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## **Ownership Structure, Tax Avoidance and Firm Performance**

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### **ABSTARCT**

**The aims of this study was to obtain empirical evidence of how ownership structure ie institutional and managerial ownership affect firm performance. The study also examine the moderating role of tax avoidance on the effect of institutional and managerial ownerships on firm performance. A model was developed and tested using sample of 58 manufactured companies from 2012 to 2014, which is listed on Indonesian Stock Exchange. Data were collected and analyzed using least square regression and moderated regression analisys. The result showed that institutional ownership and managerial oenrrship affect firm performance. This study also showed that tax avoidance moderates the effect of both institutional and managerial ownership on firm performance.**

**Keywords:** Institutional Ownership, managerial ownership, tax avoidance, firm performance

### **INTRODUCTION**

Firm performance of the company is very important, and the higher firm performance, the higher the credibility of the company. According to Wahyudi and Parwestri (2006) firm performance also describes the welfare of the owner. Allen and and Philips (2000) described that financial performance will impact on increasing share purchase by outside block ownership. This condition will cause management will attempted to do various efforts so that have the impact on increasing the firm performance. Corporate governance mechanism is a tool that can help the principal to increase the firm performance. It is caused by it can control agency cost, and therefore it will impact on increasing the firm performance. Jensen and Meckling (1976) found that institutional ownership can reduce agency conflict problems. Another finding found that institutional ownership affect the firm performance based on their controls (Nuraina, 2012). The other ownership structure ie managerial ownership can also affect the firm performance. It is because the ownership that he has will cause him to more concerned with the credibility of the company. Furthermore it has an impact to the increasing of company's performance. According Saifudin and Yuanda (2016) tax avoidance at manufacturing companies listed on the Stock Exchange period 2011-2014, increasing every year. In 2012, the average ETR arise from 0.240 to 0.260, or an increase of 0.02 units from the previous year. Furthermore, this increase also occurs in the following year. Ie in 2013 to 0, 270 and in 2014 also increased to 0.271. This condition becomes one of the indications that the tax avoidance phenomenon from year to year has increased

### **LITERATURE REVIEW**

Gideon (2005) found that fhe percentage of shares owned by the institution may affect the process of preparing the financial statements, thus it caused no possibility of accrualization by management, thus it may increase the firm performance. Institutional investors are generally sophisticated, and these conditions may affect the increasing of company's performance.

Previous study was conduct by Herawati (2008), Nuraina (2012), Wida and Suartana (2014) also found that institutional ownership affects the firm's performance. This findings indicate that high institutional ownership will have an impact on firm's performance. Managerial ownership structure also affect firm performance.

The study which conduct by Siallagan and Machfoedz (2006) found that greater managerial ownership tend to improve the firm's performance. The study of Kamardin (2014) also found the effect of managerial ownership on firm performance which is proxied with ROA. Contrary, Benson and Davinson (2008) found a negative relationship between managerial ownership and firm value. High managerial ownership is perceived as giving opportunistic behavior of managers. This will cause the market to react negatively, which will have an impact on the decline company's value. It indicates that managerial ownership has a negative effect on firm performance.

Tax avoidance is an avoidance effort in paying taxes conducted by taxpayers legally and not contrary to the provisions of taxation, using methods and techniques that tend to take advantage of the weaknesses contained in the laws and regulations of taxation itself, so that the amount of taxes that payable to decrease (Pohan, 2015). Santa & Regende (2016) found that tax avoidance are negatively effect on firm value. While Chen,Xudong, Na Hu, Xue Wang,Xiaofei Tang (2014) found that tax avoidance behavior increases agency costs and reduces firm value. However chen et al (2016) found significant positive indirect relationships between tax avoidance and market value

As discussed earlier, both institutional and managerial ownership affect firm performance, i.e. the greater the institutional and managerial ownership, the higher the firm value. Aina (2016) found that the occurrence of tax avoidance will affect the decrease in firm value.

**H1:** Institutional ownership affects firm value

**H2:** Managerial ownership affects firm value

**H3:** Tax avoidance moderates the effect of institutional ownership on firm value

**H4:** Tax avoidance moderates the effect of managerial ownership on firm value

## DATA AND METHODOLOGY

### Population and Sample

The population of the study is all manufacture listed companies on the Indonesian Stock Exchange between 2012- 2014. From all of manufacture companies listed on the Indonesian stock exchange from 2012 to 2014, a total of 66 companies as a sample. After, screening based on criteria depicted below in Table, 3.3, the finally sample size was 115 company. Below as shown in Table 3.1 are the detail of sample description.

**Table 3.1: Sample Description**

Manufacture ccompanies listed 2012-2014	144
Incomplete data	(86)
Qualified sample	58
<u>Total year-observations</u>	<u>3*58 = 174</u>

**Sourced: Processed Data**



### Measurement of Firm Value

Firm Value is measured by using Tobin's Q (James Tobin, 1969) which is developed by Klapper and Love (Khomsiyah, 2005); and used by Chen *et al* (2013), Sudianto and Puspitasari (2010).

$$\text{Tobin's Q} = \frac{\text{MVE} + \text{DEBT}}{\text{TA}}$$

Where:

MVE = The closing price at the end of the book x the number of shares outstanding

DEBT = Current Liabilities + Long Term Liabilities

TA = Total asset

### Measurement of independent variables

Institutional ownership = % institutional ownership in the company (Siregar & Utama, 2008; Ratnawati & Ali, 2015)

Managerial ownership = % of managerial ownership in the company

Tax Avoidance = *Cash Effective Tax Rates* (Cash\_ETR) which developed by Dyreng *et al.* (2008).

$$\text{Cash\_ETR} = \frac{\sum \text{CashTaxPaid}}{\sum \text{PretaxIncome}} \times 100\%$$

### Techniques of data Analysis

The test of hypotheses was done using multiple regression models as stated below:

$$\text{Hypothesis 1 and 2: } FV = \alpha + \beta_1 \text{InsOwn} + \beta_2 \text{MgrOwn} + \varepsilon$$

$$\text{Hypothesis 3 and 4: } FV = \alpha + \beta_1 \text{InsOwn} * \text{TaxAv} + \beta_2 \text{MgrOwn} * \text{MgrTaxAv} + \varepsilon$$

Where

FV = Firm Value

InstOwn = Institutional ownership

MgrOwn = Managerial Ownership

TAv = Tax Avoidance

**Normality Testing:** Using normal probability plot analysis it detected that all of the data have a normal distribution.

**Multicollinearity Testing:** Based on the VIF value, it can be concluded that there is no autocorrelation occur in this study. Variance Inflation Factor (VIF) value of each independent variable as shown in the following Table 3.4.1.

**Table 3.4.1 Regression Result**

Model	Collinearity Statistics	Tolerance	VIF	P Value
InstOwn	1.000		1.000	0.017
MgrOwn	1.000		1.000	0.027
InsOwnTAv	0.921		1.086	0.041
MgrOwnTAv	0.921		1.086	0.016

**Dependent Variable: Firm Value (Y)**

Table 3.4.1 shows that all the independent variables have a tolerance value > 0.10 and VIF < 10. Therefore, it can be concluded that the independent variables used in the regression model of this research is free from the problem of multicollinearity (Gozali, 2013).

### Autocorrelation Testing

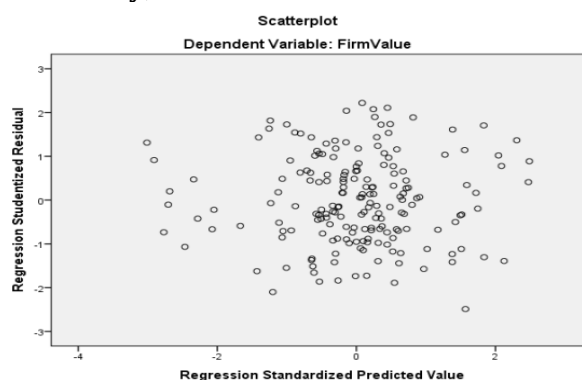
The test result showed there is no autocorrelation occurred in the regression model of this study. It can be seen from the DW value as shown in Table 3.2 below. The Durbin-Watson value of 1.761 which is the value between -2 to +2 (Gozali, 2013).

**Table 3.4.2 Model summary**

Model	R	R Square	Adj R Square	F Change	Durbin Watson
1	0.27 <sup>a</sup>	0.077	0.061	4.996	1.916

### Heteroscedasticity Testing

The results are shown that the points on the image does not form a specific pattern and the data spread above and below the number 0 on the Y axis, where this indicates that the model did not experience heterocedasticity, and this model fit for use in this study.



## RESULT AND ANALYSIS

### Institutional Ownership, Managerial Ownership, and Firm Value

From table 3.4.1 it can be seen that P value of institutional ownership and managerial ownership respectively have positive value 0.026 and 0.003, which is smaller than 0.05, so it can be concluded that both institutional ownership and managerial ownership affect firm value. Based on that finding it can be concluded that the higher the institutional ownership and managerial ownership it will be the higher the firm value. That finding indicated that institutional ownership and managerial ownership have the ability to affect the firm value. Such control is carried out through effective monitoring so that it will impact on the increased the company's credibility. These conditions will of course affect the increase in firm value. This finding is in line with Dechow et al. (1996), who found that high institutional ownership would be followed by increasing the credibility of the company's financial statements.

Gideon (2005) also found that certain percentage of shares owned by the institution could affect the process of preparing financial statements, which does not rule out any accrualization in the interest of the management. Because in general institutional investors are sophisticated investors, it will lead to institutional investors better able to utilize the current period information to predict future earnings, compared to investors other than institutional investors. This finding is also in line with Herawati (2008), Nuraina (2012), Wida and Suartana (2014). These findings indicate that high institutional ownership will impact on increasing firm value. Other findings by McConnell and Servaes (1990), Nesbitt (1994), Smith (1996), Del Guercio and Hawkins (1999), and Hartzell and Starks (2003) in Cornett et al. (2008) found empirical evidence that controls by institutional investors may limit the manager's dysfunctional behavior, which results in a decrease in firm value. Meanwhile Cornet et al. (2008) suggests that the control of the firm by an institutional investor can encourage managers to focus more attention on the company's performance so that it will reduce opportunistic or self-serving behavior, which will ultimately have an impact on the improvement of firm value.

Managerial ownership is the ownership of shares owned by managers at the company. The existence of managerial ownership will further improve the performance of the company. It is because the ownership in the company, the manager will feel that the company is his, so he will try to run the company well. Therefore, the higher the managerial ownership, the better the company performance.

Ruan et al (2011) found that managerial ownership affects firm performance. The study of Li et al (2007) also found that managerial ownership has the positive effect on firm performance. Their findings indicated that the higher managerial ownership,

### **Moderating Role of Tax Avoidance**

The test results by using moderated regression analysis shows that tax avoidance acts as a variable that moderates the influence between institutional ownership and managerial ownership on firm value. Negative beta values indicate that tax avoidance weakens the effect both between institutional ownership and managerial ownership on firm value. The occurrence of tax avoidance in companies will further weaken the effect of institutional ownership and managerial ownership on firm value. The test results indicate that the higher the institutional ownership, it will be followed by the higher firm value. The occurrence of tax avoidance in companies will reduce the strength of the effect of institutional ownership in increasing the firm value.

Tax avoidance behavior by managers tends to have a decrease in firm value, caused by small profits as a result of tax avoidance. According to Armstrong et al. (2010) if a company avoids taxes with poor governance, it poses a risk of a conflict of interest, which will trigger an opportunity for managers to divert costs for their personal interests. It may also have an impact on the company's value. According to Aina (2016), the occurrence of tax avoidance will decrease firm value.

Hypothesis testing results that test the effect of managerial ownership on firm value indicates that managerial ownership affects firm value. A positive beta value indicates that the larger the managerial ownership, the higher the firm value. Testing on the role of tax avoidance as a variable that moderates the effect between managerial ownership on firm value shows significant P value as well as beta which is negative. This indicates that the occurrence of tax avoidance weakens the influence between managerial ownership on firm value. The occurrence of tax avoidance at the company will reduce the role of managerial ownership in affecting firm value.

### **CONCLUSIONS AND RECOMMENDATIONS**

The objective of this study is to provide some empirical evidences of how institutional ownership and managerial ownership affect firm value, also want to investigate the moderating role of tax avoidance on the relationship between institutional ownership and managerial ownership on firm value. In this study it was proposed that institutional ownership and managerial ownership have a positive effects on firm value. The result also showed that tax avoidance affects the relationship between institutional ownership and managerial ownership on firm value. This finding also suggests that interaction of tax avoidance weakened the influence of institutional ownership and managerial ownership on firm value.

The results of this study can help institutions such as the Indonesia Stock Exchange and also investors to know how the institutional ownership and managerial ownership affect the firm value. Besides, from the theoretical aspect, these findings provide a better understanding of the

agency theory more broadly.

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## The Development of Audit Quality Indicators

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### ABSTRACT

Over the years, there has been much debate regarding audit quality. The industry has struggled with how to define audit quality, as well as, how to identify the proper framework and indicators for assessing audit quality. Audit quality gained even more attention after corporate scandals, such as Enron (2001), WorldCom (2002), Tyco (2002), HealthSouth (2003), American Insurance Group (2005), Bernie Madoff (2008) and Lehman Brothers (2011). These scandals shattered the publics' opinion of the accounting and auditing profession and caused investors to question the quality of the audits performed. To date, there is still "little agreement on how to define audit quality, let alone how to measure it" (Dickins et al. 2014, 1). This paper reviews the most recent academic articles published in the top journal during 1981 through 2017.

**Key words:** audit quality indicators; audit quality; assurance; AQI

### INTRODUCTION

Over the years, there has been much debate regarding audit quality. The industry has struggled with how to define audit quality, as well as, how to identify the proper framework and indicators for assessing audit quality. Audit quality gained even more attention after corporate scandals, such as Enron (2001), WorldCom (2002), Tyco (2002), HealthSouth (2003), American Insurance Group (2005), Bernie Madoff (2008) and Lehman Brothers (2011). These scandals shattered the publics' opinion of the accounting and auditing profession and caused investors to question the quality of the audits performed. To date, there is still "little agreement on how to define audit quality, let alone how to measure it" (Dickins et al. 2014, 1).

In an effort to restore the public's confidence in the accounting profession and enhance audit quality, U.S. Congress passed the Sarbanes-Oxley Act of 2002. Under the Sarbanes-Oxley Act of 2002, the responsibilities of the Public Company Accounting Oversight Board (PCAOB) "are all ultimately directed at improving audit quality and thereby benefiting investors" (PCAOB 2015a, 2). With these responsibilities, in November 2012 the PCAOB identified a project that focused on identifying audit quality measures, "with a longer-term goal of tracking such measures with respect to domestic global network firms and reporting collective measures over time." (PCAOB 2012, 5). The project was known as the audit quality indicators (AQI) project.

Initially, the Board has identified over 70 possible AQIs, primarily based on previous studies regarding audit quality. Past research has mainly focused on input-based factors such as audit fees, audit partner tenure, and audit firm size. To further understand the correlation between audit quality and input-based factors, this paper will examine past research studies related to each of the aforementioned factors. By gaining a stronger understanding of these past studies, one will be able to understand the PCAOB's logic for identifying the possible AQIs.

The remainder of this paper is organized as follows. The next section identifies various definitions of audit quality. The third section provides information from the PCAOB regarding the AQI project. The following section examines factors that affect audit quality by reviewing past research. The fifth section briefly addresses the 28 potential audit quality indicators identified by the PCAOB. The final section includes a brief summary and concluding remarks.

### AUDIT QUALITY DEFINED

Audit quality is an intricate and abstract concept. There has been a great deal of controversy over this topic which is why no universal definition has been recognized. Some of the most commonly recognized definitions of audit quality are those by DeAngelo (1981), the Government Accountability Office (GAO), and the PCAOB.

DeAngelo states, “The quality of audit services is defined to be the market-assessed joint probability that a given auditor will both (a) discover a breach in the client’s accounting system, and (b) report the breach” (DeAngelo 1981, 186). According to the GAO, “audit quality refers to the auditor conducting the audit in accordance with Generally Accepted Auditing Standards (GAAS) to provide reasonable assurance that the audited financial statements and related disclosures are (1) presented in accordance with Generally Accepted Accounting Principles (GAAP) and (2) are not materially misstated whether due to errors or fraud” (GAO 2004, 6). The PCAOB defines audit quality “as meeting investors’ needs for independent and reliable audits and robust audit committee communications on: (1) financial statements, including related disclosures; (2) assurance about internal control; and (3) going concern warnings” (PCAOB 2013, 3-4). While these definitions provide some insight into audit quality, the PCAOB believes the AQI project will refine the definition of audit quality and provide a framework that allows audit quality to be more easily measured.

### BACKGROUND ON AQI PROJECT

In an effort to produce higher quality audits, the PCAOB has identified the audit quality indicators project as a priority project beginning in 2013. “The PCAOB’s stated purpose of the AQI project is to identify a manageable set of impactful, objective, and measurable indicators that may provide insights into how high quality audits are achieved so that audit firms and audits can be evaluated and compared” (PCAOB 2015b, 1). As previously mentioned, this project will play an integral role in improving overall audit quality within the profession.

According to the PCAOB, audit quality indicators (AQI) are “measures that provide insight into financial statement audit quality” (PCAOB 2013, 1). The U.S. Department of the Treasury’s Advisory Committee on the Auditing Profession (2008) has identified two types of AQIs: (1) output-based indicators and (2) input-based indicators. The Advisory Committee provides further explanation regarding the two types of AQIs, stating, “output-based – indicators determined by what the auditing firm has produced in terms of its audit work, and input-based – indicators of what the auditing firm puts into its audit work to achieve a certain result” (Dept. of the Treasury 2008, 116). Such output- and input-based indicators can be further broken down into engagement-level and firm-level indicators (Bedard et al. 2010, C15). Bedard has provided a list that separates audit quality indicators into these four categories (refer to **Table 1**).

For each of the input-based factors identified in **Table 1**, there has been a significant amount of research conducted. Such input-based factors are commonly divided into “operational inputs, which largely reflect personnel-driven factors; and process inputs, which largely reflect firm attributes and are intended to roughly align with five components of the Committee of Sponsoring Organizations (COSO) Internal Control Framework” (Dickins et al. 2014, 18). This



paper will examine the following operational and process input-based factors: (1) audit fees, (2) audit partner tenure, and (3) audit firm size. Research regarding the abovementioned factors has been considered by the PCAOB in developing their list of potential audit quality indicators.

In addition to using previous studies, the PCAOB has used their prior knowledge and experience in developing three main principles that have guided the development of each of the audit quality indicators. The first principle relates to the fact that the AQIs should be quantitative measures, wherever possible, “to add consistency of approach and objectivity to what would otherwise in most situations be only subjective judgments” (PCAOB 2015a, 7). Next, the Board believes AQIs should “generate data that enables users to pose critical questions” (PCAOB 2015a, 7). And finally, the AQIs “should be used and function together as a balanced portfolio of audit quality” (PCAOB 2015a, 7). The Board believes that the AQIs identified should be considered collectively and within a context to obtain their true meaning.

The Board has also identified three primary goals with respect to the AQI project. The project’s goals, as identified by the PCAOB, are to: (1) Inform PCAOB regulatory processes and policy-making with additional insight into the status and trends of audit quality; (2) Possibly provide audit committees, investors, management, audit firms, other regulators, and the public with AQIs, providing insight into audit quality for their decisions and policy-making; and (3) Provide firms with additional incentives to compete based on audit quality” (PCAOB 2013, 1-2). From these goals, one can see that many different users are interested in obtaining information regarding audit quality.

The users interested in the AQI project (refer to **Table 2**) will range from audit committees to investors to the PCAOB. Each of the identified users will use the audit quality indicators for different reasons. For example, the PCAOB would be interested in the AQIs for obvious reasons such as understanding the factors that affect detection of auditing standards violations. On the other hand, audit committees may be interested in AQIs when evaluating whether or not to retain their current auditors.

Overall, the PCAOB believes the project will “improve the ability of persons to evaluate the quality of audits in which they are involved or on which they rely and to enhance discussions among interested parties” (PCAOB 2015a, 4). The Board also hopes that the AQI project will stimulate competition among audit firms, ultimately resulting in higher quality audits.

### **POTENTIAL AUDIT QUALITY INDICATORS**

“Understanding the factors that lead auditors to compromise on audit quality is an important issue of concern to scholars, investors, and regulators” (Asthana and Boone 2012, 1). A considerable amount of research has shed light on several factors that affect audit quality. As previously mentioned, **Table 1** identifies examples of audit quality indicators, some of which include audit fees, audit partner tenure, and audit firm size. Although there are a vast number of audit quality indicators, this paper will only reference past research affecting the three previously mentioned factors.

#### **Audit Fees and Audit Quality**

Past research presents conflicting evidence regarding the association between audit fees and audit quality. In analyzing audit fees, most research assesses the relationship between abnormal audit fees and audit quality. Thus, a distinction between normal and abnormal audit fees must be made. “Normal audit fees are the expected fees given the client’s size, risk, and complexity. The difference between the actual audit fee paid and the fee that was expected

given the client's size, risk, and complexity is the abnormal component" (Eshleman and Guo 2013, 18). In reviewing the literature (refer to **Table 3**), two main theories consistently appeared. The two theories identified are commonly referred to as (1) economic bonding and (2) effort view.

First, the idea of economic bonding believes that high abnormal audit fees are generally associated with bribes or client-specific quasi rents that "economically bond the auditor to the client," thus reducing auditor independence (Asthana and Boone 2012, 3). Research in support of the economic bonding theory includes: Asthana and Boone, Choi et al., and Hoitash et al. Asthana and Boone (2012) found that audit quality decreases as positive abnormal audit fees increase by assessing the relationship between abnormally high audit fees and the magnitude of discretionary accruals. Their research found that "greater economic bonding degrades audit quality by impairing auditor independence" (Asthana and Boone 2012, 1).

Choi et al. (2010a) also found that abnormally high audit fees are positively associated with the magnitude of discretionary accruals. The positive relationship between audit fees and discretionary accruals suggests a negative association between abnormal audit fees and audit quality. Choi et al. (2010a) also considered the fact that abnormally low audit fees may result in auditors having little reason to compromise audit quality. Ultimately, Choi et al. (2010a) concluded that the "association between abnormal audit fees and audit quality is asymmetric and nonlinear in the sense that the association is conditioned upon the sign of abnormal fees" (p 137).

Hoitash et al. (2007) provides additional support for the economic bonding theory with their research. Their research finds "a significant positive relation between size-adjusted and abnormal total fees paid to the auditor and two metrics used to assess audit quality – an accruals quality measure developed by Dechow and Dichev (2002), as modified by McNichols (2002) and Francis et al. (2005) and the absolute value of performance-adjusted discretionary accruals" (Hoitash et al. 2007, 762). Such findings imply a negative relationship between audit fees and audit quality. After reviewing the literature, it can be said that research in favor of economic bonding suggests that abnormally high audit fees result in lower quality audits.

The second theory, referred to as the effort view, believes that higher audit fees will result in the auditors putting forth greater effort and thus performing a higher quality audit. The research conducted by Eshleman and Guo (2013) support this view by finding "a negative relationship between the level of abnormal audit fees paid by the client and the likelihood of using discretionary accruals to meet or beat the consensus analyst forecast" (117). A negative relationship between abnormal audit fees and discretionary accruals suggests a positive relationship between abnormal audit fees and audit quality. Ultimately, the study found that "abnormal audit fees are an indication of greater auditor effort" (Eshleman and Guo 2013, 135).

Harjoto et al. (2015), relates audit fees and audit quality to the gender and ethnic diversity of CEOs. Their research sees audit fees as a proxy for audit efficiency and audit quality, similar to the effort view theory. The conclusion is that "the presence of female and minority CEOs is associated with greater assurance, leading to higher audit fees" (Harjoto et al. 2015, 969). It was found that female and minority CEOs typically demand greater assurance in order to protect their reputations, reducing the likelihood of accounting errors. However, greater assurance also creates higher audit fees. These higher audit fees are then associated with higher audit quality, concluding that "gender and ethnic diversity could improve audit quality and the firms' overall financial reporting quality" (Harjoto et al. 2015, 963).

In addition to the two theories previously mentioned, Ettredge et al. (2014) examines “the existence of downward audit fee pressure, and the consequences of fee pressure on audit quality, during the economic downturn that is often referred to as the ‘Great Recession’” (247). Using financial reporting misstatements as the proxy, their research found that “downward fee pressure on audit fees is positively associated with decreased audit quality in 2008” (Ettredge et al. 2014, 250). Ettredge et al. considers this association to be restricted to times of economic hardships. However, Asthana and Boone (2012) suggest that auditors may experience pressures during times other than a recession. For example, when negotiations occur between the client and auditor, research has shown that the party with greater bargaining power will win such negotiations. Assuming the client is a large revenue-generating client for the auditor, the auditor may succumb to client’s viewpoints. The auditors may feel pressure in this type of situation and may fear that the client will hire different auditors. In this scenario, the client has greater bargaining power and thus expects the auditor to concede. Such research supports the theory on client bargaining power which suggests that audit quality will decrease as negative abnormal audit fees increase. Furthermore, this research shows that downward fee pressure may result in lower quality audits, regardless of the economy.

Hribar et al. (2014) focuses on the relationship between audit fees and accounting quality rather than audit quality. Their research finds that “lower quality accounting systems result in higher fees charged by auditors” (Hribar et al. 2014, 514). When a lower quality accounting system is in place, auditors will be required to compensate with additional effort on their part. In order to balance the added risk and extra audit hours associated with a lower quality accounting system, auditors will increase fees. In addition, Hribar et al. (2014) found that “unexplained audit fees are incrementally informative for predicting restatements, fraud, and SEC comment letters” (536). These factors are generally associated with lower audit quality.

In addition to audit fees, Lim et al. (2012) examines the relationship between audit quality and non-audit fees. Their research finds that “as non-audit fees increase, audit quality reduces only for clients with low institutional ownership but not for clients with high institutional ownership” (Lim et al. 2012, 343). The explanation for this correlation is that clients with high institutional ownership are more likely to monitor the auditors closely, encouraging higher audit quality. The closely monitored auditors will feel more pressure to remain independent and perform well in order to protect their reputation and avoid possible litigation expenses. Therefore, the relationship of audit quality being reduced by non-audit fees exists only for clients with low institutional ownership.

The relationship between audit fees and audit quality has proven to be of particular interest to many researchers. This interest has stemmed from the fact that studies have proven that high abnormal audit fees result in both higher and lower quality audits. In reviewing the literature, it is clear that more than one association exists between audit fees and audit quality and further research is required to resolve these issues.

### **Audit Partner Tenure and Audit Quality**

Research examining the relationship between audit partner tenure and audit quality also presents conflicting arguments. In studying the literature (refer to **Table 4**), there are two common views that persist: (1) auditor independence and (2) auditor expertise. The first theory, auditor independence, assumes that as audit partner tenure increases, the partner will build personal relationships with the client, ultimately reducing auditor independence. This theory suggests that the quality of an audit will be lower due to the familiarity threat and lack of auditor independence. The second theory, auditor expertise, believes that the audit partner will obtain greater client-specific knowledge, useful in conducting a quality audit, the longer

the partner is assigned to the same engagement.

Fargher et al. (2008) and Carey and Simnett (2005) provide support for the auditor independence viewpoint. Fargher et al. (2008) finds “that as audit partner tenure increases, client managers’ accounting discretion also increases” (180). This positive relationship is indicative of a negative association between audit partner tenure and audit quality, supporting the auditor independence theory. Carey and Simnett (2005) examine the relationship between audit partner tenure and audit quality through the use of three proxies: (1) “auditors’ propensity to issue going-concern audit opinions for distressed companies;” (2) “an examination of the signed and absolute amounts of abnormal working capital accruals;” and (3) “the extent to which key earnings benchmarks are just beaten and just missed” (673). Keeping in mind that the data used for this research was prior to the implementation of mandatory partner rotation, such research concludes that long audit partner tenure impairs audit quality. More specifically, “For the measures of audit quality examining the auditor’s propensity to issue a going-concern audit opinion and just meeting (missing) earnings benchmarks, we find evidence consistent with a diminution in audit quality association with long audit partner tenure” (Carey and Simnett 2005, 674).

However, after the implementation of mandatory audit partner rotation, Carey and Simnett’s research is revisited by Monroe and Hossain. In contrast to Carey and Simnett’s original results, Monroe and Hossain (2013) find a “significant positive association between audit partner tenure when tenure is five years or more and the likelihood of an auditor issuing a going-concern opinion for a financially distressed company” (263). Their research finds that “auditors are more likely to issue qualified going-concern opinions for financially distressed companies when there is a mandatory audit partner rotation after a fixed period of time” (Monroe and Hossain 2013, 263). Thus, their research proves that mandatory audit partner rotation has improved the quality of audits performed and supports the theory of auditor expertise. In addition to Monroe and Hossain’s research, Ghosh and Moon and Manry et al. provide empirical evidence in support of the auditor expertise theory.

Ghosh and Moon (2005) “examine whether the extent to which analysts rely on past reported earnings to predict future earnings varies with tenure” (586). Consistent with the auditor expertise theory, their findings conclude “that audited financial statements, and in particular reporting earnings, are perceived as more reliable for firms with longer auditor tenure” (Ghosh and Moon 2005, 609). Manry et al. (2008) find a significant negative correlation between discretionary accruals and audit partner tenure. This relationship suggests a positive association between audit partner tenure and audit quality. Thus, their research supports the auditor expertise viewpoint. Furthermore, their research controls for certain factors, such as client size and engagement risk, and finds that “audit quality increases with partner tenure for small clients, but is unrelated to partner tenure with large clients” (Manry et al. 2008, 554). The research by Manry et al. (2008) also suggests mandatory audit partner rotation may actually reduce audit quality.

Although much research has been conducted over the years relating to the relationship between audit partner tenure and audit quality, such research has only lead to conflicting results. Ultimately, the relationship between audit partner tenure and audit quality is inconclusive.

### **Audit Firm Size and Audit Quality**

“One of the earliest theories in the audit literature is that Big 4 auditors, due to their larger size and better training programs, provide higher audit quality than other auditors” (Eshleman and

Guo 2014, 197). The following research (refer to **Table 5**) supports this theory: Eshleman and Guo (2014), Davidson and Neu (1993), Christensen et al. (2014), Francis and Yu (2009), Choi et al. (2010b), Colbert and Murray (1998), and Meckfessel and Sellers (2017).

Eshleman & Guo (2014) use “the incidence of accounting restatements as a measure of audit quality” to find that “clients of Big 4 audit firms are less likely to subsequently issue an accounting restatement than are clients of other auditors” (197). Davidson & Neu (1993) “propose that comparison of management earnings forecasts with audited, reported earnings provides an approach to the measurement of audit quality” (479). Their research suggests that larger auditing firms are generally associated with larger forecast errors, which is consistent with the theory that larger audit firms perform higher quality audits. Christensen et al. (2014), compares the opinions of audit professionals and investors regarding the relationship between audit firm size and audit quality. Their research found that “both groups associate audit firm size with higher audit quality and that investors view frequent audit firm change as an impediment to audit quality” (Christensen et al. 2014, 36).

While most research examines the relationship between audit firm size and audit quality, Francis and Yu (2009) and Choi et al. (2010b) have provided insight on the relationship between the office size of an audit firm and audit quality. Francis & Yu (2009) “examine the association of office size with going-concern audit reports and client earnings properties” (1522). Their findings suggest that larger Big 4 offices are more likely to issue a going-concern report than other audit offices. Francis and Yu (2009) document “a systematic association between Big 4 office size and audit outcomes consistent with larger offices producing higher quality audits” (1549). Similar to the results of the research performed by Francis and Yu (2009), Choi et al. (2010b) found that “large local offices provide higher-quality audits compared with small local offices” (73). In conducting their research, Choi et al. used unsigned abnormal accruals as the proxy for determining the relationship between office size and audit quality.

Colbert and Murray conducted an analysis on small CPA firms and found results similar to prior research. Colbert and Murray (1998) examined the relationship between audit firm size and audit quality by “measuring auditor quality based on outcomes from the AICPA’s Private Companies Practice Section (PCPS) Peer Review Program” (136). Their research found that “even among small CPA firms, size is an indicator of quality for firms that perform audits, reviews, and compilations” (Colbert and Murray 1998, 148).

Instead of focusing on the relationship between audit firm size and audit quality, Meckfessel and Sellers (2017) explore the relationship between consulting practice size and audit quality. Their research found that “consulting practice size has a positive and statistically significant influence on audit reporting lag and restatement rate” (Meckfessel and Sellers 2017, 19), indicating lower audit quality. It was found that when an audit firm has a larger consulting practice size there is a decreased focus on auditing services, resulting in a decrease in audit quality.

The association between audit firm size and audit quality appears to provide more conclusive evidence than audit fees and audit partner tenure that a relationship exists between audit quality and a specific indicator. Based on a review of current literature, one can conclude that there is a positive relationship between audit firm size and audit quality.

### **CURRENT STATUS ON AQI PROJECT**

Since the inception of the AQI project, the PCAOB has identified a number of potential audit

quality indicators. More recently, the Board has narrowed down the number of audit quality indicators to consist of a list of 28 that they believe will effectively measure audit quality. The framework developed for analyzing audit quality is broken down into three parts: (1) Audit Professionals, (2) Audit Process, and (3) Audit Results. Each of the three sections are further broken down into various subsections. **Table 6** outlines the framework and identifies the indicators proposed by the PCAOB. Some of the indicators identified include: staffing level, industry expertise of audit personnel, quality ratings and compensation, and timely reporting of internal control weaknesses.

Of the three audit quality factors addressed in this literature review, only audit fees were directly included in the PCAOB's list of potential indicators. The other two audit quality factors, audit partner tenure and audit firm size, are not explicitly identified in the list of 28 indicators. However, the PCAOB has acknowledged independence requirements, going-concern issues, and industry expertise as potential indicators; all of which were factors discussed in relation to audit partner tenure and audit firm size within this literature review. The studies included in this literature review have not only made significant contributions to enrich research on audit quality, they have also made peer-reviewed contributions to addressing issues raised by the PCAOB's AQI project.

### CONCLUSION

In summary, the research suggests conflicting views with respect to factors affecting audit quality. Although much of the research is inconclusive, the PCAOB believes that the implementation of the AQI project will solve some of the mysteries related to audit quality. The Board hopes that the project will "provide new insights about how to evaluate the quality of audits and how high quality audits are achieved" (PCAOB 2015a, \*\*\*). By furthering the development of the AQI project, hopefully one day a universal definition of audit quality will be recognized as well as a proper framework and indicators for assessing the quality of an audit.

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**TABLE 1**  
**Examples of Audit Quality Indicators**

Measurable INPUTS to Audit Quality	Example of Sources Using Indicator	Measurable OUTPUTS of Audit Quality	Example of Source Using Indicator
<u>Engagement-Level Indicators</u>			
Audit hours	O’Keefe et al. (1994) Chen et al. (2008a); Deloitte (2010)	Accuracy of audit opinion	Francis and Yu (2009)
Training hours	Johnstone and Bedard (2001); Low (2004)	Accounting and Auditing Enforcement Releases detailing individual acts indicating low audit quality, including 10A Proceedings	SEC; Feroz et al. (1991)
Personnel assignment	Carcello et al. (2002)	Client discretionary accruals and other earnings quality measures	Hoitash et al. (2007); Chen et al. (2008b)
Audit fees	Carey and Simnett (2006); Chi et al. (2009); Bedard and Johnstone (2010)		
Audit partner tenure			
Tailoring of audit tests to reflect client risk	Elder and Allen (2003) Gist and Davidson (1999); Bedard et al. (2008)		
Audit budgeting			
Individual auditor industry specialization	Owhoso et al. (2009); Thibedeau (2003)		
<u>Firm-Level Indicators</u>			
Audit firm size	Francis (1984)	Litigation* and related costs	Palmrose (1988); Khurana and Raman (2004); Deloitte (2010)
Audit firm industry specialization	Craswell et al. (1995)		PCAOB; Hermanson et al. (2007); Deloitte (2010)
Audit firm tenure	Carcello and Nagy (2004)	Inspection activities and report results	AICPA; Casterella et al. (2009)
Audit firm independence	Simunic (1984); Francis (2006)	Peer review results	
Audit firm compensation plans	Trompeter (1994); Carcello et al. (2000)	Internal inspection results	

\* While we classify litigation as a firm-level indicator, we acknowledge that litigation related to specific engagement may be linked to the quality of the conduct of individual audit engagements.

**\*\*Table directly from, “Audit Quality Indicators: A Status Update on Possible Public Disclosures and Insights from Audit Practice” by Bedard et al. (2010).**

**TABLE 2**  
**Users of AQIs**

Potential AQI User	Potential Use (Decisions AQIs Can Influence)
Audit Committees	<ul style="list-style-type: none"> <li>Assess reporting risk and audit quality</li> <li>Retain and compensate auditors</li> <li>Oversee auditors</li> </ul>
Audit Firms	<ul style="list-style-type: none"> <li>Assess and manage risk</li> <li>Improve quality control efforts and, ultimately, audit quality</li> <li>Identify root causes of audit deficiencies and remediate weaknesses.</li> </ul>
Investors	<ul style="list-style-type: none"> <li>Assess reporting risk</li> <li>Vote shares</li> </ul>
PCAOB (and other Regulators)	<ul style="list-style-type: none"> <li>Inform policy-making</li> <li>Assist root cause and quality control projects</li> <li>Stimulate public discussion of, and market demand for, quality</li> </ul>

**\*\*Table directly from PCAOB Release No. 2015-005.**



**TABLE 3**  
**Audit Fees and Audit Quality**

Author	Purpose	Hypotheses	Method	Sample	Key Results/Findings
Michael Ettredge, Elizabeth Emeigh Fuerherm, & Chan Li	To investigate the existence of downward audit fee pressure, and the consequences of that fee pressure on audit quality, during the economic downturn.	Downward pressure on audit fees is positively associated with decreased audit quality in 2008.	Mathematical models and equations	A sample of all public companies covered by both Audit Analytics and Compustat in 2008 were obtained. A final sample of 3,039 firms in 2008 was used to estimate the fee models needed to calculate expected audit fees in 2008 and the model used to test the hypothesis.	The findings suggest that auditors made fee concessions to some clients in 2008, and that fee pressure was associated with reduced audit quality in that year.
Sharad C. Asthana & Jeff P. Boone	To assess the effects that abnormal audit fees have on audit quality by examining economic bonding and client bargaining power;  To analyze pre-SOX and post-SOX data to determine whether the SOX reforms increased audit quality.	H1a: Audit quality will decline as below-normal audit fee increases in magnitude.  H1b: The association predicted in H1a will be amplified as proxies for client bargaining power increase.  H2: Audit quality will decline as above-normal audit fees increase in magnitude.  H3: The association between audit quality and abnormal audit fees will be attenuated in the post-SOX period as compared to the pre-SOX period.	Mathematical models and equations	The sample selection includes observations for the period 2000–2009 available in the Audit Analytics database for non-Anderson clients. The total sample size used was 18,873 observations.	This study finds that audit quality, proxied by absolute discretionary accruals and meeting or beating analysts' earnings forecasts, declines as negative abnormal audit fees increase in magnitude, with the effect amplified as proxies for client bargaining power increase. The study also concludes that in years following the Sarbanes-Oxley Act (SOX), this effect is reduced, suggesting that SOX was effective in enhancing auditor independence, thus audit quality.
Rani Hoitash, Ariel Markelevich, & Charles A. Barrangato	To capture the relation between audit quality and auditor independence by examining fees paid by firms in the context of auditor profitability.	Principal objective is to ascertain whether larger size-adjusted or abnormal fees result in a higher or lower quality audits.	Mathematical models and equations	Data was obtained from Standard & Poor's Audit Fee Database. The final data set consisted of 13,860 observations.	The key results of this study find a significant positive relation between size-adjusted and abnormal total fees paid to the auditor and two metrics used to assess audit quality – an accruals quality measure developed by Dechow and Dichev (2002), as modified by McNichols (2002) and Francis et al. (2005) and the absolute value of performance-adjusted discretionary accruals during the period 2000-2003.

Author	Purpose	Hypotheses	Method	Sample	Key Results/Findings
John Daniel Eshleman & Peng Guo	To shed light on the conflicting evidence by performing a study of the relationship between abnormal audit fees and audit quality using a new research design. More specifically, to examine whether clients paying abnormal audit fees are more or less likely to use discretionary accruals to meet or beat the consensus analyst forecast.	There was no explicitly stated hypothesis within the study.	Mathematical models and equations	This study obtained audit fee and auditor data from Audit Analytics, financial statement data from Compustat and analyst forecast data from the I/B/E/S. The study required firms to have earnings before discretionary accruals less than the consensus analyst forecast. The sample amount was 1,670 firm-year observations spanning from 2000-2011.	The key findings suggest that clients paying higher abnormal audit fees are less likely to use income-increasing discretionary accruals to meet or beat earnings targets. This is consistent with the notion that abnormal audit fees are an indication of greater auditor effort.
Jong-Hag Choi, Jeong-Bon Kim & Yoonseok Zang	To examine whether and how audit quality proxied by the magnitude of absolute discretionary accruals is associated with abnormal audit fees, that is, the difference between actual audit fee and the expected, normal level of audit fee.	H1: Abnormal audit fees are not significantly associated with audit quality when the association between the two is not conditioned upon the sign of abnormal audit fees.  H2: For clients with positive abnormal audit fees, abnormal audit fees are positively associated with the magnitude of discretionary accruals.	Mathematical models and equations	Data was obtained from the Compustat audit fees file. The full sample size consists of 9,815 firm-years over the four-year sample period.	This study finds that the association between abnormal audit fees and audit quality is asymmetric and nonlinear in the sense that the association is conditioned upon the sign of abnormal audit fees.
Paul Hribar, Todd Kravet, & Ryan Wilson	To assess the relationship between audit fees and accounting quality and connect accounting quality to instances of fraud, restatements, and SEC comment letters.	Audit fees contain information about firms' accounting quality.	Mathematical models and equations	Data was obtained from various sources. Audit Analytics was used to obtain audit fee data. The Compustat database was used as well.	This research finds that unexplained audit fees contain information about firms' accounting quality. It was also found that unexplained audit fees are incrementally informative for predicting restatements, fraud, and SEC comment letters.

Author	Purpose	Hypotheses	Method	Sample	Key Results/Findings
Chee Yeow Lim, David K. Ding, & Charlie Charoenwong	To examine the relationship between audit quality and non-audit fees as a condition of institutional monitoring.	Audit clients with low institutional ownership will have lower audit quality when non-audit fees increase than clients with high institutional ownership.	Mathematical models and equations	The sample included 13,789 firm-years, and the fee information was obtained through the Audit Analytics database for fiscal years 2000-2001.	The key findings suggest that external monitoring affects the association between non-audit fees and audit quality. The research indicates that as non-audit fees increase, audit quality is reduced only for firms with low institutional ownership.
Maretno Agus Harjoto, Indrarini Laksana, & Robert Lee	To examine the impact of gender and ethnicity of CEO and audit committee members (directors) on audit fees and audit delay in the US firms.	<p>H1a: CEO gender is associated with audit fees.</p> <p>H1b: CEO ethnicity is associated with audit fees.</p> <p>H2a: The proportion of female audit committee members is associated with audit fees.</p> <p>H2b: The proportion of ethnic minority audit committee members is associated with audit fees.</p> <p>H3a: The presence of a female CEO is negatively associated with audit delay.</p> <p>H3b: The presence of an ethnic minority CEO is negatively associated with audit delay.</p> <p>H4a: The proportion of female audit committee members is associated with audit delay.</p> <p>H4b: The proportion of ethnic minority audit committee members is associated with audit delay.</p>	Mathematical models and equations	Data was obtained from a variety of sources: audit data from the Audit Analytics database, financial data from Compustat, stock market data from Center for Research in Security Prices (CRSP), CEO tenure and CEO turnover data from Execucomp and director data from RiskMetrics Investor Responsibility Resource Center (IRRC).	This research found that female CEOs, ethnic minority CEOs, and ethnic minority directors, compared to male Caucasian CEOs and directors, are associated with higher audit fees. This implies that gender and ethnic diversity in corporate leadership and boardrooms could improve audit quality and the overall financial reporting quality.

**TABLE 4**  
**Audit Partner Tenure and Audit Quality**

Author	Purpose	Hypotheses	Method	Sample	Key Results/Findings
Gary Monroe & Sarowar Hossain	To investigate whether audit partner tenure and audit quality associations remain significant after the implementation of mandatory audit partner rotation.	There is a significant association between audit partner tenure and audit quality as measured by the propensity of auditors to issue going-concern opinions for financially distressed companies.	Mathematical models and equations	Audit opinion and audit partner data are hand-collected from annual reports in the AspectHuntley DatAnalysis and Connect4 databases. Financial data are downloaded from the AspectHuntley FinAnalysis database. The final sample consists of 4,711 firm-year observations	The study finds a significant positive association between long audit partner tenure and the likelihood of issuing a going-concern opinion for a financially distressed company. The results provide evidence of higher audit quality for longer audit partner tenure after the introduction of mandatory audit partner rotation.
Peter Carey & Roger Simnett	To examine the association between audit quality and long audit partner tenure by looking at the following three measures: (1) auditor's propensity to issue a going-concern audit opinion for distressed companies, (2) the direction and amount of abnormal working capital accruals and (3) beating (missing) earnings benchmarks.	There is a negative association between audit quality and long audit partner tenure.	Mathematical models and equations	The data collection for this study involved the review and analysis of published information for public companies listed on the Australian Stock Exchange (ASX) in 1995. A final sample of 1,021 Australian-domicile companies was used.	For the measures of audit quality examining the auditor's propensity to issue a going-concern audit opinion and just meeting (missing) earnings benchmarks, we find evidence consistent with a diminution in audit quality associated with long audit partner tenure.
David L. Manry, Theodore J. Mock & Jerry L. Turner	To examine whether there is a relationship between evidence of reduced audit quality, measured by estimated discretionary accruals, and audit partner tenure with a specific client.	Audit quality is reduced as audit partner tenure with a client increases.	Mathematical models and equations	The firms examined in this study are a subset of the sample compiled by Mock and Turner (2005), who investigate the relationship between auditor risk assessments and audit program planning judgments. A sample was obtained of two years of data from audits of 202 clients conducted by three audit firms. The final sample for this study was 90.	The key findings suggest that audit quality increases with partner tenure for small clients, but is unrelated to partner tenure for large clients. It also suggests that audit partner rotation may not increase audit quality as desired by Congress, but instead may actually reduce audit quality for some companies.

Author	Purpose	Hypotheses	Method	Sample	Key Results/Findings
Neil Fargher, Ho-Young Lee & Vivek Mande	To examine the effect of audit partner tenure on client managers' accounting discretion.	<p>H1: All else constant, there is no change in client managers' accounting discretion as audit partner tenure on an engagement increases.</p> <p>H2: All else constant, there is no difference in client managers' accounting discretion across short- and medium-tenured audit partners.</p> <p>H3: All else constant, there is no difference in client managers' accounting discretion across medium- and long-tenured audit partners.</p>	Mathematical models and equations	The initial sample consisted of the population of publicly traded Australian firms that were publicly traded on the ASX for which annual reports were available over the period 1990-2004. The annual reports were obtained from DatAnalysis. Due to the number of restrictions, the sample used in this study amounted to 1,306 firms or 12,077 firm-year observations.	This study finds that, in the initial years of tenure of a new audit partner, client managers' accounting discretion decreases when the new partner is from the same audit firm as the outgoing partner. However, when the new audit partner is from a different audit firm as the outgoing partner (audit firm rotation), it is found that client managers' accounting discretion increases in those initial years.
Aloke Ghosh, Baruch College & Socheol Moon	To examine whether the extent to which analysts rely on past reported earnings to predict future earnings varies with tenure.	Reported earnings are perceived as being more reliable as auditor tenure increases.	Mathematical models and equations	The full sample includes Compustat firms with available data from 1990 to 2000. The restricted sample consists of firms in the full sample with auditor-client relationships lasting for at least five years. The maximum number of observations for the "restricted" sample was 35,826 firm-years.	In general, most of the results are consistent with the hypothesis that audited financial statements, and in particular reported earnings, are perceived as more reliable for firms with longer auditor tenure. The study suggests that imposing mandatory limits on the duration of the auditor-client relationship might impose unintended costs on capital market participants.

**TABLE 5**  
**Audit Firm Size and Audit Quality**

Author	Purpose	Hypotheses	Method	Sample	Key Results/Findings
Gary Colbert & Dennis Murray	To examine the relationship between audit quality and auditor size for small CPA firms by using peer review ratings from the AICPA's Private Companies Practice Section	H1: Firm size is positively associated with auditor quality.  H2: The number of previous reviews is positively related to audit quality.  H3: Peer review ratings differ for the two oversight organizations.	Mathematical models and equations	The study used a nationwide sample of 422 small CPA firms selected from the American Institute of Certified Public Accountants' (AICPA) Private Companies Practice Section Peer Review Program	The findings indicate that audit quality is positively related to auditor size. Even among small CPA firms, size is an indicator of quality for firms that perform audits, reviews, and compilations.
Jong-Hag Choi, Chansog (Francis) Kim, Jeong-Bon Kim, and Yoonseok Zang	To investigate whether and how the size of a local practice office within an audit firm is a significant, engagement-specific factor determining audit quality and audit fees over and beyond audit firm size at the national level and auditor industry leadership at the city or office level.	H1: Audit quality, measured by unassigned abnormal accruals, is not associated with the size of a local engagement office, other things being equal.  H2: Audit fees paid to auditors are not associated with the size of a local engagement office, other things being equal.	Mathematical models and equations	The initial sample consisted of firms included in the Audit Analytics database for the six-year period from 2000-2005 for which data on audit fees and the location of city-level audit engagement offices are available. After excluding certain firms from the sample, the final sample consisted of 55,704 firm-year observations.	First, this study finds that the office size is positively associated with audit quality proxied by unsigned abnormal accruals. Second, this study finds that large local offices are able to charge higher audit fees to their clients than small ones, which is consistent with the view that large offices provide higher quality audits than small offices. Overall, the results suggest that both regulators and audit firms should pay more attention to the behavior of small offices because they are more likely to be economically dependent on a particular client, and thus to compromise audit quality.
Ronald Davidson & Dean Neu	To provide preliminary evidence on the association between audit firm size and audit quality by using management earnings forecasts as a benchmark against which audit actual results were compared.	There was no explicitly stated hypothesis within the study.	Mathematical models and equations	The sample used for this study included descriptive statistics from 112 firms that applied for an initial Toronto Stock Exchange (TSE) listing between 1983 and 1987.	Consistent with other research, this study suggests that larger auditing firms are associated with higher-quality audits.

Author	Purpose	Hypotheses	Method	Sample	Key Results/Findings
John Daniel Eshleman & Peng Guo	To reexamine whether Big 4 auditors deliver higher quality after controlling for the endogenous choice of auditor. The audit quality proxy chosen is the likelihood of a firm issuing an accounting restatement.	H1: Clients of Big 4 auditors have a lower likelihood of issuing an accounting restatement than clients of non-Big 4 auditors after controlling for the client's propensity to choose a Big 4 auditor.  H2: Clients of the Big 4 have a lower likelihood of using an accounting restatement than clients of Mid-tier auditors after controlling for the client's propensity to choose a Big 4 auditor.	Mathematical models and equations	This study obtained financial statement data from the Compustat Fundamentals Annual file and auditor and restatement data from Audit Analytics for the period 200-2009. The sample selection differs for each hypothesis. To test the first hypothesis, a sample of 5,950 observations were used. To test the second hypothesis, a sample of 3,248 observations were used.	This study finds that clients of Big 4 auditors are less likely to subsequently restate their earnings than are clients of non-Big 4 auditors. We also find weak evidence that clients of the Big 4 are less likely to issue a restatement than are clients of Mid-tier auditors. Taken together, the evidence is consistent with Big 4 auditors delivering higher quality audits.
Jere R. Francis & Michael D. Yu	To analyze the effects of client influence and auditor industry expertise in individual practice offices of Big 4 accounting firms and to investigate a fundamental question: Is Big 4 audit quality uniform across small and large practice offices?	Larger offices of Big 4 accounting firms provide higher quality audits, where higher quality audits are inferred by the auditor's likelihood of issuing a going-concern audit report (and accuracy of the report in predicting client bankruptcy), and the degree to which clients evidence earnings management behavior.	Mathematical models and equations	This study examined a sample of 6,568 U.S. firm-year observations for the period 2003-2005 and audited by 285 unique Big 4 offices.	This study suggests a systematic association between Big 4 office size and audit outcomes consistent with larger offices producing higher quality audits.
Brant E. Christensen, Steven M. Glover, Thomas C. Omer, & Marjorie K. Shelley	To examine the thoughts of audit professionals and investors regarding audit quality, specifically how they define and evaluate audit quality.	There was no explicitly stated hypothesis within the study.	Survey; Mathematical models and equations	This study obtained usable responses from 96 auditor participants, coordinating with the CAQ's Research Advisory Board	This study found key similarities and differences between the opinions of auditors and investors regarding audit quality. It was found that both groups associate audit firm size with higher audit quality. It was also found that investors, more than auditors, view frequent audit firm change as an impediment to audit quality.

Author	Purpose	Hypotheses	Method	Sample	Key Results/Findings
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Michele D. Meckfessel & Drew Sellers	To explore the relationship between the regrowth of sizable consulting practices by the Big 4 and audit reporting lag and restatement rates.	H1: Percent of revenue from consulting fees paid to Big 4 auditors is positively associated with audit-reporting lag.  H2: Percentage of revenue from consulting fees paid to Big 4 auditors is positively associated with restatements.	Mathematical models and equations	This study used the Audit Analytics database to obtain a sample of SEC-registered US audit clients of the Big 4.	This study found that Big 4 audit practices are not immune to the presence of large consulting practices within the same firm. It was found that consulting practice size has a positive and statistically significant influence on audit reporting lag and restatement rate, indicating lower audit quality due to a decreased focus on auditing.
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**TABLE 6**  
**Potential Audit Quality Indicators**

<b>AUDIT PROFESSIONALS</b>	Availability	1. Staffing Leverage 2. Partner Workload 3. Manager and Staff Workload 4. Technical Accounting and Auditing Resources 5. Persons with Specialized Skill and Knowledge
	Competence	6. Experience of Audit Personnel 7. Industry Expertise of Audit Personnel 8. Turnover of Audit Personnel 9. Amount of Audit Work Centralized at Service Centers 10. Training Hours per Audit Professionals
	Focus	11. Audit Hours and Risk Areas 12. Allocation of Audit Hours to Phases of the Audit
<b>AUDIT PROCESS</b>	Tone at the Top and Leadership	13. Results of Independent Survey of Firm Personnel
	Incentives	14. Quality Ratings and Compensation 15. Audit Fees, Effort, and Client Risk
	Independence	16. Compliance with Independence Requirements
	Infrastructure	17. Investment in Infrastructure Supporting Quality Auditing
	Monitoring and Remediation	18. Audit Firms' Internal Quality Review Results 19. PCAOB Inspection Results 20. Technical Competency Testing
<b>AUDIT RESULTS</b>	Financial Statements	21. Frequency and Impact of Financial Statement Restatements for Errors 22. Fraud and other Financial Reporting Misconduct 23. Inferring Audit Quality from Measures of Financial Reporting Quality
	Internal Control	24. Timely Reporting of Internal Control Weaknesses
	Going Concern	25. Timely Reporting of Going Concern Issues
	Communications between Auditors and Audit Committee	26. Results of Independent Surveys of Audit Committee Members
	Enforcement and Litigation	27. Trends in PCAOB and SEC Enforcement Proceedings 28. Trends in Private Litigation

**\*\*Table directly from PCAOB Release No. 2015-005**



## Working Hour Allocation Strategy in Lobster Grow-Out Farming in Lombok Island

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### ABSTRACT

Indonesia has dramatically changed in respect to marine management and fisheries resources to create friendlier ecological business environment and boost economic expansion. Interpreting policies in action found difficulty to challenge due to needed to achieve dual goals of fishery production uplifting, while sustainable resource management has improved simultaneously. Lobster industry is one of the casualty bias policies when the government issued of minimum legal size of lobster regulation, wherein this regulation brought to an end the lobster grow-out activities. Those activities has proven that economic sustainability were in progress for family members in coastal communities since they did not need coast of production input for seeds, woof, and empowering families as workforce. The purpose of the study was to explain strategy used in lobster grow-out farming by empowering family to endorse family's economic sustainability. The study was conducted in Lombok Timur District, Province of Nusa Tenggara Barat by 97 respondents. Sampling technique used was non-probability sampling method through snow ball sampling. The data collection instrument used questionnaires and they were analyzed by economic model and formulated using a simultaneous equation through two stages least square. The results concluded that the involvement of all family members in lobster grow-out farming has been unable to yield maximum result and most of them work far below their capacities.

**Key words:** working hour allocation strategy, lobsters grow out farming, Lombok Island.

### INTRODUCTION

In 2014, Indonesia has dramatically changed in respect to marine management and fisheries resources to create friendlier ecological business environment and boost economic expansion. To get to the goals were arrange a plan strategy which consists of three pillars: sovereignty, sustainability, and prosperity as stipulated in the Strategic Plan 2015 – 2019 (Kementerian Kelautan dan Perikanan, 2015). This objective can't be achieved easily as previous policy caused marine resources are threatened and damaged by overfishing and coastal development. In addition, partially spatial management of coastal ecosystems have been exploited with limited concern for sustainability and they lead to loss in productivity and cascading effects on other parts of the ecosystems. Interpreting policies in action found difficulty to challenge due

to needed to achieve dual goals of fishery production uplifting, while sustainable resource management has improved simultaneously.

Lobster industry is one of the casualty bias policies. It has not been unregulated sector yet in Indonesia. This situation changed when Minister of Marine Affairs and Fisheries issued Minister Regulation No.1/2015 as amended by Minister Regulation No.56/2016. These regulations driven of minimum legal size stipulation harvested lobster. *Panulirus spp.* legally captured from nature with carapace length over 7 cm and the weight is more than 200 grams. Minimum legal size of lobster has hampered lobster industry sustainability, both captures and grow-out farming. This regulation is in-line with Gonzales & Taniguchi's (1995) research suggested that lobsters weight less than 100 grams should not be sold to any fishery market and should be released in their natural habitat. On the other hand, this regulation should accommodate fishery issues in term of economics as a primer tool and important use. Economics, however, will never be independent from politics and financial matters of short term urgency to transform mid- to long-term policies into immediate actions and legislation that caused damage, if not drawbacks, to fishery and fishing policies (Barreiros, 2016).

In the beginning of Minister Regulation No.1/2015 implemented on 7 January 2015, activities in lobster farming were proven has contributed for economic improvement and widely opened for people in coastal area, mainly located in Lombok Island. Unlimited demand endorsed lobster business as a profitable fishing enterprise. Increasing global demand, a high market value, and sustainability concern of wild stocks have created significant interest in spiny lobster aquaculture development (Radford & Marsden, 2005; Simon & James, 2007). Aquaculture and enhancement were come up as a commercially viable alternative to increase global supply of lobsters. Aquaculture offer tremendous economic growth opportunities to provide jobs and income for millions of coastal households and they have potential foreign revenue investments. The strong market for lobsters and farmers succeed to grow-out lobster indicated that lobster aquaculture will generate a profitable business opportunity in coastal communities where puerulus and juvenile lobsters can be found. Lobster farming was easily conducted by the relative poverty by practicing households with the subsistence nature activity and also reliance on predominantly family labor utility in various income sources and created family forming on capital.

Basically, Minister Regulation No.1/2015 is necessary. One of the reasons driven this necessity by assumption among coastal communities that lobster were a common pool resource. In this case, earning a living was formed by the high level of uncertainty, giving rise to exploitative behavior that adversely affects to ecosystem, and promoting destructive fishing (Kusnadi 2009). Coastal management in Indonesia is being complex issue since in respect to socio-economy, environment, and technology mastery (Agunggunanto, 2011). Lobster grow-out farming is one of the solution to make economy better in coastal area because of large lands and huge of naturally puerulus. Utilized land for new coastal farming until 2014 is 413862 ha (4.95%) of the land, 8363501 (Kementerian Kelautan dan Perikanan Republik Indonesia 2015). Puerulus spreading area is consist of West Sumatera island, south of Java, Bali, and Nusa Tenggara, Sundaland, Strait of Malacca, east of Kalimantan, north of Sulawaesi, Maluku, and Papua (Kanna 2006). By this spreading, it can be ensured that there are many puerulus caused lobster fecundates growing linearly in line with carapace length (CL): *P. homarus* (CL 80–95 mm) 28000–96.000 eggs, *P. versicolor* (CL 85–100 mm) 16500–71000 eggs, *P. ornatus* (CL 85–100 mm) 47000–87000 eggs, *P. penicillatus* (CL 65–100 mm) 31000–152000 eggs, dan *P. longiceps* (CL 85–95 mm) 47000–140000 eggs. Puerulus has mortality rate of 0,01% (Junaidi, et al., 2010). By those comparative superiorities, it's better if the puerulus

maximized for economy. In fact, the implementation of minimum legal size of lobster created complicated problems to well establish production lobster center, particularly in Lombok Island, West Nusa Tenggara. The regulations inflicted frozen lobster industry entirely, both naturally catching and grow-out farming due to input factor of wild captured puerulus and juvenile lobsters that categorized as an illegal activities. Despite of continuing such activities, it has affected on inefficiency utilization resources due to a longer harvest period.

