratified random sampling technique was used and each university served as a stratum. The instruments used for data generation were questionnaire and structured interview. Mean and Standard Deviation were used to answer the research questions.

### RESULTS

**Research Question 1:** What is the level of institutional provision for mentoring in universities in Rivers State?

**Table 1: Mean and Standard Deviation of the opinions of the HOD's and other lecturers on the level of institutional provision for mentoring in universities**

S/N	Questionnaire items	Mean	SD	Remarks
1	There is a university policy that makes mentoring mandatory	2.68	0.95	Accepted
2	There is a functional mentoring committee in the departments	1.23	0.42	Rejected
3	There is a functional mentoring coordinator in the departments	1.39	0.49	Rejected
4	Workshops and seminars are regularly organized to increase the awareness on the advantages of mentoring	1.32	0.47	Rejected
5	Workshops and seminars are regularly organized for mentors	1.15	0.36	Rejected

Table 1 shows that out of the five items on the institutional provision for mentoring, only item 1 has mean value of 2.68 which is above the criterion mean of 2.50. The other items were below the criterion mean. Hence, those provisions are not made.

**Research Question 2:** What is the level of mentoring activities that take place in universities in Rivers State?

**Table 2: Mean and Standard Deviation of the opinions of the HOD's and other lecturers on the level of mentoring activities that take place in universities**

S/N	Questionnaire items	Mean	SD	Remarks
1	Mentoring is utilized as an induction strategy for new lecturers	1.44	0.49	Rejected
2	All the less experienced lecturers are assigned to a mentor	1.15	0.36	Rejected
3	The department provide templates for mentoring	1.16	0.37	Rejected
4	Mentoring activities are regularly evaluated by the departments	1.15	0.36	Rejected
5	The mentors and the mentees collaboratively work out the modalities for mentoring	1.14	0.35	Rejected
6	The departments provided the guidelines/modalities for mentoring	1.18	0.38	Rejected

Table 2 shows that all the mentoring activities are not carried out in the institutions because mean values of all the six items were below the criterion mean of 2.50

**Research Question 3:** What is the attitude of the lecturers of the universities in Rivers State towards mentoring?

**Table 3: Mean and Standard Deviation of the opinions on the attitude of the lecturers towards mentoring**

S/N	Questionnaire items	Mean	SD	Remarks
1	Junior lecturers do not show sufficient interest in being mentored	2.35	0.90	Rejected
2	The more experienced lecturers do not show sufficient in mentoring the less experienced ones	2.96	0.82	Accepted
3	The less experienced lecturers do not have much confidence in the more experienced ones	2.85	0.86	Accepted
4	The less experienced lecturers are enthusiastic about being mentored	3.50	0.80	Accepted

Table 3 reveals that out of the four items on the attitude of lecturers towards mentoring, only the first item had a mean below criterion mean (2.35).

**Research Question 4:** What are the challenges that impede mentoring in universities in Rivers State?

**Table 4: Mean and Standard Deviation of the opinions on the challenges impeding mentoring**

S/N	Questionnaire items	Mean	SD	Remarks
1	There is no formal provision by the institution for mentoring	2.87	0.89	Accepted
2	There is no formal guideline/format for mentoring	3.40	0.85	Accepted
3	The official schedules of the lecturers are too tight for mentoring	2.96	0.82	Accepted
4	Poor awareness of mentoring as a professional development strategy among the lecturers	1.58	0.49	Rejected
5	Poor facilities provision	2.61	0.89	Accepted

On the challenges impeding mentoring in universities, Table 4 reveals that out of the five items identified as challenges, only item 4 had a mean value of 1.58 which is below the criterion mean of 2.50. The other items were above the criterion mean. Hence, they are identified as challenges.

### **DISCUSSION OF FINDINGS**

On the issue of institutional provision for mentoring which the first research question sought to address, the study revealed that in principle, mentoring is institutionally provided as required by the National Universities Commission (NUC) by adhering to the 20 – 35 – 45 staff mix ratio. By the policy of the NUC, the regulatory body for quality and standardization of the Nigerian universities, universities are required to use the staff – mix – ratio as a platform for mentoring. However, its implementation leaves much to be desired as shown by the other indicators that reveal that little or nothing is in place for formal mentoring. This position was corroborated by the findings of the second research question on the level of mentoring in the universities. The study revealed that nothing much is being done except for situations where graduate assistants are assigned to some professors for guidance and thesis supervision. The poor emphasis on mentoring was corroborated by Amiehenomo (2002) who observed that despite the importance of mentoring in professional development, it has not been given any serious attention in Nigerian educational policies. In the same vein, Dadey and Harber in Olaniyan (1998) remarked that few countries in Africa have comprehensive training programme in educational administration and planning.

The third research question on the attitude of the lecturers towards mentoring revealed that, though the young lecturers are eager to be mentored, but the response from the more experienced colleagues is not inspiring. Though, there is some level of apathy among the younger lecturers, the senior colleagues do not show convincing commitment to assisting the younger ones through mentoring. The findings also show that a lot of challenges are impending effective mentoring. They include poor policy provision on mentoring, lack or inadequate formal guidelines and framework for mentoring. The crowded programmes of the lecturers is also a challenge.

### **CONCLUSION**

Although, the National Universities Commission (NUC) recommended that approved staff mix ratio should be used as the platform for mentoring, its effective implementation remains a mirage. From the findings of the study therefore, it was concluded that policy provision for mentoring is grossly inadequate. Hence, mentoring, as a formal strategy for lecturers professional development is almost non-existent. It was also concluded that the different universities have not made provisions for mentoring and this has negatively impacted on the attitude of some lecturers towards mentoring. It was also concluded that the tight schedules of lecturers, poor facilities provision impede mentoring in the universities.

### **RECOMMENDATIONS**

On the strength of the findings of the study, the following recommendations were made:

- Every institution should have a comprehensive and integrated plan for mentoring programmes which should be regularly evaluated.
- The National Universities Commission and the individual universities should come up with more realistic and effective policies on mentoring beyond the use of staff – mix – ratio.
- Departments should have a mentoring committee or coordinator for effective packaging and implementation of mentoring in the universities.

- The very experienced lecturers should take the lead and at the same time, encourage the young ones to embrace mentoring.
- The less experienced lecturers should also be proactive in this regard by taking the initiative of by at the feet of the more experienced colleagues especially where there are no adequate institutional provision for mentoring.
- More facilities should be provided for both the mentors and the mentee in order to create a conducive atmosphere for mentoring.

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## School Mapping And The Universalization Of Basic Education In Imo State, Nigeria

**Kenneth K. Obasi, Ph.D**

Department of Educational Management  
Faculty of Education  
University of Port-Harcourt

**Onyewuchi M. Madu**

Department of Educational Management  
Faculty of Education  
University of Port-Harcourt

### ABSTRACT

The study investigated school mapping and the universalization of basic education in Imo State. Two research questions and two hypotheses guided the study. The study adopted the descriptive survey design. The population of the study was 1,777 consisting of 1,276 Head Teachers, 216 staff of the Imo State Universal Basic Education Board (IMSUBEB) and 285 staff of the Ministry of Education (MoE). The sample size was 327 which is 18.4% of the population. This consisted of 193 head teachers, 64 staff of IMSUBEB and 70 staff of MoE. These were selected using the stratified random sampling technique and the simple random sampling technique respectively. A questionnaire titled: School Mapping and the Universalization of Basic Education Questionnaire (SMUBEQ) was used for data collection. It was validated by experts in Educational Management and Measurement and Evaluation. The reliability was determined through the use of test-retest approach, using the Pearson's Product Moment Correlation Statistics with a reliability index of 0.84. Mean and Standard Deviation were used to analyze the data while z-test statistics was used to test the hypotheses at 0.05 level of significance. The findings revealed among others that the level of primary school mapping since the implementation of UBE programme was low because it was carried out only on sampled subzones. The study recommended among others that the Government should as a matter of necessity carry out comprehensive school mapping to cater for the demand effect of the UBE programme.

**Key words:** School mapping, Universalization and Basic education

### INTRODUCTION

Education is critical to the emancipation of an individual and a country from the murky waters of illiteracy, poverty and subjugation. In other words, it is a powerful instrument for development and economic prosperity through the development of the latent capacities in man, equipping him with the relevant skills, knowledge, attitudes and capacities necessary for a productive economic life. One cannot imagine the development of a nation when the supposed key actors (the people) of development are predominantly illiterate, underdeveloped and poor. Education equips the beneficiaries with relevant skills, knowledge and attitude to be productive; so as to contribute to the nation's development. On this premise therefore, the United Nations (UN), through the Universal Declaration of Human Rights (UDHR) of 1948, declared education 'a right of everyone'. This provided the first launching pad for other Conventions and Declarations on education as a fundamental right to every person that should be made accessible to all without discrimination.

The other Conventions and Declarations that gave credence to this great course – universalization of basic education include: the 1990 Jomtien Declaration which specifically engineered the promotion of equal basic education for all (EFA), the 1991 New Delhi Declaration which called for stringent efforts by those nine countries of the world with the largest concentration of illiterate populace, commonly referred to as ‘E-9 countries’ (of which Nigeria is one), to drastically reduce illiteracy within the shortest time frame; the World Education Forum held in Dakar, Senegal in 2000, where 164 governments across the globe pledged to achieve Education for All (EFA) by the year 2015 and the Millennium Development Goals (MDGs) 2001 which provided the platform and basis for the Universal Basic Education (No. 2). This was further boosted by the Organization of African Unity (OAU) now African Union (AU) that mandated African States to generalize access to quality basic education as a necessary foundation for sustainable socio-economic development. The general objective behind their respective educational programmes was basically to provide unhindered access to basic education.

The universalization of basic education is a global strategy designed to meet the basic learning needs of individuals irrespective of their gender, race, religion any perceived challenges or differences in birth circumstances. It was meant to help the beneficiaries to survive, develop their full capacities, live and work in dignity, participate fully in development, improve the quality of their lives, to make informed decisions and also to continue learning (World Conference on Education, 1990). This education programme, led to the broadening of the scope of the right to education. Its ‘expanded vision’ was proposed to enable everybody, children, youth, and adults, to meet their basic learning needs. By this, governments are obliged to make education, at least at the basic level, free, accessible, acceptable and adaptable.

Sequel to this, the Federal Government of Nigeria, introduced the Universal Basic Education (UBE) programme in 1999 which replaced the 1976 Universal Primary Education (UPE) which was limited to primary education. The UBE programme is a policy reform measure of the Federal Government of Nigeria, aimed at rectifying distortions in the basic education (FRN, 2004). It is designed to ensure unfettered access to free and compulsory education and exposure of its teeming youths to basic skills and literacy. The UBE programme is a deliberate effort to equip the Nigerian child with basis knowledge, skills, attitudes and capacities to be useful, productive and contribute to national development. Basic education in the Nigerian context entails six years of primary education and three years of junior secondary education for all children. This study, however, was delimited to primary education.

Primary education is the largest and the most fundamental component of basic education. It is the foundation upon which other the levels of education are built and a necessary requirement for human and national progress. It is in recognition of the importance of primary education that many nations across the globe, including Nigeria have been making efforts to ensure its universalization. The fundamental objective behind their respective educational programmes was to increase access to primary so that all children of primary school age are in school. The critical nature of this level of education made the Federal Government of Nigeria to declare it free, compulsory and universal (FRN, 2004). This was a quantum shift in the effort to make basic education free for all and accessible. To ensure unhindered access to this level of education, one fundamental strategy to achieve this noble goal is school mapping.

School mapping is an essential aspect of educational planning and a critical strategy for realizing educational goals and objectives. It is the continuous, systematic and rational process of siting and rationalizing educational facilities for the purpose of ensuring that they are provided in a way that set educational goals are realized. School mapping is basically all about



school network which is dynamic in response to the dynamic nature of the environment it serves. It requires that educational facilities are systematically and rationally located such that the age-group within the population for which it is targeted may use the facilities to their maximum advantage (Kaufman & Herman, 2002). The major role of school mapping is to set up a rational school network to meet educational demand of the society. This role comes into play majorly when large-scale reform or significant expansion of an educational system takes place. It is also a continuous process. School mapping. To a very great extent, guarantees high access level, mitigates out-of-school syndrome. In other words, it seeks to ensure effectiveness and economy as much as possible while taking into account the overall objectives. In essence then, school mapping has the double function of ensuring greater access and equality of education opportunities and at the same time ensuring economic rationality in education provision.

The Universal Basic Education (UBE) programme is a response to the global call for unfettered access to basic education. It is to be seen as part of Nigeria's attempt to join the international community by giving effect to her commitment to the world trends in the field of basic education. The effectiveness and efficiency of this programme cannot be possible if the siting of educational institutions are not well planned. Hence, planning is critical to the entire process, and one of the planning strategies is School Mapping. It is an imperative strategy. School mapping is a tool that helps to plan for better access to education. It provides the requisite conditions for the achievement of universal access. On the above stand, school mapping has special significance for the universalization of access to basic education. Hence, the study sought to determine the level of school mapping for the implementation of the Universal Basic Education programme in Imo State.

The UBE programme is designed to ensure that basic education (primary and junior secondary) is free, compulsory and universal. By this, no Nigerian child of school age should be out of school. It is also an offence for anybody or any group to deny a child access to basic education. By implication, it entails hundred percent enrolment rate, all things being equal. The corresponding high enrolment rate should therefore, be anticipated. The demand for more school places will be a necessary aftermath. No wonder, Ellah (2012) posited that for the massive expansion of education which the UBE programme is designed for, to be achieved, the success relies on access. In a study carried out by Ellah (2012) on location factors and primary school attendance and participation in Otukpo Local Government Area of Benue State, it was revealed that public primary school children in Otukpo Local Government Area have low radius per child meaning the pupils cover short distances to school, which is an indication of high level of access to school places. Another study conducted by Obasi and Madu (2015) on school mapping and the democratization of basic education in Rivers State, revealed that the mapping of primary schools was adequate but they were not regularly and rationally mapped. Secondary schools (junior) were mapped but the mapping was of low level and not regularly and rationally mapped. When there is low level of school places, such a condition glaringly will have negative outcomes. This was pointed out by the National Population Commission (2011) that insufficient schools to satisfy demand can lead to overcrowded classrooms.

School mapping can sometimes be inhibited by some factors. Sabir (2013) in his study on school mapping in the light of education reforms in Pakistan found out that the absence of school mapping exercise in the area is because of the following reasons: lack of knowledge of the concerned officials to carry out the activity, the absence of the clear-cut policy direction on what, how and when this activity should be undertaken, and inadequate resources in terms of manpower, infrastructure, and facilities essential to conduct school mapping. It was also found out that the EMIS operation is contributing negligibly to the planning and the school mapping activities and this situation is prevalent at the both provincial and district levels. In yet another

study carried out by Ochai and Olatunde (2015) on the politics of public secondary school mapping and facilities provision in Benue State, it was found out that there are several ways politics influence the location of public secondary schools. The influence include: political godfatherism influencing the location of schools, establishing school to promote in-genuine philosophy to stay in power, immortalization of national heroes using institutions of learning, and location of schools based on political consideration.

### **Statement of the Problem**

The belief in the power of education as a veritable instrument for the development of the human person and the society at large has continued to enjoy global acceptance. This is evident in the continued rise in the level of involvement of different governments organisations and individuals especially in the developing nations. On the basis of this conviction, the Federal Republic of Nigeria, launched the Universal Basic Education (UBE) programme in 1999. The UBE programme is designed to ensure that basic education (primary and junior secondary) is free, compulsory and universal. By this, no Nigerian child of school age should be out of school. It is also an offence for anybody or any group to deny a child access to basic education. By implication, it entails hundred percent enrolment rate, all things being equal. The corresponding high enrolment rate should therefore, be anticipated. The demand for more school places will be a necessary aftermath. However, more than a decade after the implementation of the UBE programme in Nigeria, many children of primary school age in Imo State appear to be out of school. There are some school-age children who seem to be either not enrolled in school or failed to complete the programme. This situation is what bothers the researchers. The question therefore is: could this ugly situation be as a result of poor level of access to education facilities? What is the level of primary school mapping in Imo State?

### **Aim and Objectives of the Study**

The aim of this study is to determine the level of school mapping for the implementation of the Universal Basic Education programme in Imo State. The specific objectives thus were to:

- Determine the level to which primary school mapping is carried out since the implementation of the UBE programme in Imo State
- Investigate the factors militating against effective primary school mapping in Imo State.

### **Research Questions**

The following research questions guided the study:

- What is the level to which primary school mapping is carried out since the implementation of the UBE programme in Imo State?
- What are the factors militating against effective primary school mapping in Imo State?

### **Hypotheses**

The following hypotheses were tested at 0.05 level of significance:

- There is no significant difference between the mean responses of the staff of the Ministry of Education and the staff of the Universal Basic Education Board on the level to which primary school mapping is carried out since the implementation of the UBE programme in Imo State
- There is no significant difference between the mean responses of head teachers and the staff of the Universal Basic Education Board on the factors militating against effective primary school mapping in Imo State.

## **METHODOLOGY**

The study adopted the descriptive survey design. The 1,276 Head Teachers of the primary schools together with the 216 staff of the Imo State Universal Basic Education Board

(IMSUBEB) and 285 staff of the Ministry of Education (MoE) totaling 1,777 constituted the population of the respondents. The sample size of the respondents was 327 which is 18.4% of the population. This consisted of 136 head teachers (42, 75 and 76 respectively from the three education zones), 64 staff of the Imo State Universal Basic Education Board (IMSUBEB) and 70 staff of the Ministry of Education (MoE). These were selected using the stratified random sampling technique for head teachers and the simple random sampling technique for the staff of MoE and IMSUBEB. A validated instrument titled: School Mapping and the Universalization of Basic Education Questionnaire (SMUBEQ) with reliability index of 0.84 was used for data collection. Mean and Standard Deviation were used to analyze the data collected, while z-test statistics was used to test the hypotheses at 0.05 level of significance.

## RESULTS

**Research Question 1:** What is the level to which primary school mapping is carried out since the implementation of the UBE programme in Imo State?

**Table 1: The mean scores of the responses on the level to which primary school mapping is carried out since the implementation of the UBE programme in Imo State**

S/N	School mapping since the implementation of the UBE programme	Staff of MoE		Staff of IMSUBE		$\bar{X}\bar{X}$
		$\bar{X}$	SD	$\bar{X}$	SD	
1	The entire state is comprehensively mapped as one entity	2.49	0.89	2.40	0.92	2.45
2	The mapping is based on sampled zones	2.48	0.88	2.45	0.87	2.47
3	The mapping is based on sampled subzones	2.53	0.84	2.58	0.78	2.56

Table 1 indicates that, except item 6 with a weighted mean score of 2.56 which is above the criterion mean of 2.50, the other items 4 and 5 had mean scores of 2.45 and 2.47 respectively which are below the criterion mean of 2.50. Hence, the mapping was based on sampled subzones. This indicates a low level of primary school mapping.

**Research Question Two:** What are the factors militating against effective primary school mapping in Imo State?

**Table 2: The mean scores of the responses on the factors militating against effective primary school mapping in Imo State.**

S/N	Factors variables	Head teachers		Staff of IMSUBE		$\bar{X}\bar{X}$	Remarks
		$\bar{X}$	SD	$\bar{X}$	SD		
1	Over politicization of the process	2.90	0.91	2.97	0.90	2.94	Agreed
2	Lack or poor policy framework/ guidelines	2.87	0.92	2.83	0.92	2.85	Agreed
3	Non-involvement of educational planners	2.95	0.89	2.98	0.85	2.97	Agreed
4	No site feasibility study conducted	2.78	0.97	2.72	0.94	2.75	Agreed
5	Lack of proper assessment from the Ministry of Education	2.89	0.98	2.66	0.96	2.78	Agreed
6	Difficult terrain (hilly, roverine, rural areas)	2.75	0.96	2.59	1.00	2.67	Agreed
7	Lack of technical facilities like Global Positioning System	3.01	0.94	3.03	0.92	3.02	Agreed
8	Lack of trained manpower to Operate the equipment	2.98	0.93	3.00	0.88	2.99	Agreed
9	Poor funding	3.09	0.90	3.06	0.93	3.08	Agreed

Table 2 shows that all the identified factors have their weighted mean values above the criterion mean of 2.50. Hence, all the items are accepted as the militating factors to effective primary school mapping in Imo State.

### Hypotheses

**H0<sub>1</sub>:** There is no significant difference between the mean responses of the staff of the Ministry of Education and the staff of the Universal Basic Education Board on the level to which primary school mapping is carried out since the implementation of the UBE programme in Imo State.

**Table 3: Z-test of difference on the responses of the staff of the Ministry of Education and the staff of Imo State Universal Basic Education Board with respect to the level to which primary school mapping is carried out since the implementation of the UBE programme in Imo State**

Respondents	N	$\bar{X}$	SD	df	z-cal	z-crit	Sign. Level	Decision
Staff of MoE	70	2.49	0.88	132	0.12	1.96	0.05	NS
Staff of IMSUBEB	64	2.47	0.86					

Table 3 indicates that the calculated z-value is 0.12 which is less than the critical z-value of 1.96 at 132 degree of freedom and at 0.05 level of significance. Hence, the study failed to reject the hypothesis.

**H0<sub>2</sub>:** There is no significant difference between the mean responses of head teachers and the staff of the Universal Basic Education Board on the factors militating against effective primary school mapping in Imo State.

**Table 4: Z-test of difference on the responses of the Head Teachers and the staff of Imo State Universal Basic Education Board with respect to the factors militating against effective primary school mapping in Imo State.**

<b>Respondents</b>	<b>N</b>	$\bar{X}$	<b>SD</b>	<b>df</b>	<b>z-cal</b>	<b>z-crit</b>	<b>Sign. Level</b>	<b>Decision</b>
Head Teachers	193	2.52	0.89	255	0.07	1.96	0.05	NS
Staff of IMSUBEB	64	2.51	0.92					

Table 4 shows that the calculated z-value is 0.07 which is less than the critical z-value of 1.96 at 255 degree of freedom at 0.05 level of significance. Hence, the hypothesis was retained.

### DISCUSSION OF FINDINGS

It was revealed by the findings that the level of primary school mapping since the UBE programme was implemented in Imo State was low. The low level of mapping was also found out by Obasi and Madu (2015) on secondary school mapping in Rivers State. Such a condition will obviously have negative effects. This was pointed out by the National Population Commission (2011) that insufficient schools to satisfy demand can lead to overcrowded classrooms. However, the finding is completely different from what Ellah (2012) found out in his study. He found out that in Otukpo Local Government Area, children of public primary school have low radius per child meaning the pupils cover short distances to school, which indicated access of high level nature to school places. The scholar further made a point that for the massive expansion of education which the UBE programme is designed for to be achieved, the success relies on access of high level nature to school places.

The study also revealed some of the problems that militate against effective primary school mapping in Imo State. They are: poor funding, lack of technical facilities like Global Positioning System, lack of trained manpower to operate the equipment, non-involvement of educational planners, over politicization of the process, lack or poor policy framework/guidelines, lack of proper assessment from the Ministry of Education and difficult terrain (hilly, riverine, rural areas). The finding corroborated that of Sabir (2013) who in his study found out that lack of knowledge of the concerned officials to carry out the activity, the absence of the clear-cut policy direction on what, how and when this activity should be undertaken, and no available resources in terms of manpower, infrastructure, and facilities essential to conduct school mapping are some of the factors militating against school mapping in the study area. In the same vein, Ochai and Olatunde (2015) in their study found out that there are several ways politics influence the location of public secondary schools. The influence include: political godfather influencing the location of schools, establishing school to promote in-genuine philosophy to stay in power, immortalization of national heroes using institutions of learning, and location of school based on political consideration. These factors inhibit the proper mapping and rationalization of educational facilities.

### CONCLUSION

On the basis of the findings, it was concluded that:

- School mapping since the implementation of the UBE programme is based on sampled subzones, which indicates that the level of mapping is low.
- Over politicization of the process, lack or poor policy framework/guidelines, non-involvement of educational planners, no site feasibility study conducted, lack of proper assessment from the Ministry of Education, difficult terrain (hilly, riverine, rural areas),

lack of technical facilities like Global Positioning System, lack of trained manpower to operate the equipment and poor funding are the militating factors to effective primary school mapping in Imo State.

### **RECOMMENDATIONS**

Based on the findings and conclusions, the following recommendations were made:

- The Government should as a matter of necessity carry out comprehensive school mapping to cater for the demand effect of the UBE programme.
- More professionals in school mapping should be trained and adequate mapping equipment be provided.
- Adequate policy on school mapping should be put in place
- The government should ensure that negative politics should be eliminated from the provision and rationalization of school facilities.

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## Effects of Scaffolding Teaching Strategy on Students' Performance in Chemistry in Secondary Schools in Ondo State, Nigeria

**Dr. Omoniyi Adesoji Olubunmi**  
Department of Science Education,  
Adekunle Ajasin University  
Akungba Akoko, Ondo State, Nigeria.

**Torru Tessy Ese**  
University of PortHarcourt

### ABSTRACT

The study identified Addition Reaction of Unsaturated Organic Compounds in ordinary Level West African Secondary School Certificate (WASSC) Chemistry syllabus, and examined the effects of scaffolding teaching strategy on students' performance in chemistry. The study adopted pre-test post-test experimental design with lecture method as the control group. The sample consisted of 77 participants selected from two Senior Secondary School II Students in Akoko North East Local Government Area of Ondo State. Two intact classes were classified into experimental group Scaffolding (SF=42) and control group, lecture method (LM=35). A 20 item instrument tagged Addition Reaction of Unsaturated Hydrocarbon Achievement Test (ARUHAT) was developed by the researcher and ascertained for reliability ( $r=0.78$ ,  $p<0.05$ ). The study was guided by two hypotheses. Data collected were analysed using t-test. The result showed that there was a significant difference in the effectiveness of SF and students' performance in chemistry ( $t=0.043$ ),  $p<0.05$ . Furthermore, SF was found to be more effective ( $X=13.01$ ) than lecture method ( $X=10.43$ ). The study concluded that scaffolding is an effective method of teaching chemistry concepts in general and concepts involving building of models in particular.

**Keywords:** Scaffolding, students' performance, effects, teaching strategy.

### INTRODUCTION

Students' poor performance in chemistry at various levels of education has been an issue of concern over the years to stakeholders. For instance, some of the reasons attributed to poor performance in chemistry as a subject by scholars include lack of frequent practice, poor mathematical background, inadequate and poor method of teaching (Omoniyi, 2016). Hence, scholars are making a paradigm shift from what is generally believed to be a conventional method of teaching to an entirely different approach that is activity – based and interactive.

Novak and Cavas (2008) observed that knowledge is actively constructed by the learner on the grounds of constructs already available to him/her in the mind. A key factor in the teaching and learning process derived from teacher related factors is the strategies used in imparting knowledge to the learner. According to Onwuka (1990), knowledge of available techniques is a valuable asset towards effective teaching. Generally, success in teaching depends to a large extent on the appropriate selection and application of a teaching strategy from each subject matter.

Also, Achumugu (2013), Ali (2008), Njoku (2009) stated that a major factor for effective learning to take place is the use of interesting instructional approach that enables participation

of students in the teaching / learning process. Ajeyalehin and Owoyemi (2014), and Omoniyi (2017), have subjected a shift from the conventional method of teaching chemistry to some innovative and activity-based instructional strategies to ensure improvements in students' interest and achievement in the subject.

Several teaching methods can be used to teach chemistry in which scaffolding represents one of them. The metaphor of scaffolding is derived from construction work where it represents a temporary structure that is used to erect a building. In education, scaffolding refers to support that is tailored towards students' needs. The metaphor is alluring to practice as it appeals to teachers' imagination Saban (2007). Scaffolding is derived from mother-child observations and has been applied to many other contexts, such as computer education (Azevedo & Hadwin, 2005). The term is used to describe certain kinds of support which learners receive in their interaction with parents, teachers, and other 'mentors' as they move new skills, concepts or levels of understanding. It is a term which helps to portray the temporary, but essential nature of the mentors' assistance as the learner advances in knowledge and understanding. Andrianes (2013) defines educational scaffolding as a teaching method that enables student to solve a problem, carry out a task or achieve a goal through a gradual shedding of outside assistance. In education, scaffolding refers to a variety of instructional techniques used to move a student progressively toward stronger understanding and, ultimately, greater independence in the learning process.

### **THEORETICAL FRAMEWORK OF SCAFFOLDING**

Jerome Brunner- a cognitive psychologist, created a theory of development. On this premise, Bruner and Jean Piaget agreed on several components of learning. Bruner as a constructivist, his major theme is that learning is an active process in which learners construct new ideas or concepts based upon their past or current knowledge.

Bruner's constructivist theory suggests that it is effective when faced with new materials to follow a progression from enactive to iconic to symbolic representation, this holds true even for adult learners. Hence, the concept of Addition Reaction of Unsaturated Hydrocarbons could be effectively taught based on this theory.

### **STATEMENT OF THE PROBLEM**

Chemistry as a subject, virtually affects all aspects of human life and it is a basic requirement for admission for nearly all the courses of study in tertiary institutions. National Policy on Education has also placed it on a prestigious position as a servicing subject to engineering, Medicine and Computer Science courses in the universities. Nevertheless, the subject has not attained students' performance at its best especially in external examination such as West African School Certificate Examination (WASCE) and National Examination Council (NECO). It appears that the teaching method may be one of the factors responsible for this. The conventional lecture method being used to teach chemistry students is not learner- centered; hence, students become passive and have less interaction with one another. Therefore, to teach chemistry effectively, there is the need for classrooms' shift from teacher centered teaching strategy to student- centered teaching strategy such as Scaffolding in order to improve students' performance in chemistry concept- for example Addition reaction of unsaturated hydrocarbon which involves building of models. In scaffolding instructional package, the more the students practice the building of the models, the easier it is to master the basic facts.

To guide the study, two hypotheses were formulated namely;

1. There is no significant difference in the pre-test scores of students on the selected chemistry concept-Addition Reaction of Unsaturated Hydrocarbons.



2. There is no significant difference between the academic performance of students exposed to scaffolding and lecture method after treatment.

### METHOD

The study adopted a pre-test, post-test control group design. The population for the study consisted of students offering chemistry in Senior Secondary II in the 22 secondary schools located in Akoko North East Local Government Area of Ondo State. From these, two schools were randomly selected and from which two SSII science classes were selected. A total of 77 students participated in the study. The period of administration of the treatment was five weeks. The concept chosen is Addition Reaction of Unsaturated Hydrocarbons which is taught under Organic Chemistry in the SSS chemistry curriculum.

#### Instrument and Administration

The instrument used for the study was Addition Reaction of Unsaturated Hydrocarbons Achievement Test (ARUHAT) which consisted of 20 questions (10 objectives, 5 short-structured question and 5 questions involving skills). The questions were given to university and secondary school chemistry teachers to vet. This was to ensure content validity and suitability of the instrument for the study. The instrument had a test-retest reliability coefficient of 0.78.

#### Procedure for the Study

From the researchers' experience as a chemistry teacher in secondary school in Ondo State for many years, and her interaction with students in form of informal interview; Addition Reaction of Unsaturated Hydrocarbons was chosen as the topic to be taught using scaffolding instructional package because of the structures of the organic compounds that would require building of models.

Next, the ARUHAT was administered on the experimental and control groups in their respective schools separately in the second weeks of the study to obtain the pre-test scores. Thereafter, the experimental group was exposed to treatment in scaffolding teaching strategy while the control group was exposed to the traditional lecture method. The two groups were taught separately by the researcher for a period of three weeks after which the post-test was administered.

#### Method of Instruction

Instruction was activity and discussion oriented where students were allowed to construct models for themselves. It is important for teachers to provide opportunities for students to constantly learn new things. Some of those may be complex and will require support of a very focused teacher. Teachers need to be aware of the developmental state of each of the students they teach, and should provide scaffolding that is appropriate. Although, this may not be possible to do on their own, teachers can improvise and provide scaffolding through other support, including the use of teaching assistants who are more knowledgeable.

As students gain in confidence and competence in a particular area, teachers could place them in groups so that the good ones can extend their competence / knowledge to other students. It is also important that teachers recognize when a child is at the point where they begin to learn independently, and decisions can be made on how to construct more scaffolding. (Wood, D. J, Brunner, J. S & Ros, G. 1976).

### STEP I

Examples of unsaturated hydrocarbons were given to students e.g ethene with the structure  $\text{CH}_2=\text{CH}_2$

Structure of alkene is written as  $\text{C}=\text{C}$

### Step II

Students were asked to construct the scaffolding for this structure as an unsaturated compound

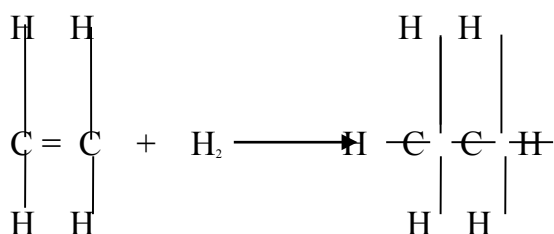
### Step III

Models of Hydrogen as a molecular compound ( $\text{H}_2$ ) H-H was given to the students

### STEP IV

Students were required to construct scaffolding by addition reaction of  $\text{H}_2$  with ethene ( $\text{CH}_2=\text{CH}_2$ )

### Equation

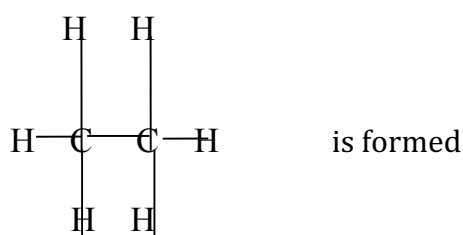


**Ethene**

**Ethane**

### Step V

Students constructs a new model of a saturated hydrocarbon from unsaturated compound. A new saturated compound ethane ( $\text{C}_2\text{H}_6$ ) with structural formular



## RESULTS

Tables 1 and 2 present the results

**Table 1: Difference between pre-treatment scores of experimental and control groups**

Group (s)	N	X	Std Dev	df	T
Scaffolding	42	5.83	4.15	76	2.782
Lecture method	35	5.09	3.43		

$P > 0.05$

**Table 2: Difference between post-treatment scores of experimental and control groups**

Group	N	X	Std Dev	df	t
Scaffolding	42	13.01	3.33	76	0.043
Lecture method	35	10.43	2.82		

P<0.05

From Table 1, the t-value of 2.784 was not significant at 0.05 level. This showed that there was no significant difference between the mean scores of students exposed to scaffolding ( $X = 5.83$ ) and lecture method ( $X = 5.09$ ) before treatment. Also, Table 2 shows that the mean score for the students in the scaffolding group ( $X = 13.01$ ) was higher than that of the traditional lecture method. When the mean scores were subjected to t-test, it yielded a value of 0.043 which was significant at 0.05 level.

### DISCUSSION

The results shows that scaffolding teaching strategy was an effective method in teaching some chemistry concepts in secondary schools. This was evident in the result of the post-test in scaffolding ( $X=13.01$ ) and lecture method ( $X=10.43$ ). The low mean scores of both experimental and control groups indicated that students had little knowledge about the concept before treatment.

The reason for the better performance of students in scaffolding could be due to the active participation process in which learners construct new ideas which enhances students' understanding progressively and ultimately led to greater independence in the students' learning process. Reasonably, this can be linked to the factor of social interaction that existed among the students. Existing studies found that social interaction is a key factor for better performance in computer supported collaborative learning (Kreijns, Kirschner, Jochens, 2003)-because of the fact that "the social process of developing shows understanding through interaction is the "natural" way for people to learn" (HiHZ, 1994).

### CONCLUSION

In conclusion, scaffolding teaching strategy tend to be effective both in enhancing students performance in chemistry and in increasing social interaction among the students. There is the need therefore, for chemistry teachers to recognize the connection between the students cognitive and their social interaction.

### RECOMMENDATIONS

1. Teachers should carefully design and teach their students appropriate scaffolds considering their functions and the use of relevant methods to pply in teaching chemistry concepts.
2. As there is a paradigm shift from teacher -centered approach to learner- centered approach in the evolution of the educational instruction (Gibb's 1981), instructors should acknowledge students' voice and what they perceive of scaffolding provided. From students' feedback, the teacher can have less lessons learnt about delivering appropriate scaffolds to meet the students' needs. On the other hand, teachers can ask students for feedback at the end of the course to see the effectiveness of the whole scaffolding works.

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## Discriptive Study About Supervision Teaching Material On Porspective Principal Training In Bima

Dr. Heri Supriyana, M.Pd

Development and Empowerment Principal Institution

### ABSTRACT

The objective of this research is to explore the relevancy, adequacy, consistency and the arrangement of supervision teaching material in Gunung Kidul, Yogyakarta. This research uses the descriptive research model which is to find the facts and interpretation accurately. The descriptive research model describes the characteristic individual or group phenomenon and also determines the frequency of events to minimize the bias and to optimize the reality. The result of this research from the data analysis, the means is 2.15 classified bad. It means that the relevancy of academic teaching material is low. It is not correlated to the everyday principal task.

**Keywords:** supervision, teaching material, principals.

### INTRODUCTION

The headmaster has main task: (a) managerial task, (b) supervision task and (c) entrepreneur task. Based on the main task, the principal has a function or a role as a manager or a supervisor. As a manager, the principal must be able to carry out the managerial task which related to the school management so all the resources can be used efficiently and effectively to reach the school objectives.

The principal as a supervisor has main task to supervise the teachers and staffs to make sure that they have worked well to maintain the process and result in the school. The main task on supervision, the principal should (a) supervision program, (b) carrying out the supervision and (c) doing the feedback. If all of the tasks have been carried out by the principal well so all of the teachers and staffs have worked well because they have been supervised and guided. The teachers have motivation to improve the learning process.

On the educational decree No. 13 year 2007 states that the principal should have five dimensions. Those dimensions are (1) personality dimension, (2) social dimension, (3) managerial dimension, (4) supervision dimension, and (5) entrepreneurial dimension. Those five dimensions can be mastered through activities which can increase principal competency. Those activities can be trainings. The headmasters should master the five competencies in the training.

In fact, the expectation of mastery of five competency is far from the hope so the principals can not master the five competencies. The result of survey of 9.105 principals in 31 provinces in 2010 carried out by the development and empowerment principal institution (DEPI) showed that the social and supervision competency were still low (Kompas, 22/3/2011). The result of the social competency is still low because the principals don't build the internal and external relationships well. The result of the supervision competency is also low because the principals don't master the concept of supervision so they can not carry out the supervision

well. In this case, the researcher paid attention on the supervision competency. The task of the supervision is related to the role and function of the principal.

The result of survey in the school showed that the principal don't master the concept of supervision so the supervision carried out by the principal is not based on the theory of supervision. So far, the principal carry out the supervision if the teachers want to promote their ranks. The headmaster supervised the teacher's teaching and learning administration. The focus of supervision is only the completeness of administration. Most of the principals don't read the content of administration given by the teachers, it is only seen the tittle of the administration and directly approved by the principals. Most of the teachers don't make the teaching and learning planning (TLP) by themselves they copied the TLP's friends. The condition of preparing the teaching and learning don't motivate the teachers to work well.

The low comprehension of supervision makes the principals don't supervise the teachers in the classroom. The supervision of teaching learning process is needed because the learning as an important factor in the school. If the supervision is not available, the teachers tend to teach without the consideration of pedagogies science. Most of the principals have supervised the teaching and learning process but they don't use the technics and approach properly, an example, they only see the TLP at glance, they don't supervise the teachers in the classroom but they only fill out the instrument in the office. Because of the low comprehension of the supervision, the principals can not do the supervision well.

One of the ways to overcome problem is to hold an education and a capacity building training of the principals before managing the schools. Related to the case, the national of educational minister declared No. 28 year 2010 about teachers appointed to be principals. The regulation prepares the teachers to be prospective principals. In in the regulation states that the teachers before being pointed to be principals should have a training. In that prospective master training, the teachers expected to be able to master five dimension competencies, one of them is an academic supervision.

In the preparation of prospective principal which needs a supported factor. One of supported factors which support the successful training is a teaching material used in the training. The development and empowerment principal institution (DEPI) has arranged the teaching material for a perspective principal training. There are a number of teaching materials which used in the training, one of them is a academic supervision. To get the information concerning supervision teaching material which developed by DEPI so the research needed to be carried out and the tittle of the research is "Descriptive study about teaching material on academic supervision in the perspective principal training in Gunung Kidul regency Yogyakarta.

### **Problem Identifications**

1. The principals aren't able to master five principal competency dimension;
  1. The low principal supervision competency
  2. The principals comprehension on supervision is not enough
  3. The principals still have difficulties to comprehend the academic supervision.

### **Research question**

How far the relevancy, adequacy, consistency, and the arrangement of supervision teaching material in perspective principal training in Gunung kidul regency, Yogyakarta?

**Objectives**

To explore the relevancy, adequacy, consistency and the arrangement of supervision teaching material in Gunung kidul reGENCY, Yogyakarta.