Steps to put out lobster farms would actually cause wider socio-economic problems, since family was a basic organizational unit in lobster grow-out farming. Lobster farm owners were poorly educated and they were in a subsistence condition, thus they were vulnerable to be poverty. This was one of the contributing factors caused all family members to be involved in lobster grow-out farming, include involving wives and children. The trap of impoverishment would be difficult to avoid due to fixity and rigidity of assets and those were being main reason why fishermen and farmers are trapped in poverty. Additionally, they would find difficulty in liquidating or converting their assets in the event of a change to their business condition (Smith, 1979). Changing their business model was not easy either for coastal communities in Indonesia. Generally, they prefer to wait and see new technologies effects that are introduced and their contribution on the household economy in order to minimize potential business failures, rather than seeking opportunities to generate maximum results. Business failure would threaten their families' existence. Through growing out lobster has been conducting in basic concept for intensive labor and it's not depend on technology use. So that, the purpose of this study to verify empirically weather labor sources were maximized effectively in order to assigning better strategy and having alternative family income sources.

## LITERATURE REVIEW

### **Coastal community and lobster grow-out farming of farmer family**

Fishery resource - common pool resources are inclined to be exploited by party who first in hand and they aside advantage for other party that provoked market failure potentially (Dharmawan & Daryanto, 2002). Lobster grow-out was identically satisfying daily needed for coastal community, especially fisherman and fishery farmer having own culture and unique characteristics. By this condition, it was needed to have comprehensively understanding of coastal community either as an idea, or cognitive system for way of life, social pattern reference, and medium to peruse every moment in surrounding (Keesing, 1989). Hishamunda et al. (2009) proposed that socio-economic in fishery sector activities can be scrutinized through input factors, such as: gender, workforce, income, nutrition, food safety, health, insurance, credit, human right, law, privatization, culture, global trade, policy, stakeholder, knowledge and behavior, ethic, market, and asset ownership.

Coastal communities in Indonesia are unique. Wahyudin (2003) defined coastal community as a pluralistic society who belongs to each other since they have combination characters either as urban society or rural communities affected by some reasons: environment, season, and market where they live in. living close to beach was chosen since give them easily access to do in daily activities. Kusnadi (2010) implied that coastal community in Indonesia has own construction in social culture that are affected significantly by social group existence and their sustainability in life depending on business utilization of marine resource and particular coastal. Those are formed through long evolution process affected by gender system, patron-client relationship, behavior patterns in exploiting fishery resource, and social leadership.

In coastal community, not only complemented trait of women (wives) in maintaining family life, but also it is stipulated by patron-client relationship which was a part of relation between two people mostly involving friendship instrumental in relationship construction. In one side,

patron was being a party has higher social-economy status using clout and resource to provide protection. On the other side, client was in lower status will return not only in material, but also in private service to patron as remuneration, endorsement, and assistance by asymmetry relationship (Scoot 1972).

Lobster grow-out farming in Lombok Island conducted by all family members, including children. Their involvement in growing out lobster is derived from '*ngayah*' culture, men and women farm together without paid. High collaboration of family member in lobster grow-out farming caused low rate workforce return in Lombok Island. This subsistence condition in growing out lobster was not assumed completely as an economy activity to seize an opportunity from investment, but also as an encouragement to create job vacancies for themselves. This is in line with neoclassical economy theory that workforce is as a deviced demand and induced supply workforce creation in informal sector.

Family members' involvement in lobster grow-out farming may absorb workforce, either men or women to ameliorate subsistence indirectly and distribute national income since they did not need to have formal educational requirement. Meanwhile, low educational level in Lombok Island was being hindrance input for productive age for workforce. Bappenas and JICA (2014) reported that household head whose work as fish farmers have education up to elementary school (SD) were 67,86% and junior high school were 15,31%.

Women (wife) position in lobster grow-out farming essentially may solve problems were caused by domestic function condition carried on. Timmer et. al. (1987) indicated that housewives who have children, mostly under five years old, spending their time to nurture their children and doing other housework, so, they had small time to deal both in market activities, and consumption and cost for their children. Through activating in this activities or family business allowed them to get out from poverty and assisted husband's low income to satisfy family needed which continuously increasing. Lobster grow out farming, moreover, had imbalance in total of real income which getting decrease. In this case, it was in line with fact that women' contribution to family income of low society was very high, yet they were still in poverty.

Children' contribution to lobster grow-out farming in Lombok Island can be classified as learning process in respect to skill sharing. The purpose of that was to equip new generation by practical competent needed for subsistence earning and facilitated children to integrate them into a community and transform them to be adult men or women. Activities in lobster grow out farming, however, were easy work and they related to applicable law. Indonesia has ratified ILO Convention No. 138 about minimum age limit allowing to work which has been ratified on Act No. 20 of 1999, ILO Convention No. 182 about prohibition and deletion as soon for worst profession forms for children has been ratified on Act No. 1 of 2000, so that, children participation in lobster grow-out farming practically have to accordance to children age, controlled by adult, not disrupt school hours, allow to have balance in order to play and socialize, and not dangerous for them.

### **Uncertainty of Fishery business theory**

Theory for uncertainty in fishery business was developed by Charles (2001). He introduced that to create sustainability fishery system have to considered three key components: first, natural system is comprise of actor, (fisherman and farmer), processor, user, fishery community, social environment, economy and culture; Second, fishery management system is consist of planning, policy, development, and research in fishery.

Charles (2001), moreover, elaborated well of sustainability concept in fishery business as an obligation to have understanding in diversity and complex issues that correlate statically and dynamically among variables in fishery business creating diversity in fishery system and coming from many interests. It's very often the interest allowed conflict between interests. In addition, there were many species and among species interacted in tropical habitat, many fisherman groups and interacted among them, social structure and the effect to fishery, fishery information dynamics and dissemination, interaction dynamics between fish resource, uncertainty in each fishery component system.

Furthermore, he added that the key point to know fishery system is by understanding uncertainty of each fishery component. In this stance, it is needed because of uncertainty in fishery business, which comprise of three types, they are: random fluctuations analyzed quantitatively, uncertainty in estimation parameters and nature state analyzed quantitatively, structural uncertainty by lack of fundamental knowledge in respect to design fishery management in order to have robust result, adaptive, and precautionary.

### **Allocation time theory**

Becker (1965) posed Time Allocation theory and laid down it as basic concept to analyze labor use in household production activities and time allocation. Household activities can be analyzed economically using the theory and it can elaborate two persons who are living in a house (having family) and each of them has utility and production function. In this case, household directly consumed commodity produced as a utility and output from household activities and produced by various input.

Furthermore, he elucidated that household are involved in production activities creating output such as food, nurturing children, and other domestic activities ( $Z$ ) in a set of product and need time to do activities in household as single utility function model, which is commodity  $Z$  produced affordable goods or can be made by themselves. If Commodity  $Z$  is rendered as production factor used to create domestically, so, the activities are identical to time allocation in company labor use.

$$\text{Max } U(x, s)$$

Budgeting constraint:  $I + wl = px$

Time constraint:  $T = l + s$

Both constraints can be combined into income constraint:

$$FI = (I + wT) = ws + px,$$

Where  $ws$  is time needed to produce goods domestically, by assumption if individual are part of workforce will has payment as  $W$ , and  $FI$  and those are all of earned income by producing the goods.

### MODEL CONCEPT OF RESEARCH

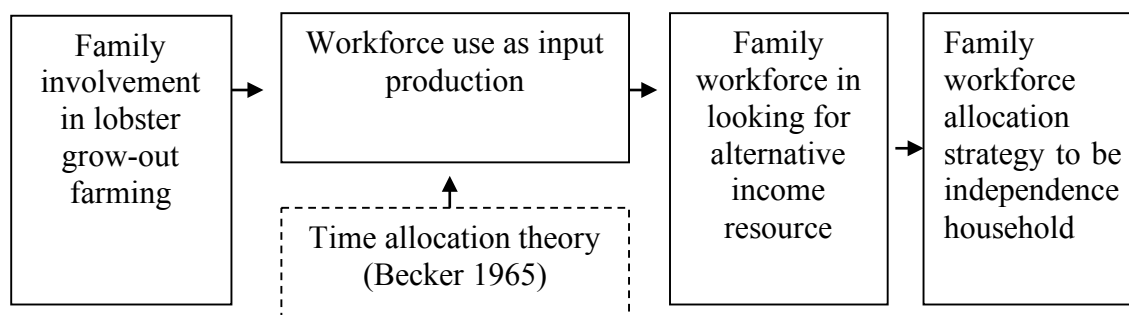


Figure 1: Model of research

### RESEARCH METHODS

#### Population

The research population of lobster grow-out farmer was accordance to Petersen (2012) Approximately there were 1000 lobster grow-out farming businesses in Indonesia and the biggest one is located in Lombok Island. However, the total was not relevant anymore caused lobster legal minimum size has effected to lobster grow-out farming abandoned by. So that, this research was difficult to define number of samples that highlighting of observation unit characteristic. Based on the search, it was known that lobster grow-out farming still undertaken by people in Lombok Timur District, particularly in Jerowaru District, so, all population were taken in Jerowaru village and Pare Mas village.

#### Sampels and Sampling Techniques

Data collection in the research was conducted by case study method. Sample determination on this survey based on purposive sampling (judgmental sampling). To solve problem in sample determination number because of people abandoned the lobster grow-out farming, it used snowball sampling technique. This technique used sample which acquired through movement process from one respondent to the others to describe social pattern or a communication (sociometric) among people in a lobster grow-out community farming (Neuman 2003).

Additionally, snowball sampling technique was used in the data collection, as when the study commenced in September 2015 lobster grow-out business has started to be abandoned by the farmers as a result of the enactment of Minister Regulation No.1/2015. Data collection was conducted through two field research. The first field research was carried out on 11-13 October 2015 to identify lobster farming locations that are still in operation, through which 97 respondents were found. The second field research on 19-24 April 2016 acquired recall data from 96 people. The second research was aimed to determine whether the harvest in January 2016 was done in compliance with Minister Regulation No.1/2015, and whether June 2016 harvest was conducted in accordance with the regulation. The lack of respondent number on second field research was because of respondent being migrant workers to Malaysia.

#### Mathematical model

The basic problem of the study was to elucidate the following question: do labor source allocation implicated all family members in lobster grow-out farming has been used effectively in its production process? Based on the above mentioned, a set of mathematical model can be developed in the form of nihilism, and their theoretical basis. To assess the effectiveness of family member involvement in the grow-out lobster farming business, validation was first done to determine a sig value on the different levels of productivity that influenced by number

of family members involved in, including women' contribution in daily operation of lobster farming.

Determinants of female labor participation based on neoclassical economic theory suggests that a female's labor supply was a dual function of market wage offer (substitution effect) and her family welfare (income effect) which maximizes its welfare subject according to time and budget constraints. Since women dependent within the family, they must choose between work in the market, work at home and leisure to maximize a family's utility (Mincer, 1962; Backer, 1965; Gronau, 1980; Standing, 1978). Empirical studies often use a woman's market-wage offer (substitution effect), her husband's earnings and family non-earnings income (income effect), her schooling, work experience, number of children and other family background as variables to explain female labor supply.

Subsequently, by employing the theory of time allocation (Becker 1965), workforce use was analyzed with respect to household production activities and time allocation for household activities. Employing time allocation theory, household activities can be analyzed in economic terms and thus it can be explained role of the two people living in the house (family), where one has a utility function while the other undertakes a production function. In this regard, the household indirectly consume the commodity produced as a utility and output of the household, produced by various differing inputs.

Becker (1965) proved that the household is also involved in production activities and produced outputs, such as food, care for the children and other domestic undertakings within the home as a single household utility function model, where other commodities generated can be bought or manufactured by the household itself. If the other commodities are translated as production factors to support domestic productivity, such activities are taken as time allocation by workforce use for profit.

Such assumptions have evolved that time needed to manufacture goods domestically, individuals as workforce received wage, and their entire income derived from goods manufactured. Under such condition household will combine time with goods purchased at the market to produce a final commodity that can be immediately enjoyed by incorporating them into a utility function. Profit was not derived in form of utility, but in form of final goods and in production required particular technology. Thus, the household was addressed to have a particular production function represented by new commodity.

If goods produced and bought at the market, time used are used to produce a number of commodities and maximize utility function within budgetary limits bound by availability of resources possessed as a differentiator under consumption theory that will produce direct utility by consuming particular goods or services. Such conditions were occurred due to Becker (1965) view that household activities should be seen as an economic unit that concurrently undertaken two things, production and consumption. Such conditions created time decreased issues to produce goods that will reduce the time for consumption. By combining the three impediments household income accordance to time availability within household and they assessed on the basis of the applicable wage level as additional income was not derived from work.

Full income concept as developed using model thought by Sing (1986) who stated that operational income ( $\Pi$ ) is included as a component of full income by taking into account all cost of manpower used in household business and the costs derived from family members or outside of applicable wage level. This condition was an outcome assumption for price receiver

behavior among labor at the market, where family workforces and hired workers have perfect substitutive character. By using household income function level through selecting consumption commodity and demand for workforce input in the production and it would conform to applicable market wage. Such equation contain an endogen variable - workforce, thereby earning full income as impediment when lobster grow-out farm owners maximized its production profit function by manipulating workforce input.

In such households, income was influenced by home production activities. When factors changed, it has affected to production and can be ascertained that has affected to full income. Consequently, they might change consumption behavior in terms of demand or goods consumption, as well spare time they have. On the other hand, such conditions might change consumption behavior and it was determined by production behavior through income, while production behavior was not determined by consumption habits. It means that production decisions with regard to use of input were different from consumption decisions and those decisions related to offers of manpower. The condition would employ formulated model by Sadoulet & Janvry (1995) stated that the decision maker within household farming would concurrent combine decisions on production, consumption and manpower. Those decision types were merged into a single household problem. In this household economy model among lobster grow-out farmers, a limitation was imposed by assumption that household used one production variable only, manpower and they may produce one type of product only. The assumption came up because of lobster feed input was procured internally among lobster farmers through trash fish. To analyze working hour allocation in lobster grow-out farmers, an economic model formulated using a simultaneous equation with two stages least square (2SLS) and processed with SAS computer program through an economic developed model to analyze household working hour for lobster farmers that were divided when lobsters rose. Completely the economic developed model to analyze the household working hour allocation in lobster farming can be described as follows:

### 1. Model for *P. Homarus* grow out

Model for man working hours in *P. Homarus* grow-out:

$$APLP_i = a_0 + a_1AWLP_i + a_2AALP_i + a_3PTRT + a_4JKLP + a_5JBLP + \mu_1$$

Model for woman working hours in *P. Homarus* grow-out:

$$AWLP_i = b_0 + b_1PTRT + b_2JKLP + b_3JBLP + b_4JABT + \mu_2$$

Model for children working hours in *P. Homarus* grow-out:

$$AALP_i = c_0 + c_1PTRT + c_2JKLP + c_3JBLP + \mu_3$$

Model for total working hours *P. Homarus* grow-out:

$$JAKP_i = APLP_i + AWLP_i + AALP_i$$

where:

APLP = Man working hours allocation in *P. Homarus* grow-out

PTRT = Total family expenditure

JKLP = Number of sea cages *P. homarus*

JBLP = Number of peureulus *P. Homarus*

AWLP = Woman working hours allocation in *P. Homarus* grow-out

JABT = Number of infants under 5 years old

AALP = Children working hours allocation in *P. Homarus* grow-out

JAKP = Total working hours *P. Homarus* grow-out



Model of production cost in *P. Homarus* grow-out

$$BPLPi = BVLPi + BTLPi$$

where:

BPLP = Production cost *P. Homarus* grow-out

BVLP = Variable cost on peureulus of *P. Homarus* grow-out

BTLP = Fix cost *P. Homarus* grow-out

Model of production *P. Homarus* grow out

$$JPLPi = d_0 + d_1JAKPi + d_2JPKLP + d_3JKLP + d_4JBLP + \mu_4$$

where:

JPLP = Total production of *P. Homarus* grow out

JAKP = Total allocation working hours of *P. Homarus* grow out

JMLP = Total feeding of *P. Homarus* grow out

JKLP = Total sea cages of *P. Homarus* grow out

JBLP = Total peureulus of *P. Homarus* grow out

Model of productivity *P. Homarus* grow out

$$PULPi = e_0 + e_1JPLPi + e_2JKLP + e_3JBLP + e_4 JAKPi + \mu_5$$

where:

PULP = Productivity of *P. Homarus* grow out

## 2. Model for *P. Ormarus* grow out.

Model for man working hours in *P. Ornatus* grow-out:

$$APLMi = e_0 + e_1PTRT + e_2JKLM + e_3JBLM + \mu_6$$

Model for woman working hours in *P. Ornatus* grow-out:

$$AWLMi = f_0 + f_1PTRT + f_2JKLM + f_3JBLM + f_4JABT + \mu_7$$

Model for children working hours in *P. Ornarus* grow-out:

$$AALMi = g_0 + g_1PTRT + g_2JKLM + g_3JBLM + \mu_8$$

Model for total working hours *P. Ornatus* grow-out:

$$JAKMi = APLMi + AWLMi + AALMi$$

where:

APLM = Man working hours allocation in *P. Ornatus* grow-out

PTRT = Total family expenditure

JKLM = Number of sea cages *P. ornatus*

JBLM = Number of peureulus *P. ornatus*

AWLM = Woman working hours allocation in *P. Ornatus* grow-out

JABT = Number of infants under 5 years old

AALM = Children working hours allocation in *P. Ornatus* grow-out

JAKM = Total working hours *P. Ornatus* grow-out

Model of production cost in *P. Ornatus* grow-out

$$BPLMi = BVLMi + BTLMi$$

where:

BPLM = Production cost of *P. Ornatus* grow-out  
BVLM = Variable cost of peureulus *P. ornatus* grow-out  
BTLM = Fix cost of *P. Ornatus* grow-out

Model of production *P. Ornatus* grow-out  
 $JPLMi = h_0 + h_1JAKMi + h_2JPLM + h_3JKLM + h_4JBLM + \mu_9$

where:

JPLM = Total production of *P. ornatus*  
JAKM = Total allocation working hours *P. ornatus*  
JPLM = Total feed of *P. ornatus*  
JKLM = Total sea cages of *P. ornatus*  
JBLM = Total peureulus of *P. ornatus*

Model of productivity *P. Ornatus* grow-out  
 $PULMi = i_0 + i_1JPLMi + i_2JKLMi + i_3JBLMi + i_4 JAKMi + \mu_{10}$

where:

PULM = productivity *P. Ornatus* grow-out

## RESEARCH RESULT AND DISCUSSION

### Description of Respondents

Respondents from Desa Jerowaru are 46 people and they are distributed into 36 men and 10 women. In addition, respondents from Desa Paremas are 50 people and they are comprised of 49 men and 1 woman. By group age distributions are youngest respondent was 19 years old while the oldest was 70 years old, and the averages age are 43 and 45 years old. Furthermore, lengths of experience in lobster grow-out farming were 1 year for the shortest and 25 years for the longest and the average experience of 5.6 years with value mode was 6 years. The maximum numbers of family member of the respondents were 8 people and the minimum number was one person, with the average number of family members were 3 people.

Lobster grow-out farmers that had low education level were 20 respondents and they had never attended formal education. 6 respondents did not complete primary school and 47 respondents completed primary school. Respondents with secondary education were 23 people by only 1 female respondent was graduated from junior high school and 6 male respondents were graduated from high school. The numbers of *keramba* (floating fish cage) in Desa Jerowaru and Paremas were 514 plots (13,878 m<sup>3</sup>). Even though transformation in lobster feed and introduction of technology had not immediately yielded the maximum result yet, it constituted a necessity to achieve business efficiency. Under such conditions, it can be ascertained that in order to lobsters meet legal minimum size better feed were needed to allow lobster grow-out farming business to be economically viable to support household needed.

**Table 1. FCR, weight of lobster, and harvest time**

Data	FCR		Weight of lobster (grams)		Harvest time (days)	
	P. homarus	P. ornatus	P. homarus	P. ornatus	P. homarus	P. ornatus
Minimal	1:16	1:11	150	150	104	99
Maximal	1:41	1:23	290	245	328	214
Average	1:28	1:18	185	197	210	159
Modus	1:27	1:18	160	175	104	175

### Lobster grow-out farming in Lombok Island

The lobster farming unit usually consists of far extended family members or sometimes closed extended family member. An ancient labor division used in lobster grow-out was recognized in three jobs or roles: looking for lobster feed, feeding, and securing sea cage. The head of business process was a father. He had dual responsibilities in looking for lobster food and looking after lobster farming security. The other family members, spouse, and children had contribution to feed lobsters and secured sea cages when their father was looking for lobster feed. Wives and children involved in lobster grow-out farming business as workers and they were inseparable in production process. During busy periods, however, lobster farmers may ask assistance from patrons, neighbors, or other acquaintances had fields adjacent to his, on a reciprocal basis, or he may hire additional labor.

Lobster grow-out farming families were lived in terrible condition. A household farmer in fishery sector had average between 4 to 5 family members and household head usually only had elementary school education. As a result, any increased income in fish farming household used to buy basic needed and average spending increased per capita of 32.85%, which only results in proportion reduction cost for fish feed by 0.1% of 65% in 2007 to 64.9% in 2010 (Bappenas dan JICA 2014). The condition contradicted to Engel's Law, stipulated that the higher income, the lower expenditure proportion was for feed.

In Lombok Island, there were two species of lobster cultivated – *P. homarus* and *P. ornatus*. A lobster owner would usually disperse lobster larvae of two above species with ratio of 3:1. They then rose in submerged cages made of synthetic fish nets with size mesh of 15 mm. The cages were cube shaped has capacity 27 m<sup>3</sup> (3 x 3 x 3m), moored to a floating frame kept afloat by plastic or metal drums. The cages held 20 lobsters per cubic meters. When the lobsters weight more than 200 grams, maximum density of lobsters kept in the cages were 10 lobsters per cubic meter. The lobsters were fed by trash fish and the trash fish were caught by farmers itself. The trash fish was minced into large pieces and given it after farmer sorted to the lobsters every morning. Usually trash fish was mostly consisting of small species with a small number mollusks and crustaceans. These kinds of feed were less than idea as they adversely affected for growth rate and skin color when the lobster harvested. The price of *P. ornatus* had sharply decreased and lower than when they fetched due to their small sizes (<500 gram). Meanwhile, harvested *P.homarus* usually has weight 200 to 300 grams.

### The Result of 2SLS Working Hours Allocation in *P. Homarus* Grow-out Farming

#### 1. Man working hours allocation in *P. Homarus* grow-out (APLP)

APLP had positive correlated to AWLP, AALP, and PTRT. APLP was significantly affected by AWLP and PTRT. It means that AWLP and PTRT was booster of APLP. The result of parameter estimation APLP was stated in Table 16 that AWLP had significant effect to APLP was on level of 5%, AWLP had coefficient effect was 0.0072, means every AWLP increment of 1%, it would increase APLP of 0.072%. Regression coefficient sign of AWLP was in line with expectation –

positive and it indicated that aligned relationship between APLP and AWLP. PTRT had significant correlation to APLP was on level of 1% with coefficient of 0.74%. As result, every PTRT increment of 1% would work up APLP of 0.74% by ceteris paribus assumption.

**Table 2. The result of APLP in Equation Parameter Estimation**

Explanatory variables	Estimation Parameter	Standard Error	t Value	Pr >  t
Intercept	-4.891650	0.798701	-6.12	<.0001
AWLP	0.071868	0.030717	2.34	0.0227
APLP	0.007733	0.024885	0.31	0.7571
PTRT	0.743580	0.058017	12.82	<.0001
F Value: 294.89		Pr > F: <.0001		
R-Square: 0.93748		Durbin-Watson: 1.761969		

### 2. Woman working hours allocation in *P. Homarus* grow-out (AWLP)

AWLP had positive correlation to PTRT and JABT. On the other hand, JBLP had negative effect to AWLP. Based on the result of AWLP data processing that AWLP was significantly affected by PTRT with p-value < 0.05, means that PTRT had significant effect to AWLP was on level of 5%. The result of parameter estimation of AWLP was stated in Table 17. The large coefficient effect of PTRT was 2.83, means that every PTRT increment of 1%, AWLP would increase of 2.83% by paribus ceteris assumption. Meanwhile, the other two variables were JBLP and JABT had not significantly effected to *P. Homarus* grow-out business. JBLP had negative correlation to AWLP.

**Tabel 3. The result of AWLP in Equation Parameter Estimation**

Explanatory variables	Estimation Parameter	Standard Error	t Value	Pr >  t
Intercept	-34.083000	15.48952	-2.20	0.0317
PTRT	2.839806	1.359083	2.09	0.0410
JPLP	-0.71491	1.044504	-0.68	0.4964
JABT	0.833529	0.868529	0.96	0.3411
F Value: 6.38		Pr > F: 0.0008		
R-Square: 0.24489		Durbin-Watson: 1.198278		

### 3.Children working hours allocation in *P. Homarus* grow-out (AALP)

AALP had positive correlation to AWLP and JBLP. Based on the result of AALP data processing indicated that AWLP had significant effect to AALP was on level of 10%. The large coefficient effect of AALP was 2.48, means that every AALP increment of 1%, AALP would increase of 2.48% by paribus ceteris assumption. The result of AALP estimation parameter was stated on Table 4.

**Table 4. The result of AALP in Equation Parameter Estimation**

Explanatory variables	Estimation Parameter	Standard Error	t Value	Pr >  t
Intercept	-13.5698	5.382690	-2.52	0.0144
AWLP	2.489083	1.310246	1.90	0.0623
JPLP	0.190546	0.934987	0.20	0.8392
F Value: 8.20		Pr > F: 0.0007		
R-Square: 0.21465		Durbin-Watson: 1.582315		

#### 4. Number of *P. Homarus* production (JPLP)

Table 5 pointed out that JPLP was significantly affected by JAKP and JPKLP due to had p-value < 0.01, means that JAKP and JPKLP had significant effect to JPLP was on level 1%. The large coefficient of JAKP was 0.064. It means that every JAKP increment of 1%, JPLP would increase 0.064% by paribus ceteris assumption. Additionally, JPKLP had significant correlation as well to JPLP was 0.767. It indicated that every JPKLP increment of 1%, JPLP would increase of 0.767%.

**Table 5. The result of JPLP in Equation Parameter Estimation**

Explanatory variables	Estimation Parameter	Standard Error	t Value	Pr >  t
Intercept	-2.70371	0.364054	-7.43	<.0001
JAKP	0.064861	0.013352	4.86	<.0001
JPKLP	0.767968	0.061757	12.44	<.0001
F Value: 220.71		Pr > F: <.0001		
R-Square: 0.88034		Durbin-Watson: 1.36758		

#### 5. Productivity of *P. Homarus* grow out (PULP)

JAKP had positive correlation to PULP. Table 20 indicated that JAKP had significant effect to PULP was on real level of 10%. The large coefficient effect of JAKP was 0.009 and it indicated that every JAKP increment of 1%, PULP would increase of 0.009% by paribus ceteris assumption.

**Table 6. The result of PULP in Equation Parameter Estimation**

Explanatory variables	Estimation Parameter	Standard Error	t Value	Pr >  t
Intercept	5.043077	0.084691	59.55	<.0001
JAKP	0.008969	0.004519	1.98	0.0517
F Value: 3.94		Pr > F: 0.0517		
R-Square: 0,06066		Durbin-Watson: 2,079393		

### The Result of 2SLS Working Hours Allocation Grow-out *P. Ornatus*

#### 1. Man working hour allocation in *P. Ornatus* grow-out (APLM)

Table 7 indicated that PTRT had significant effect to APLM was on real level 1%. The large coefficient effect was 0.635. It indicated that every PTRT increment of 1%, APLM would increase of 0.635%. Meanwhile, AWLM and AALM had not significant effect to APLM. PTRT had significant effect to APLM was on level 1% and it had coefficient effect of 0.635. It means that every PTRT increment of 1%, APLM would increase of 0.635.

**Table 7. The result of APLM in Equation Parameter Estimation**

Explanatory variables	Estimation Parameter	Standard Error	t Value	Pr >  t
Intercept	-3.88329	3.440599	-1.13	0.2731
AWLM	0.196310	0.175745	1.12	0.2779
AALM	-0.03024	0.042091	-0.72	0.4812
PTRT	0.635294	0.207980	3.05	0.0065
F Value: 4.58		Pr > F: 0.0141		
R-Square: 0.41970		Durbin-Watson: 2.047882		

#### 2. Woman working hour allocation in *P. Ornatus* grow-out (AWLM)

Table 8 indicated that PTRT, JBLM and JABTM had not significant effect to AWLM since it had

p-value > 0.20. It means that working hour allocation of woman in *P. Ornatus* grow-out had not been effected by family expenditure, seed total, and baby under five years number. In *P. Ornatus* grow-out business, baby under five years had elastic trait in working hour allocation. It implied that the more much baby less than five years old, the more much for woman in working hour allocation.

**Table 8. The result of AWLM in Equation Parameter Estimation**

Explanatory variables	Estimation Parameter	Standard Error	t Value	Pr >  t
Intercept	-20.71580	31.50742	-0.66	0.5188
PTRT	2.104677	2.473762	0.85	0.4055
JBLM	-0.98710	1.293932	-0.76	0.4549
JABT	0.666143	0.785417	0.85	0.4069
F Value: 0.41		Pr > F: 0.7464		
R-Square: 0.06105		Durbin-Watson: 2.099825		

### 3. Children working hour allocation in *P. Ornatus* grow-out (AALM)

Table 9 pointed out that PULM had significant effect to AALM was on level 10%, 26.76, It means that every increment of PULM of 1%, AALM would increase of 26.76%. AALM and PULM had elastic trait to AALM and it indicated that there was a relationship substitution.

**Table 9. The result of AALM in Equation Parameter Estimation**

Explanatory variables	Estimation Parameter	Standard Error	t Value	Pr >  t
Intercept	-147.262	68.06263	-2.16	0.0428
AWLM	1.821509	2.131148	0.85	0.4028
PULM	26.76301	13.32859	2.01	0.0583
F Value: 2.97		Pr > F: 0.0744		
R-Square: 0.22878		Durbin-Watson: 2.35866		

### 4. Total production of *P. ornatus* (JPLM)

Table 10 signified that JBLM had significant effect to JPLM, was on level of 1% or 0.79. It means that every JBLM increment of 1%, JPLM would increase of 0.79%. Meanwhile, JPKLM had significant effect was on level of 5% or 0.25. It means that every JPKLM increment of 1%, JPLM would increase of 0.25%.

**Table 10. The result of JPLM in Equation Parameter Estimation**

Explanatory variables	Estimation Parameter	Standard Error	t Value	Pr >  t
Intercept	-2.25466	0.185515	-12.15	<.0001
JAKM	0.798710	0.110915	7.20	<.0001
JPKLM	0.254962	0.107765	2.37	0.0282
F Value: 1010.53		Pr > F: <.0001		
R-Square: 0.99020		Durbin-Watson: 2.113354		

### 5. Productivity in *P. Ornatus* grow-out (PULM)

Table 11 highlighted that JAKM had significant effect to PULM, was on real level of 10%. The large coefficient effect of JAKM was 0.01. It means that every JAKM increment of 1%, PULM would increase of 0.015 by paribus ceteris assumption. The effect of JAKM to lobster grow-out

business indicated that number of family member involved within the business had low contribution to productivity of *P. Ornatus* grow-out.

**Table 11. The result of PULM in Equation Parameter Estimation**

Explanatory variables	Estimation Parameter	Standard Error	t Value	Pr >  t
Intercept	4.796813	0.122609	39.12	<.0001
JAKM	0.015949	0.008011	1.99	0.0603
PULM	0.042019	0.027505	1.53	0.1423
F Value: 7.41		Pr > F: 0.0039		
R-Square: 0.42572		Durbin-Watson: 2.340185		

## CONCLUSION

All family member involvements have allowed yielding maximum result and most of them worked far below their capacities. The result of the study on *Panulirus Ornatus* and *Panulirus Homarus* lobster grow-out farming found that extended working hour allocation has been able to increase output, although the extent of such increments assessed by productivity has not demonstrated any significant value. Added productivity was followed by high working hour which yielded low value and it had elastic trait. Productivity would be higher if working hour allocation was concurrently with procurement of quality feed, as they had positive correlation and elastic. Given this findings, feed would have a greater role in increasing productivity than merely increasing working hour allocation in lobster grow-out farming. As such in lobster grow-out farming businesses, all family member involvements had implication on total working hours that should be discarded. Wives and children should be restored as their previous roles. The impediments in lobster grow-out farming in Indonesia can be solved by maximizing new technology to shorten harvest period. Eventually, feed have to be conformed to lobsters' life cycle and not solely rely on trash fish during growth period.

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# Economic bonding, auditor safeguard and audit quality: Peer review evidence from individual auditors

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## ABSTRACT

**In this paper, we examine whether the economic bond between an individual engagement partner and client threatens auditor independence and thus audit quality. We also investigate if auditor's good economic position acts as a safeguard against this economic bond. Using a sample of peer reviewed individual audit engagements of 264 Finnish auditors we examine whether the client's economic size is likely to affect audit quality as measured by the degree of compliance with audit standards (peer review). Furthermore, using taxable earned (salaries) and unearned (capital gains) income information of auditors we investigate if high income level of an auditor diminishes the risk of financial self-interest threat. Our results provide evidence that Finnish auditors show a very high independence although big client's economic size (turnover) weakly affects audit quality. There is weak evidence that auditors are likely to show higher quality for larger clients. Our results also suggest that this financial self-interest threat can be safeguarded by auditor's high unearned income level diluting the economic bond with the client. Unearned income acts here as a proxy for economic wealth.**

**Keywords:** client size, audit quality, auditor independence, peer-review, self-interest threat, auditor income, independence safeguard

**JEL classification:** M Business Administration and Business Economics; Marketing; Accounting; Personnel Economics; M4 Accounting and Auditing; M42 Auditing

## INTRODUCTION

It is important that an auditor provides all customers with equal quality. In this paper, we examine whether the economic bond between an individual engagement partner and the client threatens auditor independence and thus audit quality. Furthermore, we investigate if auditor's high income acts as a safeguard diluting this economic bond. Since the risk of audit quality impairment is higher when auditor's independence is impaired (DeAngelo 1981), we investigate if client's economic size has an influence on audit quality (as measured by peer review). When literature presents several safeguards (financial independence) to inhibit the self-interest threats (dependence on total fees from an assurance client, concern about the possibility of losing the engagement, or contingent fees) relating to assurance engagement affecting audit quality, we examine whether the audit quality can be improved by using one of these safeguards (earned and unearned income as a measure of economic independence of an auditor).

In various contexts, it has been required that auditors should identify and evaluate threats to their independence and reduce them to an acceptable level. Economic rents associated with audit fees create an economic bond between auditor and client (DeAngelo 1981; Magee and

Tseng 1990). It is possible that in order to retain these revenues, auditors will compromise their independence. The seminal paper of DeAngelo (1981) suggests that large audit firms supply higher audit quality since large auditors are more economically independent from a single client and have more to lose by compromising audit quality. Empirical research after DeAngelo (1981) has generated mixed evidence. Some studies have found auditor independence impairment to be associated with economic bond (e.g. Frankel et al. 2002; Knechel et al. 2013). Some studies found no evidence for this association (DeFond et al. 2002; Lennox 1999; Hardies et al. 2012).

DeAngelo (1981) examined the influence of economic bond at the audit firm level. However, it has been argued that it would not be the appropriate level to investigate auditor independence impairment (Tepalagul and Lin 2015). Because engagement partner and local offices will suffer relatively more than large audit firms when losing a client (DeFond and Francis 2005; Reynolds and Francis 2001), studies have started to investigate the relationship between economic bonding and auditor independence at the office-level (e.g., Craswell et al. 2002; Li 2009; Reynolds and Francis 2001). These studies did not find any support for the claim that economic bonding in terms of higher fees will lead to auditor independence impairment.

DeFond et al. (2005) suggested studying economic bond between individual engagement partner and the client. This relationship has been considered to be as important as the one between the audit firm and the client (Miller 1992; Wallman 1996). It has also been suggested that audit process is affected by the task-performing auditor (Church et al. 2008). Evidence shows that audit engagement partners make the most important decisions in every audit engagement (Chin and Chi 2009; Reichelt and Wang 2010). Furthermore, a specific client is considered more likely to be economically important for an audit partner than for the entire firm or local office (Hardies et al. 2012).

Despite of these observations it is still unknown how individual partners trade off individual losses or benefits against the loss of quasi-rents for partnership as a whole (Simunic 2003). Anyhow, it is obvious that engagement partners recognize that developing or maintaining clients will lead to career advancement and that losing a client will damage their career (Miller 1992). Hence, economic bonding may increase the individual engagement partner's willingness to compromise audit quality.

Thus, individual audit engagement partner level can be a seminal starting point to study economic bonding. However, prior research at this level has been very limited due to the lack of relevant data (Hardies et al. 2012; Knechel et al. 2013). Hardies et al. (2012) reported only two studies that had investigated the relationship between auditor independence impairment and fee revenues at the audit partner level. Chen et al. (2010) reported that client importance, measured at the individual auditor level, but not at the audit office or firm level, impairs audit quality in China in terms of a lower probability of modified audit opinion issuance. Chi et al. (2010) found no evidence that individual partners compromise independence for economically important clients.

The third study at this level is Hardies et al. (2012) that used Belgian data to investigate the relationship between auditor independence impairment and economic bond between individual engagement partner and his or her client. Their results provided no evidence that client's economic importance negatively affects auditor independence. In addition, Knechel et al. (2013) used Swedish data to show that for distressed firms the client's economic importance increased and the auditor's wealth (as a safeguard) decreased the auditor's

propensity to give a modified (going concern) audit opinion. However, for bankrupt and equity-lost firms the effect of the auditor's wealth was found insignificant.

Hardies et al. (2012) and Knechel et al. (2013) selected their countries of source data for several reasons (Belgium and Sweden, respectively). Some of them are valid also in this study where we are using Finnish data. Hardies et al. (2012) argue that ideal setting to test auditor impairment is the one with low reputation risk (i.e. private firms with few shareholders) and low litigation risk. In this kind of environment auditor incentives favor avoiding the loss of the client (Knechel and Vanstraelen 2007). The environments for auditors in these respects are largely similar in Belgium, Sweden, and Finland. Thus, Finnish data provides us with a good environment to examine the influence of economic bonding on auditor independence.

Finnish data make it also possible to examine auditor's safeguard against economic bonding nearly in the same way as in Sweden (Knechel et al. 2013). In Finland all tax information of taxable income is public making it possible to assess the economic importance of a client in relation to auditor's yearly income. For this purpose, we have collected both earned (annual salaries) and unearned income (capital gains) figures for all Finnish auditors in our sample. Thus, we can on the one hand measure the importance of a client to an auditor as the client's size; on the other hand measure the absolute income level of an auditor as a safeguard against economic bonding (cf. Knechel et al. 2013).

Instead of measuring audit quality with timely modified audit opinions or discretionary accruals as in previous studies we are using the Peer Review Quality results of a national office, Finnish Central Chamber of Commerce. We think that Engagements Reviews are even more direct test of auditor independence than modified audit opinions or earnings management. Instead of client's total assets (Chen et al. 2010, Chi et al. 2010) or audit fees (Hardies et al. 2012) we are using client's (private firm) turnover as a proxy for client's economic size and importance for auditor. The turnover captures and reflects also other economic values than audit fee, e.g. the economic significance of a client in society and thus marketing and reputation value for an auditor.

This paper makes several contributions to the existing audit research. First, we are contributing to the scarce literature that examines audit quality at individual engagement level (e.g., Chen et al. 2010; Francis and Yu 2009; Hardies et al. 2012; Knechel et al. 2013). Second, we are extending the study by Hardies et al. (2012) using a measure of client's economic importance including both the client's sales (size) and the auditor's taxable income level into the analysis. In this perspective, our study has similarities with Knechel et al. (2013). Third, we use an audit quality measure that has not earlier been examined in this context; peer review quality results (compliance with audit standards). Hardies et al. (2012) and Knechel et al. (2013) measure audit quality as a propensity to give a modified opinions to clients that represent a material portion of their client portfolio. Fourth, we also test for Finnish data if auditor's economic position can act as safeguard against potentially impaired quality for randomly selected firms. Knechel et al. (2013) tested this kind of hypothesis for Swedish data only in special circumstances (distressed, equity-lost, and bankrupt firms).

We will show that both the audit quality and the independence of Finnish auditors are at a very high level although client's economic size (in terms of turnover) weakly affects audit quality. There is found weak evidence that auditors are likely to show higher quality for larger clients. Thus, Finnish auditors are not willing to compromise audit quality due to economic bonding but merely to use a strategy to build a reputation by providing higher than expected quality for important clients. Our results also suggest that this financial self-interest threat can be

safeguarded by auditor's high unearned income (capital gains) level diluting the economic bond with the client. Unearned income acts in this context as a proxy for economic wealth.

The remainder of this paper is organized as follows. In the next section, we shortly discuss the nature of peer review information which plays the central role in our study. In that section, we describe peer review systems in Europe, and the Finnish audit environment to enlighten the special context for the study. In the third section, we discuss our research questions and hypotheses. In section four we present our research methodology and data. The fifth section reports our overall results. Finally, the study ends with section six, including a general discussion of our results, the limitations of our research, and suggestions for future research.

## PEER REVIEW QUALITY INFORMATION

### Europe

In Europe, the European Parliament and the Council gave 2006 directive (Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits of annual accounts and consolidated accounts, amending Council Directives 78/660/EEC and 83/349/EEC and repealing Council Directive 84/253/EEC) that stipulates Quality assurance systems in Member states. According to directive, each Member State shall ensure that all statutory auditors and audit firms are subject to a system of quality assurance which is organized in such a manner that it is independent of the reviewed statutory auditors and audit firms and the persons who carry out quality assurance reviews shall have appropriate professional education and relevant experience in statutory audit and financial reporting combined with specific training on quality assurance reviews.

Furthermore, the selection of reviewers for specific quality assurance review assignments shall be effected in accordance with an objective procedure designed to ensure that there are no conflicts of interest between the reviewers and the statutory auditor or audit firm under review. The quality assurance review shall be the subject of a report which shall contain the main conclusions of the quality assurance review and quality assurance reviews shall take place at least every six years. The recommendations of quality reviews shall be followed up by the statutory auditor or audit firm within a reasonable period. If the recommendations referred are not followed up, the statutory auditor or audit firm shall, if applicable, be subject to the system of disciplinary actions or penalties.

National legislation in Finland (the Finnish Auditing Act 459/2007) stipulates the execution of Audit directive. According to 24 § auditor has to assure the quality of his audits and participate quality assurance review defined in 40 §. Quality assurance reviews in Finland are managed by the Finnish Central Chamber of Commerce.

### Finland

#### *Audit environment in Finland*

The audit market in Finland is divided to two tiers. First-tier auditors are called KHT auditors. Second-tier auditors are called HTM auditors. Becoming a first-tier auditor requires a Master's Degree. KHT exam has a low passing rate and it's considered to be more demanding than HTM exam. Both of the exams require also three years of auditing experience as a prerequisite. Future first-tier auditors have to be in supervision of another first-tier auditor, which makes the requirement a bit more challenging for them. (Knechel, Niemi & Sundgren 2008: 67.)

First-tier auditors are approved and supervised by the Central Chamber of Commerce while second-tier auditor are approved and supervised by regional Chambers of Commerce. The

largest companies and all listed companies in Finland are required to hire a first-tier auditor. Because of this limitation the clients of second-tier auditors are mostly small and medium-sized companies. (Niemi 2004: 545.)

The Finnish Auditing Act states that if two of the following criteria are met, an entity has to choose a first-tier auditor:

1. Total assets are over 25 million euro
2. Gross revenues exceed 50 million euro
3. Number of personnel is over 300 on average (The Finnish Auditing Act 2007/459)

Only the small entities in Finland can choose not to be audited. From three criteria only one can be exceeded if a company wants to remain unaudited. Not only financial information of the previous fiscal year is significant but also the year before that. The three criteria are as follows:

1. Total assets are over 100 000 euro
2. Gross revenues exceed 200 000 euro
3. Number of personnel is over 3 on average. (The Finnish Auditing Act 2007/459)

In the beginning of the year 2015 there were 780 first-tier auditors and 637 second-tier auditors in Finland. In addition to that there are 38 first-tier audit firms and 32 second-tier audit firms in Finland (The Auditing Board of The Central Chamber of Commerce 2015).

### ***Quality assurance reviews***

The Finnish Auditing Act requires all auditors in Finland to participate in quality assurance reviews. Quality assurance review will be conducted every third year for auditors auditing public interest entities and every sixth year for other auditors. (The Auditing Board of The Central Chamber of Commerce 2015). Reviews of audit firms auditing public interest entities are conducted by a quality assurance team. Typically this team includes 2-6 people and its purpose is to identify target areas which the audit firms have to develop further to ensure good quality. (The Auditing Board of The Central Chamber of Commerce 2015).

The Quality Section set up by the Auditing Board of The Central Chamber of Commerce supervises and instructs the quality assurance process. The head of the section, quality assurance director, composes an annual quality assurance plan for individual auditors which define for example auditors who will be reviewed and who will conduct the review. The Auditing Board then accepts the plan for first-tier auditors and Auditing committees of regional Chambers of Commerce for second-tier auditors. Quality assurance reviewers are other professional auditors. Quality assurance reviews were started in 2009 and in the period of 2009–2011 altogether 412 quality assurance reviews have been conducted. When the six-year quality assurance period ends in 2013 practically all the auditors in Finland are reviewed once. (The Auditing Board of The Central Chamber of Commerce 2015).

### **Reliability of peer review quality**

Results of the peer review process could be regarded as a direct indicator of audit quality. However, there might be some concerns about the reliability of the peer review process. Wallace (1991) notes that these concerns about moral hazards related to peer reviewer, potential selection biases and timeliness of the reports are anyhow without a merit. There have been a few studies that link peer review results to audit quality. Colbert and Murray (1998) find that bigger auditors receive better results from peer reviews and that previous reviews help getting better results from latter reviews.

Casterella et al. (2009) link the results of the peer review process to proprietary files of an

insurance company indicating audit failures (litigation risk) and conclude that peer reviews are an effective measure of actual audit quality. Hilary and Lennox (2005) find that auditors receiving clean reports gain clients while auditors with modified or adverse reports lose them, which indicates that clients also consider that peer review ratings are an effective measure of audit quality.

## RESEARCH HYPOTHESES

### **Economic bonding**

In literature auditor independence is defined as the (conditional) probability that an auditor will report a discovered breach (Watts and Zimmerman 1981, 1986; DeAngelo 1981). It is argued that economic rents associated with audit fees create an economic bond between the auditor and client that can jeopardize auditor's independence (DeAngelo 1981; Magee and Tseng 1990). Therefore, it is possible that in order to retain these revenues, auditors may compromise their independence leading to impaired quality (DeFond et al. 2002; Craswell et al. 2002; Hope and Langli 2010). Thus, auditors should identify and evaluate threats to their independence and reduce them to an acceptable level. Evidence on economic bonding is however mixed. Some studies have found auditor independence impairment to be associated with economic bond (e.g. Frankel et al. 2002; Knechel et al. 2013) whereas some studies found no evidence for this association (DeFond et al. 2002; Lennox 1999; Hardies et al. 2012).

Evidence on economic bonding depends on the level of relationship considered. Research on bonding is recently begun to study audit engagement partners on an individual auditor level instead of local and national audit firm levels (DeFond and Francis 2005; Chen et al. 2010; Hardies et al. 2012; Knechel et al. 2013). This relationship between an individual audit partner and the client has been considered as important as the relationship between the audit firm and the client (Miller 1992; Wallman 1996). It has also been suggested that audit process is affected by the task performing auditor (Church et al. 2008). Engagement partners make the most important decisions in every audit engagement, since they plan and implement the engagement and ultimately determine the type of audit report to be issued to the client (Chin and Chi 2009; Reichelt and Wang 2010). Furthermore, a specific client is also considered more likely to be economically as important for an audit partner as for the entire audit firm or local office (Hardies et al. 2012). Chen et al. (2010) found that client importance measured on the individual auditor level, but not on the audit office or firm level, impairs audit quality in China in terms of a lower probability of a modified audit opinion issuance. In Finland, where reputation risk and litigation risk are low, individual auditor incentives favor avoiding client disputes so as to avoid the loss of the client leading to impaired quality (Knechel and Vanstraelen 2007; Hardies et al. 2012). This study concentrates on the individual auditor level.

The individual auditor can however react to economic bonding in different ways due to tensions between professional intention to provide good quality to the client and willingness to impair quality to save the client from reputation and economic losses. It can be expected that impaired quality (or, compromising) in terms of traditional measures is likely to emerge only in special circumstances when the client already suffers from financial difficulties or when a modified audit opinion can lead it to such difficulties (risky clients). However, in normal circumstances it can be expected that economic bonding may lead the individual auditor to provide higher quality to more important clients when quality is measured by overall quality measures such as Peer Review. This kind of behavior is associated with a strategy to build a reputation by providing higher than expected quality for important clients. This kind of strategy is supported by empirical evidence (Reynolds and Francis 2001; Gaver and Paterson

2007; Knechel et al. 2013) showing that auditors are more conservative with clients that are most important.

The clients in our data are all private firms. The tendency to provide more important clients with better quality can be stronger for clients who are private firms than clients who are public firms, since private firms do not have a broad shareholder base to which they are accountable (Knechel and Vanstraelen 2007). For public firms, the differences in their economic importance and financial reporting quality are smaller than for private firms (Ball and Shivakumar 2008). Therefore, due to tensions between providing high overall quality and avoiding disputes with the client (compromising), we present the first research hypothesis in the following general form:

**H<sub>1</sub>:** There is dependence between the economic importance of client (private firm) and audit quality (Peer Review) of an individual engagement partner.

### **Auditor safeguard**

Even though there are some mitigating effects (safeguards) against economic bonding, they are not empirically widely studied. The lack of research may be due to the sensitive nature of the issue as well as a lack of data (Knechel et al. 2013). Evidence shows that economic bonding can partly be mitigated by concerns about an auditor's reputation (Reynolds and Francis 2000; Weber et al. 2008) and the risk of litigation (Krishnan and Krishnan 1997; Shu 2000). Moreover, incentive for individual partners to accept risky clients can be mitigated by profit sharing rules (Burrows and Black 1998; Bedard et al. 2008). To contribute to this scarce research we are examining whether auditor's good economic position acts as a safeguard for economic bonding. This kind of hypothesis is supported by Knechel et al. (2013). They show for Swedish data that wealthy audit partners with high levels of annual compensation are likely to be less affected by the potential client pressure implying greater auditor independence. In their study, audit quality is measured as propensity to issue a going-concern opinion.

Thus, we assume that potential economic bonding between important clients and individual auditor is at least partly mitigated by auditor's good economic wealth. When an auditor's economic position is good, the relative economic influence (bond) of an important client is less than when his or her position is not as good. In summary, based on previous research and this kind of reasoning we hypothesize that:

**H<sub>2</sub>:** The economic bonding is mitigated by good economic position of an individual engagement partner.

## **RESEARCH DESIGN**

### **Data sources**

The empirical data of our research consist of 264 auditors' quality assurance reviews including two audit engagements (cases) from each auditor with complete data conducted in 2010 (107 auditors), 2011 (114 auditors), and 2012 (43 auditors). Thus, the number of observations (engagements) in statistical analyses is equal to  $2 \cdot 264 = 528$ . These data are received from The Finnish Central Chamber of Commerce and they include all the archival material from every review. The research data are highly confidential and therefore not publicly available. For this reason, any detailed confidential information cannot be published in this study. The cases (engagements) for peer review are selected in the way that one of the engagements represents a very important client in the auditor's portfolio whereas another engagement is randomly selected from the rest clients in the portfolio. In our sample, all clients are private companies. These kinds of cases provide us with an excellent opportunity to assess the influence of client's importance on audit quality (H<sub>1</sub>) when comparing the two cases.

The data are extracted from two engagement forms for peer reviewed audit engagements. The data also include a form where personal quality control system is reviewed, a form for pre-review information gathering and a report with the result, both in numeric and verbal form. The detailed questions in the engagement forms are used to assess the degree of the compliance of audit work with International Auditing Standards (ISA) and International Standard on Quality Control 1 (ISQC1) separately in both engagements. The form for pre-review information gathering is the main source for information about individual auditor characteristics. These variables are used as control variables in the research model.

In addition, part of our data is received from public sources. Income information of the reviewed auditors is received from a Finnish private tax company (Veropörssi) that is specialized in gathering tax data for their customers. Public tax data are gathered for all auditors in the sample in their review year (2010, 2011, or 2012). Earned income (annual salaries) and unearned income (capital gains) figures are separated in tax data. Taxable unearned income is not an exact measure of capital gains, since some types of income are not taxable. It was not possible to get information about the taxable wealth of auditors because it is not public information in Finland (cf. Knechel et al. 2013). These data of taxable earned and unearned income are used in assess the mitigation effect of economic position on economic bond (H<sub>2</sub>).

## Variables

The audit quality is reflected by four peer review variables. The measurement of quality is not straightforward because the engagement forms are not identical in each year due to changes in detailed questions. In all, the forms from three years contained 155 detailed review questions and 118 of them (76.1%) are comparable over years and included in the analysis. The number of responded questions is not identical for each engagement, since some questions are not appropriate for every case. The questions are classified in four classes according to the stage of audit process that the standards are associated with: 1) planning audit engagement (9 questions); 2) analytical procedure 1 (31 questions); 3) analytical procedure 2 (48 questions); and 4) conclusions and reporting (30 questions). Classes of analytical procedures 2 and conclusions and reporting respectively include questions about discretionary accruals (earnings management, EM) and modified audit (e.g., going concern, GC) opinions which are main measures of audit quality used in prior studies. For each class, a summary measure is constructed reflecting the degree of compliance (%) with standards (yes or no). Finally, an overall summary measure is calculated as the degree of compliance with all 118 standard questions.

The variables reflecting the differences in the compliance with standards between bigger (more important) and smaller (less important) clients are used as dependent variables in our research models to test hypotheses H<sub>1</sub> and H<sub>2</sub>. The size (economic importance) of clients is measured by annual turnover. The research models also include a set of independent and control variables. The economic position of the auditor to test H<sub>2</sub> is measured by two independent variables in a logarithmic form: total annual income and unearned annual income (capital gains). In this analysis, total annual income measures total income available to the auditor whereas unearned income is proxy for taxable wealth that is not publicly available.

The research models also include a set of control variables (cf. Knechel et al. 2012; Knechel et al. 2013). Most control variables deal with the characteristics of the author and his or her work. However, the results are firstly controlled for the bigger client's (logarithmic) turnover to reflect its importance. The auditor's characteristics and work are measured by eight variables.



Four of these control variables are dummy variables: full-time auditor (0 = part-time, 1 = full time); gender (0 = female; 1 = male); CPA exam (0 = HTM, 1 = KHT); and company form (0 = private, 1 = company). The rest of the control variables reflect the auditor's age, experience, and work load; age in years; age of CPA exam; (logarithmic) number of annual engagements; and number of annual hours of audit work.

### Statistical methods

The research data provides us an excellent opportunity to test the hypotheses using simple statistical methods. For each auditor peer review results from 264 bigger (important) and 264 smaller (random) engagement clients are available. First, we analyze the pairwise differences in the audit quality measures between big and small clients using the paired t test. In this case, the results are controlled for other variables than the size of client, since the engagements of the big and small clients are conducted by the same auditor in the same year. If the difference in the audit quality between big and small clients is positive and statistically significant, we get general evidence supporting  $H_1$ .

The results of paired t test do not however show whether the potential difference in audit quality between the clients is depending on the auditor's economic position, the big client's size, or the auditor's characteristics and work. Therefore, we use the regression analysis in two different ways to assess this dependence. First, we estimate the following regression equations explaining overall summary quality (compliance with standards) separately for the big and small clients:

$$SC_i(j) = a + b_1X_{1i} + \dots + b_{11}X_{11i} + \epsilon_i \quad (1)$$

where

$SC_i(k)$  = Overall summary compliance (j = big client, small client)

$a$  = constant

$b_j$  = coefficients (j = 1, 2, ..., 11)

$X_{1i}$  = Unearned annual income (Euro), logarithm

$X_{2i}$  = Total annual income (Euro), logarithm

$X_{3i}$  = Client turnover (thousands of Euro), logarithm

$X_{4i}$  = Full-time auditor (0 = part-time, 1 = full-time)

$X_{5i}$  = Gender of auditor (0 = female, 1 = male)

$X_{6i}$  = CPA exam of auditor (0 = HTM, 1 = KHT)

$X_{7i}$  = Company form of auditor (0 = private, 1 = company)

$X_{8i}$  = Age of auditor

$X_{9i}$  = Age of CPA exam

$X_{10i}$  = Number of annual engagements, logarithm

$X_{11i}$  = Number of annual hours in audit work

$\epsilon_i$  = residual

$i$  = auditor ( $i = 1, 2, \dots, 264$ )

If the auditors conduct the audit engagements of the big and small clients in the same way (with the same compliance with standards), the regression equations in (1) give identical results (quality determination functions) for the big and small clients. Moreover, the marginal effect of client size (logarithmic turnover)  $X_{3i}$  ( $b_{3i}$ ) should be insignificant. This comparison of estimation results between the two clients also serves as a robustness test for explaining audit quality.

Secondly, we estimate the following regression equations explaining the potential difference in

the audit quality (compliance with standards) between the big client and the small client separately for the five quality measures (all standards and four classes of standards):

$$DSC_i(j) = a + b_1X_{1i} + \dots + b_{11}X_{11i} + \dots \quad (2)$$

where the variables are the same as for (1) except for the following:

$DSC_i(j)$  = Difference in compliance with standards (j = all standards, planning audit engagement, analytical procedures 1, analytical procedures 2, conclusions and reporting)

$X_{3i}$  = Big client turnover (thousands of Euro), logarithm

In equation (2) the focus is set on the coefficients of  $X_{1i}$ ,  $X_{2i}$ , and  $X_{3i}$ . If the coefficient of  $X_{3i}$  ( $b_{3i}$ ) is statistically significant, the size of the big client affects the difference in audit quality between the big client and the small client supporting H<sub>1</sub>. The coefficients of  $X_{1i}$  and  $X_{2i}$  ( $b_{1i}$  and  $b_{2i}$ ) reflect the auditor's economic position of the quality difference allowing us to test H<sub>2</sub>. To support H<sub>2</sub>, they should be statistically significant and have an opposite sign from the coefficient of  $X_{3i}$  ( $b_{3i}$ ) to indicate a mitigating effect.

## EMPIRICAL RESULTS

### Comparative analysis

Table 1 shows descriptive statistics for the client size and the measures of compliance with audit standards. The median turnover of the big client is about 4.0 million Euros whereas it is only 1.2 million Euros for the small client. Both size measures (turnover and total assets) show a high skewness and kurtosis. The statistics of the compliance measures indicate a very high audit quality for Finnish auditors. For both groups of clients the median of compliance with all standards is over 85%. The compliance with standards is exceptionally high in conclusions and reporting for both groups. The compliance with standards is lowest in analytical procedures being on average higher for big clients. For big and small clients the quality measures show a low skewness and kurtosis.

**Table 1. Descriptive statistics of compliance measures for big and small audit clients (N=264).**

Variable	Mean	Median	Standard Deviation	Skewness	Kurtosis
<b>1. Big client</b>					
Client turnover (thousands of Euro)	8641,09	3997,00	15959,85	6,31	53,42
Client total assets (thousands of Euro)	4769,57	2130,00	8895,62	5,79	44,14
Compliance (%) with all standards	77,92	85,81	22,08	-1,30	1,01
Compliance (%) with standards in planning audit engagement	81,20	91,67	23,70	-1,37	0,93
Compliance (%) with standards in analytical procedures 1	71,02	79,17	26,64	-0,85	-0,39
Compliance (%) with standards in analytical procedures 2	77,22	83,33	22,73	-1,03	0,26
Compliance (%) with standards in conclusions and reporting	88,31	94,74	18,69	-2,37	5,30
<b>2. Small client</b>					
Client turnover (thousands of Euro)	2521,14	1246,50	3700,36	3,69	17,31
Client total assets (thousands of Euro)	2640,43	940,00	9049,33	11,62	156,56
Compliance (%) with all standards	78,15	85,31	20,88	-1,19	0,72
Compliance (%) with standards in planning audit engagement	81,04	91,67	24,28	-1,30	0,53
Compliance (%) with standards in analytical procedures 1	70,14	77,78	26,36	-0,79	-0,34
Compliance (%) with standards in analytical procedures 2	75,80	80,38	22,22	-0,88	-0,01
Compliance (%) with standards in conclusions and reporting	88,75	95,00	17,76	-2,23	4,69

Table 2 shows the paired t-tests for the variables. The pairwise differences in client size are statistically significant. The significance (p-value) of the test statistic is lower for client turnover than for total assets as a measure of size. The pairwise differences in compliance measures between big and small clients are negligible indicating high independence in auditing from this point of view. The most notable difference is found in the compliance with analytical procedures (part 2) that is significant at p-value 10% (two-way significance). The difference is positive referring to higher compliance with standards in big client engagements.