**Benefit**

To help institution which is related to education and training principal to prepare the academic supervision teaching material.

**LITARATURE REVIEW****Literature review****Teaching material**

According to Tomlinson (1998:2) teaching material is anything which is deliberately used to increase the learners' knowledge and/or experience of the language. Another opinion says that any teaching material which is used by teachers or instructors in teaching and learning process in the classroom. Winkel (2009: 342-433) teaching material is a learning material which is expected to be absorbed or transferred to the students so they have competencies. Meanwhile, Soprawoto (2010) said that teaching material is a material which is arranged systematically in written form or not so it makes learning environment to learn. Depdiknas (2006) states that instructional materials is knowledge, skill and attitudes which must be learned by the learners to reach the standard competency appointed. The meaning of learners in this research is a participant who join the training. In detail, a kind of teaching material consist of knowledge (fact, concept, principle, procedure), skills, and attitudes.

Based on the explanation before, we can draw back the conclusion that is a set of teaching material (knowledge, skill, and attitude) which is arranged systematically in printed form as well as audio visual used the teachers or instructors in teaching and learning process in the classroom. In this research, the meaning of teaching material which is consist of knowledge, skill, and attitude which arranged systematically in printed form and non printed form and used by instructors or widyaiswara (trainer) in the preparation of perspective principal training.

**The forms of teaching material**

Suprawoto (2010) said that there are some kinds of teaching material: (1) printed teaching material, example: work sheet, hand out, module, leaflet, wall chart, etc. (2) audio visual teaching material: film and cvd, (3) audio teaching material, example radio, cassette, compact disk, (4) visual: photo, picture, market, (5) multi media: interactive cd, computer, and internet.

The same opinion stated by Hujair AH. Sanaky (2009) teaching material can be seen from physical aspect and non physical aspect. The physical aspect of teaching material consists of printed form likes books, hand outs, module, work sheet, graphics media and teaching aids and electronic material like, television, film, radio, slide, video, DVD, LCD, computer, etc. Teaching material seen from non physical material: cognitive, affective, and psychomotor.

Based on the explanation above in this research teaching material will be arranged in physical aspect: teaching material program or syllabus, learning program unit anf teaching material, meanwhile, non-physical form can be prepensation form (slide). Non-physical material is cognitive, affective, psychomotor.

## **Academic supervision**

Clickman, at Al (2007), academic supervision is an activity which help the teachers to manage learning process to reach the goal. Meanwhile, sergiovani (1982) focus reflection practice on teacher assessment in academic supervision seen the real teacher performance to answer the following questions: What happens in the classroom? Which activities is significant for students and teachers? What has been done by the teachers to reach academic goal? What is the deficiency and advantage of the teachers and how to develop them? Based on the answers can be gotten the teacher performance in managing classroom. After being gotten the teacher performance, headmasters should do the feedback and make the supervision program and carry out it.

Meanwhile, Lantip and Sudiyono (2011), the scope of academic supervision include: (a) school curriculum activities, (b) preparation, implementation and the teacher assessment, (c) standard competition graduate achievement, (d) enhancement of the learning quality through: (1) learning model related to the standard-process, (2) student role in learning process which is active, creative, democratic, educated, motivation, creative drive and dialogue, (3) involvement the students actively in learning seriously to reach the freedom in getting material not only from the teachers, (4) students can form character and have mindset as well as intellectual activities which creative and innovative, argumentation, questioning, inquiry and prediction, (5) responsible for quality learning program for every subject matter.

*Based on the explanation above, in this research academic supervision is a set of activities include: preparation, implementation and feedback to improve competencies to manage learning to reach the learning goals.*

## **Academic supervision goals**

Glickman et al (2007) said that the academic supervision goals include: (a) helping the teachers empower competencies, (b) develop curriculum, (c) develop the teacher organization and guide the classroom action research. Supervision is a basic function in all the school program so the result of the supervision is an information resource for teacher professional development.

Based on the explanation above, the goals of this research from academic supervision to help the teachers to motivate to develop learning process and develop profession through quality supervision.

## **Training concept**

### ***Training definition***

Based on state administration institution( 2009: 3) training is learning process to change performance competency to reach the optimal carrier. Based on the government regulation No. 101/2000, training is a learning process to develop civil servant competency. Meanwhile in presidential instruction No. 15 year 1974 about main activity training is civil servant training which educate the civil servant to develop attitude, knowledge and competency related to requirement job description. Job and profession in this case is which given additional job as a headmaster. In this research training is a learning process to develop attitude, knowledge and capability of headmaster.

### ***The goals and training target***

The goals of training in government regulation No. 101 year 2000 states that the goal of training: (1) develop knowledge, expertise, skills, and attitudes to carry out the job professional based on attitude and civil servant civil servant etic based on the institution



need, (2) create the civil servants are able to be reformers and adhesive the state unity, (3) build attitude spirit devotion based on the services, caring and society empowerment, (4) create the same vision, mission and mindset in implementation the general government tasks and build the good government. Meanwhile, the training target is to make the civil servants have competencies which is required by the each job.

Based on the above explanation the goals and the targets the training in this research are (1) to develop knowledge, expertise, skills and attitude to carry out the tasks as principal in professional way with the good attitude and ethic related to the school needs, (2) to create the principals to be educational reform in Indonesia, (3) to strengthen attitude and spirit to the loyalty as headmasters who have orientations to services, caring and society empowerment, (4) to create the same vision, mission and mindset dynamic in implementation tasks as principal to realize excellent education. Meanwhile, the training target is to make the principals who have the competencies needed on line with the educational regulation No. 13 year 2007 about the standardized hprincipals cover (a) personality competency, (b) social competency, (c) managerial competency, (d) entrepreneur competency.

### ***Prospective principal training***

In the regulation of implementation educational decree No. 20 year 2010 states education and training of prospective principal is a process of giving experience learning and theories to improve knowledge, attitude and skills on dimension of personality competency, managerial competency, entrepreneur competency, supervision competency and social competency.

### ***The prospective principal training model***

The activities of education and training is to prepare the prospective principals can be classroom learning in 70 hours and each hour 45 minutes . The training material includes: general material, core material and supported material. The general material covers (1) public policy, (2) program orientation. Core material covers (1) managerial competency development, (2) academic supervision competency development, (3) character building (personality, social, entrepreneur competency). Supported material covers (1) pre test and post-test, (2) training evaluation, (3) program for feed back leadership. Pre-test and post- test covers managerial competency and academic supervision competency. In the beginning of training, the participants are given pre-test to assess managerial and academic supervision competencies. Meanwhile, in the end of the training, the participants are given post-test to know the result of the training and also to evaluate the organization of the training, program and the trainers.

### **Relevancy of the research**

Gregory Charles Farley (2010) in his research in tittle “Instructional Supervision: A Descriptive study Focusing on the observation and evaluation of teachers in Cyber school” A dissertation Indiana University of Pennsylvania. In that research school towards from the traditional approach to modern approach and the use of technology to support the learning. In this case, we need the different supervision which used to supervise the online learning. In this research states criterion of supervisor performance, supervision activities, impact of supervision activities. In this research states that the performance of supervisors of traditional and online supervisors are the same. The difference is only technical skill in online supervision, in the supervision and practice supervision are also the same.

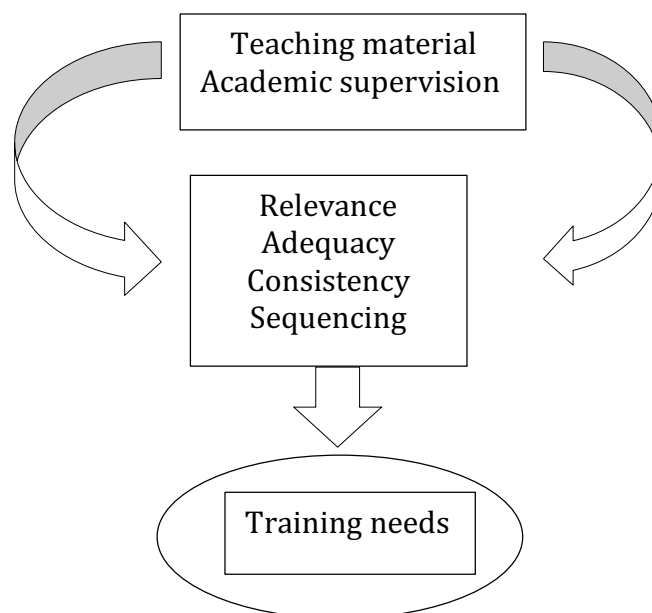
Judy McKimm (2007) in this paper in tittle “ Educational Supervision, personal support and mentoring. In this paper states a number of and guide document related to bachelor, postgraduate, and trainers. The goals of this paper is to explain the important points in supervisions like supervision principles, clinical supervision instrument, and the result of the

supervision. This paper is also to see the impact of informal and formal supervision and support the time, the need and advantages, guidance, and supervision for the students and trainees. It is also explained the different supporting likes educational inspection, accompaniment, academic guidance, counseling and consider the difference and the same of the roles. At last this paper sees how the teachers determine the limitation of supporting and the teachers must look for the supporting.

National Science Foundation (2005) in this paper in title Instructional Materials Development (IMD): Learning progressions; instructional Materials for students. The development of materials are (a) teaching and learning process is to support knowledge, technology and human resource development to improve the professionalism, (b) teaching materials to support curriculum revisions and teaching material based on the research, (c) supported assessment created an instrument to assess student learning related to national standard to develop how students learn mathematics and knowledge, (d) applied researches support IMD and also give evidence that activities strengthen the portfolio and give identification the new material and assessment.

Widjono HS (2010) in his research in title “ Research and development model on Indonesia writing material for academic purposes. Jakarta state university dissertation. This research asked how to Indonesia writing material for academic purposes (from sentences to paragraphs) which meet the need of Jakarta state university. The product of this research is teaching material developed from cohesive sentences and coherently to academic program. The last model of the research and development can meet the student needs.

### Framework of thinking



**Framework thinking chart**

#### Notes:

The academic supervision teaching material is explored deeply, and investigated in descriptive research to know the degree of relevancy, adequacy, consistency, sequencing of teaching material so the characteristic of academic supervision meet with training needs and the headmaster tasks.

## RESEARCH METHOD

This research uses the descriptive research model and the explanation as follow:

### Research Design

Moch Nasir (1983:3), research design is all of the process used in planning and research implementation. Meanwhile, the kinds of research design according to Sell Tiz (Cited Nasir, 1983:104). There are 3 kinds of research design: (1) explorative and formulative, (2) descriptive research design, and (3) casual hypothesis testing. Moch Nasir (1983:105), descriptive research is a research to find the facts and interpretation accurately. Moch nasir (1983:105) explained that the descriptive research is also to describe the characteristic individual or group phenomenon and also study to determine the frequency of events to minimize the bias and to optimize the reality. The same opinion stated by Hasimi Arikunto (1990:309) descriptive research is a research to collect information about phenomenon happen in this study.

Based on some the opinion, the goals of descriptive study of this research is to collect information or facts about the phenomenon appear while the research is carrying out so interpretation can be gotten correctly.

### Research subject

Suharsimi Arikunto (1989:190), research subject is thing, case, people where data is collected related to research variable. The research subjects in this research are participants of perspective headmaster training. The participants of the training are 18 teachers who passed from administration and academic selection in Gunung Kidul, Yogyakarta.

### Research Population

Moh Nazir (1883:225) population is a collection of individual with the same characteristics. The same opinion stated by Suharsimi Arikunto (1987:115) population is all of research subjects. From those opinion can be drawn back conclusion that population are all of the research subjects with the same characteristics. From the conclusion above, population are all of the participants of perspective principal training. The place of this research is Gunungkidul, Yogyakarta.

The sample of this research is purposive sampling based on the use of teaching material used in the perspective principal training held by the regency and in collaboration with Indonesian LPPKS. LPPKS is an institution managed by the educational ministry to prepare the perspective principals.

### Instrument and Data collecting

Moh. Nazir (1983:221) collecting data method is a systemic procedure to collect the data needs. Meanwhile Suharsimi Arikunto (1997: 137) in this research how to collect the data is collecting data. From two opinion, it can be drawn back conclusion that collecting data method is a systemic and standardized procedure to collect the data. The types of collecting data method are direct observation method, questioning method and special method (Nazir, 1983: 212). In this research is used observation method and questioning method. Moh Nazir (1983:212) said that questioning method can be interview and questionnaire. Suharsini arikunto (1995: 136) questionnaire method is a list of questions given to someone who wants to give response. Suharsimi Arikunto (1995: 136-137) said that there are 2 kinds of questionnaires: closed questionnaires and open questionnaires. Closed questionnaires consist of a list of questions and the respondents only give a cross in the given column. Meanwhile,

open questionnaires, the respondents can give respond freely. Based on the explanation above, this research use closed method and open method.

### Data analysis

Closed questionnaire is analyzed using means analysis. The formula of closed questionnaires:

$$\bar{X} = \frac{\sum X}{n}$$

Keterangan:

$\bar{X}$  = means

n = evaluators

$\sum X$  = total score of evaluators' answers

Criteria of means closed questionnaires

Means	Criteria
4.20 - 5,00	Excellent
3.20 - 4.19	Good
2.20 - 2.19	Enough
1.00 - 2.19	Bad

Data analysis of open questionnaires use descriptive qualitative method which collects the same response and then it is made conclusion (Suharsimi Arikunto, 1999). The result of the closed and open questionnaires analysis used to determine the degree of relevance of the academic teaching material with the principal needs.

## RESULTS AND DISCUSSION

Before the researcher carried out the research, the instruments were tried out to see the validity and reliability of instrument in the perspective principal training in Magelang, Central java for 7 days.

There are 15 of 17 item instruments classified validity and critical coefficient df: 9 (N-2= 11-2=9) with the degree of significant 5%= 0.666. Instruments stated reliable with alpha coefficient 0.689. There are 2 item not validity: item number 4 and number 17. After being tried out, the instruments used to collect the data in the perspective principal training in Bima Nusa Tenggara Barat for 9 days.

From the data analysis, the means is 2.15 is classified bad (Arikunto, 2004). It can be drawn back the conclusion that the relevancy of academic teaching material is low, it is correlated to the everyday principal tasks. The teaching material used in perspective headmaster training is not correlated to the main task of headmaster so what is learned in the training is applicable. Tomlison (1998) says that anything which is deliberately used to increase the learners' knowledge and experience. What is learned in the training must be relevant to the main task of principal. The institution should plan to arrange the teaching material which relevant to the principal task at school.

## CONCLUSION

Based on the research findings the perspective principal training felt difficulties to use the academic teaching material. It can be seen from the data analysis means 2.15 classified bad and the result of qualitative data showed the need of development academic teaching material so it is applied at schools.

Literature review showed that the old academic teaching material doesn't meet the principle of writing teaching material which is consistency and adequacy. The teaching material doesn't meet the consistency and adequacy because the teaching material doesn't meet competency, sub competency and indicators.

### SUGGESTION

It is needed the next development of academic supervision of teaching material so the material can be used the principals to carry out the supervisions at school.

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## The Anti-Vaccination Debate: A Cross-Cultural Exploration of Emotions and Epistemic Cognition

**Ayano Tsuda**

Department of Educational and Counselling Psychology,  
McGill University, Montreal, Canada.

**Krista R. Muis**

Department of Educational and Counselling Psychology,  
McGill University, Montreal, Canada.

### Author Notes:

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### ABSTRACT

Do vaccines cause autism? Answers to this question have become hotly debated since Web 2.0, where self-authored content continues to grow. If individuals do not have the skills to judge the veracity of information, this can have negative health consequences. Equally troubling is the negative emotions that arise due to the content on vaccination websites, which can be detrimental for learning. We examined source and justification strategies authors used in vaccine websites from USA, Canada, Japan and Chile, and the epistemic strategies and emotions individuals used or expressed while reacting to website content. Analyses revealed that pro-vaccination websites justified claims using quotes from experts. In contrast, anti-vaccination websites relied on sources from personal experience. Results also indicated that anger was prominent in websites that included a balanced or pro-vaccine view, which was consistent across cultures. These results provide insight into the importance of emotions in learning about controversial topics, and shed light into possible cultural differences in formatting arguments. Results may be used to develop interventions designed to change misconceptions about controversial topics that are emotionally driven.

**Key words:** emotion; epistemic cognition; anti-vaccines; pro-vaccines; cross-cultural comparison

### INTRODUCTION

Do vaccines cause autism? Are childhood vaccinations safe? Answers to these questions have become debated since Web 2.0, where self-authored, unregulated content continues to grow [1]. Unfortunately, although 80% of Internet users search for health-related information [1], only 45% of sites about vaccinations are scientifically accurate [2]. If individuals do not have the skills to judge the veracity of information, or assess source quality, this can have negative health consequences by making health-related decisions that are ill-informed. That is, individuals must engage in high-quality epistemic cognition [3].

Equally troubling is the emotional upheaval caused by vaccination websites. A quick scan of comments left on vaccination websites reveals that individuals experience a variety of emotions regarding whether or not to vaccinate. As previous research has shown, emotions facilitate or constrain learning processes and outcomes [4]. For example, negative emotions,

like anxiety and anger, can limit individuals' ability to critically evaluate information [5]. In contrast, positive emotions, like curiosity and enjoyment, have been shown to foster effortful thinking and flexible learning strategies [6]. Given these issues, research is needed to examine how individuals evaluate claims made on these websites, what emotions arise when individuals read content on these websites, and whether emotions vary as a function of quality and cultural context of the information. That is, to our knowledge, no research has taken into account cross-cultural differences that may arise in epistemic cognition or emotions when reading information about a controversial topic like vaccines. If differences arise, such information would help to inform interventions designed to reduce the negative impact of misinformation on the Internet.

As such, the purpose of this research was to examine individuals' epistemic cognition about website content of varying epistemic quality and perspective, and the emotions individuals expressed while responding to the content or other individuals' comments on those websites. To situate this work, in the ensuing literature review, we delineate persuasive strategies found on the Internet in relation to vaccines, and then present theoretical and empirical work on emotions and epistemic cognition coupled with a literature review on the importance of epistemic cognition when searching information about controversial topics. Lastly, given cultural differences in epistemic cognition [7-9] and emotion expression [10, 11], a discussion on cultural considerations of each construct is reviewed.

### **Persuasive Strategies on the Internet**

Compared to the first generation of the Internet, Web 1.0, wherein websites were static, proprietary, and lacked interactive aspects, Web 2.0 enables a two-way communication where content is contributed by anyone [12]. In other words, Web 2.0 is user-generated with information supported by social media such as Facebook and Twitter, which facilitates health communication among users and eases the spread of information [1]. Unfortunately, information provided in the media does not guarantee its quality, as anyone can contribute to the content. This becomes an issue particularly when the topic is viewed as controversial, such as vaccinations [13].

The vaccine controversy typically is traced back to a study conducted by Wakefield et al. [14] wherein they argued that developmental disorders are linked to the measles, mumps and rubella (MMR) vaccine. Even though the research was fully retracted, this information triggered an anti-vaccination movement, wherein many people around the world still believe that the MMR vaccine causes developmental disorders such as autism [1]. This is particularly problematic in a world where Web 2.0 is widespread, which has allowed individuals without expertise about vaccinations to post information on the Internet.

For example, Kata [15] conducted a Google search on information about vaccinations using terms like "vaccine", "vaccination", and "immunization." Kata found that for websites that provided information about vaccines, 88% of the claims made were misrepresented. Inaccurate information included, for example, drawing false conclusions from research, or using untruthful sources such as the study by Wakefield et al. [14]. In another study, Kortum et al. [2] examined how effectively high school students in an advanced science class accurately assessed Internet-based health information on vaccines. The students conducted a Google search using terms such as "vaccine safety" and "vaccine danger," and were asked to answer questions related to the accuracy of information on the sites and what they learned about vaccines. Analysis revealed that 67% of the websites gave inaccurate information about vaccines. Furthermore, they found that 59% of the students thought that the sites gave



accurate information and 53% of the students left the exercise with misconceptions about vaccines.

Betsch, Renkewitz, Betsch, and Ulshöfer [16] found that anti-vaccine websites persuade individuals by drawing on their emotions through personal stories. Personal testimonies, such as narratives of parents who felt their children were affected by the use of vaccines, were the most common emotive appeals used on the internet [15]. As Betsch et al. [16] argued, the use of first person narrative enhances credibility. Results from Kortum et al.'s [2] study support this claim: students reported that inclusion of personal stories on the websites were compelling, whereas sites with authoritative web pages with peer-reviewed material were viewed as less compelling. Furthermore, narratives are also known to be easily understood and are considered as highly emotional [12]. Betsch, Ulshofer, Renkewitz, and Betsch [17] looked at online narrative information and its impact on risk judgments. They found that the more emotional the narrative, the greater the perceived risk of vaccination. These results suggest that anecdotal information presented on the Internet regarding vaccines may influence the decisions and views an individual has towards vaccinations by triggering one's emotions.

### **Emotions**

Emotions refer to multifaceted phenomena that involve affective, cognitive, physiological, motivational, and expressive components [18, 19]. For example, a learner may feel anger during learning because the information contradicts his or her opinion. In this case, the rage experienced (affective), discrepancy with one's thought (cognitive), increased heart rate (physiological), impulse to fight the situation (motivation), and lowered slanting eyebrows (expressive) might comprise the learner's feelings of anger. In the field of education, emotions are considered to have profound effects on learners' performance and achievement outcomes [11]. For example, anger has been shown to decrease achievement because it increases task-irrelevant thinking, but the same emotion could also motivate an individual to work harder to overcome obstacles [5, 6]).

One prominent theoretical framework linking emotions to learning processes and outcomes includes Pekrun's [10, 11] control-value theory of achievement emotions. According to Pekrun [10], emotions can be grouped based on their valence (positive and negative), degree of arousal (activating and deactivating), and object focus. Valence refers to whether the emotion experienced is pleasant (positive) or unpleasant (negative), whereas degree of arousal refers to physiological activation. As such, emotions can be categorized as positive activating (e.g., enjoyment, curiosity), positive deactivating (e.g., relief), negative activating (e.g., frustration, confusion), or negative deactivating (e.g., boredom).

In terms of object focus, there are at least four distinct groups of emotions, including achievement emotions, topic emotions, epistemic emotions and social emotions [10, 20]. Given their relevance when learning about controversial or contradictory content [21], and the social nature of the websites examined for this research, epistemic emotions and social emotions were considered. Knowledge-related emotions are known as epistemic emotions (e.g., surprise, curiosity, confusion), and arise when incoming information is inconsistent with prior knowledge, beliefs, or recently processed information [21]. Social emotions refer to emotions that individuals experience in a social context (e.g., envy, jealousy, schadenfreude, anger toward others) [6]. For instance, frustration a learner experiences when attempting to learn two scientific theories that contradict each other is considered an epistemic emotion if the focus is on the cognitive incongruity caused by the contradiction. If other individuals are involved in the experiencing of emotions, such as admiration or hate towards others, the emotion is considered a social emotion.

### ***Emotions and science learning***

In a time when there are complex and dynamic issues surrounding the understanding of science [22], it is important to identify which emotions arise during science learning. In addition, with new advances in technology, the learning environment is not limited to a classroom context; learning through other mediums like the Internet must also be taken into consideration [23]. Given the interactive environment of Web 2.0, it is particularly important to consider the type of emotions, like social emotions, that are experienced during learning in social contexts.

For example, Linnenbrink-Garcia, Rogat and Koskey [24] conducted a study exploring the social emotions that emerge during small-group activities. Of particular interest, they found reciprocity between group interactions and emotions whereby negative group interactions, such as disengagement from the group, were related to negative emotions, such as boredom. However, positive emotions, like excitement, and positive interactions, like engagement promoted by others, were found to interrupt the negative interactions. In the context of the Internet and vaccines, Betsch et al. [16] examined features of narratives that impacted risk judgments on vaccines. They found that high emotional narratives had a greater impact on the perceived risk, which in turn decreased vaccination intentions.

With regard to epistemic emotions, empirical studies have shown that negative epistemic emotions, such as confusion, motivate learners to reduce the incongruity between one's original belief and newly acquired information [25]. To reduce the incongruity, individuals may use resolution strategies, but if the discrepancy is too large, individuals may simply ignore the conflicting information [21]. For example, Trevors, Muis, Pekrun, Sinatra, and Winne [26] explored relations between epistemic emotions and knowledge revision. Of particular relevance, individuals who believed that genetically modified foods were not pure and who stated that dietary purity was an important part of their self-concept experienced more negative emotions than individuals who did not hold these same beliefs. These negative emotions then interfered with knowledge acquisition and revision of individuals' attitudes towards and misconceptions about genetically modified foods. As such, negative epistemic emotions might conflict with learning and decision-making when acquiring new knowledge that is inconsistent with their prior knowledge.

In relation to vaccines, Nyhan, Reifler, Richey, and Freed [27] examined the effectiveness of health messages in reducing misconceptions of the MMR vaccine and its link to autism for parents with children younger than 17 years of age. They found that health narratives that induced fear increased self-reported belief in vaccine safety concerns, such as serious side effects. As previously noted, narratives are the most commonly used tactic in vaccine-related websites (e.g. [15]). However, not much focus has been given on the emotions that individuals voluntarily express on these websites in the context of responding to the content or others' comments. Moreover, to date, research has not considered whether there are differences in expressed emotions with regard to the position that the various websites take on whether or not to vaccinate. That is, it may be the case that websites that provide scientifically accurate information (e.g., Centers for Disease Control) trigger different emotions compared to websites that present misinformation about vaccinations (e.g., anti-vaccination websites that focus on faulty consequences of vaccinations like autism). Of particular concern, negative activating emotions, like anger, may result in individuals not being able to accurately judge the veracity of information presented on misinformed websites or may result in individuals ignoring information on websites that present accurate information if they already hold misconceptions about vaccines. That is, emotions may facilitate or constrain high-quality epistemic cognition [21].

## Epistemic Cognition

Epistemic cognition is defined as thinking about the epistemic characteristics of information, including knowledge claims and their sources, as well the enactment of epistemic strategies and processes for reasoning about that information, its sources and knowledge claims [3]. More broadly, the field of personal epistemology includes the study of individuals' thinking about knowledge and knowing, which has focused primarily on epistemic beliefs, or individuals' beliefs about knowledge and knowing [7, 28].

One prominent theoretical framework within the personal epistemology literature is Hofer and Pintrich's [7] framework. According to Hofer and Pintrich [7], there are two dimensions that reflect the nature of knowledge that vary along a continuum from less constructivist to more constructivist: 1) *certainty of knowledge*, that is, the degree to which one sees knowledge as fixed or evolving, and 2) *simplicity of knowledge*, or the degree to which knowledge is seen as isolated bits and pieces of information or interrelated. The other two dimensions fall under the nature of knowing: 3) *source of knowledge* that ranges from knowledge originating from outside the self, such as authority, to knowledge constructed by the individual through active construction and interaction with the environment, and 4) *justification for knowing*, which ranges from a blind reliance on authorities to justify knowledge claims to individuals evaluating knowledge claims via the use of evidence and by integrating and comparing multiple sources of information.

Epistemic cognition is known to play an important role when dealing with scientific information, especially with contradictory information and how well people integrate prior knowledge and different sources of information to create a coherent representation of the scientific issue [13]. Moreover, reading multiple sources, which is necessary when searching for information on the Internet, requires the skill to locate relevant information as well as the ability to assess the epistemic aspects of the information [29]. That is, individuals must assess the credibility of the source, and determine whether the information provided is validly justified. As such, epistemic cognitive processes across the four dimensions of knowledge and knowing become important when one is faced with a controversial topic via the Internet where there is no guarantee of the quality of information and the readers themselves must evaluate the truthfulness of that information [23].

For example, Mason, Boldrin, and Ariasi [30] captured epistemic cognitive processes using a think aloud protocol as university students searched the Internet for information about dinosaur extinction. They found that all participants spontaneously expressed epistemic cognitive processes that related to the four dimensions of knowledge and knowing. In particular, of all epistemic cognitive processes captured, 67.33% reflected a judgment about the source of knowledge, and 16.44% reflected evaluations with regard to the justification of knowledge. For example, for justification of knowledge, common epistemic cognitive processes that participants used included judgments as to whether information was consistent or not with their own knowledge (66.6%), followed by evaluations of scientific evidence (28.6%). They also noted that almost all of the participants recognized the partisan websites but only a few of the participants substantiated their claim with scientific evidence.

Additionally, several researchers have found that learners who believe knowledge is complex and evolving consider conflicting information more thoroughly and spend more time on reliable sources compared to those who believe that knowledge is simple and certain [9]. These differences in beliefs about knowledge result in better learning gains on the tasks for those with more constructivist beliefs [9]. For instance, Mason, Pluchino, and Ariasi [31] used an eye-tracking device to assess differences in what university students attend to as a function

of their epistemic beliefs. They found that those who believed in complex knowledge fixated more on graphical information on the websites, indicating more critical evaluation of the information.

With regard to source and justification, Yang, Chen, and Tsai [32] explored the judgment criteria used by university students in Taiwan on socio-scientific issues. They found that these students paid attention to various aspect of the content searched, such as sophistication of the arguments, and checked the authoritativeness of the source. Furthermore, the relationship between students' epistemic beliefs and their use of justification strategies indicated that the less they believed in relying solely on authority as the source of knowledge, the more critical their criteria for the evaluation of arguments.

Sinatra and colleagues (e.g., [33-35]) have further argued that when learning about controversial science topics, individuals' attitudes must also be taken into consideration. Eagly and Chaiken [36] define attitude as an evaluation of an object, such as the extent to which one dislikes or likes the attitude object, or the extent to which one favors or disfavors the entity that is evaluated. Based on this notion, Sinatra and Seyranian [35] suggest that when attitudes are based on misconceptions, for instance having an anti-vaccination attitude based on the misconception that vaccines are related to autism, their misconceptions are particularly resistant to change unless attitudes are corrected.

Taken together, results from these studies suggest that in an era where information can be easily searched on the Internet, there is more responsibility on each individual to compare and contrast different web pages and justify their arguments, which becomes a challenge with abundant information on the Internet. It is clear that misinformation places additional burden on individuals when searching for information on the web. Moreover, depending on the attitude one has towards the controversial topic, it may affect the extent to which they change, or not change, the misconceptions that they have. There is a necessity for them to think critically about the content and to filter information accordingly. However, not much is known regarding the quality of sourcing and justification across websites of varying perspectives. Furthermore, contexts are known to matter in regard to the relation between epistemic cognition and the Internet [37]. That is, given cultural differences in emotional expression and epistemic cognition, cultural differences need to be taken into consideration [9].

### **Cultural Aspects**

Both emotion and epistemic cognition are found in every culture; however, the process and their contents, as well as the extent to which they are present in each culture differ [8, 11]. In this section, a brief overview of possible cultural differences and aspects of their universality are discussed in relation to emotive and epistemic cognitive components.

### ***Emotions***

With regard to emotions, Pekrun and Perry [11] proposed that there is universality in terms of functional mechanisms. For example, principles linking emotions with their antecedents and outcomes are proposed to be universal. However, the frequency of the occurrence, contents and process of the emotion including its intensity varies depending on one's culture [11]. Research has shown that European Americans show more positive emotions than negative ones compared to Chinese Americans when discussing areas of conflict with their partners [38]. This is consistent with other research that states Western cultures express more positive emotions to differentiate themselves positively from others [39]. On the other hand, researchers have shown that the opposite is also true. Studies in educational contexts, comparing Germany and China, have found that Chinese students experienced higher levels of

enjoyment, pride and shame towards mathematics, whereas German students experienced higher levels of anger [40]. Individuals from collectivistic cultures, such as China, are known to display lower frequency of intense emotions such as anger depending on the severity of the problem, either academic or social [41]. These differences in emotional experiences and expressiveness might be important to consider in relation to Web 2.0, which may be traced via the comments that individuals leave on websites about vaccines.

### ***Epistemic cognition***

Personal epistemology is socially constructed [42]. Cross-cultural studies focusing on dimensions of epistemic cognition have found that Asian cultures show respect and obedience towards authority figures [43]. In North America, critical thinking is valued and is a common objective in Western education [44]. Therefore, thinking for oneself and making independent choices may be considered important in Western cultures, whereas in Asian cultures, authoritativeness might play an important role when defining their beliefs about knowledge and knowing. For example, Hofer [45] found that the structure of the four dimensions of epistemic cognition (certainty, simplicity, source, and justification) was supported cross-culturally but there were also cultural differences among US and Japanese students. Result indicated that US students were more constructivist in their beliefs across all four dimensions. Japanese students, on the other, were found to show respect to authority figures and held a stronger belief in the certainty and simplicity of knowledge.

Strømsø, Bråten, Anmarkrud, and Ferguson [46] also found cultural differences in individuals' epistemic cognition, specifically in the justification of knowledge. They contrasted ethnic majority and ethnic minority high school students in Norway. Ethnic minority students consisted of families where neither parent spoke Norwegian as their first language, and were from Europe, Asia and Slavic-speaking communities, whereas ethnic majority students were native Norwegian speakers. In the domain of scientific learning and understanding, ethnic minority students believed knowledge claims can be justified by appealing to scientific authorities, which facilitated learning and comprehension while no such comparison was found among ethnic majority students. These sharp contrasts are, however, decreased when the cultures are similar [8]. Given these cultural differences, we questioned whether the content on the various websites in addition to individuals' comments would vary as a function of culture across the four epistemic dimensions. We describe our specific research questions and hypotheses next.

### **Research Questions and Hypotheses**

The objectives of this research were to analyze various vaccination websites in terms of the quality of the claims made about vaccinations as a function of perspective (i.e., pro vaccine, anti-vaccine, or neutral) and culture (Western versus Eastern). Websites from cultures that vary in emotional expression by country were chosen, which were the United States and Canada, Japan and Chile [47]. In addition, we explored whether individuals' expressed emotions and epistemic cognition about the content varied as a function of website perspective, attitude toward vaccinations, and culture.

For each website, we first examined the emotions prevalent in each of the websites across cultures as a function of website attitude (pro- or anti-vaccine). Our research questions included the following: (1) Are there cultural differences in the extent to which individuals express positive or negative emotions about controversial topics like vaccinations? For collectivistic cultures, given that intense emotions like anger are expressed less often compared to individualistic cultures [41], we hypothesized that there would be less frequency of anger reported in Japan and Chile (collectivistic cultures [39, 48]) compared to the US and

Canada. For positive emotions, since conflicting results have been reported in previous research [38-40], we do not offer any specific research hypotheses.

We also asked: (2) Are there cultural differences in the extent to which individuals express negative or positive emotions in response to controversial arguments on vaccinations as a function of attitude (pro or con vaccinations)? For emotions and attitudes, we hypothesize that negative emotions, such as anger, might be more prevalent in websites that oppose individuals' attitudes, whereas positive emotions, such as gratitude, might be expressed more often in websites that support their attitudes.

For epistemic cognition, our research question was as follows: (3) Are there differences in the quality of arguments, particularly the sourcing and justification strategies used, on the websites as a function of attitude (pro versus con vaccination) and culture? We examined this question from two perspectives: one from the website itself, and one from individuals' comments provided on the website. For the websites, given that the majority of anti-vaccination websites rely on personal stories rather than scientifically valid information [2], we hypothesized that the quality of argumentation and justification strategies used for these websites would be poor compared to websites that provided pro-vaccine content. Moreover, since collectivistic cultures respect and value authority [43][45], we hypothesized more reliance on authority for collectivist culture-based websites compared to the individualistic culture-based websites.

For individuals, we took into consideration their attitudes (pro, con or neutral) towards vaccinations to assess whether there were differences in quality of epistemic cognition as a function of culture and website perspective. Due to the exploratory nature of this research, we have no specific hypotheses with regard to quality of individuals' epistemic cognition as a function of attitude and website perspective. We did, however, hypothesize that individuals from collectivist cultures would rely more on authority compared to individuals from individualistic cultures.

The arguments used in the comments of websites were considered from two contrasting cultures: United States and Canada compared to Japan and Chile. Canadian and American cultures share many historical and cultural similarities [49], therefore analysis for Canadian and American websites were combined into one group as North America. Japan and Chile, which are categorized as collectivistic or interdependent cultures, were considered separately as the degree of collectivism is known to differ between Asian and South American culture [48].

## METHODOLOGY

### Materials

We chose websites from cultures that vary in emotional expression by country: United States and Canada, Japan and Chile [47]. Keywords 'vaccines' and 'child' were entered into Google search, a search engine commonly used in past vaccine-related research (e.g. [2, 15, 50]). Popular parental magazine websites were chosen based on whether they presented one or both sides of the debate. Sites were considered anti-vaccine if they advocated refusal of vaccines and/or emphasized vaccine risk [50]. Those that advocated vaccines were categorized as pro-vaccines. Furthermore, one website that included both anti and pro-vaccine views was included for analysis. Since the purpose of the research was to focus on people's reactions to the content of the webpage, it was a requisite to have a section in which people could leave comments. Highest number of shares and visits were also used as criteria in choosing the websites. The websites used in this research were as follows:

1. The top 6 reasons why parents are choosing not to vaccinate their kids [51] (Canada; balanced view point).
2. 6 reasons to say no to vaccinations [52] (USA; anti-vaccines).
3. 10 vaccine myths busted [53] (USA; pro-vaccines).
4. Sekai no uragawa news [54] (News from the other side of the world; Japanese; anti-vaccines).
5. Are you against or pro-vaccines? [55] (Japanese; pro-vaccines).
6. Vacunas infantiles: peligrosas e innecesarias [56] (Infant vaccines: dangerous and unnecessary; Chilean; anti-vaccines).
7. Paremos la locura anti-vacunación infantil [57] (Let's stop the insanity of infant anti-vaccination; Chilean; pro-vaccines).

The comments that viewers of the website wrote were content analyzed for the emotions that were expressed in reaction to the website itself or in reaction to other comments that people wrote. The comments to be analyzed were selected on the same day, March 7, 2016, for all the above websites to avoid any social or political news to affect the standpoint mentioned in the comments. Furthermore, content of the webpage itself was analyzed for quality of the sourcing information and justification for the positions taken.

### **Coding for Emotions**

Individuals' comments were segmented and then analyzed using a coding scheme that was created for this research. Pekrun's control-value theory of achievement emotions (e.g. [10, 6, 11]), and instruments designed to measure emotions (e.g., Achievement Emotions Questionnaire [5]; Epistemically-Related Emotions Survey [58]) were used as a guide to create the coding scheme, with a specific focus on social and epistemic emotions. Social emotions were coded as emotions that emerged in relation to the interactive nature in the social medium, such as emotions that arise in relation to other people's comments, to the article, or to society in general (for a full list of emotions, their definitions and examples, see Table 1).

Similarly, individuals' reactions to the web content or to other individuals' posts were coded for epistemic emotions. All epistemic emotions were considered, however, the only emotions that were explicitly stated included surprise, confusion, curiosity (which are always epistemic in nature, see [21]), and enjoyment (see Table 2). Once the coding scheme was established, a research assistant unfamiliar with the objective of the research was first trained on the coding scheme, and then coded 10% of all webpage comments independently. Inter-rater reliability was established at 97.4% and disagreements were resolved through discussion.

### **Coding the Epistemic Quality of Websites**

For each website, content was first segmented and then coded for quality of the sources used (i.e., credibility of source) and quality of the justifications made for each claim (i.e., personal anecdote or high-quality scientific evidence). Credibility was coded as strong or weak depending on the source provided. Sinatra et al. [13] have suggested that considering knowledge as absolute and residing only in an external source is a less constructivist view. However, relying on experts as testimony of others with regard to scientific claims is a valid and reliable strategy [59]. As such, sources that included published peer-reviewed articles in reliable journals, and quotes from experts were categorized as strong, or valid and reliable sources, whereas referring to newspaper articles without scientific evidence, sourcing websites such as Wikipedia, having no link to outer resources or no support were categorized as weak, or invalid and unreliable sources (see Table 3).

Moreover, justification of the claim was also considered, categorized as valid and reliable if from an authority (i.e., medical experts, peer-reviewed articles), or invalid and unreliable if from personal anecdotal narratives or if no support for justification was provided. Additionally, for each source and claim made, quality of source (i.e., highly respected journal, or not) and content of the original source (i.e., original article or validity of quote from expert) was checked to ensure accuracy of each claim made (i.e., whether source was correctly referenced or interpreted). Two raters coded two of the seven websites to establish inter-rater reliability, which was established at 91.0%. Disagreements were resolved through discussion.

### **Coding for Epistemic Cognition from Individuals' Comments**

To consider individuals' epistemic cognition, their comments were considered. Using a previously developed coding scheme [30], comments provided by one individual was considered as a whole and was given points on each of the four epistemic dimensions: certainty, simplicity, source, and justification. Points were distributed depending on the level of sophistication of each comment. The more sophisticated the comment, the more points were awarded. More specifically, up to three points were given for each of the four dimensions. For example, for certainty of knowledge, one point was given for comments that referred to knowledge as certain, two points were given if the participants referred to knowledge as being uncertain, and three points if they considered certainty or uncertainty of knowledge as depending on content and context (for the remaining dimensions and examples see Table 4). Epistemic cognition was operationalized using this coding scheme wherein individuals who earned higher points by using some sort of scientific evidence to justify their comments, for example, were considered more constructivist in their epistemic cognition.