**Table 2. Paired differences of compliance measures between big and small audit clients of auditors (N=264).**

Variable	Paired Differences				
	Mean	Standard Deviation	Standard Error Mean	t statistic	p-value #
Client turnover (thousands of Euro)	6119,95	15056,94	926,69	6,60	0,0000
Client total assets (thousands of Euro)	2134,19	12267,72	769,75	2,77	0,0060
Compliance (%) with all standards	-0,23	10,93	0,67	-0,34	0,7320
Compliance (%) with standards in planning audit engagement	0,28	17,83	1,13	0,25	0,8070
Compliance (%) with standards in analytical procedures 1	0,94	15,75	0,99	0,96	0,3410
Compliance (%) with standards in analytical procedures 2	1,81	15,83	0,99	1,83	0,0690
Compliance (%) with standards in conclusions and reporting	-0,48	10,64	0,66	-0,73	0,4680

Note:

# = 2-tailed probability

Appendix 1 presents the statistical distributions (percentiles) of the differences in compliance measures between big and small clients. These distributions again emphasize the small differences found in audit quality. The distributions are all symmetric around zero obviously referring to a random nature of difference. There is not found any identifiable tendency for concentration on positive or negative side of the distributions. For each distribution, the median difference is zero. The auditors show highest consistency in planning audit engagement and in conclusions and reporting where about 40% of the auditors achieve exactly the same compliance for big and small clients. Thus, in summary, the descriptive statistical results do not give empirical support for H<sub>1</sub>. Finnish auditors are likely to conduct audit engagements with very comparable quality for big and small clients.

### Regression results

Table 3 shows descriptive statistics for the variables used in the regression equations (1) and (2) as dependent and independent variables. The variables reflecting the difference in compliance show only a low skewness in their distributions due to a high symmetry. However, they show higher kurtosis due to the concentration of differences around zero (indicating high consistency in audit quality). The distributions of the independent variables are also only slightly skewed for the sake of logarithmic transformations. In general, the kurtosis of these distributions is low except for the (logarithmic) unearned annual income. The high kurtosis in this case is due to that about 30% of the auditors have not capital gains at all. This fact also increases the (absolute) skewness of the distribution. The descriptive statistics show that 51% of the auditors are full-time auditors, and that 75% of them are male. In addition, the average age of the sample auditors is quite high (58 years) and they have passed their CPA more than twenty years ago.

Appendix 2 shows that the correlations between the independent variables are generally very low. The highest correlation is found between the (logarithmic) numbers of annual engagements and annual hours in audit work (0.77). These variables referring to the amount of auditor's work are also positively correlated with full-time auditor dummy (0.48 and 0.56) and the bigger client turnover (0.41 and 0.44). These correlations are too low to lead any serious

multicollinearity. For all regression analyses, the variance inflation factors (VIF) are less than 3. Appendix 2 also shows that the correlations between the dependent compliance measures and the independent variables are very low. Thus, it is expected that the strength of dependence in the regression equations explaining overall compliance with standards or its parts is also weak.

**Table 3. Descriptive statistics of the dependent and independent variables (N=264).**

Variable	Mean	Median	Standard Deviation	Skewness	Kurtosis
1. Difference in variable (dependent variable)					
Compliance (%) with all standards	-0,23	0,00	10,93	0,15	7,03
Compliance (%) with standards in planning audit engagement	0,28	0,00	17,83	0,50	4,82
Compliance (%) with standards in analytical procedures 1	0,94	0,00	15,75	0,13	3,33
Compliance (%) with standards in analytical procedures 2	1,81	0,00	15,83	0,21	1,77
Compliance (%) with standards in conclusions and reporting	-0,48	0,00	10,64	-0,59	9,81
2. Independent variable					
Unearned annual income (Euro), logarithm	5,42	7,16	4,23	-0,31	-1,58
Total annual income (Euro), logarithm	10,91	10,98	0,79	-3,79	33,19
Bigger client turnover (thousands of Euro), logarithm	8,35	8,29	1,15	0,18	0,20
Full-time auditor (0 = part-time, 1 = full-time)	0,51	1,00	0,50	-0,05	-2,01
Gender of auditor (0 = female, 1 = male)	0,75	1,00	0,44	-1,14	-0,71
CPA exam of auditor (0 = HTM, 1 = KHT)	0,22	0,00	0,41	1,39	-0,07
Company form of auditor (0 = private, 1 = company)	0,13	0,00	0,34	2,18	2,77
Age of auditor	57,56	59,00	7,77	-0,92	0,41
Age of CPA exam	21,42	22,00	8,90	-0,26	-0,68
Number of annual engagements, logarithm	4,36	4,46	1,02	-0,34	0,15
Number of annual hours in audit work	578,78	428,00	452,22	1,20	1,15

Table 4 presents the estimation results of regression equation (1) separately for the big and small client. In general, the association between the dependent variable (overall summary compliance with standards) and the independent variables is not strong for either model. This indicates that it is not easy to explain statistically audit quality in terms of peer review. The average differences in quality between auditors are quite small and random. There are however a couple of statistically significant similarities in the estimated models. First, the total annual income has a positive relationship with quality for both big and small clients. It indicates that the auditor's income is correlated with competence to meet standards in engagements. Second, full-time auditors show a higher compliance with standards irrespective of client's size. Third, the older of CPA exam, the lower is the compliance in both big and small cases. Thus, those auditors who have recently passed CPA exam meet the standards better than other auditors.

The client's size and the auditor's unearned income have a statistically insignificant relationship with compliance for both models. Thus, the results of quality determination are quite robust leading in general to similar functions for the compliance with standards in engagements of big and small clients. However, the signs of the (statistically insignificant) coefficients of the client's size and the auditor's unearned income are opposite for small client and big client models. This finding raises an expectation that in spite of insignificant

coefficients these variables may play some roles when explaining the difference in audit quality between the big and small clients.

**Table 4. Regression models for compliance (%) with all standards (dependent variable) (N=264).**

Independent variable	Big client:			Small client:		
	Coefficient	t statistic	p-value#	Coefficient	t statistic	p-value#
Constant	21,751	0,924	0,356	46,837	2,123	0,035
Unearned annual income (Euro), logarithm	-0,351	-1,055	0,293	0,000	0,001	0,999
Total annual income (Euro), logarithm	4,649	2,603	0,010	3,049	1,793	0,074
Client (big/small) turnover (thousands of Euro), logarithm	0,832	0,612	0,541	-0,900	-0,832	0,406
Full-time auditor (0 = part-time, 1 = full-time)	6,482	1,857	0,064	5,145	1,556	0,121
Gender of auditor (0 = female, 1 = male)	1,772	0,552	0,581	1,938	0,634	0,527
CPA exam of auditor (0 = HTM, 1 = KHT)	-0,271	-0,075	0,941	-1,578	-0,460	0,646
Company form of auditor (0 = private, 1 = company)	-0,620	-0,146	0,884	-0,029	-0,007	0,994
Age of auditor	0,049	0,191	0,849	-0,011	-0,046	0,964
Age of CPA exam	-0,424	-1,900	0,059	-0,392	-1,835	0,068
Number of annual engagements, logarithm	0,045	0,021	0,984	2,008	0,934	0,351
Number of annual hours in audit work	0,003	0,673	0,502	0,002	0,355	0,723
Coefficient of determination (R-Square) (adjusted)	0,089	(0,049)		0,072	(0,032)	
F statistic (significance)	2,233	(0,013)		1,787	(0,057)	

Note:

# = 2-tailed probability

Table 5 shows the regression results for equation (2) explaining the difference in compliance with standards between big and small clients. The strength of dependence between the difference and the independent variables (predictors) is weak which was expected due to the random nature of difference distributions. The first part of the table shows the results for a model estimated without control variables. The difference in compliance is significantly affected by big client turnover (positively) and unearned annual income (negatively). The effect of annual income is positive but statistically insignificant. The second part of the table shows the results for the full model. The robustness of the results is emphasized by the finding that the coefficients of the three main variables are only slightly changed but the coefficient of annual income is now significant. The control variables do not have any significant effect on the difference in compliance with standards. In a robustness test, client turnover was replaced by client total assets. However, it had only a negligible effect on results.

Thus, although the differences in compliance between big and small clients are small and largely random, our findings give empirical support to H<sub>1</sub> and H<sub>2</sub>. First, there is a positive dependence between difference of compliance and the big client's turnover. The bigger (big) client, the higher is the compliance for the big client in relation to that for the smaller client. Thus, although the effect is weak, the findings support H<sub>1</sub> and the conclusion that Finnish auditors to some degree trust a strategy to build a reputation by providing higher quality for important clients (Reynolds and Francis 2001; Gaver and Paterson, 2007; Knechel et al. 2013). However, the findings show that annual income does not act as a safeguard against this

strategy, since its effect on the difference is also positive. Hence, auditors with high annual income tend to provide for the big client higher quality than for the small client. This positive relation between income and difference obviously contradicts with H<sub>2</sub>.

**Table 5. Regression models for the difference in compliance (%) with all standards between big and small clients (N=264).**

Independent variable	Without control variables:			With control variables:		
	Coefficient	t statistic	p-value#	Coefficient	t statistic	p-value#
Constant	-23,288	-2,323	0,021	-23,783	-2,011	0,045
Unearned annual income (Euro), logarithm	-0,353	-2,197	0,029	-0,335	-1,999	0,047
Total annual income (Euro), logarithm	1,134	1,316	0,189	1,509	1,681	0,094
Big client turnover (thousands of Euro), logarithm	1,508	2,599	0,010	1,508	2,204	0,028
Full-time auditor (0 = part-time, 1 = full-time)				1,238	0,706	0,481
Gender of auditor (0 = female, 1 = male)				-0,149	-0,092	0,926
CPA exam of auditor (0 = HTM, 1 = KHT)				1,342	0,733	0,464
Company form of auditor (0 = private, 1 = company)				-0,540	-0,254	0,800
Age of auditor				0,039	0,303	0,762
Age of CPA exam				-0,018	-0,165	0,869
Number of annual engagements, logarithm				-1,625	-1,477	0,141
Number of annual hours in audit work				0,001	0,545	0,586
Coefficient of determination (R-Square) (adjusted)	0,045	(0,034)		0,060	(0,019)	
F statistic (significance)	4,117	(0,007)		1,465	(0,145)	

Note:

# = 2-tailed probability

The results however show that the relation between unearned annual income and the difference in compliance is negative and statistically significant. Since capital gains are here used as a proxy of wealth, this finding is consistent with the results got by Knechel et al. (2013) for distressed Swedish firms. Hence, empirical evidence supports H<sub>2</sub> in that high capital gains (wealth) diminish the difference in compliance between the big and small clients. Since capital gains are included in total annual income, the effect is not straightforward but also dependent on the effect of total income. Because of the logarithmic transformation, the marginal effect of unearned income ( $X_{1i}$ ) on the difference in compliance ( $DSC_i$ ) is as follows:

$$\frac{DSC_i}{X_{1i}} = \frac{b_1}{X_{1i}} + \frac{b_2}{X_{2i}} \quad (3)$$

The marginal effect of capital gains in (3) is negative if:

$$\frac{X_{1i}}{X_{2i}} > \frac{b_1}{b_2} \quad (4)$$

which shows that in this case the percent of capital gains in total income should be more than 22.2% (-0.335/1.509) to make the effect negative. Thus, although supporting H<sub>2</sub>, the auditor's wealth in terms of capital gains must be quite high to act as a safeguard against economic bond. In the present sample, this condition holds for about 17-18% of the auditors getting capital

gains more than 22.2% of total income.

The regression coefficients  $b_1$ ,  $b_2$ , and  $b_3$  in Table 5 for capital gains, total income, and big client turnover respectively can be interpreted analyzing the differences of the respective coefficients between regression equations (1) estimated separately for big and small clients using the same independent variables as in (2). For the big client, the regression equation is the same as in Table 4. However, for the small client, the regression equation must be re-estimated using the big client turnover instead of its own turnover as an independent variable. The resulted regression equation is presented in Appendix 3. Using the estimated coefficients in Table 4 and Appendix 3, the differences of the coefficients of capital gains ( $X_{1i}$ ), total income ( $X_{2i}$ ), and big client turnover ( $X_{3i}$ ) between the big and small client models are as follows:

	Big clients model	Small clients model	
Variable	Coefficient	Coefficient	Difference
$X_{1i}$	-0,351	-0,017	-0,334
$X_{2i}$	4,649	3,140	1,509
$X_{3i}$	0,832	-0,675	1,507

The differences of the coefficients in the fourth column almost exactly correspond to the coefficients estimated in the model for the difference in compliance with audit standards (Table 5). The coefficients show that the strong effect of big client turnover ( $X_{3i}$ ) on the difference in compliance is originated from its positive effect on big client's quality and its negative effect on the small client's quality. Thus, auditors tend to provide higher quality for big clients and lower quality for small clients; the higher is big client turnover. In addition, auditors with higher total income ( $X_{2i}$ ) tend to provide higher quality for both big and small clients but the tendency is clearly stronger for big clients increasing the difference in compliance between these clients. Finally, capital gains ( $X_{1i}$ ) act as an effective safeguard against this bonding for big clients but not for small clients.

### Partial results

Table 6 presents the estimated regression equations for equation (2) explaining the difference in compliance with standards between big and small clients separately for all four parts of compliance with standards. The results show that the differences in audit quality are largely random and only for analytical procedures 2 the regression is statistically marginally significant (p-value 0.06). For each part of compliance, the coefficients of (logarithmic) unearned income (capital gains) are negative although being insignificant in the 2-tailed test. However, for analytical procedures 2 this coefficient is significant in the 1-tailed test at p-level < 0.10 reflecting a potential safeguarding effect (1-tailed p-value 0.09). The coefficients of (logarithmic) total annual income are not consistent over the parts of compliance being negative for two parts and positive for two parts of compliance. The only statistically significant (positive) coefficient of this variable at p-level < 0.10 is got for the difference in the compliance for conclusions and reporting (p-value 0.08).



**Table 6. Regression models for the difference in different compliance measures between big and small clients (N=264).**

Independent variable	Difference in compliance with audit standards in:							
	Planning audit engagement		Analytical procedures 1		Analytical procedures 2		Conclusions and reporting	
	Coefficient	p-value #	Coefficient	p-value#	Coefficient	p-value#	Coefficient	p-value #
Constant	21,140	0,405	18,329	0,297	-7,309	0,671	-3,272	0,777
Unearned annual income (Euro), logarithm	-0,297	0,306	-0,130	0,604	-0,329	0,181	-0,094	0,567
Total annual income (Euro), logarithm	-1,612	0,405	1,486	0,268	-0,309	0,814	1,544	0,080
Big client turnover (thousands of Euro), logarithm	1,575	0,189	1,225	0,235	2,694	0,008	-0,362	0,588
Full-time auditor (0 = part-time, 1 = full-time)	0,476	0,874	2,173	0,407	2,406	0,354	-1,131	0,513
Gender of auditor (0 = female, 1 = male)	4,459	0,114	0,592	0,806	-3,105	0,194	-2,068	0,191
CPA exam of auditor (0 = HTM, 1 = KHT)	0,357	0,907	0,104	0,969	3,306	0,215	0,899	0,616
Company form of auditor (0 = private, 1 = company)	-0,956	0,786	-3,479	0,274	1,535	0,619	0,773	0,710
Age of auditor	-0,235	0,287	-0,031	0,874	-0,004	0,983	-0,055	0,664
Age of CPA exam	0,238	0,212	0,108	0,513	0,063	0,703	-0,110	0,323
Number of annual engagements, logarithm	-2,584	0,169	-2,136	0,199	-1,851	0,259	-1,431	0,184
Number of annual hours in audit work	0,002	0,570	0,002	0,612	-0,002	0,599	0,005	0,036
Coefficient of determination (R-Square) (adjusted)	0,048	(0,004)	0,029	(0,015)	0,074	(0,032)	0,057	(0,015)
F statistic (significance)	1,08	(0,378)	0,652	(0,782)	1,766	(0,060)	1,366	(0,190)

Note:

# = 2-tailed probability

There are only two additional statistically significant coefficients in the models for the four parts of compliance. Firstly, a significant coefficient is obtained for the difference in the compliance of analytical procedures 2. For this part of compliance, the coefficient of big client turnover is positive and statistically very significant (p-value 0.008). This strong client size effect is expected due to the significant difference found in this part between big and small clients (Table 2). Secondly, for the compliance of conclusions and reporting the number of annual hours in audit work has a significant positive effect (p-value 0.036). This result implies that the amount of practical audit work improves the quality of audit in conclusions and reporting. The coefficient shows that an increase of 1000 hours in audit work increases compliance with standards in this part by 5 percent units.

In summary, the partial regression analyses do not give consistent overall support to the research hypotheses. However, they obviously give partial support. It seems that auditors with higher annual income are likely to make better quality for big clients in conclusions and reporting conforming to H<sub>2</sub>. It also seems that auditors are more likely to make better quality to big clients in analytical procedures 2 supporting H<sub>1</sub>. For these procedures the total and capital income measures have a negative (2-tailed insignificant) coefficient only giving weak

support for safeguarding (H<sub>2</sub>). The findings imply that economic bonding and safeguarding are so weakly associated with auditing that they are systematically identifiable only at the level of overall quality as a sum of all parts of compliance. This kind of general conclusion is supported by correlations between the compliance measures (Appendix 2). The compliance with all standards is strongly correlated with all parts of compliance but the correlations between the parts are however much lower reflecting their heterogeneity.

### SUMMARY AND CONCLUSIONS

The first objective of this study was to examine whether the economic bond between an individual engagement partner and his or her client threatens auditor independence and thus audit quality (H<sub>1</sub>). The second objective was to investigate whether auditor's good economic position acts as a safeguard mitigating at least partly the effects of this economic bond (H<sub>2</sub>). The self-interest threats are due to such reasons as dependence on total fees from an assurance client, concern about the possibility of losing the engagement, or contingent fees. Many studies have found auditor independence impairment due to economic bond associated with lower quality (Frankel et al. 2002; Knechel et al. 2013). However, some studies have not found evidence for this association (DeFond et al. 2002; Lennox 1999; Hardies et al. 2012). There is lack of research on safeguarding in this situation. However, Knechel et al. (2013) showed that for distressed firms the client's economic importance increased and the auditor's wealth (as a safeguard) decreased the auditor's propensity to give a modified (going concern) audit opinion.

This study makes several contributions to the existing research. First, we contribute to the scarce literature that examines audit quality at individual engagement level (Chen et al. 2010; Francis and Yu 2009; Hardies et al. 2012; Knechel et al. 2013). Second, we extend the study by Hardies et al. (2012) taking account of client's turnover and auditor's taxable income. Third, we add findings for a quality measure that has not earlier been tested in this context, peer review quality results (compliance with audit standards). Hardies et al. (2012) and Knechel et al. (2013) both measure audit quality as a propensity to give a modified opinions to clients that represent a material portion of their client portfolio. Fourth, we are also testing for Finnish data if auditor's economic position can act as safeguard against potentially impaired quality. This question is rarely analyzed in audit research and there is lack of general empirical evidence. Knechel et al. (2013) analyzed this question only for distressed, equity-lost, and bankrupt firms showing that auditor's wealth acts as a safeguard only for distressed firms.

This study makes use of a very special data based on peer review results of 264 Finnish auditors. These data provide us with an excellent opportunity to test the research hypotheses because the review is based on engagements with a very important client and with a randomly selected average client. The comparison of the quality of audit in terms of peer review in these two engagements for each auditor makes it possible to assess the effect of client importance at the individual audit partner level. The data also include background information about the auditor and about his or her earned and unearned annual income from the year of peer review. In Finland, taxable wealth is not public as it is in Sweden (Knechel et al. 2013). Therefore, we use taxable unearned income (capital gains) as a proxy of wealth.

The empirical evidence shows that the quality of audit and the independence of auditors in terms of economic bonding are very high in Finland. High quality is reflected by high compliance with audit standards. The differences in peer reviewed quality in audit for the big client and small client engagement were found to be negligible and seemingly random. This obviously led to very low coefficients of determination in regression equations when

explaining these differences. However, our evidence showed that the effects of auditor's income measures and big client's turnover on the difference are statistically significant. Firstly, evidence showed that the difference is larger; the bigger is the big client's turnover. This finding supports  $H_1$  and indicates that Finnish auditors are likely to provide more important clients with marginally higher audit quality. Thus, auditors are not willing to compromise audit quality due to economic bonding but merely use a strategy to build a reputation by providing higher than expected quality for important clients. This evidence is consistent with empirical evidence that auditors are more conservative with clients that are most important (Reynolds and Francis 2001; Gaver and Paterson, 2007; Knechel et al. 2013).

Secondly, the study also gives new evidence on the role of income in safeguarding the auditor from economic bonding. Evidence shows that the level of annual earned income (salaries) does not act as a safeguard against bonding but on the contrary increases the difference in audit quality between big and small client engagements. This means that the difference is larger; the higher are auditor's annual salaries. In practice, this finding can indicate that competent auditors with high salaries are likely to provide important customers with exceptionally good quality. However, evidence shows that unearned income or capital gains (as a proxy of wealth) acts as a safeguard against this kind of strategy consistently with  $H_2$ . Thus, the difference in audit quality between big and small clients is lower; the higher are capital gains got by the auditor. This negative effect is however effective only for a part (17-18%) of auditors, since capital gains must be significant (at least 22% of total income) to make safeguarding effective.

The partial results considering different parts of overall audit quality showed that the effects of economic bonding and safeguarding are not similar for all parts of audit process. However, they obviously give partial support to  $H_1$  and  $H_2$ . Evidence shows that auditors with higher annual income are likely to make better quality for big clients in conclusions and reporting conforming to  $H_2$ . Evidence also supports  $H_1$  when showing that in a part of analytical procedures auditors are more likely to provide better quality to big clients; the more important is the client. For these analytical procedures the total and capital income measures have a negative coefficient giving weak support for safeguarding ( $H_2$ ). These results are consistent with previous studies, since such previously used audit quality measures as discretionary accruals (earning management) and modified audit reports are focused in these parts of audit process (analytical procedures and conclusions and reporting) (Reynolds and Francis 2001; Gaver and Paterson, 2007; Knechel et al. 2013).

The scope of this study is limited in many respects. First, the empirical data from peer reviews is only got from auditors having private firms as clients. Therefore, the auditors of public firms are not included in this study and the results cannot potentially be generalized for these auditors. Secondly, our results are drawn for a sample of auditors in Finland, where reputation risk and litigation risk are low. Thirdly, we used in our analyses taxable unearned income as a proxy of the taxable wealth of auditors because this wealth is not public information in Finland. Fourthly, we used only simple statistical methods such as the regression analysis in analyzing the data. Thus, future research should generalize the results and expand this kind of audit quality analysis to auditors of public firms and to audit markets in other countries than Finland. Moreover, future research should use more proper measures of wealth and more advanced statistical methods.

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## APPENDICES

### Appendix 1. Statistical distributions of the differences in compliance with standards between big and small clients.

Difference in compliance (%) between big and small clients in:

Percentile	All standards	Planning audit engagement	Analytical procedures 1	Analytical procedures 2	Conclusions and reporting
10	-8,4894	-15,3846	-16,0079	-14,1538	-7,5188
15	-6,0528	-9,0909	-11,3971	-9,5141	-5,2632
20	-4,6154	-7,6923	-6,6666	-7,0513	-4,7619
25	-2,9811	-2,7778	-5,2631	-4,5454	-0,6957
30	-1,8448	0,0000	-3,6232	-2,5641	0,0000
35	-1,4571	0,0000	-0,5848	0,0000	0,0000
40	-0,8772	0,0000	0,0000	0,0000	0,0000
45	-0,1254	0,0000	0,0000	0,0000	0,0000
50	0,0000	0,0000	0,0000	0,0000	0,0000
55	0,2554	0,0000	0,3676	0,0000	0,0000
65	1,7669	0,0000	4,1667	3,0960	0,0000
70	2,5641	0,0000	6,1404	5,0000	0,0000
75	3,9474	0,7576	7,8432	8,3334	0,8281
80	5,4546	7,6923	10,3261	12,5000	4,3478
85	6,7099	10,0000	14,6199	16,6667	5,5556
90	10,2843	16,6667	18,5185	20,0000	6,8421

**Appendix 2. Pearson correlations of the dependent and independent variables (N=264).**

	Number of variable:															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Compliance (%) with all standards	1,00															
2. Compliance (%) with standards in planning audit engagement	0,69*	1,00														
3. Compliance (%) with standards in analytical procedures 1	0,73*	0,37*	1,00													
4. Compliance (%) with standards in analytical procedures 2	0,58*	0,25*	0,15*	1,00												
5. Compliance (%) with standards in conclusions and reporting	0,61*	0,24*	0,19*	0,36*	1,00											
6. Unearned annual income (Euro), logarithm	-0,06	-0,07	-0,01	-0,07	-0,02	1,00										
7. Total annual income (Euro), logarithm	0,02	-0,06	0,05	0,02	0,05	0,23*	1,00									
8. Bigger client turnover (thousands of Euro), logarithm	0,10	0,11	0,08	0,12	-0,04	0,11	0,06	1,00								
9. Full-time auditor (0 = part-time, 1 = full-time)	0,07	0,05	0,03	0,09	0,02	0,04	-0,14*	0,39*	1,00							
10. Gender of auditor (0 = female, 1 = male)	0,01	0,13	0,05	-0,06	-0,01	0,12	0,14*	0,18*	0,07	1,00						
11. CPA exam of auditor (0 = HTM, 1 = KHT)	0,12	0,08	0,05	0,14*	0,06	0,01	0,03	0,31*	0,31*	0,16*	1,00					
12. Company form of auditor (0 = private, 1 = company)	0,00	-0,01	-0,07	0,07	0,07	-0,12	0,01	0,08	0,28*	-0,05	0,10	1,00				
13. Age of auditor	-0,06	-0,03	0,04	-0,06	-0,02	0,27*	0,05	0,08	0,07	0,17*	-0,10	-0,21*	1,00			
14. Age of CPA exam	0,01	0,05	0,08	-0,01	-0,01	0,22*	0,06	0,18*	0,12	0,25*	-0,05	-0,15*	0,73*	1,00		
15. Number of annual engagements, logarithm	-0,06	-0,04	-0,03	-0,08	-0,02	0,17*	0,08	0,41*	0,48*	0,13*	0,06	0,14*	0,26*	0,30*	1,00	
16. Number of annual hours in audit work	0,02	0,02	0,02	-0,04	-0,05	0,14*	0,10	0,44*	0,56*	0,16*	0,21*	0,15*	0,19*	0,28*	0,77*	1,00

Note:

\* = 2-tailed probability less than 5%

**Appendix 3. Regression model for compliance (%) with all standards (dependent variable) for small clients (N=264).**

Independent variable	Coefficient	t statistic	p-value#
Constant	45,534	2,026	0,044
Unearned annual income (Euro), logarithm	-0,017	-0,052	0,959
Total annual income (Euro), logarithm	3,140	1,841	0,067
Big client turnover (thousands of Euro), logarithm	-0,675	-0,520	0,604
Full-time auditor (0 = part-time, 1 = full-time)	5,244	1,573	0,117
Gender of auditor (0 = female, 1 = male)	1,921	0,627	0,531
CPA exam of auditor (0 = HTM, 1 = KHT)	-1,613	-0,464	0,643
Company form of auditor (0 = private, 1 = company)	-0,081	-0,020	0,984
Age of auditor	0,010	0,040	0,968
Age of CPA exam	-0,405	-1,903	0,058
Number of annual engagements, logarithm	1,670	0,799	0,425
Number of annual hours in audit work	0,002	0,418	0,677
Coefficient of determination (R-Square) (adjusted)	0,071	(0,030)	
F statistic (significance)	1,746	(0,064)	

Note:

# = 2-tailed probability



# The effect of strategic thinking patterns on the efficiency of decision making process in Jordanian companies of insurance.

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Abridgment of research

## ABSTRACT

This research purposes to recognize the effect of strategic thinking patterns on the efficiency of decisions making process in Jordanian companies of insurance ; and reaching the recommendations that aim to increase the necessity of this side to ameliorate the strategic performance level in these companies; the research also includes recognizing the effect of personal variables ( gender, age, years of experience; administrative level and scientific qualification) on the efficiency of decisions making; whereas this research depends on the descriptive analytical curriculum; using the questionnaire to study the opinions of research sample that composes 46 persons like an average (10%) from the society of research. And this research shows an effect with statistical indication (  $a > 05.0$ ) for the dimensions of strategic thinking jointly in the efficiency of decisions making in Jordanian companies of insurance. The results also showed no differences related to statistical significance on the significance level ( $a > 0.05$ ) in the efficiency of decisions making of the employees of Jordanian companies of insurance attributed to personal and functional variables (gender, age, scientific qualification and practical experience). And based on the results of research, they recommend the necessity of the organizations and leaders to be able to involve the whole in presenting vision and making visualizations, uniting efforts with organizations and civil society to achieve common objectives and spreading the culture of argumentation, participation, frankly, optimism and sheerness in the atmospheres of organizations, deepening the responsibility and self control, in addition to the necessity of hiring the human resources, their energies and their true knowledge and encouraging them to creativity and innovation, by supporting creators and motivating them , adopting their ideas , assigning them with works show their intellectual challenges and sharpen their spirit of creation , also encouraging them to be against the familiar from typical specific thinking to a thinking characterized by variety , authenticity and innovation , and changing the methods of work , its ways and its measures.

**Key words:** strategic thinking types, efficiency of decisions making process, Jordanian companies of insurance, strategic thinking.

## INTRODUCTION

Most of business organizations seek to achieve success in their operations and activities to build a special strategic and competitive position that ensure existence and growth for it and efficient performance in its environment (Al-Dawry, 2010), and requires from the organizations in their different kinds and activities, to have a long term vision, based on the idea that the strategic administration is only administration of the long term future of the organization, and whereas this future is full of surprises, confusion, danger and variation, a certain style of organization management –should be used –that exceeds the traditional and old visualization and thinking to a creator, innovator visualization and thinking, and with optimistic outlook which is the strategic visualization (Al-Khafagi, 2008).

And like the other business organizations, most of external and internal insurance companies face multiple challenges, as globalization, openness and rapid development in technology and communications; push these companies to follow the strategic approach in thinking and planning, to present their products and insurance services in all fields and in the right time, and deliver them to as many customers as possible using different modern means.

Most of the researchers in this field see that the strategic thinking is a very important thing if we want to our business to be distinguished (Abo Zoqaya, 2011),

so if the continuance in achieving the desired goals is one of the main challenges in the organization, the change, keeping up with progress and adopting to the environment, are a necessary condition to achieve these goals, as the strategic thinking is the means of facing to problems and dealing with internal and external changes, it also a main affair not only for the business organizations that seek to money, but also for the governmental organizations, on their different activities, to ameliorate their performance level, and make the right decisions, (Al-Hosseiny, 2000).

And here, decisions making process is one of challenges that face administrative organizations and on different levels, where they deal with variables not only related to organizational field, but also to take into account the environment around of it, social pressures, and external powers that affect and are affected by, whereas strategic thinking comes as one of the activities that followed by the organization to reach the right decisions that provide the administrative organization with force, stability and effectiveness, so the decisions makers should have the full knowledge of available alternatives and their consequences and full understanding of the data associated with the substance of the problem (Kanaan, 2007).

### **PROBLEM OF THE RESEARCH**

Attention to strategic thinking patterns in facing and solving problems that obstruct the work inside the organizations whether governmental or private, plays an important role in the success of the organization or its failure, the admission of the role of decision making in the success of organizations, and as a basis of the administrative process, has led the researchers to study and analyze the factors that influence on the decision making process, and whereas the strategic thinking types are one of the influential factors on decision making process, so the problem of the research represented in the answer of the following question:

**What is the effect of the strategic thinking types on the effectiveness of the decision making process in the Jordanian companies of insurance?**

### **The importance of the research**

This research derived its importance from the role of the strategic thinking patterns in decision making process, as the high risks in decision making, and the cost of the wrong decisions share in increasing the restrictions and economic loads, the increasing of the competition and the accelerated technological development led to increase the adoption of strategic thinking by leaders to be able to save the competitiveness under variable environmental conditions, the research also derived its importance from:

1. The importance of cognition and adopting the strategic thinking types and using them in the right decisions making process, that leads to the success of the organizations and its continuance.
2. This research serves the Jordanian companies of insurance by its information about the strategic thinking types and the means of right decisions making, and making use of them in training programs to achieve the desired organizational goals.

**Objectives of the research:**

This research purposes –especially- to identify the effect of the strategic thinking patterns on the decision making process in the Jordanian companies of insurance, it also seeks to achieve the following objectives:

1. Recognizing the visualizations of the employees in the companies of insurance about the strategic thinking.
2. Recognizing the visualizations of the employees in the companies of insurance about the efficiency of decision making process.
3. Recognizing the visualizations of the employees in the companies of insurance about the efficiency of decision making process according to the demographic variables (gender, scientific qualification, age, practical experience).
4. To present recommendations and proposals to the decision makers in the Jordanian companies based on the results of the research.

**QUESTIONS AND HYPOTHESES OF RESEARCH****Firstly: questions of research**

First question: what are the visualizations of the research sample of the level of dominant strategic thinking, and the availability of each dimension in Jordanian companies of insurance, and these dimensions are: (abstract thinking, diagnostic thinking, planning thinking).

Second question: what is the level of the efficiency of decision making process with its dimensions (defining the problem, choosing the optimal alternative, observation and evaluation) of the employees in the Jordanian companies of insurance?

**Secondly: Hypotheses of the research**

First main hypothesis: There is no effect with statistical indicator on the level of significance ( $\alpha < 0.05$ ) for the types of strategic thinking (abstract thinking, diagnostic thinking, planning thinking) on the efficiency of decision making in Jordanian companies of insurance.

First sub-hypotheses: There is no effect with statistical indication on the significance level ( $\alpha < 0.05$ ) on the strategic thinking in defying the problem as one of the dimensions of the efficiency of decision making.

Second sub-hypothesis: There is no effect with statistical indication on the significance level ( $\alpha < 0.05$ ) on the dimensions of the strategic thinking in choosing the optimal alternative as one of the dimensions of the efficiency of decision making.

Third sub-hypothesis: There is no effect with statistical indication on the significance level ( $\alpha < 0.05$ ) on the dimensions of the strategic thinking in observation and evaluation as one of the dimensions of the efficiency of decision making.

Second main hypothesis: There are no differences with statistical indication on significance level ( $\alpha > 0.05$ ) in the efficiency of decision making process of the employees of Jordanian companies of insurance attributed to personal and functional variables (gender, age, scientific experience, scientific qualification).

**EXECUTIVE DEFINITIONS**

1. Independent variable (strategic thinking): It's an extended and innovative way of thinking on strategic basis, and in the same time a long term and look and more completeness for the organization and the environment, and it is a visualization of an organization for its future in terms of its position and what it will be in the future on a long term (Haines, 2006:1).

1. The abstract thinking: it is a mental process that aims at extracting and abstracting the abstract meanings of things and relations by the hypothetical thinking through symbols and circulars and the ability to create assumptions and make sure that they are correct. (Al-Otoom, 2004:200).

3. Diagnostic thinking: it is a process of an application of accurate analysis for the subject that will be decided, and then identifying the most important factors or the reasons for decision making, and thus choosing the non-flexible ruling alternative to reach to inevitable solutions, as well as the ability to predicate of the outcome of the negative relations arranging them to choose main and emergency strategic alternatives to prevent surprises when they happen (Al-Shahry, 2010: 54).

3. Schematic thinking: this pattern tends to determine the possible results as a first phase of thinking, then configure the necessities to reach to those results. and here, the element of flexibility must be allowed to determine the causes or the information and its sources or the desired objectives to make decision (Mohamed, 2002: 14).

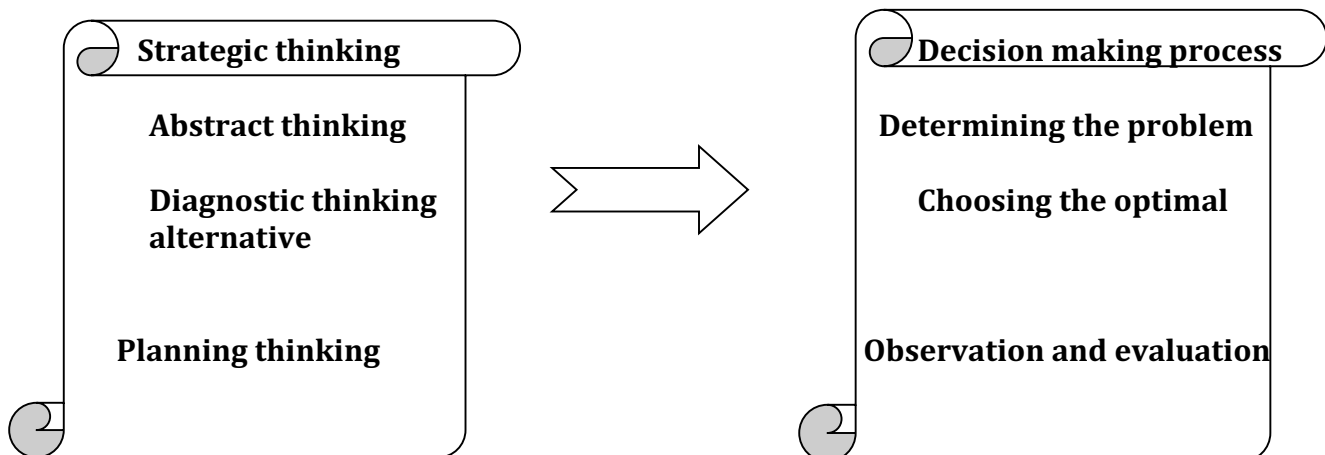
**Attendant variable (decision making):** decision making is the choice between two or more alternatives by following several steps represented in recognizing and defining the problem, determining and analyzing the existing alternatives, choosing the most effective alternative in achieving and applying the objectives of the organization (Maher,2008: 58), and therefore the decision making – according to the current research – includes the following variables:

1. Determining the problem: it is diagnose the problem process, by knowing its nature, essence, dimensions and its results, it means its effects and reasons (Qassem, 2011: 54).
2. Choosing the optimal alternative: it is a comparison process between the available alternatives according to their expected results and comparing them with the objectives or their standards, by the processes of searching, analyzing and testing, and benefiting from the experiences of the decision maker in this field (Moussa, 2010: 55).
3. Observation and evaluation: it is a depending on feedback process, by collecting the information, examining and analyzing them, to know the results of choosing this alternative and apply it, and if the achieved results are positive or negative (Hussein and Al-Said, 2001: 25).

### MODEL OF THE RESEARCH

**Independent variable**

**Attendant variable**



## CHAPTER ONE

### Strategic thinking and decision making process

#### The First topic: Strategic thinking

##### *Concept of strategic thinking*

The term of strategic thinking, its fundamentals and principles appeared as a reaction which developed by the research circles that were interested in studying the uses of strategic administrative in strategic planning, and its effectiveness in reaching and achieving the organizational objectives (Qassem, 2011), as the strategic thinking is based on heading for the future by benefiting from the events and facts of the past and the data of the present (Al-Dawry, 2009: 29).

And many writers and researchers have handled the strategic thinking with several definitions; we mentioned of them that the strategic thinking is the prediction of the ideal form of the organization in the future, and achieving this form, to uncover the mystery of the organization's future, the prediction of the features of the organization in the future, visualization of the directions and the path of the organization in the future, determining the vision, message, and the objectives of the organization in the future, in addition to imagine the field of works and activities (Borkan, 2011: 18). And this is the way in which the officials can direct the organization to move from the administrative processes, the executive activities, facing the emergencies and crisis to create a different vision of the external and internal factors that capable of serving the required change in the surrounding environment, to ensure the best possible use of the possibilities of the organization,

starting from a new perspective that is fundamentally focused on the future, with no neglect to the past (Al-Mubark, 2006: 23). (Tavakoli, 2005: 11) also defined it as a cognitive process that must precede the decisions and strategic action, as the strategic thinking occurs when somebody regards in the future of the institution,

taking into account their surroundings and variables.

From the past, we can define strategic thinking as the in-depth and expansive thinking of the ideal situation that the organization must have in the far future

and drawing different scenarios to this future then planning to benefit from the available chances and avoiding and reducing the risks of this future.

##### *Characteristics of strategic thinking*

Strategic thinking is concerned with the general affairs of the organization as a whole, and strategic thinking is started and directed by the high administrative level but all of the administrative levels must participate in to work (Al-Kobaisi, 2006).

And (Saleh, Mohamed, 2001) indicate that strategic thinking linked to the organization's need for growth and survival in a constantly changing environment, so it focuses on two types of activities the first one is the diagnosis of strength and weakness sides of the organization, and the second is determining the required strategic actions to keep the performance level and improve it.

So, the planners have to present the formal analysis and the data required by strategic thinking process as long as it aims at broadening the process of thinking in subjects and not to reach to know the only and right answer, as the strategic thinking is a first and important step from the

steps of the strategic planning and it is closely linked to the strategic leaders and planners, because the first step in this process is to do a conscious diagnosis to the surroundings conditions, and analyzing whole of the connected factors whether they are in the present or in the future, then creating a vision and alternatives, and all of this can only come from strategic thinking.

And here, (Al-Zaher,2009) sees that strategic thinking characterized by the following characteristics:

1. Optimistic and human thinking, believes in the capacities of the human and his mental energies to penetrate the unknown world and predict the possibilities of what will happen.
2. Competitive thinking: His supporters head to seize opportunities before the others, and they believe in the dominant minds and visionaries who precede the others in discovering the new knowledge.
3. Strategic thinking is a developmental thinking because it starts from the future to derive the picture of the present from it, and starts from the external vision to deal with the internal environment through it, and so it is described as proactive.
4. Strategic thinking is multi-vision and angles, it requires looking forward in its understanding of the past, and adopts the consideration from the top to understand what is down, and resorts to the diagnostic analysis to understand the reality of the things realistically.
5. Strategic thinking employs quantitative methods and numbers to understand the independent and attendant variables in the relation of the things with each other.

### ***Positives and utilities of strategic thinking***

The utility of following the method of strategic thinking inside the business organizations through its completely look to the future and what is available and what can be obtained based on the initiative like a method of work, as strategic thinking is characterized by several positives and utilities, from them (Al-Ghalby and Idris, 2007):

1. Crystallization of conceptual framework to look to the organization in its whole surrounding and its completeness relations instead of describing it as a closed box, that doesn't affect or effected by the surrounding variables.
2. Orienting the future and determining its trends and possibilities instead of preoccupation with the present and the whole function of its problems , that is an extension of the past.
3. Uniting the efforts and filling the energies towards the goals and objectives.
4. The good hiring of human resources, their energies and their correct knowledge, and motivating them on creation and innovation.
5. Achieving the adaptation, conformation and positive interaction with external environment.
6. Enabling the organizations and authorities to engage the operating and beneficiaries bodies in presenting the vision and visualizations, and uniting the efforts with organizations and civil society to achieve the common objectives.
7. Strategic thinking helps to spread the culture of discussion, participation, frankness, optimism and sheerness in the atmospheres of the organizations, deepening the responsibility and self control.
8. Consolidating the confidence of individuals, groups and organizations with themselves and their identity, and releasing hope in the souls, feeling them with their abilities to contribute to make the future and comparing between their options.

### ***Purposes of strategic thinking***

Strategic thinking is a more creative way of thinking and how to deal with issues and main opportunities that face the organization through which they operate, so the successful strategy combines a large number of factors related to the external environment, organization goals and human resources. Whereas (Tawfiq, 2005) sees that the advanced thinking that focuses on organization, combines the external and internal factors on planning for the future of organization. So the purposes of strategic thinking can be summarized as follows ( Al-Dawry, Saleh, 2009):

- Determining the strategic intent that leads the management to direct of the energies of the employees correctly.
- Diagnosing the effect of the sorts of environments on the work of organization.
- Bagging the smart opportunity.
- Enabling the organization to determine the appropriate strategy to bridge the gap between the facts of the past, the data of the present and the features of the future.

### ***Damages caused by the absence of strategic thinking***

The damages caused by the absence of strategic thinking can be calculated as follows (Khalif, 2008):

1. Loss of many opportunities of the benefiting from the available in the external environment off the organization.
2. The organization is confronted with many problems and crises as a result of the lack of early awareness of the restraints and threats inside the external environment of the organization and the non readiness for them.
3. Wasting a part of the potentials and sources and not benefiting from them.
4. Weakness of the relationship and lack of connection between the message of the organization and its objectives, and making some decisions that don't serve the message of the organization and its objectives.
5. Weakness of the ability of the organization to create and innovate, and fear of individuals from presenting unusual ideas to develop and update.
6. Organizational climate in which there are many tension and anxiety among workers, weakness of belonging to the organization, the struggle and conflict between managers and managements as a result of the absence of strategic vision.
7. The organization is floundering in its decisions, due to the lack of knowledge of the elements of the external and internal environment on its reality, and forming the plans and formulating goals on incorrect assumptions.
8. Dissatisfaction between employees towards the organization, as a result of the employees' awareness and their belief that the organization focuses its efforts on achieving its advantages without the advantages of the other parties in the external environment.

### ***The preliminary steps for the development of strategic thinking among the leaders of the institution***

1. Self-revision, seeing the fact of the reality and faith in the importance of thinking.
2. Checking up the selection and choosing the thinking brains that capable of dealing and diving in the depth, practicing and analyzing of the complex mental processes, according to new and unusual ideas and visions.
3. Academic Refinement and practical training. (Sultan, 2006).

### ***Factors of the success of strategic thinking***

The success of strategic thinking has several elements which dealt by the writers from the angles of their interests and different specializations, but all of them revolve in similar axis, as

the factors of the success of strategic thinking were determined as follows (Al-Mubarak, 2006):

- Strategic thinking is based on a real integrated system away from guesswork and foreknowledge.
- The plan must be spurred from the reality of the work environment with which it interacts.
- All of the employees must participate in forming the plan to ensure their interaction on the time of the application.
- General goals of planning can achieve the need of individuals and societies for their development.
- The plan must be disposed to change, development, increasing, decreasing.
- The plan must be consistent with the goals to achieve development and growth.
- The plan focuses on the preferences of the work in organization.
- The plan must be disposed to evaluation, observation and supervision.

(Al-Zaher, 2009) added important requires for the success of thinking:

- A high management believes in strategic thinking.
- A clear and appropriate organizational structure for the institution.
- The availability of material potentials, appropriate and different skills of thinking.
- The availability of a clear figure of the environment of the university and realizing the defect well.
- Commitment of employees and middle management to think.

From the previous we see that strategic thinking is an arranged effort aims at making fundamental decisions and procedures that determine the essence of the institution, what it is doing? and why it is doing this? by concentrating on the future. Readiness and preparedness for the best methods in response to the surroundings environmental conditions of the institution, regardless of knowing or not knowing these conditions in advance, and to be strategic means that the objectives of the institutions and the means of achieving them are clear and precisely defined, and its sources and origins must be known and targeted towards achieving these goals.

## **Second topic: Decision making process**

### ***The concept of decision making***

Decisions making process is one of the main and important responsibilities and tasks doing by the managers inside the organization, by describing the decision making as an administrative and organizational activity, and the most prominent factor is the individuals who make these decisions (Moussa, 2010), as it is one of the important subjects that have many points of view in its definition: according to the differences of the diligences of the writers and researches and also as a result of their scientific, philosophical and social backgrounds, and here are some of these definitions:

*(Robert and hunt, 1991: 334) defined decision making as "the contribution of a large number of the members of organization on decision making that leads to a good level of the required results".*

*(Boone & Kurtz, 1992: 176) defined decision making as "choosing between two or more alternatives by following the next steps: understanding the problem and defining it, determining the existed alternatives and analyzing them, choosing the more contributed alternative in achieving the goals of the organization and apply them".*



*And (Al-Hawamda and Al- Kasasba, 2000:141) defined it as "group of actions taken by the decision making director and ending with a preference for an alternative or an appropriate solution between a number of available alternatives".*

*(Shehab, 1995: 209) also sees that it is "a process of the individual's mental and emotional interaction with the group in which he works in the organization by enabling him to mobilize his efforts and energies to achieve common goals, and taking responsibility by self motivation in the light of the environmental data in which the organization operates".*

And the administrative decision is "the involved process whereby one person reached to make a choice that influences the behavior of the others in the organization in their contribution to achieve its goals" and from another point of view, the decision making is a series of individual or collective responses that end by choosing the appropriate alternative in the face of a certain position, so the concept of decision making isn't just about decision making only, but also a very complicated process involving multiple factors: psychological, political, economic and social (Hussein, 2008).

(Shehada, 2005) indicates that the decisions are the central engine for organizational activities in the successful organizations and they make better decisions and, faster and completely completion, and with no doubt the decision making process is an activity committed by managers in the whole organizations and at all levels.

### ***The elements of the effective administrative decision***

The elements of decisions making revolve around a specific framework and aim at treating a problem, and from the most important elements:

objective, position, decision maker, choosing rules, alternatives and the process of choosing the optimal solution among the available alternatives, and all of the decision making elements are interlocked and entwined (Al-Fadl, 2008), as the elements of the administrative decision are summarized in the following points (Al-Adayla and Zoyalef, 1996):

1. Existence of a specific problem requires a solution.
2. Existence of different alternatives, this means the existence of different ways and multiple means which are available to the administrative to select the more suitable from them.
3. A goal that the decision maker appeals to: represented in achieving the required goal with the lowest cost.
4. Consciousness or awareness in choosing the alternative.
5. The climate in which the decision is made, this means the atmosphere in which the decision was made and the consideration involved in this climate.

(Kan'an, 2007) indicates that the most important elements of decision making:

1. **Available alternatives:** A certain position has more than way to face it and this way is called alternatives, and at a minimum, the decision must has two alternatives whereas the decision maker chooses one.
2. **Perceptive choosing for one of the available alternatives:** The existence of decision requires a conscious choice of one of the available alternatives, as the decision maker chooses the alternative (sensible), this means after conscious, awareness, study and thinking, but if the behavior was (unconscious) in choosing the alternative without study or thinking, therefore, it goes beyond being a decision.

### ***Importance of administrative decisions making***

Decision making is the center of the administrative process, and it is an intergraded process in all functions and activities of the administration, and when the administration does the planning function, it makes certain decisions, when the administrative establishes the appropriate organization for its various missions and activities, it makes decisions on the organizational structure, its type, its size and the basis of the division of the administrations and departments, the individuals they need to do different jobs, scope of appropriate supervision, lines of authority, responsibility and communication (Ibrahim, 2008), as the decision making process acquires its growing importance because of the developments of the methods of collecting information, their analysis, classification and storage, this process also attracted many parties in several practical fields to the importance of the decision to use it in finding solutions of the problems of the management (El-Bahisi, 2006), decision making process also acquires its importance as an administrative function and organizational process, as the decisions of the manager reflect a lot of main administrative functions such as forming plans, composing policies and determining the goals, they also lead to more of goals and results related to the administration of the institution. The decisions of the managers have a great influence on the shape and method of work (Al-Mashrafi, 2004).

(Al-Qahtani, 2007) indicates to the importance of the decisions making issue by using it in quantitative analyzing that depends on mathematical methods to achieve the desired results as much as possible, and this requires the using of mathematical models and decision making models that help the decision making manager to make decision that achieves the desired goals with facing the obstacles that surround the decision, and consequently determining the method of the improvement and development of the decisions making process effectively.

As (Yagi, 2010) sees that the importance of decisions making increases according to the increasing of its complexity as a result of enlargement of the size of organizations and its openness on the different environments, and the fastness of the changes that have become characteristic of the general movement. And the reason for the importance of making the organizational decisions is that they are affected and effect on the individuals and groups inside and outside the organization, and consequently effect on the economic and social status of the whole society.

### ***Characteristics of decision making process***

Many of the characteristics of the decision making process have been identified, the most important between them (Kan'an, 2007):

- Decision making process is a systematic mental and intellectual process, this means it submits to the pattern and the steps of scientific method.
- Decision making process is scientific and technical process in the same time.
- Decision making process is a human process aimed at satisfying the human needs.
- Decision making process is a dynamic, continuous and connected process that includes - in its different stages- multiple interactions start from the design stage and end with the decision making stage.
- Decision making process influenced by the personality of decision maker, the motives and objectives of the participants in decision making.

And (Ibrahim, 2008) showed that what helps to the success of application and implementation of the decisions effectively is to be characterized by:

- Its ability to survive for a long reasonable period of time.
- Take into account the psychological dimensions of the employees in the institution.

- Its clarity in terms of content and formulation.
- To be applied on stages that convenient for the available financial resources and the capacity of the employees in the institution.

(Talha, 2008) also indicated that the effective and correct decisions must be characterized by:

- taking into account the values and dominant trends in the internal and external environment.
- Participation of all individuals in making decisions.
- Using the scientific curriculum and its steps in making decisions to ensure the choosing of the appropriate alternative that achieves the goal with the lowest costs.
- Avoiding making mistakes by the decision maker as a result of the short sight and rigid thought.
- Determining the appropriate time to make decisions and apply them.

(Hussein, 2008) also sees that the decisions making process characterized by several characteristics, and these characteristics can be summed up as follows:

1. Decisions making process influenced by the human factors arising from the behaviors of the decision maker or decision makers.
2. Decision making process characterized by realism because it accesses to the reasonable level, not to the maximum.
3. Decisions making process is a general process; this means it includes most of organizations on their different specializations, and comprehensive because it includes the whole of administrative posts in the organizations.
4. This process composed of group of sequential steps.
5. This process influenced by the surrounding environmental factors.

From the above, we see that the decisions making process is not a random process, but an organized and dynamic process based on scientific basis, and its success depends on the ability and personality of the decision maker who sets the objectives of the institution and the employees in front of his eyes, taking into account the material and human possibilities and the domain conditions in the institution, it also depends on the participation and interaction of the employees in the institution, their sense of responsibility, their experience and the essence of their ideas to serve the institution.

## CHAPTER II Methodology and design

### First topic: Field study procedures

The following are the results of the descriptive statistical analysis of the data, and they are the value of the arithmetical average, standard deviations, the relative importance of all dimensions of the study and the paragraphs of each dimension, taking into account that the used succession of the scale is :

Always applied	Often applied	Sometimes applied	Rarely applied	Never applied
(5)	(4)	(3)	(2)	(1)

And based on this, the values of arithmetical averages reached by the study will be treated to explain the data as follows:

High	Medium	Low
3.5 and more	2.5 _ 3.49	1 _ 2.49

And based on this, if the value of the arithmetical average of the paragraphs is more than (3.5),

the level of the visualizations will be high, and this means the acceptance of the members of the society to the paragraph, but if the value of the arithmetical average is (2.5\_ 3.49) , the level of the visualizations will be moderate, and if it is less than (2,49) , the level of visualizations will be low.

### **Society and sample of the research**

The society of the research represented in the total of the employees in Jordanian companies of insurance and their number is (460) employees, according to the official calculations issued on (1\1\2016), as a simple random sample, representing (10%) from the total of the employees in these companies, was taken, (46) questionnaires were distributed on the research sample, (42) questionnaires were retrieved, and (3) questionnaires were excluded because of their invalidity for statistical analysis, to be (39) questionnaires valid for analysis like an average (84.7%) from the total sample of research, and it is reasonable average for the purposes of scientific research.

### **Research tool**

The questionnaire of the research was developed based on the theoretical framework and previous studies in this subject, and the questionnaire composed of three parts.

**Part one:** Includes the information about the characteristics of the research sample, according to the demographic variables, and they are (age, scientific qualification, experience, gender).

**Part II:** This part includes paragraphs covering the independent variable of research (strategic thinking).

**Part III:** This part contains paragraphs covering the attendant variable of research (decision making efficiency). And the answers were classified according to the (Likert) scale, and identified with five answers (always applied, often applied, sometimes applied, rarely applied, never applied), and the answers were given numbers from (1\_5), as number (1) for (never applied), number (2) for (rarely applied), number (3) for (sometimes applied), number (4) for (often applied) and number (5) for (always applied).

### **Statistical processing method**

To answer the questions of the research and to test the correctness of their hypotheses, methods of descriptive and analytical statistics were used, by using the statistical parcel (SPSS.16). The following is a list of statistical methods that will be used for each question and hypothesis:

**Answer the first and second question:** Descriptive Statistic Measures to describe the characteristics of the research sample, based on the repetitions and percentages, to answer the research questions, and to know the relative importance by using the mathematical averages, and standard deviations.

### **Answer the first hypothesis and sub-hypotheses:**

Multiple Regression Analysis was used to test the validity of research models and the effect of the independent variable and its dimensions on the attendant variable and its dimensions.

### **Answer the second hypothesis:**

One Way ANOVA to test the differences of the demographic variables in the visualizations of the researched towards the attendant variables.

## Second topic: Characteristics of research sample

**Table no. (1.2)**  
**Distribution of the individuals of research sample according to the variables (gender, age, functional experience, scientific qualification)**

Variable	Level	Number	Percentage %
Gender	Males	28	71,8%
	Females	11	28,2%
	<b>Total</b>	<b>39</b>	<b>100</b>
Age	30 years or less	12	30,8%
	31_40 years	13	33,3%
	41_50years	8	20,5%
	50 years or more	6	15,4%
	<b>Total</b>	<b>39</b>	<b>100</b>
Functional experience	5 years or less	6	15,4
	6_10 years	14	35,9
	11_15 years	9	23,1
	16 years or more	10	25,6
	<b>Total</b>	<b>39</b>	<b>100</b>
Scientific qualification	High school or less	3	7,7
	Diploma	5	12,8
	BA	25	64,1
	Master's degree	6	15,4
	<b>Total</b>	<b>39</b>	<b>100</b>

Table no. (1.2) illustrates, with regard to gender, that the males accounted the percentage (71.8%), while the percentage of females was (28.2%). And this reflects the actual reality of the labor force in Jordanian organizations, as the males' ratios are always higher than the females' ratios.

For the variable of age, the employees who ranged in age between (31-40 years) accounted the percentage (33, 3%), then the employees between (30 years or less) with the percentage (30, 8%), after them, the employees between (41-50 years) with the percentage (20, 5%), and finally the employees who were 50 years or more came in the last rank with the percentage (15, 4%).

With regard to the functional experience, the employees with the experience (5 years or less) accounted the percentage (15,4%) , in the last rank, compared with (35,9%) from the individuals of research sample, their experience was (6-10 years), while the experience of (25,6%) of the individuals of research sample was 16 years or more, and the percentage of the individuals with the experience (11-15 years) was (23,1%).

For the scientific qualification variable, the high average was in favor of the employees with a bachelor's degree as it was (64, 1%), to reflect the prevailing scientific qualification generally in all Jordanian companies and institutions. Then, the percentage of the employees with

master's degree as it was (15, 4%), after them the percentage of the employees with diploma as it was (12,8%), and finally the percentage of the employees with high school or less, as it was (7,7%).