When the comments were too short and could not be evaluated across any of the dimensions due to lack of information, 0 points were assigned. Also, if individuals failed to mention one of the dimensions in their entire comment, 0 points were given for each dimension that was not mentioned. For each individual who provided comments, points for each of their comments were then summed to create a total score. Additionally, individuals' attitude towards vaccination were also considered if they were explicitly stated: individuals were coded as anti-vaccine, pro-vaccine or having a neutral or balanced view. If the comments were too short to identify their views, they were categorized as no view. A second rater coded 10% of the comments to establish inter-rater reliability, which was acceptable at 89%. Disagreements were resolved through discussion.

### **Data Analyses**

To assess the frequency with which each emotion occurred in the comments posted on each website, each coded instance of an emotion was considered as a count of one. Instances were then summed for each emotion to calculate the total frequency. Percentage was then calculated by dividing the number of times a certain emotion appeared by the total number of emotions coded. To assess the quality of arguments used in the websites and across cultures, total scores based on evaluation of sources and processes of justification were calculated for the content of each webpage. Individuals also received a total score based on the quality of their comments as a function of the four epistemic dimensions. For the epistemic quality of each webpage, the credibility of the source, either weak or strong, was counted and frequency percentage was calculated by dividing the number of weak (or strong) claims appearing by the total number of claims coded. For justification, from authority, personal/anecdotal or no support, points were also summed and frequency percentage was calculated.



## RESULTS

### Individuals' Emotions

To address the research question of whether there were any cultural differences in the extent to which individuals expressed negative or positive emotions in response to vaccines, we explored percentage of emotions across the webpages using a chi-square goodness of fit test (conducted only for those with expected values greater than 5%). The frequency and percentages of social and epistemic emotions per webpage are reported in Tables 5.1 to 5.3. For these analyses, only the pro-attitude and con-attitude websites were taken into consideration. For anger, chi-square analyses revealed a significant difference across cultures,  $\chi^2 = 37.47$ ,  $p < .001$ . Specifically, individuals posting on the Japanese websites expressed significantly more anger compared to the North American or Chilean websites. For anxiety, chi-square analyses revealed a significant difference across cultures,  $\chi^2 = 9.83$ ,  $p = .007$ . Individuals posting on the Chilean websites expressed significantly more anxiety compared to those in North American or Japan. Finally, for gratitude, chi-square analyses revealed a significant difference across cultures,  $\chi^2 = 26.16$ ,  $p < .001$ . Similar to the pattern found for anxiety, more gratitude was expressed on the Chilean websites compared to the North American and Japanese websites.

For the second research question, we probed cultural differences reported above by assessing whether different patterns of emotions arose as a function of attitudes towards vaccinations using a chi-square test for independence. For anger, results revealed a significant relationship between culture and attitude,  $\chi^2 = 10.20$ ,  $p = .006$ , wherein more anger was expressed on the Japanese pro-vaccination website (100%) compared to any other website. Interestingly, for the North American website that included a balanced view, anger (52.11%) was also the most prominent emotion. In contrast, for the anti-vaccine North American website, anger occurred less frequently (16.67%), whereas gratitude (30%) was expressed the most. This trend was similar to the anti-vaccine Japanese website with gratitude (14.81%), followed by anger and curiosity (11.11%) as the most frequent emotions.

For gratitude more specifically, results revealed a significant relationship between culture and attitude,  $\chi^2 = 28.79$ ,  $p < .00001$ , wherein gratitude was expressed more on the Chilean pro-vaccine website (38%) compared to the anti-vaccine website (20.59%). In contrast, gratitude was expressed more for the anti-vaccine Japanese (14.81%) and North American (30%) websites compared to the pro-vaccine websites (0, and 6.67%, respectively). With regard to epistemic emotions, curiosity was present across most of the websites except for the pro-vaccine Japanese website. In addition, for all the North American websites, enjoyment was expressed, though to a lesser extent (ranging from 1.41%-6.67%). Confusion was mentioned for the website that had balanced view (5.63%) and for the anti-vaccination webpage (3.33%).

### The Quality of Source and Justification of the Websites' Contents

To address the third research question of whether there were differences in source and justification strategies used across the different websites as a function of website perspective (pro versus anti-vaccine), the quality of the arguments was considered. As presented in Table 6, North American anti-vaccine websites used invalid and unreliable arguments 100% of the time, whereas for the pro-vaccine website, of the 34 claims made, strong valid and reliable arguments were used 52.94% of the time and invalid and unreliable arguments were used 47.06% of the time. A similar trend was present for the Chilean website; for the anti-vaccine website, invalid and unreliable arguments were used 100% of the time, and for the pro-vaccine webpage, valid and reliable arguments were used 100% of the time. In contrast, Japanese anti- and pro-vaccine websites showed a different trend. Of the 14 claims made on the anti-vaccine website, 35.71% were invalid and unreliable arguments, whereas 64.29% were valid and

reliable. In contrast, the Japanese pro-vaccine website used invalid and unreliable arguments all of the time (100%). Finally, of the 107 claims made, the balanced North American website used valid and reliable arguments 84.11% of the time.

Content analyses revealed that websites that had balanced views relied on evidence from peer-reviewed journal articles. Pro-vaccination websites sourced medical experts and justified claims using quotes from experts and journal citations. In contrast, anti-vaccination websites relied on sources from personal experience, and claims were justified using sources such as Wikipedia, news articles or fraudulent research.

For example, in the pro-vaccine North American website, it was mentioned:

*"The ability of immunizations to prevent the spread of infection depends on having a certain number of children immunized," says Thomas Saari, M.D., professor of pediatrics at the University of Wisconsin Medical School in Madison. "Scientists refer to this as 'herd immunity.'" (from 10 Vaccine Myths-Busted [53])*

This was categorized as a valid and reliable claim since the claim was accurate and used testimony from a medical doctor to support the claim.

On the anti-vaccine North American website, links to other resources were provided, but most of them were commercial websites or other unreliable resources such as Wikipedia. For instance, the following claim had a link that led to an unreliable commercial website:

*"Vaccinated children are found to be more chronically ill than unvaccinated children with rates for autism, ear infections, ADHD, asthma and allergies as much as 30% higher than unvaxed children." (From Six Reasons to Say NO to Vaccination [52])*

In contrast, the North American balanced view webpage used a good sourcing strategy by supporting claims with peer-reviewed journals, and citing direct quotes from the original journals with links to those sources. For example, one website stated:

*In March of 2013, the Journal of Pediatrics published a study titled "Increasing exposure to Antibody-Stimulating Proteins and Polysaccharides (antigens) in Vaccines is Not Associated with Risk of Autism." The study found that vaccines, during the first couple of years of life are not related to the risk of developing an ASD diagnosis. (From The Top Six Reasons Why Parents are Not Vaccinating their Kids [51])*

With regard to the justification of the claims made, authoritativeness (i.e., experts) was used for the North American pro-vaccine website (100%; Table 7), and Chilean pro-vaccine website (100%). For example, in the North American pro-vaccine website, doctors with backgrounds in medicine and professors of pediatrics were quoted:

*University of Rochester researchers confirmed that when they compared mercury concentrations in the urine, blood and stools of children who got vaccines containing thimerosal with those of kids who received only thimerosal-free vaccines. All the children had mercury levels well below the EPA's most stringent public safety limits. Even if your baby received a vaccine that contained thimerosal, the overwhelming majority of data support a lack of association between the substance and neurological problems, says Margaret Rennels, M.D., the chair of the committee on infectious diseases of the AAP. (From 10 Vaccine Myths-Busted [53])*

In the Chilean pro-vaccine website, peer-reviewed journals were often cited and claims from doctors were used for justification.

For the North American anti-vaccination website, anecdotal evidence was the only form of justification used (100%). Support for claims was often in the form of their own stories or from their family. For example:

*Interestingly, my pediatrician at the time (who was a lifelong friend of our family) had highly recommended that this vaccine be given to my newborn baby at the time. I trusted my instincts and said no to the shot – am I glad I did! My pediatrician (remember, lifelong family friend) subsequently dropped me as a patient. Guess he wasn't such a friend after all! (From Six Reasons to Say NO to Vaccination [52])*

No justification was provided on the Japanese pro-vaccine and Chilean anti-vaccine webpages. Authority was used 88.06% of the time for the balanced North American webpage, with claims justified by vaccine- and medically-related peer-reviewed journal articles:

*Regarding the HPV vaccine, a new review was just published in the journal Autoimmunity Reviews titled, "On the relationship between human papilloma virus vaccine and autoimmune disease." They concluded that: "The decision to vaccinate with HPV vaccine is a personal decision, not one that must be made for public health. HPV is not a lethal disease in 95% of the infections; and the other 5% are detectable and treatable in the precancerous stage." (From The Top Six Reasons Why Parents are Not Vaccinating their Kids [51])*

Similarly, the Japanese anti-vaccine webpage used justification from authority 80% of the time, using medical expert testimony and deriving data from reliable research, but also used personal justification 20% of the time.

### **Individuals' Epistemic Cognition**

To address the question of whether individuals' epistemic cognition differed as a function of website perspective, individual attitude toward vaccinations, and culture, an ANOVA was performed with culture, website perspective and individuals' attitudes as independent variables and scores on each of the dimensions of epistemic cognition as the outcome variable. Levene's test for homogeneity of variance was significant  $F = 3.618, p < .001$ , as such reported results included the adjusted means to correct for this. The means and standard deviations are reported in Table 8.

ANOVAs were conducted on each of the four dimensions independently. For certainty of knowledge, there was a significant main effect of attitude ( $F(3, 68) = 23.28, p < .001, \eta^2 = .44$ ) and a significant interaction between culture and website ( $F(2, 68) = 3.71, p = .03, \eta^2 = .05$ ). The simple main effect analysis showed a significant simple main effect of anti-vaccine website and culture as a function of certainty of knowledge ( $F(2, 68) = 11.84, p < .001, \eta_p^2 = .258$ ). More specifically, pairwise comparisons with an LSD correction revealed that the certainty scores were higher in the pro-vaccine North American websites compared to North American anti-vaccine websites (see Figure 1). The balanced North American website had higher certainty scores than pro-vaccine website or the anti-vaccine North American website. The Japanese anti-vaccine website was found to have higher certainty scores compared to the Japanese pro-vaccine website. Furthermore, when comparing websites within each culture, there was a significant simple main effect of North American websites ( $F(2, 68) = 9.30, p < .001, \eta_p^2 = .215$ ) and Japanese websites ( $F(1, 68) = 4.74, p = .033, \eta_p^2 = .065$ ) with certainty of knowledge as the outcome. More specifically, Chilean pro-vaccine websites had higher certainty scores than North American pro-vaccine websites. Additionally, Chilean anti-vaccine websites had higher certainty scores than North American anti-vaccine websites. Japanese anti-vaccine website had higher certainty scores than the North American anti-vaccine website.

For simplicity of knowledge, there was a significant main effect of culture ( $F(2, 67) = 9.03, p < .001, \eta^2 = .15$ ), and attitude ( $F(3, 67) = 4.54, p < .001, \eta^2 = .11$ ). There was also a significant interaction between culture and attitude ( $F(4, 67) = 3.40, p < .001, \eta^2 = .11$ ). Since the interaction was significant, a simple main effect analysis was conducted. There was a significant simple main effect of pro-vaccine attitude and culture as a function of simplicity of knowledge ( $F(2, 67) = 9.71, p < .001, \eta_p^2 = .225$ ). More specifically, pairwise comparisons with an LSD correction revealed that the pro-vaccine attitude holders in North American websites had higher simplicity of knowledge scores compared to those with pro-vaccine attitude holders in Japanese websites (see Figure 2). Pro-vaccine attitude in Chilean websites were found to have higher simplicity scores than Japanese pro-vaccine attitude counterparts. Furthermore, when comparing attitudes within each culture, there was a significant simple main effect of North American ( $F(3, 67) = 17.40, p < .001, \eta_p^2 = .438$ ) and Japanese websites ( $F(2, 67) = 4.64, p = .015, \eta_p^2 = .118$ ) and their attitudes on the simplicity of knowledge. Those who did not hold a view in the North American website had significantly lower simplicity of knowledge scores compared to those with a pro-, anti-, or balanced attitude. Simplicity of knowledge was also higher for pro-vaccine attitude holders than their anti-vaccine counterparts in North America. In contrast, pro-vaccine attitude holders on Japanese websites had significantly lower simplicity of knowledge scores than anti-vaccine counterparts. Balanced view holders on Japanese websites, on the other, had significantly higher simplicity of knowledge scores than those with anti-vaccine views, and anti-vaccine attitude holders had higher scores than no view holders.

As for source of knowledge, there was a significant main effect of culture ( $F(2, 68) = 6.75, p < .001, \eta^2 = .12$ ), and attitude ( $F(3, 68) = 3.21, p = .03, \eta^2 = .09$ ) but there was no significant interaction. The post hoc analyses with a LSD correction revealed no significant differences among the three culture but there was a significant difference between no view holders and pro-vaccine ( $p < .001$ ), anti-vaccine ( $p < .001$ ) and balanced-view holders ( $p < .001$ ), in which no view holders held a significantly higher source of knowledge scores than pro-, anti- and balanced view holders. For justification of knowledge, there was a significant main effect of culture ( $F(2, 68) = 6.33, p < .001, \eta^2 = .12$ ), and attitude ( $F(3, 68) = 4.64, p = .01, \eta^2 = .13$ ) but there was no interaction. The post hoc analyses with a LSD correction showed significant difference between North America and Chilean culture ( $p = .03$ ) with Chile holding a significantly higher justification of knowledge scores than North America. There was also a significant difference between no view holders and pro-vaccine ( $p < .001$ ), anti-vaccine ( $p < .001$ ), and balanced-view holders ( $p < .001$ ), in which no view holders held a significantly higher source of knowledge scores than pro-, anti- and balanced view holders. In addition, there was a significant difference among balanced and anti-vaccine view ( $p = .04$ ) in which those with balanced attitude had a higher justification score than those with anti-vaccine attitudes.

## DISCUSSION

The amount of misinformation widely spread on the Internet requires individuals to think critically about the sources used and justifications provided and necessitates an understanding of the role that emotions play in relation to controversial topics. The current research sought to examine individuals' emotions expressed while responding to content or other individuals' comments on websites about vaccines, and to investigate differences in individuals' epistemic cognition and the quality of epistemic strategies used across various websites. Cross-cultural aspects were taken into consideration, along with website perspective and individuals' attitudes toward vaccinations.

## **Individuals' Emotions**

For the first research question, we explored cultural differences in the extent to which individuals express negative and positive emotions in response to controversial arguments. It was found that anger was most prominent in Japanese websites, whereas anxiety and gratitude was most expressed in Chilean websites. For the second research question, differences across cultures were probed as a function of website perspective (pro- or anti-vaccine). Results revealed that anger was most prominent in Japanese pro-vaccination website compared to any other websites. Gratitude was most often expressed in Chilean pro-vaccine website, compared to Chilean anti-vaccine website. However, in Japanese and North American websites, the opposite was true, in which gratitude was expressed most often in North American and Japanese anti-vaccine websites, compared to their pro-vaccine websites. As previous research has shown, anxiety can be more intense for individuals when they hold several misconceptions about a particular topic, like vaccinations, compared to when individuals hold few misconceptions [60]. Therefore, for the Chilean anti-vaccine website, this might imply that individuals accessing the anti-vaccine webpage held stronger misconceptions towards the topic.

Positive emotions are known to promote engagement and conceptual change whereas negative emotions are related to a lack of engagement and resistance to change [13]. Given that gratitude was the most expressed emotion on the anti-vaccine websites for North America and Japan, it may be the case that positive emotions under this condition supported the lack of engagement with the conflicting information, which served to maintain misconceptions. This speaks to the larger issue of misinformation that plagues the Internet – it is likely the case that individuals search for information that further supports their misconceptions or attitudes, fostering positive emotions that increase disengagement with conflicting information, and, subsequently strengthening misconceptions.

Equally troubling was the anger that was expressed on the balanced (North America) and pro-vaccine (Japanese) websites. The experience of anger likely constrained any conceptual change, and may have resulted in the backfire effect given the negative attitudes from those who expressed their anger [26]. In situations that require conceptual change, one key aspect for the change process is to overcome strong emotions but also to change attitudes toward the object of change [35]. In other words, emotion regulation becomes a key aspect but so does attitudinal change. As such, if the goal is to change individuals' misconceptions about vaccinations, it may be necessary to include a positive mood induction element into websites with accurate information in addition to text that attempts to change attitudes towards vaccinations to help foster conceptual change. Future research should explore this possibility as an effective means to foster conceptual and attitudinal change about an emotionally-driven and highly controversial topic.

## **The Epistemic Quality of Websites' Contents**

For the third research question, we explored differences in quality of arguments as function of attitude and culture across the various websites. It was hypothesized that the anti-vaccine websites would use less valid arguments compared to the pro-vaccine websites. In terms of the cultural aspect, it was hypothesized that reliance on authority would be more prevalent in collectivistic cultures. Analysis of the credibility of sources and justification strategies used across the various websites revealed that the North American balanced view webpage used strong and reliable arguments by citing authority figures to justify the claims made. Moreover, North American pro-vaccine websites primarily used reliable and valid arguments with justification by authority, but did include some unreliable and invalid claims. The Chilean pro-vaccine website presented reliable arguments and used authority to justify claims made. This

trend was different to that of the Japanese pro-vaccine website, which used unreliable arguments with no justification. The North American anti-vaccine website, on the other, used weak and unreliable arguments most of the time with support provided mostly from anecdotes. This was similar to the Chilean anti-vaccine website, which used weak and invalid arguments most of the time with no form of justification provided. This is in contrast to the Japanese anti-vaccine webpage, which mainly used strong, valid and reliable arguments with justification by authority. Therefore, the hypothesis of whether the quality of argumentation and justification strategies used for anti-vaccine websites would be poor compared to websites that provided pro-vaccine content was supported for North American and Chilean anti-vaccine websites but not for the Japanese anti-vaccine website. Indeed, the use of personal narratives was widespread for the majority of the anti-vaccination websites.

Narrative stories, as used in the North American anti-vaccine webpage, have the potential of appealing to emotion [12, 17]. However, this may not be true for the Japanese anti-vaccination website, as the source used was mainly derived from authority. Individuals in such a culture are expected to show respect and obedience to elderly and authority figures [43]. Therefore, it might be that differences in source of justification strategies used in North American compared to Japanese webpages were because in North America, emotive appeals might work better whereas in Japan, authority is a more convincing tool used to convey anti-vaccine messages. It is important to note, however, that Yang et al. [32] found that in Taiwan, a collectivistic culture like Japan, individuals' epistemic beliefs mattered in terms of their belief in authority, and that the more individuals examined the content for justification by authority, the less they believed in justification by authority. Future research may need to consider individuals' epistemic beliefs in relation to cultural differences and the effectiveness of emotive versus authority-justified anti-vaccine messages.

### **Individuals' Epistemic Cognition and Attitudes**

For the fourth research question, individuals' attitudes towards vaccines, culture and website were examined to explore differences in quality of epistemic cognition. There was no main effect of website found in relation to each of the four aspects of individuals' epistemic cognition. However, there was a significant interaction between culture and website for the certainty of knowledge. More specifically, the arguments individuals used on the North American pro-vaccine website reflected the belief that knowledge certainty depends on context, whereas comments on the anti-vaccine North American website were more reflective of the belief that knowledge is certain, regardless of context. On the other hand, arguments presented by individuals on the Japanese anti-vaccine website were found to be more constructivist, believing knowledge is tentative and evolving compared to those on the pro-vaccine websites. Interestingly, the Japanese anti-vaccine website was found to have comments with higher scores on certainty of knowledge, implying these individuals believed knowledge tentativeness as depending on context, compared to the anti-vaccine North American website counterparts. However, there was no significant difference among the pro-vaccine websites for these two countries. As previous research has shown, those who believe knowledge is actively constructed are known to have better searching strategies while using the Internet and spend more time on reliable resources [61, 31].

It may be that in North America, individuals with more constructivist views about vaccine knowledge search for more reliable information, which may lead them more often to pro-vaccine websites given their higher quality in general. In contrast, in Japan, the opposite trend was found, which is counter to previous research. For example, Hofer [45] compared American and Japanese students' epistemic cognition and found that North American students held more constructivist beliefs about knowledge and knowing than their Japanese counterparts, who

were more likely to view knowledge as simple and certain. In the current research, differences may have occurred due to how the epistemic dimensions were coded. For the certainty of knowledge, highest points were given if they mentioned that certainty or uncertainty depends on context. Japanese individuals are known to endorse harmony with others, and thus have the tendency to keep things ambiguous [39]. Therefore, the wording 'depends on context' used in the coding scheme might have represented the ambiguity that Japanese tend to favor.

For the simplicity of knowledge, results revealed that those with pro-vaccine attitudes had more constructivist views than those holding anti-vaccine views and no views towards vaccines. The simple main effect analysis of culture and attitude on epistemic cognition showed that pro-vaccine attitude holders in North America and Chile used better constructivist arguments than those from Japan, but there were no significant differences among North America and Chile. This was also the case for the simplicity of knowledge, implying that those with pro-vaccine attitudes in North America and Chile saw knowledge as interrelated, whereas in Japan, knowledge was seen as unrelated. Furthermore, in North America, pro-vaccine attitudes were related to higher quality epistemic cognition than anti-vaccine holders. This was the opposite with Japanese individuals, wherein anti-vaccine viewers held more constructivist approaches to knowledge about vaccines than those with pro-vaccines and balanced views.

This result may be related to the fact that arguments used on Japanese websites were in direct contrast to those from their North American and Chilean counterparts. That is, pro-vaccine Japanese websites used weak, invalid arguments with no justifications, whereas the pro-vaccine North American and Chilean websites used strong, valid arguments with justification by authority. In other words, Japanese authors of the websites may not be using constructivist arguments, as measured by the four dimensions of epistemic cognition, in ways similar to those used by North American and Chilean website authors. As Hofer [45] pointed out, nearly all of the frameworks for personal epistemology have been derived from the United States, emphasizing the need to consider whether it is an artifact of Western education or not. Research in argumentative writing has found that Japanese tend to avoid direct confrontation when writing, not stating one's ideas explicitly so the readers inductively draw their own conclusions and thoughts [62]. Japanese students' critical thinking skills are also often criticized for not being fostered in the current educational system in Japan [62], and they generally lack experience in argumentative writing [63]. These differences in language structure, as well as in the education system, might have accounted for differences in epistemic cognition. More cross-cultural research is needed to understand the universality of frameworks of epistemic cognition.

Another reason for the opposite findings in Japanese websites could be related to how their motivation towards the topic affected their processing of information. In other words, motivated reasoning [64], or how individuals' motivations affect their judgements by biasing the information they access and the strategies they use to evaluate the controversial information [13] might have accounted for the results in Japanese anti-vaccine viewers holding more constructivist approaches to knowledge about vaccines. It might be the case that since Japanese individuals with anti-vaccine views have the motivation to withhold their anti-vaccine belief, they used stronger arguments to convince others that their original belief is true. The current research was not able to measure the motivational aspect of each individual, which should be considered in future research.

Finally, it is important to note that the differences in culture identified here may be due to the websites that were chosen for this research. Since this research only focused on one webpage for each perspective per country (i.e., the most popular), it would be crucial to analyze

additional webpages, perhaps with different controversial topics, to observe if the cultural differences found in this research are generalizable.

## CONCLUSION

Access to information on the Internet is limitless. In a world where Web 2.0 is becoming more common, it is impossible to control the type of information that individuals can access. Individuals must be taught to judge the veracity of information and assess the source quality to ensure misconceptions are not developed or strengthened. Given that individuals often rely on the Internet to make health-related decisions, this is of critical importance. Results of this current research provide insight into the importance of debate perspective in triggering specific emotions and shed light into possible cultural differences in emotional expression, arguments used on the websites, and the attitudes individuals have about controversial health issues.

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**Table 1**  
**Definitions of Social Emotions and Examples**

Social Emotion	Definition	Examples
Anger	Anger to others' thoughts, anger directed to other people	"it sickens me", "stupid ignorant fools", "stupid is as stupid does", "this is absurd" Educate yourself"
Sadness	Sad feelings to other people, other people's thoughts	"sad that..." "it saddens me", "it's really sad that..."
Worry	Feeling worried for oneself as a result of others' behavior, reaction	"Tell me this isn't all related..."
Anxiety	Anxiety about information provided by others or anxiety about group behavior, or about group performance.	"Does alarm me", "I'm so nervous"
Gratitude	Feelings of appreciation for other people's behavior and/or action.	"I appreciate..." "thanks for the article", "I'm glad", "thank you so much for saying this..."
Fear	Feeling fear as a result of information/action from others	"The part that scares me..." "It scares me", "it's scary..."
Doubt	Feeling doubt as a result of information/action of others	"I doubt the majority of Anti-Vaxx'rs are against vaccination", "In my heart I doubt vaccinating"
Hope	To want something to happen or to be true and think it could happen or become true	"I think it's fair to say that we are all looking forward"
Encouragement	Giving others support	"Please keep talking because you are so unselfish by doing this and you are helping others" "...give you the courage to continue telling the TRUTH that many are not hearing"
Regret	Disappointment to things that has already happened	"I would never have done it"
Shock	Feeling shock as a result of information/action of others	"horribly shocked to see that SEVERAL DOZENS of girls vaccinated against HPV fainted"
Disgust	Feeling profound disapproval as a result of information/action of others	"I have no respect for people who use science as club"
Annoyed	Feeling irritated as a result of information/action of others	"one point that really bugs me"
Painful	Feeling pain as a result of information/action of others	"I'm in deep pain for the choice I made"

**Table 2**  
**Definitions of Epistemic Emotions and Examples**

Epistemic Emotion	Definition	Examples
Surprise	Surprised about incoming information.	"Big surprise" "Wow! I didn't know that." "Hm, I didn't expect that."
Confusion	Confused about the information given.	"I don't get it." "I don't understand." "I'm confused." "I'm not sure why", "I really don't know what to think about this"
Curiosity	Curious to learn or know more about something.	"I wonder..." "I'm interested in knowing..." "maybe..." "I would be curious", "Where did you get the information?"
Enjoyment	Enjoying success in understanding/learning.	"It brings me joy knowing"
Frustration	Frustrated about not understanding or learning.	"Ugh, I don't get this!" "Well, this just makes me angry."

**Table 3**  
**Definition of Epistemic Cognition of the Webpage and Examples**

Credibility and Justification of Support	Definition (Source used)	Examples
Weak/Invalid and Unreliable	Wikipedia Magazines Anecdotal No support	"My own Father (retired) is a MD as is my brother and my cousin (who was a pediatrician, now deceased). "My husband's mother is a nurse. "
Strong/Valid and Reliable	Published articles Expert source Scientific support	"It's the natural evolution of a vaccine program," says Paul Offit, M.D., chief of infectious diseases and director of the Vaccine Education Center at the Children's Hospital of Philadelphia. "

**Table 4**  
**Coding Scheme for Epistemic Cognition – Webpage Comments**

Four Dimensions	Definition	Examples
Certainty of Knowledge	1 pt.: knowledge is certain	Earned three points on each aspect: The man who started this craze has been disbarred. He published a study based on EIGHT subjects, come to find out he wanted the current MMR vaccine taken off the market because he had come up with a new vaccine for MMR, and wanted his to be used instead. Conflict of interest? duh. (From The Top Six Reasons Why Parents are Not Vaccinating their Kids)
	2 pts.: uncertain	
Simplicity of Knowledge	3 pts: certainty-uncertainty depends on content	
	1 pt.: collection of multiple information, one source	
Source of Knowledge	2 pts.: comparison of multiple information	
	3 pts: shared scientific answer	
	1 pt.: popularity of source, anecdotal	
Justification for Knowing	2 pts.: authoritativeness /expertise of source	
	3 pts: scientific nature of source	
	1 pt.: knowledge cannot be evaluated	
	2 pts.: agreement /disagreement with one’s knowledge	Earned one point on each aspect: 5 years ago, I took all the required shots to work in the hospital, Meningitis, Hepatitis A and B, Flu, MMR.... Must say these vaccinations broke my strength and performance down by at least 25%. I am now 31 years old and it have been 5 years since I took them and could feel my body progressively physically weakening for the duration. I no longer work at the hospital, and if I knew I was trading off my health for a job after school, I would never have done it. (From Six Reasons to Say NO to Vaccination)
	3 pts: scientific evidence	

**Table 5.1**  
**Frequency and Percentage of each Emotions for North American Websites**

	Balanced			Anti-Vaccines			Pro-Vaccines		
	<i>f</i>	% per Segments	% per Emotions	<i>f</i>	% per Segments	% per Emotions	<i>f</i>	% per Segments	% per Emotions
<b>Social Emotions</b>									
Anger	37	5.73	52.11	5	1.84	16.67	15	4.18	50.00
Sadness	4	0.62	5.63	3	1.10	10.00	4	1.11	13.33
Worry	2	0.31	2.82	0	0.00	0.00	0	0.00	0.00
Anxiety	1	0.15	1.41	5	1.84	16.67	0	0.00	0.00
Gratitude	10	1.55	14.08	9	3.31	30.00	2	0.56	6.67
Fear	1	0.15	1.41	1	0.37	3.33	1	0.28	3.33
Doubt	0	0.00	0.00	1	0.37	3.33	1	0.28	3.33
Hope	1	0.15	1.41	0	0.00	0.00	0	0.00	0.00
Encouragement	2	0.31	2.82	1	0.37	3.33	0	0.00	0.00
Regret	0	0.00	0.00	1	0.37	3.33	0	0.00	0.00
Shock	0	0.00	0.00	1	0.37	3.33	1	0.28	3.33
Disgust	1	0.15	1.41	0	0.00	0.00	0	0.00	0.00
Annoyed	1	0.15	1.41	0	0.00	0.00	0	0.00	0.00
Painful	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
<b>Epistemic Emotions</b>									
Surprise	2	0.31	2.82	0	0.00	0.00	0	0.00	0.00
Confusion	4	0.62	5.63	1	0.37	3.33	0	0.00	0.00
Curiosity	4	0.62	5.63	1	0.37	3.33	4	1.11	13.33
Enjoyment	1	0.15	1.41	1	0.37	3.33	2	0.56	6.67
<i>n</i> Emotions	71			30			30		
<i>n</i> Segmented Sections	646			272			359		

**Table 5.2**  
**Frequency and Percentage of each Emotions for Japanese Websites**

	Anti-Vaccines			Pro-Vaccines		
	<i>f</i>	% per Segments	% per Emotions	<i>f</i>	% per Segments	% per Emotions
<b>Social Emotions</b>						
Anger	3	1.39	11.11	5.00	5.26	100.00
Sadness	1	0.46	3.70	0.00	0.00	0.00
Worry	1	0.46	3.70	0.00	0.00	0.00
Anxiety	2	0.93	7.41	0.00	0.00	0.00
Gratitude	4	1.85	14.81	0.00	0.00	0.00
Fear	2	0.93	7.41	0.00	0.00	0.00
Doubt	1	0.46	3.70	0.00	0.00	0.00
Hope	1	0.46	3.70	0.00	0.00	0.00
Encouragement	3	1.39	11.11	0.00	0.00	0.00
Regret	1	0.46	3.70	0.00	0.00	0.00
Shock	0	0.00	0.00	0.00	0.00	0.00
Disgust	0	0.00	0.00	0.00	0.00	0.00
Annoyed	0	0.00	0.00	0.00	0.00	0.00
Painful	2	0.93	7.41	0.00	0.00	0.00
<b>Epistemic Emotions</b>						
Surprise	2	0.93	7.41	0.00	0.00	0.00
Confusion	0	0.00	0.00	0.00	0.00	0.00
Curiosity	3	1.39	11.11	0.00	0.00	0.00
Enjoyment	1	0.46	3.70	0.00	0.00	0.00
<i>n</i> Emotions	27			5		
<i>n</i> Segmented Sections	216			95		



**Table 5.3**  
**Frequency and Percentage of each Emotions for Chilean Websites**

	Anti-Vaccines			Pro-Vaccines		
	<i>f</i>	% per Segments	% per Emotions	<i>f</i>	% per Segments	% per Emotions
<b>Social Emotions</b>						
Anger	4	1.00	11.76	4	0.81	30.77
Sadness	2	0.50	5.88	2	0.40	15.38
Worry	0	0.00	0.00	0	0.00	0.00
Anxiety	9	2.25	26.47	0	0.00	0.00
Gratitude	7	1.75	20.59	5	1.01	38.46
Fear	0	0.00	0.00	0	0.00	0.00
Doubt	4	1.00	11.76	0	0.00	0.00
Hope	0	0.00	0.00	0	0.00	0.00
Encouragement	3	0.75	8.82	0	0.00	0.00
Regret	1	0.25	2.94	0	0.00	0.00
Shock	0	0.00	0.00	0	0.00	0.00
Disgust	0	0.00	0.00	0	0.00	0.00
Annoyed	0	0.00	0.00	0	0.00	0.00
Painful	0	0.00	0.00	1	0.20	7.69
<b>Epistemic Emotions</b>						
Surprise	0	0.00	0.00	0	0.00	0.00
Confusion	0	0.00	0.00	0	0.00	0.00
Curiosity	4	1.00	11.76	1	0.20	7.69
Enjoyment	0	0.00	0.00	0	0.00	0.00
<i>n</i> of Emotions	34			13		
<i>n</i> Segmented Sections	400			495		

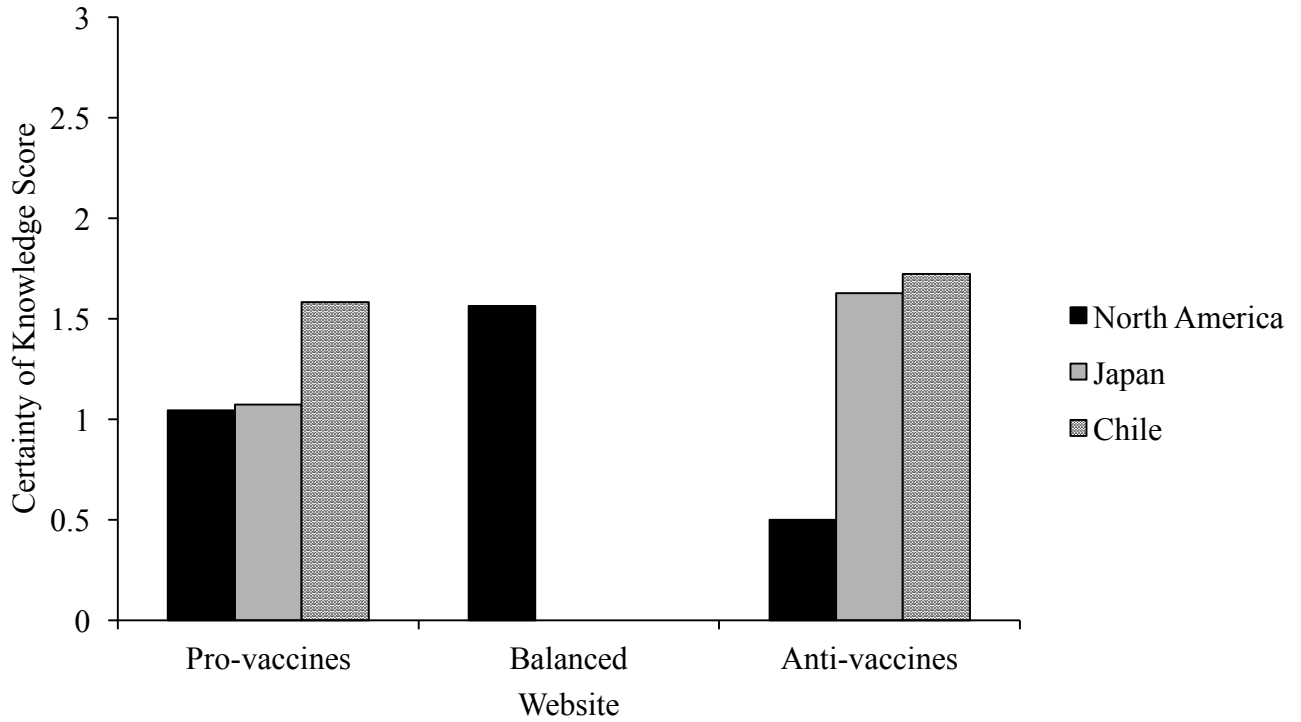
**Table 6**  
**Frequency and Percentage of the Credibility of Source per Website**

	Balanced			Anti-Vaccines			Pro-Vaccines		
	<i>f</i>	% per segments	% per claims	<i>f</i>	% per segments	% per claims	<i>f</i>	% per segments	% per claims
North America									
Invalid and Unreliable	17	12.14	15.89	38	62.30	100	16	41.03	47.06
Valid and Reliable	90	64.29	84.11	0	0.00	0.00	18	46.15	52.94
<i>n</i> of Segments	140			61			39		
<i>n</i> of Claims	107			38			34		
Japan									
Invalid and Unreliable				5	27.78	35.71	4	40.00	100
Valid and Reliable				9	50.00	64.29	0	0.00	0.00
<i>n</i> of Segments				18			10		
<i>n</i> of Claims				14			4		
Chile									
Invalid and Unreliable				20	64.52	100	0	0	0
Valid and Reliable				0	0.00	0.00	15	88.24	100
<i>n</i> of Segments				31			17		
<i>n</i> of Claims				20			15		

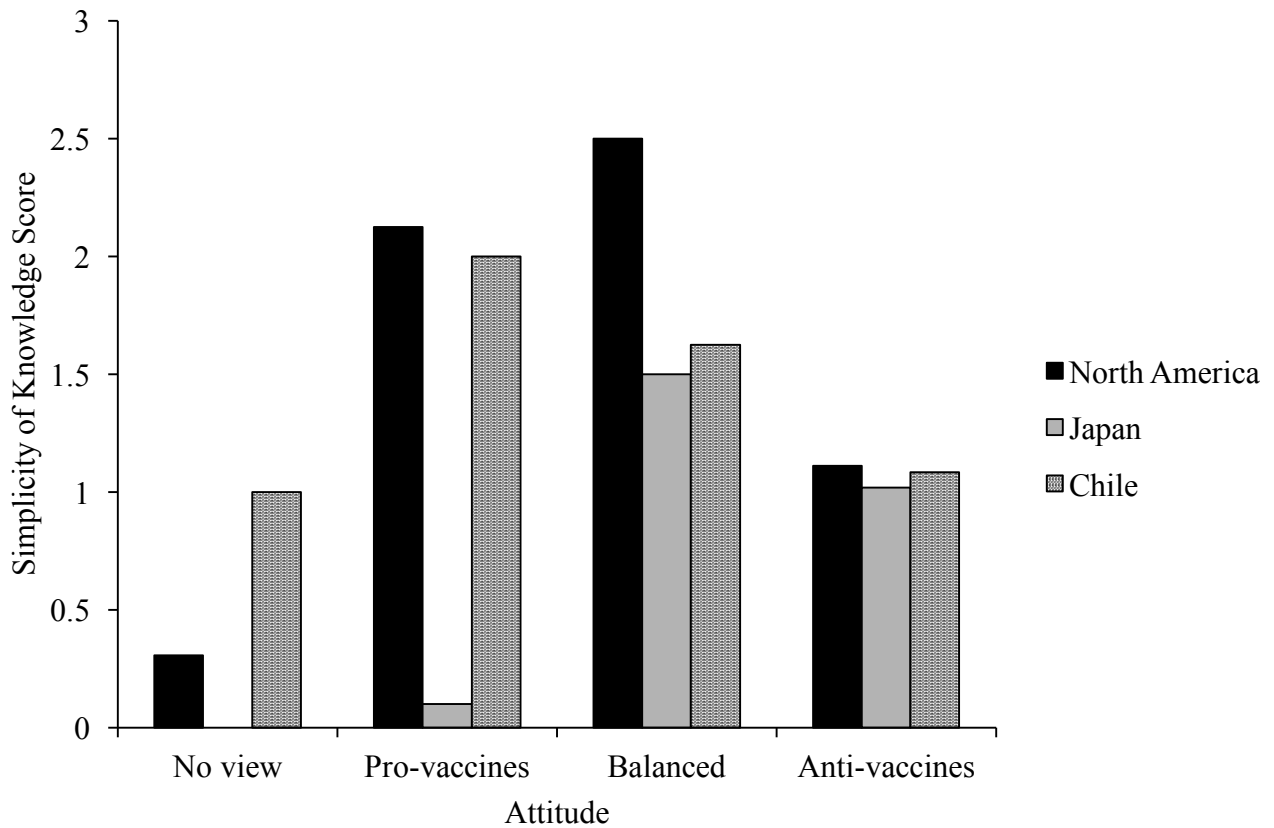
**Table 7**  
**Frequency and Percentage of Justification of Knowledge per Website**

	North America						Japan				Chile			
	Balanced		Anti-Vaccination		Pro-Vaccination		Anti-Vaccination		Pro-Vaccination		Anti-Vaccination		Pro-Vaccination	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Authority	59	88.06	0	0	17	100	8	80.00	0	0	0	0	12	100
Personal/Anecdotal	8	11.94	5	100	0	0.00	2	20.00	0	0	0	0	0	0
No support	0	0	0	0	0	0	0	0	4	100	14	100	0	0
<i>n</i>	67		5		17		10		4		14		12	

**Figure 1. Scores on certainty of knowledge as a function of culture and website.**



**Figure 2. Scores on simplicity of knowledge as a function of culture and attitude.**





# **Analysis of Differences in Improvement of Mathematical Problem Solving Ability of The Students at Upper Secondary School 3 Sidikalang Based on Contextual Learning Model And Direct Learning Models**

**Abden Rahim Aritonang**

Mathematics Education Program, Post Graduate Program  
Universitas Negeri Medan, Indonesia

**Ani Minarni**

Mathematics Education Program, Post Graduate Program  
Universitas Negeri Medan, Indonesia

**Waminton Rajagukguk**

Mathematics Education Program, Post Graduate Program  
Universitas Negeri Medan, Indonesia

## **ABSTRACT**

This research aims to analyze differences in the improvement of students' mathematical problem-solving ability (MPSA) through contextual learning model and direct learning model. Type of research is a quasi-experimental study. The research population was all students of upper secondary school (USS) at Sidikalang which consisted of nine classes by taking classes IX-4 and IX-5 as the sample. In this research students is categorized to master MPSA if they do MPSA test, they understand the problem, choosing a problem solving strategy, executing the strategy, and concluding the solution in line with the initial problem. Problems are designed contextually. Based on the results of this study it was found that there were differences in the improvement of MPSA between students taught through contextual learning model and through direct learning model and the students MPSA are categorized good. MPSA N-Gain of the taught through contextual learning models is higher than students taught through direct learning models.

**Keywords:** Mathematical Problem Solving Ability, Contextual Learning Model, Direct Learning Model

## **BACKGROUND**

Mathematics is a universal science that provides the basis for the development of modern technology and provides a very important role in advancing various disciplines and human mindset. In school mathematics, the materials taught are basic sciences that develop rapidly both in content and application. Thus teaching mathematics in schools is a priority in education. Mathematics is also very important in everyday life. Mathematics with its various roles makes it a very important science and one of the roles of mathematics is as a means of thinking to deliver students to understand the mathematical concepts they are learning.

Mathematicians seek and use patterns (Ziegler, Günter, 2011) & Steen (1988) to formulate new conjectures; they resolve the truth or falsity of conjectures by mathematical proof. When mathematical structures are good models of real phenomena, then mathematical reasoning can

provide insight or predictions about nature. Through the use of abstraction and logic, mathematics developed from counting, calculation, measurement, and the systematic study of the shapes and motions of physical objects. Practical mathematics has been a human activity from as far back as written records exist. The research required to solve mathematical problems can take years or even centuries of sustained inquiry. There are two visions of learning mathematics, namely: 1) directing mathematics learning to understanding concepts that are then needed to solve problems and other sciences, and 2) directing a broader future that is mathematics providing problem solving, and forming human good character, like systematic, critical, objective and open. These ability are needed in facing an ever-changing future.

In Indonesia, it is a common fact that mathematics for children is an unpopular subject, considered a difficult and complicated science. From various fields of study taught at school, mathematics is a field of study that is considered the most avoided by students elementary school until upper secondary school. This has an impact on students' mathematical achievements which are always low, for example in achieving national exams, and in participating in Trend in International Mathematics & Science Studies (TIMSS) (Wilson, 2007), also PISA (2012).

Mathematical problem solving ability (MPSA) becomes one of the abilities that must be developed in mathematics learning. NCTM (2000) states that problem solving is not just a goal of learning mathematics but also a major tool for doing or working in mathematics. Again, the fact that the Indonesian students MPSA was also low (Wilson, 2007). There are many factors influenced MPSA achievement. One of these factors is learning approach used by the teacher in the classroom. Education experts found that conventional learning does not have enough role in increasing MPSA, thus it is necessary to try constructivism-based learning, such as problem-based learning, realistic mathematics education, inquiry, open-ended, and contextual learning, applied in the classroom. This learning is intended to make students construct their own understanding of the knowledge gained. Especially, contextual learning try to design problem proposed with the integration of context to make the student easier to understand the problem.

### **THEORETICAL FRAMEWORK**

Mathematical problem solving ability of the students could be improved through learning in the classroom using certain learning model. Nihdayati, et.al (2018) used model eliciting activities to improved MPSA. Other learning model such as cooperative learning model has the possibility to enable the students to get such ability. The contextual teaching learning model is influenced by constructivism philosophy which was initiated by Mark Baldwin and later developed by Jean Piaget. The two of them is prominent education experts. The constructivism philosophy flowed from Giambastista's epistemological thinking. The view of constructivism philosophy about the nature of knowledge influences the concept of the nature of the teaching and learning process, that learning is not just memorizing, but constructing knowledge through experience. Knowledge is not the result of giving from other people such as teachers, but constructive results that are carried out by each individual.

The contextual learning model began in the United States when educators rejected dualism about thoughts, brain-motion, physical-psychic, concrete-abstract, theoretical-applicative and the like. Johnson (2007) writes in his book that the dualism is very unproductive, because the true meaning is the whole meaning that cannot be explained by reason of the specialization of the expertise of the book writers or curriculum development.

Contextual has a relationship with the context, atmosphere or real world situation, so that the contextual learning model can be interpreted as a learning that connects the achievement of knowledge through a process that links knowledge with the actual situation or situation as well as experiences that have been previously owned. From this definition it can be stated that the contextual learning model is a learning that is associated with students' knowledge in the real-life situations they already have. Contextual learning model is an approach that emphasizes the process of students full involvement to be able to find material that is learned and relate it to real life situations, it may also connected to the students culture, thus encouraging students to be able to apply it in their lives.

While, direct learning model is a learning model that is Teacher-centre. According to Arends (2008), Direct Learning model is one of the teaching models specifically designed to support student learning processes related to well structured declarative knowledge and procedural knowledge that can be taught with a step-by-step activity pattern. Direct learning can take the form of lectures, demonstrations, training or practice, and group work; used to convey lessons that are transformed directly by the teacher to students; requires careful planning and implementation on the part of the teacher. To be effective, direct learning requires that every detail of skills or content is carefully defined and demonstrated and the training schedule is carefully planned and implemented. So, there is the possibility to improve MPSA of the students at both learning model.

### **Mathematical Problem Solving Ability (MPSA)**

NCTM (2000) details the problem solving abilities that students must develop including: 1) building new mathematical knowledge to solving problems, 2) solving problems that arise in mathematics and other contexts, 3) using and adapting variations of the right strategies to solve problems, 4) monitor and reflect on the process of problem solving.

According to Minarni (2017) problem solving ability is a skill that is very important to be obtained, because from birth, humans face the challenges of problems that force them to get solutions. Problem solving itself, according to Anderson (2001) is the process of applying knowledge in a variety of new and unusual situations. Napitupulu (2016) states that problem solving occupies a central position in mathematics. He continues that if mathematics is seen as a product then the problem solving is in its heart, various concepts, principles and procedures are sought and found with the aim that they can be utilized and lead to problem solving, while, if mathematics is seen as a process, then problem solving is also in the heart. Generally, the appearance of various mathematical objects begins and is triggered by problems that must be resolved or questions that demand answers.

According to Goos et.al. (2000), a person is considered a good problem solver if he is able to demonstrate the ability to solve problems faced by choosing and using various alternative strategies so as to overcome these problems. Some indicators of mathematical problem solving abilities in this study are modified from Polya (1987), that is; 1) Understanding, 2) Submitting strategies, 3) Completion, and 4) Summing up the results/solutions in line with initial problem.

### **RESEARCH QUESTION**

1. Are there differences in the improvement of problem solving abilities between students taught through contextual learning models with students taught through direct learning models?

2. What are the category of mathematical problem solving abilities of the students taught through contextual learning models and students taught through direct learning models?
3. Does MPSA N-Gain of students' taught through contextual learning models is higher than students taught through direct learning models?

### RESEARCH METHOD

This research is a quasi-experimental research which aims to improve students' mathematical problem solving ability (MPSA) through the Contextual Learning model and Direct Learning model. The research design used in this study is displayed in Table 1.

**Table 1. Research Design**

Learning model	Pretest	Treatment	Posttest
Contextual	O1	X <sub>1</sub>	O2
Direct Learning	O1	X <sub>2</sub>	O2

The population of this study was all students of upper secondary school (USS) Sidikalang which consisted of nine classes by taking classes IX-4 and IX-5 to become the sample randomly. The syntax of contextual learning models and direct learning models applied in this study are describe below.

#### Syntax of contextual learning model

1. Demonstrating introductory material.
2. Guiding students in finding linkages of subject matter from student learning experiences and with real life.
3. Raising questions that are stimulating the critical nature of students about the subject matter.
4. Divide students into several groups heterogeneously.
5. The teacher guides students in modeling.
6. Guiding students to conclude the material that has been learned.
7. Conduct actual assessments during learning (activity observation) and at the end of learning (portfolio).

#### Syntax of direct learning model

1. Teachers explain learning objectives, background information on the importance of lessons, prepare students for learning
2. Teachers demonstrate skills correctly, or present information step by step.
3. Teacher plans and gives initial training guidance.
4. Check whether students have successfully performed the task well, give feedback.
5. The teacher prepares the opportunity to undertake advanced training, with special attention to the application to more complex situations.

Like problem in student activity sheet (SAS), pretest and posttest are designed based on mathematical problem solving aspect. Aspects of mathematical problem solving required students to show their ability in understanding the problem; one indicator of understanding the problem is the ability to represent problem in other form that make the student can understand better the problem (Minarni, 2017). Other aspects of mathematical problem solving are proposed the strategy to solve the problem, execute the strategy and conclude the solution in line with initial problem. In contextual learning model classroom, math problems are designed based on the context of local culture and the problem arouse in students daily life. Through such designed, hope that the students familiar with the problem situation so they will

understand better. In direct learning class, math problems are designed with no connection with the students daily activity and the students culture. This is the key different treatment between the two classes.

In contextual learning classroom, the teacher guides the students to express much idea to approach the solution of the problem, while in direct learning model, the teacher demonstrate the strategy to solve the problem after explaining the topic of mathematic at every session. The teacher in direct instruction class act as the main source of information, while in contextual learning the source of information could also be searched from the internet.

Because of the existence of pretest as a covariate, data analysis used is Analysis of Covariance (ANACOVA). Some assumption to use ANACOVA such as linearity of the data, variance homogeneity, and the parallelism of regression equation of the data from both classes are done and presented in “data analysis & results” section of this report.

### DATA ANALYSIS & RESULT

The purpose of his study was to analyze differences in the increase in MPSA of upper secondary students who taught through contextual learning models and students who taught through direct learning models. The data analyzed is the MPSA test results. The test results provide information about students' abilities before and after learning, both in contextual learning model classroom and in direct learning model classroom. The results of the Normality Test of pretest is presented in Table 2.

**Table 2. Normality Test Results for Pretest Score**

Learning model	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
<b>CTL</b>	.148	32	.071	.944	32	.095
<b>Direct Learning</b>	.152	32	.059	.936	32	.059

Table 2 showed that pretest data of the two classes (CTL and direct learning) are normally distributed. Next, data will be tested whether the variance pretest data of the classrooms is the same. The test equipment used for homogeneity is the Levene test. The results of the Normality Test of pretest data are presented in Table 3.

**Table 3. Levene's Test of Equality of Error Variances<sup>a</sup>**

F	df1	df2	Sig.
1.679	1	62	.200

From Table 3: F count is 1.679 with a significance of 0.200. The significance is greater than the significance level of 0.05 so that the null hypothesis which states that there is no difference variance in the posttest score of CTL and direct learning model is accepted. The result of the Pretest Normality Test is presented in Table 4.

**Table 4. Normality Test Results for Posttest Score**

Learning model	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
<b>CTL</b>	.082	32	.200*	.964	32	.354
<b>Direct Learning</b>	.139	32	.122	.929	32	.038

In Table 5: Posttest of experiment I and class II Experiment normally distributed. Furthermore, it will be tested whether the variance of experimental class I and experimental class II are



homogenous. The test equipment used for homogeneity is the Levene test. Homogeneity Tests for Posttest data is presented in Table 5.

**Table 5. Levene's Test of Equality of Error Variances<sup>a</sup> of Posttest Score**

F	df1	df2	Sig.
2.332	1	62	.132

From Table 5: F count is 2.332 with a significance of 0.132. The significance value is greater than the significance level of 0.05 so that the null hypothesis which states that there is no difference in variance of posttest score of the two classroom (CTL, direct learning model) is accepted.

Furthermore, it will be discussed how much improvement occurred between the CTL classroom and direct learning model. Student MPSA improvement in CTL classroom and direct learning model was calculated using the normalized gain or N-Gain formula. The results of the N-Gain MPSA for the classroom is presented in Table 6.

**Table 6. Recapitulation of N-Gain Results of MPSA**

Class	$X_{min}$	$X_{max}$	$\bar{x}$	SD
CTL	0.27	0.58	0.44	0.07
Direct learning	0.05	0.47	0.33	0.09

Table 6 above shows that the highest value of N-Gain in the CTL classroom was obtained 0.58 and in the direct learning classroom was obtained 0.47. While for the average value of N-Gain, CTL classroom was obtained 0.44 and in direct learning classroom was obtained 0.33. So the average N-Gain of CTL classroom is higher than the average N-Gain of direct learning classroom. Results of Calculation of the Coefficient of Class Regression Equations are presented in Table 7.

**Table 7. Results of Calculation of Class Regression Coefficients**

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	38.264	2.097		18.244	.000
	X	.378	.119	.502	3.175	.003

a. Dependent Variable: Y

Results of Calculation of the Coefficient Regression Equations of CTL classroom is presented in Table 8. Regression coefficient is the increasing of value for Y for every increasing value of X unit when sign of regression coefficient is positive. For example, if regression coefficient is 2, it means the value of Y increases two times of the increasing of the value of X. If sign of regression coefficient is negative, it means that every increasing value of X unit make the value of Y decreased as many as X times the coefficient of X.

**Table 8. Calculation Results of Regression Equation Coefficients**

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	28.827	2.661		10.835	.000
	X	.554	.163	.527	3.400	.002

Based on data presented in Table 7 and Table 8, the MPSA test results: the regression equation for the experimental class I is  $Y_1 = 38.26 + 0.37X_1$  and the regression equation for the experimental class II is  $Y_2 = 28.82 + 0.55X_2$ .

### Independence Test and Linearity Test

Variance Analysis for MPSA Independence Test is presented in Table 9.

**Table 9. ANOVA for MPSA Independence Test**

Model		Sum of Squares	Df	Mean Square	F	Sig.
I	Regression	272.141	1	272.141	10.081	.003 <sup>b</sup>
	Residual	809.859	30	26.995		
	Total	1082.000	31			
a. Dependent Variable: Y						
b. Predictors: (Constant), X						

From ANOVA or F test: F count is 10,081 with a significance level of 0.003. Because the probability is much smaller than 0.05, the regression model can be used with the regression equation  $Y_1 = 38.26 + 0.37X_1$ . Variance Analysis for the MPSA Regression Linearity Test is presented in Table 10.

**Table 10. ANOVA for MPSA Regression Linearity Test**

			Sum of Squares	Df	Mean Square	F	Sig.
Y * X	Between Groups	(Combined)	728.000	18	40.444	1.485	.236
		Linearity	272.141	1	272.141	9.994	.008
		Deviation from Linearity	455.859	17	26.815	.985	.521
	Within Groups		354.000	13	27.231		
Total			1082.000	31			

Based on Table 11: Sig. = 0.521 and for  $\alpha = 5\%$ , the value of  $\alpha < \text{Sig}$  or  $0.05 < 0.521$ . Thus the regression of CTL classroom is linear. Analysis of Variance for MPSA Independence Test for MPSA data at direct learning classroom is presented in Table 12.

**Table 12. ANOVA for MPSA Independence Test Class II Experiment**

Model		Sum of Squares	Df	Mean Square	F	Sig.
II	Regression	381.873	1	381.873	11.560	.002 <sup>b</sup>
	Residual	991.002	30	33.033		
	Total	1372.875	31			
a. Dependent Variable: Y						
b. Predictors: (Constant), X						

From ANOVA or F test: F count was 11.56 with a significance level of 0.002. Because the probability is much smaller than 0.05, the regression model can be used with the regression equation  $Y_2 = 28.82 + 0.55X_2$ . ANOVA for the MPSA data at direct learning model is presented in Table 11.

**Table 11. ANOVA of Linearity of MPSA Data of Direct Learning Classroom**

Y * X	Between Groups	(Combined)	1089.625	17	64.096	3.168	.017
		Linearity	381.873	1	381.873	18.875	.001
		Deviation from Linearity	707.752	16	44.235	2.186	.074
	Within Groups		283.250	14	20.232		
	Total		1372.875	31			

Based on Table 13: The value of Sig. = 0.74 and for  $\alpha = 5\%$ , the value of  $\alpha < \text{Sig}$  is  $0.05 < 0.74$ . The regression model of MPSA data at direct learning model is linear. ANACOVA for the Similarities of Two MPSA Regression Models are presented in Table 12.

**Table 12. ANACOVA for the Similarities of Two Regression Models**

A	B	SSTO(R)	SSR(R)	SSE(R)	F*	F <sub>(0.95,2,60)</sub>	H <sub>0</sub>
33.40	0.47	3252.938	706.768	2546.169	17.210	3.15	Rejected

From the calculation results in Table 14:  $F = 17.21$  for  $\alpha = 5\%$ ,  $F(1-0.05), (2, n-2) = F = 3.15$ . This means that H<sub>0</sub> is rejected and accepted H<sub>1</sub>. This means that the two linear regression models are not significantly different. MPSA Covariance Analysis for Regression Model Alignment is presented in Table 13.

**Table 13. ANACOVA for Regression Model Alignment**

Class	SSTx	SSTy	SPT	SSTx(adj)
CTL	1906.21	1082	720.25	809.85
Direct learning	1244.7	1372.87	689.44	990.39
Total	3150.91	2454.87	140.69	1800.24
A	B	F*	F	H0
1800.24	1823.96	0.82	3.99	Accepted

From the results of calculations in Table 13:  $F_{\text{table}} = 0.82$  for  $\alpha = 5\%$ ,  $F_{\text{count}} = 3.99$ . Means H<sub>0</sub> is accepted with a significant level of 5%. This means that both linear regression models for data of CTL classroom and direct learning are parallel. Because both regression models are not the same (not coinciding) and parallel, it can be concluded that there are differences MPSA between upper secondary school students at contextual learning model and direct learning model.

## DISCUSSION

Based on the results of data analysis on the average pretest and posttest scores then calculated the increase (N-Gain) of both classes: Class taught through the contextual learning model obtain an average N-Gain score of 0.44 and for the class taught through the direct learning model, the average N-Gain score is 0.33. ANACOVA calculation results indicated that there are significant differences and the difference in the height of the two regression lines which affected by the regression constant. The height of the regression line describes the student MPSA, that is when  $X = 0$  the regression equation for MPSA students in contextual learning class is  $Y = 38.26X$  and the regression equation for direct learning class is  $Y = 28.82X$ . This means that there is a difference in the improvement in MPSA between students taught through contextual learning models with students taught through direct learning models.

An interesting finding during the current research is that in contextual classroom, many students enjoy to engage in learning activity because in essence students like the culture they have and the problems they commonly see in their home and neighbors. Students saw that the

problems arose around their daily life could be solved by their village head and resolution of these problems usually satisfied various parties involved. Therefore, in the classroom they learn how to solve mathematical problems before them as if the village head and representatives of each group in the community are negotiating to solve the problem. Students seem excited in doing these mathematical tasks.

The reason why contextual classroom obtained higher N-gain is because contextual classroom required the teacher acts as a facilitator for students in solving problems. While, in the classroom that implements direct learning, students solve problems by following the example demonstrated by the teacher. Another thing, in contextual classes, mathematical problems are designed based on the problems often encountered by students in everyday life so that students can more quickly understand the mathematical problems they face. As for the class that implements direct learning, mathematical problems are almost unrelated to the problems encountered by students in their daily lives.

There is a difference in the improvement in PMSA because in contextual learning students are trained to solve context-related problems in accordance with the syntax of the learning. This can improve the ability of mathematical understanding as a major component of problem solving. Different from the direct learning class, in CTL classroom mathematical problems are not context related so students are not easy to understand problems. In addition, in contextual learning classroom, students are conditioned to construct the knowledge acquired so that students learn more meaningfully, not so in direct learning classes.

In contextual class, students are conditioned to learn to build their own knowledge because this learning is indeed constructivism-based learning. The students build knowledge along with their work in solving mathematical problems that teacher give in Students Activity Sheet (SAS). In direct learning classroom, there is no demand for students to build their own knowledge but students must be proficient in mechanistic calculations. Inferred from Lang & Evans (2006), this kind of learning is still needed if students background knowledge is low, teacher will deliver new material, time available is short.

Thus, it is clear that schools should begin to implement constructivism-based learning such as contextual learning model so that students can improve mathematical problem-solving abilities that are very much needed in the modern world as it is today. To apply contextual learning is not difficult because Indonesia is very rich in culture which can present its own problems in designing mathematical problems. Provided that the contextual learning syntax is actually carried out by the teacher, of course the learning can be interrupted by learning that has been carried out so far to complement the need for informative knowledge. The implementation will be even easier because the government has suggested to improve MPSA of upper secondary school students as documented in mathematics learning curriculum.

### **CONCLUSION**

Based on the results of data analysis and research findings, the conclusions which are answers to the research questions posed are consisted of :

1. There is the difference in the improvement of problem solving abilities between students taught through contextual learning models with students taught through direct learning models?
2. After implementing contextual teaching learning, tudents' mathematical problem solving abilities is categorize good.

3. MPSA N-Gain of the students who taught through contextual learning models is higher than it is the students taught through direct learning models.

In addition, although learning model based on constructivism is powerful, but direct learning model will still be needed at any time in accordance with the interests of comprehensive learning goals. Direct learning will not be shifted or ruled out.

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# **An Analysis of the Content and Effectiveness of Off-Campus Internship curriculum for Vocational and Technical Five-Year Junior College Students with Major in Cosmetics**

**Yeh Ju-Hsuan**

Cardinal Tien Junior College of Healthcare and Management, Taiwan (ROC)  
Tatung University, Taiwan (ROC)

**Lo Tsai-Yun**

Tatung University, Taiwan (ROC)

**Wang Li-Feng**

Taipei University of Marine Technology, Taiwan (ROC)

## **ABSTRACT**

The study objects comprise of vocational and technical schools in Taiwan and conducts group analysis on internship institutions, school teachers and students through qualitative research and quantitative research. The internship content reveals greatest difference for students' performance in workplace etiquettes  $p < .001$  while student's workplace performance  $p < .01$ : Workplace skills, interpersonal communication and work attitude. Students' workplace performance  $p < .05$ : adaptability issue, internship welfare, minor discretion in the presentation of internship agreement. With regards to learning factor analysis: The CR value is 0.913 and AVE value is 0.677 for interpersonal interaction and attitude learning, the CR value is 0.845 and AVE value is 0.577 for welfare regulations and career, and the CR value is 0.715 and AVE value is 0.457 environmental cognition and adaptability. A CR value greater than 0.7, suggests excellent internal consistency in the research model while AVE value also meets the standards.

**Keywords:** Cosmetics and Hair Beauty, Education, Five-Year Junior College, Off-Campus Internship curriculum, Vocational and Technical Schools

## **RESEARCH BACKGROUND AND PURPOSE**

### **Research Background**

Changes in recent economic development and people's pursuit for material life have led to the development trends in fashion industry, impelling the thriving development in cosmetics and hair beauty related industries, including skin SPA, body shaping and stress relief, manicure and pedicure, overall style, cosmetics sales, hair beauty salon, and cosmetology...etc. The Executive Yuan National Science Council (2014) announced the industry-academic technical alliance cooperation program via press release, stating: "According to the '2012 Yearbook of Biotechnology Industry,' the economic scale and output of global cosmetics product market is enormous while Taiwan's market output accounts for NTD94900000000." Directorate General of Budget, Accounting and Statistics of Executive Yuan (2012) conducted the "Human Resource Use Survey" and reveal the following: the survey was conducted on the number of employed people in all industries in Taiwan in 2010. The number of employment in service industry alone accounts for 54.74% of total employment population with a trend of annual increment of

2.16%, suggesting the incremental demand for the cosmetics and hair beauty related industries in the economic market.

Practica are very critical for students' acquiring practical knowledge and skills. It is also essential to promote students' employability and competitiveness. In recent years, universities in Taiwan have been more and more increasingly emphasizing practica. To supply sufficient human resource to the cosmetics and hair beauty industry, it is the utmost important responsible for vocational and technical education in cosmetics related departments to improve students from vocation and technical junior colleges with employment competency so that the human resource will meet industry requirement. The Ministry of Education takes action in promoting "Vocational and Technical Education Restructuring Program," and in particular the policy on "Implementing Off-Campus Internship Courses in Students" is to improve the employment competency in students through "learning while doing and doing while learning" (Ministry of Education Department of Technical and Vocational Education, 2012). Particularly, departments designed for internships in vocational schools of cosmetics related departments include: Department of Cosmetics Application and Management, Department of Cosmetics and Care, Department of Cosmetics and Fashion, Department of Fashion and Style, Department of Cosmetics and Leisure Tourism, Department of Fashion Model, and Department of Fashion Design. The industries of internship in generally include the follows: hair beauty and style, skin care, body massage, wedding photos, manicure art, cosmetics counter, cosmetics formulation and other industries. Moreover, some schools add pet cosmetics and funeral etiquettes and other departments following the development of emerging industries.

Technological and vocational education has made significant contributions to Taiwan's economic development by training mass technical specialists. Currently, the type of industry has been transferring gradually from labor-intensive to technology-intensive and even knowledge-intensive industry. This transformation has resulted in rapid changes to Taiwan's industrial structure and technology base that has affected the preparedness of technological college graduates to enter the high-tech workforce. Vocational education is the base of technological education (Chang, 2014). The five-year junior college whose main educational objective is to cultivate the mid-level technicians forms an important part of the technological and vocational education. It provides the students not only the basic knowledge of the general subjects but also the professional skills. Cosmetology departments in five-year colleges offer flexible years of completion, credits allocation, more practical elective courses, which provide five-year junior college students with more practical courses and internship experiences on cosmetology, hair styling, and nail arts than those of general high or vocational high school students. The cosmetology Industry has become diverse with innovative management and premium service quality, which led to the refined quality control of cosmetology Industry. To discover intermediate level talents for cosmetology Industry, the five-year colleges in Taiwan carry the mission of educating intermediate level workforce with diverse adaptive education integrated with practical courses of technology and technique applications, such as internship, experiments, hands-on operations, project production, and license courses to culture students' professional techniques and employment abilities.

Technical and vocational education in our country has always aimed to bring up industry professional talents; it's providing a vital lifeline of our national technical personnel. Therefore, enhancing students' practical technical expertise and implementing campus internship of industry cooperation are the key part for technical and vocational education to effectively nurture students to meet the industry demand (Chang, et al., 2016). Off-campus internship courses have intensified the overall cosmetics related industries since the implementation.

Some difficulties and dimensions still require solution throughout the implementation. For example, students' inadaptability with internship at workplace, students' inadaptability to transform from the role of students to employees, interpersonal relation, lack of anti-stress capacity, sexual harassment in workplace, troubles with skills learning, and getting off duty on time...and many other issues (Author, 2012) . To get insight to the off-campus for students from vocational and technical education majoring in cosmetics, the paper emphasizes on the students from department of cosmetics related department in vocational and technical schools as the research group. The study analyzes the inter students in terms of the follows: workplace skills, interpersonal communication, etiquettes and conducts, learning attitude, work attitude, adaptability issue, cognition, internship environment, internship welfare, internship agreement, internship visit, and career planning. Consequently the study will draw prudent and rigorous conclusion from each part of the off-campus internship process while off-campus internship courses will achieve excellent education benefits.

### RESEARCH PURPOSE

The paper intends to explore into the "Analysis of Content and Effectiveness of Off-Campus Internship for Vocational and Technical Five-Year Junior College Students with Major in Cosmetics." The following aspects of interns are studied: workplace skills, interpersonal communication, etiquettes and conducts, learning attitude, work attitude, adaptability issues, cognition, internship environment, internship welfare, internship agreement, internship visit, and career planning. Consequently the study analyzes the effectiveness of off-campus course for departments related to cosmetics in vocational and technical junior colleges, correlation and problems to be solved, thereby proposing practical suggestions for vocational and technical junior colleges with cosmetics related department to expand the off-campus internship programs. Moreover, the study will provide reference for educational administrative agencies, vocational and technical schools, cosmetics and hair beauty industries to implement off-campus internship collaboration and future research. The research framework is shown in Figure 1. The research probes into the following issues for the context of off-campus internship course and the effectiveness of promotion:

1. Analyze the cognition in enterprise, schools and students towards off-campus internship for department of cosmetics students in five-year junior colleges.
2. Analyze the correlation of context in off-campus internship for students from department of cosmetics and related fields in vocational and technical junior colleges.
3. Analyze the specific suggestions for promoting off-campus internship in department of cosmetics and related fields in vocational and technical junior colleges.

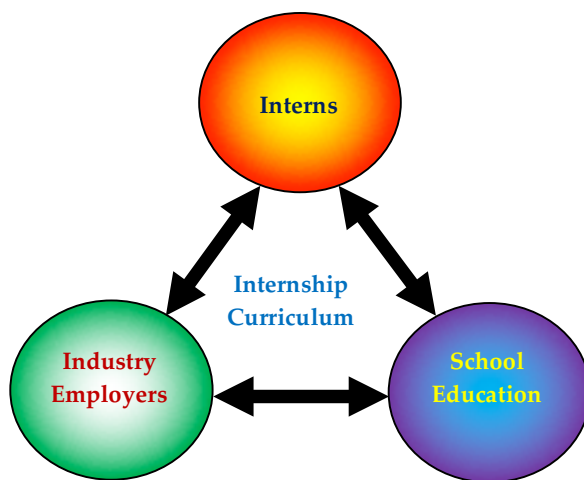


FIGURE 1: Research Framework



## LITERATURE REVIEW

### Overview of Cosmetics Education in Five-Year Junior College

Pursuant to Article 28 of "Vocational and Technical School Act," the required credits for graduation from five-year vocational and technical junior colleges may not fall under 220 credits, while graduation also requires the eligibility of associate degree for direct entrance to workplace or advanced study. Credits are generally divided into the following by course: compulsory course and electives. In particular, students who fail in compulsory courses may not be graduated. In sum, the cosmetics department in the five-year junior colleges in Taiwan is classified under four subjects: Cosmetics, beauty and style, cosmetics and care, and pet beauty. Cosmetics: Students may work in cosmetics and biotechnology companies for R&D in formulation after graduation, cosmetics channel sales and department stores counter sales. Beauty and Style: Students can engage in beauty and skin, manicure art, hair beauty industry, and wedding style work. Care: Students can engage in aroma therapy care, beauty and skin care, scalp care, and skin beauty and sculpture, and other industry. Pet beauty: Students can work as assistant to pet beautician, beautician assistant, pet beautician, employees for pet supplies wholesale store, vet assistant, pet care manager, pet trainer, and groomers.

The common curriculum framework of cosmetics and related department in five-year junior colleges are summarized below: (1) Departments under medical and nursing system mostly consists of development in cosmetics and beauty and care, hence the curriculum features emphasize on the design of cosmetics and beauty care. (2) General or regular technology universities that are fashion and style beauty oriented, hence the curriculum features is based on makeup, hairstyle and overall style as curriculum framework. Curriculum Features: (1) The first three years consist of fundamental technical courses for skin beauty, hair beauty and facial beauty, supplemented by Class C certificates in beauty, hair and haircut for men. (2) To cope with students' personal interests at the fifth and 4th year of the five-year junior college, students will be counseled for taking Class B certification testes in beauty, hair for women and hair for men. (3) Fourth year and Fifth year students in five-year junior colleges will be arranged for internship at relevant industries such as beauty, hair and manicure, who will receive counseling on their future career planning through on-site internship with profound understanding of the workplace (Ministry of Education, 2014).

Statistics provided by Ministry of Education (2017) indicated that sixteen five-year junior colleges in Taiwan offered cosmetology related courses including Bachelor Degree Program in Pet Grooming of Chung Hwa University of Medical Technology, Department of Cosmetology of Meiho University, Department of Applied Cosmetology of Nanya Institute of Technology, Department of Fashion Beauty Design of Lan Yang Institute of Technology, Department of Fashion & Cosmetology Design of Tungfang Design Institute, Department of Cosmetology and Fashion Design of Ching Kuo Institute of Management and Health, Department of Applied Cosmetology of National Tainan Junior College of Nursing, Department of Cosmetic Application and Management of Mackay Junior College of Medicine, Nursing, and Management, Department of Health and Beauty of Shu-Zen Junior College of Medicine and Management, Department of Styling & Cosmetology of Tzu Hui Institute of Technology, Department of Cosmetic Applications & Management of Cardinal Tien Junior College of Healthcare and Management, Department of Beauty & Health Care of Min-Hwei Junior College of Health Care Management, Department of Cosmetic Applications and Management of Yuh-Ing Junior College of Health Care & Management, Department of Cosmetics and Health Care of Chung-Jen Junior College of Nursing, Health Sciences and Management, Department of Cosmetic Application and Management of St. Mary's Junior College of Medicine, Nursing, and Management, and Department of Styling and Cosmetology of Hsin Sheng Junior College of Medical Care and Management.

### **Scope of Off-Campus Course**

The quality of technical staffs is the key point of improving productivity, to shorten the divide between vocational and technical education and the employment market, off-campus internship courses emphasize on the strengthening of workplace skills and knowledge with consideration in implementing the cultivation of technical personnel. Author.(2012) express that off-campus internship courses for cosmetics related departments in five-year junior colleges can improve workplace skills. Lin, et al. (2010) explain that skills for cosmetics and hair beauty workplace include the follows: hair style, makeup, massage, styling, manicure, and cosmetics sales. Apart from the required techniques in workplace, North, Alexa, et al. (2004) suggests that interpersonal communication is the foremost important capacity for all workplaces. Erozkhan, Atilgan (2013) identifies interpersonal interaction and communication skills as the key to significantly improve personal capacity for problem solving and construct self-cognition. Main subjects of interpersonal interaction in internship courses includes: supervisor in workplace, colleagues, customers, and teachers taking internship visits. Wana, et al. (2013) believes that social skills can be learned through workplace. Moreover, social etiquettes and in socialization of workplace is stressed, including: introduction, letter, conversation, telephone, proper occupational attire, posture, hands shaking, eye contact, and expression...etc. Lazorchak, Shirley A. (2000) suggests the necessary inclusion of etiquettes and conducts as one important skill for employees.

Hurst, et al. (2014) Internship can be a means of accumulating student's experience in workplace and adapt to relevant professional job content at the workplace in advance as the preparation for students in professional development and workplace skills. Nonetheless it is inevitable for interns to face with adaptability issues transforming from the role of students to employees at the workplace. Chen(2008) expresses the adaptability issues for off-campus internship includes: Work adaptability, emotional adaptability, interpersonal adaptability, and adaptability to living environment. To help inters adapt to the workplace and become the communication channel between enterprises and schools, Li, et al. (2008) regards internship visit as the school's care for interns, which not only help schools track the student's performance during internship but also increases communication and contact with internship institution. Moreover, schools can provide assistance in solving internship problems when necessary, counseling on students and engage in communication with the internship institution. The design and implementation of internship visit is one of the key success factors for organizing off-campus internship.

Off-campus internship protects enterprise, schools and students through mutual formulation of proper internship agreement, welfare and other conditions. Gibson, (2009) proposes the explicit formulation of personnel, things and objects related to internship course in the internship agreement, where both parties sign with public commitment and agreement. Such signing method through detailed listing on document will provide more binding force than the non-official oral internship agreement, i.e., the method of collaboration between enterprises and schools, protection of students' internship rights and protection of corporate internship operation. BYRD, et al. (2014) advises enterprises to develop relevant welfare system explicitly, such as salary, working hours, leave, and insurance. With regards to salary and wages, the employers should be aware of the minimum wage for interns by law with applicable overtime pay. A series of protection strategies for internships has been developed to advocate and cultivate students' workplace skills in addition to assist interns with development in future career planning capacity, expediting intern's career pace explicitly (Author, 2012). Li, Jian-Hua et al. (2014) also state that the simulation process for college interns attempting career choice through internship works to shorten the time for career preparation..

## RESEARCH METHOD AND IMPLEMENTATION PROCESS

The study adopts qualitative and quantitative research methods to establish the theoretical foundation of the research through document analysis method, supplemented by the development of research questionnaire as the subsequent reference for drawing conclusion and suggestions. Next, open interview is conducted with 10 visiting teachers for internship course, 10 people from the cosmetics and hair beauty industries, and 10 interns from the fourth and fifth year of five-year junior colleges. The study focus on the context and framework of internship issues, which are applied as the issues of discussion by focus group. Five people from internship institutions and teachers have been invited to draft outline of 20 question in: workplace skills, interpersonal relation, etiquettes and conducts, learning attitude, work attitude, respect for work, adaptability issue, cognition, internship environment, internship welfare, internship rules, internship agreement, internship content design, internship visit, administrative support, internship objectives, career planning, communication skills, corporate business reputation, and student qualities.

The first phase Delphi technique is applied to the aforementioned outline to design an open questionnaire. 10 Students with internship experience, 10 teachers, 10 internship employers have taken the questionnaire to yield 12 internship context in: workplace skills, interpersonal communication, etiquettes and conducts, learning attitude, work attitude, adaptability issue, cognition, internship environment, internship welfare, internship agreement, internship visit, and career planning. Moreover members draft the open questions according to the 12 outlines topics while the researcher recovers and summarizes the content, distributing the questionnaire to members for review and feedback through anonymous questionnaire.

Participants re-examine the questionnaire content from previous compilation and conduct the second phase of Delphi technique to integrate the content and framework of questionnaire for literature review. The prototype of questionnaire is drafted through the integration of relevant literature review with 15 teachers participating in internship operations and 15 people from cosmetics and hair beauty industries invited as expert review. Experts will correct the questionnaire prototype and develop formal questionnaire before testing. There were no studies on off-campus internship for cosmetic related department in junior colleges and hence to enhance the accuracy of pre-test, the pre-test credibility and validity of pre-test is reviewed through content analysis to execute the third phase of Delphi Technique and literature review, before conducting pre-questionnaire analysis.

After completing the pre-test, the study distributes 104 final questionnaires to cosmetics related department in junior colleges in northern Taiwan, including New Taipei City, Hsinchu and Keelung. Departments include department of cosmetics application and management and department of beauty and style, where 51 interns in the 4th and 5th year of five-year-junior colleges, 24 intern employers of cosmetics and hair beauty industries and 29 teachers for internship visits were randomly drawn and sampled, to analyze the content of off-campus internship system, correlation, internship questions and improvement strategies for students.

## DATA ANALYSIS

The study applies qualitative and quantitative research methods for analysis:

### Content Analysis of Students, Industries and Teachers in Off-Campus Internship

Lin, Zhen-Yen (2012) suggests that greater ratio of between of variation and within of variation will result in greater F-value, which can more easily achieve significance. Moreover, the greater the F-value and smaller o-value, the more significant the difference is. Students, employers and teachers believe that students' etiquette and conduct performance in workplace  $p < .001$  has

the greatest difference. In particular, the teacher means reaching 3.94 suggests more rigorous standards. Interview results reveal that teacher's rigorous requirement only aims to maintain school reputation; student means for self-requirement reaches 4.35 as students wish to be recognized by the employees. The employee means reaches 4.41 and it is generally recognized that the employees require basic workplace etiquettes from the students.

Student's workplace performance  $p < .01$ : suggesting significant difference in the workplace skills, interpersonal communication and work attitude. Particularly the standards from teachers are still more rigorous (means of three constructs is 3.88). Interview results reveal that teachers believe the students should take more aggressive in fully implementing workplace environment and resources to acquire skills. Teachers also require students to maintain excellent interpersonal interaction in workplace, active and serious work attitude, and excellent industry-academic internship collaboration. On contrary, employers merely suggest for students' re-improvement on workplace skills (means 4.22) because the industries emphasize on the quality of service techniques. Additionally, employers recognize students' interpersonal communication and work attitude. For students, the means of workplace skills is 4.25, which is higher than that of employers by 0.03 because students believe that the preparation from knowledge acquired from schools will quickly help them get on and learn workplace skills. Nonetheless students still apply more rigorous approach to treat interpersonal skills and work attitude due to their first experience in the workplace.