### CHAPTER III Presentation of results

#### First topic: Answering the research questions

**Answering the first question: What are the visualizations of the employees in Jordanian companies of insurance about the level of strategic thinking from the point of view of researched?**

**Table no. (1.3)  
Mathematical averages and standard deviations of the visualizations of the research sample about the dimensions of strategic thinking**

Sequence of paragraph	Dimensions of strategic thinking	Mathematical average	Standard deviation	Arrangement by ratio	Level for the mathematical average
1-3	Abstract thinking	3.83	0.683	1	High
4-6	Diagnostic thinking	3.70	0.756	2	High
7-9	Schematic thinking	3.47	0.811	3	Medium
<b>1-9</b>	<b>Total average</b>	<b>3.66</b>	<b>0.501</b>		High

Table no. (1.3) illustrates that the general average of the dimensions of strategic thinking was (3.66), and this means that the visualizations of the individuals of the research sample about the dimensions of strategic thinking of the employees in Jordanian companies of insurance were high. And by analyzing the dimensions of strategic thinking, we see that abstract thinking came in the first rank with a mathematical average (3.83), and standard deviation (0.683), then the diagnostic thinking with a mathematical average (3.70), and standard deviation (0.756), and in the first rank the dimension of schematic thinking with a mathematical average (3.47), and standard deviation (0.811). The following are the results of answering the sub-questions of the first question:

**What are the visualizations of the employees in Jordanian companies of insurance about the level of abstract thinking from the point of view of researched?**

**Table no. (2.3)**  
**Mathematical averages and standard deviations of the visualizations of the research sample about the dimensions of abstract thinking**

<b>Paragraph</b>	<b>Mathematical average</b>	<b>Standard deviation</b>	<b>Arrangement by average</b>	<b>Level for the average</b>
I'm dealing with unfamiliar topics	3.92	0.825	2	High
I would like to deal with ambiguous situations	3.95	0.944	1	High
I made my decision based on my personal experience	3.61	1.01	3	High
<b>Total average</b>	<b>3.83</b>	<b>0.683</b>		<b>High</b>

Table no. (2.3) showed that the general average of the visualizations of research sample about the paragraphs of the dimension of abstract thinking were high, with a mathematical average (3.83) and standard deviation (0.683), and the paragraph (I would like to deal with ambiguous situations) came in the first rank with a mathematical average (3.95), while the paragraph (I made my decision based on my personal experience) came in the last rank between the paragraphs of this dimension, with a mathematical average (3.61). This means that the constraint process of the general factors surrounding the problem for the issues and problems that cope with the insurance companies, achieved in a selective framework based on the philosophy of the decision maker or his directions, as the strategic leader applies his tendencies or values that are determined in the light of his intuitions or imagination in this regard with a relatively high form.

**What are the visualizations of the employees in Jordanian companies of insurance about the level of diagnostic thinking from the point of view of researched?**

**Table no. (3.3)**  
**Mathematical averages and standard deviations of the visualizations of the research sample about the dimensions of diagnostic thinking**

Paragraph	Mathematical average	Standard deviation	Arrangement by ratio	Level for the average
I'm initiating to invest the opportunities outside the company to achieve its goals	3.94	0.998	1	High
I'm seeking to know the reasons for making decision	3.64	0.931	2	High
I'm flexible with all the problems that I face	3.51	1.12	3	High
<b>Total average</b>	<b>3.70</b>	<b>0.756</b>		<b>High</b>

Table no. (3.3) showed that the general average of the visualizations of research sample about the dimensions of diagnostic thinking were high, with a mathematical average (3.70) and standard deviation (0.756), and the paragraph (I'm initiating to invest the opportunities outside the company to achieve its goals) came in the first rank with a mathematical average (3.94), while the paragraph (I'm flexible with all the problems that I face) came in the last rank between the paragraphs of this dimension, with a mathematical average (3.51). This means that the employees in Jordanian companies of insurance doing an accurate analysis for the issue that will be decided, then they diagnose the most important factors or the reasons for making decision, and consequently choosing the ruling alternative to reach to the inevitable solutions, as well as their ability to predict the outcome of negative relations and tabulate them for the purpose of selecting the main and accidental strategic alternatives to prevent surprises when they occur.

**What are the visualizations of the employees in Jordanian companies of insurance about the level of schematic thinking from the point of view of researched?**



**Table no. (4.3)****Mathematical averages and standard deviations of the visualizations of the research sample about the dimensions of schematic thinking**

Paragraph	Mathematical average	Standard deviation	Arrangement by ratio	Level for average
I'm interested in determining the possible results before making any decision	3.49	1.21	2	Moderate
I like deal with unusual problems	3.46	1.07	3	Moderate
I'm using unusual ways in solving problems	3.50	1.18	1	High
<b>Total average</b>	<b>3.47</b>	<b>0.81</b>		<b>Moderate</b>

Table no. (4.3) showed that the general average of the visualizations of research sample about the dimensions of schematic thinking were moderate, with a mathematical average (3.47) and standard deviation (0.81), and the paragraph (I'm using unusual ways in solving problems) came in the first rank with a mathematical average (3.50), while the paragraph (I like deal with unusual problems) came in the last rank between the paragraphs of this dimension, but with a mathematical average near to high (3.46). This means that the employees in Jordanian companies of insurance have the ability to determine the possible results as a first stage of thinking, then configuring the necessities of the access to those results.

**Answering the second question: what is the level of effectiveness of organizational decisions with their dimensions (determining problem, choosing the optimal alternative, observation and evaluation) of the employees in Jordanian companies of insurance?**

**Table no. (5.3)****Mathematical averages and standard deviations of the visualizations of the research sample about the dimensions of decision making efficiency**

Sequence of paragraph	Dimensions of decision making efficiency	Mathematical average	Standard deviation	Arrangement by ratio	Level for the mathematical average
43-46	Determining problem	3.65	0.77	2	High
55-85	Choosing the optimal alternative	3.62	0.60	3	High
59-62	Observation and evaluation	3.75	0.79	1	High
<b>43-62</b>	<b>Total average</b>	<b>3.67</b>	<b>0.57</b>		<b>High</b>

Table no. (5.3) showed that the general average of the dimensions of decision making efficiency was (3.67), and this means that the visualizations of the research sample about the

dimensions of decision making efficiency were high. And by analyzing the dimensions of decision making efficiency, we see that the dimension of observation and evaluation came in the first rank with a mathematical average (3.75), and standard deviation (0.79), then the dimension of determining the problem with a mathematical average (3.65), and standard deviation (0.77), and the dimension of choosing the optimal alternative came in the last rank with a mathematical average (3.62), and standard deviation (0.60). Such as this result is concrete and sensational, as it explains that organizations face renewed and changing challenges which require from the higher managements to adopt policies and strategies adapted to these challenges to achieve the goals of organization with a successful method. Because of the rapid and renewed change in the work environment, high management should expand a field of freedom for the employees in the different administrative levels to make the appropriate decisions without consulting the high management, with the exception of necessary cases or the decisive decisions, to present services to citizens efficiently and effectively. The following is a detailed presentation of the researched visualizations about the dimensions of decision making efficiency in Jordanian companies of insurance:

**Firstly: Visualizations of the research sample individuals about the dimension of determining problem**

**Table no. (6.3)**  
**Mathematical averages and standard deviations of the visualizations of the research sample about the paragraphs of the variable of determining problem**

Paragraph	Mathematical average	Standard deviation	Rank	Level for average
Employees can categorize the problems they face according to their importance	3.71	1.07	1	High
Employees can categorize the problems they face according to their amount	3.66	1.08	2	High
Employees can categorize the problems they face according to their complexity	3.58	1.09	3	High
<b>Total average</b>	<b>3.65</b>	<b>0.77</b>		<b>High</b>

Table no. (6.3) showed that the visualizations of the research sample about the paragraphs of the variable of determining problem were high, with a mathematical average (3.65), and standard deviation (0.77), as to the level of the paragraphs, the visualizations of the research sample were high. The table also indicates that the paragraph of "employees can categorize the problems they face according to their importance" came in the first rank with a mathematical average (3.71) and standard deviation (1.07), while the paragraph of " employees can categorize the problems they face according to their complexity " came in the last rank with a mathematical average (3.68) and standard deviation (1.09). The explanation of this is that the identifying and diagnosing of the problem is one of the first tasks in the administrative decision making process, to determine the nature of the situation that created the problem, as the effective decision making depends on the ability of the manager to obtain as much accurate data as possible and neutral information from its various sources, then determining the best ways to obtain them, then analyzing them accurately. This result can be explained as the

comparison process between the available alternatives and choosing the appropriate alternative according to

### Secondly: Visualizations of the research sample individuals about the dimension of choosing the optimal alternative

**Table no. (7.3)**

**Mathematical averages and standard deviations of the visualizations of the research sample about the paragraphs of the variable of choosing the optimal alternative**

Paragraph	Mathematical average	Standard deviation	Rank	Level for average
The employees in the company have the ability to determine the advantages of each alternative from the decision alternatives	3.56	0.99	3	High
The employees can predict the degree of risk of each alternative from the decision alternatives	3.64	1.01	2	High
The employees can choose the best and applicable alternative in decisions making process	3.66	1.00	1	High
<b>Total average</b>	<b>3.62</b>	<b>0.66</b>		<b>High</b>

Table no. (7.3) showed that the visualizations of the research sample about the paragraphs of the variable of choosing the optimal alternative were high, with a mathematical average (3.62), and standard deviation (0.66). The table also indicates that the paragraph of " The employees can choose the best and applicable alternative in decisions making process " came in the first rank with a mathematical average (3.66) and standard deviation (1.00), while the paragraph of " The employees in the company have the ability to determine the advantages of each alternative from the decision alternatives " came in the last rank with a mathematical average (3.56) and standard deviation (0.99). This result explains that the comparison between the available alternatives and choosing the appropriate alternative according to criteria and objective considerations on which the manager is based in the selection process to achieve the alternative that contributes to achieve the efficiency in decision making process.

### III: Visualizations of the research sample individuals about the dimension of observation and evaluation

**Table no. (8.3)**  
**Mathematical averages and standard deviations of the visualizations of the research sample about the paragraphs of the variable of observation and evaluation**

Paragraph	Mathematical average	Standard deviation	Rank	Level for average
Employees in the company can measure the effects of their decisions	3.79	0.97	2	High
Employees can detect the mistakes of decisions making process before they occur	3.82	1.02	1	High
Employees can form appropriate criterions to measure the performance of their decisions	3.64	1.22	3	High
<b>Total average</b>	<b>3.75</b>	<b>0.79</b>		<b>High</b>

Table no. (8.3) showed that the visualizations of the research sample about the paragraphs of the variable of observation and evaluation were high, with a mathematical average (3.75), and standard deviation (0.79). The table also indicates that the paragraph of " Employees can detect the mistakes of decisions making process before they occur " came in the first rank with a mathematical average (3.82) and standard deviation (1.02), while the paragraph of " Employees can form appropriate criterions to measure the performance of their decisions " came in the last rank with a mathematical average (3.64) and standard deviation (1.22). This result explains that the monitoring and observation process develops the ability of the decisions makers or their assistants to investigate accuracy and realism in the analysis during the implementation process which helps to discover the points of idleness and know the reasons and propose ways to treat them.

**Second topic: Testing of hypotheses**

**First main hypothesis: there is no important effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimensions of strategic thinking jointly and separately on the efficiency of decision making process.**

**Table no. (9.3)**  
**Influential relation between the dimensions of strategic thinking and decision making efficiency**

Model	Unstandard Coefficient		Standard Coefficient	T	Sig.
	B	Std. Error	Beta		
Constant	1.079	0.552	-	1.955	0.058
Strategic thinking	0.708	0.149	0.616	4.753	0.000

**Table no. (10.3)**  
**Analysis of the variance of strategic thinking and decision making efficiency**

Model	Sum Of Squares	Df	Mean Square	F	Sig.
Regression	4.800	1	4.800	22.588	0.000
Residual	7.862	37	0.212	-	-
Total	12.662	38	-	-	-

$R^2 = 0.379$

$R^2(\text{adj}) = 0.362$

Table no. (9.3) indicates that there is a moral influential relation between strategic thinking and decision making efficiency. Table no. (10.3) shows us the significance of the model of influence according to the analysis of variance that leads us to accept the first main hypothesis, as the value of  $f$  was 22.588 ( $f=22.588$ ) which calculated below a moral level (0.05) and degree of freedom (37.1). And it is larger than the tabular value, but the specification factor that expresses the ability of the independent variables jointly to interpret the attendant variable (decision making) is relatively low with the value ( $R^2 = 0.379$ ), and this means that (37.9%) from the independent variables explains the changes of the decision making efficiency.

From the previous, this requires rejecting the main hypothesis that provides for no effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimensions of strategic thinking jointly on the decision making efficiency inside the company. And accepting the alternate hypothesis that provides for an effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimensions of strategic thinking jointly on the decision making efficiency inside the company.

**First sub-hypothesis: there is no important effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimensions of strategic thinking on determining the problem as one of the dimensions of decision making efficiency.**

**Table no. (11.3)**

**Results of the analysis of multiple regressions to test the effect of independent variable (strategic thinking) on determining the problem as one of the dimensions of decision making efficiency**

Dimension	B	Standard error	Beta	Calculated value of (T)	Significance level of (T)
Abstract thinking	0.036	0.168	0.032	0.215	0.831
Diagnostic thinking	0.251	0.149	0.247	1.684	0.101
Schematic thinking	0.407	0.143	0.429	2.851*	0.007

\*with a statistical significance at the level ( $\alpha < 0.05$ )

The statistical results in the table no. (11.3), the observation of the coefficients of (Beta) and the testing of (T) show that the variable of schematic thinking has an effect on determining the problem as one of the dimensions of decision making efficiency, with the significance of the coefficient (Beta) of this variable, it also showed in the table with the ascending of the calculated value of (t) from its tabular value at the significance level ( $\alpha < 0.05$ ). As the calculated value of (t) was (2.851). The table also shows that the variables of (abstract thinking and diagnostic thinking) have no effect on determining problem as one of the dimensions of decision making efficiency, with the significance of the coefficient (Beta) of this variables, and

with the significance descent of the calculated value of (t) from its tabular value at the significance level ( $\alpha < 0.05$ ).

From the previous we see that: rejection of the zero hypothesis which stipulates that there is no effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimension of schematic thinking on determining problem as one of the dimensions of decision making efficiency. And accepting the alternative hypothesis which stipulates that there is an effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimension of schematic thinking on determining problem as one of the dimensions of decision making efficiency. Also accepting the zero hypothesis which stipulates that there is no effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimensions of abstract thinking and diagnostic thinking on determining problem as one of the dimensions of decision making efficiency.

**Second sub-hypothesis: there is no important effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimensions of strategic thinking on choosing the optimal alternative as one of the dimensions of decision making efficiency.**

**Table no. (12.3)**  
**Results of the analysis of multiple regressions to test the effect of independent variable (strategic thinking) on choosing the optimal alternative as one of the dimensions of decision making efficiency**

<b>Dimension</b>	<b>B</b>	<b>Standard error</b>	<b>Beta</b>	<b>Calculated value of (T)</b>	<b>Significance level of (T)</b>
Abstract thinking	0.209	0.132	0.237	1.587	0.121
Diagnostic thinking	0.141	0.117	0.177	1.206	0.236
Schematic thinking	0.251	0.112	0.338	2.241*	0.031

**\*with a statistical significance at the level ( $\alpha < 0.05$ )**

The statistical results in the table no. (12.3), the observation of the coefficients of (Beta) and the testing of (T) show that the sub-variable (schematic thinking) has an effect on choosing the optimal alternative as one of the dimensions of decision making efficiency, with the significance of the coefficient (Beta) of this variable, it also showed in the table with the ascending of the calculated value of (t) from its tabular value at the significance level ( $\alpha < 0.05$ ). As the calculated value of (t) was (2.241). The table also shows that the variables of (abstract thinking and diagnostic thinking) have no effect on determining problem as one of the dimensions of decision making efficiency, with the significance of the coefficient (Beta) of this variables, and with the significance descent of the calculated value of (t) from its tabular value at the significance level ( $\alpha < 0.05$ ).

From the previous we see that: rejection of the zero hypothesis which stipulates that there is no effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimension of schematic thinking on choosing the optimal alternative. And accepting the alternative hypothesis which stipulates that there is an effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimension of schematic thinking on choosing the optimal alternative. Also accepting the zero hypothesis which stipulates that there is no effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimensions of abstract thinking and diagnostic thinking on choosing the optimal alternative as one of the dimensions of decision making efficiency.

**Third sub-hypothesis: there is no important effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimensions of strategic thinking on observation and evaluation as one of the dimensions of decision making efficiency.**

**Table no. (13.3)**

**Results of the analysis of multiple regressions to test the effect of independent variable (strategic thinking) on observation and evaluation as one of the dimensions of decision making efficiency**

Dimension	B	Standard error	Beta	Calculated value of (T)	Significance level of (T)
Abstract thinking	0.246	0.174	0.211	1.418	0.165
Diagnostic thinking	0.223	0.154	0.212	1.446	0.157
Schematic thinking	0.337	0.147	0.343	2.286*	0.028

**\*with a statistical significance at the level ( $\alpha < 0.05$ )**

The statistical results in the table no. (13.3), the observation of the coefficients of (Beta) and the testing of (T) show that the sub-variable (schematic thinking) has an effect on observation and evaluation as one of the dimensions of decision making efficiency, with the significance of the coefficient (Beta) of this variable, it also showed in the table with the ascending of the calculated value of (t) from its tabular value at the significance level ( $\alpha < 0.05$ ). As the calculated value of (t) was (2.286). The table also shows that the variables of (abstract thinking and diagnostic thinking) have no effect on observation and evaluation as one of the dimensions of decision making efficiency, with the significance of the coefficient (Beta) of this variables, and with the significance descent of the calculated value of (t) from its tabular value at the significance level ( $\alpha < 0.05$ ).

From the previous we see that: rejection of the zero hypothesis which stipulates that there is no effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimension of schematic thinking on observation and evaluation. And accepting the alternative hypothesis which stipulates that there is an effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimension of schematic thinking on observation and evaluation. Also accepting the zero hypothesis which stipulates that there is no effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimensions of abstract thinking and diagnostic thinking on observation and evaluation as one of the dimensions of decision making efficiency.

**Second main hypothesis: there are no differences with statistical significance at the significance level ( $\alpha > 0.05$ ) in decision making efficiency of the employees in Jordanian companies of insurance attributed to the functional and personal variables (gender, age, practical experience, scientific qualification).**

To test this hypothesis, One Way Anova used the visualizations of the research sample individuals about decision making efficiency attributed to the functional and personal variables (gender, age, practical experience, scientific qualification):

**Table no. (14.3)**

**One Way Anova of the visualizations of researched about the decision making efficiency according to the functional and personal variables (gender, age, practical experience, scientific qualification)**

Personal variable	Source of contrast	Squares total	Squares average	Value of (f)	Significance level
Gender	Between groups	2.281	0.143	0.558**	0.882
	Inside groups	5.617	0.255		
Age	Between groups	14.059	0.879	0.683**	0.781
	Inside groups	28.300	1.286		
scientific qualification	Between groups	11.642	0.728	1.494**	0.189
	Inside groups	10.717	0.487		
practical experience	Between groups	9.519	0.595	0.410**	0.964
	Inside groups	31.917	1.451		

**\*\*with no statistical significance at the significance level ( $\alpha < 0.05$ )**

The results of the table no. (14.3) of the visualizations of researched about the decision making efficiency according to the functional and personal variables indicate that there are no differences with statistical significance between gender, age, scientific qualification, practical experience and decision making efficiency with the descent significance of calculated value of (F) from its tabular value. This means accepting of the sub-hypothesis which sees that: there are no differences with statistical significance at the significance level ( $\alpha > 0.05$ ) in decision making efficiency of the employees in Jordanian companies of insurance attributed to the functional and personal variables (gender, age, practical experience, scientific qualification).

## CHAPTER IV

### Conclusion, discussion and recommendations

#### CONCLUSION

This research sought to know the effect of strategic thinking types on decision making process in Jordanian companies of insurance, and it resulted in an important effect with statistical significance at the significance level ( $\alpha < 0.05$ ) of the dimensions of strategic thinking (abstract thinking, diagnostic thinking, schematic thinking) on the decision making efficiency in Jordanian companies of insurance. As the dimensions of strategic thinking jointly explained as much as ( $R^2 = 37.9\%$ ) from the contrast in decision making efficiency. The research also resulted in no differences with statistical significance in decision making efficiency attributed to the functional and personal variables (gender, age, practical experience, scientific qualification).

#### DISCUSSION OF RESULTS

1. The research found that the visualizations of research sample individuals about strategic thinking level with its different dimensions were positive and moderate, as the mathematical average of the strategic thinking variable as a whole was (3.66) and with standard deviation (0.501). The dimension of (abstract thinking) came in the first rank



in terms of importance, as the mathematical average was (3.83). And the dimension of (schematic thinking) came in the last rank with a mathematical average (3.47). The previous results proved that the dimensions of strategic thinking (abstract thinking, diagnostic thinking, and schematic thinking) have been available in Jordanian companies of insurance and with a high degree.

2. The results showed that the visualizations of the research sample individuals about the dimensions of the attendant variable of research (decision making efficiency) were high, as the mathematical average was (3.67), and the dimension of (observation and evaluation) came in the first rank with a mathematical average (3.75), and the dimension of (choosing the optimal alternative) came in the third and last rank but with a high level as its mathematical average was (3.62). Such as this result is concrete and sensational, as it explains that organizations face renewed and changing challenges which require from the higher managements to adopt policies and strategies adapted to these challenges to achieve the goals of organization with a successful method. Because of the rapid and renewed change in the work environment, high management should expand a field of freedom for the employees in the different administrative levels to make the appropriate decisions without consulting the high management, with the exception of necessary cases or the decisive decisions, to present services to citizens efficiently and effectively. This research also explains that the dominant work climate in organizations is one of the motives for enhancing the efficiency of organizational decisions, as this climate characterized by the domination of the interaction and dialogue between individuals the existence of the cooperation and harmony between them and the management, providing opportunities for growth, development and achievement of individual ambitions and facilitating the ways and methods of work to make use of the energies and potential abilities of individuals and employees of organization to achieve the favor of the organization and individual together.
3. The results showed an effect with statistical significance at the significant level ( $\alpha < 0.05$ ) of the dimensions of strategic thinking jointly on the decision making efficiency in Jordanian companies of insurance.
4. The results showed no effect with statistical significance at the significant level ( $\alpha > 0.05$ ) on the decision making efficiency in Jordanian companies of insurance attributed to the functional and personal variables (gender, age, practical experience, scientific qualification).

### **RECOMMENDATIONS**

Based on the results of the research, it recommends with the following:

1. Organizations and authorities should be able to involve everyone in presenting visions and visualizations, and unifying efforts with organizations and civil society to achieve the common goals.
2. Spreading the culture of dialogue, participation, frankly, optimism and sheerness in the atmospheres of the organizations, and deepening the responsibility and self control.
3. Hiring the human resources, their energies, correct knowledge and motivating them to create and innovate, by supporting the creators, stimulating them, adopting their ideas, assigning them with works that shows their intellectual challenges and sharpen their spirit of creation, it also encourages them to get out of the typical specified thinking, to a diverse, original and new thinking, and changing the methods of work, its ways and procedures.
4. Senior management encourages employees to try new methods of work and showing the creative ideas and using it in work with the necessity for the management to be the example in adopting creation and innovation and work on coloring the work with something of challenge and outing of the ordinary.

5. Enhancing the mechanisms and methods of participation in decision making among employees of Jordanian companies of insurance with their different types, which can lead to increase their abilities and skills because of its positive effect on developing their personality and increasing their self growth, by organizing courses to develop the skills of employees and ensuring the feeling of safety and sense of stability which is positively reflected on the decision making efficiency.
6. Doing more researches about the dimensions of strategic thinking and decision making efficiency from another way to include dimensions broader than the dimensions of research because of the importance of the subject.

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# Globalization and Agricultural Productivity Paradigm: The Nigeria Perspective.

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## ABSTRACT

The research was carried out to provide empirical information on agricultural productivity in Nigeria with focus on the impact of globalization. This is necessitated on the agricultural revolution resulting from the elongated recession the nation is passing through. The study made use of annual time series data spanning from 1986 to 2015 of globalization proxied by foreign direct investment (FDI) to agriculture, degree of openness, foreign exchange rate and consumer price index to assess the impact of globalization on agricultural productivity proxied by the output of agriculture. The study adopted Error Correction Model to test for the short run relationship having employed Augmented Dickey Fuller and Phillips-Perron unit root tests to verify stationarity of the variables used. While bounds Autoregressive distributed lag testing approach was employed to account for the long run relationship of the explanatory variables on the dependent variables. The result of the data analysis indicated that foreign exchange, degree of openness and foreign direct investment were not statistically significant in influencing the favorable trend of agricultural productivity in Nigeria, thus, its growth potential. However, consumer price index impacted positively on agricultural productivity to a larger extent. The study concluded that globalization has no significant impact on the growth of agriculture productivity in Nigeria. The study thus recommended that government should demonstrate proactive will in redirecting economic policies that would make the economy to be agricultural driven system through aggressive diversification of the economy in order to key into global world system. This must be reflected in increased investment and FDI into agricultural sector of the economy..

**Keywords:** Globalization, Agricultural productivity, foreign exchange, Co-Integration, Error Correction.

## INTRODUCTION

The imperative of agriculture in an agrarian nation like Nigeria as one of the major means of recovering from the menace of economic recession is a subject of empirical investigation. To the extent that the implication of opening up of the economy,(globalization), on such a nation to the outside world cannot be overemphasized.

A globalized economy is expected to have higher comparative advantage in terms of wider market and patronage in relation to their non-globalized counterparts. However, Shuaib, Ekeria and Ogedengbe, 2015 posited that globalization is not without negative effects in spite of its positive effect and acceptance, most especially on developing nations of the world.

Literature has it that developing and emerging economies suffer significantly from the negative effects of globalization while the developed countries do not (Aluko, Akinola & Sola 2004, Clark 2000, Bhagwati 2004, Adams 2004, Adenikinju 2006, Akinmulegun, 2011, Shuaib, Ekeria and Ogedengbe, 2015, Konyeaso, 2016, Felix, 2016). This school of thought argued from the perspective that the developed countries benefit more from globalization due to their

ability to diversify, employ good managerial skills and advanced technology, good structural changes, high degree of information communication technology, etc while the less developed economies (Nigeria inclusive), suffered from globalization due to their poor technological know-how, weak diversification process, political instability, corruption, lack of political will, mismanagement to mention but few. The reasons that actually reduced the strength and capacity of these countries to successfully compete in the global trend.

Nigeria, a nation that has been a protectionist system opened up her border fully to the world in 1986 with the adoption of Structural Adjustment Programme (SAP)(Olowe & Ibrahim, 2015, Agu, Achebe & Maduagwu, 2016). The goal of which was to improve the country foreign investment climate by eliminating trade and investment regulations, boost foreign exchange earnings by promoting exports, improve production base, reduce government deficits through cuts in spending and to promote economic growth. It is worthy to note that agriculture has been a main stay of Nigeria economy before the adoption of SAP, providing a good proportion of the nation's foreign exchange inflow and Gross Domestic Product. Thus, after the adoption of SAP, the sector continue to experience consistence growth until dramatic shift of focus to crude oil exploration and the attendant oil boom, hence, agriculture was displaced as the nation's main foreign exchange earnings; consequently, agriculture contribution to the nation's GDP declined to 34 per cent, food insecurity and poverty also set in (Lawal, 2011).

However, the importance of agricultural productivity growth potential as manifested in the developed nations of the world cannot be overemphasized. This assertion is supported in the literature (Mcmillian and Rodrick, 2011; Johnston and Mellor,1961), concluding that economic policy ought to favour agriculture as a vehicle for starting growth in poor economies such as those of sub-Saharan Africa. Thus, the nation Nigeria embarked on Agricultural Revolution as one of the major steps of recovering from economic recession that was noticed in 2009 with the mortgage crisis in the USA which eventually started in 2014 as a full blown menace.

Therefore, the need to turn the searchlight on globalization and all that accompanied it and examine its impact on the agricultural productivity in Nigeria. Many existing studies' views on globalization had been on the aggregate economy and lacked disaggregated stance. It is on this basis that this study examines the impact that globalization has on agricultural productivity in Nigeria within the period of 1986 to 2015 by looking at components of globalization like Foreign Direct Investment, Trade Openness, and Foreign Exchange Rate and consumer price inflation on the agricultural productivity in Nigeria.

### **LITERATURE REVIEW**

The conceptualization of the terms; agriculture and globalization with all its components had been a subject of discuss among authors over the years, with diverse approaches to the subject matter,{Akinmulegun, (2011); Moughele and Ismaila (2014); Udeh and Nwanchukwu (2015)}. However, the theories underlying these subjects have always found common base.

There are several theories of globalization which clearly explain the concept of globalization; however, this study will only review three out of such theories. The Realist, the Liberalism and the Marxist theories. Realists explain that globalization has not altered or changed the territorial division of the world, that is, nation-states, although the increased interconnectedness between economies and societies might make them more dependent on one another. Meaning, globalization poses threat to our social, economic and cultural lives but it does not surpass the international political system. Liberalists' perspective of globalization is a product or an end result of a long-running transformation of world politics. Liberals particularly focus upon the factor of revolution in technology, information and

communications represented by globalization and suitable legal and institutional arrangement to enable markets and liberal democracy to spread on trans-world scale. This school is of the view that interconnectedness between societies for economic and technological advancements results in new pattern of world political relations. Marxists viewed globalization as nothing new but the latest version of international capitalism. To them it is a western-led phenomenon which basically promotes the development of international capitalism.

Conceptually, globalization is defined by Islam (1999) as the intensification of cross border trade and increased financial and Foreign Direct Investment (FDI) flows among nations, promoted by rapid advances in trade and liberalization of communication and information technology. Kwanashie (1998), described the phenomena as the process of integrating economic decision making all across the world and creating a global market place in which increasingly all nations are forced to participate. Thus, globalization entails a borderless world and ensures increased international trade and capital flows among countries of the world. Globalization is seen as an important factor that influences macroeconomics variables in an economy (Agu, Achebe & Maduawu (2016). It is described as the rapid rise and ease of movement of humans, products and capital through many international boundaries. It is aimed at eliminating racial, ethnic, gender and all other forms of discrimination as well creating a “global free market” by removing all boundaries through accelerated relocation and reorganization of the production process (Acker, 2004). Described as a means of high rate of interdependence and inter-linkages among nations of the world occasioned by high speed economic, social, political, technological and cultural interactions (Eboh and Ogbu, 2010).

According to Keohane and Nye (2000), the thick countries otherwise known as developed countries are the most influential and neck deep in the globalization process, as they are economically advanced world powers while the thin ones are the less influential African and Asian countries who only partially participate in the globalization process. The relationship between the thick and thin countries however, is said to be “mutual” to the extent that the thick ones rely heavily on the labour, raw materials and even market of the thin ones while the thin ones in turn rely heavily on the manufactured products, technology and capital of the thick ones (Olatoyegun, 2005). Thus, benefits and challenges abound in globalization stance, nonetheless, developing countries have been enormously faced with challenges. According to the World Development Indicators (2007), “globalization has created opportunities and challenges for developing countries. While the experience of China, India, Indonesia, Thailand and some other countries have demonstrated that integration into the global economy is necessary for long term growth and poverty reduction, concerns have been expressed over equality of opportunity and unequal distribution of benefits”. This is so to the extent that globalization can undermine industrial growth in developing nations, Nigeria inclusive, as their industries are expose to global competitiveness whose corporations are better financed with advanced technology and markets. Foreign direct investment and growth in international trade have always been the forces of globalization and have united the world, enhancing trade relations between countries with increased dependency ratio among nations of the world, thereby making the world to become a global village. This allows for a greater capital flows with tremendous effect on the trade balance of the countries of the world.

### **AGRICULTURE PRODUCTIVITY PARADIGM IN NIGERIA**

Agricultural productivity as described by FAO, (2015) is the ratio of the index of total agricultural output to the index of total input used in farm production. Hanumanthapa (2014), conceptualized agricultural productivity as the varying relationship between agricultural output and one of the major inputs, such as land, labour, capital and other complementary factors. It measures the efficiency with which inputs are utilized in production, other things

being equal. The measures of productivity in agriculture as cited by Udeh and Nwachukwu (2015) are agricultural gross domestic production (output), aggregate index of agricultural production, output of major agricultural commodities (staples) and other output of major agricultural commodities excluding staples.

According to FAO, (2015), these measures of productivity are subdivided into partial or total measures. Partial measures are the amount of output per unit of a particular input. Commonly used partial measures are yield (output per unit of land), labour productivity (output per economically active person (EAP) or per agricultural person-hour). Yield is commonly used to assess the success of new production practices or technology. Labour productivity is often used as a means of comparing the productivity of sectors within or across economies. It is also used as an indicator of rural welfare or living standards since it reflects the ability to acquire income through sale of agricultural goods or agricultural production. Nonetheless, partial measures of productivity can be misleading, as there is no clear indicator of why they change. For example, land and labour productivity may rise due to increased use of tractors, fertilizer or output mix (move to high value crops). To account for at least some of those problems, a total measure of productivity, the Total Factor Productivity (TFP) was devised. TFP is the ratio of an index of agricultural output to an index of agricultural inputs. The index of agricultural output is a value-weighted sum of all agricultural production components. These components generally include land, labour, physical capital, livestock and chemical fertilizers and pesticides. Growth in TFP is referred to as the Solow residual. It is generally considered as a measure of technological progress that can be attributed to changes in agricultural research and development (R&D), extension services, human capital development, such as education and physical, commercial infrastructure, as well as government policies and environmental degradation (Ahearn, Yee, Ball and Nehring, 1998). Change in TFP can also be due to unmeasured inputs or imperfectly measured inputs.

In Nigeria, there were pre-SAP and post-SAP policies embarked upon by the government in the quest to increasing agricultural productivity in order to boost the sector. Pre-SAP policies include the National Accelerated Food Production Programme of 1972, Operation Feed the Nation in 1976, River Basin and Green Revolution Programme of 1980, while some of the post-SAP policies include NEEDS, Comprehensive African agricultural development programme, National Food Security to mention but a few. Despite all these policies, agricultural sector has not been able to achieve the expected result, as food supply has not kept pace with demand (Udeh and Nwachukwu, 2015; Diao, Hazell and Thurlow, 2010). The resultant low productivity was adjudged to have been caused by certain constraints. These constraints in the words of Ogbe (1984) as cited by Imahe and Alabi (2005), include massive rural-urban migration caused by the advent of oil and the concomitant boom in the construction and services sectors. In the same vein, Ojo, (1994) asserted that the Nigeria agricultural sector was indeed rendered less competitive over time through the over-valued currency, inappropriate pricing policies and dearth of farm labour caused by the migration of the youth to the urban centers in pursuit of wage employment in the non-agricultural sectors. In addition, there is glaring evidence of youths living in rural areas resisting any encouragement to take farming as a profession. This may hitherto be as a result of undervalued agricultural products in the economy. A situation whereby the producers have little or no input in the determination of the price of their products.

### **EMPIRICAL REVIEW**

Empirical findings on the subject of the impact of globalization on agricultural productivity in Nigeria have been mixed and not direct, with majority of the findings showing insignificant contribution of globalization to the growth of agriculture sector in Nigeria( Anowor, Ukwani

and Ikeme, 2013; Ayodeji and Ying, 2013). More so, Okpopo, Ifelunini and Osuyali, (2014) examined the impact of globalization as a potent driver of economic growth in Nigeria, employing data from 1970 -2011 and Ordinary Least Square regression as an instrument of analysis. They consequently made use of non-oil (Agricultural and Manufacturing export) as reference point. The study found that globalization had no significant impact on non-oil export, agriculture inclusive, within the period of study.

With the use of co-integration and Error Correction Mechanism (ECM) to determine the relationship between globalization components; FDI, its components and economic growth, Moughele and Ismaila (2014) in their study found that continuous inflow of foreign direct investment in mining and quarrying, telecommunication, building and construction, trading and business and agricultural sectors have a robust impact on Nigeria's economic growth. Olagunju, Adebayo and Oguntegbe (2015) examined the impact of foreign trade on the growth of agricultural output. The study used annual time series data from 1978 to 2008. The correlation analysis showed that there is existence of strong relationship between the variables. However, the results also revealed that petroleum export, food import and population growth rate were the significant factors that influence the growth of agricultural output in Nigeria. This would not be unconnected with the mono-product nature of the Nigeria economy and the fact of the overdependence on imported goods by the populace. Usenobong, (2015) in his study found that globalization has a positive impact on Agriculture, including other variables such as Manufacturing and International trade using error correction framework. Udah and Nwanchukwu, (2015) on the determinants of agricultural growth in Nigeria revealed that agricultural labour, infrastructural development and total factor productivity had positive relationship with agricultural GDP (AGR); thus, they were the factors that contributed majorly to Agricultural GDP in Nigeria.

Kabir (2015) examined the impact of foreign direct investment on agricultural output in Nigeria from 1970-2012 using an autoregressive distributed lag (ARDL) model. Results from the analysis revealed that Foreign Direct Investment, Government expenditure and Exchange rates in the period under study have significant positive effects on Agricultural output, whereas Interest rates and Inflation variables have negative effect on Agricultural output. This corroborates the findings of previous authors on the subject matter (Moughele and Ismaila, (2014); Olagunju, *e tal* (2015) and Usenobong, (2015) ). Yusuff, Afolayan and Adamu (2015) examined the level of foreign direct investment on agricultural sector and the consequential effect on the contribution of the sector to the country's Gross Domestic Product (GDP). The result obtained showed that the inflow of FDI to agricultural sector does not follow a regular pattern and the sector's contribution to GDP is in direct relationship with the inflow of FDI. This is so to the extent that the impact of FDI on Agriculture would only be limited to the amount of the FDI that is channeled to the sector. The study of Nahanga and Becvarova (2016) that investigates the impact of agricultural exports on economic growth in Nigeria using Vector-Autoregressive model with all its dynamic components supported the hypothesis that agricultural exports- led economic growth in Nigeria. The results, however, showed an inverse relationship between the agricultural degree of openness and economic growth in the country. In their fixed-effect model, Edeme, Ifeluni and Nkalu (2016) showed that agricultural exports have not impacted significantly on the economic growth of ECOWAS countries such as Côte d'Ivoire and Nigeria with respect to the Republic of Benin, which is the selected baseline.

### **ANALYTICAL FRAMEWORK**

This study used the autoregressive distributed lag (ARDL) bound testing procedure to examine the co-integration (long run) relationship between agricultural growth, degree of openness, foreign exchange rate, foreign direct investment and consumer price index as well as the short



run dynamics. The bound test is basically computed based on an estimated error correction version of autoregressive distributed lag (ARDL) model, by Ordinary Least Square (OLS) estimator (Pesaran and Shin, 2001). The bound testing procedure was chosen over other approaches to co-integration due to the fact that the bound testing procedure does not require that the variables used in the study must be integrated of the same order unlike other techniques, like the Johansen co-integration approach. It is applicable irrespective of whether the regressors in the model are purely  $I(0)$ , purely  $I(1)$  or mutually co-integrated. The bounds testing approach is suitable for small or finite sampling data, unlike other conventional co-integration approach. Its suitability for small sample study is worth noting given that the sample period of this study is limited to 30 years. The bound test in addition allows the co-integration relationship to be estimated by OLS once the lag order of the model is identified unlike other multivariate co-integration methods and the long and short run parameters of the model can be estimated simultaneously.

An F-test of the joint significance of the coefficients of the lagged levels of the variables was used to test the hypothesis of no co-integration among the variables against the presence of co-integration among the variables. The null hypothesis of no co-integration between agricultural growth, degree of openness, foreign exchange rate, foreign direct investment and consumer price index can be given as:

$$H_0: \varphi_1 = \varphi_2 = \varphi_3 = \varphi_4 = \varphi_5$$

The F-test has a nonstandard distribution irrespective of whether the variables are  $1(0)$  or  $1(1)$ . Pesaran *et al.*, (2001) put forward two sets of adjusted critical values that provide the lower and upper bounds used for inference. One set assumes that all variables are  $1(0)$  and the other assumes that they are all  $1(1)$ . If the computed F-statistics falls above the upper bound critical value, then the null hypothesis of no co-integration is rejected, and otherwise, if it falls below the lower bound. Finally, if it falls between the lower bound and upper bound, then the result would be inconclusive. The optimal lag length for the specified ARDL model was determined based on the Akaike Information Criterion (AIC).

**MODEL SPECIFICATION**

$$\text{AgricG} = f(\text{DOO}, \text{FEX}, \text{FDI}, \text{CPI}) \text{-----Eq1}$$

The explicit form of equation 1 is stated as

$$\text{AgricG}_t = \alpha + \alpha_1 \sum \text{DOO}_t + \alpha_2 \sum \text{FEX}_t + \alpha_3 \sum \text{FDI}_t + \alpha_4 \sum \text{CPI}_t + \epsilon_i \text{-----Eq2}$$

Following Pesaran *et al.*, (2001), the ARDL model specification of equation (2) is expressed as restricted error correction model (RECM) to test for co-integration between the variables under study:

$$\begin{aligned} & \text{AGRIC}_t \\ & = \varphi_0 + \sum_{i=1}^p \varphi_1 \Delta \text{LogAGRIC}_{t-1} + \sum_{i=0}^p \varphi_2 \Delta \text{LogDOO}_{t-i} + \sum_{i=0}^p \varphi_3 \Delta \text{LogFEX}_{t-i} + \sum_{i=0}^p \varphi_4 \Delta \text{LogFDI}_{t-i} \\ & + \sum_{i=0}^p \varphi_5 \Delta \text{LogCPI}_{t-i} + \beta_1 \text{LogAGRIC}_{t-1} + \beta_2 \text{LogDOO}_{t-1} + \beta_3 \text{LogFEX}_{t-1} + \beta_4 \text{LogFDI}_{t-1} \\ & + \beta_5 \text{LogCPI}_{t-1} \\ & + \mu_t \text{-----Eq3} \end{aligned}$$

Once co-integration is established, the long run relationship is estimated using the conditional ARDL model specified as:

$$\text{LogAGRIC}_t = \varphi_0 + \beta_1 \text{LogAGRIC}_{t-1} + \beta_2 \text{LogDOO}_{t-1} + \beta_3 \text{LogFEX}_{t-1} + \beta_4 \text{LogFDI}_{t-1} + \beta_5 \text{LogCPI}_{t-1} + \mu_t \dots \dots \dots 4$$

The short run dynamic relationship is estimated using an error correction model specified as:

$$\Delta \text{LogAGRIC}_t = \varphi_0 + \sum_{i=1}^p \varphi_1 \Delta \text{LogAGRIC}_{t-i} + \sum_{i=0}^p \varphi_2 \Delta \text{LogDOO}_{t-i} + \sum_{i=0}^p \varphi_3 \Delta \text{LogFEX}_{t-i} + \sum_{i=0}^p \varphi_4 \Delta \text{LogFDI}_{t-i} + \sum_{i=0}^p \varphi_5 \Delta \text{LogCPI}_{t-i} + \delta \text{ecm}_{t-1} + \mu_t \dots \dots \dots 5$$

**DATA ANALYSIS AND INTERPRETATION**

**Table 1: Unit root test**

Variables	Augmented Dickey-Fuller Test Statistics	Phillips-Perron Test Statistics	Order of Integration	max No. of Lags
LogAGRIC	-3.406510	-3.275620	I(1)	7
LogDOO	-5.173259	-10.17032	I(1)	7
LogFEX	-5.392216	-5.478611	I(1)	7
LogFDI	-6.712401	-7.848519	I(1)	7
logCPI	-4.436928	-7.450439	I(2)	7

**Source: Author computation using Eviews 9.5**

The unit root test was carried out using Augmented Dickey Fuller (ADF) unit root test and Phillips-Perron (PP) unit root test. The result of the ADF test and PP test as shown in Table 1, indicated that AGRIC, DOO, FEX and FDI were integrated of order one while CPI was integrated of order two. Therefore, the variables are not integrated of the same order and this justifies the use of bounds approach to co-integration over other conventional approaches that require the variables to be integrated of the same order.

**ARDL Bounds Test for Co-Integration**

**Table 2: ARDL Bounds Test for Co-integration**

Critical value	Lower bound value	Upper bound value
5%	2.56	3.49
10%	2.20	3.09
Computed F-statistic: $F_{\text{LogAGRIC}} = (\text{LogDOO}, \text{LogFEX}, \text{LogFDI}, \text{LogCPI}) = 3.46$		

**Note:** Critical values are cited from Pesaran et al., (2001), Table CI (iii), Case 2: restricted intercept no trend for k = 4

**Source: Author computation using E-views 9.5**

The computed F-statistic,  $F_{\text{LogAGRIC}}(\text{LogDOO}, \text{LogFEX}, \text{LogFDI}, \text{LogCPI})$  as shown on Table 2 is equal to 3.49. The value is above the upper bounds of the critical value of 3.09 at 10% level of significance. This implies that there is co-integration (long run relationship) between agricultural growth, degree of openness, foreign exchange rate, foreign direct investment and consumer price index, and therefore, the null hypothesis of no co-integration between the variables is rejected.

## Estimated Long Run Relationship

**Table 3: Estimated Long Run Coefficients using the ARDL Approach**  
**Dependent variable: LogAGRIC**

Regressor	Coefficient	Standard Error	t-ratio	Prob.
LogAGRIC(-1)*	0.474062	0.149597	3.168917	0.0056
LogDOO**	-0.121012	0.107274	-1.128069	0.2750
LogFEX	-0.033763	0.092061	-0.366741	0.7183
LogFEX(-1)	0.041735	0.106885	0.390460	0.7010
LogFEX(-2)	0.207866	0.098830	2.103260	0.0506
LogFDI	0.059530	0.064207	0.927154	0.3668
LogFDI(-1)	0.032052	0.064233	0.499001	0.6242
LogFDI(-2)	0.105537	0.059151	1.784203	0.0922
LogCPI	0.853017	0.299284	2.850192	0.0111
LogCPI(-1)	-0.306097	0.271920	-1.125688	0.2759
Constant	1.905751	0.609230	3.128131	0.0061

N.B: \*p<0.05, \*\*p<0.1

ARDL (1, 0, 2, 2, 1) selected based on Schwarz Bayesian Criterion

**Source: Author computation using E-views 9.5**

The result of the estimated coefficient of the long run relationship in Table 3 indicates that agricultural growth has a positive and significant influence in terms of its productivity when lagged by one period. The estimated coefficient of the agricultural growth (0.4741) implies that 5% increase in agricultural growth will add to its productivity increase by approximately 47.41%, all things being equal. Degree of openness and foreign exchange at current period has a negative relationship and not statistically significant with agricultural output. This is not unexpected as it depicts the negative effect of globalization on agriculture in Nigeria. To the extent that Nigerian agricultural products were not being traded on international arena during the study period. As Nigerian trade was dominated by service and oil, thus, reflecting in the unstable, undulating and unfriendly foreign exchange regime. Also, foreign exchange when lagged by one and two periods has no statistically significant relationship with agricultural output. This is also similar in the case of foreign direct investment when lagged by one and two periods and at current period as well. Consumer price index at current period has a positive and significant relationship with agricultural growth but when lagged at one period revealed a negative and not statistically significant with agricultural growth. This implies that 5% increase in consumer price index will positively influence agricultural growth by approximately 85.30%.

**Table 4: Results of the ARDL Short-run Relationship**  
**Dependent variable: LogAGRIC**

Regressor	coefficient	Standard Error	t-ratio	Prob.
D(LogFEX)	-0.033763	0.066236	-0.509731	0.6168
D(LogFEX(-1))	-0.207866	0.077778	-2.672566	0.0161
D(logFDI)	0.059530	0.038106	1.562209	0.1367
D(LogFDI(-1))	-0.105537	0.047928	-2.202003	0.0418
D(logCPI)	0.853017	0.112109	7.608808	0.0000
ECM(-1)*	-0.525938	0.101413	-5.186116	0.0001

R-squared = 0.731577

Adjusted R-squared = 0.670572

S.E of Regression = 0.100196

Residual Sum of Square = 0.220861

Log-Likelihood = 28.06367

DW-statistic = 2.386061

Akaike Info-Criterion = -1.575976

Schwartz Bayesian Criterion = -1.290504

F-stat. F (4, 28) = 687.1638 (0.0000)

N.B: \*p&lt;0.05, \*\*p&lt;0.1

ARDL (1, 0, 2, 2, 1) selected based on Schwarz Bayesian Criterion

**Source: Author computation using Eviews 9.5**

The results of the short run dynamic coefficient associated with the long run relationships obtained from the error correction model are shown in Table 4. The estimated error correction coefficient of -0.5259 (0.0000) is highly significant, has the correct sign, and imply a fairly high speed of adjustment to equilibrium after a shock. Approximately 53% of disequilibria form the previous year's shock coverage back to the long run equilibrium in the current year. The value of Durbin-Watson test is 2.386061 which can be approximated to 2, which implies that there is no problem of serial correlation of the residuals. The value of R<sup>2</sup> is 0.7316, implying that approximately 73.16% of the all changes in the dependent variable are brought about by the changes in the explanatory variables.

### CONCLUSION AND RECOMMENDATIONS

The assessment of the impact of globalization on agriculture productivity in Nigeria is highly imperative most especially in this period of agricultural revolution in the nation. The study finds a support to the view that globalization has not significantly impact the agricultural productivity in Nigeria because of the low inflows of foreign direct investment to the agricultural sector, high effect of exchange rate instability on the export prices of the agriculture products and huge import of agricultural products which are substitute to what is been produced in the country. Consumer price index out of the explanatory variables is highly significant as it contributed to agricultural productivity because the huge population of the country depends on consumption of crops from agriculture. Due to this fact, the study concludes that globalization has not contributed to the growth of agricultural sector as it does to other sectors in Nigeria such as service industry and manufacturing industry. This is supported by Okpopo, *et al* (2014), Ayodeji *et al*, (2013), Kabir, (2015), Anowor, *et al*, (2013). The study recommends that government should diversify the economy from crude oil production by encouraging more investment into agricultural sector which has been contributing to the growth of the economy in terms of employment generation, poverty reduction, food availability, raw materials for the industrial production and foreign exchange earnings to the economy. More importantly, there is need to canvass for increase in direct investment to agricultural sector in terms of capital inflows and high technology for agricultural production in order to boost the productivity of agricultural sector and finally, government should formulate and implement policy that will protect the country from being a dumping ground, especially on the agricultural produce that Nigeria can comparatively produce so as to encourage farmers and more people into the agricultural sector.

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## Analysis Unit Cost In Mild Head Injury Patient With Activity Based Costing Method At The Hospital In Yogyakarta

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### ABSTRACT

**Background:** The system used by the government to payment of tariff claim to hospital is by using INA-CBG's system (*Indonesian Case Based Groups*). The implementation of INA-CBG's system by the government make hospitals need to analyze expenditure cost in patient treatment, and take effort to effectively reduce cost expended, one of those is by using clinical pathway. Panembahan Senopati Bantul hospital has never conducted a cost evaluation based on clinical pathway for mild head injury, only in the case of appendicitis has been evaluated based on clinical pathway and compared with INA-CBG tariff obtained positive difference, the costs incurred by Hospitals are lower compared to INA-CBG "s tariff claims. One of the cost calculations in the hospital, by using analysis of unit cost. **Research Objective:** To analyzed the unit cost in mild head injury patient with Activity Based Costing method in Panembahan Senopati Bantul hospital. **Method:** This research did in Panembahan Senopati Bantul hospital. This research was kind of quantitative descriptive research. The subject of this research is chief financial officer, Surgical Specialist, Head of Ward Melati, pharmacy officer, medic record officer and mild head injury patient. Data analysis method used was *Activity-Based Costing (ABC)*. **Result:** Unit cost calculation on inpatients with head injury diagnosis by Activity Based Costing method at Panembahan Senopati Bantul hospital obtained total cost as much Rp.2,301,989.30. Unit cost with ABC method got difference between unit cost with real cost according to policy applied in RSUD Panembahan Senopati Bantul with difference of cost equal to Rp. 84.357,70. Unit cost with ABC method got difference between unit cost with INA CBG's tariff which set by the government with difference of cost equal to Rp.146.810,70. **Conclusion:** *Unit cost* in mild head injury patients with ABC method in Panembahan Senopati Bantul hospital obtained lower cost than the real cost and INA CBG's tariff.

**Keywords:** Activity-Based Costing (ABC), Unit Cost, Mild head injury

### INTRODUCTION

Increasing public demand for services in the health sector requires hospitals to always improve their human resource capacity so as to provide quality and professional services. These demands are both goals and motivations to provide health services in hospitals. On the other hand, the availability of government resources and subsidies aimed at financing public health services is increasingly limited.<sup>1</sup>

The Center for Financing and Health Insurance (2012) through its official website states that the increasing health costs make difficult for people to access the health services they need. This situation mainly occurs in circumstances where health financing should be borne (out of pocket) in the cash payment service system (fee for service). This increase in health costs is caused by the application of advanced technology, the character of "supply induced demand" in

health services, and the pattern of direct cash payments to health providers, chronic and degenerative diseases, and inflation.<sup>2</sup>

On January 1, 2014 the government began implementing the National Health Insurance System (JKN) which began to change the health payment system initially fee for service into a prospective system known casemix (case based payment) Indonesia Case Based Group's (INA-CBG) system in under the Social Security Administering Body (BPJS). Case Base Groups (CBG's) are in principle the same as the Group's Diagnosis Related (DRG's) which is a system of rewarding health care services to health care providers defined by the classification of disease diagnoses as an effort to control costs without excluding quality health services, so that the health services provided are effective and efficient.<sup>3</sup>

The change in the prevailing system makes the hospital management department analyze the costs of the patient care, and makes efforts to effectively reduce costs effectively by using clinical pathway guidelines to treat patients.

Head injury is a mechanical trauma to the head either directly or indirectly causing impaired neurological functioning ie physical, cognitive, psychosocial, temporary or permanent psychotherapy.<sup>4</sup> The incidence of head injuries in the United States (Advance Life Trauma Support (ATLS), 2004) annually reaches 500,000 cases where 10% die, 80% mild head injury (CKR), 10% moderate head injury (CKS), and 10% severe head injury (CKB).<sup>5</sup> The Defense Centers of Excellence (2012) study showed more than 244,000 people experienced head trauma, 77% of whom had mild head trauma.<sup>6</sup>

One of the hospitals in Jakarta, Mangunkusumo Hospital has a CKR incidence rate of 60% -70% of patients, 15% -20% CKS, and 10% CKB. The highest mortality rate of 35% - 50% due to CKB and 5% -10% CKS.<sup>4</sup> In addition Indonesia is also ranked first incident head injury caused by traffic accidents of 33.2%. According to data from Basic Health Research (Riskesmas) 2007, 18.9% of traffic casualties suffered head injury.<sup>7</sup> Polda DIY data shows that in 2012 there were 1,548 incidents in Sleman, 1,420 in Bantul, 678 in Yogyakarta, 453 in Gunung Kidul and 323 in Kulon Progo.<sup>8</sup>

One of the existing hospitals in Bantul Regency is Panembahan Senopati Bantul General Hospital. In accordance with Decree of Minister of Health No.142/Menkes/SK/I/2007 concerning the improvement of Class of Panembahan Senopati Bantul from type C to type B Education was inaugurated on 31 January 2007. Number of minor head injured patients who undergo inpatient at Panembahan Senopati Bantul Hospital 2016 were found 119 cases.

Based on the clinical pathway at Panembahan Senopati Bantul Hospital, this hospital has never been evaluated for cost calculation based on clinical pathway for mild head injury, only in case of appendicitis has been evaluated based on clinical pathway and compared with INA-CBG's tariff got the positive difference, that is the cost incurred by the hospital is smaller compared with INA-CBG's tariff claim. One of the cost calculations that exist in the hospital, namely by using unit cost analysis (unit cost).

The first activity based costing tally (ABC) accounting system is, tracking the activity and then product costs. ABC (Activity Based Costing) is a financing based on production activity or service. ABC (Activity Based Costing) is an information system that identifies activities undertaken in the production process and tracks the costs of the activity.<sup>9</sup>



Many patients take advantage of BPJS health insurance to get inpatient treatment for mild cases of head injury. With the tariff set by the government, the hospital needs to make adjustments with the tariff. Therefore, we need to do cost analysis of mild head injury patient service in order to minimize the hospital's loss. Based on this background, the researcher was interested to conduct research entitled "Analysis of Unit Cost in Mild Head Injury Patient with Activity Based Costing Method in Panembahan Senopati Bantul Hospital".

On the basis of the background that has been described previously, then the formulation of the problems raised in this study are:

1. What is the unit cost of CKR patients calculated using Activity Based Costing (ABC) method at Panembahan Senopati Bantul Hospital?
2. Is there any difference between unit cost of CKR patient using Activity Based Costing (ABC) method with real cost in CKR patient at Panembahan Senopati Bantul Hospital?
3. Is there any gap/difference between unit cost of CKR patient by using Activity Based Costing method with INA CBG'S tariff in CKR patient at Panembahan Senopati Bantul Hospital?

### **RESEARCH METHOD**

The type of this research was descriptive by using quantitative approach. Cost data in this research was cost data in 2016 which was processed in accordance with unit cost calculation step by using Activity Based Costing (ABC) method.<sup>10</sup>

Subjects in this study were the chief financial officer, Surgical Doctor, Head of Melati Ward, pharmacy officer, medical record officer and Patient mild head injury. The object of this study were all activities that occurred in the care of inpatient class III with the diagnosis of mild head injury until the patient came home from the hospital.

The data analysis technique was done by taking primary data conducted by interview and observation, and secondary data obtained from clinical pathway of mild head injury patient and RSUD Panembahan Senopati Bantul Hospital record. While secondary data retrieval in this research was clinical pathway of mild head injury patient and also medical records of RSUD Panembahan Senopati Bantul.

### **RESULTS AND DISCUSSION**

According to Baker (1998) Unit cost calculation by Activity Based Costing method on Inpatient of Mild Head Injury in Panembahan Senopati Bantul Hospital used the following stages:<sup>11</sup>

**Determining activity centers related, cost and cost driver of each cost category.**

**Table 1. Center Activities in the Emergency Instalation Unit**

Activity Center	First Stage Cost Drivers	Second Stage Cost Drivers
Patients Administration	Time	Number of Patients come
Patients reception	Time	Number of Patients come
Early checkup of patients	Time	Number of Patients come
Checkup of patients by doctor	Time	Number of patients
Vital sign checkup	Time	Number of checkup
Writing patient's medical records	Time	Number of medical record submission
Prescription writing	Time	Number of prescription
Preparing and administering medications	Time	Number of activity
Installation of intra vein line	Time	Number of actions
ECG Check	Time	Number of checkup
Blood sampling	Time	Number of activity
Patient delivery to radiology for CT-Scan, and cranium RO	Time	Number of new patients
Installation of identity bracelet	Time	Number of activity
Patient delivery to the ward	Time	Number of activity
Provision of cover letter administration completion	Time	Jumlah aktivitas
Completion of the Surgical Polyclinic control letter	Time	Jumlah aktivitas
Take the patient home	Time	Jumlah aktivitas

**Tabel 2. Center Activity in Melati Ward Unit**

Activity Center	First Stage Cost Drivers	Second Stage Cost Drivers
Preparation of the room	Time	Number of preparation
Receive new patients	Time	Number of patients
The file handover	Time	Number of new patient
Orientation of the room	Time	Number of new patient
Assessment and risk interventions fall patients	Time	Number of new patient
Charging medical record (nursing care)	Time	Number of medical record submission
Preparing and administering medications	Time	Number of preparation and prescription
Drug injection	Time	Number of actions
Monitoring the general state and vital sign of the patient	Time	Number of activity
Explanation of the disease	Time	Number of activity
Release of infusion	Time	Number of activity
Completeness of patient home	Time	Number of activity
Provision of cover letter administration completion	Time	Number of activity
Completion of the Surgical Polyclinic control letter	Time	Number of activity
Take the patient home	Time	Number of activity

## Charging the direct costs expended on the Impatient Light Head Injury

**Table 3. Direct cost of IGD Unit**

Cost Category	Unit	Total Unit	Total
<b>Registration of IGD</b>	<b>Activity</b>	1	5.000
Examination of IGD doctor	Action	1	32.500
Cranium Rontgen	Action	1	90.000
Blood Complete	Action	1	44.000
EKG	Action	1	58.000
Head CT scan	Action	1	400.000
Medication of minor injuries	Action	1	26.500
O2	liter	3	33.000
Nasal O2 Adult	Biji	1	13.800
Ringer Lactate Infusion	Flb	1	8.223
Macro infusion set (01-64)	Pcs	1	11.966
Abocath no 16	Pcs	1	9.540
Hipafix 10 x 500	Pcs	2	448
Identity Bracelet	Pcs	1	2.090
Spuit 5 cc	Pcs	4	4.500
Citicolin Injection 250 mg	ampoule	1	16.040
Injection of Ranitidine 50 mg	ampoule	1	3.795
Injection Ketorolak 30 mg	ampoule	1	14.830
sterile handscoon no 7	Pcs	1	7.590
6x9 folding gauze	Sheet	2	1.100
Alcohol swab	Pcs	2	254
<b>Total Direct Cost</b>			<b>783.176</b>

**Tabel 4. Direct Cost of Melati Ward**

Cost Category	Unit	Total Unit	Total
Class III / day room rental fee	Activity	2	50.000
Visite Specialist Surgeon	Activity	2	70.000
Nutrition Accommodation	Feed	2	30.000
Nasal canul Adult	Pcs	1	12.000
Ringer Lactate Infusion	Flb	2	16.446
cefotaxim injection	ampoule	2	17.076
Injection of Ranitidine 50 mg	ampoule	2	37.950
sterile handscoon no 7	Pcs	1	7.590
6x9 folding gauze	sheet	2	1.100
Alcohol swab	Pcs	2	254
Spuit 5 cc	Pcs	1	1.125
Amoxicillin	Tab	15	3.480
Mefenamic acid 500 mg	Tab	10	1.730
<b>Total Direct Cost</b>			<b>248.751</b>

### Determine the indirect resource overhead cost

Jenis Biaya	Cost (Rp)
<b>Labour Related</b>	
Staff	25.709.053.905
<b>Equipment Related</b>	
Reduction cost of medical and non-medical equipment	8.396.763.583
<b>Space Related</b>	
Maintenance cost of equipment and building	1.715.213.104
Reduction cost of building	1.209.314.042
<b>Service Related</b>	
Cost of Electric, Water, and Telephone	1.682.866.460
Cost of Cleanliness	2.538.158.929
Cost of Office Stationery and Houseware	1.976.282.325
<b>Total</b>	<b>43.227.652.348</b>

**Tabel 5. The proportion of revenues of each unit**

Unit	Total of Earning year of 2016 <sup>(a)</sup>	(%) <sup>(c)</sup>	Cost (Rp) <sup>(d)</sup>
<b>Emergency departments</b>	2.685.161.652	3.61%	1.559.862.006,87
Outpatient	9.705.399.708	13.04%	5.638.053.208,18
<b>Inpatient</b>	22.176.373.342	29.80%	12.882.681.458,36
Central Surgical Installation	12.084.071.374	16.24%	7.019.869.291,89
Hemodialysis	8.946.097.333	12.02%	5.196.959.866,33
Electromedics	642.512.333	0.86%	373.247.762,18
Pharmacy	1.602.333.333	2.15%	930.826.226,85
Laboratory	11.769.413.703	15.82%	6.837.078.603,74
Radiology	2.811.378.352	3.78%	1.633.183.713,33
Nutrition	1.567.103.667	2.11%	910.360.636,44
Medical records	422.657.000	0.57%	245.529.573,89
<b>Total</b>	<b>74.412.501.798 <sup>(b)</sup></b>	<b>100.00%</b>	<b>43.227.652.348,05</b>

Info : (c=a:b\*100%), (d=c\*e), a=Number of Earning, b= Number of Earning, c=proportion (percent), d= each installation cost, e=total cost

1) IGD

Unit IGD get a charge of Rp.1.559.862.006,87. The total cost is then charged to all IGD patients. The total number of patients with IGD in 2016 is 23,711 patients, so for one patient will get the cost of indirect resource overhead cost of Rp. 65786,43. The division is done based on one-off activities conducted in the Emergency Installation Unit (IGD).