Students' workplace performance  $p < .05$  shows slight difference in adaptability issue, internship welfare and internship agreement, and hence achieving the lowest means for teachers in adaptability issues of 3.0. On contrary, the difference between employers and teachers is minor since teachers take the visitation work, counseling on students, and accept and handle more complex internship issues. For this reason, the means teachers give to students' adaptability is lower. With regards to internship welfare and internship agreement, the student mean is lower and has greater difference from the cognition of employers mainly because students believe that the number of days of leave and salary conditions can be increased and improved. In contrast, employees do not believe that the Labor Standard Act applies to interns and hence only offer welfare and agreement conforming to school standards. The views of students, industries and teachers for remaining aspect such as learning attitude, cognition, internship environment, internship visit, and career planning do not vary, which phenomenon also reveals the consistent cognition for internship course on student's learning, teachers' visit and internship institution.

**TABLE 1: An Analysis of Students, Industries and Teachers in Off-Campus Internship System**

Internship Factors	Sample Category and Peoples		Dept. Average	Means	Standard Deviation	F	P
Workplace Skills	Employer	24 peoples	4.22	4.14	.47415	6.43	.002**
	Teacher	29 peoples	3.88				
	Student	51 peoples	4.25				
Interpersonal Communication	Employer	24 peoples	4.26	4.10	.54754	4.92	.009**
	Teacher	29 peoples	3.84				
	Student	51 peoples	4.16				
Etiquettes and Conducts	Employer	24 peoples	4.41	4.25	.52822	7.94	.001***
	Teacher	29 peoples	3.94				
	Student	51 peoples	4.35				
Learning Attitude	Employer	24 peoples	4.28	4.14	.59182	2.31	.104
	Teacher	29 peoples	3.95				
	Student	51 peoples	4.19				
Work Attitude	Employer	24 peoples	4.41	4.25	.56683	6.41	.002**
	Teacher	29 peoples	3.94				
	Student	51 peoples	4.34				
Adaptability Issue	Employer	24 peoples	4.18	4.06	.59552	4.16	.018*
	Teacher	29 peoples	3.80				
	Student	51 peoples	4.16				
Cognition	Employer	24 peoples	4.10	4.11	.51651	1.87	.159
	Teacher	29 peoples	3.96				
	Student	51 peoples	4.19				
Internship Environment	Employer	24 peoples	4.42	4.22	.56175	2.61	.078
	Teacher	29 peoples	4.07				
	Student	51 peoples	4.22				
Internship Welfare	Employer	24 peoples	4.14	3.68	.91707	4.22	.017*
	Teacher	29 peoples	3.58				
	Student	51 peoples	3.52				
Internship Agreement	Employer	24 peoples	4.52	4.23	.66095	3.22	.044*
	Teacher	29 peoples	4.18				
	Student	51 peoples	4.12				
Internship Visit	Employer	24 peoples	4.37	4.16	.67547	2.99	.054
	Teacher	29 peoples	4.26				
	Student	51 peoples	4.00				
Career Planning	Employer	24 peoples	4.07	3.85	.71020	1.98	.143
	Teacher	29 peoples	3.88				
	Student	51 peoples	3.73				

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

### Analysis of Internship Factor Correlation

SPSS is applied to the analysis of 12 internship factors (Table 2). Lin, Zhen-Yen (2012) expresses that factor analysis is one of the most effective approach to establish validity and also the effective approach to evaluate the credibility of research. The study applies exploratory factor to analyze the concepts below: CR value 0.913 and AVE value 0.67 for interpersonal interaction and attitude in learning, CR value 0.845 and AVE value 0.577 for welfare regulations and career, CR value 0.715 and AVE value 0.457 for environmental cognition and adaptability, where CR value greater than 0.7 suggests excellent consistency in research model while AVE value also conforms to the standards.

Findings of factor analysis concept and compilations of quantitative and qualitative research suggest school education to allocate relevant fields of courses in order to improve the interpersonal interaction and attitude in learning in interns. For example, occupational ethics and morals, interpersonal communication and expression, campus internship and other technical courses, workplace etiquettes...etc. and even relevant technical courses are integrated with the industry collaborative teaching strategies. Consequently senior experts can

instruct popular knowledge in cosmetics and hair beauty industries so that interns will quickly understand the industry structure and industry knowledge.

With regards to the welfare regulations and career aspects of interns, the school and industry must closely collaborate in (1) pre-internship process, including investigation in internship requirement, evaluation of internship institution, announcement of internship opportunities, propaganda for internship institutions, resume submission, internship matching, internship insurance, and educational training for internship system. (2) Internship should include internship visit, workplace internship, and internship counseling (internship emergency accident handling mechanism and counseling, exchange and withdrawal mechanism for internship inadaptability). (3) Internship completion (including before completion) – internship evaluation, internship satisfaction, internship outcome, and student presentation of report on industry knowledge.

With regards to environmental cognition and adaptability, schools can arrange interns to participate in visits to off-campus internship institution while still enrolled in school, industry experience camp, topic speech, internship outcome presentation, internship outcome expo...and other professional courses or off-campus activities. Consequently interns will have the opportunity to understand the relevant industry culture and ecology, in addition to establish complete dual-advisor counseling strategies with enterprises. Teachers from the school will help counsel interns in the communication with enterprises while enterprises mostly adopt apprenticeship to counsel interns with familiarization of work content, thereby boosting interns' effectiveness in environmental cognition and adaptability.

**TABLE 2: Analysis of Internship Factor Correlation**

Internship Concept	12 Internship Factors	Components after Rotated Component Matrix <sup>a</sup>			Credibility CR	Validity AVE
		1	2	3		
Interpersonal Interaction and Attitude in Learning	Etiquettes and Conducts	.881			0.913	0.677
	Interpersonal Communication	.837				
	Work Attitude	.836				
	Workplace Skills	.812				
	Learning Attitude	.742				
Welfare Regulations and Career	Internship Welfare		.795		0.845	0.577
	Career Planning		.757			
	Internship Agreement		.745			
	Internship Visit		.740			
Environmental Cognition and Adaptability	Internship Environment			.748	0.715	0.457
	Adaptability Issue	.544		.647		
	Cognition	.591		.628		
Extraction: Main Component Analysis Rotation: Including Varimax in Kaiser normalization. a. Rotation converged in 5 iterations.						

## CONCLUSION AND SUGGESTIONS

### Conclusion

Ministry of Education. (2017) The official website of Ministry of Education quoted Clause 1 of Junior College Law, "the goal of junior colleges is to instruct and enhance applied science and techniques, cultivate employment competence, and nurture professional talents". The goal of the cosmetology related departments in five-year junior colleges is to cultivate students' techniques and competence needed for the future employment market. With the prosperous development of cosmetics, medical cosmetology, and beauty and hair styling markets in the nation, the job demands on cosmetology related has been increasing, which also create increasing demands of talents on cosmetics application management or fashion beauty hair styling.

To cope with the demand for human resources in vocational and technical education, the Ministry of Education actively promotes internship courses for five-year vocational and technical junior colleges. Ross, et al. (2006) states that off-campus internship system is the transition period for students enrolled in school to transform into a real employee. The age distribution of vocational and technical junior college students is in the adolescent stage, where students detach from the protection of schools and enter the internship field. Interns will need to cope with new situations and new roles, not only in the tasks of role development they take but also accept tests from occupational society. Hence, it is necessary for schools for take more prudent consideration of all details in internship process, from the selection of internship institutions at the beginning, signing of internship agreement, propaganda of internship institutions, internship interview, pre-internship orientation and educational training...and to students entering the internship site for real internship, internship visit, internship performance evaluation and submission of internship report after the completion of internship. All details and processes require the collaboration and coordination from the schools, enterprises, students, and parents (Li, et al., 2008).

The study draws conclusion on the content of off-campus internship for cosmetics related department in vocational and technical schools: workplace skills, interpersonal communication, etiquettes and conducts, learning attitude, work attitude, adaptability issue, cognition, learning environment, internship welfare, internship agreement, internship visit, and career planning. In particular, the findings suggest the greatest difference of students' performance in etiquettes and conducts  $p < .001$  and student's workplace performance  $p < .01$ : workplace skills, interpersonal communication and work attitude. Students' workplace performance  $p < .05$  has the following slight difference in terms of presentation in adaptability issue, internship welfare and internship agreement. School teachers have more rigorous requirement in terms of questionnaire survey and interview content on the basis of rigorous educational stance and maintenance of internship quality. For the rest such as learning attitude, cognition, learning environment, internship visit and career planning, the difference of views in students, enterprises and teachers is not significant.

Analysis of Internship Factor Correlation: CR value 0.913 and AVE value 0.677 for interpersonal interaction and attitude in learning, CR value 0.845 and AVE value 0.577 for welfare regulations and career, and CR value 0.715 and AVE value 0.457 for environmental cognition and adaptability, suggest that CR value greater than 0.7 means excellent consistency inside the research model, where AVE value also meets the standards. The compilation of research reveals the follows: (1) The interpersonal relation and internship learning content of interns can affect students in terms of cognition for workplace environment and performance of adaptability. (2) Cognition for internship environment and adaptability will affect interns'

views on welfare regulations and career. (3) The content of internship welfare regulations and career will affect the learning progress and attitude in workplace.

## **Suggestions**

To improve the implementation effectiveness of off-campus internship courses for cosmetics related departments in vocational and technical junior colleges, the paper proposes the following suggestions for students, schools and enterprises:

### **1. Suggestions for Students**

Since the workplace interpersonal relation of interns and content of internship learning can affect students' performance in workplace environmental cognition and adaptability, interns are suggested to collect work intelligence and store learning capacity before internship, particularly in areas of etiquettes and conducts, workplace skills, interpersonal communication, and work attitude, to familiarize and understand the purpose of internship as career exploration and development of self-career planning.

1. Interns are suggested to write internship diary and report regularly during internship period in addition to regarding writing internship report as training for boosting capacity. The internship and report writing will help students completely reflect on the internship and regard such experience as boosting self-capability.
2. Interns are suggested to take initiative in reflecting their future career planning by discussing with faculty, peers, relatives, and friends and share their experience of internship, followed by providing clear orientation of future career and thereby fulfilling the purpose of internship.

### **2. Suggestions for Schools**

1. Schools are suggested to develop students with basic skills in internship by strengthening the foundation for professional and technical courses such as cosmetics, hair beauty, manicure, and makeup chemistry. Such skills are particularly required in the marketing management of service industry, interpersonal communication and professional knowledge in occupational ethics.
2. Evaluate the competent internship institution and job content by developing the internship proposal and agreement as well as other documents so that internship institution managers will understand the purpose of internship and notify them of internship objectives. Schools will protect the internship rights and interests of interns to facilitate subsequent establishment of internship collaboration.
3. To achieve the effectiveness of internship courses, prudent process should be taken for different stages of internship course while explicit process should be formulated, i.e. (A) Pre-internship process includes – adjustment in internship requirement, evaluation of internship institution, announcement for internship opportunities, propaganda for internship institutions, resume submission, internship matching, internship insurance, and educational training for internship system. (B) Internship includes—internship visit, workplace internship and internship counseling (internship emergency accident handling mechanism and counseling, exchange and withdrawal mechanism for internship inadaptability). (C) Internship completion (including before completion) – internship evaluation, internship satisfaction, internship outcome, and student presentation of report on industry knowledge.

### **3. Suggestions for Enterprises**

1. Since the content of internship welfare regulations and career have influence on the learning progress and attitude of workplace, enterprises should explicitly suggest the regulations and conditions for implementing internship agreement, which will facilitate the



school to implement internship collaboration.

2. Enterprises should establish excellent industry-academic collaboration such as industry collaborative teaching, participation in department curriculum development committee...etc. to carry out the reciprocal industry-academic exchange and in order to maintain the long-term cooperation.
3. To retain human resource and talents, interns should be regarded as the resource of the company's full-time human resource by arranging appropriate and free educational training course, thereby improving students' occupational knowledge and skills. Interns will be provided with support system in interpersonal care, thereby enhancing interns' adaptability to meet the triple-win situation in enterprises, students and schools.

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## Entrepreneurship Education And Employability Among Babcock University Students

**Ngozi Caroline Uwannah, PhD**

Department of Education,  
Babcock University, Ogun State, Nigeria

**Anelechi Onyemeze Uwannah**

Babcock University, Ogun State, Nigeria

**Dolapo Ruth Ojelabi**

Department of Education,  
Babcock University, Nigeria

### ABSTRACT

Several attempts have been made at encouraging entrepreneurial activities in Nigeria in the past but observation has shown that these efforts failed due to various constraints. Hence this study investigated the extent at which entrepreneurship education determines employability among Babcock University students. A descriptive survey research design was adopted in the study and a total sample of three hundred and thirty (330) undergraduates of Babcock University in their final year were drawn through stratified random sampling technique as subject of study. Self-developed instruments namely Students' Assessment of Entrepreneurship Education Questionnaire; consisting of 13 items with a reliability co-efficient of 0.68, and Employability Questionnaire with 6 items was used to test the influence of entrepreneurship education on employability with a reliability co-efficient of 0.73. The study adopted linear regression analysis to test the hypothesis while mean and standard deviation were employed to analyse the research questions at 0.05 level of significance. The findings revealed that entrepreneurship education is a significant determinant of employability among Babcock University undergraduates. Further analysis revealed that entrepreneurship education is beneficial and have positive impact on them. It was recommended among other things that skill acquisition programmes should be incorporated into the school's curriculum as a course to be taken by all students regardless of their level and course of study.

**Keywords:** Entrepreneurship education, Employability, Babcock University.

**Word count:** 215

### INTRODUCTION

Entrepreneurship, in today's world, has become one of the most publicized activities. It is believed that nations are being shaped by entrepreneurs who are men and women innovators who make changes by translating various resources like time, money and opportunities into gainful ventures.

The rate of youth unemployment, low standard of living and increased hardship witnessed in recent times in the country has led to a renewed interest in entrepreneurship development in Nigeria (Adebayo & Kolawole, 2013). The recent trend in the nation is that after graduation, youths find it difficult to find white collar jobs. The situation is so serious that Anyebe (2017) drew attention to the fact that tertiary institutions in Nigeria produce not less than 120,000

graduates each year with no hope of finding employment. This is the reflection of the state of the economy with negative implication on mental health, heart disease, crime and violence, suicide and even poverty (Nwaoga & Omeke, 2012).

Additionally, a look at the National Bureau of Statistics Report (2017) show that unemployment rate was recorded at 12.1percent in March quarter 2016 and 13.3percent in June quarter 2016, up from 10.4 percent in the fourth quarter of 2015, the number of unemployed persons rose by 18 percent that is 9.485 million, meanwhile, youth unemployment increased to 21.5 percent from 19 percent. This is a clear indication that Nigeria is in a present state of recession having realised two consecutive quarters of negative GDP (gross domestic product), in March quarter -0.36 and in June quarter -2.06 in 2016 (National Bureau of Statistics Report, 2017). Globally, the times are hard and Nigeria as a nation is not immune to these hard times, hence the need to provide solution to some of the problems facing the nation in form of economic recession, unemployment, poverty, inadequate and poor healthcare services, insecurity, etc (Anyebe, 2017). In the present situation therefore, job creation will be very difficult except with the introduction of entrepreneurship education into the university syllabus.

Nigeria can only solve these problems when it totally works hard to develop the capacity for entrepreneurship which will lead to the employability of the youths. Based on this need, the Federal Government issued a directive to all Universities in Nigeria to establish Entrepreneurship Centres and this was contained in the Nigerian Universities Commission (NUC) Benchmark and has become a mandatory course for all Nigerian graduates despite their disciplines since the year 2000 (Arogundade, 2011). This is important because a successful entrepreneur needs to learn the skills ((Dubey, 2017) and through entrepreneurship education individuals can be turned into responsible and independent beings, who are thinkers and who can contribute to economic development of their nations (Kenton & Enwin, 2010).

Entrepreneurship education is not just teaching someone how to start a business rather it encourages creative thinking, innovation and the visualization of the thought. It aims at influencing the learner's characters and also enabling the learner to develop in all areas (Dubey, 2017). Entrepreneurship education encompasses strategies in introducing and instilling entrepreneurship attitudes into students. Entrepreneurship education instills in students the additional knowledge, attributes and capabilities required in the context of setting up a new venture or business and the ability to demonstrate initiative and original thought, alongside self-discipline in starting tasks (Arogundade, 2011). It is a lifelong learning process starting as early as elementary school and progressing through all levels of education with the aim of making the youths self-reliant and self-employed (Fajana, 2010). Entrepreneurship education will inculcate and expose the students and potential entrepreneurs to entrepreneurial values and skills which include the aspect of leadership, innovation, creativity, competitiveness independence, calculated risk and ability to identify and create opportunities (Akpomi, 2008).

Well planned entrepreneurship education is expected to result to employability. Pereira (2016) argues that employability is not a set of skills but the ability to maintain and successfully create jobs, either for oneself and or for others. This means that it is not all entrepreneurship education that could translate to employability but the ability to apply what was learned. Students who engage in developing their employability skills are said to be independent, reflective and responsible learners (Pereira, 2016).

Employability skills such as critical thinking, interpersonal relationship, ability to work with technology, etc, are necessary tools for job creation but these skills were not previously taught in our universities in order to equip students taking into consideration the fact that these skills are required for employability thus rendering the students unemployable in the society (Matley, 2008). To solve this problem, the federal government of Nigeria in an attempt to ensure that her citizens are self-employed established the National Directorate of Employment in 1986; the Peoples Bank of Nigeria and many others with the belief that this effort will go a long way in reducing unemployment but it did not (Fajana, 2010; Efe-Imafidon, Ade-Adeniji, Umukoro & Ajitemisan 2017).

This study therefore examines entrepreneurship education as a determinant of employability among Babcock University students. It was carried out among final year students in 400level because this class of students were about to graduate to face the world of work and they have completed a course in Entrepreneurship Education.

### **ENTREPRENEURSHIP EDUCATION**

Graduates in today's world will need to equip themselves with the required skills and education in order to meet up with current job market and job requirements that are constantly changing. Hence, they need to be flexible and have personal capacity to manage changing and challenging work situations.

Entrepreneurship is seen as the key to the survival of nations and an important component of economic development capable of moving nations out of poverty (Adeoye, Olajide-Arise & Egwakhe, 2018). It could create jobs and is the only economic tool for sustainable development (Iyiola & Azuh, 2014). According to Onu and Ikeme (2008), entrepreneurship is the process of creating or seizing an opportunity and pursuing it regardless of the resources currently controlled. They noted that Entrepreneurs are those who create wealth from nothing and put everything they have in order to get everything they desire.

The ability to actually fulfil the demands of successful entrepreneurship requires sound entrepreneurship education. Anyebe (2017) define entrepreneurship education as the liberation of the mind and the improvement of socio-economic development in any nation. Therefore, when people do not have the required skills, education have failed to achieve its aim. Kenton and Envin (2010) assert that entrepreneurship education is based on the construction and transference of knowledge to a field and focusing on learning experience and the development of competencies, skills, aptitudes or values. Entrepreneurship education that will really cater for the needs of nations may differ nation by nation based on their peculiarity. In Nigeria as a nation, entrepreneurship education is the type of education where the learner is exposed to cognitive, affective and psychomotor abilities that will enable the learner to be self-reliant, self-sufficient and sustainable (Nwaoga & Omeke 2012). It is the education that will prepare citizens, mostly youths, to create jobs, wealth and generate income for both the government and for themselves thereby providing solution to economic problems (Nwaoga & Omeke 2012). This has made it clear that the benefits of entrepreneurship education cannot be overemphasized especially at it relates with employability.

### **EMPLOYABILITY**

According to Yorke (2006), employability is a synergic combination of personal qualities, skills of various kinds and subject understanding. In recent times, it has been seen as the key to individual, organizational and societal success because it speaks of exploration of infinite human resourcefulness which involves self-management, giving shape to individuals who have everything to win and nothing to lose from working to improve their selves (Berglund, 2018).

Yorker and Knight (2006) discussed that employability is influenced by students' self-efficacy beliefs, self-theories and personal qualities. Thus employability not only broadens the focus to include a wider range of attributes required to be successful within employment but also includes the attributes required to manage one's career development in ways that will sustain one's employability.

In another quarter, employability is the possession of qualities and competencies required to meet the changing needs of employers and customers by an individual thereby helping to realise aspirations and potentials in work (Pereira, 2016). Employability skills demands the development of skills and adaptations in which everyone who is able to work are enabled to gain employment and sustain that employment as long as they are willing to work (Berglund, 2012).

### **ENTREPRENEURSHIP EDUCATION AND EMPLOYABILITY**

Governments all over the world believe that entrepreneurship education have positive impact on the socio-economic and political infrastructure of a nation (Efe-Imafidon et al, 2017). Entrepreneurship has been defined as a tool that equips individuals with a potential in life, studies, work and in society to deal with problems, see opportunities and be energetic (Berglund, 2012). Education is needed to be able to develop a business idea, recognize opportunities, build entrepreneurial team, write business plans and manage growing entrepreneurial firm. Employability on the other hand, equips people with skills that make them enterprising and in control of both their life and work (Berglund, 2018). It involves essential skills and abilities that enable one to be gainfully employed into the various employment opportunities thereby reducing the unemployment rate in the country, therefore there is a strong link between entrepreneurship education and employability. Yorke (2006) submit that when students are exposed to entrepreneurship education, a positive influence is impacted on their entrepreneurial intentions and they are equipped with the necessary skills and mind-sets required for successful entrepreneurship while at the same time instilling self-confidence that will give them the strength to face the world of work successfully.

#### **Purpose of the Study**

The general objective of this study is to examine entrepreneurship education as a determinant of employability among Babcock University students while the following are the specific objectives;

- To find out the assessment of Babcock University students on the course Entrepreneurship education.
- To find the impact of entrepreneurship education on Babcock University students
- To find out if entrepreneurship education can be a significant determinant of employability among Babcock University students.

#### **Research Questions**

1. What is the student's assessment of entrepreneurship education?
2. What is the impact of entrepreneurship education on Babcock University students?

#### **Research Hypotheses**

1. Entrepreneurship education will not significantly determine employability among Babcock University students.

### **METHODOLOGY**

The descriptive survey research design was adopted for this study. A sample of three hundred and thirty (330) 2016/2017 final year students of various Departments in Babcock University,

Nigeria was selected as participants through stratified random sampling technique. This category of students has undergone the entrepreneurial learning process and is assumed to have better understanding regarding their future careers. They have been exposed to entrepreneurship education and may want to consider self-employment as an alternative to becoming wage earners.

Self-developed instruments namely Students' Assessment of Entrepreneurship Education Questionnaire; with 13 items such as "the course developed my entrepreneurial knowledge and skills" with a reliability co-efficient of 0.68, was used to analyse students assessment of entrepreneurship education and its impact on them and Employability Questionnaire with 6 items was used to test the relationship between entrepreneurship education and employability with a reliability co-efficient of 0.73 with questions like "amongst various options, I would prefer to be an entrepreneur".

The data collected was analysed using linear regression analysis, mean and standard deviation at 0.05 level of significance.

## RESULTS

**Table 4.1: Demographics of Respondents**

<b>Demographic Variables</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Gender</b>		
Male	189	57.3percent
Female	141	42.7percent
<b>Total</b>	<b>330</b>	<b>100.0percent</b>
<b>Age</b>		
18-20 years	15	4.5percent
21-23 years	176	53.3percent
24-26 years	123	37.3percent
Above 27 years	16	4.8percent
<b>Total</b>	<b>330</b>	<b>100.0percent</b>
<b>Level</b>		
400	283	85.8percent
500	47	14.2percent
<b>Total</b>	<b>330</b>	<b>100.0percent</b>

**Source: Author's Computation from Field Survey**

Table 4.1 above showed the demographics of respondents on variables such as gender, age and level. As regard the gender distribution, 189(57.3percent) of the respondents were male and the remaining 141(42.7percent) were females. For age distribution, 15(4.5percent) of the respondents are between the ages of 18 and 20 years; 176(53.3percent), which constituted the majority, are between the ages of 21 and 23 years; 123(37.3percent) are between the ages of 24 and 26 years and 16(4.8percent) are above 27 years. For level distribution, 283 (85.8percent) of the respondents, which formed the majority are in 400 level and the remaining 47(14.2percent) are in 500 level

## Research Question One: What is the student's assessment of entrepreneurship education?

**Table 4.2.1: Students' Assessment of Entrepreneurship Education**

S/N	Items	SA	A	U	D	SD	Mean
1.	The course provided a new and different experience.	122	151	35	14	8	4.11*
2.	The course provided the opportunity to things my way without conforming to class structures.	124	169	30	4	3	4.23*
3.	The course exposed me to situations with uncertain outcomes.	137	161	12	16	4	4.25*
4.	The course developed my entrepreneurial knowledge and skill.	134	138	33	15	10	4.12*
5.	The course provided an opportunity to learn by doing.	113	148	41	21	7	4.03*
6.	I do not enjoy courses that require a student to learn by doing.	68	88	34	85	67	3.12*
7.	As a result of taking this course, I feel I have a better understanding about business.	139	143	37	12	5	4.26*
8.	My interest in entrepreneurship has been raised after taking the course.	127	171	17	11	4	4.23*
	<b>Cluster Mean</b>						<b>4.04*</b>

Source: Author's Computation from Field Survey

\*= significant.

Table 4.2.1 showed the results of students' assessment of entrepreneurship education. The responses were structured in a 5-point likert scale format ranging from strongly agree (SA) to disagree (D). The benchmark mean point for each item was pegged at 3.00. Any item whose mean point is less than 3.00 was considered as insignificant, on the other hand, any item whose mean point exceeds 3.00 was considered significant.

From table 4.2 above, all the items were significant as their mean point exceeds 3.00. Furthermore, the cluster mean stood at 4.04. Thus, this implies that the students' assessment of entrepreneurship education is significant, vital and pertinent as it provides the students with new experience, enables them to do things without conforming to classroom structures, exposes them to situations with uncertain outcomes, develops their entrepreneurial knowledge and skills, provides the opportunity for them to learn by doing, makes them knowledgeable about business and propels their interest in entrepreneurship.



## Research Question Two: What is the impact of entrepreneurship education on Babcock University students?

**Table 4.2.2: Impact of Entrepreneurship Education on Students**

S/N	Items	SA	A	U	D	SD	Mean
1.	I know how to develop an entrepreneurship project.	132	141	31	21	5	4.13*
2.	I can control the creation process of a new firm.	128	157	22	14	9	4.15*
3.	I have been able to develop the skill of networking and making professional contact.	144	159	12	12	3	4.30*
4.	I have been able to improve in my idea of development skill.	137	161	6	19	7	4.22*
5.	I know the responsibilities of an entrepreneur.	139	153	25	3	10	4.24*
6.	I can recognize problems and provide solutions.	123	158	21	21	7	4.12*
7.	I can develop a business plan	129	164	24	4	9	4.22*
	<b>Cluster Mean</b>						<b>4.20*</b>

**Source: Author's Computation from Field Survey**

\*= significant.

Table 4.2.2 revealed the impact of entrepreneurship education on students. The responses were structured in a 5-point likert scale format ranging from strongly agree (SA) to disagree (D). The benchmark mean point for each item was pegged at 3.00. Any item whose mean point is less than 3.00 was considered as insignificant, on the other hand, any item whose mean point exceeds 3.00 was considered significant.

From table 4.3 above, all the items were significant as their mean point exceeds 3.00. Furthermore, the cluster mean stood at 4.20. Thus, this denotes that the impact of entrepreneurship education is significant to the students in the context of development of entrepreneurial project, creation of new firms, professional and skill networking, improvement in development skill, information about entrepreneurship, identification of problems and suggestion of solutions and development of business plans.

## Testing Of Hypothesis

**Hypothesis One:** Entrepreneurship education is not a significant determinant of employability among Babcock University final-year students.

**Table 4.3(a): Regression Result of Entrepreneurship Education as a determinant of Employability**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.791	.367		18.504	.000
	E.Education	.005	.022	.034	.227	.016

Dependent Variable: Employability

### Model Summary

**Table 4.3(b):**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.911	.831	.782	.165921

Predictors: (Constant), Employability

From the results above, a positive relationship existed between entrepreneurship education and students' employability. The coefficient of determination (R-square) showed that entrepreneurship education accounted for 83.1percent variation in students' level of employability. Furthermore, the probability value of entrepreneurship education stood at .016, is less than the standard .05 ( $p < .05$ ). This implies that entrepreneurship education is a significant determinant of employability. Thus, the alternative hypothesis is accepted that entrepreneurship education is a significant determinant of employability among Babcock University final-year students.

## DISCUSSION

The results of the analysis of research question one found that students' assessment of entrepreneurship education is positive. This implies that students rated entrepreneurship education as very important to their present and future entrepreneurial undertaking. The students agree to the fact that the course provided them with an opportunity to learn new things during their practices thereby providing them with new and different experience, provided them with the opportunity of doing things their way without been confirmed to formal class structure and it also helped to develop their entrepreneurial knowledge and skills. This finding supports that of Pereira (2016) and Nwaoga & Omeke (2012) who equally discovered in their studies that entrepreneurship education sharpens the learner's cognitive, affective and psychomotor abilities and enables the learner become self-reliant, self-sufficient and sustainable.

Research question two confirms the positive impact of entrepreneurship education on Babcock University students by affirming that entrepreneurship as a course taught in Babcock University has instilled in the students skill of networking and making professional contact, improved their ideas on skill development, their ability to recognize problems and provide suitable solutions, to develop entrepreneurial project and also to develop a business plan. It was found that the impact of entrepreneurship education to students is significant. This finding aligns with that of Muhammad, Aqsa and Hafiz (2016) that the program entrepreneurship encourages entrepreneurs to start a business. Additionally Matley (2008) findings prove that entrepreneurship education has tremendous impact on students as it exposes them to viable

business ideas and opportunities, makes them job creators and not job seekers, makes them self-dependent and self-reliant and reduces the rate of idleness or joblessness among youths.

Furthermore, the hypothesis on if entrepreneurship education will significantly determine employability among Babcock University students was validated. It was found that entrepreneurship education is a significant determinant of employability among students in Babcock University. This implies that the knowledge of entrepreneurship education raises the level of employability among the youths. This equally means that the more an individual is enlightened on this aspect, the higher his/her chances of being employed. This finding aligns with the submission of Nwaoga & Omeke (2012) that entrepreneurship and employability go hand in hand because entrepreneurship education helped to facilitate the acquisition of skills competence and ability of the students. When these graduates are well equipped, they will help to reduce unemployment, contribute to gross domestic product, faster innovation and incubate potential large industries that will boost technological development and identify business opportunities in Nigeria. Entrepreneurship education is a powerful factor of graduates' level of employability, as it enables an individual to develop astute business ideas and it also fosters creativity among youths.

### CONCLUSION AND RECOMMENDATIONS

Findings from the study revealed that students' assessment of entrepreneurship education is significant as it provides the students with new experience, enables them to do things without conforming to classroom structures, exposes them to situations with uncertain outcomes, develops their entrepreneurial knowledge and skills, provides the opportunity for them to learn by doing, makes them knowledgeable about business and propels their interest in entrepreneurship. Furthermore, the impact of entrepreneurship education is significant to the students as it trains them to develop an entrepreneurial project, create their own business, contact and network with other professional and successful entrepreneurs, improves their development skill, exposes them to the basics of entrepreneurship, enables them to identify business problems and proffer relevant solutions and aids them to develop feasible business plans. Finally, entrepreneurship education is a significant determinant of employability among students of Babcock University. This implies that the more knowledgeable an individual is on entrepreneurship education, the higher the chances of being employed. Hence, entrepreneurship education can actually help reduce youth unemployment by propelling them to establish their own business thereby making them job owners and not job seekers.

The study recommends that all the government of Nigeria as well as organizations encourage and teach acquisition of skills and knowledge and not laying emphasis on paper qualification alone which is what is obtainable presently, hence, skill acquisition programmes should be incorporated into the school's curriculum as a course to be taken by all students in the university.

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## Tools, Techniques, and Methods of Finance and their Applications in Business

**Sadaf Mustafa**

Research Scholar,

Department of Commerce, University of Karachi

### ABSTRACT

Effective financial management involves intelligent use of financial tools, techniques and methods to determine and increase market value of firms. Its scope extends beyond accounting, budgeting, financial reporting and analysis. Its scope also goes beyond use of regular accounting tools like time value of money, working capital management, NPV analysis, make versus buy decisions, and investment analysis. In the broader domains of business, therefore, finance managers are expected to provide foresight for business strategy, helping the firms gain sustainable growth and expansion. The main purpose of this paper is to present and analyze the efficacy and relevance of the most pertinent tools used in the financial analysis. In order to achieve the purpose, secondary research is used to provide supporting evidence to determine the efficacy of each of the classical and contemporary financial tools. Extensive literature from research journals has been sought to present discussion on the relevance of these tools in light of growing changes in the world of finances, varying financial structures across the globe and rising need for ethical considerations in measurement and presentation of financial analysis and financial reports. This paper begins with a look at the basic valuation tools used by finance managers to assess a firm's value. It then moves to analyze advanced financial tools need to create and sustain firm value. Finally, the paper presents an examination of the legal and ethical insights into the use of these tools and techniques and advocates measures that should be adopted by decision makers in finance.

**Keywords:** Methods of Finance, Financial Tools, Finance Techniques

### INTRODUCTION

Investors, creditors and financial managers use different techniques to determine a firm's value. Though most of such techniques are industry or company-specific, some stand generally acceptable and are extensively used for varied situations and business conditions (Ross et al. 2009). Four most commonly used techniques for determining a firm value are described below:

1. Discounted Cash Flow Analysis (DCF): This method involves determining a firm's value based on cash flow projections for the future. Once future cash flows are estimated, they are discounted using the net present value (NPV) techniques using a given rate of discount.
2. Comparable Company Analysis: This method is most frequently used to gauge values for public companies (Farooq & Thyagarajan, 2014). Value is determined by comparing the company's financial standing and metrics with similar companies using the market prices.
3. Leverage Buyout (LBO): This method involves analysis whereby a firm's ability to pay is arrived at. The method involves arriving at the value on the basis of how well a company is able to acquire a significant amount of borrowed funds when a certain required rate of return is affixed to the borrowed capacity (Waddock & Graves, 1997).

In other words, LBO assesses a firm value based on its ability to pay given a certain RoR and debt/equity ratio.

4. Precedent Transaction Analysis: This method is particularly useful in situations where mergers and acquisitions have taken place. By analyzing the historical prices for any mergers/acquisitions that similar companies have had, valuation accounts for any 'control premium' and its rate over equity/revenue which the acquirer paid to have the business.

It is imperative to note that no single method can be applied across all situations.

Financial managers must look into the varying characteristics of the businesses they are valuing (Farooq & Thyagarajan, 2014). Furthermore, investors are not advised always to rely on the same method. They may arrive at a range of firm valuations before arriving at a decision and they may average out all such valuations to see if they bring more precision (Milkman, Chugh & Bazerman, 2008).

Contemporary techniques of financial management might include activities like risk management, performance management, competitive intelligence and use of big data for forecasting. The real or economic value of a firm (as against its accounting or book value) comes from the use of these very tools. By adopting these tools, the financial function becomes a main driver of value. Some other activities that also encompass or supplement the finance function may include one or more of the following:

1. Reducing cycle times through meaningful processing and inference of accounting and financial data.
2. Quicker closing of general ledger through data organization.
3. Leveraging technology and human resources to reduce lags, such as through use of electronic data interchange; electronic payroll processing and purchase credit cards for payables etc.

### **Advanced Value Creation Tools**

The traditional approach to value creation focuses on historical accounting information and hardly accounts for the current and future market value of the organization (Ross et al. 2009). This puts the sustainability of investments at risk. The market valuation approach takes into account, not just earnings but expected cash flows for the future. The emphasis is thus shifted to economic performance rather than accounting performance (Tidd, 2012). Decision makers in finance are also expected to think outside the financial statements, quantify and measure non-financial parts such as human resource capital, information technology, research and innovation and strategic business partnerships (Tidd, 2012). These all impact the quality of earnings which the financial statements fail to reflect.

In order to arrive at the true picture of financial health, finance managers can make use of some advanced valuation techniques enlisted below.

1. Financial Restructuring
2. Market Value Added (MVA)
3. Residual Cash Flow (RCF)
4. Economic Value Added or EVA
5. Cash Flow Return on Investment or CFROI Cash Flow Return on Investment (CFROI)

### **Financial Restructuring**

Financial restructuring is the basic value maximization technique used by modern large-scale businesses (Ross et al. 2009). Through it, financial outlook of a company can be improved

through reconfiguration of business operations or business units or through purchase and sale of some other businesses or business assets (Cerný, 2009). A business restructuring can be in different forms including vertical restructuring, horizontal restructuring, corporate restructuring, recapitalizations and spin-offs (Ross et al. 2009).

1. In vertical restructuring, the configuration of assets of a business unit is changed. For example, a sale/lease arrangement can be utilized for reconfiguration of the assets between two business units. Other instances of such restructuring include subcontracting and franchising (Farooq & Thyagarajan, 2014).
2. In horizontal restructuring, either a new business venture or acquisition takes place, or a leveraged recapitalization takes place to improve a business capital structure (Ross et al. 2009).
3. In corporate restructuring, financial outlook is improved via issues of stocks/debt, repo transactions, leveraged buy outs (LBOs), liquidation and change in the form of business ownership (Waddock & Graves, 1997).
4. In recapitalizations, or recaps, debt is used as a shield for an improved financial outlook. The firm incurs large debt in order to attract investments in future and also to ensure that they use their funds to their maximum potential and efficiency. Recaps force a business management to ensure high levels of cash and avoid any misuse or overuse of funds. In this way, value creation is maximized.
5. In spin off, a whole new company is created from an existing one, allowing value creation for shareholders as their share values are split into two parts: one of the old company and one of the new company (Ross et al. 2009).. This way a large part of trapped value of shares is released.

### **Market Value Added (MVA)**

Public limited companies determine their market value by multiplying the number of their outstanding shares by market stock price (Cerný, 2009). Extending this concept further, the Market Value Added (MVA) model reflects the difference between market and invested values of this capital. It compares the cost of capital with its rates of return (ROR) to assess how well a firm is doing. Thus, MVA of a firm is presented by following steps:

$$\text{MVA} = \text{Market Value of Equity} + \text{Market Value of Debt} - \text{Total Adjusted Capital}$$

If market value of debt is not readily available, firms may only rely on the equity portion (Waddock & Graves, 1997). Imperative to note here is that the valuation for capital originally invested cannot always be precise as accounting entries may cause distortion over time. However, the MVA approach is best applicable when firms need to benchmark their performance against others.

### **Residual Cash Flow (RCF)**

Determining the residual cash flow (RCF) is one of the most important techniques firms use for value creation. Also called as cash value added (CVA) approach, RCF obtains the residual cash generated by a certain investment (Cerný, 2009). It is computed by subtracting the cost of capital from net cash flows and can be presented with the given formula:

$$\text{RCF} = \text{Adjusted Operating Cash Flows} - I \text{ (Gross Investment)}$$

Where

I= Cost of Capital

RCF= Residual cash flow

As an example, a capital asset with a \$100,000 cost has expected annual cash flows of \$ 35000. Assuming that marginal tax for this asset is 35%, and weighted average cost of capital as 8.5%, we can arrive at RCF as:

Cash Flows (per year) = \$ 35,000  
 Minus Taxes at rate of 35% (12,250)  
 Net Cash Flows 22,750  
 Adjustment to Cash Flow (1) 7,000  
 Adjusted Cash Flow 29,750  
 Less Cost of Capital (2) ( 8,500)  
 Therefore, Residual Cash Flow (RCF) per Year \$ 21,250

Note that adjustments to cash flows have been calculated using the following steps:

1. Depreciation of \$ 20,000 per year (\$100,000 / 5 years) x .35 tax rate.
2. Gross investment of \$ 100,000 x 8.5%.

RCF is considered as the easiest approach to arrive at an investment valuation (Cerný, 2009). However, in order for RCF to be much accurate, certain adjustments are needed in the Weighted Average Cost of Capital and Operating Cash Flows. Furthermore, RCF cannot be applied as a comparable measurement tool (Waddock & Graves, 1997). That is, we cannot compare two companies using their residual cash flows. The technique is more suitable for valuation of projects than for valuation of companies.

**Economic Value Added or EVA**

This technique, like the RCF approach discussed above, is also based on the notion that economic income rather than accounting income should reflect the financial outlook of a business. EVA was popularized by a financial consulting firm called Stern Stewart which made sure that it was adopted as an effective financial tool for corporations like Whirlpool, Coca-Cola, Boise Cascade, Monsanto, and Eli Lilly.

The basic formula for measuring EVA of a firm is presented by:

$$EVA = NOPAT - \text{Cost of Capital}$$

In the equation above = NOPAT represents the ‘Net Operating Profits after Taxes’ which is the sum of cash equivalent equity that has been invested in the business and the cash equivalent of income (Cerný, 2009). On the other side, cost of capital represents the charge for use of capital, including interest on the debt and a charge for the equity capital based on a cash equivalent equity x cost of equity rate (Ross et al. 2009). The EVA model assumes that economic income can be arrived when accounting distortions affecting net operation profits and capital are removed. The table below presents the adjustments that are made in EVA.

**Table:1**

<b>Adjustments Required to Calculate NOPAT:</b>	<b>Adjustments Required to Calculate Capital:</b>
+ Increase to Deferred Taxes	+ Deferred Taxes
+ Increase to LIFO Reserve	+ LIFO Reserve
+ Goodwill Amortized in Current Year	+ Total Goodwill Amortized to Date
+ Increase to Net Capitalized Intangibles	+ Net Capitalized Intangibles
+/- Unusual Loss or (Gains) net of tax	+/- Cumulative Loss or (Gain) net of tax
+ Increase to Other Reserves & Allowances	+ Other Reserves & Allowances



### Cash Flow Return on Investment or CFROI

This method involves value measurement through an emphasis on operating cash flows adjusted for economic uncertainties such as inflation (Cerný, 2009). When such cash flows are arrived at, they are compared against returns to investments, which are also adjusted for economic uncertainties (Ross et al. 2009). This is done because market response to accounting information is not reflective of economic behaviors (Farooq & Thyagarajan, 2014). The basic equation for CFROI is presented with the formula given below:

$$\text{CFROI} = \text{Inflation Adjusted Cash Flows (Cash In)} / \text{Inflation Adjusted Investment (Cash Out)}$$

Seeing the equation above, it can be deduced that CFROI is the ratio of cash in to cash out given an expected rate of return (ROR). Like EVA, this method will also involve adjustments to accounting distortions. Some common adjustments made in order to determine value through EVA are presented in the table below:

**Table:2**

<b>Net Income</b>	<b>Book Value of Assets</b>
+ Rent Expense (Operating Leases)	+ Accumulated Depreciation
- FIFO Profits	+ Operating Leased Assets
+ Interest Expense	- Net Deferred Tax Assets

### Financial Structures of Firms

A firm's financial structure can mainly be divided into equity and debt. Each firm, depending on the size and market in which it operates, may have a different financial structure, with some firms having more funds from equity and others more from finance (Ross et al, 2009). The financial structure of a firm will also depend on the extent and ease of internal and external sources financing (Tidd, 2012; Farooq & Thyagarajan, 2014). Moreover, the size and operations of national equity markets, as indicated in national stock exchanges, banking and insurance sectors, may also impact on a firm's financial structure (Deesomsak, Paudyal & Pescetto 2004).

The financial structures of global firms are generally reflective of their global strategy (Deesomsak, Paudyal & Pescetto 2004). Global firms like Toyota, HP, Caterpillar and Du Pont would have a varied set of capital structure for each of the markets they operate, and some of their projects may even be having a zero or negative ROI (Hout, Porter & Rudden, 1982). The reason for variations in financial performance targets of global firms is simple: they work for ousting local and regional competition and emerge as massive global businesses rather than small financial winners.

According to Porta et al (1997), UK and the US have colossal equity markets in relation to equity markets of France and Germany. While hundreds of firms become public limited companies in the US, only a few will be able to do so in Italy. In the banking line, Japan and Germany surpass their market size greater than those of some wealthier countries, and in Russia, companies may not be having any external finance at all. These variations in size, depth and valuation of capital markets across the world are in large due to variations in legal atmosphere. Countries which follow common law protect creditors and shareholders the most; countries that follow German civil law and Scandinavian civil law moderately protect shareholders and creditors; while countries which follow French civil law have least regard for

creditors and shareholders. In general, wealthier countries are better in law enforcement than poorer ones. Porta et al (1997) also argued that countries more open to external finance will generate better valuations of stocks. It is therefore suggested that countries with stronger law enforcement take on the path of external finance to broaden their capital markets.

### **Global Financial Markets**

Financial markets are arrangements wherein buyers and sellers exchange financial instruments such as bonds, stocks, options, derivatives, swaps, futures, as well as currencies and commodities, are exchanged (Ross et al, 2009). Financial markets operate under certain rules and procedures mandated by national and international legislation. Some financial exchanges, however, are made in private i.e. through middlemen and dealers who operate in over-the-counter markets, or through insurers who secure debt for an individual or a firm (Deesomsak, Paudyal & Pescetto 2004). The dynamic nature of financial products and services demand a high degree of compliance not only for laws, principles and policies, but also for ethics (Benjamin, 2009). Financial markets are considered ethically responsible when they pose minimum amount of unfairness with regards to trading practices (Waddock & Graves, 1997). Such unfairness may be found through instances of fraud and manipulation or in unfair business conducts such as window dressing of financial statements for purposes of tax evasion, unhealthy business competition, inaccurate or misleading financial announcements and the like.

It may sometimes be difficult to measure the size of financial markets because they are mainly dominated by the biggest firms (Porta et al, 1997). Smaller firms, be they hundred in number, may never even access stock markets unless they go through a formal registration and a given a legal access to stock market through issuance of shares to the public in the form of Initial Public Offers, or IPOs (Deesomsak, Paudyal & Pescetto 2004).

The global financial markets consists of all national and international players engaged in financial dealings of stocks, currencies, commodities, bullions, foreign exchange, loans, deposits, insurance, reinsurance, trading instruments and the like. According to Beck, Kunt and Levine (2009), the size of global financial markets can be gauged by liquid liabilities, currency outside the banking system, stock market and bond market capitalization and private credits (Benjamin, 2009). These indicators could be used to determine how financial sector varies from one country to another (Beck, Kunt and Levine, 2009).

### **Ethical and Legal Implications of Finance**

According to Richardson (2009), regulations relating to the financial sector must stress on the environmental cost' of funds of a business. The need for an environmentally responsible behavior must be reflected as a part of business practice through strict adherence to the concept of Socially Responsible Investment, or SRI (Benjamin, 2009). In it, the financiers are advised to look at the environmental outcomes of their investments (Richardson, 2009). The fiduciary duties of financial regulators are also need to be expanded to account for environmental costs. Such duties may also be financially incentivized by the regulators in the form of strong performance standards (Porta et al, 1997). Laws may also be developed in which financial reporting includes aspects of environmental costs and returns of investments.

The global financial markets registered heavy shocks from the financial crises that erupted in the year 2007. The unabated collapse of a few banks fuelled a vicious circle of disinvestments across the globe, with major financial markets taking years to absorb and respond to those shocks. Policymakers and researchers soon focused on the irregularities of financial markets

that caused the crises, with greater focus on the issue of legislation targeting governance and control of financial markets (Boatright, 2010).

The issue of ethics in finance has received little focus from the research community (Boatright, 2010). Scholars appear to lack the research paradigm needed for the issue because of the absence of precise analytical tools or methods to determine how ethics impact business investments and profits (Ross et al, 2009). Scholars who have researched on business ethics also exclude these financial aspects given their limited understanding of theories and practices of finance.

Contemporary researchers in finance, however, are of the view that ethics should govern all company policies and procedures (Boatright, 2010). Without ethical fairness, they argue, businesses may register several financial and non-financial losses and may find it difficult to operate in stable market conditions (Benjamin, 2009).

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## Relationship Analysis ICARE-Oriented Students Worksheet Development With Learning Styles To Improve Learning Outcomes

**Jurubahasa Sinuraya**

Faculty of Mathematics and Natural Sciences,  
Universitas Negeri Medan, Indonesia

**Ida Wahyuni**

Faculty of Mathematics and Natural Sciences,  
Universitas Negeri Medan, Indonesia

**Deo Demonta Panggabean**

Faculty of Mathematics and Natural Sciences,  
Universitas Negeri Medan, Indonesia

### ABSTRACT

This study is the first year of three years. This study aims to describe the relationship of the development of teaching materials to learning styles in improving learning outcomes. The type of research used in the entire study is Research and Development (R & D). Research subjects are lecturers and Students in Basic of Mathematics and Sciences Group. The first year's study contains the need assessment, and the drafting of the initial draft of textbooks for high school physics courses with ICARE-oriented Students Worksheet. Data collection techniques used were questionnaire, observation, interview, and documentation study, and supported by logbooks and focus group discussion (FGD). The results shown in the development of the device indicate that the development of ICARE-based teaching materials is not influenced and does not have a significant relationship in one of the learning styles.

**Keywords:** Development ICARE, Learning Outcomes, Learning Styles

### INTRODUCTION

Relation to the application of the block system curriculum, the Dean of Faculty of Mathematics and Natural Sciences Unimed (2017), explains that the learning approach in lectures using scientific approach is equipped with six tasks: (a) routine task (TR), (b) critical book report (CBR), (c) critical research / journal review (CRR / CJR), (d) mini research (MR), (e) Project (Pr), and idea engineering (RI). Scientific approach (scientific) in this research called scientific method (scientific method) is a learning technique to formulate questions and answer questions through activities: observation, try melaksanakan activities, or carry out experiments. Therefore, the implementation of the scientific method is structured in seven steps: (1) formulating the problem, (2) formulating the research background, (3) formulating the hypothesis, (4) designing the experiment, (5) data collection, ( 6) analyzing results and drawing conclusions, and (7) reporting results (Majid and Rochman, 2013; Motlan, Sinuraya, J., and Tarigan, R. (2012)).

One of the courses contained in the KKNI-based block system curriculum is school physics. Learning tools that are needed, among others, is a school physics textbook that is oriented to a scientific approach (scientific). The textbook is not yet available. Therefore, it is necessary to

develop a school physics textbook in accordance with the demands of the KKNI based block curriculum system.

The textbook is a collection of printed materials printed in book form. Teaching materials are lectures arranged systematically used by lecturers and students in lecturing process (Pannen, 2001). According to Sungkono, et al. (2003) teaching materials are teaching materials that are "designed" to achieve learning objectives. Poerwati, et al. (2013) explained that the textbook is a handbook for a course written and composed by related field experts and meet the rules of textbooks and published officially and disseminated. The principle of textbook development can be used through: (1) classroom-oriented models, (2) product-oriented models, and (3) system-oriented models (Gustafson, 2002). Classroom-oriented models, are models related to the learning process that takes place in the classroom.

To optimize the use of high school physics textbooks in learning activities, the textbooks are accompanied by ICARE-oriented Students Worksheets. The Students Worksheet is one of the teaching materials used as a guide to conduct investigation or problem-solving activities (Trianto, 2008). The Students Worksheet is one of the teaching materials used as a guide for conducting investigation or problem-solving activities. The inclusion of Students Worksheets, in the textbook, lecturers can direct students to engage in aspects of knowledge, skills, and attitudes together. The connection in the teaching of textbooks, Dick & Carey (2009) explains that the first step "must" dilaksanakan to develop textbook is a needs analysis (need assessment). Aspects studied through requirement analysis activities include: (a) student learning styles, (b) model needs or learning approaches, (c) student learning characteristics, (d) facilities and infrastructure, (4) availability of worksheets and so forth. People who have a visual learning style tend to use more vision; they have a strong sensitivity to color, and only have sufficient understanding of artistic problems (Sinuraya, J. (2004)). Weaknesses for visual styles according to Uno, H. B. (2008) are difficulty in following verbal suggestions and often misinterpret words or utterances.

Characteristics of visual learning style according to De Porter, B & Hernacki, M. (2001) are not generally distracted by the commotion, (a) tend to remember what is seen than what is heard, (b) prefers to read rather than read, (c) readers are quick and diligent, (d) often know what to say, but are not good at picking words, (e) remembering visual associations, (f) having problems remembering verbal instructions unless written, and often asking help people to repeat it, (g) careful attention to detail.

Auditoria learning style is a learning style that utilizes the sense of hearing to facilitate the learning process. De Porter, B & Hernacki, M. (2001) easily disturbed by noise or commotion, (a) enjoy reading aloud and listening, (b) finding it difficult to speak to oneself at work; writing, but great in storytelling, (c) prefers to learn by listening and remembering things by way of discussion rather than by seeing, (d) liking to talk, discuss and explain things at length.

Kinesthetics learning style is a learning style that more easily absorbs information by moving, doing, and touching something that provides certain information so that he can remember it. De Porter, B & Hernacki, M. (2001), student characteristics with kinesthetics learning styles: a) speaking slowly, b) difficulty remembering the map unless he / she has been there, c) memorizing by walking and seeing, d) using the finger as a guide while reading, e) unable to sit still for long, f) the possibility of writing is ugly, g) always physically oriented and moving a lot, h) wanting to do everything.

In addition to considering the style of learning, it is also necessary selection of learning approaches in accordance with student learning styles and the scientific approach set forth in school physical school textbooks. One of the learning approaches that is consistent with the scientific approach is the ICARE approach, ie the learning Phases contain: Introduction (I), connecting (C), applying (A), reflecting (R) and extending (E)

Phase I: Introduction at this Phase the outline of the overall subject matter, the objectives to be achieved, the prerequisite material, the time required, the activities and the evaluation to be performed, as well as the necessary reading material. At this Phase is also intended to determine the extent of understanding and interest of students in following the lesson to be given.

Phase II: Connecting, at this Phase it is introduced facts, concepts, principles, and / or processes related to the material to be studied. In this activity gives students the opportunity to discover facts, concepts, and principles. There are 4 steps suggested by Pastor (Wahyudin & Susilana (2012)) at this Phase: 1) divide the material into sub-topics to make it easier for students to understand new information; 2) linking information to tasks related to the real world and prior knowledge; 3) facilitate students with information in Phases and continuous so that is a meaningful learning series; 4) presents the material to be presented more pleasantly with various approaches and media usage.

Phase III: Applying, This Phase provides challenges and activities that enable students to apply the knowledge they gain in phase II by providing real-world issues. Simulation, game, or guessing activities are very well done at this Phase. Another activity that can also be done at this Phase is to ask students to find other relevant sites.

Phase IV: Reflecting at this Phase students are asked to reflect on what they have learned, what they gain and experience gained from the connected to apply Phase. This can be done in several ways including: discussing about online learning, asking students to create concept maps, visually represent relationships between concepts. Concept maps are very useful for students to help expand new information.

Phase V: Extending, at this Phase it gives students the opportunity to extend the knowledge gained by challenging the wider problem. There are two main activities in this final phase, namely: 1) Provide enrichment and remediation activities; 2) Provide evaluation on the mastery of student materials and evaluation of instructional materials or learning design. In train students' science skills, support tools are required, including textbooks, ICARE oriented student workbooks. ICARE stands for introduction, connect, apply and reflect and extend. ICARE is one of the effective learning strategies in e-learning environment (Salyers, et al., 2010). ICARE's learning strategy put forward the following characteristics: active, creative, and fun (joyful learning) (Wahyudin, 2010). The ICARE strategy is designed for online learning. According to Pastor (Wahyudin & Susilana (2012)), ICARE is designed to help students learn online effectively. The ICARE principle is to present the essential material for each topic. NSES (1996) explains that students study science through science skills such as observing concluding and experimenting. Science is concerned with how to systematically find out about nature, so science is not just the mastery of a collection of knowledge in the form of facts, concepts or principles but also a knowledge of the process of discovery. These skills are: observing, classifying, measuring, summarizing, forecasting, and communicating. With the result of the school physiology textbook that contains the physics material that refers to the learning style of the students, as well as complement the ICARE-oriented Students Worksheet

is expected to train the students to carry out scientific skills that impact on improving process quality and student learning outcomes in the range of school physics material.

### RESEARCH METHODS

The location of this research is done by Universitas Negeri Medan Faculty of Mathematics and Natural Sciences. The research was conducted for 3 (three) years i.e. Academic Year 2017/2018 and 2018/2019. The development target is the third semester students who are taking high school physics course of Physics Education Study Program of FMIPA Universitas Negeri Medan in Academic Year 2017/2018 and 2018/2019. The main activity of this research is needs analysis in the development of textbook based on ICARE. This study involved an assessment of student learning styles on the ICARE approach. Implementation of this research is still limited to the preliminary study (need assessment) related to the lecturer's perception of the need to use the concept of ICARE in the development of teaching materials of high school physics course, and description of student learning style. Steps for Development of Textbooks In the previous section it has been pointed out that Gall & Borg (2007) explain that: the system approach model designed by Dick and Carey, consisting of 10 steps as in Figure 1. The data collected in this study is data qualitative, which is then analysed descriptively.

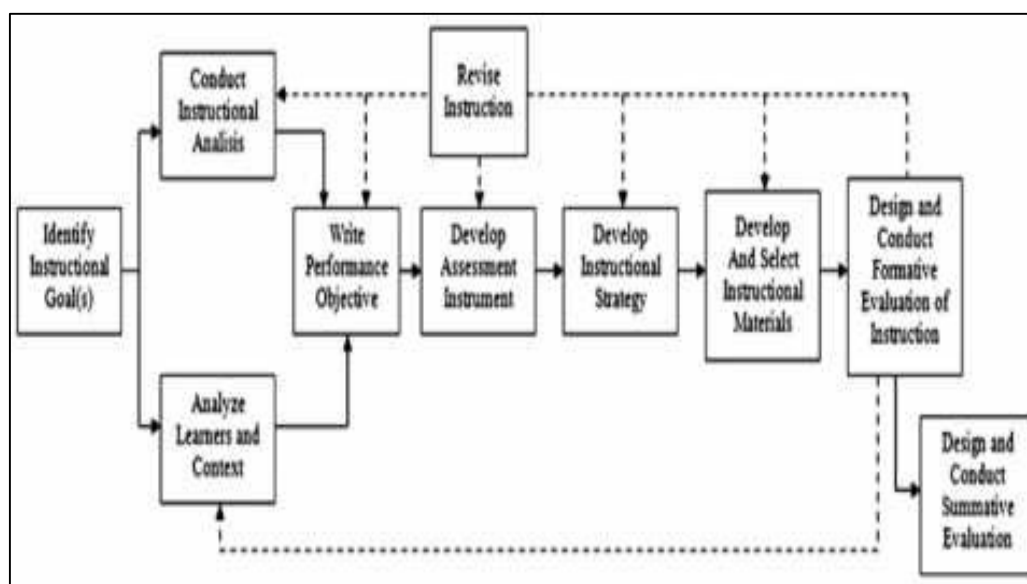


Figure 1. Development Stages of Dick & Carey Design (2009)

Research on development of high school physics textbooks with ICARE oriented LKM begins with needs analysis as a reference for developing textbook will be developed. The analysed aspects are limited to: (1) the need to use the concept of ICARE in textbooks, (2) student learning styles, and (3) students' self-responsiveness to learning. After doing the needs analysis continued the development of textbook draft by considering the results of needs analysis. The completed draft of the textbook was continued with validation by 3 (three) experts, materials experts, media experts, and strategists, 3 (three) student formative tests, and a small group test of 15 (fifteen) students.

### RESULTS AND DISCUSSION

Based on Table 1 it can be seen that the result of instrument testing in assessing student learning style is more dominated by Visual learning style. For the other two learning styles does not mean not to play but to have an influence in learning. This is because in every learning conducted the use of ICARE also requires students not only on sight but also with the other two learning styles. It is proven that the comparison or difference of the three learning styles is very low.

**Table 1. Distribution of Instrument Items Based on Student Learning Styles**

VISUAL		AUDITORY		KINESTHETIC	
No Item	Score	No Item	Score	No Item	Score
3	175	1	115	4	158
4	159	5	94	6	170
8	142	8	116	9	166
11	156	11	132	12	92
15	97	13	106	15	97
17	164	18	110	17	114
20	140	21	101	20	133
23	151	24	111	23	134
Total	1184		885		1064
Score Max	1600		1600		1600
Average	74,00		53,44		66,50

The result of data analysis showed that the difference of learning styles and the application of ICARE in the learning showed a positive correlation to the responsiveness of the students who implemented the learning (Sinuraya, J., Simatupang, S. & Wahyuni, I. (2014)). Learning tools developed can help the implementation of learning become more interesting to do in this learning style used kinesthetic (Trianto, (2008), Motlan, Sinuraya, J., & Tarigan, R. (2012)).

Hypothesis test results (Table 2) show that for both tests conducted as a test of learning outcomes there is no influence of learning styles on learning outcomes. This is because in the submission of the test composition test given is not based on one of the learning styles that want to be emphasized as the basis for development. This is indicated by the value of Sig. > 0.05. Test development is given with the aim to improve competencies that support the quality of teaching materials development and achieve learning objectives of teaching materials that are developed not on improving certain learning styles (Cassidy, 2004; Duckett & Tatarkowski, n.d.; Husain, 2000; Sadler-smith & Riding, 1999; Sastromiharjo & Pd, 2008).

**Table 2. Hypothesis Test**

Model	Sum of Squares	Mean Square	F	Sig.
1 Regression	107.143	107.143	0.884	0.364 <sup>a</sup>
Total	1683.333			

a. Predictors: (Constant), Learning Style

b. Dependent Variable: pretest

Model	Sum of Squares	Mean Square	F	Sig.
2 Regression	10.971	10.971	0.319	0.582 <sup>a</sup>
Total	457.733			

a. Predictors: (Constant), Learning Style

b. Dependent Variable: posttest



**Table 3. Regression Test**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	Sig. F Change
1	0.252 <sub>a</sub>	0.064	-0.008	11.011	0.064	0.884	0.364

a. Predictors: (Constant), Learning Style

b. Dependent Variable: pretest

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	Sig. F Change
2	0.155 <sub>a</sub>	0.024	-0.051	5.862	0.024	0.319	0.582

a. Predictors: (Constant), Learning Style

b. Dependent Variable: posttest

From Table 3 regression test obtained the value of correlation coefficient on the initial test (R) of 0.252 with the reliability value (R Square) of 0.064; for the correlation coefficient (R) of 0.155 with the reliability value (R Square) of 0.024. Based on this, it can be explained that the use of learning outcome tests used is the basis for the development of teaching materials. Teaching materials developed with the results of the proposed test have a significant effect but not for learning styles (Felder & Henriques, 1995; Mazlan, Harun, & Zainuddin, 2012; Sadler-smith, 1996). Learning style does not become a basic influence of development in improving learning outcomes. This is because learning style is one of the development of ways of learning that students do in developing themselves. This is also evidenced from the correlation test of learning style with the results of learning tests in Table 4.

**Table 4. Correlation Test**

		pretest	Learning Style
Pearson Correlation	pretest	1.000	-0.252
	Learning Style	-0.252	1.000
Pearson Correlation	posttest	1.000	-0.155
	Learning Style	-0.155	1.000

Based on Table 4 it is known that the correlation coefficients of learning style variables and pretest  $r_{xy} = -0.252$ ; for the correlation coefficient of learning style variables and posttest  $r_{xy} = -0.155$ . With this coefficient, the negative  $r$  indicates that the relationship between the two variables has no relationship. Learning styles have a significant influence on learning outcomes. Learning style is used as the basis for a person to get information to make a memory that can facilitate students to develop themselves. This is not used as an improvement in teaching materials produced with the aim of improving the quality of learning through teaching materials (Al-arfaj, 2016; Ali, Nur, & Rubani, 2009; Mazlan et al., 2012; Restami, Suma, & Pujani, 2013; Zajacova, 2013). In addition, the instructional material produced leads to the generalization of the students learning styles and does not specialize in certain learning styles.

## CONCLUSION

The results shown in the development of the device indicate that the development of ICARE-based teaching materials is not influenced and does not have a significant relationship in one of the learning styles. This is because the development of teaching materials is focused on learning outcomes and activities in learning in the self-development of students. This aims to optimize learning and learning outcomes.

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## Doctor – Patient Relationships in Marge Piercy's *Woman on the Edge of Time* and Simone de Beauvoir's *A Very Easy Death*

Gönül Bakay

This paper aims to examine the patient–doctor and nurse relationships in Simone de Beauvoir's *A Very Easy Death* and Marge Piercy's *Woman on the Edge of Time*. Published in 1964, *A Very Easy Death* is a moving and personal account of the final six months of Beauvoir's mother written from a relative's point of view. Marge Piercy's *Woman on the Edge of Time* is a classic work of speculative science fiction that deals with universal themes including love, madness morality as well as society, gender and class.

*Woman on the Edge of Time* raises several questions in the readers' minds regarding doctor–patient relationships, the conditions of asylums, the dangerous experiments the doctors perform on patients, the meaning of progress and whether there will be a return to the past to find peace and harmony. Connie is the protagonist of the novel and her life as a poor Chicana woman is depicted through her relationships with her two husbands and lovers. Her first husband is killed by the police in a street brawl. Her second husband, on the other hand, abuses her physically which causes her to run away. Her lover dies in a medical experiment in the prison. Connie gets into a fight with her niece Dolly's pimp Geraldo because he tries to convince Dolly to have an abortion. Dolly seeks protection in Connie's home. Connie hurts Geraldo who then has her committed into an asylum. Connie's story starts with her second institutionalization, but her past life is recounted through the use of flash backs. She was first institutionalized because of her violent behavior towards her own daughter, Angelina.

Unfortunately, Connie has never had the chance to live the life she wanted to live. She goes to college for two years but is forced to drop out abruptly. Because she can't afford a typewriter, she tries to make some money by typing the papers of a white student. She then becomes pregnant by him and leaves college. She later meets a black saxophone-player and a pickpocket who dies after he accepts to take part as a guinea pig in an experiment in prison. Connie is devastated by these traumatic events and takes to drinking and drugs. Suffering under considerable mental distress, she hits her own child and is sent to prison. Her daughter, on the other hand, is sent to a foster home. To avenge himself on Connie who hits him, Geraldo secures the assistance of a doctor to put Connie in a mental hospital where she is diagnosed with schizophrenia. As Judith Kegan Gardner observes: "The pimp and the mad doctor thus stand as the two exemplary villains of this society. Both profit from turning the private realms of sexuality and of mental fantasy into institutions of exploitation" (75).

This unfortunate event marks the beginning of Connie's life as a mental patient. In this context, her story also reveals the harsh conditions of the hospitals. In this environment, even the relatives of the patients collaborate with the doctors to keep the former imprisoned. Throughout her life, Connie had been abused by men. Her pregnancy was a result of rape and she becomes barren as a result of the experiments performed on her in the mental hospital. Through her portrayal of the horrible hospital conditions, Piercy encourages the reader to think deeply about Connie's so-called madness. Is Connie really mad or is it rather the societal conditions that frame her to blame for her demise? I would argue that Connie is considered

mad because she does not display the conventional behaviours expected of women. As argued by Gilbert and Gubar in their seminal *Madwomen in the Attic*, Piercy believes that it is societal rules, norms and regulations that drive women mad.

While at the hospital, Connie enters a futuristic world where the conditions are very different. Mattapoissett is the community of the future. It is the size of a village and “the community lives in rural conditions where cows graze and pure vegetables are grown. It reminds Connie of the Mexican village” (Rosenthal, Miriam 2). It is important to note that in this seemingly utopian world, madness seems to be perceived as a natural part of life. Children are seen as belonging to the community. Births are controlled. A child is allowed to be born when someone dies... The state of madness is treated very differently in Mattapoissett. Luciente, who not only represents but also explains the future, says:

*“our mad houses are places where people retreat when they want to go into themselves.-to collapse away on, see visions, hear voices of prophecy, bang on the walls, , relive in infancy,-getting in touch with the buried self and the inner mind.We loose part of ourseves,We all make choices that go bad... How can another person decide that it is time for me to disintegrate, to reintegrate himself?”( 60)*

In the hospital the experiments performed on Alice Blue Bottom, show how women, especially unprotected women could be used as guinea pigs. Although Alice is a happy woman, the device doctors place in her in order to control her drives her insane. Doctors don't really care about their patients; they are primarily interested in them as test subjects. During an experiment on Alice, a doctor observes with indifference:

*You see we can electrically trigger almost every mood and emotion- the fight or flight reaction,euphoria,calm,pleasure,pain, terror,!We can monitor and induce reactions through the micro miniaturized radio under the skull. We believe through this procedure, we can control Alice's violent attacks and maintain her in a balanced state. The radio will be feeding information and telemetry straight into the computer once we are in the institute and Alice will be able to walk around the ward freely (204)*

Piercy also implies that the loss of mental balance may have some seemingly positive consequences. By going deep within herself, the individual can discover her latent talents. Because they can not come into terms with their son's homosexuality, Skip's family send him to the mental hospital, hoping they can change him there. But Skip doesn't change in the way that is expected of him and eventually commits suicide. On the other hand, his counterpart in the futuristic world, Jackrabbit is accepted and loved for who he is. In this sense, Piercy draws attention to the fact that in this futuristic world, difference is not suppressed or punished but welcome.

It is important to note that Piercy does not completely see this future world she created as a utopia. Still, her ideas reflect the ideals espoused by proponents of feminism. Due to her suffering in life, Connie eventually loses her mental balance. The medicine she takes hinder her from thinking in a healthy way. She accepts giving her daughter for adoption without really thinking about the consequences. In the end, she tries to take revenge by poisoning the doctors.

The critic Richard Mc Carthy asks whether the Future World Connie visits is real or the product of the imagination of a mad woman. In his words: “My argument is, I'm afraid to say,that the utopian future that Connie experiences in Mattapoissett is a product of her psychosis, a fantasy that she uses to escape from the confines of the mental hospital and also a means to justify her final actions” (p. 3). Laing observes that people seek shelter in a fantasy world when things

become unbearable. In his words: "The self avoids being related directly to real persons but relates itself to itself and to the objects which itself posits. The self can relate himself with immediacy to an object which is an object of its own imagination or memory but not a real person" (86).

Connie's experiences in the ward are vividly described: "She laid tied with strapped to a bed, staring at the bare bulb, shot up with meds. Thorazine, it felt worse, heavier. A massive dose. Hospital trunks hit her like a bulldozer when she taken nothing for a long time (16-17) [...] All of her ached. Geraldo and his carnal Slick had beaten her twice.;once right after she had broken Geraldo's nose,and again on the way to Bellvue in his car" (17).

At times, she also feels there is no hope for her. Connie observes: "Surely, she would die here. Her heart would beat more and more slowly and then stop, like a watch running down. She stared at the room, empty except for the mattress and odd stains, names, dates, word scratched somehow into the wall with blood, fingernails, pencil stubs, shit: how did she come to be in this desperate place?" (60) Laing refers to this kind of experience as petrification and depersonalization. He observes: "The dread of this happening: the dread, that is, of possibility of turning, or being turned, from a live person into a dead thing, into a stone, into a robot, an automaton without personal autonomy of action, an it without subjectivity" (46).

Fancourt observes that in this novel, Piercy disrupts constructed notions of sanity and insanity, arguing that madness is a gendered construct in patriarchal society, exploited by those in power and used as a means of oppression" (quoted in Yla- Kapee 260): "... Luciente views madness in the Langian manner as a possibility of mental growth" (Yla- Kapee, 261). In Connie's world, the doctors consider themselves "sane" and hence believe they have the right to pass judgement on patients they deem "mad". Laing observes: "I suggest, therefore, that sanity or psychosis is tested by degree of conjunction between two persons where the one is sane by common consent. The critical test of whether or not a patient is psyhotic is a lack of congruity an incongruity, a clash between him and me" (36).

Connie tries to resist the doctors but can do nothing. Doctors say: "Connie you are resisting. You are the patient. You know why you are here. The more you resist, the more you punish yourself. Because when you fight us, we can't help you" (261-262). "This is a Laingian double bind: either one resists and is treated like a subjugated person, - a patient- or one does not resist, and one is still treated like a subjugated person - a patient" ( Yla-Kapee, 271).

Connie is then selected for a scientific experiment. Doctors intend to put an implant in her brain which they believe will control Connie's nervous outbursts. Connie tries to resist this experiment and tries to escape from the asylum but fails to do so. Because she can not escape, she poisons the doctors who intend to operate on her. The book does not offer a neat satisfying ending - as in life there are very few clear-cut endings to stories. Connie is poor, hispanic, and lives on the periphery of society. Was Connie mad? Or were the people in her environment insane? The novel leaves this as an open ended question.

In brief, one can observe that, by shifting the narrative back and forth in time and connecting the present, past and the future, Piercey aims to show the interrelatedness of these time periods. In doing that, her main aim is to draw attention to the oppression and subjugation of women in our world. Feeling trapped in this hostile environment, the main character suffers from alienation and mental disorder. She is then labelled as "mad" by the very same forces that have driven her "insane". In this sense, her so-called descent into "madness" can be perceived as a defence mechanism, as a manifestaiton of her desire to find a space within which she can

find safety and fulfillment. Even though this fantasy world might be a work of her creative imagination, it is more real to her than the real World which has offered her nothing but pain and suffering.

Simone de Beauvoir's *A Very Easy Death* recounts the last six weeks of her mother's life before she dies from cancer. The events she depicts belong to the period before the modern palliative care movement. Beauvoir's mother was 78 when she was operated for cancer of the intestines. Prior to her operation she was complaining of anorexia and pain in her stomach. One day she collapses in her home and taken to the hospital. She is diagnosed as having sercoma and later develops bowel obstruction, peritonis, and ruptured viscus. She has an operation, puss drained and tumour removed. She dies four weeks later.

In a profoundly moving and powerful narrative, de Beauvoir depicts the condition of her mother, her feelings, the helplessness of her two daughters and the conduct of the doctors and the nurses. Throughout her account, she also draws attention to the loneliness of her mother and how the terminally ill people suffer from loneliness because no one can share their feelings. Laing says: "the isolation of the self is a corollary, therefore, of the need to be in control"(The Divided Self, 83) Several doctors are involved in her treatment and they display different attitudes in their conduct. When she first collapses in her home, a doctor living in the same apartment helps her. Later, when the family wants her personal local doctor to treat her, he refuses this request, saying that he wasn't called at the first instance. An appalled neighbour remarks: "after the shock and after her night in the hospital, your mother needed comforting by her usual doctor. He wouldn't listen to a word of it" (12).

Two doctors in particular are depicted in detail in the book: Dr P and Dr. N whose general attitudes and communication styles are very different. Dr N, a resuscitation expert, is described as quite cool and unemotional. Both Beauvoir and her sister try to talk with the doctor, urging him to act in such a way as to ensure that their mother won't suffer much. Pouquette, Beauvoir's sister says "what's the good of tormenting her, if she's dying? Let her die in peace" (25). Beauvoir also speaks with this doctor she describes as "white coat, white cap : a young man with an unresponsive face" She asks the doctor: "Why this tube, why torture Maman since there is no hope?" he answers: "I am doing what has to be done... At dawn she had four hours left, I have brought her back to life." "For what?" Beauvoir muses ( 25). When she opens her eyes and has a glassy look, Beauvoir thinks this may be the end. But the doctor N answers in a half pitying, half triumphant tone: "No, she has been revived too well for that" (78). Beauvoir observes that "for him she was the subject of an interesting experiment, not a person" (page no). He keeps his cool detached manner when Beauvoir's mother asks him for more injections to stifle the pain. He answers in a sardonic tone: "Ha, ha, you are going to be a real drug- addict. I can supply you with morphia at very interesting rates" (79). Then his expression hardens and he adds looking towards Beauvoir's direction: "There are two points upon which a self-respecting doctor does not compromise-drugs and abortion" (79).

Beuvoir observes that it is important for a doctor to care and feel empathy with for his patients. As Laing correctly observes : "To look and to listen to a patient and to see 'signs' of a disease and to look and listen to him simply as a human being are to see and to hear in as radically different ways as one sees, first the vase, then the faces in the ambiguous Picture" (the divided self,33)

Dr. P, on the other hand, is depicted as having a more warm and caring personality. Beauvoir describes him with the words: "I liked Dr. P. He did not assume consequential airs; he talked to Maman as though she was a human being and he answered my questions willingly" (82). When

asked by the daughters whether their mother will be given enough doses when she suffers from excruciating pain, he answers: "She will not suffer. She will be given the doses that are called for" (82). Beauvoir remarks that this doctor gave them confidence and made she and her sister feel calmer.

The book also deals with the conduct of the nurses and how this affects the patients. Due to the hard work they do, the nurses' often felt physically and mentally strained and thus their behaviour could sometimes upset the patients. Beauvoir notes that the elderly nurses in have more compassion. When doctors decide to operate on Beauvoir's mother after the consultation, Mme Gontrand, an elderly nurse, bursts out: "don't let her be operated on" then she clasps her mouth with her hand and says: "If Dr N knew I had said that to you! I was speaking as if it were my own mother" (26). When Beauvoir asks her what will happen if they do operate on her, she refuses to give an answer. One of the nurses, Mademoiselle Laurent who had come to inquire after her in the evening gives her strength, helps her to spit, and massages her. Beauvoir comments: "Afterwards Maman looked at her with a real smile, -the first for four days" (41).

Beauvoir's mother also experiences real difficulty with defecation. The nurses try to put her on to a bed-pan but because she has nearly no flesh left Beauvoir feels as if they are setting her on knife-edges. Beauvoir observes "the two women urged her, pulled her about, and the red-haired nurse was rough with her" (48). Beauvoir goes out of the room with the nurses and tells them to allow her to defecate in her bed. One of the nurses says it is very humiliating for the patients, the other says "she will be soaked it is very bad for the bed sores" (page no). Beauvoir tells them that they can change the clothes at once. When she returns to her mother's side her mother moans: "The red-haired one is an evil woman" (48).

When the end comes, Beauvoir's sister Poupette sobs:" the doctors said she would go out like a candle: it wasn't like that, it wasn't like that at all" (78). "But, Madame, replies the nurse, I assure you, it was a very easy death" (78).

The problem of palliative care continues in our day. There is also heated debate on whether in terminal cases the patient should be told the truth or not. Some doctors believe that the patient has the right to know the truth and that he may want to put his affairs in order. There are others who believe that one does not have the right to destroy the last ray of hope. Most of the cancer patients who retain their faculties somehow understand and feel that the end is near. Yet, they still don't want to acknowledge it to themselves and their loved ones. I remember a cancer patient saying: "I feel perfectly allright. They are telling me that I have cancer. The diagnosis must be wrong". The patient was at the fourth stage of cancer of the intestines and yet he felt perfectly all right. He had gone to the doctor because he complained of a slight pain in the abdomen area. It was only a month prior to his death that he accepted that the diagnosis must be true.

The ones that are left behind always blame themselves for acting or not acting in various ways. Sometimes the doctors ask the closest relatives do decide for the patient: should they tie him to a breathing machine or let him die in peace. Or in the case of an elderly patient with a heart condition if there is one percent chance of his surviving an operation, should he be left to die in peace or operated on depending on that one percent chance. I personally had to decide for two such patients and I always opted for them being given the chance to live until the last moment. Knowing these peoples' characters I knew, they would want to live even if the chances were very low. They would want to take this chance. Of course, this leaves the surviving ones with a clear conscience but is it really the best decision for the suffering patients? That is debatable.



Beauvoir gives a detailed account of her feelings after her mother's death. She observes: "What would have happened if Man's doctor had detected the cancer as early as the first symptoms? No doubt it would have been treated with rays and Maman would have lived two or three years longer. But she would have known or at least suspected the nature of her disease, and she would have passed the end of her life in a state of dread. What we bitterly regretted was that the doctor's mistake had deceived us; otherwise Maman's happiness would have been our main concern. I should have seen more of her: I should have invented things to please her" (82).

Beauvoir also identifies with the terminally ill and their feelings. She observes: "In public wards, when the last hour is coming near, they put a screen round the dying man's bed; he has seen this screen round other beds that were empty the next day; he knows" (83).

How can the relationship between doctors, nurses and the patients can be improved? What more can be done? I think support groups formed of psychologists can give support to both the patients and close ones who take care of the patient. Many stress that those who are close to the patient should be provided with psychological support more than the patient, because they doubly suffer both personally and also for the terminally ill one. Medical humanities studies is also a positive step in this direction towards establishing stronger empathy between the doctor and the patient.

Beauvoir observes that before she was confronted with the death of her mother, she would have considered anyone weeping for a close one dead at seventy or eighty to be neurotic. That was a perfectly right age to die. Beauvoir, comments that despite appearances one is alone in death. She observes: "Even when I was holding Maman's hand, I was not with her. There is no such thing as a natural death: nothing that happens to a man is natural, since his presence calls the World into question. All men must die: but for every man his death is an accident and even if he knows it and consents to it, an unjustifiable violation" (92).