2) Melati Ward

Inpatient of Panembahan Senopati Bantul General Hospital received indirect resource overhead fee of Rp.12.882.681.458,36. One of the inpatient units in Panembahan Senopati Bantul Hospital is Mealti Ward. Melati ward is a class III ward and has a

number of beds as many as 27 of the total 297 beds contained in Panembahan Senopati Bantul Hospital. For indirect resource overhead calculation, Melati Ward get charge of Rp.1.171.152.859,85.

The cost of the overhead indirectly charged by the patient will be proportioned to impose the cost of indirect resource overhead per each day of care (LOS). Ward of Jasmine in 2016 has the number of day care for 5,642 hospital day, so for every day of care, then one patient gets the cost of indirect resource overhead cost equal to Rp.207.577,61.

### **Determine Direct Resource Overhead**

#### 1) IGD

The cost of direct resource overhead unit cost The emergency department obtained a fee of Rp.1.943.144.041,74. The total cost will then be charged to all IGD patients Panembahan Senopati Bantul Hospital in 2016 many as 23,711 patients, then for one patient will get the cost of direct resource overhead of Rp. 81.951,16.

#### 2) Melati Ward

The cost calculation of Direct Resource overhead of Melati ward unit in 2016 is Rp.1,174,933,723,71, which is then charged to all patients on the basis of loading the number of day care of Melati Ward unit during 2016 is 5,624 days. So one patient in the Melati ward unit gets a direct resource overhead cost of Rp. 208.247,74.

### **Determine overhead cost per activity**

#### 1) IGD

The cost of overhead per activity on the IGD unit is obtained indirect resource overhead cost of Rp. 65,786,43, and direct resource overhead costs amounting to Rp.81.951,16

#### 2) Melati Ward

The cost of overhead per activity on Melati ward unit was obtained indirect resource overhead cost of Rp. 207,577.61, and direct resource overhead costs of Rp.208.247,74.

### **Determine Activity Centers related to Patients Care for Mild Head Injuries contained in clinical pathways and charge overhead into each activity centers in the clinical pathway.**

#### 1) IGD

The cost of Indirect resource overhead in IGD unit which has been calculated based on activity in clinical pathway for diagnosis of CKR, the total cost obtained is Rp.65.786,43, while the cost of direct resource overhead on the IGD unit in total based on clinical pathway obtained cost calculation that is amounting to Rp.81.951,16

#### 2) Melati Ward

The indirect Resource Overhead cost calculation on Melati Ward as calculated based on activity in clinical pathway was obtained total cost Rp.560.258,01, while the cost of direct resource overhead based on activity in clinical pathway at Melati wards unit, obtained total cost of Rp.562.066,70

### Summing up the direct costs and overheads in the Light Head Injury Patient care in RSUD Panembahan Senopati Bantul.

Structure of Cost			Cost
<b>Direct Cost Diagnosis Light head injury</b>			
IGD		783.176	1.031.927,00
Bangsal Melati		248.751	
<i>Overhead Cost</i>	<i>Indirect Resource Overhead</i>	<i>Direct Resource Overhead</i>	<i>Total Overhead</i>
<i>Overhead Cost of IGD</i>	65,786.43	81,951.16	147,737.59
<i>Overhead Cost of Melati Ward</i>	560,258.01	562,066.70	1,122,324.71
Total Cost			2.301.989,30

The calculation of unit cost of inpatients with mild head injury at Panembahan Senopati Bantul Hospital with Activity Based Costing method was obtained total cost of Rp.2.301.989,30 with total direct cost of Rp. 1,031,927, and the total overhead cost is Rp.1.270.062,30.

### DISCUSSION

#### Direct Cost Charges in Unit Cost Calculation Diagnosis of Mild Head Injury

Direct costs are fees that can be charged directly to cost or product objects such as consumable costs, specialist medical services and laundry linens. Direct costing is not a generally accepted accounting procedure for external reporting purposes, as the exclusion of all overheads from inventory is not compliant with the definition of production cost.<sup>12</sup>

Based on the result of research, known that direct cost in calculation of unit cost of patient care with diagnosis of mild head injury at RSUD Panembahan Senopati Bantul is Rp. 1,031,927. The calculation of the direct costs consists of the cost of the IGD unit and the Melati Ward unit. In the Emergency Installation Unit (IGD), the total direct cost of Rp 783,176 consists of supporting costs of Rp 618,500 and the cost of medicines, consumables of Rp 127,176, while the direct cost of Melati ward unit is Rp248.751. Direct cost calculations for patients with head injury are obtained based on the cost of consumables adapted to the Clinical Pathway for the diagnosis of mild head injuries during patient care at Panembahan Senopati Bantul Hospital.

The examination of CKR patients starts at the IGD unit, the patient was examined by the Emergency Installation Unit duty physician and then examined in the form of Blood Complete, EKG, Rontgent Cranium and Head CT Scan. One of the investigations on Headache Injuries is Head CT Scan. Head CT Scan is one of the procedures contained in clinical pathway to establish diagnosis of mild head injury.

In this research, direct cost calculation on Melati ward unit is Rp. 248.751 with details of drug costs, consumables found in Melati Ward is Rp. 98751. The cost of the room, visite doctor surgeon and nutrition accommodation is Rp. 150,000. Length of stay (LOS) of patients with mild head injury on average treatment is 2-3 days depending on the clinical condition or the patient's condition. In this study the length of the patient's hospitalization of Mild Head Injury is for 2 days according to the clinical pathway. Treatment of CKR patients who have shorter hospitalization time can reduce the cost because of longer maintenance time or higher Length of stay (LOS) can cause more and more expense.

The results of a study conducted by Chatterjee, Levin and Laxminarayan (2013) show "One reason for the overhead high cost at the outpatient and inpatient departments of the privilege can be focused on cases, which ones may be few."<sup>13</sup> Reason for the high the overall costs of outpatient and hospitalization can be due to some special cases that should get the focus of the hospital, but the cases are likely to be few. The hospital needs to determine the foster road load or revenue can be increased to improve unit cost.

Based on interviews with IGD doctors at Panembahan Senopati Bantul Hospital that for investigations such as GDS and EKG are not all done on the care of patients Mild Head Injury. Examination of GDS and EKG is only done under certain conditions depending on the patient's clinical condition such as the history of Diabetes mellitus disease, the patient has shortness of breath, chest pain, or the patient has previous history of heart disease. This is what causes the difference in the cost calculation in each patient.

### **Overhead costs in the calculation of unit cost of patient care with diagnosis of Mild Head Injury (CKR)**

Based on the research results obtained total overhead in accordance with clinical pathway for the diagnosis of head injury in RSUD Panembahan Senopati Bantul Rp.1.270.062,30. Overhead or indirect expenses are outlays that are incurred in achieving project completion but that do not apply directly to any specific work item.<sup>14</sup>

Calculation of Overhead cost consists of two units, namely overhead cost of Emergency Installation Unit (IGD) and overhead cost of Melati Ward unit. The total overhead cost of the Emergency Installation Unit (IGD) was Rp.147.737,59, which consisted of indirect resource overhead cost of Rp.65.786,43 and direct resource overhead cost of Rp.81.951,16. The calculation of unit cost of patient care with diagnosis of head injury according to clinical pathway on Melati Ward unit got total cost of overhead equal to Rp. 1.122.324,71, which consists of indirect resource overhead cost of Rp. 560.258.01 and direct resource overhead cost of Rp. 562.066,70.

In this study the calculation of direct resource overhead cost is greater than the cost of indirect resource overhead, both in Emergency Installation Unit (IGD) and Melati Ward unit. According to the researchers the high cost of direct resource overhead is due to the cost of charging only charged to one functional unit that is the unit itself, while the calculation of indirect resource overhead cost is lower because the total cost is charged to all functional units in hospital such as Emergency Installation Unit (IGD) get the cost of 3.61%, the outpatient unit is 13.04%, the hospitalization unit is 29.80%, the central surgery installation unit is 16.24%, the hemodialysis unit is 12.02%, the electromedical unit is 0.86%, Pharmacy unit 2.15%, Laboratory unit 15.82%, Radiology unit 3.78%, Nutrition unit 2.11%, and medical record unit 0.57%. The nearly of overhead costs and total costs in the setting of increased inpatient days and decreased inpatient bed capacity suggests that hospitals have failed to control overhead costs.<sup>15</sup>

The calculation of overhead cost both on indirect resource overhead and direct resource overhead in the calculation has four categories: labor related, equipment related, space related, and service related. Labor related consists of the cost of salary. The hospital unit cost studies from developing countries reported that human resource was the largest component of the total cost of a hospital.<sup>16</sup> The total cost of Panembahan Senopati Bantul hospital employee in 2016 was Rp.25.709.053.905. RSUD Panembahan Senopati Bantul itself has an employee number of 819 people, consisting of 450 civil servants (civil servants) and non-civil servants as

many as 369 people. In the IGD unit the amount of salary costs of employees to be issued by the hospital amounted to Rp.1.026.000.000, with a total number of IGD employees of 43 people consisting of 15 general practitioners, 24 nurses, and administrative officers of 4 people. Total cost of employees who must be issued hospital on Melati unit manny as Rp. 486,337,000 with total number of employees as many as 20 employees consisting of the number of nurses as many as 18 people, and administrative officers as much as 2 people. Equipment related consists of the cost of depreciation of medical and non medical equipment with total hospital cost of Rp.8,396,763,583, Space related consists of the cost of building depreciation and maintenance cost of equipment and buildings with total hospital costs of Rp.2,924,527,146, and Service related consisting of electricity, water, telephone, hygiene cost, ATK cost and household appliances, got total hospital cost Rp. 6.197.307.714.

The study by Kalman et al (2015) states that "this study's inclusion of staff salaries in the calculation of overhead costs is likely led to the higher percentage. The calculation of costs with the addition of salary to the staff can cause the percentage of overhead costs to be higher. To overcome the cost of care adequately, the hospital needs to overcome the overhead as well as direct patient costs.<sup>17</sup>

**Unit cost of Patient Head Injury to Melati Ward (class III) through Activity Based Costing (ABC) calculation as well as difference with mild head injury treatment tariff and INA CBGs tariff in RSUD Panembahan Senopati**

Based on the calculation of unit cost in inpatients with diagnosis of head injury with Activity Based Costing method in RSUD Panembahan Senopati Bantul obtained unit cost of Rp.2.301.989,30 with direct cost of Rp. 1,031,927, and overhead cost of Rp.1.270.062,30. Calculation of Real Cost in accordance with the management policy applied hospital is Rp. 2.386.357,00, while INA CBG's tariff for diagnosis of Mild Head Injury set by the government with ICD BPJS SO6.0 coding is Rp. 2.448.800,00.

**Table 6 Unit cost method of Activity Based Costing (ABC), Real Cost, and Rates of INA CBGs Mild Headache Injury treatment in inpatient class III patients in 2016**

Unit Cost	Real Cost	Tarif INA CBGs (Rp)
2.301.989,30	2.386.357,00	2.448.800,00

In table 6 found that the calculation of unit cost with ABC method obtained cost of Rp. 2,301,989.30. Total cost is lower than the cost of hospital's real cost with the difference in cost of Rp. 84,367.70, which means that the real cost tarrif is able to cover both direct and overhead costs at the hospital. In this study it was found that unit cost calculation was lower compared to INA CBG's tariff set by the government with cost difference of Rp.146,810.70, while the real cost tariff applied by the hospital is found to be lower cost with INA CBG's tariff with a cost difference of Rp. 62.443.00. In the calculation of unit cost is obtained the total cost is lower than the real cost and INA CBG's tariff set by the government. Therefore, according to researcher, the hospital might need to evaluate the existing tariff so that the difference or cost difference between unit cost, real cos, and INA CBG's tariff is not too big so it can reduce the loss rate of the hospital.

The difference between unit cost calculated by Activity Based Costing method because the calculation method used is different. Unit cost calculated in this study was calculated based on Clinical Pathway CKR diagnosis that was applied in RSUD Panembahan Senopati Bantul.



According to Rahmanto (2009) Clinical Pathway (a medic service flow) is an integrated service concept that summarizes every step given to patients based on medical service standards, nursing care standards, and other standards of health-based, evidence-based service with measurable results and within a certain time during the hospital. The advantages and benefits of Clinical Pathway can support the introduction of Evidence Based Medicine, improve communication among teamwork disciplines, provide clear and good standards for service activities, help reduce variation in patient care (through standards), improve resource management processes. The theory is in accordance with the results of research conducted by Huang et al (2015) shows that the benefits of clinical pathway implementation that can reduce the average length of hospitalization, reduce inpatient expenses, improve patient satisfaction, and improve the quality of hospital management resources.<sup>18</sup>

In this study the results of unit cost calculation by ABC method is expected to provide information about the calculation of more accurate cost, so it can be used by the hospital management in determining the tariff. ABC system constitutes the cause-and-effect relationship between activities and cost objects and provides information on the actual unit cost of providing clinical services in hospital.<sup>19</sup> Based on observations from researcher on the use of Clinical pathway for mild Head Injury in Panembahan Senopati Bantul Hospital, the use of clinical pathway can not be used in CKR patients with other comparisons such as fracture because it will affect the total cost and the determination of the CKR diagnosis tariff if accompanied by compilation or not.

The medic services in Panembahan Senopati Bantul Hospital are Deep Disease, Child Health, Surgery, Obstetrics and Gynecology, Anesthesiology, Radiology, Rehabilitation Medic, Pathology Clinic, Eyes, skin, THT, Nerve, Heart, Lung, psikiatri and Orthopedic Medicine. This is in accordance with Minister of Health Decree No. 340 / Menkes / PER / III / 2010 on classification of Hospital Article 10 stating that Class B Hospital must have facilities and medic service capability of at least 4 basic medical services (Internal Medicine, Obstetrics and Gynecology), 4 Specialist Support Services (Anesthesiology, Radiology, Rehabilitation Medic and Pathology Klinik), and other specialist medical services at least 8 of 13 services (Eyes, THT, Nerve, Heart, Skin, Lung, Orthopedics, Urology, Neurosurgery, Plastic Surgery and Forensic Medicine). For specialist Surgery at RSUD Panembahan Senopati Bantul only have a specialist General Surgery as much as 3 people. Based on an interview with one of the surgeons that for one of the CKR's diagnosis is to use GCS (Glasgow Coma Scale). For care CKR actually must be handled by a neurosurgeon, therefore CKR patient care should always be observation. If the patient is experiencing a deterioration or leads to moderate head injury (CKS) or severe head injury (CKB) then the patient should be immediately referred to a hospital that has adequate facilities, one of which is a hospital that has a specialist neurosurgeon. The absence of a neurosurgeon in the hospital will have an impact on the quality of care provided to the patient. In the future the hospital might need to provide a neurosurgeon doctor from the high incidence of CKR in Panembahan Senopati Bantul Hospital in 2016 which was 119 patients, so that the future of patient care can be more comprehensive.

## CONCLUSION

Unit cost calculation on inpatients with diagnosis of Mild head injury with Activity Based Costing (ABC) method at Panembahan Senopati Bantul Hospital obtained total cost of Rp.2,301,989.30. Unit cost calculation by Activity Based Costing method got difference between unit cost with real cost according to policy applied in Panembahan Senopati Bantul Hospital with cost difference equal to Rp. 84.357,70.

Calculation of unit cost with Activity Based Costing method got difference between unit cost

with INA CBG's tariff which determined by government with cost difference equal to Rp.146.810,70. Based on these calculations, it can be concluded that unit cost in patients with Mild Head Injury (CKR) with Activity Based Costing method found lower cost results compared to real cost and INA-CBG's tariff.

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# Effects of Service Quality on Students' Satisfaction in Libraries in Kenya Using Servperf Model: Case of St Pauls' University in Kenya

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## ABSTRACT

Service quality is increasingly recognized as being of key strategic value by organizations and more so in institutions of higher learning. These institutions are continuously seeking ways to offer quality service especially in the libraries. The purpose of this research study was to examine the effects of service quality on students' satisfaction in libraries in Kenya, using Servperf Model. The objectives of the study were to determine the effect of service reliability on student's satisfaction in libraries in Kenya; to examine the effect of service assurance on student's satisfaction in libraries in Kenya; to establish the effect of service tangibility on student's satisfaction in libraries in Kenya; and to determine the effect of service responsiveness on student's satisfaction in libraries in Kenya. The study adopted a descriptive research design. The study targeted approximately 600 Bachelors degree students in the main campus. The sample size was 60 students who were picked through simple random sampling. The study collected primary data use of a questionnaire. A pilot test was conducted to test for validity and reliability of the data collection tool. The researcher personally administered the questionnaire to the respondents. The data collected from the field was cleaned, coded and entered in SPSS software which also aided in its analysis. The data was analysed through descriptive statistics which included frequency distribution tables, mean and standard deviation. The analysed data was presented using tables, charts and graphs. The study found out that the students felt secure and relaxed when interacting with the library staff and that the library was opened for students' access at the appropriate time. The study also found out that the students had confidence in librarians' ability in handling their problems. The librarians were always willing to help the library students and that the library staff had respect for all class of students. The study found out that the librarians were always available to respond to students' needs and that they were competent in solving students problems. The library had functional facilities that inspired study and learning and that it had most e-resources the students needed for my studies. However, the students were not able to access the electronic resources in the library from home/ office. The study concludes that service reliability, service assurance, service tangibility and service responsiveness in the university library influenced students' satisfaction to a great extent. The study recommends that the librarians should be well trained on quality aspects and service delivery so as to enhance service quality in the library. The study also recommends that libraries should be well equipped with modern functional facilities that inspire study and learning. The libraries should enhance proper recording and maintenance of the students' details to create a better service responsiveness.

**Key words:** Service quality, Library, Students, Satisfaction and SERVEPERF Model

## INTRODUCTION

### Background

The quest for quality improvement has become a highly desired objective in today's intensively competitive markets. Quality management has been reckoned as the prime mover towards enhanced business performance and competitiveness (Awwad, Al Khattab & Anchor (2013). Service quality especially in learning institutions is becoming an important aspect of interest as

it focuses on meeting needs and requirements, and how well the service delivered matches customers' expectations (Adil, 2013).

Service quality is defined as the consumer's comparison between service expectation and service performance. They proposed service quality to be a function of pre-purchase customer expectations, perceived process quality, and perceived output quality (Parasuraman et al., 1985). Based on their statement in 1985, they then suggest that service quality is determined by the differences between customers' expectations of the service and their perceptions of the service experience (Parasuraman et al, 1988).

Quality in the context of business organizations refers to an administrative philosophy that addresses policy formation or a comprehensive administrative system based on positive radical changes within the organization. These changes should include thought and behavior, culture, leadership style, and work procedure improvements and achieve outputs of the highest quality (Saif, 2014). Quality in universities refers to a set of attributes, dimensions and characteristics that relate to university services. If quality is embedded in the system, then the university will be able to fulfill students' needs based on students' traits and desires (Majeed et al., 2008). Quality standards in educational institutions emphasize providing library services and electronic information resources to help achieve the organization's mission and goals. The maintenance of essentials of quality service in education institutions, for instance, well managed and updated libraries play a vital role in determining the performance of students, development of organizational image and quality assurance (Usman, 2010).

In the improvement of quality of higher education, libraries have a vital role to play. Library is the vital agent in dissemination of information and knowledge to the right persons, in the right manner and at the right time in this era of knowledge and information. The libraries have transformed drastically from storehouses for books and journals to the powerhouses of knowledge and information since the middle of the 20th century (Abraham & Kennedy, 2012). The transformation of libraries has witnessed increased use of technology in library management; availability of varied information materials and increased number of users. Despite these developments service quality has become increasingly important aspect in libraries owing to challenges such as limited organization of resources, insufficient skilled professionals, accumulation of multiple resources, multidimensional requirements of the readers due to multidisciplinary research, among others (Pandiya & Sarmah, 2014).

In the global information age new ways to conceive and measure quality in contemporary libraries have emerged and changed the primary focus of libraries from material collections to service-orientation (Miller, 2012). With the increasing emphasis on assessment and accountability, coupled with the changes in the pattern of libraries and library collections which was made possible by information and communication technologies, librarians in developing countries have begun to seek new measures to evaluate service quality (Asogwa, 2014).

### **Problem Statement**

Service quality is increasingly recognized as being of key strategic value by organizations. The students in institutions of higher learning are motivated from the academic as well as the administrative efficiency of their institution such as the libraries which play a vital role in determining the performance of students (Usman, 2010). Though libraries play a critical in the universities sector, they lag behind in service quality due to poor service delivery (Somaratna & Peiris, 2011) both globally and locally. Students' satisfaction in libraries has been studied by

different scholars, for example Rehman (2012), Asogwa (2014), Saif (2014), from its measurement to its relationship with other concepts. The problem is that despite the numerous studies on service quality in institutions in developed countries, there are very few references to the application of SERVPERF in academic libraries in developing countries (Asogwa, 2014). These and many other studies have been carried out to evaluate service quality and user satisfaction levels of libraries in different technological and social-cultural contexts, and different evaluation methods have been adopted.

In this study, the researcher is interested in bridging this knowledge gap, by using the SERVPERF model to determine the relationship between the two constructs from the students' point of view. It should also be noted that in the improvement of quality of higher education, libraries have a vital role to play and therefore service quality is key. It is against this background that this study sought to establish the effects of service quality on students' satisfaction in libraries in Kenya, using Servperf Model, with a focus on St. Pauls' University Library Services.

### **Purpose of the Study**

The purpose of this research study is to examine the effects of service quality on students' satisfaction in libraries in Kenya, a case of St. Pauls' university

### **Objectives of the Study**

1. To determine the effect of service reliability on student's satisfaction.
2. To examine the effect of service assurance on student's satisfaction.
3. To establish the effect of service tangibility on student's satisfaction.
4. To determine the effect of service responsiveness on student's satisfaction

### **Scope of the Study**

This study focused on the effects of service quality on students' satisfaction in libraries in Kenya. The study targeted the students of St Pauls' University who were the users of the school Library. The study was limited to the students in the main Campus in Limuru, Kiambu County. The students are the customers and consumer of the library services in St Pauls' University and therefore they were the main target population for the study.

## **LITERATURE REVIEW**

### **Effect of Service Reliability on Student's Satisfaction**

Yousef and Limooni (2015) conducted a study to determining the correlation between the quality of library service at Mazandaran University of Medical Sciences, based on SERVPERF model, and customer loyalty. The results indicate that there was a significant positive correlation between the quality of service (based on SERVPERF model) and physical dimensions, reliability, accountability, assurance and empathy with customer loyalty. There was a significant correlation between the quality of service (based on SERVPERF model) and customer loyalty in libraries of Mazandaran University of Medical Sciences, so that the customer loyalty is increased by enhancing the service quality in libraries of Mazandaran University of Medical Sciences. This study proves that the increased reliability of quality of service will lead to the increased at the levels of loyalty and vice versa.

Karami and Olfati (2012) conducted a study to measure master students' perception of service quality in business schools in Iran. The study used a modified SERVPERF for measuring students' satisfaction in higher education which had 6 dimensions which were tangibles, reliability, empathy, employee, professor and career guidance was represented for measuring service quality in business schools. The research findings show that there was a positive

relationship between reliability and service quality in business schools.

In Ghana Anwowie, Amoako and Abrefa (2015) investigated students' satisfaction of service quality at the Takoradi Polytechnic. The study found out that students' perceptions of service quality exceeded their expectations on four service quality dimensions namely tangibility, responsiveness, assurance and empathy, while their expectations for reliability exceeded their perceptions. It was recommended that, the management of Takoradi Polytechnic must maintain or improve if possible their tangibility, assurance, empathy and responsiveness. Nevertheless, institutions must take urgent measures to tactically tackle their reliability dimension.

### **Effect of Service Assurance on Student's Satisfaction in Libraries**

Phan and Nham (2015) conducted a study to investigate the impact of service quality performance on customer satisfaction on ATM service in a commercial bank in Vietnam. This study applied SERVPERF framework to analyze the data collected from a questionnaire survey and found that Assurance and Tangibles factors significantly impact on the customer satisfaction.

Anand and Selvaraj (2012) examined the impact of service quality on customer satisfaction and Loyalty in Indian Banking sector by applying SERVPERF scale. The result revealed that out of five service quality factors considered, Assurance had a highest Mean score of SERVPERF (P) score and the bank should concentrate on Reliability as it had the least mean score of SERVPERF. It is also observed that there was a significant association found between all the Service quality factors and the customer satisfaction as well as with customer loyalty. While analyzing the antecedents of customer satisfaction and loyalty, factors like Responsiveness, Reliability and Empathy are significantly influenced and also explained respective percentage of relevant changes in the independent variables considered.

In Pakistan, Malik et al. (2012) analyzed the impact of different quality services on student satisfaction in higher educational institutes of a big division of Punjab province of Pakistan. Both public and private sector institutes were included in this study. Data was collected from 240 students of business courses either enrolled in master program or graduation program in provincially chartered universities of the Gujranwala region. The results show that students were overall satisfied with services of Assurance, Reliability and Empathy but not much satisfied with for example parking facilities, computer labs and cafeteria services.

Rahman and and Zarim (2014) explored the degree of influence of the variables: reliability, responsiveness, ease of use and security assurance on the student satisfaction in purchasing online educational resources. The researchers established that the security assurance of the service providers is very important to meet the existing and likely customers. This guide the seller of online education materials an efficient marketing tactic with dynamic policy to insure all the components (Security, Reliability, Responsiveness and Ease of usage). The study concluded that the students are likely to utilize more and more for online materials with assurance by the providers (the library).

### **Effect of Service Tangibility on Student's Satisfaction in Libraries**

Shafiq et al. (2013) conducted a study to evaluate the hotels' service quality through customer satisfaction. SERVPERF tool was adopted which also checked which dimensions of SERVPREF were need to be focused more in Pakistan. The study shows that the hotel managers focused on the tangible dimension as well as the assurances because people give importance to tangibility

of services. Therefore by applying SERVPERF scale, the most important implication of this study is that managers have to improve their physical facilities, reduce the delayed time and improve their current services. The results also indicated that in Pakistan among the five dimensions of SERVPERF the dimension tangible and empathy needed to be focused more.

Marques da Silva (2014) examined the impact of service quality dimensions including, tangibility, reliability, responsiveness, assurance and empathy, on customer satisfaction in a Dublin hostel. The study found out that the dimensions of service quality, tangibility and assurance has influence on customer satisfaction in a hostel industry. It also emphasized on the dimensions of service quality, especially tangibility and assurance, and also improve the communication skills of staff with the purpose to improve the level of empathy with customers. The study recommended that hostels' managers have to be aware that among the various dimensions of service quality, tangibility and assurance were especially significant in predict the customer satisfaction. Improving the level of service offered is the key factor to customer satisfaction.

In Malaysia, Hassan et al. (2013) examined the relationship between service quality dimensions and overall service quality (tangibility, responsiveness, reliability, assurance and empathy) and students satisfaction in private higher education institutions. The study is also examined critical factors in service quality dimensions (tangibility, responsiveness, reliability, assurance and empathy) that contribute most to the satisfaction of the students. This study was conducted using a set of questionnaire to 200 Bachelor Degree students from two private higher education institutions. The study found out that tangibility had a stronger relationship with students' satisfaction than responsiveness and reliability. The study concluded that service quality has significant positive relationship with student satisfaction. Thus, it confirms what other literature try to suggest, which is by improving service quality, it may potentially improve the students' satisfaction.

### **Effect of Service Responsiveness on Student's Satisfaction in Libraries**

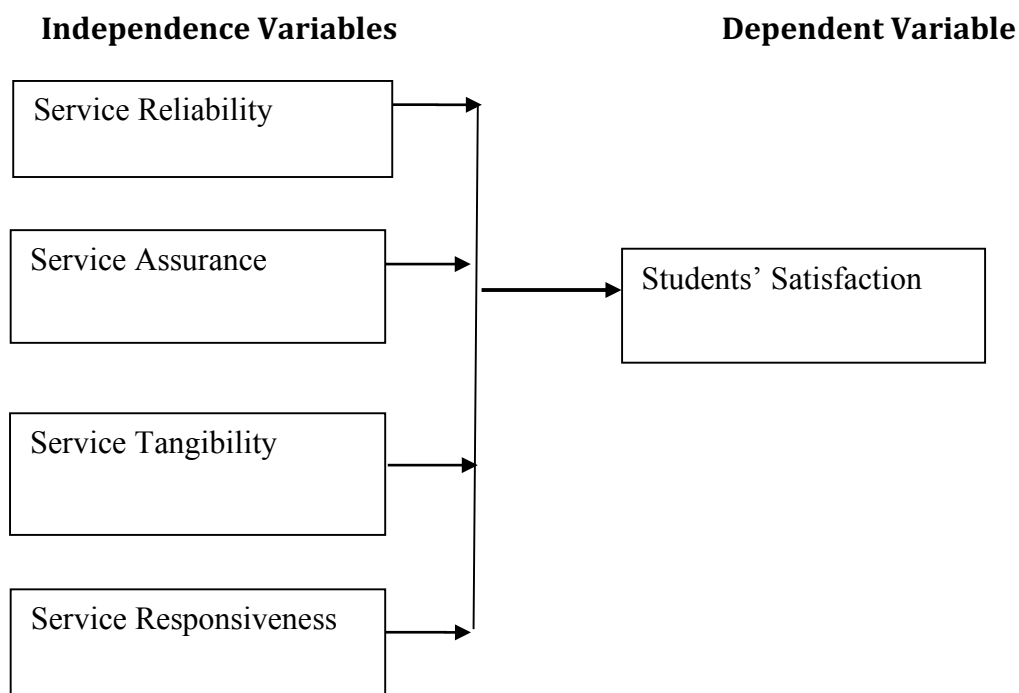
Wang and Shieh (2006) examined the relationship between service quality and customer satisfaction, with a focus on Chang Jung Christian University (CJCU) library. The study investigated the users' degree of importance and the performance provided by the library as well as user satisfaction. The study evaluated five service quality dimensions which are tangibles, responsiveness, reliability, assurance and empathy. The results indicate the overall service quality has a significantly positive effect on overall user satisfaction. Among these five dimensions except responsiveness, all of them have a significantly positive effect on overall user satisfaction.

Ahmed and Masud (2014) conducted a quantitative survey on students' perception of a higher educational institute in Malaysia namely Graduate School of Management, IIUM based on service quality performance. This paper mainly focused on critical factors of service quality of academic programmes which are offered by the Graduate School of Management, IIUM. The structural equation modeling (SEM) analysis shows that responsiveness of staffs ( $\beta = 0.197$ ) had a positive and significant influence on satisfaction. Responsiveness and feedback factors positively and directly affected students' satisfaction.

In another study, Wei and Ramalu (2013) examined the relationship between service quality (SQ) and the level of student's satisfaction (SS) using a field study of 100 undergraduate students in one of the university in Malaysia. The findings of this study revealed that service quality is a vital factor that determines the level of student's satisfaction. Specifically, the result of this study reveals that the better the service quality provided by the university, the higher

the level of SS. Responsiveness was positively related to student satisfaction (SS) indicating that the higher the level of responsiveness, the higher the level of student's satisfaction. Responsiveness was therefore one of the dimensions of SQ that is significantly related to the level of SS.

In this study, the independent variables are: service reliability, service tangibility, service responsiveness, and service assurance while the dependent variable is students' satisfaction. The variables are presented in Figure 2.1 below.



**Figure 2.1: Conceptual Framework**

Satisfaction is a feeling of happiness and joy that individuals obtain when they have fulfilled their human needs and desires. Educational institutions use certain methodologies to determine the level of their students' satisfaction regarding the services and programs they offer to better fulfill student needs and satisfy student aspirations (Qureshi et al., 2011). Customers are one of the per-eminent stakeholders of all organizations and their satisfaction or dissatisfaction is a primary determinant of success for organizations. Students are similarly playing the same role in universities. As noted by Gold (2001), students should be considered as primary customers and educational institutes should focus on student-centered education (Qureshi et al., 2010).

In consequence, consumers' satisfaction is nearly the most notable concern of service organizations. Several studies have confirmed the relationship between quality of service and satisfaction (Helgesen & Nettet, 2007). Students as customers always have some expectations from universities and when these expectations are met, they grew more satisfied and loyal towards the institute (Karami & Olfati, 2012). As there is positive relationship between quality of service offered and student satisfaction, management should pay a keen attention to the quality of service offered (Helgesen & Nettet, 2007).

Reliability involves ability to provide the promised services or resources needed by users dependably and accurately in a way that could satisfy the expectations of library users.



Assurance measures knowledge, competences and courtesy of employees and their ability to convey trust and confidence in customers towards the service firm. Competences in librarianship refer to the possession of required skills, knowledge and willingness to use them to transform the service needs of users in libraries; and courtesy involves politeness and respect for clients, friendliness, honesty and trustworthiness of library employees. Tangibility covers the existence of physical and functional facilities, equipment experiences/knowledgeable personnel and communication materials used in rendering and promoting effective services in libraries (Asogwa, 2014). Responsiveness measures the “willingness of organization’s staff to help customers and provide them with prompt services”. This refers to the timeliness and promptness which Ranganathan 1988 cited in Manjunatha and Shivalingaiah (2004) envisaged in his fourth laws of librarianship that librarians should save the time of the reader while providing the service.

## RESEARCH METHODOLOGY

### Research Design

The study used mixed method by adopting descriptive research design. The descriptive research design is one of the best methods for conducting research in human contexts because of portraying accurate current facts through data collection for testing hypothesis or answering questions to conclude the study (Williams, 2007).

The design is appropriate for this study since it helps in collecting data to answer the questions of the current status and describe the nature of existing conditions of the subject under study. The design also facilitates the use of a questionnaire to collect both quantitative and qualitative data for the study.

### Population

The target population consists of students of St Pauls’ University who are the users of the school Library. The student population at St Paul’s University is now between 6000-7000 across all the university’s campuses. This study was limited to Bachelors degree students in the main campus in Limuru who are approximately 600 students.

### Sample Size

The study took a 10% sample. This was guided by Mugenda and Mugenda, (2008), who says that when the population is 1000 and over, 10% of the population should be sampled, while when the population is less than 1000, a 30% sample should be taken. From the target population of 600 students, the sample size was therefore 60 respondents.

### Sampling Technique

The study used simple random sampling, by using simple random sampling, all members of the study population are either physically present or listed, and the members are selected at random until a previously specified number of members or units has been selected. Simple random sampling gives each and every student a chance of being selected.

### Data Collection Tools

The study collected primary data. The data was collected using a questionnaire. The questionnaire had both closed and open-ended questions. The closed ended questions enabled the researcher to collect quantitative data while open-ended questions enabled the researcher to collect qualitative data. The questionnaire was divided into six sections. Section one was concerned with the general information about respondents, while section two to six collect information on the variables under study.

Questionnaires were considered for the study since they provide a high degree of data standardization, they are relatively quick to collect information from people in a non-threatening way and they are cheap to administer. According to Kombo and Tromp (2009), a self-administered questionnaire is the only way to elicit self report on people's opinion, attitudes, beliefs and values. Questionnaires also give a detailed answer to complex problems.

### **Data Collection Procedure**

During the data collection process, the researcher sought permission to collect the data from the management of St. Pauls University and further notified and made arrangements with the university library management on how to conduct the data collection without interfering with library operations. The researcher personally administered the questionnaire to the respondents. However, where the respondents were busy or unable to fill the questionnaires at that moment, a drop and pick later method was adopted. A deadline was set by which the completed questionnaires were ready. To ensure high response rates, the researcher interpreted each of the sections of the questionnaires to the respondents to ensure that they fully understood the questions before answering.

### **Questionnaire Pre-test**

Pilot test was conducted to detect weakness in design and instrumentation and to provide alternative data for selection of a probability sample (Cooper & Schindler, 2011). A pre-test of the questionnaire was out prior to the actual data collection. The developed questionnaire was checked for its validity and reliability through pilot testing. The research subjected the questionnaire to 5 respondents to participate in the pilot study. According to Mugenda (2008) a successful pilot study would use 1% to 10% of the actual sample size.

The objectives of pre-testing was to allow for modification of various questions in order to rephrase, clarify and or clear up any shortcomings in the questionnaires before administering them to the actual respondents. It helped the researcher to correct inconsistencies arising from the instruments, which ensured that they measured what was intended.

### **Data Analysis and Presentation**

The data collected by the questionnaire was edited, coded, entered into Statistical Package for Social Sciences (SPSS) which aided in the data analysis. This study generated qualitative and quantitative data. The qualitative data was generated from the open ended questions and was categorized in themes in accordance with research objectives and reported in narrative form along with quantitative presentation.

The data was analyzed by using descriptive statistics which included frequency distribution tables and measures of central tendency (the mean), measures of variability (standard deviation) and measures of relative frequencies. The data was presented using tables, charts and graphs.

## **DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF FINDINGS**

### **Response Rate**

In this section, the study shows percentage of the respondents who responded to the survey. A survey must have a good response rate in order to produce accurate, useful results. This was therefore important so as to establish whether the response rate was good enough and representative of the population.

**Table 4.1 Response Rate**

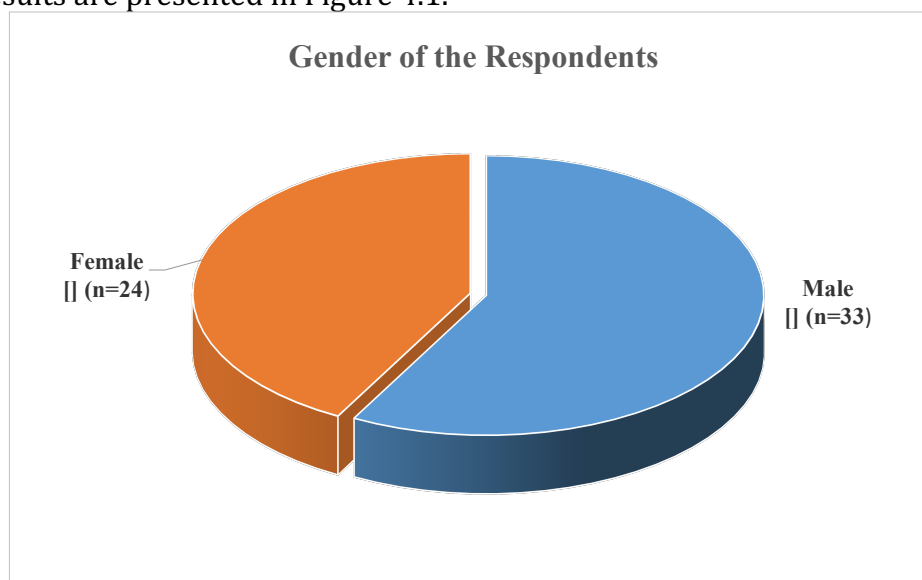
<b>Response Rate</b>	<b>Frequency</b>	<b>Percentage</b>
Responses	57	95.0
Non-Response	3	5.0
<b>Total Sample size</b>	<b>60</b>	<b>100.0</b>

The study sample size was 60 Bachelors students in St Pauls' University main Campus in Limuru. A total of 77 questionnaires were successfully filled in time for data analysis. This represented 95% of the total sample size. According to Mugenda and Mugenda (2003) a 50 percent response rate is adequate, 60 percent good and above 70 percent rated very well. The response rate of 74% was therefore considered appropriate to derive the inferences regarding the objectives of the research.

## Demographic Information

### *Gender of the Respondents*

This section of the study sought to establish the gender of the respondents who took part in the study. The results are presented in Figure 4.1.

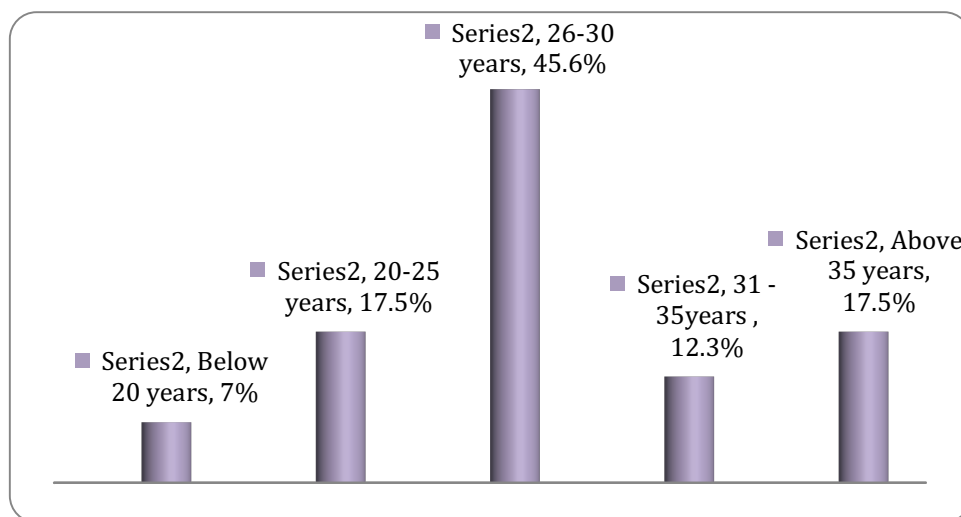


**Figure 4.1 Gender of the Respondents**

The study results in the Table 4.2 show that a majority (57.9%) 33 students of the respondents who took part in the study were male while (42.1%) 24 students of were female. This shows that the study accommodated both genders and it was not discriminatory to any gender.

### *Age of the Respondents*

In this section the respondents were asked to indicate their age. The respondents' age was captured in structured age brackets. The results are presented in Figure 4.2.



**Figure 4. 2: Age of the Respondents**

The results show that most of the respondents 45.6% were aged between 26-30 years while 17.5% of the respondents were aged between 20-25 years and above 35 years. On the other hand, 12.3% of the respondents were aged between 31-35 years while 7% (frequency) of the respondents were aged below 20 years.

#### ***Use of the library by the respondent***

The respondents were asked to indicate how often they used the library at St. Pauls' University. The results are presented in Table 4.2.

**Table 4.2 Use of the library by the respondent**

<b>Course</b>	<b>Frequency</b>	<b>Percent</b>
Frequently use	23	40.4
Almost every time	11	19.3
Occasionally/sometimes	20	35.1
Almost never	3	5.3
<b>Total</b>	<b>57</b>	<b>100</b>

Most of the respondents (40.4%) reported to have been using the university library frequently while 35.1% of the respondents indicated to be occasional users. On the other hand, 19.3% of the respondents indicated that they used the library almost every time while 5.3% of the respondents indicated to almost never use the university library.

#### ***Service Reliability and Students Satisfaction***

The respondents were asked to indicate their level of agreement with the various statements on service reliability at the University Library. A five point likert scale was used to interpret the responses whereby the scores of "strongly disagree" and "disagree" were represented by mean score, equivalent to likert scale (1≤disagree≤2.5). The scores of 'neutral' were equivalent to 2.6 to 3.5 on the likert scale (2.6≤neutral≤3.5) The scores of "agree" and "strongly agree" were equivalent to (3.6≤agree≤5) on the likert scale which shows a strong agreement with the statement. The findings are presented in Table 4.3.

**Table 4.3 Service Reliability and Students Satisfaction**

<b>Statements on Service Reliability</b>	<b>Mean</b>	<b>Std. Deviation</b>
Students have confidence in librarians' ability in handling their problems	4.05	1.059
The library opens to students at the appropriate time	4.21	0.977
The library has access tools for users/students	3.88	0.825
Students feel secure and relaxed when interacting with the library staff	4.33	1.024
Students are well informed about the time of receiving their services	4.02	0.973

The respondents agreed that Students felt secure and relaxed when interacting with the library staff and that the library was opened for students' access at the appropriate time; as shown by the mean scores of 4.33 and 4.21 respectively. The respondents also agreed that the students had confidence in librarians' ability in handling their problems, were well informed about the time of receiving their services and that the library had access tools for users/students; as shown by the mean scores of 4.05, 4.02 and 3.88 respectively.

#### **Extent to Which Service Reliability in the Library Affect Students' Satisfaction at St. Paul's University**

The respondents were asked to indicate the extent to which the service reliability affected their satisfaction at university. The results are presented in Table 4.4.

**Table 4.4 Effect of Reliability on Students' Satisfaction**

<b>Extent</b>	<b>Frequency</b>	<b>Percent</b>
Not at all	2	3.5
To a small extent	3	5.3
To a moderate extent	17	29.8
To a great extent	28	49.1
To a very great	7	12.3
<b>Total</b>	<b>57</b>	<b>100</b>

Most of the respondents (49.1%) indicated that the service reliability affected their satisfaction to a great extent while 29.8% of the respondents indicated that service reliability affected their satisfaction to a moderate extent. On the other hand, 12.3% of the respondents indicated that service reliability affected their satisfaction to a very great extent while 5.3% of the respondents indicated that the service reliability affected their satisfaction to a small extent. However, 3.5% of the respondents indicated that the service reliability had not affected their satisfaction at all.

#### **Service Assurance and Students Satisfaction**

The respondents were asked to indicate their level of agreement with the various statement regarding the service assurance and students satisfaction. The results are presented in Table 4.5.

**Table 4.5 Service Assurance and Students Satisfaction**

<b>Statements on Service Assurance</b>	<b>Mean</b>	<b>Std. Deviation</b>
Librarians are always willing to help users	4.56	0.907
Students have confidence in librarians' ability to guide them	4.32	0.909
Library staff has respect for all class of users/students	4.54	0.803
Library services are provided at the pre-determined time	3.91	1.074

The respondents agreed that the librarians were always willing to help the library users and that the library staff had respect for all class of users/students; as shown by the mean scores of 4.56 and 4.54 respectively. The respondents also agreed that they had confidence in librarians' ability to guide them and that Library services were provided at the pre-determined time; as shown by the mean scores of 4.32 and 3.91 respectively.

### ***Effect of Service Assurance on Students' Satisfaction***

The respondents were asked to indicate the extent to which the service assurance affected their satisfaction at university. The results are presented in Table 4.6.

**Table 4.6 Effect of Service Assurance on Students' Satisfaction**

<b>Extent</b>	<b>Frequency</b>	<b>Percent</b>
Not at all	2	3.5
To a small extent	4	7
To a moderate extent	12	21.1
To a great extent	30	52.6
To a very great	9	15.8
<b>Total</b>	<b>57</b>	<b>100</b>

Most of the respondents (52.6%) indicated that the service assurance affected their satisfaction to a great extent while 21.1% of the respondents indicated that service assurance affected their satisfaction to a moderate extent. On the other hand, 15.8% of the respondents indicated that service assurance affected their satisfaction to a very great extent while 7% of the respondents indicated that the service assurance affected their satisfaction to a small extent. However, 3.5% of the respondents indicated that the service assurance had not affected their satisfaction at all.

### ***Service Tangibility and Students Satisfaction***

The respondents were asked to indicate their level of agreement with the various statement regarding the service tangibility and students satisfaction. The results are presented in Table 4.7.

**Table 4.7 Service Tangibility and Students Satisfaction**

<b>Statements on Service Tangibility</b>	<b>Mean</b>	<b>Std. Deviation</b>
The library has modern and functional equipment	3.53	1.104
The library has functional facilities that inspires study and learning	3.63	1.046
Electronic resources in the library are accessible from my home/ office	3.32	1.338
The library has most e-resources I need for my studies	3.60	1.116

The respondents agreed that the library had functional facilities that inspired study and learning and that it had most e-resources the students needed for my studies; as shown by the mean scores of 3.63 and 3.60 respectively. The respondents also agreed that the library had modern and functional equipment; as shown by a mean score of 3.53. However, the respondents appeared to be neutral on the opinion that the electronic resources in the library were accessible from home/ office; as shown by a mean of 3.32.

### ***Effect of Tangibility on Students' Satisfaction***

The respondents were asked to indicate the extent to which the service tangibility affected their satisfaction at university. The results are presented in Table 4.8.

**Table 4.8 Effect of Tangibility on Students' Satisfaction**

<b>Extent</b>	<b>Frequency</b>	<b>Percent</b>
Not at all	2	3.5
To a small extent	5	8.8
To a moderate extent	15	26.3
To a great extent	28	49.1
To a very great	7	12.3
<b>Total</b>	<b>57</b>	<b>100</b>

Most of the respondents (49.1%) indicated that the service tangibility affected their satisfaction to a great extent while 26.1% of the respondents indicated that service tangibility affected their satisfaction to a moderate extent. On the other hand, 12.3% of the respondents indicated that service assurance affected their satisfaction to a very great extent while 8.8% of the respondents indicated that the service tangibility affected their satisfaction to a small extent. However, 3.5% of the respondents indicated that the service tangibility had not affected their satisfaction at all.

### ***Service Responsiveness and Students Satisfaction***

The respondents were asked to indicate their level of agreement with the various statement regarding the service responsiveness and students satisfaction. The results are presented in Table 4.9.

**Table 4.9 Service Responsiveness and Students Satisfaction**

<b>Statements on Service Responsiveness</b>	<b>Mean</b>	<b>Std. Deviation</b>
Librarians are always available to respond to users'/students' needs	4.47	0.630
Librarians are competent in solving users/students problems	4.30	0.844
Students' records in the library are appropriately kept and maintained	4.28	0.840
Students are able to obtain e-services without much delayed	3.54	1.036

The respondents agreed that the librarians were always available to respond to users'/students' needs and that they were competent in solving users/students problems; as shown by the mean scores of 4.47 and 4.30 respectively. The respondents also agreed that Students' records in the library were appropriately kept and maintained and that the students were able to obtain e-services without much delays; as shown by the mean scores of 4.28 and 3.54 respectively.

### ***Effect of Service Responsiveness on Students' Satisfaction***

The respondents were asked to indicate the extent to which the service responsiveness affected their satisfaction at university. The results are presented in Table 4.10.

**Table 4.10 Effect of Service Responsiveness on Students' Satisfaction**

<b>Extent</b>	<b>Frequency</b>	<b>Percent</b>
Not at all	1	1.8
To a small extent	5	8.8
To a moderate extent	20	35.1
To a great extent	23	40.4
To a very great	8	14
<b>Total</b>	<b>57</b>	<b>100</b>

Most of the respondents (40.4%) indicated that the service responsiveness affected their satisfaction to a great extent while 35.1% of the respondents indicated that service responsiveness affected their satisfaction to a moderate extent. On the other hand, 14% of the respondents indicated that service responsiveness affected their satisfaction to a very great extent while 8.8% of the respondents indicated that the service responsiveness affected their satisfaction to a small extent. However, 1.8% of the respondents indicated that the service responsiveness had not affected their satisfaction at all.

## **SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

### **Summary of Findings**

#### ***Influence of Service Reliability on Students' Satisfaction***

The objective of the study was to determine the effect of service reliability on student's satisfaction in St. Pauls' university. The study found out that the students felt secure and relaxed when interacting with the library staff and that the library was opened for students' access at the appropriate time. The study also found out that the students had confidence in librarians' ability in handling their problems, were well informed about the time of receiving their services and that the library had access tools for users/students. The study further found out that that the service reliability affected students' satisfaction to a great extent.

#### ***Influence of Service Assurance on Students' Satisfaction***

The objective of the study was to examine the effect of service assurance on students' satisfaction in St. Pauls' university. The study found out that the librarians were always willing to help the library users and that the library staff had respect for all class of users/students. The study also established that the students had confidence in librarians' ability to guide them and that that the library services were provided at the pre-determined time. The study further found out that that the service assurance affected students' satisfaction to a great extent.

#### ***Influence of Service Tangibility on Students' Satisfaction***

The objective of the study was to establish the effect of service tangibility on student's satisfaction in St. Pauls' university. The study found out that the library had functional facilities that inspired study and learning and that it had most e-resources the students needed for my studies. The study also established that that the library had modern and functional equipment. The study also established that electronic resources in the library were not accessible from home/ office. The study further found out that that the service tangibility affected students' satisfaction to a great extent.

#### ***Influence of Service Responsiveness on Students' Satisfaction***

The objective of the study was to determine the effect of service responsiveness on student's satisfaction in St. Pauls' university. The study found out that the librarians were always available to respond to users'/students' needs and that they were competent in solving users/students problems. The study also found out that the students' records in the library



were appropriately kept and maintained and that the students were able to obtain e-services without much delays. The study further found out that that the service responsiveness affected students' satisfaction to a great extent.

### **CONCLUSION**

The study concludes that the students felt secure and relaxed when interacting with the library staff and that the library was opened for students' access at the appropriate time St. Pauls' university. The students also had confidence in librarians' ability in handling their problems, the librarians well informed about the time of receiving their services and that the library had access tools for users/students. On overall, it can be concluded that service reliability at the libraries affected students' satisfaction to a great extent.

The study also concludes that the librarians at St. Pauls' university were always willing to help the library users and that the library staff had respect for all class of users/students. The students had confidence in librarians' ability to guide them and that the library services were provided at the pre-determined time. In overall, service assurance in the library affected students' satisfaction to a great extent.

The study also concludes that the library at St. Pauls' university had functional facilities that inspired study and learning and that it had most e-resources the students needed for my studies. The library also had modern and functional equipment. The electronic resources in the St. Pauls' university library were not accessible from home/ office. On overall, it can be deduced that the service tangibility in the library affected students' satisfaction to a great extent.

The study further concludes that the librarians at St. Pauls' university were always available to respond to users'/students' needs and that were competent in solving users'/students problems. The students' records in the library were appropriately kept and maintained and that the students were able to obtain e-services without much delays. On overall, the study concludes that the service responsiveness in the library affected students' satisfaction to a great extent.

### **RECOMMENDATIONS**

The study recommends that the librarians should be well trained on service delivery so as to ensure that the students/users feel secure and relaxed when interacting with the library staff. This should also ensures that the librarians are well informed so as to establish confidence amongst the students/users on librarians' ability in handling their problems. The librarians should always ensure that the libraries are open for students' access at the convenient time to further enhance service reliability.

The study also recommend that libraries should be well equipped with modern functional facilities that inspires study and learning e.g. resources the students are required by students according their specific fields of study so as to enhance the establishment of better service quality. The study also recommends that St. Pauls' university should improve on its libraries service quality by ensuring that its electronic resources are accessible to the students/users from home/ office.

The study recommends that efficiency at the libraries should be enhanced by ensuring that there is proper recording and maintenance of the students' details to create a better service responsiveness. The e-service delivery should also be well managed to ensure that library users access the services without much days.

## AREAS OF FURTHER STUDY

This study sought to establish the effects of service quality on students' satisfaction in libraries in Kenya, a case of St Pauls' university. The study established that the university library had not fully adopted the e-services in its service delivery and most of the students/users could not access the most of its electronic resources from home/office. The study recommends that a study be conducted, to establish the challenges affecting the adoption and implementation of various e-services in the institution.

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# The Foreign Trade And Economic Cooperation In Intensive And Effective Economic Growth Of China <sup>1</sup>

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## ABSTRACT

In this research work, Author focus on the analysis the foreign trade and economic cooperation in intensive and effective economic growth of China. It must be emphasized that openness to trade is associated with higher incomes and growth and there are the need for new approaches to trade cooperation in light of the forces that are currently re-shaping international business. The key of trade developments within the broader socio-economic context is especially the rise of global supply chains, the general shift of trade power away from the West towards Asia Pacific state. In the new circumstances for the development of the global economy and the international trade, People Republic of China seems to be a production superpower, able to change the world trade. The question raised is whether the West will see China rise as an opportunity for cooperation and peace or for conflict. Economic growth is generally more preferable in China to military and extensive expansion. With new investments, a country can transform its position through industrial expansion at home and sustain it through international trade. The main aim of the paper is the presentation of the foreign economic cooperation in intensive and effective economic growth of China.

**Key words:** China, foreign trade, cooperation, effective economic growth

## INTRODUCTION

It must be emphasized that there are the need for new approaches to trade cooperation in light of the forces that are currently re-shaping international business. It suggests that the multilateral trading system will need to adjust to developments in trade and in the trading environment. The key of trade developments within the broader socio-economic context is especially the rise of global supply chains, the general shift of trade power away from the West towards Asia and especially to China. A long-termed stability of China depends however on the fast economic growth, which is possible only when this country will be a partner able to play global roles. Question raised is whether the West will see China's rise as an opportunity for cooperation or for conflict. The main aim of the article is the presentation of the international cooperation in intensive and effective economic growth of China. In the research was use quality and quantity methodology. The article presents the variation in the foreign trade policy among states, intensive economic growth and inequality development in China, the liberalisation of China trade policy and their effects, the increase of China role in international business, the tendencies to international trade liberalisation in China and the problem of environmental protection, the tendencies to bilateralism in the foreign trade policy of China.

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### **THE VARIATION IN TRADE POLICY AMONG STATES**

Since the end of World War II, the promotion of free trade has been a pillar of international economic policy, promoted through numerous international treaties and organizations. Among economists, the consensus seems to be that freer trade is an imperative in developing world (Caughlin, Chrystal, and Wood, 1995), (Sachs and Warner, 1995:1-95). However, despite the pressure of international organizations and the advice of economists, there is a large amount of variation in trade policy among states (Kennedy 2007: 145).

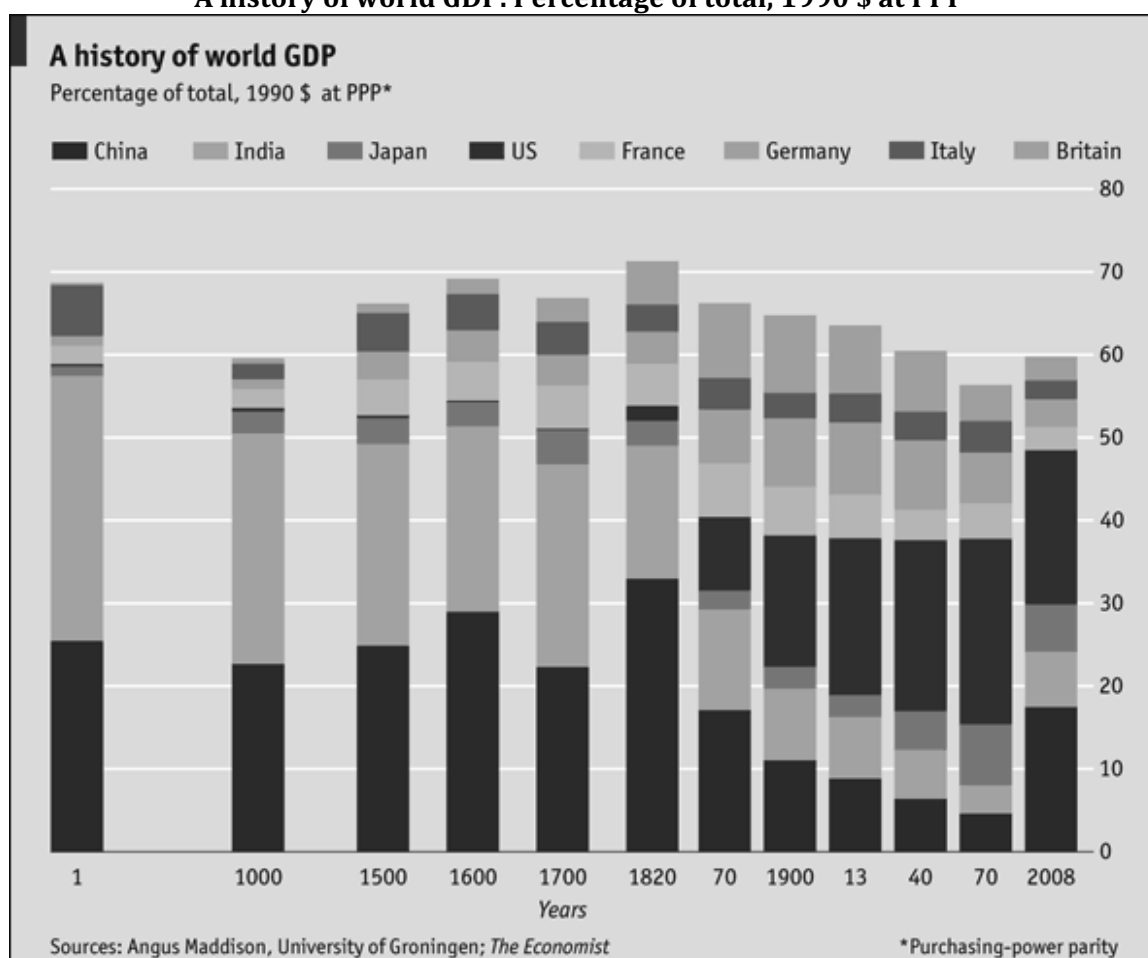
While the WTO has a cursory agreement on trade-related investment measures (TRIMs), a comprehensive agreement has failed to materialize in multilateral forums like the OECD and the WTO. Talks over the Multilateral Agreement on Investment (MAI) broke down under OECD in 1998 because of the pressure from environmental and labor groups concerned with “race to the bottom” scenarios and also due to France’s refusal to join the. In 1996, investment was one of four so-called Singapore Issues. But it was thwarted in Cancun in 2003 by developing countries for fear of domination by Western multinationals, and also by NGOs and civil society groups concerned about the adverse impact in environment and labor. The investment issue was thus dropped from Doha agenda (Pekkanen, Solis and Katada, 2007:960).

The WTO – through its agreements on safeguards and antidumping, for example – does offer some recourse for states to rein in the forces of free trade. However, many experts suggest that there are legal ambiguities in WTO regime that have limited invocation of safeguard measures (Kawase, 2006). Japan is moving toward the use of WTO-consistent safeguards. These concerns have been fueled because there is increasing Chinese competition in weak industries and because it is harder to request supplying countries to take grey measures such as VERA in agriculture and textiles than it was in the past (e.g., edible fats from New Zealand; textiles from Korea and China). But officials do not appear to have high hopes of using safeguards as a matter of routine under the WTO because the text and precedents regarding the Safeguard Agreement are murky enough to deter successful invocation and because, if it takes place, invocation is scrutinized heavily in the WTO dispute-settlement system (Kawase, 2005), (Kawase, 2006).

### **INTENSIVE ECONOMIC GROWTH AND INEQUALITY DEVELOPMENT IN CHINA**

Economic growth in China has proceeded at a dramatic pace over the past thirty plus years. In this period, China adopted a number of economic policies and reforms that made significant and continuous economic progress possible. In the 18th century, China’s economy was the largest in the world and accounted for 25% of global output. But by the first half of 20th century, China was known as the “the poor man of Asia”. In 1949—when China had a quarter of world’s population and its economy produced only 5% of global output (LaFleur, 2010). In 1850, China supported almost half a billion people with agricultural technology that was largely developed 1,000 years earlier (LaFleur, 2010). In 1949, 89% of China’s population lived in the countryside, with agriculture accounting for about 60% of total economic output (LaFleur, 2010). Since 1978, China’s economy has doubled in size every eight years (McGregor 2010: 28). Between 1978 and 2005, China’s economic output—as measured by real gross domestic product GDP—

**Chart 1**  
**A history of world GDP. Percentage of total, 1990 \$ at PPP\***



Sources: Angus Maddison, University of Groningen: *The Economist* <http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/> 11.10.2013.

grew 9.6% per year (LaFleur, 2010). Between 2000 and 2007, China’s international trade exploded—with exports increasing almost 490% and imports growing 425% (LaFleur, 2010). The backbone of China’s economy, agriculture and industry together employ more than 70% of the China’s labor force and account for over 60% of the country’s GDP (Rediff Business, 2010). Much of the population benefited from the reforms but a large part of the population remains below or near the poverty line. There are vast differences in the geographical distribution of income in China. In 2001, the central government adopted the Minimum Subsistence Guarantee (MSG), which replaced the Basic Subsistence Guarantee (BSG). The program covers poorly paid workers, laid-off workers, unemployed pension and retirement pension labor. Recipients of MSG aid increased from 4.6 million in 2001 to 22.4 million in 2004. Payments to recipients soared from 1.2 billion per year in 1998 to 10.2 billion in 2004 plus an additional 9 billion Yuan from local government sources (Doherty and Lu, 2013).

Since the late 1990’s, China shifted its regional development focus from the coast to the western and northeast regions. A large amount of funds have been invested in infrastructure, energy, environmental and extraction projects. About 60% of the population lives in the countryside. In 2004, the central government increased its funds for education, culture and the health services to the countryside. Rural residents are now allowed to work in the city and the state has helped peasant workers receive unpaid wages (Chen, 2009). Nevertheless, efforts to deal with income inequality have a long way to go. In 2004, rural per capita income was only

31% of the rural income. 21.5 million rural populations earn only about \$90 per year. An additional 35.5 million including providing peasants with basic service and the means to achieve upward mobility. The central government needs to provide effective education, health and housing services, empower local governments to deliver the aforementioned services and restrain the abuses by local cadres. The ratio of urban to rural income was 3 1/3: 1 in 2007 (Chen, 2009:121). The population of rural residents is about 720 million. An additional 230 million rural residents work in urban areas (Chen, 2009:134). Beginnings with the 16th NCCPC (2004) agricultural taxes were abolished and farmers were to receive subsidies for their production. Beginning in 1998, major attention was given to infrastructure development especially in electric, biogas, water and rural roads. Rural highways cover about 95% of townships and 87% of administrative villages. By 2007, China's cumulative investment in rural electric utilities exceeded RMB 270 billion (Chen, 2009:127). Social development in rural areas was enhanced by government investment in education, medical services and culture development (television and radio are broadcasted to all villages). Also, a social security system that provides a basic living allowance of 50 RMB per month was approved in 2006 (Xie, 2008).

influence market forces. For example, it maintains an extensive network of grain reserves. From 2006-2008, state owned enterprises (SOE) were the dominant purchasers of grains. In this period, global prices were falling so that this action supported domestic prices. The size of grain reserves is kept secret so it is not possible to assess demand and supply conditions. Inhibiting the free flow of information is anathema to the efficient functioning of competitive markets. The government's immense purchase of grain is inconsistent with its privatization and development of free markets in the agricultural sector of the economy. The low productivity and income of the rural population is a legacy of the planned economy, which prohibited the free flow of labor and capital across regions. Currently, agriculture contributes only 11% of GDP while employing over 40% of the labor force. The government uses subsidies and pricing policies that marginally increase farm income in the short run. But, the long run effect is to keep farmers entrenched in low-income grain production (Doherty and Lu, 2013)..

In the last several years, China's supported grain prices have been above global prices. Consequently, grain exports have fallen. Intent on supporting China's production of grains (wheat, corn, rice, cotton and soybeans), the government purchased large quantities for its reserves. China was tempted to raise grain tariffs but this would have been a violation of its WTO commitment to keep tariffs below 3%. China needs to introduce greater freedoms and flexibility in its grain policies to improve its international competitiveness (Doherty and Lu, 2013).

The Solow-Swan growth model demonstrates that regional (and country) differences in per capita income are largely the result of differences in the capital-labor ratio (K/L). Higher K/L ratios produce higher growth rates in per capita income over regions and the opposite is true for lower ratios. Given factor mobility, labor will migrate to capital rich regions and capital will move to labor rich regions. Factor mobility across sectors will speed the rate of convergence. Studies have shown that this convergence pattern has occurred among the states of the US and the countries comprising the Common Market (Sachs and Warner, 1995).

The path of convergence also depends on a host of other factors: technology, skilled labor, foreign direct investment (FDI), resource endowment, government restrictions and so forth. Generally, convergence is faster and more effective in regional sectors that are linked by open trade and factor mobility (Jian, Sachs and Warner, 1996). Many of the forces of convergence are repressed in socialist economies. In China, restrictions imposed on the movement of labor

and favoritism shown to state owned enterprise (SOE) reduces the self-correcting forces of free markets. Constraints against unregistered migration from rural to urban areas are not currently as restricted as they were before 1980. Still unregistered migrants may lack access for their children to schools and medical services(Doherty and Lu, 2013).

There is a huge difference in the economic well being of urban versus rural and coastal versus inland residents. Substantial income growth occurred in eastern, southern and northeastern China. Very little development occurred beyond Chongqing into central China or further west. Since 2000, eight provinces accounting for 40% of the population have generated 75% of the growth in GDP. In 2006, Shanghai had a per capita income of \$15,000 while Guizhou's per capita income was a mere \$1,247 on a purchasing power parity basis (Reuvid, 2008: 55).

China is divided into 30 provinces. These provinces can be aggregated into three regions: North Coastal, South Coastal, and Interior. The North Coastal Provinces (Including Shanghai, Tianjin, and Liaoning) have the highest income levels. The South Coastal regions (e.g., Guangdong, Fujian and Zhejiang) are next. The Interior provinces (e.g., Shaanxi, Shanxi and Ningxia) have considerably less income (Jian et al.1996)

In 2002, the 16th NCCPC (National Congress of Communist Party of China) established policies to raise the income of farmers and improve the efficiency of agriculture. Over the next several years the CPMCC (Communist Party China Central Committee) introduced initiatives to:

- 1) give priority and provide greater assistance to less developed areas;
- 2) expand employment opportunities and enhance public services such as, education and medical care;
- 3) reform onerous rural farm taxes; the overall burden on farmers was reduced from 8.4% to 6% (Chen, 2009:125);
- 4) provide a substantial agricultural subsidy program for farmers which was introduced in 2004; by 2008, farmers received RMB 1 to billion (Xie, 2008);
- 5) make significant increases in rural basin infrastructure, e.g., electric, utilities, highways, and water and biogas utilities.

In 2006, the rural residence population was 949 million. About 230 million of rural laborers were working in urban areas (Chen, 2009: 134). China's farms are much too small to operate efficiently. Combining farms, farming cooperatives will release millions of laborers. How to employ the released labor is a long term and monumental problem that must be solved by the government.

To presents the spectacular growth and inequality in China important is the following equation and its major component parts:

$$Y = C + I + G + \text{Exports} - \text{Imports} \quad (1)$$

Where Y = Gross Domestic Products (GDP or Income)

C = Consumption

I = Investment (Domestic and Foreign)

G = Government Expenditures

China's growth was largely fueled by government expenditure in heavy investment, infrastructure, resource development and residential and commercial real estate. In the 1980's consumer spending exceeded 50 percent of GDP. However, by 2009, consumer expenditure



dropped to 30% of GDP as government spending for infrastructure and the export industries overwhelmed residential consumption. In the most recent five-year plan, nonfarm workers are scheduled to receive wage increases of up to 15 percent annually for the next five years. This is projected to increase consumer spending to 45 percent of GDP. This would represent an increase in consumer spending of \$540 billion. In terms of Eq. (1), consumption (C) will play a greater role in the growth of GDP and this will produce a more balanced and sustainable growth path (Doherty and Lu, 2013).

The current 11th Five Year Plan recognizes the following imbalances in past growth strategies:

- 1) heavy reliance on investment and efforts at the expense of domestic demand;
- 2) emphasis on heavy industry over services;
- 3) increases in income disparity between urban and rural areas and between inland and coastal provinces; and
- 4) large differences in access to social, medical and educational services (Doherty and Lu, 2013).

The global crisis of 2008-2009 affected China's economy via exports, foreign domestic investment (FDI) links and the real estate market; China adopted a huge stimulus plan to counter the depression effect of the international crisis. As a result, China's economy grew 8.7% in 2009 (World Bank China, Research Working Paper No. 9). China's GDP growth for 2011 is forecasted to be 9.1 to 10.0%, according to Goldman Sach's Global Economics, Commodities and Strategy (ECS) Research group (Sachs, 2010). China's GDP growth for 2012 is forecasted to be 9.5% (Sachs, 2010). Between 2010-2020, China's average annual real GDP growth rate is expected to be 9.5% ( *Top 10 largest economies...*, 2010). In a 2011 Gallup poll, 52% of Americans named China as the world's leading economic power today compared to only 32%

**Table 1 Real GDP Growth Forecasts**

**Real GDP Growth Forecasts**

%yoy	2009	2010		2011		2012 (GS)
		GS	Consensus*	GS	Consensus*	
<b>USA</b>	-2.6	2.8	2.7	2.7	2.4	3.6
<b>Japan</b>	-5.2	3.5	3.0	1.1	1.2	2.0
<b>Euroland</b>	-4.0	1.7	1.6	2.0	1.4	1.9
<b>UK</b>	-5.0	1.8	1.7	2.4	2.0	2.6
<b>Brazil</b>	-0.2	7.5	7.6	5.0	4.5	4.3
<b>China</b>	9.1	10.1	10.1	10.0	9.1	9.5
<b>India</b>	7.4	8.5	8.4	8.7	8.5	8.3
<b>Russia</b>	-7.9	3.8	4.0	5.3	4.3	5.6
<b>BRICs</b>	5.5	8.7	8.6	8.6	7.9	8.2
<b>Advanced Economies</b>	-3.2	2.9	2.8	2.5	2.2	3.0
<b>World</b>	-0.6	4.9	4.7	4.6	4.1	4.8

\* Consensus Economics November 2010

Source: GS Global ECS Research

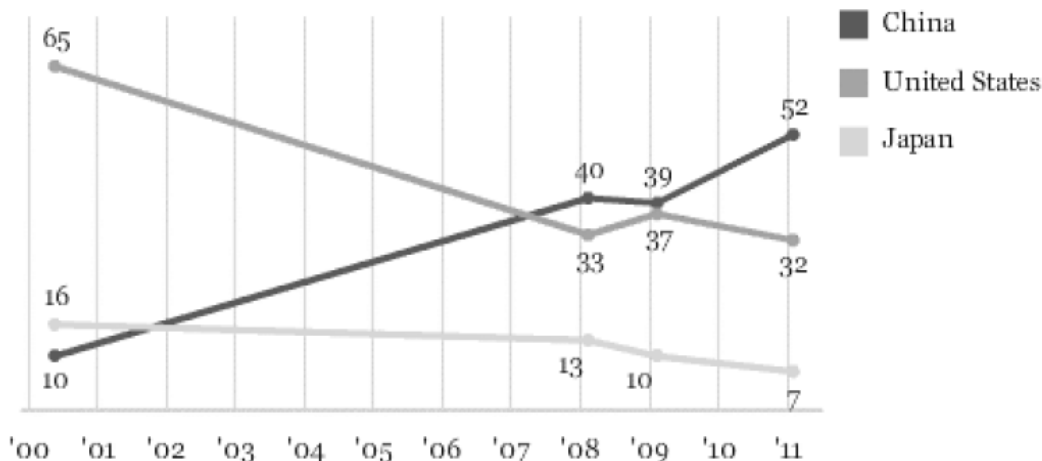
Source: Goldman Sachs Global ECS Research, Dec. 2010

of Americans naming their own country (*China Surges in Americans' Views.....2011*). The stimulus was composed of infrastructure spending, tax cuts, consumer subsidies, and transfer payments. Also, substantial loans to local governments were made for infrastructure projects. The share of total new lending going to residents; e.g., mortgages, increased from 14% in 2008 to 26% in 2009. Policy makers stress that future growth should be driven more by consumption and that the benefits of prosperity should be more evenly shared. There needs to be a reallocation of resources to sectors that have been shortchanged or ignored. Financial sector

**Chart 2**  
**Perceptions of the World's Leading Economic Power Today**

*Perceptions of World's Leading Economic Power Today*

Which one of the following do you think is the leading economic power in the world today -- [the United States, the European Union, Russia, China, Japan, India]?



GALLUP

**Source: Gallup's annual World Affairs survey, "China Surges in Americans' Views of Top World Economy" Feb. 2011**

reform is needed to improve access to funds by private enterprises, particularly service firms and small-size firms. In addition to financial reforms, adjustments are needed in prices and taxes to eliminate the subsidization of industrial (capital) inputs. Also, the dividend policy of state-owned-enterprise (SOEs) must be revised to achieve a more efficient allocation of investment funds. Finally, restrictions of private firms to enter the service sector should be revised (Doherty and Lu, 2013).

#### **THE LIBERALISATION CHINA FOREIGN TRADE POLICY AND THEIR EFFECTS**

The access of China to World Trade Organisation (WTO) (10 November 2001) was a historical decision, the evidence of evolution which was taking place within that organisation, giving it a more universal, global form. This means also that it expands on a huge market which can open itself up for foreign competition. However, there are many problems to be solved in China itself. The country is undergoing the transformation towards the market economy. Gaining the economic balance is still very difficult.

The access of China to the WTO was the moment in which new trade rules became obligatory. In the next five years China eliminated all kinds of quotas and other non-tariff barriers that slow down the inflow of foreign goods. Customs duties which were lowered from 44% in 1992 to 15% in 2001 were gradually reduced to an average of 9%. Foreign banks received the right to introduce the foreign ownership in 100% of economic fields and the right to take in the deposits from the Chinese in their own currency.

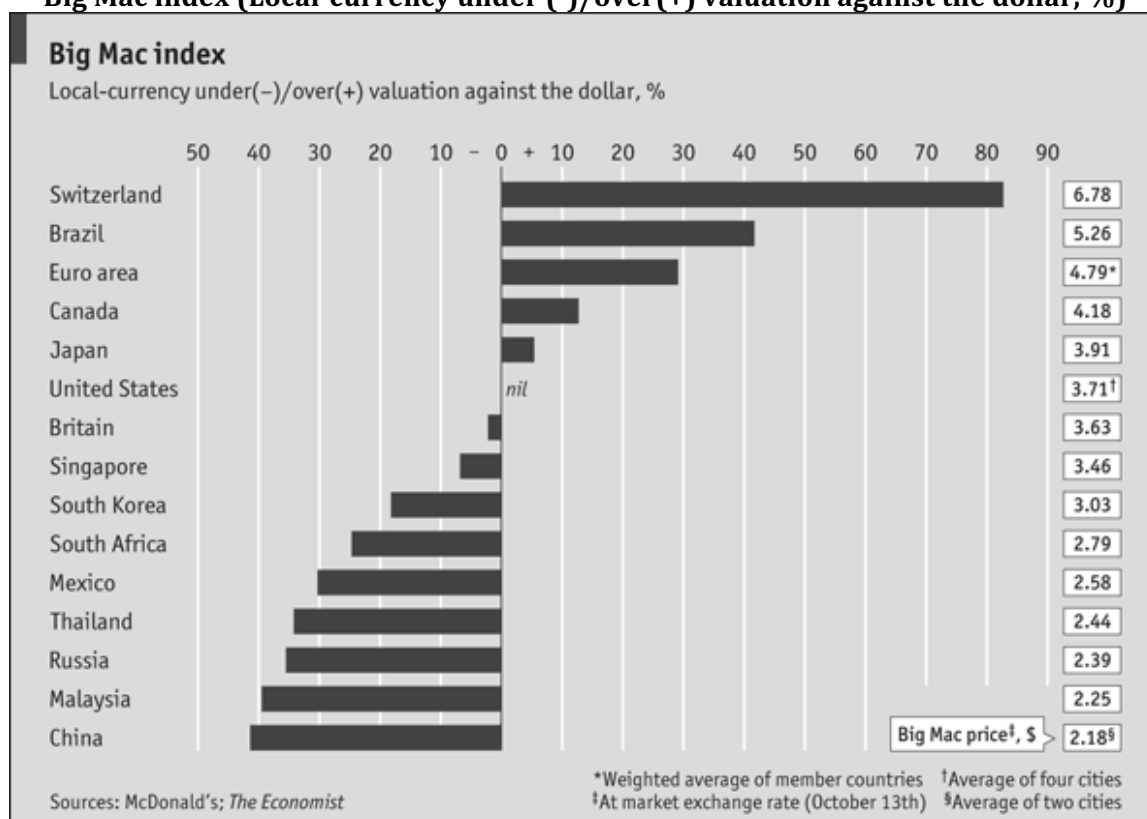
The Chinese trade practice becomes more and more subjected to the anti-dumping rules, to the intellectual property rights and to other laws, accepted officially by Beijing, as well as by the provinces, where the protection of the Chinese firms may still take place. In general opinion, as far as China is concerned, WTO is both a challenge and a chance. However, in case of

agriculture, it is easy to see the challenge, while the chances are rather difficult to spot. The reason lies in the fact that the area of the Chinese farms are too small when compared with the American agricultural giants. Nevertheless, during the last two decades the Chinese laid strong foundations for reforms. Membership in WTO means also the acceleration of the already implemented reforms.

In the 19th century, the U.S. was—as China is now—“a predominantly rural country undergoing a massive shift toward an urban, industrial economy. By the 1850s, the U.S. was en route to becoming the workshop of the world, rapidly churning out cheap yet high-quality textiles, clocks, guns and other goods. The British dubbed this miracle the ‘American system of manufactures,’ and it became the envy of the world...British commentators once said (that) New England factories used reverse engineering to mimic the latest Lancashire technological breakthroughs.”(*How China Is like....*, 2010)

China’s weak currency—which is good for Chinese exports—also makes the yuan (RMB) one of the most undervalued currencies in the so-called “Big Mac index”, a measure of purchasing-power parity. While a Big Mac averages US\$3.71 in the U.S.....you can buy one in China for only 14.5 yuan (US\$2.18) in Beijing and Shenzhen on average (*Bun Fight*, 2010).

**Chart 3**  
**Big Mac index (Local-currency under (-)/over(+) valuation against the dollar, %)**



Source, McDonald’s; *The Economist*, <http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/> 11.10. 2013.

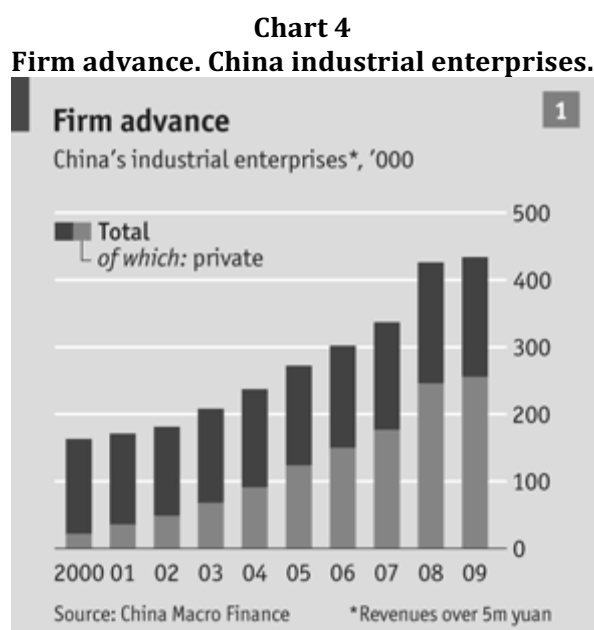
China is poised to make its money a global currency, which “could strengthen China’s influence in overseas financial markets and begin to erode the dollar’s dominance.” According to Nobel laureate economist Robert A. Mundell: “The RMB is likely to become a reserve currency in the future, even if the government of China does nothing about it.”(*In China, Tentative Steps...*,

2011). China's has over US\$1 trillion in foreign exchange reserves (exceeding Japan's), and continue to grow around \$200 billion each year

(The World Bank 2011). China's foreign-exchange reserves hit record highs on Q4 2010 to reach US\$ 2.85 trillion. The \$199 billion gain was the largest quarterly increase since Bloomberg data began in 1996 (*China's Currency Reserves Rise...*, 2011). China owns over 25% of U.S. Treasury Bonds and is the largest creditor in the world (Rediff Business, 2010). China is also the U.S.A.'s largest creditor, holding more than \$900 billion worth of U.S. Treasury bonds on the USA in October 2010. The second and threethed creditors are Japan and the U.K (*Factbox: China leads...*, 2011).

China became the world's biggest initial public offering market in 2010 (Dealogic 2011; PricewaterhouseCoopers, 2010).

China's emerging market stocks are predicted to quintuple in the next two decades—reaching a market value of around \$80 trillion by 2030 (Sachs, Moe 2010). The Shanghai Stock Exchange was the fifth largest stock market in the world in December 2010 (market capitalization of US \$2.7 trillion) (*List of stock...*,2013) . Eight of the ten largest stocks on the Shanghai Stock Exchange are state-controlled enterprises (*Shanghai Stock Exchange*, 2013), 98% of China's banking assets are state-owned, as are most of China's financial institutions (*Rediff Business*, 2010). China's state-controlled entities are not particularly profitable. The average return on equity for companies wholly or partly owned by the state is barely 4%. In comparison, the returns of unlisted private firms are no less than ten percentage points higher. It is often said in China that a new economic era has recently begun, described as guo jin min tui: state advances, private retreats.( *Let a million*, 2011). The number of registered private businesses in China grew by more than 30% a year between 2000 and 2009. But these figures exclude unregistered businesses. No one knows quite how much private companies contribute to China's fast-growing economy...However, enterprises that are not majority-owned by the state account for two-thirds of industrial output.( *Let a million*, 2011)



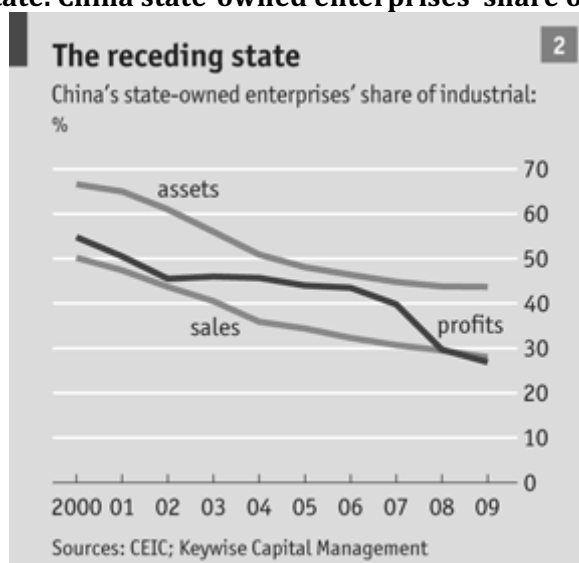
Source: China Macro Finance. Revenues over 5 m yuan.

<http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/> 11.10.2013

China's private firms account for about 75-80% of profit in Chinese industry and 90% in non-

financial services ( *Let a million...*, 2011).

**Chart 5**  
**The receding state. China state-owned enterprises' share of industrial: (%).**

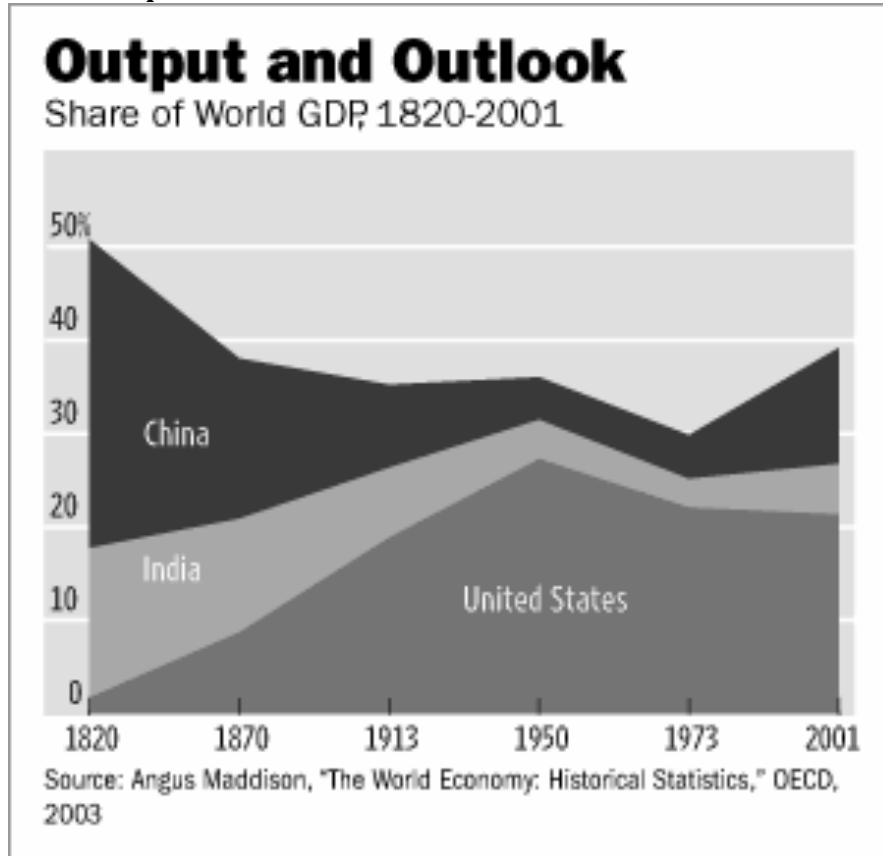


Source: CEIC; Keywise Capital Management

<http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/> 11.10.2013

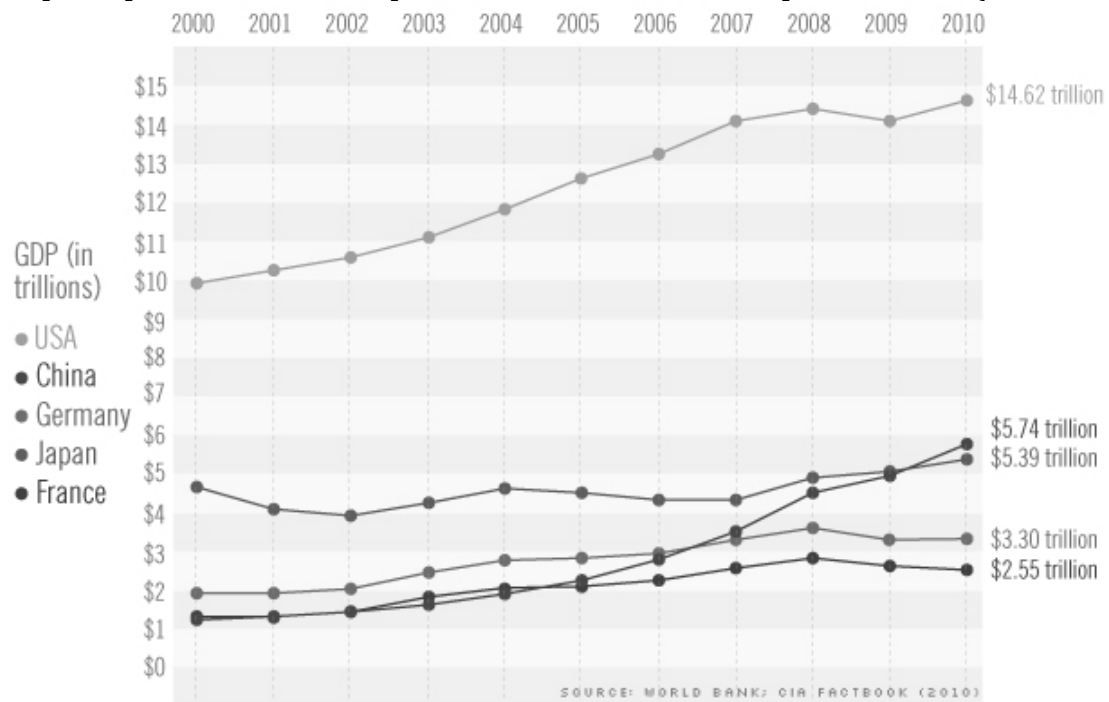
China is the world's fastest-growing major economy, with an average growth rate of 10% for the past three decades years. In 2000, China's accounted for only 7.1% of the world's total GDP (in PPP terms). In 2010, that figure increased to 13.3%. By 2020, it is expected to reach 20.7% (*Top 10 largest economies in 2020*, 2010). In 2000, China topped Italy to become the world's sixth-biggest economy. In 2005, China overtook France to become the fifth-largest. In 2006, it moved up again by knocking off the U.K. In 2007, China became the third-largest economy by topping Germany (*China is richer...*, 2011).

**Chart 6**  
**Output and outlook. Share of World GDP, 1820-2001**



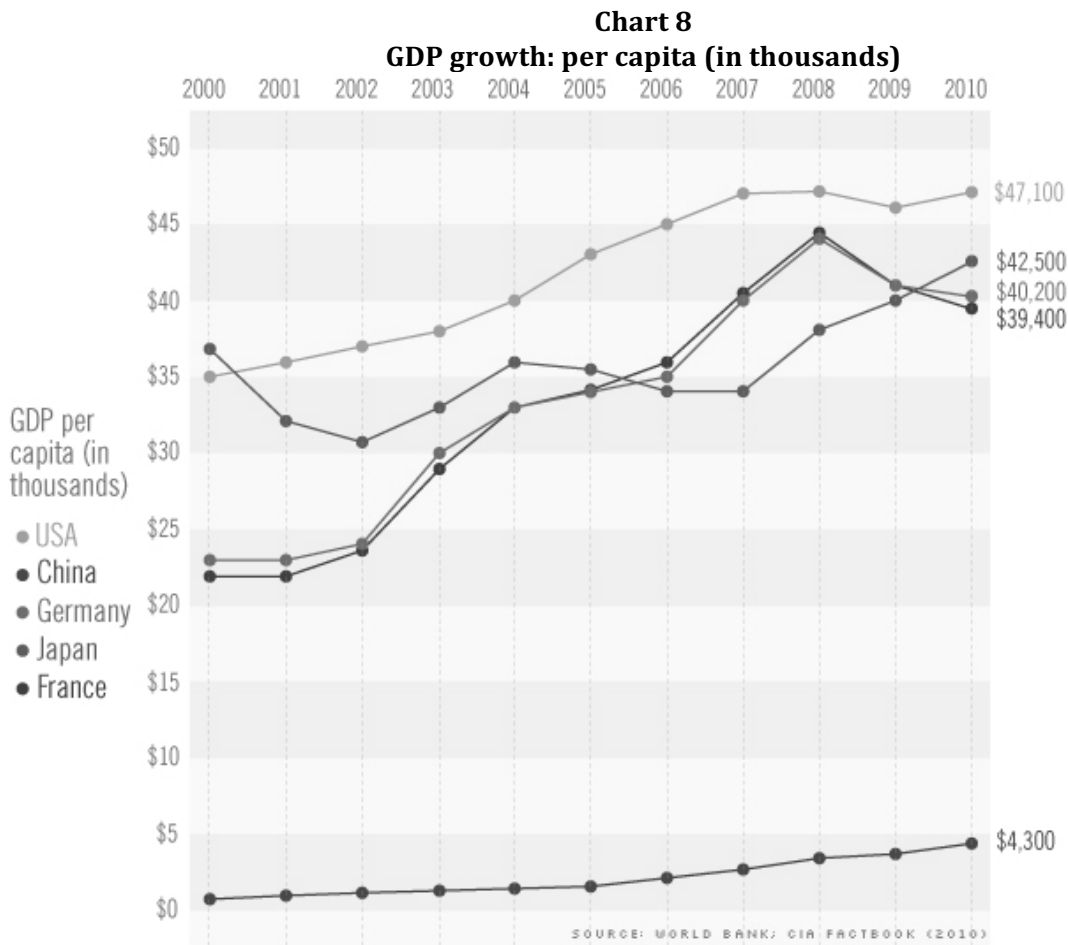
Source: Angus Maddison, The World Economy: Historical Statistics, OECD, 2003  
<http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/> 11.10. 2013

**Chart 7**  
**GDP per capita of China in comparison with the most developed countries (in trillions)**



Source: World Bank: CIA Factbook (2010) <http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/> 11.10. 2013

However, China’s per capita GDP still only ranks #127 (2010), just under that of Albania and Turkmenistan (.CIA World Fact Book, accessed 2011).

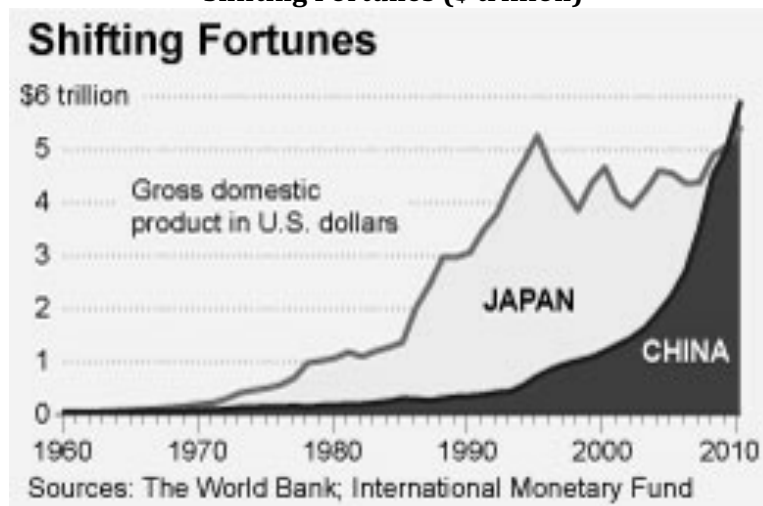


Source: World Bank: CIA Factbook (2010) <http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/> 11.10. 2013

China is the world’s second largest economy, after overtaking Japan in 2010. (The Economist, 2010; CNBC , 2010; The Guardian ; 2011). China could overtake the U.S. as the world’s biggest economy by 2030, according to economic experts (*China Passes Japan...*, 2010).



Chart 9  
Shifting Fortunes (\$ trillion)

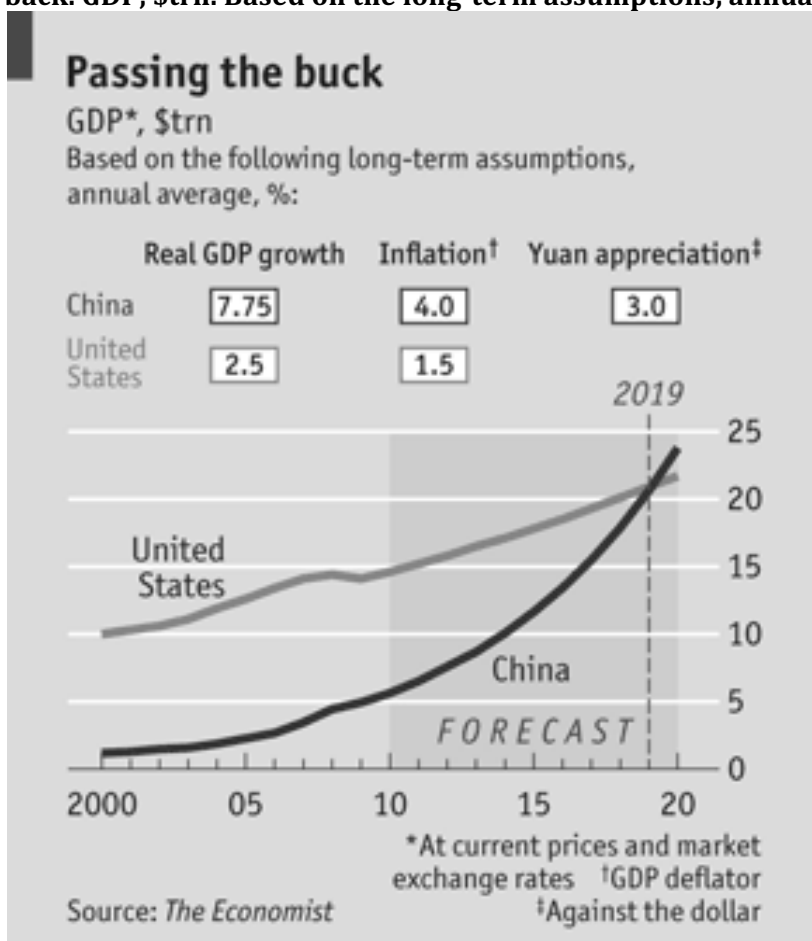


Source: World Bank; International Monetary Fund <http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/> 11.10. 2013

According to Goldman Sachs Group Inc. chief economist Jim O'Neill China could overtake the U.S. as the largest economy as early as 2027. China's economy could overtake the U.S. economy by 2019, "given reasonable assumptions", according to *The Economist* in 2011. The posting says that "Absent a total disaster in China, the transition will take place, and that right soon. Why? Well, China remains far behind the developed world in per capita terms, and because there is plenty of catch-up left to accomplish, there's plenty of room for rapid growth. And China's population is enormous. It has over four times as many people as America, and so its output per capita only needs to be about a fourth of America's to match it in total size." (*How to gracefully step...*, 2011)

**Chart 10**

**Passing the buck. GDP, \$trn. Based on the long-term assumptions, annual average, %.**



**Source: The Economist, <http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/> 11.10. 2013**

Estimates by R.J. Tammen et al. (2000) anticipate that China will overtake the United States in mid-century (Tammen, Kugler, Lemke, Stam, Abdollahian, Al-Sharabati, Efir, and Organski 2000) but Euromonitor International predicts that China will overtake the USA to become the largest world economy in 2020 (tbl.2). The global market research group writes: “by 2020 there will be a major shift in the global balance of economic power compared to 2010. Emerging economies will rise in importance and China will have overtaken the USA to lead the list of the world’s top ten largest economies by GDP measured in PPP terms.” (*Top 10 largest economies in 2020*, 2010). Thus American dominance in this time should endure. Afterwards, Asian demands for modification to the international system will likely increase, and unless resolved, will be increasingly likely to be imposed by force. The question raised by this

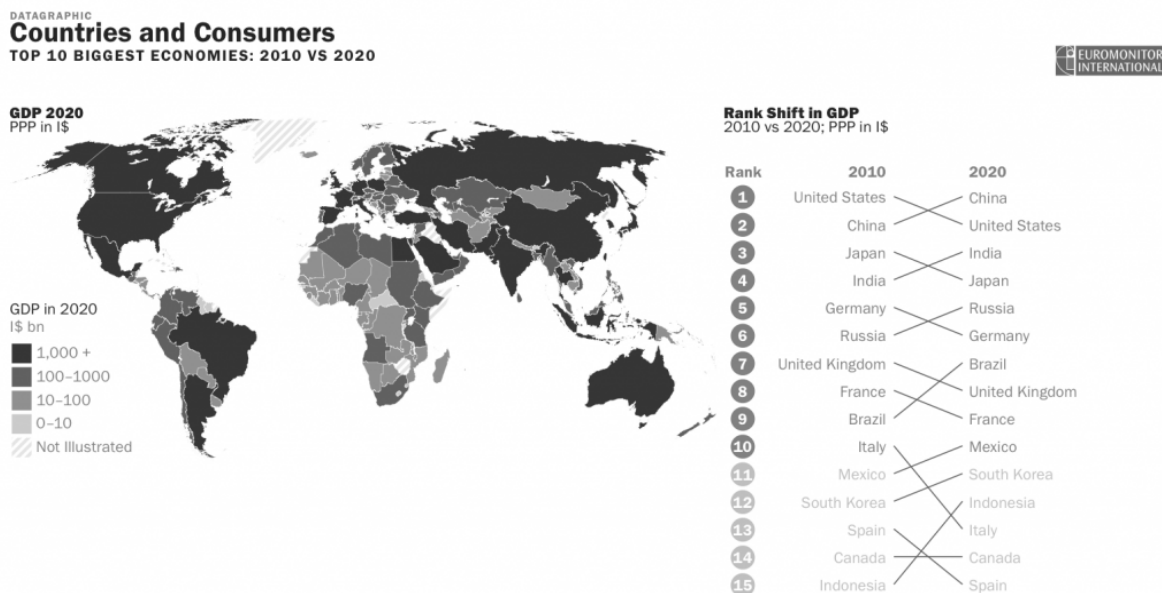
**Table 2 The global balance of economic powers in 2010 versus 2020**

Rank	Country - 2010	GDP (U\$ million)	Country - 2020	GDP (U\$ million)
1	USA	14,802,081	China	28,124,970
2	China	9,711,244	USA	22,644,910
3	Japan	4,267,492	India	10,225,943
4	India	3,912,911	Japan	6,196,979
5	Germany	2,861,117	Russia	4,326,987
6	Russia	2,221,755	Germany	3,981,033
7	United Kingdom	2,183,277	Brazil	3,868,813
8	France	2,154,399	United Kingdom	3,360,442
9	Brazil	2,138,888	France	3,214,921
10	Italy	1,767,120	Mexico	2,838,722

Euromonitor International from IMF, International Financial Statistics and World Economic Outlook/UN/national statistics

Source: Facts about China: ECONOMY & GDP 2011-2012, <http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/>

**Map 1**  
**Countries and Consumers. Top biggest economies: 2010 vs 2020**



Source: Facts about China: Economy & GDP 2011-2012, <http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/>

empirically grounded extrapolation is whether the West will see China's rise as an opportunity for cooperation (as former European enemies did when responding to the post-World War II resurgence of Germany by creating the EU) or for conflict (Kugler, 2006, p.39).

Intensive development through economic growth is generally preferable to military and extensive expansion. With new investments, a country can transform its position through industrial expansion at home and sustain it through international trade. Access to the economies of other nations is sufficient; a rising nation does not need territorial control of them. Peaceful development can thus take the place of aggressive expansion. Since World War II, a number of economies have adopted this principle, including Germany, Japan, China and other East Asian Nations (Rosecrance, 2006:33)..

China will enter a world market in which many of the spoils have already been appropriated. But fewer and fewer major firms may actually dominate the world economy. Some countries, like Mexico, will possess few, if any, decreasing cost industries. They will have to send their

labor elsewhere to retain economic advantage. China will be studied with United States, Japanese, and European firms contributing high technology to Chinese development. Aside from textiles, however, it is not clear how many purely Chinese industries will attain economies of scale.

Under these circumstances, even very strong countries economically will be at least partly dependent on industries headquartered somewhere else. Even today, America does not represent the attainment of unipolarity in economics, whatever its military might. It is dependent upon money market and foreign direct investment from China, Japan, and Europe. Economic concentration today has three or four different nodes, not just one. The same will be true in 2020 or 2030. Decreasing cost (increasing returns) industries will be located in different zones and no one Great Power will monopolize them all. Europe will boast the London-Frankfurt and Zurich-Milan corridors. America will find large-scale competitive champions in two zones-Boston to North Carolina and San Diego to Seattle. China will have industrial or software concentrations in north China, Fujian, and Guangdong terminating in the Pearl River Delta. But no country, however powerful in terms of GDP, will incorporate all worldwide industrial or service potential. It is even possible that the defense industry on an international basis is one of increasing returns to scale. Under the circumstances, there will be overlapping zones of economic competency among Great Powers, and some countries will be left out altogether.

The assumed result of one Great Power hegemony replacing another and a shift between unipolarities will not be obtained in the next few decades. Thus, even very powerful countries militarily will find themselves needing the products and markets of countries (and corporations) located somewhere else. In theory, a very strong power militarily might be able to expand to take over the industries on which it has become dependent, but for a host of reasons this is unlikely. Again, cost-benefit reasons would cut against any attempt at conquest – openness would provide access to such industries much more efficiently than seizure that would not be successful in the longer term (Rosecrance, 2006, p.35).

One, of course, cannot be sure that the more full-throated globalization of the present and future will remedy the difficulty. History shows that states sometimes engage in war for insufficient reasons, neglecting the ties that bind nations together. Short-term motives take precedence over long-term maximization. But they are not likely to do so between the United States and China, both long-term maximizers. China is especially sensitive to the advantages of intensive growth and will not wish to disrupt essential economic arrangements that have been crucial to her success.

In addition, should she decide otherwise, there are neighboring power that would present barriers to extensive expansion. Japan, a unified Korea, India, and Russia all border on China. Even if the United States were not a major power guarantor of the existing settlement, these powers would make Chinese external expansion difficult if not impossible. Japan, perhaps, has traditionally underused her power, but this is not true of Russia or India. A unified Korea will represent another uncertainty for China. Again, economic ties with these nations will be preferable to military expansion against them. And the presence of the United States and its military bases will occasion additional hesitation. No one can be certain that relations among Great Powers will be peaceful ones over the long term. But the current economic, political, and military relationships make that prospect much more likely than it has been in the past (Rosecrance, 2006, p.35).

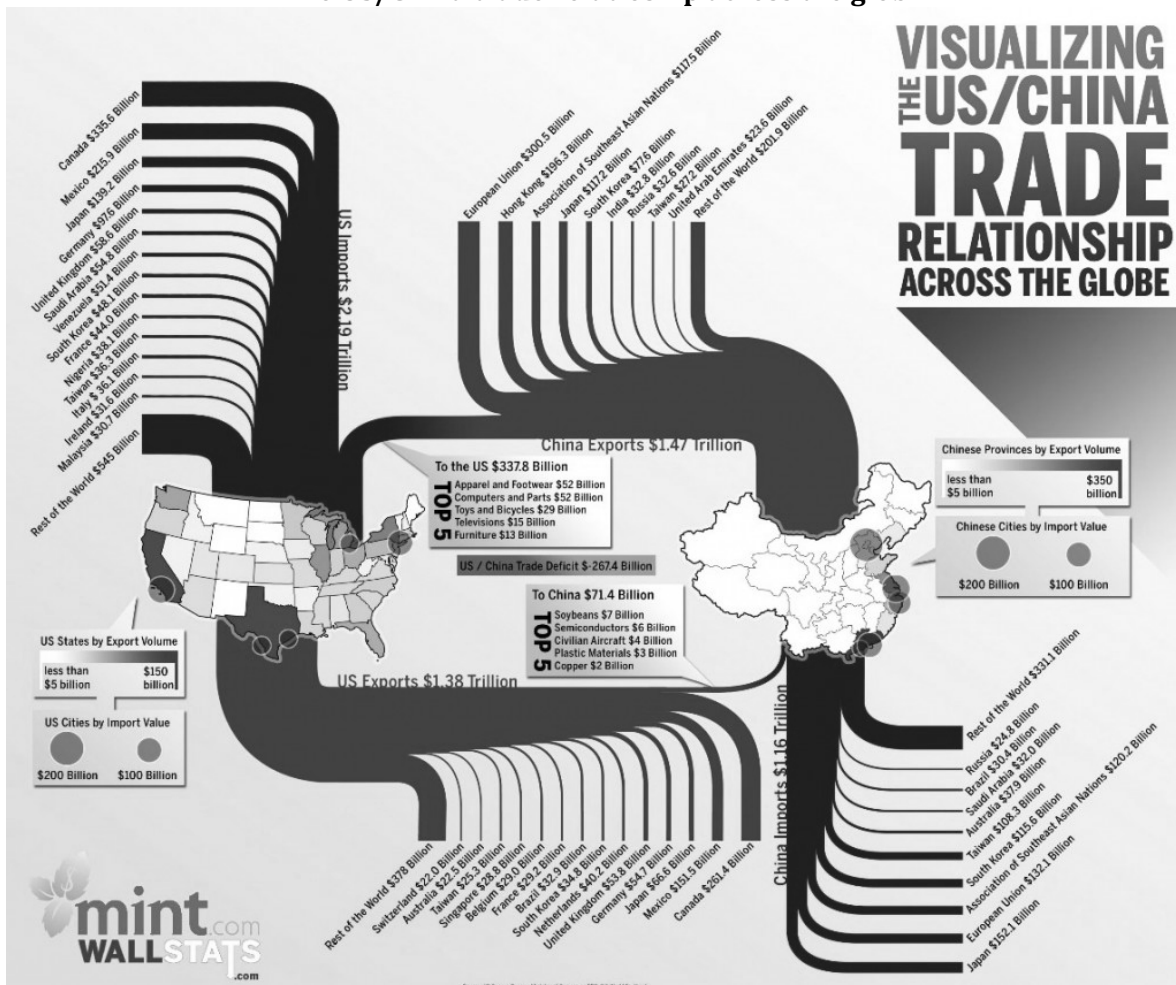
### THE INCREASE OF CHINA'S ROLE IN INTERNATIONAL BUSINESS

In the new circumstances for the development of the global economy and the global trade which result from the war against terrorism, the eyes of the world have been turned to China. This country seems to be a production superpower, able to change the world trade. In many areas it possesses comparative advantages. First of all, there is lots of cheap labour force, millions of gifted engineers, and a well-developed infrastructure. In that context, the decisions from September 17<sup>th</sup>, 2001, eliminating the last obstacles on the way of China to WTO, were particularly important.

The access of China to WTO is a historical decision, the evidence of evolution which was taking place within that organisation, giving it a more universal, global form. This means also that it expands on a huge market which can open itself up for foreign competition. Consequently, the transnational corporations, from semiconductors to the internet and passenger cars, will press strongly for the door to China to be opened wider. However, there are many problems to be solved in China itself. The country is undergoing the transformation towards the market economy. Gaining the economic balance is still very difficult. The United States and Great Britain are helping to introduce there so-called "market shock". The war against terrorism exerts a tremendous pressure on the world economy. Among other things, it accelerated the access of China to WTO, making this country part of the present world. It becomes obvious that also China has joined that war.

China is the world's number one exporter after taking the top spot from Germany in 2009. China's total 2009 were US\$1.2 trillion, compared to Germany's US \$1.17 trillion (816 billion euros) (*China's customs office, the Federation of German...*, 2010). About 20% of China's exports go to the United States (The World Bank, 2011). The U.S. is China's largest trading partner (LaFleur 2010). In 2010, U.S. exports of goods to China jumped 32%, to US\$92 billion (*Your Next Job:...*,2011). of China's top 10 trading partners are in Asia, including Japan, South Korea, Taiwan, Singapore (and Hong Kong) (LaFleur 2010) Six of the world's largest container ports are in China.(*Trading Places...*2010)

**Chart 11**  
**The US/China trade relationship across the glob**



Source: Facts about China: Economy & GDP 2011-2012, <http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/> 11.10. 2013.

**Chart 12**  
**World's largest container ports (Volume, million TEUs\*)**

World's largest container ports		World's largest container ports	
Volume, million TEUs*		Volume, million TEUs*	
1989		2009	
Hong Kong	4.5	Singapore	25.8
Singapore	4.4	Shanghai (China)	25.0
Rotterdam (Netherlands)	3.9	Hong Kong	20.9
Kaohsiung (Taiwan)	3.4	Shenzhen (China)	18.2
Kobe (Japan)	2.5	Busan (South Korea)	11.9
Busan (South Korea)	2.2	Guangzhou (China)	11.2
Los Angeles (United States)	2.1	Dubai (United Arab Emirates)	11.1
New York/New Jersey (United States)	2.0	Ningbo (China)	10.5
Keelung (Taiwan)	1.8	Qingdao (China)	10.2
Hamburg (Germany)	1.7	Rotterdam (Netherlands)	9.7
Long Beach (United States)	1.5	Tianjin (China)	8.7
Yokohama (Japan)	1.5	Kaohsiung (Taiwan)	8.5
Antwerp (Belgium)	1.5	Antwerp (Belgium)	7.3
Tokyo (Japan)	1.4	Port Klang (Malaysia)	7.3
Felixstowe (Britain)	1.4	Hamburg (Germany)	7.0
San Juan (Puerto Rico)	1.3	Los Angeles (United States)	6.7
Bremen/Bremerhaven (Germany)	1.2	Tanjung Pelepas (Malaysia)	6.0
Oakland (United States)	1.1	Long Beach (United States)	5.0
Seattle (United States)	1.0	Xiamen (China)	4.6
Manila (Philippines)	0.9	Laem Chabang (Thailand)	4.6

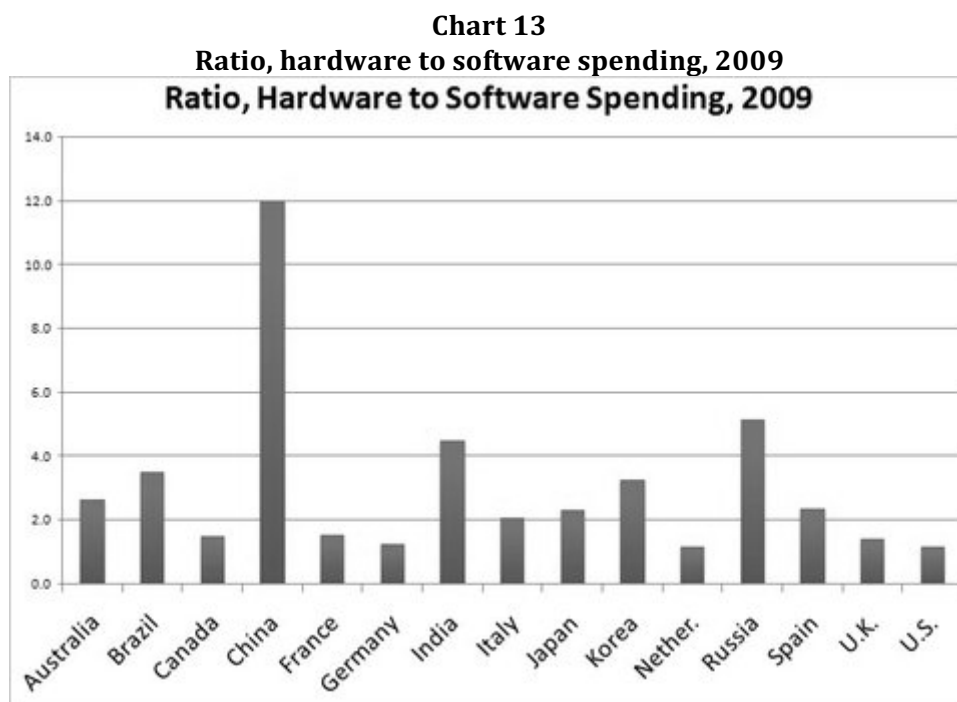
Source: Containerisation International \*Twenty-foot equivalent units

\*Twenty-foot equivalent units

Source: Containerisation International, <http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/> 11.10. 2013.

China has some of the highest piracy rates in the world—with a piracy rate of 96% in PC software, 93% in motion pictures, and 85% in records and music (Fang 2007), (International Intellectual Property Alliance, 2010). The U.S. Trade Representative's office estimated in 2005 that 85% to 93% of all sales of copyrighted products in China were pirated (Fang 2007). The International Intellectual Property Alliance has estimated U.S. trade losses in China due to piracy at \$3.5 billion in 2009—combined losses from music, movie, book, and software companies (China vows tougher punishments..., 2011). An estimated 79 percent of China's computers run on pirated software, according to the Business Software Alliance (Twelve Software CEOs..., 2010)

China is world's second-largest market for computer hardware sales...but is only the eighth-largest for software sales (The Real Problem..., 2011).



Source: Facts about China: Economy & GDP 2011-2012, <http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/> 11.10. 2013.