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## Psychiatric Morbidity Among Adolescent Students With Deafness In A Nigerian School For Persons With Special Needs

**Ogundiran O.**

Department of Otorhinolaryngology, Head and Neck Surgery,  
LAUTECH Teaching Hospital, Osogbo - Osun State, Nigeria

**Egunranti B. A.**

Department of Psychiatry,  
LAUTECH Teaching Hospital, Osogbo, Osun State, Nigeria

**Ogundiran A. C.**

Department of Guidance and Counselling,  
University of Ibadan, Ibadan - Oyo State, Nigeria

**Falade J.**

Department of Psychiatry,  
LAUTECH Teaching Hospital, Osogbo, Osun State, Nigeria

**Olaosun A. O.**

Department of Otorhinolaryngology, Head and Neck Surgery,  
LAUTECH Teaching Hospital, Osogbo - Osun State, Nigeria

### ABSTRACT

Adolescence is a transitional period from the age of 10 to 19 years, when young people undergo physical, biological, psychological, cognitive, social and economic changes. Adolescence could be a challenging period for people. Adolescents with deafness face greater challenges as their communication skills and access to information relevant to their social life is limited. This study is a cross-sectional school-based one conducted among 105 adolescent students with deafness at Osun State Secondary School for Persons with Special Needs, Osogbo, Nigeria. Otoscopy was performed on all the participants to check for those with cerumen impaction and other middle ear pathologies. Pure Tone Audiometry was done by a certified Audiologist to determine the hearing thresholds of all the participants. General Health Questionnaire (GHQ 12) was used to determine the prevalence of psychiatric morbidity among the participants. The majority of the participants were late adolescents 96.2% (15 – 19 years), with a mean age of 17.45 years (SD = 1.50). There were 60 male and 45 female adolescent students with deafness that participated in the study .76.2 % were normal (negative psychiatric morbidity) while almost a quarter (23.8%) of the respondents had positive psychiatric morbidity. Adolescent student with deafness are at risk of psychiatric morbidity. Prompt provision of effective communication within the family and societal support will go a long way to preventing many of these problems.

**Key words-** Psychiatric morbidity, adolescent, deafness, special needs

### BACKGROUND TO THE STUDY

Adolescence could be a challenging period for people. Adolescents with deafness face greater challenges as their communication skills and access to information relevant to their social life

is limited. Adolescence is a transitional period from the age of 10 to 19 years, when young people undergo physical, biological, psychological, cognitive, social and economic changes [1] that affect the development of their health, well-being and health behavior [2]. Adolescence can be divided into two parts: early adolescence (10–14 years) and late adolescence (15–19 years). During early adolescence, the physical changes in the development of the brain are obvious [3, 4]. Late adolescence comprises the latter teenage years and at this stage, most of the physical changes have already occurred, with the continuous development of both the body and mind. During these years, cognitive abilities are enhanced with analytical and reflective thoughts [4] and the adolescent's understanding of the social perspectives, their self-awareness and their inhibitory control are increased [3].

The NAD (National Association for the Deaf) defines the term “deaf” as those persons who are unable to hear well enough to rely on their hearing and to use it as a means of processing information. The NAD refers to “hard of hearing” as those persons who have some hearing, and are able to use it for communication purposes, and who feel reasonably comfortable doing so [5]. Those who have lost their hearing before three years of age and whose loss is present before the development of speech and language are classified as pre-lingual, the persons who experience loss at three years of age or older, however, are classified as post lingual [6]. In fact the deaf and hard of hearing are a group of people who mostly experience the world visually and have a unique and vibrant culture, a fact not always appreciated by hearing individuals. Many advocates believe that recognition by the hearing public that a deaf culture exists is a crucial first step toward educating the Nation about the needs of the deaf and hard of hearing [5]. While deafness has historically been labeled a disability, many Deaf adults see themselves as members of a unique, nondisabled culture [7]. Involvement with a Deaf community contributes positively to their self-esteem and social relationships. Members of the Deaf community reported no difference in the QOL (Quality of Life) dimension of social relationships compared with samples from the general population [8]. It is often assumed that adolescence is a very “difficult” period of life, with adolescents being highly stressed and moody. It is further assumed that adolescents are under stress because they have to cope with enormous changes in their lives. Some of these changes are in sexual behavior following puberty. There are also large social changes, with adolescents spending much more time with others of the same age and much less time with their parents than they did when they were younger. Adolescence is also a time at which decisions need to be made about the future. In addition to these difficulties, in this tough period, having a hearing disorder may make it even harder and problematic.

Deaf children have been estimated to be 1.5–2 times more vulnerable to mental health problems than hearing children [9]. The prevalence of mental health problems in community samples of deaf children is approximately 40% [10]. But it is estimated that only 2% of Deaf adults ever receive mental health care [11]. Other Studies of mental health among deaf children have shown higher rates of psychiatric disorders than in hearing comparison groups or samples of the general population, with rates ranging from 0 to 77% [12].

## **FACTORS THAT MAY CAUSE MENTAL DISORDERS AMONG PEOPLE WITH DEAFNESS**

### **Age at Onset of Deafness or Hearing Loss**

Age at which deafness or hearing loss occurs could affect an individual psyche. Acquired hearing loss may be considered part of the normal ageing process, whereas severe hearing impairment acquired in young or adult life may constitute a severe loss for the individual, often accompanied by reactions of grief, sadness, and depression [8]. The afflicted person has lived his or her life as a hearing person and identifies as such. The hearing loss requires the person to adapt to and cope with his or her new life situation. Hearing loss of any degree that is

acquired after early childhood involves challenges that are similar to, but also distinctly different from, those of individuals with congenital or childhood hearing loss.

### **Family Composition and Parental Education**

The increased load of environmental stress of these children and adolescents clearly makes them vulnerable to mental health problems. Having parents with a low educational level is believed to be a risk factor for more mental health problems. The prevalence of parents having a low educational level is found to be higher amongst deaf and hard of hearing children than among their hearing peers [13]. Family composition might also affect the development of problems [13]. Having a one-parent family is believed to be associated with a higher burden of mental health problems, this is more prevalent in the families of the hard of hearing and deaf children, compared to the hearing children [13]. The rates of divorce are known to be higher when caring for a child with a handicap, and the challenges for these children are complex and highly variable. Being in a family with no siblings has been shown to increase the risk of mental health problems.

### **School**

The person's choice between a mainstream school and a special school for the deaf or hard of hearing could impact on their mental health. Some discussants hold that life in a segregated school is likely to become a burden, whereas others consider it an advantage because communication is easier in an environment fluent in sign language. The latter also assume that the risk of being different than the others and being bullied is less in special schools, which facilitate attachment and development of identity.

However, a small study found a trend that total mental distress and peer problems were lower in mainstream schools for children with a high level of spoken language [14]. It has not yet been demonstrated that a high competence in sign language results in significantly lower prevalences of peer problems in special schools. The only prevalence study which found better figures in special schools has methodological shortcomings, i.e. the sample is small, based on a screening test using a questionnaire filled in by parents and teachers, the researcher chose who to interview, but interviewed only positively screened in schools of the deaf, and both negatively and positively screened children from the hearing impaired units. Thus, its findings may rely on methodological bias [15]. Close mentorship is likely to promote identification, assessment, and gratification of special needs, thereby adding to the feeling of competence and mental wellbeing in these children. The special schools often have fewer pupils and trained teachers who can address problems earlier than in a mainstream school. In some cases the schools could be placed at a fair distance away from the home of the children and their families.

No studies specifically investigate the effect of living away from home, but the findings that having no siblings and only one parent affect the mental health of the children negatively indicate that a strong social family relation is protective [16]. Mental health disorders seems to be higher among deaf. The core protective factor seems to be having positive peer relationships in school.

### **Physical Discipline and Abuse**

A study has shown that hearing impaired children are more likely to be physically disciplined than their hearing peers. It has also been shown that the mental health of children who have been teased, maltreated or isolated are markedly decreased [17]. Furthermore, it has been found that these children are more likely to be victims of abuse, with a clearly additive negative influence on mental health [17].

## **Adolescents**

Deaf children and adolescents are more vulnerable to mental health problems than hearing children [18]. Puberty is a tough time for all youth, and the hearing impaired and deaf seem to be particularly vulnerable to the challenges of this transitional period.

## **Communication**

Good communication with family and peers seems to be a major predictor of good mental health in the referred studies [8]. Good communication within the family, with friends and others in the child's surroundings is accomplished when people in the surroundings are well trained in sign language. It seems crucial to be able to express thoughts and feelings, particularly in close relationships. Relational and behavioral problems are ameliorated through open communication, which promotes understanding of self and others and counteracts development of depressive thoughts and feelings. Not being understood within the family increases the risk of developing problems 4 times [19]. In line with this, a study found that children of parents that are hard of hearing or deaf themselves have less problems than children of parents with normal hearing [13]. Being able to communicate with hearing peers will make it easier to build social networks and relations. The number of words known is markedly decreased in populations with hearing impairments. Language development is often delayed. It has been shown that the hearing impaired command only half the vocabulary of a hearing person of the same age [8].

The results of the studies reviewed show that the choice of informants contributes to variations in reported prevalence. Most studies were based on questionnaires either to parents and teachers [19] or to teachers alone [20]. Hindley et al. were among the first to include a structured interview with the child and screening questionnaires to both parents and teachers [15]. So, children in this study were not representative of all deaf children in the community, and the prevalence rate of mental health disorders appeared to be rather high (50.3%). However, this study aims to find the prevalence of psychiatric morbidity among adolescent students with deafness in a Nigerian school for persons with special needs using a screening instrument on the selected sample of the affected population.

## **MATERIALS AND METHODS**

### **Participants**

This was an approved cross-sectional school-based study conducted among 105 adolescent students with deafness at Osun State Secondary School for Persons with Special Needs, Osogbo, Osun State, Nigeria.

### **Inclusion and Exclusion Criteria**

The inclusion criteria were students with deafness i.e. above 90dB (Deaf Community/Culture), age between 13 to 19 years (adolescents). Those below 13 years and above 19 years were excluded. Also adolescents with dual sensory loss (deaf blindness) and those with mild, moderate and severe hearing loss were also excluded from the study.

### **Instrumentation**

Otoscopy was performed on all the participants with HEINE mini 3000® otoscope to check for those with cerumen impaction and other middle ear pathologies. Thereafter, hearing assessment was done by a certified Audiologist with Interacoustic AD 629 Hybrid Diagnostic Audiometer to determine the hearing thresholds of the participants. Pure tone averages were determined by averaging frequencies 500Hz, 1000Hz, 2000Hz and 4000Hz for both AC and BC tests on both ears and were used to select the adolescents with deafness from adolescents with other degrees of hearing loss. On the other hand, General Health Questionnaire (GHQ 12) was

used to determine the prevalence of psychiatric morbidity among the participants. GCQ 12 is a screening instrument for identifying minor psychiatric disorder in the general population and within the community (non-psychiatric setting). It is suitable for all ages from adolescent upwards but not for children because it is self administered.

### Procedure for Questionnaire Administration

The administration of questionnaires and scoring of the responses was spearheaded by the experts in the field (Psychiatrists) supported by co-researchers. After a brief introduction of our team, a brief explanation was also given to the participants from one class to the other with an expert in American Sign Language (ASL) interpreting to the students. The students responded to the questionnaires themselves after they read the brief instructions since it was a self administered questionnaire. The scoring of GHQ 12 is simple, any participant with score below 3 has negative psychiatric morbidity, that is, normal while those equal to or more than 3 ( $\geq 3$ ) has positive psychiatric morbidity.

### Statistical Analysis

Analysis of data was done with SPSS version 16. Results are summarized and displayed in tables, frequencies and percentages.

## RESULTS

**3.1 Table 1: Age Distribution**

Age Category	Frequency	Percentage %	Minimum	Maximum	Mean	Std. Deviation
Early Adolescence*	4	3.8	13	19	17.45	1.50
Late Adolescence**	101	96.2				
Total	105	100.0				

\* = 10 – 14 years      \*\* = 15 – 19 years

The majority of the participants were late adolescents 96.2% (15 – 19 years), with a mean age of 17.45 years (SD = 1.50).

**3.2 Table 2: Gender Distribution**

Gender	Frequency	Percentage %
Male	60	57.1
Female	45	42.9
Total	105	100.0

There were 60 male and 45 female adolescent students with deafness that participated in the study. (M:F= 1.3:1).

**Table 3: Prevalence of Psychiatric Morbidity**

Psychiatric Morbidity	Frequency	Percentage %
Yes	25	23.8
No	80	76.2
Total	105	100.0

Table 3 above shows that 76.2 % were normal (negative psychiatric morbidity) while almost a quarter (23.8%) of the respondents had positive psychiatric morbidity.

## DISCUSSION

Table 1 shows that the majority of the participants were late adolescents 96.2% (15 – 19 years), with a mean age of 17.45 years (SD = 1.50). The remaining 3.8% were early adolescents. This shows how the education of a child with deafness could be delayed. Some of these adolescents are still in Grade 7, that is, Junior Secondary School 1 (JSS 1) with an average age of 15 years. Majority of these students with deafness were in Grade 5 (Primary 5) when they entered adolescence age (13 years old). The reason is that most of these children with congenital deafness started schooling 3 years late compared with their hearing counterparts. Normally, a 6 year old child is supposed to be in Grade 1 (primary1) or higher but this is not so with a child with deafness, pupils in Grade 1 in a special school are around 9 years old or even more. There were students with deafness in the school where the study was conducted that were 24 years old, whereas, their hearing counterparts had already completed their degree and higher degree programmes. According to Ajavon, deafness in Nigeria is diagnosed very late in comparison to other countries. There is no systematic hearing screening programme for children at birth or later in life [21]. This is one of the reasons those children with deafness enroll late compare to their hearing counterparts.

It was also revealed in table 2 that more male adolescent students with deafness participated in this study than their female counterparts, that is, 57.1% and 42.9% respectively (M:F= 1.3:1).

According to the result in table 3, it was revealed that approximately 24% of the respondents had positive psychiatric morbidity. This is low compared with the study by Hindley [10], who found the prevalence of mental health problems in community samples of deaf children to be approximately 40%. However, the result from this present study is close to the National Statistics Online data which suggest that 15–20% of all deaf children have clinically significant mental health problems [9].

The results of the early clinical studies of DHH patients are not easy to compare because of differences in methodology. However, all the studies reported high percentages of severe mental disorders like schizophrenia (43%–54%) and organic mental disorders (19%–32%). It is notable that depression, if diagnosed at all, is only reported in 1.2% of patients until 1969 when two studies reported depression in 9.5% [22] and 9.6% of the patients [23]. The conclusion drawn by Vernon et al. in a review of these studies was that the overall prevalence of mental illness seemed to be significantly higher in the DHH population than in the general population [24].

Research findings suggest that not deafness as such, but other risk factors contribute to psychopathology in deaf adolescents [25]. National Health Interview Survey Series conducted a survey whereby they assessed the knowledge, attitudes, and beliefs in the deaf and hard-of-hearing community regarding mental health and mental illness. Their sample consisted of fifty-four deaf volunteers between eighteen-and seventy years old who preferred to communicate with American Sign Language (ASL). Results suggested that a few deaf individuals 9% (n =5) believed that deafness and hearing loss itself causes mental health problems. The participants overwhelmingly ascribed mental health problems to external causes, such as familial tribulations, own childhood, and poor communication. More specifically, 41% (n = 22) indicated that communication problems, family stresses, and the societal prejudice that accompany deafness and hearing loss leads to problems ranging from suicidal depression to substance abuse to violent behavior . The participants in this study identified communication barrier as the main cause of mental health problems [26].

## CONCLUSIONS

Adolescent deaf students are at increased risk of mental health problems. This is as a result of the interplay between a range of factors. Early provision of effective communication within the family goes a long way to preventing many of these problems. Mental disorders may result from an individual's non-optimal coping strategies and patterns of adaptation to life experiences. Development of mental disorders may be viewed as part of the dynamic relation between the individual and his/her context [27]. A child with deafness whose family members are all hearing may be at risk because communication and language form the basis for the conceptual and emotional processing of experiences and events and therefore play a crucial role in preventing mental disorders. The quality of parent-child communication may have far-reaching consequences for parent-child emotional bonding and for the child's emotional, cognitive, and social development. Problems of language and communicative ability have been linked to the development of psychopathology in DHH people [28]. Clinicians working with deaf children with mental health problems need to be aware of their communication needs and of the developmental consequences of deafness. Adequate provision should be made to minimize these aforementioned barriers and also adequate specialist services that can provide skilled assessment and interventions for this disadvantaged group.

## CONFLICTS OF INTEREST

No conflicts of interest were reported.

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## RECOMMENDATIONS

- ❖ Provision of educational programmes on healthy relationships for adolescents with deafness.
- ❖ Family members should be encouraged to sign or use the preferred mode of communication even in private discussions in order to reduce communication and relationship problems.
- ❖ Mentors and coaches for adolescents with deafness are recommended.
- ❖ Accessible and prompt mental health care for adolescents with deafness that are in need of mental health services.

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## Empowerment of Community Business of Scavengers in Landfill of Njawar, Surabaya City

**Tri Prasetijowati**

Faculty of Social and Political Sciences,  
Bhayangkara University, Surabaya

**Ratna Setyarahajoe**

Faculty of Social and Political Sciences,  
Bhayangkara University, Surabaya

**Suminah**

Faculty of Agriculture,  
Sebelas Maret University, Surakarta

**Sapja**

Faculty of Agriculture,  
Sebelas Maret University, Surakarta

### ABSTRACT

Surabaya, the second largest city in Indonesia, has a large scale garbage disposal site or landfill located in Njawar. It is commonly called Njawar Landfill. In this landfill area there are many communities of scavengers living in some villages not far from the landfill site. Although they live in various limitations, still they are able to show their high survival rate due to their assets or potential. During the field identification towards the scavengers, some physical, financial, human resources, and social capital and waste assets have been found. They are still considered in a low condition, except for the waste assets, so that they have less role in finding and developing some activities for the business empowerment of the scavenger community. This research was conducted by combining the quantitative and qualitative methods, and data collection techniques were carried out through questionnaires, observations, interviews and FGDs with the scavenger communities. A simple random technique using confidence intervals was applied for sampling in this study. There were several deep consideration due to the business empowerment for the scavengers of Njawar landfill, and they included the low technology, low income and the exploitation of the collectors on the scavengers. Three dimensions of opportunity, scavenger HR, and accessibility of business sources had been determined for the proposed activities to build the business empowerment of the scavengers.

**Keywords:** business empowerment, scavengers.

### INTRODUCTION

The presence of scavengers is rejected by most of people although they are considered as the spearhead of trash trading. The people still think that the scavengers have the potential to commit theft, they are not trustworthy, and they are also as objects of suspicion. On the other hand, their presence is highly required to minimize the trash or waste, especially inorganic one needed by certain factories, dumped in the landfills or in the Final Disposal Sites. (Kusuma, 2016). In their limited conditions, this community continues to survive and strive for the improvement of their standard of living. It clearly shows that they actually have a potential

or assets. In the concept of empowerment, according to (Priyono and Pranaka, 2006), a man is the subject of himself which means that there is no human or community that is totally without any assets even though the asset is classified as a low one. The assets owned by the scavengers include physical, human resources, financial and social capital, and waste assets which are considered to be their strengths to build the business empowerment (Sircular,1991) . Based on the description above, the purpose of this research is to find some empowerment activities for the scavenger community in the Njawar landfill to build the business empowerment.

### METHODOLOGY

The location of this study is the City of Surabaya, and the reason to choose it because it is as the second largest city in Indonesia, and become the target of migrants to come in hopes of improving their lives. The subject of this study is the scavengers living in Njawar landfill.

The sampling technique applied in this study is the purposive sampling, and it is used to obtain the valid data. Focus Group Discussion (FGD), independent interviews, and direct observation are also included as the instrument of the study by the author.

The process of data analysis is carried out qualitatively by using the interactive analysis in which there are three main components that must be truly understood by each qualitative researcher. The three main components are (1) data reduction, (2) data presentation, and (3) drawing conclusions and verification (Slamet, Y, 2006).

### DISCUSSION

Identification of existing conditions of scavengers in Njawar landfill, Surabaya

#### 1. Low level of Technology Owned by Scavengers

The existing condition of the scavengers is closely related to the level of technology owned by them. It is a very simple, traditional technology, and manually operated. The scavengers only process their products by collecting the piles of garbage, sorting them based on the types, drying them to reduce the water content, then packing them, and finally preparing them to be readily sold to the collectors. Seeing thoroughly the overall conditions experienced by scavengers, some programs to open any business opportunities to empower the scavengers are seriously considered.

#### 2. Low Revenue of Scavengers

The income of the scavengers is allocated to both the living necessities and sending some to their families living in the villages. Even though their income is quite low, they are still able to manage their spending and live in such a city like Surabaya. To find out the income of the scavengers, here is the distribution of data presented on a monthly basis.

**Distribution of Scavengers Based on Income**

No	Income	Number of Persons	%
1	< 1.000.000	12	5,8
2	1.000-1.500.000	209	94,2
4	> 1.500.000	0	0
	Total	222	100.00

**Source: 2018 Primary Data**

The table above indicates that 94.2% of the scavengers have their total income ranging from 1,000,000 to 1,500,000 Rupiah in one month. It is allocated to support the cost of living, eating, and paying for the boarding homes as well as being sent to the families living in the villages. It can be seen that the income and expenditure of the scavengers are not balance. It can be stated

that the income is classified as minimal even below the standard of the regional minimum payment. Based on these facts, an opportunity for the scavengers to be empowered is strongly recommended.

### 3. **Exploitation of Collectors on Scavengers**

The collectors are the business people who have the capital, and utilize the scavengers as their clients who can be controlled to expedite or run their business. The identification of the existing conditions indicated that the collectors in Njawar landfill had little role in processing the waste products. It led to the lower added value of the products which could not increase the income. The role of collectors was more instrumental in which they facilitated the scavengers to sell the products to the product-recycling industry. On the other hand, the scavengers lack the ability or competency in the form of capital and knowledge related to the markets and prices of the products. They did not have any channels to go through a higher level of market. The identification of the existing conditions indicated that the margins of the marketing of recycled products at the landfill level was not high. The small collectors received a margin ranging from 13% to 49% while the big ones got around 42% to 215% above the price level of the scavenger. If the margin shows that the value of remuneration creates more added value to the product in the marketing chain, the amount of margin received by the collectors is more exploitative and not the added value (quality) for the products.

The potential of the collectors to do any kinds of exploitation on the scavengers can be used as entry points for the empowerment of the scavengers by providing better business opportunities to process the recycled goods so that they have a better selling value to increase the income.

#### **Business empowerment activities for scavengers in Njawar Landfill**

Empowerment is an effort to build the power by encouraging, motivating, and raising awareness of the potential owned and striving to develop it. The aim is to support the scavenger community in Njawar landfill to develop the businesses empowerment to achieve such ideal scavengers with strong characteristics.

- a. Receive an income level that can meet the needs of the family to live properly and be able to work independently.
- b. Guarantee the rights and obligations, and acknowledge the existence and role in the community in accordance with the state rules and regulations related to the rights and protection.
- c. Have the ability to meet the primary needs (clothing, food and shelter) as well as the secondary ones (entertainment, security, affection, and self-esteem).
- d. Being widely acknowledged by the people not as a marginal group, but as an institution to strengthen its social roles and functions (Kusuma, 2014)

In an effort to achieve the ideal scavengers with their characteristics mentioned above, the relevant agencies and the Surabaya City Government is necessary to intervene in a pattern of empowerment through the activities below.

The proposed activities to build such business empowerment are as follows:

**A. Dimensions of Business Opportunity**

Proposed Activities	Aims	Targets	Parties involved
1. Compost Processing	1. Increasing the income of the scavengers 2. Employment 3. Increasing the bargaining position of the scavengers	1. Scavengers 2. Collectors 3. The influential scavengers	1. Forestry Service 2. Cleaning and gardening services of the city 3. Provincial Empowerment Agency
2. Sorting, washing and milling of scavenging products	1. Increasing income 2. Employment 3. Increasing the bargaining position of scavengers	1. Scavengers 2. Collectors 3. The influential scavengers	1. Labor offices 2, Provincial Empowerment Agency
3. Savings and Loan	1. Increasing the access of the scavengers to capital 2. Being able to escape from the bonding agent, the collectors.	1 Scavengers 2. Collectors 3. The influential scavengers	1. Services of Cooperation and Micro Business of Surabaya city

**B. HR Dimensions of Scavengers**

Proposed Activities	Aims	Targets	Parties involved
1. Social Guidance	In order to have social responsibility for the people or community	Scavengers and families	1. Social Services 2. Education Authorities 3. Labor Offices 4. Colleges or Universities 5. Provincial and City Empowerment Agencies
2. Physical guidance	kesehatan In order to have a fit physical condition so as to maintain health	Scavengers and families	1. Social Services 2. Education Authorities 3. Labor Offices 4. Colleges or Universities 5. Provincial and City Empowerment Agencies
3. Mental and Religion Guidance	In order to have religious awareness so that being able to hold the religion well	Scavengers and families	1. Social Services 2. Education Authorities 3. Labor Offices 4. Colleges or Universities 5. Provincial and City Empowerment Agencies
4. Guidance on working skill	In order to have skills for self and family interests	Scavengers and families	1. Social Services 2. Education Authorities 3. Labor Offices 4. Colleges or Universities 5. Provincial and City Empowerment Agencies
5. Training on Stuff Sorting	In order for the scavengers to know the types of goods/stuff collected through sorting because they will have lower prices if they are sold without being sorted first.	Scavengers and families	1. Provincial Empowerment Agency 2. Provincial Industry Service

### C. Dimensions of Accessibility to Business Sources

Proposed Activities	Aims	Targets	Parties involved
1. Partnering with the city government, and related offices	1. Building networks to facilitate interactions with related parties	1. Scavengers 2. The influential scavengers	1. City Government 2. Services of Cooperation and Micro Business 3. Provincial Empowerment Agency
2. Partnering with non-government institutions or private parties, NGOs	1. To facilitate obtaining some funds	1. Scavengers 2. The influential scavengers	1. Private Companies 2. Government-owned business entities 3. NGOs – Non Government Organizations

### CONCLUSIONS

1. Identificaton of the existing conditions of the scavengers in Njawar landfill, and among others are as follows:
  - a. Lower technology used by scavengers
  - b. Low income of scavengers
  - c. Exploitation of collectors on scavengers
  
2. Businesses Empowerment of scavenger community in Njawar landfill is carried out through 3 dimensions:
  - a. Dimensions of business opportunities
  - b. Strengthening human resources
  - c. Strengthening resource accessibility

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## Managing Occupational Health And Safety In A Ghanaian Building Industry (A Case Study Of Some Construction Sites Of Eris Property Group In Accra)

**Dolores Mensah Hervie**

Department of Secretaryship and Management Studies,  
Accra Technical University, P. O. Box GP 561, Accra-Ghana

**Cynthia Oduro-Nyarko**

Department of Secretaryship and Management Studies,  
Accra Technical University, P. O. Box GP 561, Accra-Ghana

### ABSTRACT

Achieving occupational health and minimisation to a large extent possible hazard to health and safety in the construction industry is the responsibility of all employees. The onus is on management to achieve high standards in such matters as required by the constitution of Ghana (1992) and the Labour Act 2003 (Act 651) in relation to health and safety at the work place. It is high time construction practitioners pay much attention to health and safety issues on sites and implement policies or framework in this regard. The main objective of this study is to find out if contractors and developers in the building industry have health and safety policies and whether these policies are implemented and functional. Through questionnaires, interviews and literature, it was revealed that majority sites have employees' orientation on health and safety before starting work. More so, management and employees have regular interactions to continuously re-orient the mind on importance of site safety. It also came to light that local contractors are guiltier when it comes to site health and safety practices. Based on the findings from this research, it was recommended that a regulatory body should be formed for the building industry. This body should develop an institutional health and safety framework in line with the constitution and the Labour Act of Ghana that would be stringently implemented in Ghanaian construction sites. Furthermore, international construction sites normally have dedicated department which are well resourced to ensure health and safety measures which local contractors could emulate.

**Key words:** Health, Safety, Occupational, Construction sites, OHS Policies

### INTRODUCTION

In recent years, occupational health and safety at a workplace has received much attention from both employers and employees. The building industry is not excluded in this move. The Ghana Labour Act 2003 (Act 651) indicates that it is the duty of an employer to ensure that their employees work under satisfactory, safe and healthy conditions. (Section 118) of the mentioned Act 2003(Act 651) specifically, sets out the key duties, responsibilities and administrative measures to be taken by employers to avoid risks, injuries, casualties and unsafe working environment. The constitution of Ghana (1992 - Article 24 (1) also demands that all persons working in both formal and informal sectors of the economy be protected by ensuring that they work under safe conditions devoid of any adverse effect on their health. Alli (2008), stated that Occupational health and safety as the science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, considering the possible impact on the surrounding communities and the general environment.

According to International Labour Organization (ILO, 2003b) report an estimated 2 million occupational fatalities occurred across the world in 2003 and the highest of these deaths was caused by work related cancers, circulatory and cerebrovascular diseases and some infectious diseases. The overall annual rate of occupational accidents, fatal and non-fatal, is estimated at 270 million Hämäläinen, Takala and Saarela (2006).

Studies conducted in Ghana on occupational health and safety particularly on construction sites revealed a poor state of health and safety on Ghanaian construction sites (Samuel Laryea, 2016). According to this researcher, the primary reasons for the state of health and safety on construction sites were lack of strong institutional framework governing construction activities and poor enforcement of health and safety policies as well as procedures.

Construction sites are expected to be well organized by tidying up the sites, have a decent welfare, health and safety policy document that would ensure that workers have the requisite personal protective equipment (PPE) to work with, providing well protected plant and equipment in safe work activities, ensuring quick response and investigation into all incidents, accidents and near misses in an attempt to minimize recurrences and also, take other measures to prevent risks and hazards. They are again expected to train their supervisors and workers to be health and safety conscious. The personal protective equipment (PPEs) at a construction site should include: reflectors, safety boots, helmets, overalls, nose masks, goggles etc.

This study was conducted on Eris Property Group (international property developers) construction sites in the Greater Accra Region (335 Place and SU Tower). Eris Property Group is a fully integrated property development and services group which provides a range of commercial property skills in South and sub-Saharan Africa markets. Eris had engaged the services of De-simone Ltd (the main construction company), Pernium Ghana Ltd. (Health and Safety Consultants on sites), the rest are: K3 Aluproducts Ltd., Elisones Ltd., Sylprin Fire & Solar Co., Jeffdaz Painting Ltd, VACC Technical Services Ghana Ltd., Lambert Electromec Ltd. (subcontractors engaged by Desimone) working on the two construction sites. Eris, had engaged the services of Pernium Ghana Ltd; occupational health and safety consultants to ensure health and safety policy and standards were adhered to on the sites. These sites were chosen for the study to ascertain the extent to which international contractors operating in the Ghanaian building industry consciously adhered to occupational health and safety laws, standards, regulations and practices. More so, whether the workers were aware of their responsibilities and obligations as far as their health and safety are concerned. Hence the main purpose of this is to find out whether there is occupational Health and Safety (OHS) Policy available in the building industry, whether it is being used and to recommend ways that could be applied to prevent or minimize accidents and occupational hazards in the said industry.

Unlike advanced countries where there are statutory and legal framework for construction workers on construction sites that sought to minimize risks and work hazards, for instance, (The Construction Regulations 2007 (S.I. 2007/No. 320) in the United Kingdom, there are no such stringent occupational health and safety framework as far as construction industry in Ghana is concerned. As a result, most construction companies do not have health and safety policy, officer, standards or principles to guide their activities. Those who have, pay less attention to it when it comes to working on sites. The loss from work-related incidence, accidents, injuries and other risks could be estimated in terms of death, loss of skilled labour, hospital bills, high insurance premium payments, replacement cost of plant and equipment. There is also lack of proper accident investigation/data and therefore, a lack of institutional learning.



## LITERATURE REVIEW

The need for physical and emotional security of employees demands equal attention. Employers are required by the labour law to provide working conditions that do not impair the safety or health of their employees. Employers must ensure a work environment that protects employees from physical hazards, unhealthy conditions, and unsafe acts of other personnel. Through effective health and safety programmes, the physical and emotional well-being, as well as the economic security of employees may be preserved and boost employee performance.

Construction companies must maintain working conditions in which employees are not only safe but also feel safe. Health and safety programmes deal with the prevention of accidents and with minimizing the resulting loss and damage to persons and property. Employees relate more to systems of work than the working environment, but both health and safety programmes are concerned with protection against hazards Armstrong (2007). According to Megginson et al. (2002), employee health and safety also depends on the size of the organization, the type of industries, and the type of occupation involved. With the building industry, the importance of healthy and safe policies and practices is often underestimated by those concerned with managing construction sites and by individual managers/supervisors. It must be noted that the prevention of accidents and elimination of health and safety hazards are a prime responsibility of managers to minimize suffering and loss.

In Ghana the realization of the importance of health and safety laws have been passed to strengthen health and safety. Labour Regulations 1969 (L1 632), Factories, Offices and Shops Act, 1970 (Act 328) amended by PNDC Law 66, and Workmen Compensation Law, 1987 (PNDCL 187). While the laws safeguarding employees' physical and emotional well-being are incentives, many organizations are motivated to provide desirable working conditions by virtue of their sensitivity to human needs and rights. The most cost-oriented employer recognizes the importance of avoiding accidents and illness wherever possible. Cost associated with sick leave, disability payments, replacement of employees who are injured or killed, workers' compensation far exceed the costs of maintaining health and safety programme.

Since accidents and illnesses attributable to the work place may also have pronounced effects on employee morale and on the goodwill that the organization enjoys in the community and in the country as a whole, employers should provide safety training for their employees. It is important to encourage and follow up on employee compliance to safety regulations, precautions, and discipline employees for noncompliance. In this case, management must be concerned about the protection of the organization's employees from hazards at work and to indicate how this protection will be provided. Casio (1995) indicates that management's first duty is to formulate a safety policy. Its second duty is to implement and sustain this policy through control programmes and stressed that such programmes have four components. A safety budget, safety records managements, personal concern and management's good example. Most construction in Ghana lack such health and safety policies that guides and boost employees' morale for higher performance. Some of them have no written health and safety policies required to demonstrate that management is concerned about the protection of the firm's employees from hazards at work and how these protections would be provided. The Study indicates a close relationship exists between safety and employees' satisfaction with their work. It further proved that where top management actively supports safety programmes, the accident frequency and severity rates are lower Megginson et al (2002). The aim of this research is to collect data to find out whether the construction sites in the study area have any health and safety policies support for their employees as well as, management support to fully implement these policies.

## METHODS AND ANALYSIS

The descriptive survey research design was used for the study. Descriptive survey is a process of collecting data in order to answer questions concerning the current status of the subject in the study Mugenda and Mugenda (2003). The target population of this study was the employees and management of the multinational construction firms and the developer (ERIS – Developer, Desimone and other sub-contractors) in Ghana. The total population of employees and contract staff of the two construction firms were about two hundred (200) as at the time of data collection.

### Determining the Sample Size

Based on the random sampling method of sample size determination for a finite population, the study made use of approximately one-hundred employees from Desimone and the other subcontractors. These figures are considered appropriate sample size for the study because it is in conformity with the Hair et al (2010) table of sample size determination of continuous and categorical data.

### Method of Data Collection

Data was collected using structured questionnaire (instrument for data collection), this was used to collect relevant data from all sources types. The questionnaire was (was organized in two portions) one for the management of sites and the other for (for junior staff). Follow up interviews were also conducted.

### Data Analysis

Quantitative analysis (was used as a tool to analyze data obtained) applying descriptive statistics techniques such as the mean, median and the standard deviation to describe the responses provided by the respondents. Inferential statistical technique such as the Chi-Square test ( $\chi^2$ ) was used to examine association between nominal variables. SPSS (version 25) was used for the analysis of data. The results were presented using tables and frequency.

## RESULTS AND DISCUSSIONS

### a. Demographic profile of the respondents

This study considered one-hundred (100) respondents, of which eighty-five (85) were active respondents who were able to complete the questionnaire assigned them. This constituted about 85% of coverage; the remaining respondents did not provide any response at all to the researcher. The result in table 1 below depicts the demographic profile of the respondents. From the result as shown in the table 1, 91.8% (78) of the respondents were males and the remaining 8.2% (7) were female. This value shows that the construction industry in Ghana receives or welcomes few females in its setup this could be as a result of the nature of the work. Also, the ages of the respondents were obtained, from the analysis there is an evident that majority of the respondents were within the age group of 20-29 years. This age group constituted about 49.4% (42) of the total respondents, followed by those within the age group 30-39 years forming about 32.9% (28). This is an indication that the nature of the work requires strength and this kind of strength could only be obtained among those in their youthful age. Furthermore, the study obtained information about the work experience of the respondents especially the number of years that they had worked within the construction industry. It was realized that majority of the respondents had worked in the construction industry between 6 months to 1 year when they joined the industry. They constitute 32.9% representing 28 of the respondents. Some of the employees on site said they had worked in the industry for more than two years which has helped them gain a lot of experiences, they formed about 23.5% indicating 19 respondents. This was followed by those who said they had worked in the construction industry from 1 year to 2 years, 22.4% (19) of the respondents had

worked within these years. 21.2% (18) of the respondents made it known that they had worked for less than 6 months in the industry.

**Table 1: Demographic profile of respondents**

Variable	Level	N	%
Sex of respondents	Male	78	91.8
	Female	7	8.2
	<b>Total</b>	<b>85</b>	<b>100.0</b>
Age	20-29 years	42	49.4
	30-39 years	28	32.9
	40-49	6	7.1
	Above 50 years	9	10.6
	<b>Total</b>	<b>85</b>	<b>100.0</b>
Work experience	<6 months	18	21.2
	6 months-1yr	20	32.9
	1yr-2yrs	19	22.4
	Above 2 years	28	23.5
	<b>Total</b>	<b>85</b>	<b>100.0</b>

### **b. Exploring respondents' knowledge on Occupational Health and Safety (OHS) at the workplace.**

Knowing respondents view on the subject matter was one of the objectives that was formulated by the researchers. The result as shown in the table below indicates that, most of the respondents had been given orientation on the OHS when they were employed. About 96.50% (82) of the total respondents said yes to the question asked whether they were given orientation on OHS. A few of the respondents claimed that they did not receive their orientation as indicated in the table, 2.4% (2) and only one person did not provide any response to the question. The responses show that employees go through orientation before commencement of their jobs.

Also, respondents were asked whether if OHS was useful to them as employee, 91.1% (80) said that OHS is useful to them whereas 5.9% (5) did not provide any response to the question asked.

Furthermore, it was realized that respondents met twice in a month to discuss issues relating to OHS among others as indicated by 34.10% (29). Those who claimed they met daily and 4times in a month were 22.40% (19) each, whereas 16.5% (14) were of the view that, they met once a month to learn about occupational health and safety related issues. Few respondents did not provide any response to the question asked, they represent 4.8% (4). Meaning, OHS is useful at both sites.

Majority of the respondents were interested in attending health and safety meeting, the result shows that 92.9% (79) said yes, they wished to attend such meeting, whereas 5.9% (5) said they were not interested in such meetings. 97.6% (83) of the respondents said they wished or were interested in the safety meetings and would implement the safety lessons learnt on site, whereas 2.4% (2) did not provide response to the question.

**Table 2**

Variable	Level	N	%
Did you get orientation on OHS since you were employed?	Yes	82	96.5
	No	2	2.4
	No response	1	1.2
Is it useful to have OHS	Yes	80	94.1
	No response	5	5.9
	Twice	29	34.1
Safety tool box meeting	Daily	19	22.4
	4 times	19	22.4
	Once	14	16.5
	No response	4	4.8
Are you interested in attending? health/safety meetings	Yes	79	92.9
	No	5	5.9
	No response	1	1.2
Do you easily implement safety? lessons at your work?	Yes	83	97.6
	No response	2	2.4

**c. Provision of personal protective equipment**

The result below indicates the responses provided by the respondents on whether they are provided with personal protective equipment as stated below in the table. Among those who said “Yes” they were been provided with personal protective equipment (PPE); 17% (82) of them said yes, they were provided with foot protection equipment such as boot. 17.20% (83) said they were provided with eye protection. Hand protection had a score of 17.20% (83), Helmet protection ,16.60% (80), Respiratory equipment ,17.20% (83) and the least item that received the least support was the hearing protection equipment which had a percentage score of 14.90% (72), meaning that respondents were not receiving much equipment that could be used to protect their ears (The other implication was less workers are active in areas with much noise). This means that much attention must be given to prevent those who work at the site from contracting ear related illness. In a summary, it could be said that 97.70% of the total respondents said yes, that they were provided with PPE with few individuals, about 5.3% said No they were not given such equipment. This is an indication that majority of the respondents were of the view that the personal protection equipment was provided by the management of the construction sites (A late visit revealed that it was must for everybody to use PPE hence, a few may have misplaced theirs.)

**Table 3: Respondents who said Yes, that they are provided with personal protective equipment**

	Level	N	%
	Foot protection	82	17.00%
	Eye protection	83	17.20%
	hand protection	83	17.20%
	hearing protection	72	14.90%
	respiratory	83	17.20%
	Helmet	80	16.60%
Total		483	100.00%

#### d. Accident related issues at the site

In order to determine the accident related issues of the selected building sites, respondents were asked, how often they were prone to accidents in a month. From the result obtained, 45.90%(39) of the respondents were of the view that accidents on site mostly occurred once a month, which means that measures had been put in place to prevent accidents at the construction sites. This was closely followed by those who said, accidents did not occur every month since they joined the construction sites but rather once a while, it does but not every month, this view was represented by 18.8% of the respondents indicating 16 site men. Some of the respondents made it known that accidents did occur in most cases twice, thrice and four times in a month. The result obtained indicates that cumulatively 35.20% representing 30 site men claimed that accidents occurred at least twice, three and four times in a month. From the result, it was evident that accidents in the industry is not as rampant as it used to be (in other local construction sites) since, there is the observation of strict safety and health policies in the organization. However, because, they deal with heavy equipment in most cases, once a while they experienced such cases as identified by some of the respondents.