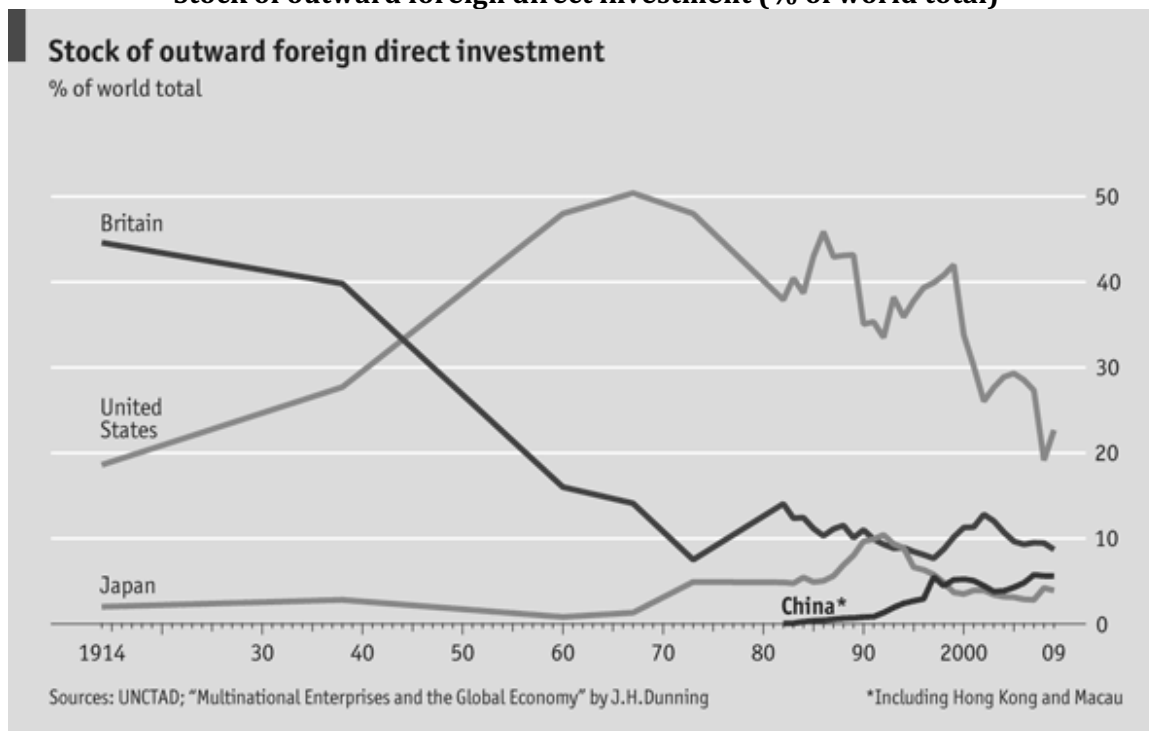
Nine out of ten DVDs sold in China are illegal copies according to the Motion Picture Association of America—costing Hollywood US\$2.3 billion a year in lost revenue (Fang 2007). 79% of counterfeit and pirated goods seized by U.S. Customs are of Chinese origin, representing \$204.7 million of the total seizure value in 2009. (U.S. Customs & Border Protection, 2010). In the late 1800s, Europeans widely viewed America as the source of inferior goods and pirated versions of best selling books, according to U.S. historian Stephen Mihm. For instance, Charles Dickens complained bitterly about how many unauthorized copies of his books were sold in the U.S (Wasserstrom, 2010).

Foreign investors are aware that after the rules of WTO have been accepted, they will be able to function in China in a relatively high safety, which is an important factor during the war conducted against terrorism. However, nobody expects that China will immediately introduce all the institutions supporting the rules of WTO. Anyway, the Chinese trade practice becomes more and more subjected to the anti-dumping rules, to the intellectual property rights and to other laws, accepted officially by Beijing, as well as by the provinces, where the protection of the Chinese firms may still take place.

China is now the biggest exporter and receiver of foreign investments. China was the second-largest recipient of Foreign Direct Investment (FDI) in 2009, attracting US\$95 billion, (behind only the U.S., which drew in \$130 billion) (United Nations, 2010). China attracted \$105.7 billion in foreign direct investment in 2010—the first time FDI in China crossed the \$100 billion mark (*China FDI rises strongly...*, 2011); (*Foreign Direct Investment*, 2011).



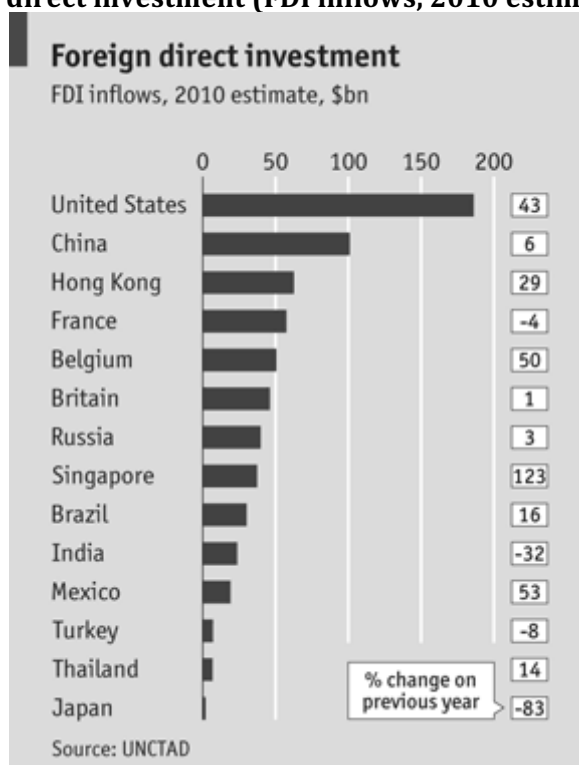
**Chart 14**  
**Stock of outward foreign direct investment (% of world total)**



\*Including Hong Kong and Macau

Source: UNCTAD; "Multinational Enterprises and the Global Economy" by J.H. Dunning  
<http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/>  
 11.10.2013.

**Chart 15**  
**Foreign direct investment (FDI inflows, 2010 estimate, \$ bn)**



Source: UNCTAD, <http://www.china-mike.com/facts-about-china/economy-investment-business-statistics/> 11.10. 2013.

A question may arise: what exactly are Chinese doing to become an important production

centre of the world? First of all they have young employees with higher education who earn \$1.50 a day and thousands of new employees entering the market every year. Many Chinese universities and institutes are still educating relatively lowly paid engineers. Besides, the price of land for an industrial firm is almost the cheapest in the world - it is \$25 for a square meter in Shanghai, which means half of the price in Kuala Lumpur and Bangkok and 60 times less than in Yokohama, Japan.

**Table 3 Comparison of selected costs between Shanghai and Yokohama**

	Shanghai	Yokohama
Engineering staff pays/ per month	\$180-\$540	\$4.200-\$5.000
Factory workers' pays/ per month	\$125-\$270	\$3.300
Price of industrial land/ per square meter	\$25	\$1.539
Rent for a flat/ per square meter	\$24	\$31-36
Installing the telephone	\$152	\$650
Industrial electric power	\$0.07	\$0.14
Direct tax	30%	30%

**Source: Business Week / October 22, 2001, p. 56.**

Telephone and port services, electric power and other elements of infrastructure, in the biggest, key cities are the best in all the developing world. Chinese bureaucrats, stimulated with the official grants, have become much more efficient and now they can be compared to their biggest rivals, that is, the bureaucrats of Thailand.

In China one has to do with the same accumulation and a similar type support for industry to that which can be observed in case of her production rivals from Latin America and South-East Asia. Such cities as Beijing or Huangho manufacture and supply, on a global scale, electronic equipment of the world quality. Car manufacturing also develops very fast. The enterprises with mixed capital, of the joint venture type, produce in a particularly intensive way. Such Shanghai firms as Shanghai Automotive Industry Corp., which has a capital co-operation with Volkswagen and General Motors Corp., and Tianjin Automotive, co-operating with Toyota Motor Corp., belong to that group of enterprises.

The Chinese successes lead to a more expensive labour force, and consequently different firms from the developing countries start offering a cheaper labour force, although not in large quantities so far. Even India, where wages are the lowest in the whole world, is not able to compete with the productivity of China in the area of low technology industrial goods. Hence, the shops of Bombay and Calcutta are filled with Chinese products.

In general opinion, as far as China is concerned, WTO is both a challenge and a chance. However, in case of agriculture, it is easy to see the challenge, while the chances are rather difficult to spot. The reason lies in the fact that the area of the Chinese farms most often does not exceed half a hectare, which means they are too small when compared with the American agricultural giants. Nevertheless, during the last two decades the Chinese laid strong foundations for reforms. A long-termed stability of that country depends also on the fast economic growth, which is possible only when the foreigners become convinced that China is a

partner able to play global roles. Both the world and China should be properly prepared for this.

China supports globalisation, declaring that it is the most efficient way of fighting poverty. This country wants to be a part of a global world and it is aware that it must observe its laws. In 2005, China was the fourth biggest exporter after European Union, Germany, United States of America and the fourth biggest importer after United States, European Union, Germany in the world (CIA-The World Factbook, China 2006). Currently, China is the largest destination for foreign investment (Reuvid, 2008). Due to China's access to WTO, her share in the world trade will increase from 3% to 7% (in 1986 it was only 0,7%). The results of the transition provide compelling evidence of the efficiency of market incentives. Other factors that have contributed to China's ascendancy to a world economic power include privatizing much of its industry, joining the World Trade Organization (WTO), formation of the Chinese Stock Exchange, passage of the Company Law (1993) and a multitude of corporate governance principles to protect shareholders and provide a framework of shifting from state to private ownership of capital (Doherty and Lu, 2013). It is being estimated that by the year 2020 China will take the first position among the world powers.

### **THE TENDENCIES TO INTERNATIONAL TRADE LIBERALISATION IN CHINA AND THE PROBLEM OF ENVIRONMENTAL PROTECTION**

The tendencies to liberalise the international trade often stand in clear conflict with the protection of the natural environment which, during the intensification of production, found itself in the centre of attention also in China. The process of pollution was one of the negative results of scientific-technological revolution. Many countries introduced special legal regulations in order to protect the environment against pollution. Ecological organisations of different types were established, and also the pressure groups, especially in industrialised countries, interested in the use of trade restrictions by governments for protection of the environment.

The pressure groups acting for natural environment protection see the trade policy in two aspects: as the way of improvement the standards of environmental protection in individual countries and over their borders, and as the instrument for persuading those countries like China to sign the international agreements on environmental protection. The imports restrictions against the producers coming from the countries with low standards of environmental protection may lead to the improvement of production standards by the local companies resulting from fighting with low competitiveness, and from the attempts to compete with foreign firms (Anderson, 1997, p. 319).

In trade policy, of discriminating means in relation to the environment, is in accordance with the article XX of WTO, and it testifies to the fact that trade barriers are used for the protection of the environment. In this context it is important to underline that, the activities related to environmental protection are in conflict with the tendencies leading to international trade liberalisation. From the theoretical point of view, we cannot say that trade liberalisation may help the environmental protection, especially when serious steps have to be taken in order to protect this environment against further degradation (Chichilnisky, 1994, p. 851 - 874; see also Copland and Taylor, 1995, p. 716 - 737; Corden, 1996). On the other hand, when some government find itself in a difficult situation, the trade reforms will be much more advantageous for that government than the actions in the environmental protection area (Bhagwati and Srinivisan, 1996) what we can observe also in China. In this situation the pressure groups connected with the environmental protection are against the international trade liberalisation.

The actions of those groups on WTO forum, and their regional activity against the reduction of trade barriers, have three reasons: 1) free trade means the growth of production and income, which, in turn, leads to the degradation of the environment, 2) free trade and growing investments cause the growth of transport activity and encourage companies to transfer the production to the countries with low ecological standards, which from the environmental point of view is wrong, 3) freedom for foreign investments discourage local companies to develop the technologies favourable for environmental protection (Anderson, 1997, p. 319). The question of reaching some form of an agreement between the problems of international trade liberalisation and the protection of natural environment especially in the context of the sustainable development became an important task for the WTO. The program of WTO activities included:

- the relations between the means used in trade and in environmental protection
- the relations between multilateral trade systems and the environmental protection means, applied for protection of the environment
- the influence of the effects of environmental protection on the liberalisation of international trade
- the relations between the mechanisms leading to compromises within WTO and within the multilateral agreements on environmental protection (Martin and Winters, 1995, p. 1-3).

Reaching the effective agreements on the international trade liberalisation and on environmental protection in the light of sustainable development is considered to be both very difficult and very delicate question. The problems of environmental protection have become most important issues especially in China. Therefore, it is evident that the international market has to take them into account. In the context of the sustainable development, the key problem is to make a proper choice: is the introduction of restrictions on international trade the best solution, or will the benefits from environmental protection (as applied by a multilateral trade system) be higher than the costs?

It is necessary also to emphasize that if the rules of international trade are clear – and if they are perceived to be supportive of important environmental values – then their legitimacy will be much greater also in China. Over the long term, public support for the WTO depends on a perception that it is balanced and fair (Esty, 1998, p. 123). Efforts to address the issues identified above could greatly enhance the WTO's reputation. Competing trade and environmental principles could best be balanced through creation of an interpretive statement that focuses on how the “exceptions” spelled out in Article XX would be implemented, rather than through full-blown renegotiation of the environmental elements of the trading system (Esty, 2000, p. 250-251).

Finding ways to address the environmental issues that inescapably arise in the context of deeper economic integration and tendency to the sustainable development must be seen as an important trade policy priority, as a matter of WTO commitment to undergirding the trade regime with sound economic theory, and as a matter of political necessity. Building a trading system that is more sensitive to pollution control and natural resources management issues is mandated by the growing degree to which these realms intersect with trade and environmental policies mutually reinforcing are also advisable to the extent that the presence of trade rules that internalize externalities will prove to be more economically efficient over time. Institutionalizing the links from the trade regime to environmental actors and other elements of civil society will also pay dividends. A culture of openness within the WTO is likely

to generate policies that the public accepts and that therefore become more useful and durable (Esty, 2000, p. 250-251).

### **THE TENDENCIES TO BILATERALISM IN THE FOREIGN TRADE POLICY OF CHINA**

Globalization can create changes in domestic markets also in China and placing pressure on political actors to obtain aid from the government. We can observe the groups which want to coordinate activities and change foreign trade policy. China's government provide the justification for protection of the domestic market to response to global competition. Significant government ownership of the productive resources of a country has a negative effect on trade liberalization, while fragmentation of decision-making authority, has a positive impact on the liberalization of trade policy (Kennedy, 2007, p. 165).

It is important to underline that generally in the area of foreign policy analysis has focused on "three i's": interest groups, international structure, and ideas (Kennedy, 2007, p. 146). Contemporary structure of the world suggests that freer trade was a reflection on U.S. interests and its hegemonic status after World War II, while a problems with free trade is a reflection of the U.S.'s hegemonic decline (Krasner, 1976, p. 317-347). The literature on ideas suggests that policy beliefs are reflected in laws and institutions. In contrast to these explanations government interests in the economy and in maintaining stability also play a large role in trade policy (Kennedy, 2007 p. 146). A multilateral forum with near universal membership offers maximization of gains from trade also for China however bilateral FTA often yields very small gains from trade and usually increases transaction costs by producing idiosyncratic sets of rules. But at the same time, a large state like China can acquire a high level of control in terms of partners, issues and agenda selection, and sectoral exclusions or inclusions based on domestic political needs (Pekkanen, Solis & Katada, 2007, p. 962).

One can contend that industrialized of aggregate economic gains in the interest of national welfare (largest in multilateral forums) or seeking control over rules in line with political interests (greatest in bilateral forums) also in China. The liberalizing rules are no longer an acceptable political price for the economic gains bundled across sectors. Yet, this sort of vague statement fosters uncertainty for domestic actors at home in uncompetitive sectors like agriculture and in several cases like for example in Japan trade officials need to show that they have more concrete control for political reasons-an element more credible in a bilateral setting than a multilateral one (Pekkanen, Solis & Katada, 2007, p. 962). This situation may also to indicate the back from globalisation to the mercantilist tendencies in the foreign trade policy of China (Puślecki, 2008).

### **CONCLUSIONS**

The trade policy plays a key role in the maintenance of both economic and political liberalization of China. The prominence of rent seeking in a country can have far-reaching implication for its economic development. Both structural and micro-political economy analyses of foreign trade policy have missed the impact of changing ideas about protectionism and relatively unchanging institutions designed to handle domestic producer complaints. The political consensus on the supply of trade policy and protectionism has changed over time. In the economic depression protectionism played important roles in the politics of political parties. In a global financial and economic crisis in 2008-2010 started to prevail also protectionist tendencies which accompany economic recession. Weakened has the same time, the impact of multilateral trade agreements on the processes of liberalisation of international trade in the framework of the WTO and increased the importance of bilateral agreements and regional agreements. This tendencies it can observe also in China. This point of view is very important for the theory and practice of the contemporary international business.

Further trade liberalisation and improved framework policies would increase trade and promote growth. It must be emphasized that openness to trade is associated with higher incomes and growth and there are the need for new approaches to trade cooperation in light of the forces that are currently re-shaping international business. The key of trade developments within the broader socio-economic context is especially the rise of global supply chains, the general shift of trade power away from the West towards Asia. A major factor, was the even more remarkable transformation of China, as market reforms opened up its economy to foreign trade and investment, and unleashed an unprecedented growth dynamic that has continued, with only minor slowdowns. In the new circumstances for the development of the global economy and the global trade, People Republic of China seems to be a production superpower, able to change the world trade. In many areas it possesses comparative advantages. China may continue their development to specialise in electronics and increasingly in services. With or without further trade agreements, services will be more traded and trade policies will have to adjust to changes in the organisation of global value change. The question raised is whether the West will see China's rise as an opportunity for cooperation or for conflict. Economic growth is generally more preferable in China to military and extensive expansion. With new investments, a country can transform its position through industrial expansion at home and sustain it through international trade. China is especially sensitive to the advantages of intensive growth and will not wish to disrupt essential economic arrangements that have been crucial to her success.

The integration of China into the world trade system may have increase aggregate welfare in the rest of the world by 0,4% but factor incomes in individual sectors may fall or rise by more than 5%. Dealing with relative wage pressures and needs for structural adjustment due to rising trade integration will thus be important. The benefits from trade liberalization are transmitted through several channels like shifting production from low to high locations, relocation of factors of production towards sectors and firms with high productivity and rising incomes due to an increase in market size that supports more specialisation, faster technology diffusion and stronger incentives to invest in "non-rival" assets. The former two effects include mostly static from international trade in goods, services and factors of production, while the latter entails dynamic growth effects. Significant static and dynamic efficiency gains – especially for South countries – could be reaped through further multilateral trade liberalization while global welfare gains from regional agreements are much more limited due to trade diversion. While fostering multilateral trade liberalisation has proved difficult in the recent past and regional arrangements have been frequent, the former should remain priority due these larger benefits and despite the practical challenges of seeing through such reforms in a multipolar world. This results are based on the "partial multilateral" trade liberalization scenario based on multilateral cuts in tariffs (50%) and transaction cost (25%) relative to baseline.

It is important to underline that also fiscal consolidation will require major efforts in several countries. Fiscal pressures will build up in reverse areas over coming decades unless extensive fiscal reforms are pursued. China growth could be curbed further by damages from environmental degradation due inter alia to climate change, wich are likely to affect these countries earlier than expected. By 2060, environmental damages in China may lower GDP by more than 5% compared to the central scenario.

China's growth is good for the world economy with significant terms of trade gains being experienced in its trading partners, reduction in poverty and increases in living standards. Chinese economic growth has been good for Chinese with massive reductions in poverty and

rising living standards. Moreover, China is now a very large regional power and the preceding discussion has provided evidence that it is having a very large growth effect on its neighboring trade partners. If China continues its path of stable growth there is every reason to expect continued and expanded benefits for its trade partners.

Rapid economic growth appears to have spread from China, and, while much of the old capitalist heartland is mired in economic stagnation and fiscal crisis, the 'emerging economies' face an investment glut. Current trends in world economy and global politics provide evidence that the China and other Global South countries has now arrived at 'normal' capitalism at last, bringing with it new patterns of uneven development, inequality and injustice. Its newly confident elites, now fully engaged in global circuits of trade, investment and finance, and in global governance too, appear to have left behind their previous colonial role. It is clear that the China and other Global South countries, or in elite-speak the 'emerging economies', has suffered less and recovered more quickly than the advanced capitalist heartland. In addition, it now seems that the patterns of political impact – not in the sense of immediate crisis measures but of long-term 'tectonic' shifts – may be equally significant and unexpected. While political elites in the USA, European Union and Japan struggle to find paths of recovery that are acceptable to their confused and divided electorates, remarkable changes of various kinds are observable across China and other 'emerging economies' from Asia, Africa and Latin America.

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## **Patriarchy and the state of Women participation in Governance in Edo State of Nigeria.**

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### **ABSTRACT**

Despite the freedom to participate in governance by both eligible men and women in Nigeria, the political scene in Edo State has been highly dominated by men-folk at all levels of governance due to the patriarchal social system in the State. Patriarchy as a concept, symbolizes a hierarchical structure that encompasses political, economic, social, religious, cultural, industrial and financial spheres, under which a large proportion of upper echelons in society are controlled and dominated by men. Thus, any system that perpetrates men's undue advantage over women is considered patriarchal. This paper analyzed the relationship between patriarchy and women participation in the governance of Edo State and found that there is low participation in the state politics and governance on the part of Edo women; that there is discrimination against women in governance in the state, and that patriarchy remains a factor that limits women participation in the governance of Edo State. The implication of the study is that there is need for policy action on the part of the state government to enable more women to be included in the governance of Edo State. The paper recommends the need to address the low participation of women in the governance of Edo State by allocating political positions to women on quota basis. Also, societal obstacles of patriarchy, custom, religion, tradition and other obnoxious beliefs found to be responsible for low women political participation must be set aside in the State.

**Key Words:** Discrimination, Gender imbalance, Governance, Patriarchy, Politics, Women Participation.

### **INTRODUCTION**

Women participation in governance in Nigeria and Edo State in particular, remains a burning issue in nearly every political discourse. For years, it has been obvious that women have been relegated to the background in governance in Nigeria and Edo State in particular. In Edo State of Nigeria, the political arena is not different from other parts of the world where political participation is imbalance in favour of men. Women are rendered nearly invisible and excluded from the political space which is often regarded as the male preserve, thereby depriving the state from benefiting from their potentials and contributions to development. Oronsaye-Salami [1] observes that one of the greatest challenges of the Edo woman today, as with all Nigerian women, is her exclusion from the political space and her invisibility in political affairs. Arising from this invisibility, it is obvious that only few Edo women have actually gained access to the political arena in Edo State. Since the creation of Edo State in 1991, women representation in governance has always been minimal below 30% affirmative action as against 50/50 in other parts of the world like Germany.

Oronsaye-Salami [1] even went further to state that male politicians characterize politics as patriarchal and excessively masculine. Their ideological aim is to perpetuate and legitimize patriarchy in the political system. To her, women political participation in Edo State is peripheralized. Unfortunately, Edo politicians have little regard for the position of women in

the state distribution of political power hence the political scene in Edo State is characterized by inadequate representation of women. In spite of women's efforts in the mobilization of voters, their contributions are often trivialized. Since women constitute a substantial portion of Edo State's population, excluding them would rob the state of fresh ideas and inputs in governance, thus posing a significant threat to democracy.

Edo State was created in 1991 when Bendel State was split into Edo and Delta States. The state is located in the South-South geo-political zone of Nigeria and occupies a landmass of 19,794 square kilometres. The capital city is Benin City, and its commercial cities are Benin, Auchi and Ekpoma. Edo state is made up of three major ethnic groups: namely the Binis, Esan and Afemai(en.wikipedia.org). It is bounded in the south by Delta State, in the west by Ondo State, in the north by Kogi State and in the east by Anambra State. Edo State's three major ethnic groups, the Binis, the Esan and the Afemai occupy Edo South, Edo Central and Edo North Senatorial Districts respectively. The state is also politically divided into eighteen (18) Local Government Areas. The state has a population of 3,497,502 based on 2006 estimate, and which of course has increased considerably in the past years.

### **Statement of the Problem**

Patriarchal factor appears to relegate majority of women in Edo State to house wife roles. Politics which provides the platform for governance has been generally regarded as the domain of men in the state. Women therefore do not have equal influence over the policy decisions that affect their lives and the overall development of the state. Thus, the inability of Edo women who constitute half of the state's population to properly fit into the political arena has affected their empowerment, social status and contribution to the development of the state. It is against this background that this study is undertaken in order to find how to rekindle the interests of more Edo women in their participation in politics and governance.

### **Research Questions**

In order to address the above stated problem of women participation in the governance of Edo State of Nigeria, the study seeks to provide answers to the following:

1. Has there been gender discrimination against women in governance in Edo State of Nigeria?
2. To what extent does patriarchy affect women's participation in governance in Edo State of Nigeria?

### **Objectives of the Study**

The study aims to achieve the following specific objectives:

1. To ascertain the degree of relationship between discrimination against women and their participation in the governance of Edo State of Nigeria.
2. To examine the degree of relationship between patriarchy and women participation in governance in Edo State of Nigeria.

### **Research Hypotheses**

**Ho<sub>1</sub>:** There is no statistically significant association between sex of the respondents and their perception of gender discrimination against women in governance in Edo State of Nigeria.

**Ho<sub>2</sub>:** There is no statistically significant relationship between patriarchy and women participation in governance in Edo state of Nigeria.

## **LITERATURE REVIEW**

Okpe [2] believes that patriarchy is a broad network or system of hierarchical organization

that cuts across political, economic, social, religious, cultural, industrial and financial spheres, under which the overwhelming number of upper positions in society are either occupied or controlled and dominated by men. Thus, any system that enforces an order that accords men undue advantage over women is considered patriarchal.

In the Nigerian context, Ejumudo [3:62] contends that the culture which emerged in our society requires women to take care of the home, their husbands and children. It needs to be said that the lowly position of women was more importantly inspired by the scriptures which states that:

*the Lord God said, it is not good that the man should be alone, I will make him a help meet for him; I will therefore that the younger women marry, bear children, guide the house and give no occasion to the adversary to speak reproachfully; thy desire shall be to thy husband and he shall rule over you, and wives submit yourselves unto your husbands, as unto the Lord, for the husband is the head of the wife even as Christ is the Head of the church.*

The above scriptural injunctions have further justified the fact that men occupy a superior position over women. To Ejumudo [3], apart from using the scripture to explain male-domination over the female, most societies, particularly in Africa, are innately patriarchal in nature. Because of the natural responsibilities of women, they are not naturally or traditionally predisposed towards socio-political activities. The patriarchal nature of the African culture is one that promotes the exclusion of women from political domain and is considered to mean a demonstration of their passion, love and care for their families.

Bunwaree [4:2] contends that “women are often not treated as full-fledged citizens. Having equal rights on paper does not necessarily translate into effective practices on the ground. Subtle discriminatory mechanisms rooted in patriarchal norms and values continue to pervade people’s lives”.

Also, opinion poll of 50 women conducted by Okpalike and Abamba [5] as to whether they would vote for a woman candidate as Nigeria’s president, shows that none of them was inclined to do so. The respondents were required to answer ‘Yes’ or ‘No’ as to whether they would vote for male or female presidential candidate in an election. The response from both males and females not only confirms the resilience of patriarchal attitude but also brings to the fore that even women are not yet ready to give support to their gender type.

Agbalajobi [6] argues that some general opinion has been that Nigerian politics is based on high political virility. That is, politics is for those who have all it takes to compete in the turbulent environment; those who have the wherewithal or financial muscles to take it by force when force is required; those that can march violence with violence. That it is also generally believed that men possess the superiority, strength, competitiveness and self reliance, and are prepared to engage in a political tussle, whereas women are considered too docile to participate in politics and governance. This consensus is also constructed by societal norms and values, which through socialization has defined different gender roles according to biological differences. Women’s belief that politics is a dirty game and their continued fright whenever the thought of violence comes into them, has further alienated them from mainstream politics.

Campaigns for political office according to Odhiambo [7],. are routinely violent affairs, physically and verbally, even for men. The violence that women experience emanates from two

levels; first from a generally violent political culture and secondly, from a patriarchal society that does not believe in leadership by females. The political rules of engagement formulated as they are by men, reflect and respond to men's experiences thereby locking out women. Unless the law tackles the structural and institutional impediments that limit women in engaging fully in political activities, no equality will be achieved [7].

Ojo [8] has posited that in Nigeria, the roles of women in the political process are restricted, due to the patriarchal nature of our society. The patriarchal, traditional and socio-political systems do not recognize the role of women in politics hence the presence of male domination in the Nigerian democratic governance. He argues further that in one hand, the political naivety of the Nigerian society does not encourage women political participation, and the antagonistic imbalance between men and women on the other hand, has continued to impede women's political advancement [8].

Thus, it is the view of Ogunye [9] that our society is patriarchal in nature, and most of the parties are established by men who merely recognize the contributions of women. Also, because our political system has been largely infiltrated by "money bags" politics, a lot of women do not have the financial wherewithal to operate in most of these political parties. To Ojo [10], although the liberal democracy allows full and unconditional participation of women in politics through voting and holding of elective and appointive positions, but women are still at the background in the arena of real politicking. One obvious reason for this alienation of women from the mainstream of politics, despite the demands and expectations of liberal democracy for gender parity in politics, is gender stereotypes and predisposition towards women participation in politics [10].

UNDP [11] believes that patriarchy is a very strong factor that explains male dominance over female, and as a result, it is believed that men will sit back in the family to keep the family name and lineage growing while women will be married out. Thus, while men are being trained for leadership activities, women are confined to household responsibilities; roles ascribed to them by culture which affect them later in life, thereby making them to lose self-confidence/worth and have low self-esteem in their career in adult life, politics inclusive. Despite the pronounced commitment of the international community to gender equality and to the bridging of the gender gap in the formal political arena, reinforced by convention on Elimination of All Forms of Discrimination Against Women (CEDAW) and the Beijing Platform of Action, women are highly marginalized and are poorly represented in governance and other political activities [11].

In support of the above position, Michelle [12] observed that since the implementation of the Beijing Declaration and Platform of Action in 1995, the governments of different countries vowed to include in their priorities to address gender inequality and the increased access of women in politics and decision-making. It has been 12 years since this international commitment; many countries have strides in opening the political arena to more women. Yet, in some societies (such as Edo State), the patriarchal system still prevails and limits the participation of women in national, state and local governments, and the goal set for women to achieve 'parity', defined as at least 40% representation by 2025, is still far from being reached.

In a survey carried out by Tong [13] in a study titled "the Gender Gap in Political Culture and Participation in China", it was found that there is a continuous gender imbalance in many facets of political culture and participation, with female respondents scoring significant lower, compared with males. Tong's survey reported that women respondents were more passive towards achievement, were more accommodating in conflict situations and had a higher

preference for conflict mediation by traditional authority than men, and that these traits were further negatively correlated with political culture and participation measures.

Shvedova [14] in her study "Obstacles faced by women in parliament, using Sweden and India as case studies, identified four major political hurdles that curb women's political representation and growth. They include lack of party support, for example, limited financial support for women candidates, limited access to political networks, and the more stringent standards and qualifications applied to women; lack of sustained contact and cooperation with other public organizations such as trade (labour) unions and women's groups; lack of access to well-developed education and training systems for women's leadership in general, and for orienting young women towards political life; and the nature of the electoral system, which may or may not be favourable to women candidates.

The main culture that pervades the entire Nigerian society is patriarchal in nature. This male-dominated culture, relegate women to an inferior and second position in society. The patriarchal culture of male supremacy still remains embedded, obscured and protected within traditional institutions and structure held in abeyance and relative utmost sacredness. A major obstacle to the task of executing gender-sensitive and gender-parity policies in Nigeria, therefore, is the patriarchal cultural norms, attitudes and practices, which have been accepted as the natural order of things. This culture is still ingrained in men and it is demonstrated both consciously and unconsciously, despite the general drive for a meaningful change in gender relations through policy initiatives and actions as well as sundry international conventions and accords to which Nigeria is a signatory [3].

Nwankwo [15] has rightly observed that the various Nigerian constitutions guaranteed the rights of women to participate in active politics as the last decade appeared to have witnessed a relative increase in women's participation in governance. This is only when we measure increase in participation with certain standards like the number of women who vote in elections; the number of public offices held by women; number of women-related policies implemented by government etc. To her, over the years, there has been a remarkable increase in women's participation in politics in Nigeria considering these standards; yet, there is inherently a pronounced level of underrepresentation of women in politics and governance when compared with their male counterparts.

In line with Nwankwo [15], United Nations Children and Education Fund UNICEF [16] stated that the involvement of women in governance at the micro and macro levels is not only a moral but legal and constitutional right. And that Chapters 2 and 4 of the 1999 constitution safeguard civil, political, social, economic and cultural rights and protect all citizens against discrimination, although Chapter 2 on socio-economic and cultural rights is not justiciable. Convention on the Elimination of All forms of Discrimination against Women (CEDAW) and the Beijing Platform for Action (BPFA), also make provisions for these rights. However, available records from the Federal Ministry of Women Affairs and Social Development (2006) show an unacceptable level of discrimination against women[16].

Available records by UNICEF [16] point to the fact that gender gap in governance is fast changing even though variations exist across the nation. The national gender gap average is 16.59 percent but it is as high as 48 percent in Sokoto and Zamfara states. The trend of slight improvement in some segments of the country is certain to have positive effect on women as they now have role models of their gender in those who have attained prominence in politics or business.

Despite the improvements in statistics of women in governance, traditional gender stereotypes, threats of violence and poverty are factors still accounting for low participation of women in governance in Nigeria. Women are traditionally seen in Nigeria as caregivers and are 'expected' to remain at home caring for both the husband and children. They are seen within the purview of custom, tradition and religion. Surprisingly, some women believe and encourage this stereotype. Besides, violence in Nigeria's political culture discourages women from participating. Despite these challenges, some women in Nigeria have excelled in politics and public life culminating in the election of the first female Speaker of the Sixth Legislative Assembly [16].

The International Institute for Democracy and Electoral Assistance (IDEA) [17], notes that gender equity is the process of being fair to women and men. To ensure this fairness, measures must often be available to make-up for historical and political disadvantages that limit women from otherwise operating on a level-playing field with men. Equity leads to equality. Gender equality implies that women and men enjoy the same status. Gender equality means that women and men have equal opportunities for realizing their full human rights and potential to contribute to political, economic, social and cultural development, and to benefit from results thereof. Gender equality includes both quantitative and qualitative aspects. The quantitative perspective focuses on equal distribution of power for both women and men.

On the whole, the above arguments explain why Edo women like their counterparts in other parts of the world, have not shown much of enthusiasm to compete or struggle with men in an attempt to occupy political positions in the governance of the state. The crux of this paper therefore, is to find out what has been responsible for the lack of interests shown by Edo women whenever the need to compete with men for political positions in the governance of the state arises.

### **THEORETICAL UNDERPINNING**

The study is anchored on the theory of patriarchy. The theory of patriarchy was popularized by Goldberg [18], one of the conservative theorists, who expressed strong doubts about how far traditional gender roles could, and should be transformed. Other early advocates of patriarchy were Beauvoir [19] and Millet [20] who argued that patriarchy laid emphasis on male-dominance of female folks as men are seen to control access to institutional power (governance), mould ideology, philosophy, art and religion to suit their needs.

In his work, "the inevitability of Patriarchy", Goldberg [18], argued that authority and leadership are and always have been, male-dominated. The basis of this theory is the assertion that sexual/physiological differentiation leads inevitably and universally to differences between males and females. Therefore, if this assertion remains the truth, it means that nowhere are most women going to change traditional sex-roles to attain equality with men in public power, status and rewards [18]. This rightly explains the political governance in Edo State which has been dominated by men to the disadvantage of women due to the patriarchal nature of Edo people.

### **METHODOLOGY**

The population of this study is four thousand, six hundred and twenty-five (4,625) key politicians (holding political positions) across the three senatorial districts in Edo state, and were selected from each of the eighteen (18) local governments areas located in the three senatorial districts. These politicians comprise the state executive council members, local government chairmen, vice-chairmen, secretaries, councilors, supervisory councilors, party executive members of political parties in the state and the state House of Assembly members.

This category of politicians is considered as stakeholders in the business of politics and governance in the state. Hence they are well situated to adequately respond and contribute to the issue being investigated.

**Table 1: Distribution of key Respondents across the three Senatorial Districts of Edo State.**

LGA by Senatorial District	Coun-cillors	No of party exco	L.G. Chair-men	Vice Chair-men	Secre-taries	Super-visory Council-lors	House of Assem-bly	State Exco
<b>Edo South</b>							24	23
Egor	10	220	1	1	1	6	-	-
IkpobaOkha	10	220	1	1	1	6	-	-
Oredo	12	264	1	1	1	6	-	-
Orhunmwon	12	264	1	1	1	6	-	-
Ovia North-East	12	264	1	1	1	6	-	-
Ovia south-West	10	220	1	1	1	6	-	-
Uhunmwode	11	242	1	1	1	6	-	-
<b>Edo Central</b>	0	0	0	0	0	0	0	0
Esan central	10	220	1	1	1	6	-	-
Esan North-East	11	242	1	1	1	6	-	-
Esan south-East	10	220	1	1	1	6	-	-
Esan west	10	220	1	1	1	6	-	-
Igueben	10	220	1	1	1	6	-	-
<b>Edo North</b>	0	0	0	0	0	0	0	0
Akoko Edo	10	220	1	1	1	6	-	-
Etsako Central	10	220	1	1	1	6	-	-
Etsako East	10	220	1	1	1	6	-	-
Etsako West	12	264	1	1	1	6	-	-
Owan East	11	242	1	1	1	6	-	-
Owan West	11	242	1	1	1	6	-	-
<b>Total</b>	<b>192</b>	<b>4224</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>108</b>	<b>24</b>	<b>23</b>

Source: Ainabor’s Field Survey,2016

**Sampling Frame**

Senatorial District	No. of LGAs	Total Sample Size
Edo South	7	140
Edo Central	5	104
Edo North	6	124
Total	18	368

**DETERMINATION OF SAMPLE SIZE**

In determining the sample size for this study, Taro Yamani formula cited in Shaib and Momoh [21] was used to get the sample size as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where,

*N* = Total population of the study

*e* =level of precision (0.05or 5%)

*n* = Desired sample size

$$n = \frac{4625}{1 + 4625(0.0025)}$$



$$n = \frac{4625}{1+11.5625}$$

$$n = \frac{4625}{12.5625}$$

$n = 368.15 \approx 368$ . The sample size is 368

**Table 2: Frequency distribution of returned valid questionnaire by local governments of Edo State**

LGA by Senatorial District	Questionnaire Administered	Questionnaire returned	Percentage Administered	Percentage Returned
<b>Edo South</b>				
Egor	20	20	5.4	5.4
IkpobaOkha	20	20	5.4	5.4
Oredo	22	22	6.0	6.0
Orhunmwon	22	22	6.0	6.0
Ovia North-East	22	22	6.0	6.0
Ovia south-West	20	20	5.4	5.4
Uhunmwode	20	20	5.4	5.4
<b>Edo Central</b>				
Esan central	20	20	5.4	5.4
Esan North-East	20	20	5.4	5.4
Esan south-East	20	20	5.4	5.4
Esan west	20	20	5.4	5.4
Igueben	20	20	5.4	5.4
<b>Edo North</b>				
Akoko Edo	20	20	5.4	5.4
Etsako Central	20	20	5.4	5.4
Etsako East	20	20	5.4	5.4
Etsako West	22	22	6.0	6.0
Owan East	20	20	5.4	5.4
Owan West	20	20	5.4	5.4
Total	122	122	100	100

Source: Ainabor's Field Survey, 2016

**Table 3: Personal Characteristics of Respondents**

PERSONAL CHARACTERISTICS	CLASSIFICATION	Freq	%
SEX	Male	232	63
	Female	136	37
AGE	28 – 37 years	38	10.3
	38 – 47 years	241	65.5
	48 – 57 years	59	16
	Above 57 years	30	8.2
MARITAL STATUS	Married	294	79.9
	Single	17	4.6
	Divorce	17	4.6
	Widow	20	5.4
	Widower	20	5.4
RELIGION	Christianity	311	84.5
	Islam	57	15.5
EDUCATIONAL QUALIF	NECO/WASC/TCII	26	7.1
	ND/NCE	56	15.2
	HND/B.Sc/BA/BPA	76	20.7
	M.Sc/MA/M.Ed/Ph.D	210	57.1
OFFICE/POST OCCUPIED	Elected	12	3.3
	Appointed	210	57.1
	None	146	39.7
YEAR OF SERVICE	1 – 2 years	218	59.2
	3 – 5 years	2	.5
	None	148	40.2

**Source: Ainabor's Field Survey, 2016**

**Table 4: Gender Discrimination in State Governance**

QUESTIONNAIRE ITEMS	Strongly Agree		Agree		Strongly Disagree		Disagree		Undecided	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
i. I do support gender equality in the political governance of Edo State.	34	9.2	206	56	55	14.9	44	12	29	7.9
ii. Edo State will benefit more if equal number of men and women are involved in politics and political governance in Edo State.	36	9.8	203	55.2	85	23.1	34	9.2	10	2.7
iii. There has been gender discrimination in the governance of Edo State.	32	8.7	241	<b>65.5</b>	49	13.3	36	9.8	10	2.7
iv. There is discrimination against women in the political governance of Edo State.	46	12.6	216	<b>58.7</b>	58	15.8	32	8.7	16	4.3
v. There is discrimination against men in the political governance of Edo State.	24	6.5	20	5.4	64	17.4	245	66.6	15	4.1
vi. Men have always been more than women in the legislative arms of State and local governments across Edo State.	210	57.1	68	<b>18.5</b>	42	11.4	32	8.7	16	4.3
vii. Men have always been more than women in the executive arms of State and local governments across Edo State.	227	61.7	16	4.3	35	9.5	48	13	42	11.4

**Source: Ainabor's Field Survey, 2016**

Table 4 above showed the frequency of respondents to the issue of gender discrimination in state governance in Edo State. It revealed that 273(74.2%) respondents were of the opinion that there has been gender discrimination in the governance of Edo State while 85(23.1%) respondents were of the view that there has been no gender discrimination in state governance in Edo State. The table also showed that 262(71.3%) respondents agreed that there is discrimination against women in the governance of Edo State while 90(24.5%) respondents disagreed that there is discrimination against women in the governance of Edo State.

As to whether there has been discrimination against men in the governance of the state, the table showed that 309(84%) respondents expressed their views that there has been no discrimination against men in the governance of the state. While 278(75.6%) respondents agreed that men have always been more than women in the legislative arms of state and local governments across Edo State, 74(20.1%) respondents did not agree. 243(66%) respondents agreed that men have always been more in the executive arms of state and local governments across Edo State while only 83(22.5%) respondents did not agree. From the above revelations, it therefore implies that there is discrimination against women in the governance of Edo State, as men have always occupied political positions more than women in the governing bodies (executive and legislature) of Edo State.

**Table 5: Patriarchy and Women Participation in Governance in Edo State**

QUESTIONNAIRE ITEMS	Strongly Agree		Agree		Strongly Disagree		Disagree		Undecided	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
i. There is a relationship between patriarchy and Women participation in Political governance in Edo State.	-	-	241	65.5	64	17.4	39	10.6	24	6.5
ii. Patriarchy (male authority or domination) can be responsible for under-representation of women in the political governance of Edo State.	43	11.7	190	51.6	60	16.3	57	15.5	18	4.9

Source: Ainabor’s Field Survey, 2016

Table 5 showed the frequency of respondents to the relationship between patriarchy and women participation in the governance of Edo state. From the Table, 241(65.5%) were of the view that there is a relationship between patriarchy and women participation in the governance of Edo State while 104(28%) respondents did not agree. The Table revealed that patriarchy (male authority or domination) was responsible for under-representation of women in the governance of Edo State. This was indicated by 233(63.3%) respondents while 117(31.8%) respondents did not agree. On the whole, the finding implies that patriarchy is mainly responsible for low participation of women in the governance of Edo State.

### Hypotheses Testing

Hypothesis One:

**H<sub>0</sub>:** There is no significant association between the sex of the respondents and their perception of gender discrimination against women in state governance in Edo State.

In order to test this hypothesis, data collected on sex were cross-tabulated with those obtained on the respondents’ opinion on discrimination against women in political governance in Edo State and analyzed, using Chi-Square. The result of the test is shown below:

**Table 1: Chi Square test on sex of the respondents and their perception about discrimination against women**

	U	D	SD	A	SA
Male	10	16	39	136	31
Female	6	16	19	80	15
Total	16	32	58	216	46

	X <sup>2</sup> Value	DF	P value
Chi-Square Test	3.151	4	.533**

\*\* Not Significant at 5% Critical level

The Chi Square analysis showed that there is no significant association between sex and respondents’ opinions on discrimination against women in governance in Edo State, with Chi Square value (3.151) not significant at 5% level since the P Value(.533\*\*)=0.05. The null hypothesis under test is thus accepted. The implication of this finding is that the respondents’ opinion on the issue of gender discrimination against women in political participation in Edo

State is independent of sex. This means that both men and women significantly agreed that there is discrimination against women in governance in the state.

### Hypothesis Two:

**H<sub>0</sub>:** There is no significant relationship between patriarchy and women participation in state governance in Edo State of Nigeria.

In order to test this hypothesis, patriarchy was selected and tested for its effect on the level of participation of women in political leadership in the study area using the Chi-Square test of goodness-of-fit. A summary of the result is presented as follows:

**Table 2: Chi-Square Test on Patriarchy and women's participation in governance in Edo State**

Scale of Response	Observed Frequency	Expected Frequency	X <sup>2</sup> Value	DF	P Value
Undecided	24	92.0	330.630	3	0.00*
Disagree	39	92.0			
Strongly Disagree	64	92.0			
Agree	241	92.0			
Total	368	368			

\* Significant at 5 % critical level

The results showed that patriarchy significantly influences women participation in political governance in Edo State with Chi square value (330.630) significant at 5% level since the P-Value(0.00\*) < 0.05. The null hypothesis under test was thus rejected. The conclusion is that patriarchy limits women participation in political governance and general participation in leadership in Edo State. This explains why the governance of Edo State has been dominated by men to the detriment of Edo women.

### DISCUSSION OF FINDINGS

The study reveals that there is gender discrimination in the governance of Edo State as both men and women significantly agree that women have been discriminated against in politics and governance in Edo State. This is understood in terms of holding key governing positions in the state as no Edo woman has ever been governor, deputy governor, speaker or deputy speaker of the legislative arm, secretary to the state Government etc since the creation of the State. There appears to be no conscious efforts being made on the part of men to concede these key positions in governance to women in the near future. The implication is that women continue to suffer discrimination or marginalization or male dominance in the political governance of the state. This is corroborated by the scholarly works of Tong [13], UNDP [11], UNICEF [16], Epelle and Oriakhi [22], Ihemeje [23] which stated that women have been discriminated against in governance and that it is high time they started becoming active participants rather than portray apathy or play passive roles in government practices as done in the past. This, no doubt, falls in line with the trend in Edo State.

The study revealed as well that patriarchy which emphasizes male authority or male dominance in every social organization or institution is responsible for the underrepresentation of Edo women in the state governance of Edo State. Also, patriarchy which promotes division of traditional gender sex roles puts governance in the domain of men. This goes to explain why many women in Edo State have not been aspiring to political or appointive positions in the governance of the state. The patriarchal nature of Edo people, poses obstacles to women's political aspirations hence the dominance of males in the political scene to the detriment of women. This agrees with the findings of Ogunye [9], Bunwaree [4], Odhiambo [7] and Shvedova [14] that our society is patriarchal in nature and that a traditional,

strong patriarchal value system favours sexually segregated roles, and the so-called 'traditional cultural values', militate against the advancement, progress, and participation of women in any political process.

The study is also in consonance with the works of Ojo [10] and Okpalike and Abamba [5] which found that the Nigerian society like many other societies of the world is patriarchal. Right from the formation of the different political parties, men take the lead; hence there is no political party which has a woman as its chairperson, secretary or even holding any sensitive office in the party. This is a reflection of the cultures of the various ethnic groups in Nigeria. Since the creation of Edo State, there is no political party which has had a woman as its chairperson, secretary or has given a woman the opportunity to hold a sensitive position in the party. Due to this attitude, men are expected to be pacesetters for women to follow, not the other way round.

### **FINDINGS**

1. That both men and women significantly agreed that there is discrimination against Edo women in governance in Edo State.
2. That patriarchy limits women participation in the governance of Edo State.

### **CONCLUSION**

It is an empirical fact that governance in Edo State has been dominated by men to the detriment of the women. It therefore means that politics and governance in the State will continue to be the domain of men until something is deliberately done to strike a balance on gender representation. It is concluded that patriarchy which emphasizes male dominance or male authority constitutes a cog in the wheel of women participation in the state governance in Edo State. Thus, the participation of Edo women at the macro level of decision-making which is supposed to be an essential ingredient that ensures that policy-making takes into account women's perspectives and experiences, has remained elusive. If men in Edo State continue to monopolize the political process, passing laws which affect the state at large, the decision-making process will not always balance the interests of the male and the female populations.

However, effective formulation and implementation of deliberate policies towards the attainment of gender equity in political representation can be a panacea to the continuous downward trend in the political participation of Edo women in governance.

### **RECOMMENDATIONS**

Based on the findings, the following recommendations are made:

1. There is need to address the discrimination against women in the governance of Edo State by allocating political positions to women on quota basis. A gender quota or representative law that will help the state to achieve this and be committed to the Affirmative Action on women representation should be passed by the State House of Assembly. This will enable more Edo women to participate in the governance of Edo State.
2. In line with the above, political parties in the state must change their programmes and attitudes that tend to perpetuate discrimination against women, if gender equity in political participation in Edo State is to be achieved. There is need to allow women to occupy sensitive positions in the party structure, such as chairpersons, secretaries and other key positions in the party as against their traditional position of 'women leader'. Giving them opportunity to hold some key positions in their parties will give them a

sense of belonging and rekindle the interest of more women in politics and governance in the state.

3. Societal obstacles of patriarchy, custom, religion, tradition, and other obnoxious beliefs, which have been found to be responsible for the low (women) political participation, must be broken in Edo state. This can be achieved by regular training and awareness creation through mass media to sensitize the Edo people who hitherto believed that politics and governance were exclusive preserve of the men. Women in Edo State should not be domesticated in terms of gender roles. This will encourage more women to show interest in politics and governance of the state.

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# Ordering of components of Green Supply Chain Practices jointly impacting the individual components of Green Supply Chain Performance – An Empirical Study of the Indian Automobile Manufacturing Sector

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## ABSTRACT

This paper establishes the order in which five identified green supply chain practices jointly impact ten identified individual component measures of green supply chain performance with reference to the automobile manufacturing sector of India. This research paper is an extension of the research work done by [1]. The purpose of this research paper is to test the hypotheses developed by [1]. Further the joint impact of Green Supply Chain Practices on individual components of Green Supply Chain Performance has been established by means of ten multiple regression models. Consistently the ten multiple regression models that were developed established that there is a definite ordering of the five Green Supply Chain Practices while jointly impacting each of the ten component measures of Green Supply Chain Performance individually. These findings would enable practicing managers in the automobile manufacturing sector of India to take decisions related to implementation of green supply chain practices which would result in enhancing a particular green supply chain performance measure. This information regarding implementation of Green Supply Chain Practices would be very handy as it has financial and policy making implications.

**Keywords:** Automobile Manufacturing; Empirical Study; Components of Green Supply Chain Practices; Components of Green Supply Chain Performance; Indian.

## INTRODUCTION

The research problem here is to test sixty-one hypotheses out of which fifty have been developed by [1] related to the association of Green Supply Chain Practices with individual component measures of Green Supply Chain Performance with reference to the automobile manufacturing sector of India. Additionally another eleven hypotheses have been framed in this paper pertaining to the ordering and joint impact of Green Supply Chain Practices on individual component measures of Green Supply Chain Performance.

Literature that studies the impact of Green Supply Chain Practices on Green Supply Chain Performance measures is on the rise. Few of the studies that have addressed this linkage are as follows: [1]; [2]; [3]; [4]; [5]; [6]; [7].

It has been established by the existing literature that Green Supply Chain Practices have an impact on measures of GSC performance [8] only at a broad level. Not many studies have focused identifying the exact joint impact of Green Supply Chain Practices on particular component measures of Green Supply Chain Performance [4], [5], [6], [7]. Further the existing

studies could not state conclusively the ordering of the GSC Practices that jointly impact a particular component measure of GSC Performance.

The purpose of this study is to test the association between the components of green supply chain practices and the components of green supply chain performance with reference to the automobile manufacturing sector in India. The study also tests already developed hypotheses pertaining to the association of GSC Practices with component measures of Green Supply Chain Performance [1]. The study additionally identifies the joint impact of Green Supply Chain Practices on individual component measures of Green Supply Chain Performance [1]. Finally the study identifies the order of influence of the GSC Practices while jointly impacting the individual component measures of GSC Performance.

### THE CONCEPTUAL FRAMEWORK IDENTIFIED FOR TESTING THE HYPOTHESES

The conceptual framework showing the joint influence of green supply chain practices on component green supply chain performance measures as appearing in existing literature [1] is shown in figure 1. One of the Green Supply Chain Performance measures namely Green Supply Chain Execution, as identified in the mentioned paper consists further of five components namely Green Supply Chain Execution-Production; Green Supply Chain Execution-Logistics; Green Supply Chain Execution-Packaging; Green Supply Chain Execution-Marketing; Green Supply Chain Execution-Supply Loops [9].

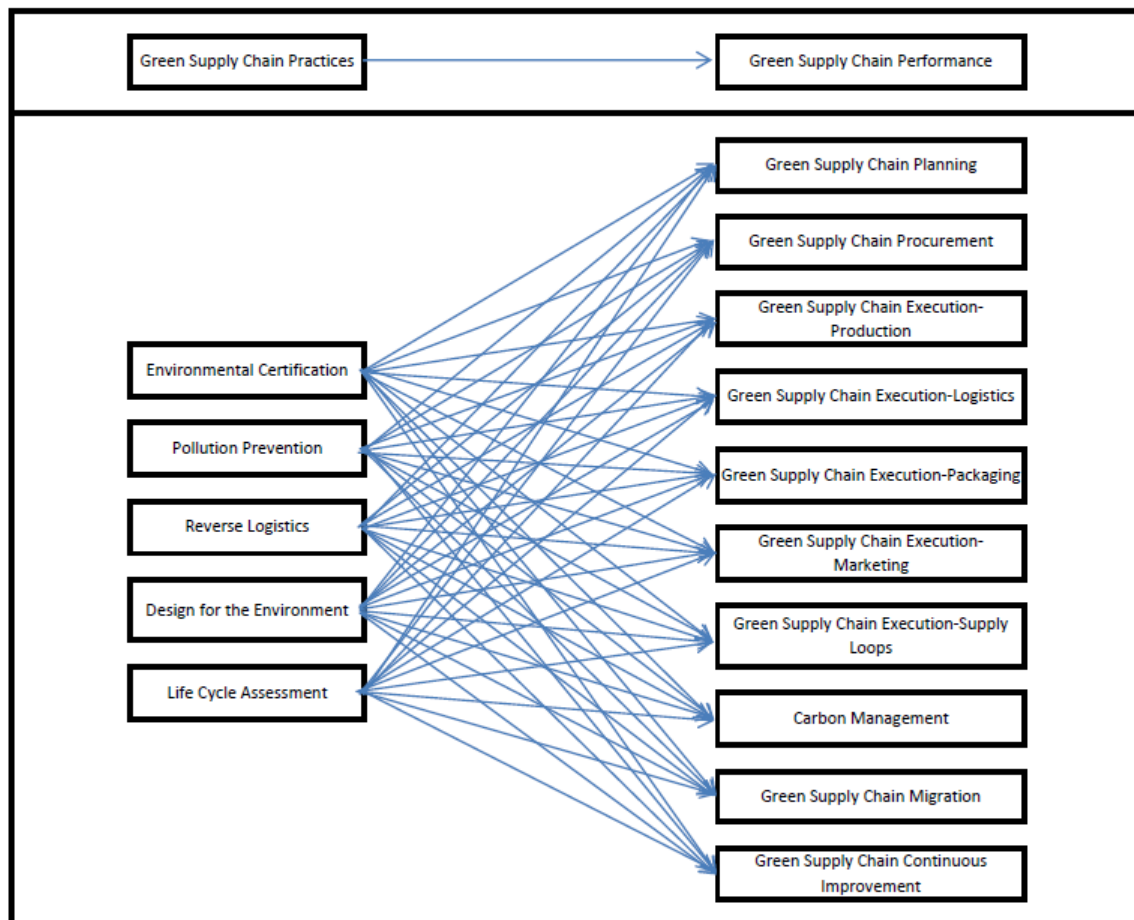


Figure 1. Association between components of Green Supply Chain Practices and components of Green Supply Chain Performance

## METHODS

This research may be described as quantitative research. It makes use of deductive reasoning for drawing conclusions. The data was collected by making use of a newly and originally prepared questionnaire instrument to scale the constructs namely Green Supply Chain Practices; and Green Supply Chain Performance as well as their sub-constructs by using a 5-point balanced Likert scale. The population consisted of plants of all Indian automobile manufacturing firms. The sample consisted of respondents from automobile manufacturing firms and their plants from India. The participants consist of representative executives from various automobile manufacturing firms having knowledge of the subject area of the research i.e. Green Supply Chain Practices and Green Supply Chain Performance.

A close-ended questionnaire instrument developed by [1] was used to scale the collected data. The questionnaire was administered on the respondents to scale the five green supply chain practices and the ten component measures of green supply chain performance. The questionnaire items are shown in the appendix section of this document.

A covering letter supported the instrument and the instrument contained demographic items, attitudinal items, behavioral items, factual items and closing instructions. The instrument used a continuous scale to measure the items; the instrument was subjected to expert comments of eminent faculties/practitioners in the field of green supply chain management. The suggestions given by them were subsequently incorporated to further improvise or revise the questionnaire. The pilot survey was of sample size 50 and the major survey was of sample size 103 including the 50 samples of the pilot survey.

The construct Green Supply Chain Practices has five sub-constructs and the construct Green Supply Chain Performance has ten sub-constructs as shown in the Table 1.

**Table 1. Summary of the constructs and sub-constructs used in the study in their abbreviated and expanded forms**

Sr. No.	Constructs and their sub-constructs in their abbreviated form	Constructs and their sub-constructs in their expanded form
	GSC Practices	Green Supply Chain Practices
1	EC	Environmental Certification
2	PP	Pollution Prevention
3	RL	Reverse Logistics
4	LCA	Life Cycle Assessment
5	DfE	Design for the Environment
	GSC Performance	Green Supply Chain Performance
6	GSCPLAN	Green Supply Chain Planning
7	GSCPROC	Green Supply Chain Procurement
8	GSCEXPROD	Green Supply Chain Execution-Production
9	GSCEXLOG	Green Supply Chain Execution-Logistics
10	GSCEXPACK	Green Supply Chain Execution-Packaging
11	GSCEXMARK	Green Supply Chain Execution-Marketing
12	GSCEXSL	Green Supply Chain Execution-Supply Loops
13	CM	Carbon Management
14	GSCMIG	Green Supply Chain Migration
15	GSCCI	Green Supply Chain Continuous Improvement

The data that was collected on administering the questionnaire on the respondents was entered in an EXCEL sheet manually by coding the responses on a 5-point balanced Likert scale as 1, 2 3 4 and 5. The data was subsequently transferred to statistical analysis software SASS for the analysis. The descriptive statistics of the data collected is shown in the Table 2.

**Table 2. Descriptive statistics of the sub-constructs used in the pilot study**

Sub-constructs	N	Mean	Std. Dev.	Sum	Minimum	Maximum
GSCPLAN	50	4.12000	0.83690	206.00000	2.00000	5.00000
GSCPROC	50	4.15818	0.85750	207.90909	1.72727	5.00000
GSCEXPROD	50	4.39429	0.60165	219.71429	2.57143	5.00000
GSCEXLOG	50	4.19833	0.44221	209.91667	3.16667	4.75000
GSCEXPACK	50	4.37000	1.09991	218.50000	2.00000	5.00000
GSCEXMARK	50	3.77000	1.07124	188.50000	1.25000	5.00000
GSCEXSL	50	3.48000	0.69059	174.00000	2.00000	4.66667
CM	50	3.60571	0.80272	180.28571	1.00000	5.00000
GSCMIG	50	4.02400	1.14331	201.20000	1.00000	5.00000
GSCCI	50	4.26000	1.02441	213.00000	1.81818	5.00000
EC	50	4.47600	0.66626	223.80000	2.00000	5.00000
PP	50	4.46909	0.76488	223.45455	2.00000	5.00000
RL	50	3.48000	0.83885	174.00000	1.20000	4.60000
LCA	50	4.07333	0.94830	203.66667	1.00000	5.00000
DFE	50	4.15750	0.73097	207.87500	1.00000	5.00000

In order to evaluate the reliability of the data collected, Cronbach Coefficient Alpha was evaluated for each of the sub-constructs in the study. Table 3 shows the various sub-constructs involved in the study along with the corresponding value of the Cronbach Coefficient Alpha. This coefficient is a measure of reliability. Normally values starting from around 0.7 and going upwards are considered to indicate a good reliability. By reviewing the Cronbach Coefficient Alpha for the sub-constructs shown in the table 3, it is observed that the questionnaire is reliable to scale all the fifteen items. Sample size was 50 respondents for this pilot study whereas for getting a true indication of reliability, a sample size of around 100 respondents is needed. Accordingly, 103 samples were taken for this study during the major survey so that better conclusion could be drawn.