**Table 4: How often do accidents occur at site in a month**

Level	N	%
Once	39	45.9
None	16	18.8
Twice	15	17.6
Four times	8	9.4
Three times	7	8.2
Total	85	100

One of the key role of safety and health education on site is to be able to address injuries and accidents related issues in the course of operation, this could be enhanced if site men who either get injured or accidents are able to report such incidence to health and safety manager or personnel for the needed intervention to be done.

However, when such incidence or occurrences are not reported to the personnel in charge, measures could not be put in place to address future occurrence in the organization, as a result of that there was a crosstabulation to determine the association between how often accident / accidents / injuries occurs and whether or not respondents would report it for further analysis. The table 5, below depicts the result obtained from the crosstabulations analysis, it revealed that, there is significance difference between the two variables, among those who said accidents or injuries did not occur and those who said Yes, they would report for further investigations were 19.85% and 9.9% respectively. From the result, respondents who claimed that accidents on site most often occurred three times a month and said yes, they would report accident to those in charge for investigation were 6.2% (5). Also 17.3% (14) said accidents occurred twice a month and they would report incidence for an investigation.

Furthermore, among respondents who agreed that accidents occurred on the sites, 46.9% (38) of them said accidents occur once every month and they are willing to report to health and safety manager(s) for the necessary action to be taken to prevent future occurrences. There are some respondents who claimed that they would not report accidents related issues for investigation, and from the result they seemed not to be significant as compared to those who said they would report issues for investigation. Four (4) respondents made it known that they would not report any form of injuries/ accidents as they formed less than 5% of the total responses.

This is an indication that indeed minimal accidents occurred and respondents are willing to report it to authorities for the necessary action to be taken to prevent future occurrences. This significant difference is confirmed by the chi-square test  $\chi^2_4 = 10.603$ , with small significant value ( $p\text{-value}=0.03$ ) less than 5% significant level, which means that there is significant difference between the occurrence of accidents or injuries on the construction sites and workers readiness to report such occurrence to health and safety officers for an investigation to avert it occurring in the near future.

**Table 5: Cross tabulation between occurrences of accidents on and whether, they would be reported for further investigation**

		Will you report incidence for investigation?		Total
		Yes	No	
How often do accidents occur on site in a month?	None	19.8% (16)	0	16
	Four times	9.9% (8)	0	8
	Three times	6.2% (5)	50% (2)	7
	Twice	17.3% (14)	25% (1)	15
	Once	46.9% (38)	25% (1)	39
	<b>Total</b>	<b>81</b>	<b>4</b>	<b>85</b>
Chi-Square ( $\chi^2$ ) value	10.603 <sup>a</sup>			
df	4			
Sig-value	0.031			

Though, there are significant differences in the various levels of occurrence of accidents and incidence on sites and measures put in place to prevent them, yet respondents were of the view that these areas must be given much attention to either reduce or prevent accidents related issues on sites. From the output as shown in the table 6 below, there is an indication that respondents needed much attention in the area of height and lifting of equipment. The respondents claimed that most of the work they were doing was on height and as a matter of fact they need more attention to prevent accidents or injuries on sites as it was indicated by 49.4% (42) of the total respondents. Some of the respondents made it known that attention must be given to cover all areas of the sites, not necessarily on height but all areas where accidents or injuries could occur, this was indicated by 34.1% (29) of the total respondents. Among those who wanted much attention to be given to the personal protection equipment alone were 8.2% (7) of the total respondents, whereas few were of the view that sanitation issues should be considered on sites as it was indicated by 2.4% (2) of the total respondents. 5.9% (5) of the total respondents did not give any view on what must be done.

In summary, there is an indication that majority of the respondents want much attention to be given to safety on sites especially in the area of height and lifting of machines to prevent accidents or injuries on sites based on the result obtained.

**Table 6: Areas that need more attention to prevent accidents on the construction sites**

Levels	N	%
Working at height and lifting machines	42	49.4
All areas	29	34.1
In terms of PPEs	7	8.2
Sanitation	2	2.4
No response	5	5.9
Total	85	100

### **e. Officers and management views of health and safety issues on site**

Management of the site were not left out of the study. They were asked series of questions on their views on health and safety related issues on site. Eight (8) staff of the management level were contacted and from the responses they provided, they indicated that one of their priority on sites is health and safety, they put measures in place to curtail incidence/ accidents and injuries on both sites where the surveys were conducted by providing personal protection equipment to guard them against any occurrences, having initial training upon employment and organizing regular health and safety meetings. They agreed that at times accidents do occurs, but it occurs once in a while. They claimed that some of the frequent occurring incidence that affected employees in most cases were dust which enters their noise and eyes, burns and bruises, loose materials falling from heights and chemical spoilages.

They also claimed that the OHS unit conducted periodic inspection on site to avoid accidents on site. They made it known that inspections are key to their services and not taken for granted. They said inspection is conducted almost every day of the month, in order to prevent accidents or injuries on sites.

### **CONCLUSION AND RECOMMENDATION**

On health and safety, the study (considering the 2 sites) found that managers in the building construction industry were aware of the health and safety regulations regarding the nature of their work. They also had health and safety policy put in place for their employees. Furthermore, employees were quite aware of the health and safety requirements in place and were actively involved in the health and safety matters.

From the empirical and field data, it is recommended that regulators of the building industry would have to develop an institutional health and safety framework in line with the constitution and the Labour Act of Ghana that would be stringently implemented in Ghanaian construction sites. More so, like international construction sites where supervisors insisted on health and safety measures, local constructions sites should also (put in more measures to) insist on such measures. Practitioners in the building industry should comply with all applicable Health, Safety and environment laws, regulations and standards in the various locations in which they operate. all management and supervisory staff should be made accountable for Health, safety and environment activities that affect personnel and the environment. Safe plant and equipment should also be provided for work activities

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## Arab dialects that formed the classical Arabic, in which the Holy Qur'an was revealed

**Salahuddin Mohd. Shamsuddin**

Islamic University Sultan Sharif Ali - Brunei Darussalam

**Arman Bin H. Asmad**

Assistant Rector,

Islamic University Sultan Sharif Ali - Brunei Darussalam

**Siti Sara Binti Hj. Ahmad**

Dean: Faculty of Arabic Language,

Islamic University Sultan Sharif Ali - Brunei Darussalam

### ABSTRACT

Arabic is one of the Semitic languages: Syriac, Hebrew and Arabic. Syriac was the language of peoples whose effects and history had disappeared. Hebrew was the language of Torah and Scriptures had been extinct by the extinction of primitive cultures and ancient messages. Arabic was and is still alive with its other sisters living in the world. It is the language of an immortal divine message. God has adapted it to be the language of His Speech (Revelation) or (Qur'an), as it is stated in the verse: "We have brought down the Qur'an and we will save it". It is necessary to sanctify the eternal and miraculous language of God. As well as, it is the language of Muḥammad The prophet who brought a religion unites the hearts and souls by the love and faith, to spread peace and security in every part of the world, and presented to all of the human societies a comprehensive and universal message was the message of removal for all of the ancient religious messages. The language of this last universal message is Arabic, and its universality lies in its universal message to all people. This is the teaching of Muḥammad The prophet: "Arabic is not by the father or the mother, whoever speaks Arabic is an Arab". The classical Arabic is the language of all Arabs and Muslims who believe in its universal message. We are talking about those dialects that made up the Arabic language, as the language of the holy Qur'an.

**Keywords:** 1. Arab Tribes, 2. Arab Dialects, 3. Dialect of Ḥimyar, 4. Dialect of Quraish. 5. Standard Arabic, 6. Language of the Qur'an.

### INTRODUCTION: ARABIC LANGUAGE

No doubt that each language has its suitable place. If we try to quote here what is written about it before, will not be enough. Therefore, it is better to choose a page has been written by Muṣṭafā Ṣādiq al-Rafī'ī in his book: "History of Arabic Literature and Standard Arabic", It is imperative that if we want to record words in the definition of classical Arabic or to express what was written about it was difficult to consider it better than what was written, but can be considered as little of the lot stated in its statement, I think it is better to quote a page written by Mustafa Sadiq Al-Rafi'i in "The History of the Literature of Arabs" and their classical Arabic, he says: "It is decided by the wise men, that the language is rich because of its vocabularies. The wide condition of their disposing is a clear evidence for the civilization of its people, and their capacity under the shadow of their society. There is nothing to mention for the Arabs except that they had a literal civilization characterized by the nature; as they had noting in the science of metals and places of industries. There was not in their hands the tools of Nations and

social facilities except a few belongings do not reach in its entirety to be a brief explanation of the term (the Arabs) in the dictionary of Nations. The wisdom that made the Old civic arts in the hands of Chinese, and civic sciences in the minds of Greeks, it is summarized the civilization of languages for the tongues of Arabs.

If we think about the meaning of civilization, including its benefit for us, we have seen it in every society in two forms: the first form is the image of the individual in his core, and the second is the apparent image of the group. The urbanization will not be true only if it is based on the mental qualities found in per capita including his preparation for the virtues that are the material of the changing in the mental growth and creation of a new origination entails the emergence of history in total. There is no doubt that the apparent atmosphere of the group is the mirror of inner changes in the individuals. The society in its meaning is such as the combined effects of the minds and the history of psychological changes.

If we consider that in the Arabs we have not seen it in them as the fact nor as the appearance, but only in the language, because it is not enough for Arab to be on an innate morality protected by the borders of desert, and maintained by the walls of natural liberty, so that it can be said that there is a developing soul in Arabs for the literature; because this literature did not occur the mental changes in them that can be appeared in the image of their group, but in the last reign of their ignorant age when they entered in Islam, but if we consider their language we see the fact of urbanization represented, with all of its necessary conditions; it was the sea of life, which focused all the elements spewed out this mental power in their own perfect language.

The wisdom gave their nature this linguistic system, and made them to do the best for the process of its perfection, so that they do not face any obstacle to change their faces from the civil system. They went on that language beyond the social grades step by step, and at the end they became united in the unity of a nation in the world, then they changed completely, as a new young force faced by the old countries with a shock that demolished the history and then wrote a new history. If there was not this language the Arabs could not be organized because their generations to generations had spent before in the urbanization of their language, but they did not prove any talent in themselves, they did not consider the nature social system, which is a way to save the life, to complete the system of life, as it is concerned by the social civilization. The language leaded them to the social ethics by the poetry, to the policy guidance by the rhetorical speech, and to the religious guidance by the Holy Qur'an.

The faces of urbanization that suit the natures of the civilian purposes are those grammatical signs that specify the meanings and purposes by the most convenient signal that are the features of mental Highness specifically. (1)

### **Search Questions:**

- A. What are the dialects of the main Arab tribes that formed the classical Arabic?
- B. What is the concept of this saying: "The Qur'an is revealed on seven characters, so you all can read it with the easier one of them"? Does it mean the seven number or it is a kind of permission?
- C. What are the seven readings of the Holy Qur'an?
- D. What are the reliable dialects in the concept of the seven readings?

### **ARAB TRIBES**

Arabs are divided into two major parts or two main classes: The lost Arabs who lived and died, and the Arabs who were counted as the original Arabs.

- A. The lost Arabs were those Arabs whose tribes perished and their effects disappeared and their news broke, they were nine: 'Aād, Thamūd, Ṭasm Jadīs, Umaim, 'Abīl, Jurhum, Jāsim and 'Amlīq, but the most famous of them are the first four tribes who are called as the original Arabs. The second class of them is the Arabized or alienated Arabs, who are the sons of Isma'il b. Ibrahim. Some of the historians divided the Arabs into two classes: The first are 'Aād, Thamūd, Ṭasm and Jadīs, and they are called Qaḥṭān Arabs, and the second are Adnan who are not original Arabs, but they have become multicultural Arabs.
- B. As for the original Arabs, so called for their roots in Arabic, and considered by the historians the oldest inhabitants of the Arabian Peninsula, as they promise Semitic descendants of Arm b. Sam, but the Giants were descendants of Oud b. Sām who was Iram's brother. It is said that the people of 'Aād and most of the ancient giant Arabs were from the breed of Ḥām, who have been mentioned in the Qur'an for the example of the pride and highness, which led them to the destruction.

### DIALECTS OF ARAB TRIBES IN THE PRE-ISLAMIC ERA

The historians swear the ignorance period into two: the first ignorance period and the second ignorance period. We do not know anything about the first one, but through what is mentioned about it in the Qur'an. The second ignorance period is one hundred and fifty years or two hundred years mostly before Islam. The first Arab poet is Imra' -ul- Qais b. Ḥujr or Al-Muhalhal b. Rabi'a, as it is mentioned by Al-Jāḥiẓ in his book: (The animal). (2) Scientists of the languages do not differ in the presence of different Arab dialects in that period of time, as we see in the view of Abu 'Amr b. al-'Alā: "The tongue of Ḥimyar and the ends of Yemen is not our language, and their culture is also not our Arabian culture", but some orientalist deny the existence of a common language before Islam, as we see that the orientalist David Samuel Margoliouth aimed at the questioning about the pre-Islamic poetry and at the same time about the Islam, saying: All the poems of the pre Islamic era that reached us was in the language of the Qur'an, they do not represent the multiple accents of Arab tribes in the Pre Islamic Era, then do not represents the difference between the language of Al-'Adnānyyīn in the north and Al-Ḥimyaryyīn in the south. (3)

The difference between the accents of the southern (al-Yemenī) and northern (al-'Adnānī) is a fact, as we see Ibn Jinnī accepts this fact saying:

"There is no doubt that the language of Ḥimyar and other languages like that were far away from the language of Bnī Nazār"... "When the scholars wanted to narrate the language found the tribes varying in eloquence had ruled out the language of Ḥimyar, because it was almost alone as being a different language to Arabic language of Muḍar, as they had contacted to Abyssinia, Jews and Persians. So their language was affected by the other languages. (4)

Here we say: The northern tribes began to attack on the south since the middle of the fourth century AD, after the weakness of Ḥimyarite state, and the tribes settled and published their language in the south of the island, as well as, a large number of Arabs in the south migrated to the north, and adopted the language of northern peoples. We know from the inscriptions found in the Arabian Peninsula that the Arabic writing has evolved in the northern Ḥijāz, and the inception was from the Nabatean writing, as the language used for the writing of these inscriptions is Arabic in its different phases.

Shawqī Ḍaif Says: "We have in our hands some of the pre-Islamic poetry indicates conclusively that all of the Arab tribes in the north decided to develop a standard literary dialect, the poets of different tribes were composing their poetry in this tone. When the poet was composing his poetry was rising from the local tone of his tribe to this common literary tone. Then other

properties characterized by each local tone of each tribe disappeared, even those characteristics were not shown in the poetries of their poets, but some time in a very little form, (5) there are accounts indicate the presence of the standard Arabic language in the pre Islamic era, namely:

- ❖ 'Abu Naṣr al-Fārābī says: Quraish was the finest tribe among all of the Arab tribes in the selecting the most eloquent and the easiest word on the tongue in the pronunciation, the best in the hearing and the most excellent in the explanation of what was in the soul.
- ❖ 'Aḥmad b. Fāris says quoting from Ismā'īl b. 'Abi 'Ubaid Allah: "All of the scholars of Arabic language, the narrators of poetry, Arab linguists and the scientists of the wars and trade centers had accepted that Quraish was the most eloquent and the finest tribe among the all Arabs in their tongues and languages, so that Allah selected them among all of the Arabs and chose Muḥammad one of them to be the Prophet of Mercy, making Quraish the protector and sponsor of Kā'ba and neighbor of His house. Therefore, the delegations of Arab pilgrims and others were coming to Mecca for Hajj, then to Quraish arbitrating in their affairs. If the delegations came to them, they were with their fluency, good language and good tongue choosing the best words of Arabic language and poetry. So they became the most eloquent among the all of Arab tribes. Therefore, you do not find in their words the verbal errors like the errors of Tamīm, Qais, 'Asad and Rabi'a". (6)
- ❖ According to Ibn Khaldūn: "The language of Quraish was the most eloquent and explicit language among all of Arabic tongues, because it was far from the countries of Non-Arabs in all directions, this distance from Persians saved them from linguistic errors and being influenced by Persian styles, so in the linguistic issues the witnesses for the right and wrong were taken from the language of Quraish to the people of industry of Arab language. (7)
- ❖ Here, Shawqī Ḍaif said: "There were some religious, economic and political factors prepared for the tone of Mecca to lead the other tribal dialects in the Pre-Islamic Era. The Arab tribes had been seeing by their own eyes that the neighboring countries: Persia, Rom and Ethiopia were attacking on their lands, as they also had been seeing that the Judaism and Christianity these two religions were attacking on their pagan religion, so their hearts gathered around Mecca. Thus, there was an opportunity for al-Quraishiyya dialect to prepare itself to control the different tribal dialects in the pre-Islamic era and become itself the literary language for their prayers, their thoughts and feelings. This is further supported by the narrators sayings that Arabs "were presenting their poems to Quraish, which was accepted by Quraish was acceptable to all of the Arabs and which was rejected by Quraish was rejected by the all." (8)

There was a difference between the Yemeni and 'Adnāni dialects before the collapse of Ma'rib dam, which separated between Qaḥṭānian and Ḥimyarian. Then they migrated to all parts of the Arabian Peninsula and mixed up with their 'Adnānian brothers after their resettlement, even the tribe of 'Azd including Jurhum, 'Aws and Khazraj stabilized in the city (Medina), while Kindah from Yemen, which was the place of the tribe of Imr'-ul-Qays (the poet) settled in al-'Arud in the north and Khuzā'ah in Mecca, as being in the vicinity of Quraish. Some tribes like Huzayl and Kināna were settled in the land of Yemen. Many other tribes and their branches gathered in Iraq and Syria to the north and south and played an important role in the movement of Islamic conquest. (9)

After all of these migrations, stability of Yemenis and their mixing with 'Adnānis through intermarriage, neighborliness, governance, accommodation and cohabitation, this language was converged and the differences between Arabic dialects were very slim.

As it is stated in the words of Al-Jāhīz in his book "The statement and interpretation": "The people of Mecca said to Muḥammad b. Manādir a poet of Tamīm addressing the people of Basra that you don't have an eloquent language, but we the people of Mecca have an eloquent language". Ibn Manādir said that our word is the most approval to the Qur'an, you put the Qur'an after this as you like... Then he mentioned some examples of the disagreement among the Arabic dialects, but he does not deny the existence of a unified Arab common language. (Margoliouth and his position to the Arabic poetry by Muḥammad Muṣṭafā Haddāra) (10) Therefore, the danger presented by Margoliouth and who followed him like Ṭāhā Ḥusayn no longer remained.

We want to say that the classical language of Quraish prevailed in the Pre-Islamic Era, and poets since the beginning of this era were composing their poetries in this language. The tone of Quraish prevailed because of the religious, economic and political factors. The poets were composing their poetries in this language leaving their local tone as we mentioned earlier in this regard or somehow we see Arab poets make in this age according to the differences of their countries and regions. The pre-Islamic poetry does not represent the language of Ḥimyar tribes in the south of the Arabian Peninsula. Yes, this is normal, because they were not using the literary language of poetry, as we see in the words of 'Abu 'Amr b. al-'Ala': "The language of Ḥimyar and the people in the end of the Yemen was not like our Arabic language and their Arab culture also was not like our Arab culture." The classical Arabic had taken - as it is written by Shawqī Ḍaif - stormed the doors on this language in the same Pre-Islamic Era, so we can say that Urbanization of the southern peoples began since the early eras.

Shawqī Ḍaif adds that there are some images of the styles and compositions in the Pre-Islamic Poetry, that are different to the natural grammatical image, which indicates their oldness, and they are not made by the Abbasids and also there is the image of the moral deviation, which cannot be found except in the nature of the pagan as we see in the poem of Imra'-ul-Qais, which is one of the seven Pendants. (11)

Then we see Lyle back to this topic in his introduction: "Divan of 'Obaid b. al-Abras", saying: It is confirmed that the narration of the poetry continued active since the pre Islamic Era until it was written finally in the Abbasid era. It is due to the pendants, for example, we find each of them in a clear and unique personality. It proves that it belongs to its owner. Lyle returned to what he said first in his "introduction" that the simulation of the poetry in the first century H. required the existence of the pre-Islamic poetry, which shared with it in the same tradition, and also there were some exotic words that were not used in the era of these narrators who wrote it. It is a demonstrating conclusive indication that it is true in its essence.

### **ADNANITES AND CLASSICAL ARABIC**

As for the Adnanites, the Arabized Arabs were told that Ismael spoke Hebrew. When Arabs of the Qaḥṭāniyah tribe came and settled down in Mecca, they lived with Ismael who married the girl was one of them. Then he and his Arab sons learned Arabic and called the Arabized Arabs, the Arab population of Bedouins and the urban dwellers spread in the middle of the Arabian Peninsula and Ḥijāz to Shām.

It is known that the Arabic language remained centuries before the history of pre-Islamic era. It was developed and composed, and had taken all the reasons that complete its characteristics, in which the factors of growth varied from substitution, derivation, carving and Arabization until emerged in the full matured form to the history.

The Arabs wanted to form a literary tone can be a tool for expressing the Arab conscience, and can be used by the speakers, literary persons and wise men. This classical literary language had spread over the Arabian Peninsula, as the Arabs and the tribes had accepted it. Meanwhile, their tribal ton remained to be used in non-literary expression, such as the conversation and daily life, depending on the environment in which they were living, following the different methods of development and improvisation. (12)

The classical Arabic language emerged and flourished in the period, in which its artistic characteristics were completed. Imr'-ul-Qais from Yemen and Labīd b. Rabi'a al-Muḍari al-'Adnānī both were using the same Arabic language in their dialogue and poetry. As the result, Arab poets were divided into the regional poets and public poets. The creation of a literary language had many factors, as according to their suffering it was essential and necessary to them to unify a language brings them all together, and can be a vessel for their literature. This literary language was a fruit of the rapprochement among the languages of tribes and clans, in which the Holy Qur'an was revealed. (13)

Some Arab orientalists and researchers ignored this historical background that the northern tribes had begun to attack on the south since the middle of the fourth century AD, after the weakness of Ḥimyar state, when the tribes of Ḥimyar had settled and spread their language in the south of the island, as well as, a large number of southern Arabs had migrated to the north, and adopted the language of the northerners. It is known by the inscriptions found in the Arabian Peninsula that the Arabic calligraphy had evolved and developed in the north of Ḥijāz, and it was developed by the Nabataea calligraphy, and those inscriptions were written by the language was Arabic language in its different stages.

As for the origin of the classical Arabic language, the history tellers are known for their knowledge do not trust the pre-Islamic poetry, which is one hundred and fifty years before Islam, otherwise it is a common myth and fabricated news. Indeed, no one said that there was a unified Arabic language except within two centuries before Islam.

However, the assumption raised by some researchers that classical Arabic did not exist anywhere in the island before Islam, was unreasonable. It was not understood that the Qur'an revealed in a language to those people who did not know that language, as that language was not their own language or language of one of their tribes. As well as, it was not the strange that the Qur'an was revealed by God to His Prophet in his own language and the language of his people. Despite the fact that there were other views of the orientalists in that dialect used by the poets as the language of their poetry. However, there were some other valid narrations had indicated about the existence of the classical Arabic in the pre-Islamic Era, including the narration of Ahmad b. Fāris depending on the authority of Isma'il b. Abu'Ubaid Allah who said: "The scholars of Arab speech, the narrators of their poems, and the scholars of their language, their days and their homelands had agreed that Quraish had the best tongue of the Arabs, because Allah (the Almighty) chose them from all of the Arabs and chose one of them prophet of the mercy Muḥammad, Allah made them neighbors of His house to keep it, so the Arabs were prosecuted to Quraish in their affairs, and Quraish was with its façade, its good language and good tongues if delegations came from the Arabs to Quraish choose the best language for their words and poems. Therefore, Quraish was the most eloquent among the Arabs. (14)

There were religious and economic reasons that prepared the dialect of Adnanites to prevail among the tribal dialects in the pre-Islamic era, where the political reasons were intertwined. The Arab tribes saw by their eyes the attack by the neighboring people: Persians, Romans and Abyssinians on their sides. They also saw the attack by the two religions: Judaism and

Christianity on their pagan religion. Therefore, they thought about Mecca and its importance to their unity. In this way, the dialect of Quraish was able to prevail among the other different tribal dialects in the pre-Islamic era and became a literary language, in which they formulated their prayer, ideas and feelings. This is supported by the narrators who narrated that the Arabs "were presenting their poems to Quraish, if they accepted them were acceptable and if they refused were unacceptable to all tribes". (15) As well as, al-Baghdadi mentioned in his book: "Treasury of the literature: "In the ignorance era, if some of Arabs prepared a poetry and was far away from the Arab land, was not read by anyone, until he came to Mecca during the pilgrimage season, and presented it to the clubs of Quraish, if they liked it was narrated..."

### QAḤṬĀNIYANS AND QAḤṬĀNI DIALECT

The land of Yemen was the home of the people of Qaḥṭān. It was attributed to Qaḥṭān b. 'Aabir b. Shalih who was the first king of the land of Yemen. He wore the crown and was called the descendants of Yemenite's Qaḥṭān or Qaḥṭāniyans, while the offspring of Ishmael b. Ibrahim was called "Adnanites" or "Nizaris". These words became synonymous with the Arabs in the South and Arabs in the North. Qaḥṭān - the grandfather of the South - left his son "Ya'rub" who was the first took Arabic as his tongue and was called by the poets: "Lord of the eloquence".

Hence, Qaḥṭānians were called the Arabized or Arabicized Aran, but there is a saying that the attribution of Arabic language to "'Aabir" or "Ya'rub" was based on the verbal similarity only, because these names in the Torah were not as we see in Arabic.

The people in the south lived a stable life, while the people in the north were mostly living a life of Bedouin and migration. The language of Yemenis was contrary to the language of the Adnanites according to their situations and atmospheres of its use. As the tongue of the people in the South includes various dialects, the most important ones are: Ma'īniyya, Saba'iya, Qatbaniya, Ausaniya and Hadramiyya that are close to the Semitic Abyssinian dialects.

People of Sabaean state were the Qaḥṭānians originally who were called "Arabized Arabs". The scholars refer their origin to Abyssinia, and according to their investigation, the emergence of their state was between the eighth century and the year 115 BC. They had adopted the language of Ma'īnians. Perhaps this was the cause that historians said that they took the Arabic language from the Arabized Arabs: Obviously, this Arabic language cannot be the language of Muḍar.

However, the origin of this Arabic language must be from Abyssinians, Ḥimyarians, and the other Semitic languages, because the Arabs were the traveler people, they were mixed with many nations, so the effect of this mixing must have an impact on the composition of their language, which is a general method in all languages. Thus, Arabic was in its first rise until the tribes were struck in the desert after the stream of 'Uram, and then the Arabic way became independent, and its people went out to take care of its derivation. Therefore, it is not possible to assert that the Adnānian Arabic has a particular origin unless it is possible to decide that they have a stable state and a certain civilization in the history, which is required to prove the originality of language, and this is not said by anyone, because it has no place in history.

### NEIGHBORING TRIBES OF QURAISH

When linguists in the second century came to the tribes in Najd, to collect their material, they were searching for the springs that were still pure. Their work had no question about the language of Mecca during the pre-Islamic era and period of descent of the holy Qur'an. They looked for their target in the neighboring tribes of Quraish, such as Kanana, Huzail and some tribes of Qais. Surely, the differences between the dialect of Mecca and the dialect of these tribes were negligible in pre-Islamic era, and these differences widened as we moved to the

south, east, or north, but we should not exaggerate in their perception. Since the early days of the pre-Islamic era, the poets have been able to broadcast the dialect of Mecca in their tribes when they were composing their poems.

It means that the Quraish dialect had not started to spread among the Arabs in Islam, but it had started to spread since the pre-Islamic era, and even since its earliest time, the oldest texts are like the most recent, organized in the Quraish dialect, which they adopted as a common literary language for them.

Perhaps one of the reasons, which also misled the orientalist and pushed them out of the correct argument was that they found the linguists, when they began to collect their linguistic material went to the Najd tribes opposing the Quraish tribes, as if they forgot that the time had changed, as many Persians entered Mecca when they accepted Islam, and that the classical Arabic was in Mecca during the second century, the century of collecting and codifying the language, which was infected by the impurities of Persians and loyalist who were too numerous. For this reason, the linguists went to the tribes of Najd who still maintained the purity of their language. It was very common that the Arabs who had explained to their age, were known Upper layer of Hawazin, lower layer of Tamīm, Assad, Kanana and Huzail. Abu Nasr al-Farabi explains why they were limited to those tribes in the collection of language, saying: "Those tribes who transferred the language followed by Arabs, are Qais, Tamim and Assad, these are the ones who transferred the most of Arabic language, then it was taken from Huzail and some of Kanana and some of Tayians, and was not taken from any other tribe. (16)

#### **STANDARD ARABIC WAS THE LANGUAGE OF QURAIISH**

It is known that the classical Arabic was known everywhere in the north, and it was a clear indication to their quick response to the Qur'an and its call, they understood it once they heard it, if we know that the Qur'an was revealed in the language of Quraish it must be the literary language that prevailed. However, it was echoed by linguists that the Holy Qur'an was revealed in seven languages, including five languages of Hawazin. It was to some people an interpretation of the Prophet's Ḥadith: "The Qur'an is revealed on seven characters so read it by which one is the easiest". They interpreted the characters by the languages or dialects, and when they searched about them found that there were many dialects of the Arabs, so they chose seven of them that were the most eloquent that were left to the linguists to collect their correct language material. Some believe that the Hadith does not mean any kind of the specification, but it is intended to allow the Arab tribes to read it by the different dialects that were closed to Quraish.

Some believe in the interpretation of this Ḥadith that the Qur'an was revealed in seven particular dialects were the most eloquent of the Arab dialects, was the one reason that misled the orientalist, as they thought that the Qur'an was revealed in the languages of the tribes of Najd, it was not revealed in the language of Quraish, but they did not notice that the same tribes that were fixed by the linguists were the closest tribes to Quraish. This is the reason that al-Ṭabari made it clear that Quraish language itself used to absorb the seven characters mentioned in the Prophet's Ḥadith.

It was not reasonable to the Prophet to leave the language of his people (Quraish) and choose the languages of other peoples. It is mentioned in the Qur'an also: "We did not send any messenger, but with the tongue of his people". The Qur'an testifies that it is revealed in the language of Quraish. As long as the orientalist concede that it came down in classical Arabic, then this standard Arabic is the same as the Quraish language.



The reason that misguided the orientalist may be that they found the linguists going to the tribes in Najd to collect their language material, not to Quraish, as if they had forgotten that the time had changed that many non-Arabs had entered Mecca and many of them had accepted Islam and that the classical Arabic in Mecca in the second century was the century of collecting and codifying the language, which was infected by the tongue of non-Arabs and the loyalists who were very numerous. For this reason the linguists went to the tribes in Najd who were still maintaining the purity of their language. It was common that the Arabs were the most prominent of their time, namely, Hawazin, Tamim, Asad, Kanana and Huzail. Abu Naṣr al-Fārābi explained the reason that they were limited to those tribes in collecting the language. He said: Those who were quoted by the Arab linguists and used their dialects, and chose the Arabic tongue among the all Arab tribes were Qais, Tamim and Assad... Then Huzail, Kanana and Taiyans. The linguists in the second century, when they went to the Najd tribes to collect their material from them, were looking for the springs that were still pure.

Imam al-Ṭabari believes that these seven dialects are the components of the Quraish dialect. He means that the Quraish dialect is a universal dialect of these seven characters, so you can read which one is the easiest. (17)

#### **DIFFERENCE BETWEEN YEMENI TONGUE AND ADNANIAN DIALECT**

Abu Amr b. al-ʿAla said: "The tongue of Ḥimyar, which is prevailed to the end of Yemen is not our tongue, and their Arabic culture is not our Arabic culture". This saying indicates that there was a difference between the tone of Ḥimyar in the south and the dialect of Adnians in the north. The difference between the south and north was before the collapse of the Mārib Dam. The dispersion of the Qaḥṭānians and Hamyarrians and their migration to all parts of the island and their mixing with their Adnanian brethren after their settlement, as Azad tribe: (Jurhum, Aus and Khazraj) settled in the north, but after these migrations and the stability of Yemenis and their amalgamation of Adnians through marriage, neighborliness, governance, residence, cohabitation, and friction, after all this the language came closer, but the existence of these dialects was very small. It is not fancy that every tribe had its own language that contradicted the languages of the other tribes. As we cannot think that there were various nations in Al-Jazeera, not tribes that were united in one nation.

The classical Arabic was prevalent in the pre-Islamic era for religious, economic, and political reasons. Poets were composing their poems in classical Arabic, leaving their local dialects, while the language of Ḥimyar was not the language of poetry, as we see in the words of Abu Amr b. ʿAla: "The tongue of Ḥimyar, which was prevailed to the end of Yemen was not our tongue, and their Arabic culture also was not our Arabic culture". Classical Arabic began to penetrate the doors of this language in the ignorance period itself, so we can say that the Arabization of southerners began since early times.

The words spoken by Abu Amr b. Ala means that their Arabic culture, including the language was influenced by the culture of Abyssinians and language of Persians, so it was free of Arab originality. Therefore, when the scholars came to narrate the language, they discovered that the tribes differed in eloquence. They excluded the language of Ḥimyar, because it was almost a language alone was contrary to the language of Muḍar, and because they mixed with the Abyssinians, Jews and Persians.

Some orientalist ignored this historical background that the northern tribes began to attack on the south since the middle of the fourth century AD, after the Ḥimyar state became weak, and these tribes settled, and spread its language in the south of the island, and a large number of Arabs in south migrated to the north and adopted the language of northerners. We know

from the inscriptions found in the Arabian Peninsula that the Arabic calligraphy originated from the Nabatean writing and the developed in northern Ḥijāz, and that the language was written in these inscriptions was Arabic language in its different stages. (18)

In this sense, we reject the conclusion of some orientalists say: "We have no reason to assume that there was a literary language anywhere until the Qur'an was revealed". (19) It was not reasonable for the Qur'an to be revealed in a language to people who did not know it. It is not surprising that God reveals the Qur'an to the prophet in the language of his people. There are some opinions of Orientalists in this dialect mentioned as the following:

- ❖ Theodor Nöldeke said: There were few differences between the dialects in the core parts of the Arabian Peninsula, such as Ḥijāz, Najd and region of Euphrates, this dialect (the fluent standard Arabic) developed by all of these dialects.
- ❖ Javidi said: It is not a certain tone to a particular tribe, but it is a mix of the dialects of the people in Najd and their neighbors.
- ❖ Fisher said: It was a certain tone, but he did not attribute it to any tribe.
- ❖ Nalino said: It was the language of those tribes were famous in the composing of poetry. The linguists and grammarians had collected their linguistic materials and examples from the people of those tribes. Those are tribes of Ma'd who were united by the kings of Kinda under the banner of a single provision before the middle of the fifth century AD. In his view it was generated from one of the civilized dialects in Najd in the time of the Kingdom of Kindah and became a literary language prevailed among the Arabs. (20)
- ❖ Brockelmann claimed that the classical Arabic was a technical language, standing above the dialects, though it was fueled by all. (21)
- ❖ Shawqī Ḍaif has mentioned in his book: "The Pre-Islamic Era" four old Arabic dialects, three of them were written with the Southern script, these three are al-Thamudī, al-Liḥyānī and al-Ṣafawī dialects. The fourth one is Nabatean, which is written in bold Aramaic script. He described: How did the classical Arabic grow? How did it evolve and become a literary language flourished? How then it became united under the leadership of Quraish? (22)

Quraish had a great influence because of its religious spiritual and material economical central position. It was based on guarding the Ka'ba. Its convoys were roaming all over the Arabian Peninsula. All of the tribes were meeting in the seasons of religious festivals, commercial markets and literary functions in this central place. Therefore, Quraish was as a landing place for the travelers and authorized to be focused by their eyes and hearts. So Quraish was working to refine its dialect and belongings, choosing what was the suitable word for the tongue and light in hearing from the dialects of all these tribes, Thus it was able by its fluent tone to prevail the other dialects as the whole and to be the standard classical language, in which the Qur'an was revealed.. (23)

Arabic Language grew up and passed through the various stages of development until its characteristics were completed and it flourished in Arab societies and markets. Arabs practiced its arts that flourished and grew up, and they memorized its poetry, its prose and its great wisdom. When it rose up and reached its every amount, stood on the threshold of the language of the Qur'an in its linguistic miracle, bow in front of its miraculous method liking and praising, and the scholars and scientists of Arabic tongue recognized the high quality style of its graphic statement, understanding its secrets and no wonder, because it was a sign of its greatness. On the other side, the Qur'an stood up taking its position before the people of this language challenging them in various forms, but their statement and their tongue could not resist against this challenge, even their pens were crashed in front of this challenge.

## CONCLUSION

The process of collecting the Arabic language, as it is well known, began in the blogging era after the melody began to erupt in a society where non-Arabs became a majority. Whatever the real and decisive motive of this process, the result was that the collection of Arabic language as it was done had helped to continue to deal with the Qur'an in a direct way to understand and interpret.

Since the reason for the melody was the mixing that took place in the cities, it was normal to ask for the "correct" language in the villages and the tribes that remained isolated and the men remained "Al-Arab" maintaining the "instinct", "Style" and "Right Pronunciation". If the scholars of the language did not rely on the Qur'an as a basis for the enumeration of the Arabic language, the definition of its forms and the extraction of its rules, it was not only because of the "religious achievement" but also because the process of collecting the language was to protect it from the outside, which required the creation of a "unseen" language, whether at the level of pronunciation, expression or meaning.

No doubt that the process of language preservation is an automatic process that keeps pace with the life of language, any language. However, the attempt to collect vocabularies to put them in the dictionaries define their patterns and extract their bases was quite another thing, an "industry" according to the ancients. In this case, it is necessary to set standards conduct an organized way or to become a codified organization.

Indeed, the narration of language became an industry and profession at the beginning of the second century of emigration, where some people appeared to enlist their material and intellectual energies for this purpose. The most prominent of those were Abu Amr b. al-'Ala (154 H), Ḥammad al-Rawiya (d. 155 H) and Khalīl b. Aḥmad (170 H). It was in the forefront of the conditions for those who can narrate the language to have "the rough skin," a pure Arab that did not know the life of the city, the civilization did not "spoiled" his Arab originality. As well as, there was a strong competition in order to find the most exalted egalitarian Arab in the wilderness and isolation, the competition was even harder to obtain from the rare stranger words of language, which led sometimes to the resorting to those who had acquired the goods required, but by the money, so, they tended to lie and develop a phenomenon that had spread so much that the word became acceptable as long as it concerns the words of Bedouin in the construction of words and their meaning, those words that do not have the smell of civilization. (24)

It can be seen easily in general or specialized Arabic dictionaries where the "Arab world" prevails. Words, meanings, citations, and contradictions all convey to us the simple primordial sensory life of Arabs. The authors of dictionaries had been bounded to the "Arab world" in their consideration to the extent that every word does not refer to the origin of the Bedouin sense is an "alien word" should be neglected if it is not translated into Arabic or it should be mentioned with the quotation mark to indicate that it is as "the stranger". The dictionary named: "Tongue of Arabs" which is the largest and biggest Arabic dictionary, has contained or registered almost, eighty thousand words that can be an encyclopedia of Bedouin life, the life of the Bedouin Arabs in particular. It can be only a surprise when it will be noted that the current Arabic language does not transmit to us, through the ancient dictionaries, the names of tools and types of relations known to the society of Medina and Mecca under the Prophet and the four caliphs, and known to the community of Damascus then Baghdad and Cairo Etc..., As they were urban societies that used countless machines and tools, while the Bedouin language material was accumulated, with so many synonyms, to the extent that the Arabic language

lexicon had a huge surplus of words for the meaning, but only for the Bedouin world not the urban world.

The result is that the classical Arabic, which is the language of lexicons, poetry and literature, has been and continues to convey to its people an increasingly distant world from their world, a Bedouin world living in their minds, but in their imagination and consciousness, which is completely different to the civilized world. Do we exaggerate if we succeed in saying that the Bedouin is actually the creator of the Arab world, the world that the Arabs lived on the word, the phrase, the perception and the imagination, but on the level of reason and conscience, and this world is deficient, poor, shallow and dry... just like the world that was copied by Arabic language in the "pre-Islamic era"... the era of "Pre-Arab History".

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