**Table 3. Cronbach Alpha values as a measure of reliability for the various sub-constructs used in the study**

Sr. No.	Sub-constructs	Cronbach Coefficient Alpha for the sub-constructs	
		Raw	Standardized
1	Environmental Certification	0.839954	0.850132
2	Pollution Prevention	0.977275	0.981131
3	Reverse Logistics	0.920683	0.922742
4	Life Cycle Assessment	0.614101	0.649368
5	Design for the Environment	0.886993	0.898978
6	Green Supply Chain Planning	0.947669	0.953422
7	Green Supply Chain Procurement	0.960878	0.954046
8	Green Supply Chain Execution (Green Production)	0.845737	0.888054
9	Green Supply Chain Execution (Green Logistics)	0.775143	0.817626
10	Green Supply Chain Execution (Green Packaging)	0.997976	0.997972
11	Green Supply Chain Execution (Green Marketing)	0.969056	0.968858
12	Green Supply Chain Execution (Supply Loops)	0.279859	0.252359
13	Carbon Management	0.836164	0.831687
14	Green Supply Chain Migration	0.978998	0.979889
15	Green Supply Chain Continuous Improvement	0.989219	0.989432

The Cronbach Coefficient Alpha for Green Supply Chain Execution (Supply Loops) is less but it has got strong support of existing literature in its favour; so it has been retained [9].

#### FACTOR ANALYSIS OF THE DATA COLLECTED DURING THE PILOT STUDY

Confirmatory Factor Analysis was conducted on the variables constituting the sub-constructs DFE [10], EC [11], LCA [12], PP [13] and RL [14]. Confirmatory Factor Analysis was also conducted on the variables constituting the sub-constructs GSCPLAN [15], GSCPROC [16], GSCEXP [17], GSCEXLOG [18], GSCEXP [19], GSCEXMARK [20], GSCEXSL [21], CM [22], GSCMIG [23] and GSCCI [24] in a similar manner. This helped in identifying the factors and also in establishing the communality estimates for or each of the sub-constructs in the questionnaire. By sorting the component variables of each sub-construct in descending order of value of their communality estimates, it was possible to establish the order of contribution of component variables constituting each sub-construct [10], [11], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21], [22], [23] and [24]. The major survey consisted of 103 samples including the 50 samples taken during the pilot survey. The ten sub-constructs of the construct GSC Performance (Green Supply Chain Performance) and the five sub-constructs of the construct GSC Practices (Green Supply Chain Practices) used in correlation analysis are shown in Table 4 in their abbreviated form.

**Table 4. The set of constructs used in correlation analysis**

10 Constructs	GSCPLAN	GSCPROC	GSCEXP	GSCEXLOG	GSCEXP	GSCEXMARK	GSCEXSL	CM	GSCMIG	GSCCI
5 Constructs	EC	PP	RL	LCA	DFE					

The descriptive statistics of the data collected and scaled during the major survey is shown in the Table 5.

**Table 5. Descriptive statistics of the data scaled during the major survey**

Simple Descriptive Statistics						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
GSCPLAN	103	4.40194	0.77788	453.40000	2.00000	5.00000
GSCPROC	103	4.42807	0.77950	456.09091	1.72727	5.00000
GSCEXPROD	103	4.58669	0.55035	472.42857	2.57143	5.00000
GSCEXLOG	103	4.37136	0.43627	450.25000	3.16667	4.75000
GSCEXPACK	103	4.78155	0.41076	492.50000	4.00000	5.00000
GSCEXMARK	103	4.15534	1.03441	428.00000	1.25000	5.00000
GSCEXSL	103	4.36893	0.33305	450.00000	4.00000	4.66667
CM	103	3.81692	0.70112	393.14286	1.00000	5.00000
GSCMIG	103	4.60388	0.44368	474.20000	4.00000	5.00000
GSCCI	103	4.69462	0.38461	483.54545	4.00000	5.00000

Table 6 shows the Pearson’s correlation coefficient between each of the five components of green supply chain practices and each of the ten components of green supply chain performance. Accordingly, in all fifty associations were identified for a co-relational study.

**Table 6. Correlations between the sub-constructs of GSC Practices and GSC Performance**

Pearson Correlation Coefficients, N=103					
Prob >  r  under H0: Rho=0					
Sub-constructs	EC	PP	RL	LCA	DFE
GSCPLAN	0.77652 <.0001	0.89556 <.0001	0.58815 <.0001	0.86637 <.0001	0.89235 <.0001
GSCPROC	0.79505 <.0001	0.91784 <.0001	0.64056 <.0001	0.89016 <.0001	0.88818 <.0001
GSCEXPROD	0.81458 <.0001	0.94278 <.0001	0.59098 <.0001	0.90133 <.0001	0.77809 <.0001
GSCEXLOG	0.73401 <.0001	0.78128 <.0001	0.33109 0.0006	0.78431 <.0001	0.88357 <.0001
GSCEXPACK	0.75984 <.0001	0.89303 <.0001	0.73419 <.0001	0.91591 <.0001	0.59887 <.0001
GSCEXMARK	0.43783 <.0001	0.57391 <.0001	0.35796 0.0002	0.72417 <.0001	0.92030 <.0001
GSCEXSL	0.56192 <.0001	0.63907 <.0001	0.29853 0.0022	0.74510 <.0001	0.89379 <.0001
CM	0.42258 <.0001	0.59716 <.0001	0.50793 <.0001	0.76088 <.0001	0.86238 <.0001
GSCMIG	0.63345 <.0001	0.72321 <.0001	0.39958 <.0001	0.81444 <.0001	0.89433 <.0001
GSCCI	0.75947 <.0001	0.87719 <.0001	0.62598 <.0001	0.93066 <.0001	0.79845 <.0001

On the basis of Table 6 it is possible to test the association between the fifty pairs of sub-constructs and hence test the fifty hypotheses which have been framed [1]. Also additionally eleven hypotheses pertaining to the ordering and the joint influence of components of GSC Practices on individual component measures of GSC Performance have been framed. Table 7 shows all the sixty-one hypotheses to be tested in their null and alternate form. Also it shows the decision of accepting or rejecting the hypotheses on the basis of correlation coefficient and/or regression analysis. For values of p less than 0.05 the null hypotheses have been rejected else they have been accepted.

**Table 7. Hypotheses tested along with the decision of accepting or rejecting them based on correlation analysis and/or regression analysis**

Sr. No.	Null Hypothesis	Hypothesis	Pearson's correlation coefficient	p value for Significance level ( $\alpha = 0.05$ )	Decision about the hypothesis
	Alternate Hypothesis				
1	H1 <sub>0</sub>	Environmental Certification has no association with GSC Planning.	0.77652	<.0001	Reject Null Hypothesis
	H1 <sub>a</sub>	Environmental Certification has a significant positive association with GSC Planning.			Accept Alternate Hypothesis
2	H2 <sub>0</sub>	Environmental Certification has no association with Green Procurement.	0.79505	<.0001	Reject Null Hypothesis
	H2 <sub>a</sub>	Environmental Certification has a significant positive association with Green Procurement.			Accept Alternate Hypothesis
3	H3a <sub>0</sub>	Environmental Certification has no association with Green Production component of GSC Execution.	0.81458	<.0001	Reject Null Hypothesis
	H3a <sub>a</sub>	Environmental Certification has a significant positive association with Green Production component of GSC Execution.			Accept Alternate Hypothesis
4	H3b <sub>0</sub>	Environmental Certification has no association with Green Logistics component of GSC Execution.	0.73401	<.0001	Reject Null Hypothesis
	H3b <sub>a</sub>	Environmental Certification has a significant positive association with Green Logistics component of GSC Execution.			Accept Alternate Hypothesis
5	H3c <sub>0</sub>	Environmental Certification has no association with Green Packaging component of GSC Execution.	0.75984	<.0001	Reject Null Hypothesis
	H3c <sub>a</sub>	Environmental Certification has a significant positive association with Green Packaging component of GSC Execution.			Accept Alternate Hypothesis
6	H3d <sub>0</sub>	Environmental Certification has no association with Green Marketing component of GSC Execution.	0.43783	<.0001	Reject Null Hypothesis

Sr. No.	Null Hypothesis	Hypothesis	Pearson's correlation coefficient	p value for Significance level ( $\alpha = 0.05$ )	Decision about the hypothesis
	Alternate Hypothesis				
	H3d <sub>a</sub>	Environmental Certification has a significant positive association with Green Marketing component of GSC Execution.			Accept Alternate Hypothesis
7	H3e <sub>0</sub>	Environmental Certification has no association with Supply Loops component of GSC Execution.	0.56192	<.0001	Reject Null Hypothesis
	H3e <sub>a</sub>	Environmental Certification has a significant positive association with Supply Loops component of GSC Execution.			Accept Alternate Hypothesis
8	H4 <sub>0</sub>	Environmental Certification has no association with Carbon Management.	0.42258	<.0001	Reject Null Hypothesis
	H4 <sub>a</sub>	Environmental Certification has a significant positive association with Carbon Management.			Accept Alternate Hypothesis
9	H5 <sub>0</sub>	Environmental Certification has no association with GSC Migration.	0.63345	<.0001	Reject Null Hypothesis
	H5 <sub>a</sub>	Environmental Certification has a significant positive association with GSC Migration.			Accept Alternate Hypothesis
10	H6 <sub>0</sub>	Environmental Certification has no association with GSC Continuous Improvement.	0.75947	<.0001	Reject Null Hypothesis
	H6 <sub>a</sub>	Environmental Certification has a significant positive association with GSC Continuous Improvement.			Accept Alternate Hypothesis
11	H7 <sub>0</sub>	Pollution prevention has no association with GSC Planning.	0.89556	<.0001	Reject Null Hypothesis
	H7 <sub>a</sub>	Pollution prevention has a significant positive association with GSC Planning.			Accept Alternate Hypothesis
12	H8 <sub>0</sub>	Pollution prevention has no association with Green Procurement.	0.91784	<.0001	Reject Null Hypothesis
	H8 <sub>a</sub>	Pollution prevention has a significant positive association with Green Procurement.			Accept Alternate Hypothesis
13	H9a <sub>0</sub>	Pollution prevention has no association with Green Production component of GSC Execution.	0.94278	<.0001	Reject Null Hypothesis
	H9a <sub>a</sub>	Pollution prevention has a significant positive association with Green Production component of GSC Execution.			Accept Alternate Hypothesis



Sr. No.	Null Hypothesis	Hypothesis	Pearson's correlation coefficient	p value for Significance level ( $\alpha = 0.05$ )	Decision about the hypothesis
	Alternate Hypothesis				
14	H9b <sub>0</sub>	Pollution prevention has no association with Green Logistics component of GSC Execution.	0.78128	<.0001	Reject Null Hypothesis
	H9b <sub>a</sub>	Pollution prevention has a significant positive association with Green Logistics component of GSC Execution.			Accept Alternate Hypothesis
15	H9c <sub>0</sub>	Pollution prevention has no association with Green Packaging component of GSC Execution.	0.89303	<.0001	Reject Null Hypothesis
	H9c <sub>a</sub>	Pollution prevention has a significant positive association with Green Packaging component of GSC Execution.			Accept Alternate Hypothesis
16	H9d <sub>0</sub>	Pollution prevention has no association with Green Marketing component of GSC Execution.	0.57391	<.0001	Reject Null Hypothesis
	H9d <sub>a</sub>	Pollution prevention has a significant positive association with Green Marketing component of GSC Execution.			Accept Alternate Hypothesis
17	H9e <sub>0</sub>	Pollution prevention has no association with Supply Loops component of GSC Execution.	0.63907	<.0001	Reject Null Hypothesis
	H9e <sub>a</sub>	Pollution prevention has a significant positive association with Supply Loops component of GSC Execution.			Accept Alternate Hypothesis
18	H10 <sub>0</sub>	Pollution prevention has no association with Carbon Management.	0.59716	<.0001	Reject Null Hypothesis
	H10 <sub>a</sub>	Pollution prevention has a significant positive association with Carbon Management.			Accept Alternate Hypothesis
19	H11 <sub>0</sub>	Pollution prevention has no association with GSC Migration.	0.72321	<.0001	Reject Null Hypothesis
	H11 <sub>a</sub>	Pollution prevention has a significant positive association with GSC Migration.			Accept Alternate Hypothesis
20	H12 <sub>0</sub>	Pollution prevention has no association with GSC Continuous Improvement.	0.87719	<.0001	Reject Null Hypothesis
	H12 <sub>a</sub>	Pollution prevention has a significant positive association with GSC Continuous Improvement.			Accept Alternate Hypothesis
21	H13 <sub>0</sub>	Life Cycle Assessment has no association with GSC Planning.	0.86637	<.0001	Reject Null Hypothesis

Sr. No.	Null Hypothesis	Hypothesis	Pearson's correlation coefficient	p value for Significance level ( $\alpha = 0.05$ )	Decision about the hypothesis
	Alternate Hypothesis				
	H13 <sub>a</sub>	Life Cycle Assessment has a significant positive association with GSC Planning.			Accept Alternate Hypothesis
22	H14 <sub>0</sub>	Life Cycle Assessment has no association with Green Procurement.	0.89016	<.0001	Reject Null Hypothesis
	H14 <sub>a</sub>	Life Cycle Assessment has a significant positive association with Green Procurement.			Accept Alternate Hypothesis
23	H15a <sub>0</sub>	Life Cycle Assessment has no association with Green Production component of GSC Execution.	0.90133	<.0001	Reject Null Hypothesis
	H15a <sub>a</sub>	Life Cycle Assessment has a significant positive association with Green Production component of GSC Execution.			Accept Alternate Hypothesis
24	H15b <sub>0</sub>	Life Cycle Assessment has no association with Green Logistics component of GSC Execution.	0.78431	<.0001	Reject Null Hypothesis
	H15b <sub>a</sub>	Life Cycle Assessment has a significant positive association with Green Logistics component of GSC Execution.			Accept Alternate Hypothesis
25	H15c <sub>0</sub>	Life Cycle Assessment has no association with Green Packaging component of GSC Execution.	0.91591	<.0001	Reject Null Hypothesis
	H15c <sub>a</sub>	Life Cycle Assessment has a significant positive association with Green Packaging component of GSC Execution.			Accept Alternate Hypothesis
26	H15d <sub>0</sub>	Life Cycle Assessment has no association with Green Marketing component of GSC Execution.	0.72417	<.0001	Reject Null Hypothesis
	H15d <sub>a</sub>	Life Cycle Assessment has a significant positive association with Green Marketing component of GSC Execution.			Accept Alternate Hypothesis
27	H15e <sub>0</sub>	Life Cycle Assessment has no association with Supply Loops component of GSC Execution.	0.74510	<.0001	Reject Null Hypothesis
	H15e <sub>a</sub>	Life Cycle Assessment has a significant positive association with Supply Loops component of GSC Execution.			Accept Alternate Hypothesis
28	H16 <sub>0</sub>	Life Cycle Assessment has no association with Carbon Management.	0.76088	<.0001	Reject Null Hypothesis

Sr. No.	Null Hypothesis	Hypothesis	Pearson's correlation coefficient	p value for Significance level ( $\alpha = 0.05$ )	Decision about the hypothesis
	Alternate Hypothesis				
	H16 <sub>a</sub>	Life Cycle Assessment has a significant positive association with Carbon Management.			Accept Alternate Hypothesis
	H17 <sub>0</sub>	Life Cycle Assessment has no association with GSC Migration.	0.81444	<.0001	Reject Null Hypothesis
29	H17 <sub>a</sub>	Life Cycle Assessment has a significant positive association with GSC Migration.			Accept Alternate Hypothesis
	H18 <sub>0</sub>	Life Cycle Assessment has no association with GSC Continuous Improvement.	0.93066	<.0001	Reject Null Hypothesis
	30	H18 <sub>a</sub>			Life Cycle Assessment has a significant positive association with GSC Continuous Improvement.
	H19 <sub>0</sub>	Design for Environment has no association with GSC Planning.	0.89235	<.0001	Reject Null Hypothesis
	31	H19 <sub>a</sub>			Design for Environment has a significant positive association with GSC Planning.
	H20 <sub>0</sub>	Design for Environment has no association with Green Procurement.	0.88818	<.0001	Reject Null Hypothesis
	32	H20 <sub>a</sub>			Design for Environment has a significant positive association with Green Procurement.
	H21a <sub>0</sub>	Design for Environment has no association with Green Production component of GSC Execution.	0.77809	<.0001	Reject Null Hypothesis
	33	H21a <sub>a</sub>			Design for Environment has a significant positive association with Green Production component of GSC Execution.
	H21b <sub>0</sub>	Design for Environment has no association with Green Logistics component of GSC Execution.	0.88357	<.0001	Reject Null Hypothesis
	34	H21b <sub>a</sub>			Design for Environment has a significant positive association with Green Logistics component of GSC Execution.
35	H21c <sub>0</sub>	Design for Environment has no association with Green Packaging component of GSC Execution.	0.59887	<.0001	Reject Null Hypothesis

Sr. No.	Null Hypothesis	Hypothesis	Pearson's correlation coefficient	p value for Significance level ( $\alpha = 0.05$ )	Decision about the hypothesis
	Alternate Hypothesis				
36	H21c <sub>a</sub>	Design for Environment has a significant positive association with Green Packaging component of GSC Execution.	0.92030	<.0001	Accept Alternate Hypothesis
	H21d <sub>0</sub>	Design for Environment has no association with Green Marketing component of GSC Execution.			Reject Null Hypothesis
37	H21d <sub>a</sub>	Design for Environment has a significant positive association with Green Marketing component of GSC Execution.	0.89379	<.0001	Accept Alternate Hypothesis
	H21e <sub>0</sub>	Design for Environment has no association with Supply Loops component of GSC Execution.			Reject Null Hypothesis
38	H21e <sub>a</sub>	Design for Environment has a significant positive association with Supply Loops component of GSC Execution.	0.86238	<.0001	Accept Alternate Hypothesis
	H22 <sub>0</sub>	Design for Environment has no association with Carbon Management.			Reject Null Hypothesis
39	H22 <sub>a</sub>	Design for Environment has a significant positive association with Carbon Management.	0.89433	<.0001	Accept Alternate Hypothesis
	H23 <sub>0</sub>	Design for Environment has no association with GSC Migration.			Reject Null Hypothesis
40	H23 <sub>a</sub>	Design for Environment has a significant positive association with GSC Migration.	0.79845	<.0001	Accept Alternate Hypothesis
	H24 <sub>0</sub>	Design for Environment has no association with GSC Continuous Improvement.			Reject Null Hypothesis
41	H24 <sub>a</sub>	Design for Environment has a significant positive association with GSC Continuous Improvement.	0.58815	<.0001	Accept Alternate Hypothesis
	H25 <sub>0</sub>	Reverse Logistics has no association with GSC Planning.			Reject Null Hypothesis
42	H25 <sub>a</sub>	Reverse Logistics has a significant positive association with GSC Planning.	0.64056	<.0001	Accept Alternate Hypothesis
	H26 <sub>0</sub>	Reverse Logistics has no association with Green Procurement.			Reject Null Hypothesis
	H26 <sub>a</sub>	Reverse Logistics has a significant positive association with Green Procurement.			Accept Alternate Hypothesis

Sr. No.	Null Hypothesis	Hypothesis	Pearson's correlation coefficient	p value for Significance level ( $\alpha = 0.05$ )	Decision about the hypothesis
	Alternate Hypothesis				
43	H27a <sub>0</sub>	Reverse Logistics has no association with Green Production component of GSC Execution.	0.59098	<.0001	Reject Null Hypothesis
	H27a <sub>a</sub>	Reverse Logistics has a significant positive association with Green Production component of GSC Execution.			Accept Alternate Hypothesis
44	H27b <sub>0</sub>	Reverse Logistics has no association with Green Logistics component of GSC Execution.	0.33109	0.0006	Reject Null Hypothesis
	H27b <sub>a</sub>	Reverse Logistics has a significant positive association with Green Logistics component of GSC Execution.			Accept Alternate Hypothesis
45	H27c <sub>0</sub>	Reverse Logistics has no association with Green Packaging component of GSC Execution.	0.73419	<.0001	Reject Null Hypothesis
	H27c <sub>a</sub>	Reverse Logistics has a significant positive association with Green Packaging component of GSC Execution.			Accept Alternate Hypothesis
46	H27d <sub>0</sub>	Reverse Logistics has no association with Green Marketing component of GSC Execution.	0.35796	0.0002	Reject Null Hypothesis
	H27d <sub>a</sub>	Reverse Logistics has a significant positive association with Green Marketing component of GSC Execution.			Accept Alternate Hypothesis
47	H27e <sub>0</sub>	Reverse Logistics has no association with Supply Loops component of GSC Execution.	0.29853	<0.0022	Reject Null Hypothesis
	H27e <sub>a</sub>	Reverse Logistics has a significant positive association with Supply Loops component of GSC Execution.			Accept Alternate Hypothesis
48	H28 <sub>0</sub>	Reverse Logistics has no association with Carbon Management.	0.50793	<.0001	Reject Null Hypothesis
	H28 <sub>a</sub>	Reverse Logistics has a significant positive association with Carbon Management.			Accept Alternate Hypothesis
49	H29 <sub>0</sub>	Reverse Logistics has no association with GSC Migration.	0.39958	<.0001	Reject Null Hypothesis
	H29 <sub>a</sub>	Reverse Logistics has a significant positive association with GSC Migration.			Accept Alternate Hypothesis

Sr. No.	Null Hypothesis	Hypothesis	Pearson's correlation coefficient	p value for Significance level ( $\alpha = 0.05$ )	Decision about the hypothesis
	Alternate Hypothesis				
50	H30 <sub>0</sub>	Reverse Logistics has a no association with GSC Continuous Improvement	0.62598	<.0001	Reject Null Hypothesis
	H30 <sub>a</sub>	Reverse Logistics has a significant positive association with GSC Continuous Improvement.			Accept Alternate Hypothesis
51	H31 <sub>0</sub>	There is no definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Planning component of Green Supply Chain Performance.	The null hypothesis is rejected and the alternate hypothesis is accepted on the basis of the evidence provided by Table 6, Table 8, Table 9, Table 10, Table 39, Table 41 and Figure 12.		Reject null hypothesis
	H31 <sub>a</sub>	There is a definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Planning component of Green Supply Chain Performance.			Accept alternate hypothesis
52	H32 <sub>0</sub>	There is no definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Procurement component of Green Supply Chain Performance.	The null hypothesis is rejected and the alternate hypothesis is accepted on the basis of the evidence provided by Table 6, Table 11, Table 12, Table 13, Table 39, Table 41 and Figure 13.		Reject null hypothesis
	H32 <sub>a</sub>	There is a definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Procurement component of Green Supply Chain Performance.			Accept alternate hypothesis
53	H33 <sub>0</sub>	There is no definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for	The null hypothesis is rejected and the alternate hypothesis is accepted on the basis of the evidence provided by Table 6, Table 14, Table 15, Table 16, Table 39, Table 41		Reject null hypothesis

Sr. No.	Null Hypothesis	Hypothesis	Pearson's correlation coefficient	p value for Significance level ( $\alpha = 0.05$ )	Decision about the hypothesis
	Alternate Hypothesis				
		Environment; and Reverse Logistics impact the Green Supply Chain Execution (Production) component of Green Supply Chain Performance.	and Figure 14.		Accept alternate hypothesis
	H33a	There is a definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Execution (Production) component of Green Supply Chain Performance.			
54	H34 <sub>0</sub>	There is no definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Execution (Logistics) component of Green Supply Chain Performance.	The null hypothesis is rejected and the alternate hypothesis is accepted on the basis of the evidence provided by Table 6, Table 17, Table 18, Table 19, Table 39, Table 41 and Figure 15.		Reject null hypothesis
	H34a	There is a definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Execution (Logistics) component of Green Supply Chain Performance.			Accept alternate hypothesis
55	H35 <sub>0</sub>	There is no definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Execution (Packing) component of Green Supply Chain Performance.	The null hypothesis is rejected and the alternate hypothesis is accepted on the basis of the evidence provided by Table 6, Table 20, Table 21, Table 22, Table 39, Table 41 and Figure 16.		Reject null hypothesis

Sr. No.	Null Hypothesis	Hypothesis	Pearson's correlation coefficient	p value for Significance level ( $\alpha = 0.05$ )	Decision about the hypothesis
	Alternate Hypothesis				
	H35 <sub>a</sub>	There is a definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Execution (Packing) component of Green Supply Chain Performance.			Accept alternate hypothesis
56	H36 <sub>0</sub>	There is no definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Execution (Marketing) component of Green Supply Chain Performance.		The null hypothesis is rejected and the alternate hypothesis is accepted on the basis of the evidence provided by Table 6, Table 23, Table 24, Table 25, Table 39, Table 41 and Figure 17.	Reject null hypothesis
	H36 <sub>a</sub>	There is a definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Execution (Marketing) component of Green Supply Chain Performance.			Accept alternate hypothesis
57	H37 <sub>0</sub>	There is no definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Execution (Supply Loops) component of Green Supply Chain Performance.		The null hypothesis is rejected and the alternate hypothesis is accepted on the basis of the evidence provided by Table 6, Table 26, Table 27, Table 28, Table 39, Table 41 and Figure 18.	Reject null hypothesis
	H37 <sub>a</sub>	There is a definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Execution			Accept alternate hypothesis



Sr. No.	Null Hypothesis	Hypothesis	Pearson's correlation coefficient	p value for Significance level ( $\alpha = 0.05$ )	Decision about the hypothesis
	Alternate Hypothesis				
		(Supply Loops) component of Green Supply Chain Performance.			
58	H38 <sub>0</sub>	There is no definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Carbon Management component of Green Supply Chain Performance.		The null hypothesis is rejected and the alternate hypothesis is accepted on the basis of the evidence provided by Table 6, Table 29, Table 30, Table 31, Table 39, Table 41 and Figure 19.	Reject null hypothesis
	H38 <sub>a</sub>	There is a definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Carbon Management component of Green Supply Chain Performance.			Accept alternate hypothesis
59	H39 <sub>0</sub>	There is no definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Migration component of Green Supply Chain Performance.		The null hypothesis is rejected and the alternate hypothesis is accepted on the basis of the evidence provided by Table 6, Table 32, Table 33, Table 34, Table 39, Table 41 and Figure 20.	Reject null hypothesis
	H39 <sub>a</sub>	There is a definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Migration component of Green Supply Chain Performance.			Accept alternate hypothesis

Sr. No.	Null Hypothesis	Hypothesis	Pearson's correlation coefficient	p value for Significance level ( $\alpha = 0.05$ )	Decision about the hypothesis
	Alternate Hypothesis				
60	H40 <sub>0</sub>	There is no definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Continuous Improvement component of Green Supply Chain Performance.		The null hypothesis is rejected and the alternate hypothesis is accepted on the basis of the evidence provided by Table 6, Table 35, Table 36, Table 37, Table 39, Table 41 and Figure 21.	Reject null hypothesis
	H40 <sub>a</sub>	There is a definite order in which the five Green Supply Chain Practices namely Environmental Certification; Pollution Prevention; Life Cycle Assessment; Design for Environment; and Reverse Logistics impact the Green Supply Chain Continuous Improvement component of Green Supply Chain Performance.			Accept alternate hypothesis
61	H41 <sub>0</sub>	There is no definite order in which components of Green Supply Chain Practices jointly impact the components of Green Supply Chain Performance.		The null hypothesis is rejected and the alternate hypothesis is accepted on the basis of the evidence provided by Table 10, Table 13, Table 16, Table 19, Table 22, Table 25, Table 28, Table 31, Table 34, Table 37, Figure 12 and Figure 21.	Reject null hypothesis
	H41 <sub>a</sub>	There is a definite order in which components of Green Supply Chain Practices jointly impact the components of Green Supply Chain Performance.			Accept alternate hypothesis

From the first fifty hypotheses i.e. hypotheses from serial number 1 to serial number 50 of Table 7 it is evident that on the basis of correlation analysis the five components of green supply chain practices are individually associated in varying degrees with the ten sub-construct components of green supply chain performance (Hypotheses H<sub>1</sub> to H<sub>30</sub>). Also it is evident from table 7 that the five green supply chain practices jointly impact individual component measures of Green Supply Chain Performance (Hypotheses H<sub>31</sub> to H<sub>40</sub>). Finally hypothesis H<sub>41</sub> in table 7 makes it evident that there is a definite order of influence of the five green supply chain practices on individual component measures of Green Supply Chain Performance.

### REGRESSION ANALYSIS

Ten dependent sub-constructs and five independent sub-constructs were identified. Accordingly ten models and fifty (10 x 5 = 50) hypotheses emerged for doing regression analysis. Each of these models was tested one by one for studying the joint impact of the independent sub-constructs (i.e. components of GSC Practices) on a particular dependent sub-construct (component measures of GSC Performance). Accordingly, all the fifty hypotheses

were stated in their null and alternate form as shown in table 7 for testing them by using multiple regression analysis. Also additional eleven hypotheses pertaining to the ordering of components of GSC Practices jointly influencing the component measures of GSC Performance are stated in their null and alternate form in table 7. In all sixty-one hypotheses are put to test.

### Model 1. Green Supply Chain Planning (GSCPLAN)

Model 1 is associated with the five hypotheses namely H<sub>1</sub>, H<sub>7</sub>, H<sub>13</sub>, H<sub>19</sub> and H<sub>25</sub> wherein the dependent construct is GSCPLAN (Green Supply Chain Planning) and the independent sub-constructs are EC, PP, RL, LCA and DFE. Model 1 is depicted in figure 2.

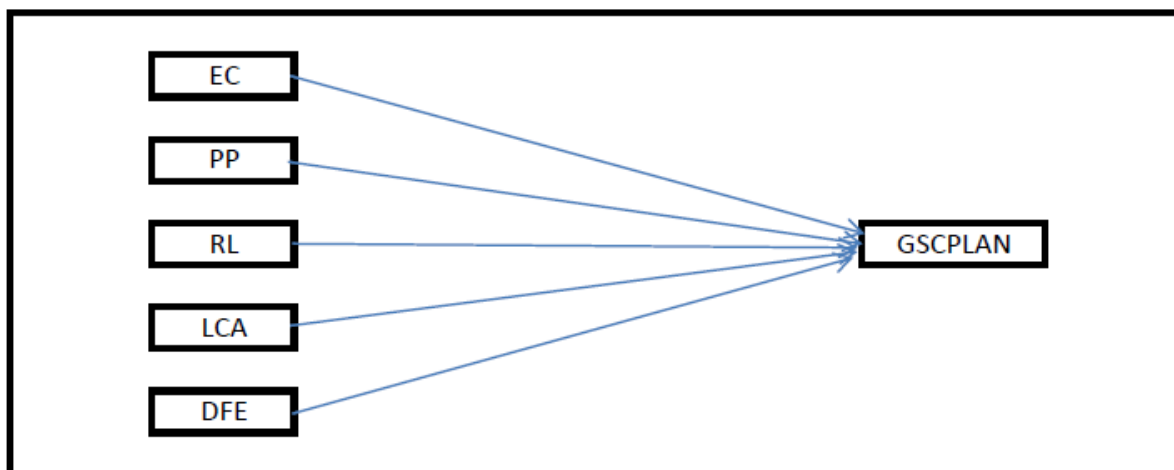


Figure 2. Model 1-Impact of GSC Practices on GSCPLAN

The summary of the multiple regression output for model 1 is as follows:

When the five independent or predictor constructs namely EC, PP, RL, LCA and DFE are jointly regressed against the dependent or criterion construct GSCPLAN, which is interval scaled, the five individual correlations collapse into what is called as a multiple *r* or multiple correlation. The square of the multiple *r* which is also commonly known as R-square or R<sup>2</sup> is indicative of the amount of variance in the dependent construct explained jointly by the predictors. In the case of model 1, the R<sup>2</sup> = 0.9606 which means that 96.06 % of the variance of the dependent construct GSCPLAN is significantly explained jointly by the predictors EC, PP, RL, LCA and DFE at a significance level of  $\alpha = 0.05$  ( $p < 0.0001$ ), i.e., this does not hold true 0.0001 % of times. Table 8 shows the analysis of variance for model 1. Table 9 shows the computation of R<sup>2</sup> value for model 1. Table 10 shows the computation of parameter estimates for model 1. Thus, the hypotheses H<sub>1a</sub>, H<sub>7a</sub>, H<sub>13a</sub>, H<sub>19a</sub> and H<sub>25a</sub> are substantiated. Since some of the parameter estimates are negative, as shown in the table 10, there appears to be an existence of multicollinearity. The effect of multicollinearity can be removed by using Principal Component Regression. On applying Principal Component Regression the centered and scaled data is as shown in the figure 35 and the new (revised) parameter estimates are obtained as shown in the table 36. Since all the revised parameter estimates are now positive, the effect of multicollinearity is no more there. So these revised parameter estimates are usable. They are the standardized coefficients of the corresponding multiple regression equation for studying the impact of Green Supply Chain Practices on the GSCPLAN component of Green Supply Chain Performance. But what remains to be explored is the order in which the five Green Supply Chain Practices impact the GSCPLAN component of Green Supply Chain Performance. Sorting the revised parameter estimates shown in table 36 in the descending order of magnitude gives the descending order in which the corresponding Green Supply Chain Practices impact the GSCPLAN component of Green Supply Chain Performance. The Green Supply Chain Practices in the descending order in which they influence the GSCPLAN component of GSC performance is

as follows: LCA, EC, PP, DFE and RL. The corresponding parameter estimates or standardized coefficients in that order are as follows: 0.352077842, 0.311427967, 0.296521179, 0.223926708 and 0.196058173. Accordingly, model 1 yields the following regression equation to explain the impact of the five Green Supply Chain Practices on the GSCPLAN component of Green Supply Chain Performance:

$$\text{GSCPLAN} = -1.733112398 + (0.311427967)(\text{EC}) + (0.296521179)(\text{PP}) + (0.196058173)(\text{RL}) + (0.352077842)(\text{LCA}) + (0.223926708)(\text{DFE})$$

**Table 8. ANOVA for model 1: Dependent variable: GSCPLAN**

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	59.29042	11.85808	473.51	<.0001
Error	97	2.42919	0.02504		
Corrected Total	102	61.71961			

**Table 9. Computation of R<sup>2</sup> for model 1**

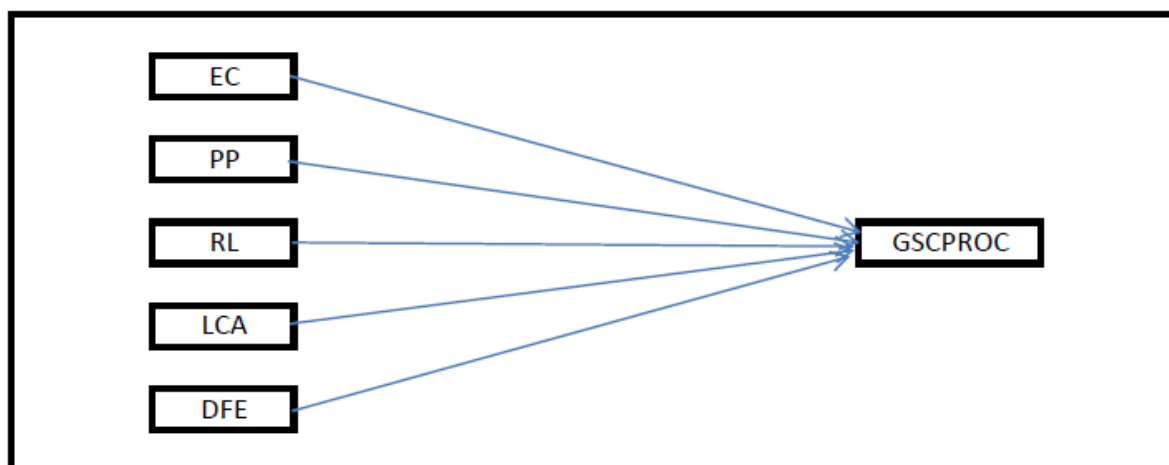
Root MSE	0.15825	R-Square	0.9606
Dependent Mean	4.40194	Adj R-Sq	0.9586
Coeff Var	3.59501		

**Table 10. Parameter estimates for model 1**

Parameter Estimates						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t	Variance Inflation
Intercept	1	-0.01935	0.24227	-0.08	0.9365	0
EC	1	-0.47431	0.10377	-4.57	<.0001	12.30377
PP	1	1.11008	0.13184	8.42	<.0001	28.90365
RL	1	0.20592	0.05503	3.74	0.0003	6.50446
LCA	1	-0.59159	0.12174	-4.86	<.0001	16.61923
DFE	1	0.79340	0.04851	16.36	<.0001	4.55562

### Model 2. Green Supply Chain Procurement (GSCPROC)

Model 2 is associated with the five hypotheses namely H<sub>2</sub>, H<sub>8</sub>, H<sub>14</sub>, H<sub>20</sub> and H<sub>26</sub> wherein the dependent construct is GSCPROC (Green Supply Chain Procurement) and the independent sub-constructs are EC, PP, RL, LCA and DFE. Model 2 is depicted in figure 3.



**Figure 3. Model 2-Impact of GSC Practices on GSCPROC**

The summary of the multiple regression output for model 2 is as follows:

When the five independent or predictor constructs namely EC, PP, RL, LCA and DFE are jointly regressed against the dependent or criterion construct GSCPROC, which is interval scaled, the five individual correlations collapse into what is called as a multiple  $r$  or multiple correlation. The square of the multiple  $r$  which is also commonly known as R-square or  $R^2$  is indicative of the amount of variance in the dependent construct explained jointly by the predictors. In the case of model 2, the  $R^2 = 0.9901$  which means that 99.01 % of the variance of the dependent construct GSCPROC is significantly explained jointly by the predictors EC, PP, RL, LCA and DFE at a significance level of  $\alpha = 0.05$  ( $p < 0.0001$ ), i.e., this does not hold true 0.0001 % of times. Table 11 shows the analysis of variance for model 2. Table 12 shows the computation of  $R^2$  value for model 2. Table 13 shows the computation of parameter estimates for model 2. Thus, the hypotheses  $H_{2a}$ ,  $H_{8a}$ ,  $H_{14a}$ ,  $H_{20a}$  and  $H_{26a}$  are substantiated. Since some of the parameter estimates are negative, as shown in the table 13 there appears to be an existence of multicollinearity. The effect of multicollinearity can be removed by using an advanced statistical analysis technique called as Principal Component Regression. On applying Principal Component Regression the centered and scaled data is as shown in the figure 20 and the new (revised) parameter estimates are obtained as shown in the table 21. Since all the revised parameter estimates are now positive, the effect of multicollinearity is no more there. So these revised parameter estimates are usable. They are the standardized coefficients of the corresponding multiple regression equation for studying the impact of Green Supply Chain Practices on the GSCPROC component of Green Supply Chain Performance. But what remains to be explored is the order in which the five Green Supply Chain Practices impact the GSCPROC component of Green Supply Chain Performance. Sorting the revised parameter estimates shown in table 36 in the descending order of magnitude gives the descending order in which the corresponding Green Supply Chain Practices impact the GSCPROC component of Green Supply Chain Performance. The Green Supply Chain Practices in the descending order in which they influence the GSCPROC component of GSC performance is as follows: LCA, EC, PP, DFE and RL. The corresponding parameter estimates or standardized coefficients in that order are as follows: 0.362416519, 0.320572971, 0.305228448, 0.230502259 and 0.201815371. Accordingly, model 2 yields the following regression equation to explain the impact of the five Green Supply Chain Practices on the GSCPROC component of Green Supply Chain Performance:

$$\text{GSCPROC} = -1.887141383 + (0.320572971)(\text{EC}) + (0.305228448)(\text{PP}) + (0.201815371)(\text{RL}) + (0.362416519)(\text{LCA}) + (0.230502259)(\text{DFE})$$

**Table 11. ANOVA for model 2: Dependent variable: GSCPROC**

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	61.36375	12.27275	1940.05	<.0001
Error	97	0.61362	0.00633		
Corrected Total	102	61.97737			

**Table 12. Computation of R<sup>2</sup> for model 2**

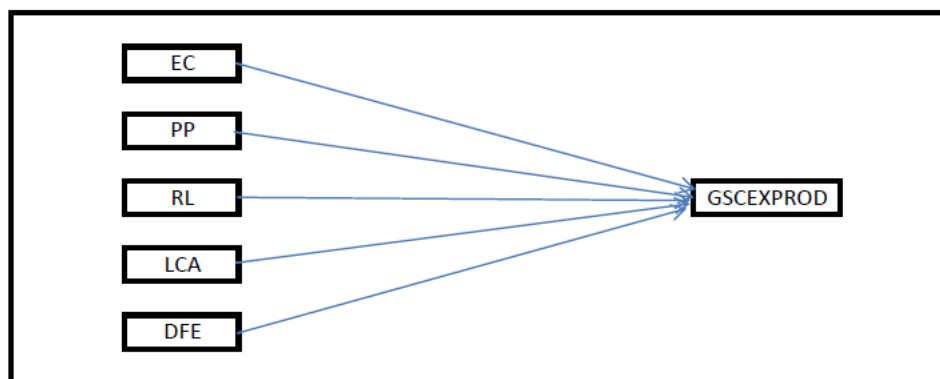
Root MSE	0.07954	R-Square	0.9901
Dependent Mean	4.42807	Adj R-Sq	0.9896
Coeff Var	1.79618		

**Table 13. Parameter estimates for model 2**

Parameter Estimates						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t	Variance Inflation
Intercept	1	-0.30400	0.12176	-2.50	0.0142	0
EC	1	-0.26830	0.05216	-5.14	<.0001	12.30377
PP	1	0.88997	0.06626	13.43	<.0001	28.90365
RL	1	0.36609	0.02766	13.24	<.0001	6.50446
LCA	1	-0.64308	0.06118	-10.51	<.0001	16.61923
DFE	1	0.80498	0.02438	33.02	<.0001	4.55562

**Model 3. Green Supply Chain Execution - Production (GSCEXPROD)**

Model 3 is associated with the five hypotheses namely H<sub>3A</sub>, H<sub>9A</sub>, H<sub>15A</sub>, H<sub>21A</sub> and H<sub>27A</sub> wherein the dependent construct is GSCEXPROD (Green Supply Chain Execution-Production) and the independent sub-constructs are EC, PP, RL, LCA and DFE. Model 3 is depicted in figure 4.



**Figure 4. Model 3-Impact of GSC Practices on GSCEXPROD**

The summary of the multiple regression output for model 3 is as follows:  
 When the five independent or predictor constructs namely EC, PP, RL, LCA and DFE are jointly regressed against the dependent or criterion construct GSCEXPROD, which is interval scaled, the five individual correlations collapse into what is called as a multiple r or multiple correlation. The square of the multiple r which is also commonly known as R-square or R<sup>2</sup> is

indicative of the amount of variance in the dependent construct explained jointly by the predictors. In the case of model 3, the  $R^2 = 0.9561$  which means that 95.61 % of the variance of the dependent construct GSCEXPROD is significantly explained jointly by the predictors EC, PP, RL, LCA and DFE at a significance level of  $\alpha = 0.05$  ( $p < 0.0001$ ), i.e., this does not hold true 0.0001 % of times. Table 14 shows the analysis of variance for model 3. Table 15 shows the computation of  $R^2$  value for model 3. Table 16 shows the computation of parameter estimates for model 3. Thus, the hypotheses  $H_{3Aa}$ ,  $H_{9Aa}$ ,  $H_{15Aa}$ ,  $H_{21Aa}$  and  $H_{27Aa}$  are substantiated. Since some of the parameter estimates are negative, as shown in the table 16 there appears to be an existence of multicollinearity. The effect of multicollinearity can be removed by using an advanced statistical analysis technique called as Principal Component Regression. On applying Principal Component Regression the centered and scaled data is as shown in the figure 20 and the new (revised) parameter estimates are obtained as shown in the table 21. Since all the revised parameter estimates are now positive, the effect of multicollinearity is no more there. So these revised parameter estimates are usable. They are the standardized coefficients of the corresponding multiple regression equation for studying the impact of Green Supply Chain Practices on the GSCEXPROD component of Green Supply Chain Performance. But what remains to be explored is the order in which the five Green Supply Chain Practices impact the GSCEXPROD component of Green Supply Chain Performance. Sorting the revised parameter estimates shown in table 21 in the descending order of magnitude gives the descending order in which the corresponding Green Supply Chain Practices impact the GSCEXPROD component of Green Supply Chain Performance. The Green Supply Chain Practices in the descending order in which they influence the GSCEXPROD component of GSC performance is as follows: LCA, EC, PP, DFE and RL. The corresponding parameter estimates or standardized coefficients in that order are as follows: 0.250726008, 0.221777918, 0.211162313, 0.159465444 and 0.13961936. Accordingly, model 3 yields the following regression equation to explain the impact of the five Green Supply Chain Practices on the GSCEXPROD component of Green Supply Chain Performance:

$$\text{GSCEXPROD} = 0.217714868 + (0.221777918)(\text{EC}) + (0.211162313) (\text{PP}) + (0.139619360) (\text{RL}) + (0.250726008) (\text{LCA}) + (0.159465444) (\text{DFE})$$

**Table 14. ANOVA for model 3: Dependent variable: GSCEXPROD**

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	29.53856	5.90771	422.66	<.0001
Error	97	1.35583	0.01398		
Corrected Total	102	30.89439			

**Table 15. Computation of  $R^2$  for model 3**

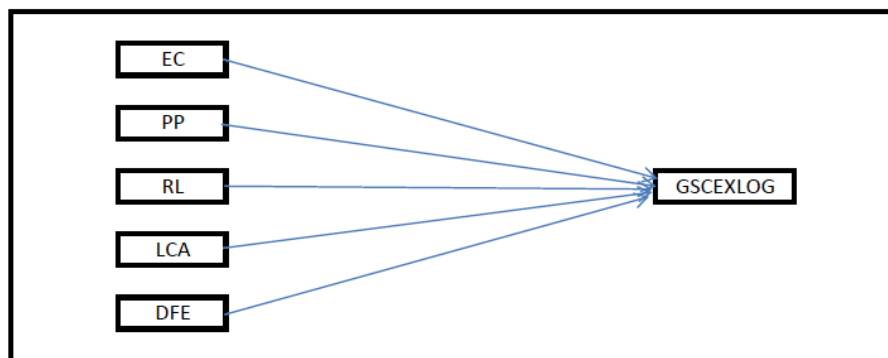
Root MSE	0.11823	R-Square	0.9561
Dependent Mean	4.58669	Adj R-Sq	0.9539
Coeff Var	2.57761		

**Table 16. Parameter estimates for model 3**

Parameter Estimates						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t	Variance Inflation
Intercept	1	0.50128	0.18099	2.77	0.0067	0
EC	1	-0.33418	0.07753	-4.31	<.0001	12.30377
PP	1	0.93933	0.09850	9.54	<.0001	28.90365
RL	1	-0.34678	0.04112	-8.43	<.0001	6.50446
LCA	1	0.55240	0.09095	6.07	<.0001	16.61923
DFE	1	-0.01472	0.03624	-0.41	0.6855	4.55562

**Model 4. Green Supply Chain Execution - Logistics (GSCEXLOG)**

Model 4 is associated with the five hypotheses namely H<sub>3B</sub>, H<sub>9B</sub>, H<sub>15B</sub>, H<sub>21B</sub> and H<sub>27B</sub> wherein the dependent construct is GSCEXLOG (Green Supply Chain Execution- Logistics) and the independent sub-constructs are EC, PP, RL, LCA and DFE. Model 4 is depicted in figure 5.



**Figure 5. Model 4-Impact of GSC Practices on GSCEXLOG**

The summary of the multiple regression output for model 4 is as follows: When the five independent or predictor constructs namely EC, PP, RL, LCA and DFE are jointly regressed against the dependent or criterion construct GSCEXLOG, which is interval scaled, the five individual correlations collapse into what is called as a multiple r or multiple correlation. The square of the multiple r which is also commonly known as R-square or R<sup>2</sup> is indicative of the amount of variance in the dependent construct explained jointly by the predictors. In the case of model 4, the R<sup>2</sup> = 0.9050 which means that 90.50 % of the variance of the dependent construct GSCEXLOG is significantly explained jointly by the predictors EC, PP, RL, LCA and DFE at a significance level of  $\alpha = 0.05$  ( $p < 0.0001$ ), i.e., this does not hold true 0.0001 % of times. Table 17 shows the analysis of variance for model 4. Table 18 shows the computation of R<sup>2</sup> value for model 4. Table 19 shows the computation of parameter estimates for model 4. Thus, the hypotheses H<sub>3Ba</sub>, H<sub>9Ba</sub>, H<sub>15Ba</sub>, H<sub>21Ba</sub> and H<sub>27Ba</sub> are substantiated. Since some of the parameter estimates are negative, as shown in the table 19 there appears to be an existence of multicollinearity. The effect of multicollinearity can be removed by using an advanced statistical analysis technique called as Principal Component Regression. On applying Principal Component Regression the centered and scaled data is as shown in the figure 20 and the new (revised) parameter estimates are obtained as shown in the table 21. Since all the revised parameter estimates are now positive, the effect of multicollinearity is no more there. So these revised parameter estimates are usable. They are the standardized coefficients of the corresponding multiple regression equation for studying the impact of Green Supply Chain



Practices on the GSCEXLOG component of Green Supply Chain Performance. But what remains to be explored is the order in which the five Green Supply Chain Practices impact the GSCEXLOG component of Green Supply Chain Performance. Sorting the revised parameter estimates shown in table 21 in the descending order of magnitude gives the descending order in which the corresponding Green Supply Chain Practices impact the GSCEXLOG component of Green Supply Chain Performance. The Green Supply Chain Practices in the descending order in which they influence the GSCEXLOG component of GSC performance is as follows: LCA, EC, PP, DFE and RL. The corresponding parameter estimates or standardized coefficients in that order are as follows: 0.173690515, 0.153636718, 0.146282754, 0.110469733 and 0.096721352. Accordingly, model 4 yields the following regression equation to explain the impact of the five Green Supply Chain Practices on the GSCEXLOG component of Green Supply Chain Performance:

$$\text{GSCEXLOG} = 1.344753781 + (0.153636718)(\text{EC}) + (0.146282754)(\text{PP}) + (0.096721352)(\text{RL}) + (0.173690515)(\text{LCA}) + (0.110469733)(\text{DFE})$$

**Table 17. ANOVA for model 4: Dependent variable: GSCEXLOG**

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	17.56953	3.51391	184.84	<.0001
Error	97	1.84403	0.01901		
Corrected Total	102	19.41357			

**Table 18. Computation of R2 for model 4**

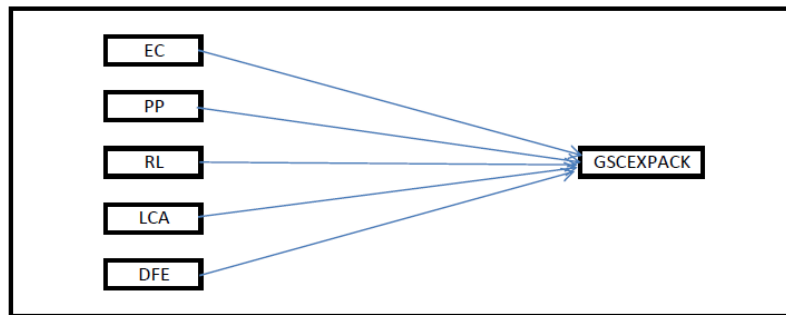
Root MSE	0.13788	R-Square	0.9050
Dependent Mean	4.37136	Adj R-Sq	0.9001
Coeff Var	3.15415		

**Table 19. Parameter estimates for model 4**

Parameter Estimates						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t	Variance Inflation
Intercept	1	0.91554	0.21108	4.34	<.0001	0
EC	1	-0.08449	0.09042	-0.93	0.3524	12.30377
PP	1	0.27390	0.11487	2.38	0.0191	28.90365
RL	1	-0.39933	0.04795	-8.33	<.0001	6.50446
LCA	1	0.70384	0.10607	6.64	<.0001	16.61923
DFE	1	0.15971	0.04226	3.78	0.0003	4.55562

### **Model 5. Green Supply Chain Execution -Packaging (GSCEXPACK)**

Model 5 is associated with the five hypotheses namely H<sub>3C</sub>, H<sub>9C</sub>, H<sub>15C</sub>, H<sub>21C</sub> and H<sub>27C</sub> wherein the dependent construct is GSCEXPACK (Green Supply Chain Execution-Packaging) and the independent sub-constructs are EC, PP, RL, LCA and DFE. Model 5 is depicted in figure 6.



**Figure 6. Model 5-Impact of GSC Practices on GSCEXPACK**

The summary of the multiple regression output for model 5 is as follows:

When the five independent or predictor constructs namely EC, PP, RL, LCA and DFE are jointly regressed against the dependent or criterion construct GSCEXPACK, which is interval scaled, the five individual correlations collapse into what is called as a multiple *r* or multiple correlation. The square of the multiple *r* which is also commonly known as R-square or  $R^2$  is indicative of the amount of variance in the dependent construct explained jointly by the predictors. In the case of model 5, the  $R^2 = 0.9286$  which means that 92.86 % of the variance of the dependent construct GSCEXPACK is significantly explained jointly by the predictors EC, PP, RL, LCA and DFE at a significance level of  $\alpha = 0.05$  ( $p < 0.0001$ ), i.e., this does not hold true 0.0001 % of times. Table 20 shows the analysis of variance for model 5. Table 21 shows the computation of  $R^2$  value for model 5. Table 22 shows the computation of parameter estimates for model 5. Thus, the hypotheses  $H_{3Ca}$ ,  $H_{9Ca}$ ,  $H_{15Ca}$ ,  $H_{21Ca}$  and  $H_{27Ca}$  are substantiated. Since some of the parameter estimates are negative, as shown in the table 22 there appears to be an existence of multicollinearity. The effect of multicollinearity can be removed by using an advanced statistical analysis technique called as Principal Component Regression. On applying Principal Component Regression the centered and scaled data is as shown in the figure 20 and the new (revised) parameter estimates are obtained as shown in the table 21. Since all the revised parameter estimates are now positive, the effect of multicollinearity is no more there. So these revised parameter estimates are usable. They are the standardized coefficients of the corresponding multiple regression equation for studying the impact of Green Supply Chain Practices on the GSCEXPACK component of Green Supply Chain Performance. But what remains to be explored is the order in which the five Green Supply Chain Practices impact the GSCEXPACK component of Green Supply Chain Performance. Sorting the revised parameter estimates shown in table 21 in the descending order of magnitude gives the descending order in which the corresponding Green Supply Chain Practices impact the GSCEXPACK component of Green Supply Chain Performance. The Green Supply Chain Practices in the descending order in which they influence the GSCEXPACK component of GSC performance is as follows: LCA, EC, PP, DFE and RL. The corresponding parameter estimates or standardized coefficients in that order are as follows: 0.180826261, 0.159948591, 0.152292503, 0.115008172 and 0.100694966. Accordingly, model 5 yields the following regression equation to explain the impact of the five Green Supply Chain Practices on the GSCEXPACK component of Green Supply Chain Performance:

$$GSCEXPACK = 1.630605607 + (0.159948591)(EC) + (0.152292503) (PP) + (0.100694966) (RL) + (0.180826261) (LCA) + (0.115008172) (DFE)$$

**Table 20. ANOVA for model 5: GSCEXPACK**

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	15.98130	3.19626	252.34	<.0001
Error	97	1.22865	0.01267		
Corrected Total	102	17.20995			

**Table 21. Computation of R<sup>2</sup> for model 5**

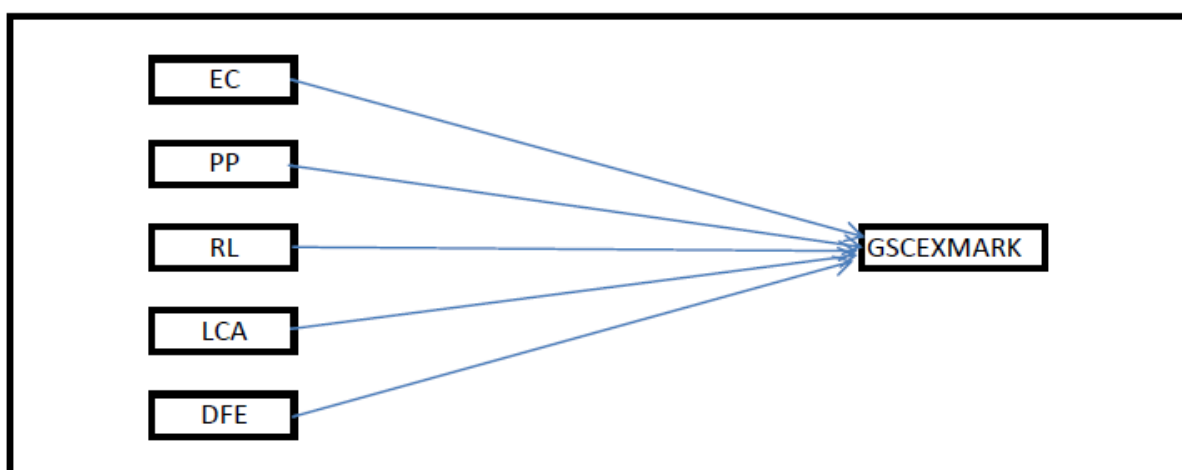
Root MSE	0.11255	R-Square	0.9286
Dependent Mean	4.78155	Adj R-Sq	0.9249
Coeff Var	2.35375		

**Table 22. Parameter estimates for model 5**

Parameter Estimates						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t	Variance Inflation
Intercept	1	0.50367	0.17230	2.92	0.0043	0
EC	1	0.45734	0.07380	6.20	<.0001	12.30377
PP	1	-0.24915	0.09377	-2.66	0.0092	28.90365
RL	1	-0.08176	0.03914	-2.09	0.0393	6.50446
LCA	1	1.02099	0.08658	11.79	<.0001	16.61923
DFE	1	-0.26049	0.03450	-7.55	<.0001	4.55562

**Model 6. Green Supply Chain Execution - Marketing (GSCEXMARK)**

Model 6 is associated with the five hypotheses namely H<sub>3D</sub>, H<sub>9D</sub>, H<sub>15D</sub>, H<sub>21D</sub> and H<sub>27D</sub> wherein the dependent construct is GSCEXMARK (Green Supply Chain Execution-Marketing) and the independent sub-constructs are EC, PP, RL, LCA and DFE. Model 6 is depicted in figure 7.

**Figure 7. Model 6-Impact of GSC Practices on GSCEXMARK**

The summary of the multiple regression output for model 6 is as follows:

When the five independent or predictor constructs namely EC, PP, RL, LCA and DFE are jointly regressed against the dependent or criterion construct GSCEXMARK, which is interval scaled,

the five individual correlations collapse into what is called as a multiple r or multiple correlation. The square of the multiple r which is also commonly known as R-square or  $R^2$  is indicative of the amount of variance in the dependent construct explained jointly by the predictors. In the case of model 6, the  $R^2 = 0.9403$  which means that 94.03 % of the variance of the dependent construct GSCEXMARK is significantly explained jointly by the predictors EC, PP, RL, LCA and DFE at a significance level of  $\alpha = 0.05$  ( $p < 0.0001$ ), i.e., this does not hold true 0.0001 % of times. Table 23 shows the analysis of variance for model 6. Table 24 shows the computation of  $R^2$  value for model 6. Table 25 shows the computation of parameter estimates for model 6. Thus, the hypotheses  $H_{3Da}$ ,  $H_{9Da}$ ,  $H_{15Da}$ ,  $H_{21Da}$  and  $H_{27Da}$  are substantiated. Since some of the parameter estimates are negative, as shown in the table 25 there appears to be an existence of multicollinearity. The effect of multicollinearity can be removed by using an advanced statistical analysis technique called as Principal Component Regression. On applying Principal Component Regression the centered and scaled data is as shown in the figure 20 and the new (revised) parameter estimates are obtained as shown in the table 21. Since all the revised parameter estimates are now positive, the effect of multicollinearity is no more there. So these revised parameter estimates are usable. They are the standardized coefficients of the corresponding multiple regression equation for studying the impact of Green Supply Chain Practices on the GSCEXMARK component of Green Supply Chain Performance. But what remains to be explored is the order in which the five Green Supply Chain Practices impact the GSCEXMARK component of Green Supply Chain Performance. Sorting the revised parameter estimates shown in table 21 in the descending order of magnitude gives the descending order in which the corresponding Green Supply Chain Practices impact the GSCEXMARK component of Green Supply Chain Performance. The Green Supply Chain Practices in the descending order in which they influence the GSCEXMARK component of GSC performance is as follows: EC, PP, RL, LCA and DFE. The corresponding parameter estimates or standardized coefficients in that order are as follows: 0.309560444, 0.294743046, 0.194882481, 0.349966556 and 0.222583898. Accordingly, model 6 yields the following regression equation to explain the impact of the five Green Supply Chain Practices on the GSCEXMARK component of Green Supply Chain Performance:

$$\text{GSCEXMARK} = -1.942924586 + (0.309560444)(\text{EC}) + (0.294743046) (\text{PP}) + (0.194882481) (\text{RL}) + (0.349966556) (\text{LCA}) + (0.222583898) (\text{DFE})$$

**Table 23. ANOVA for model 6: Dependent Variable: GSCEXMARK**

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	102.62098	20.52420	305.41	<.0001
Error	97	6.51858	0.06720		
Corrected Total	102	109.13956			

**Table 24. Computation of  $R^2$  for model 6**

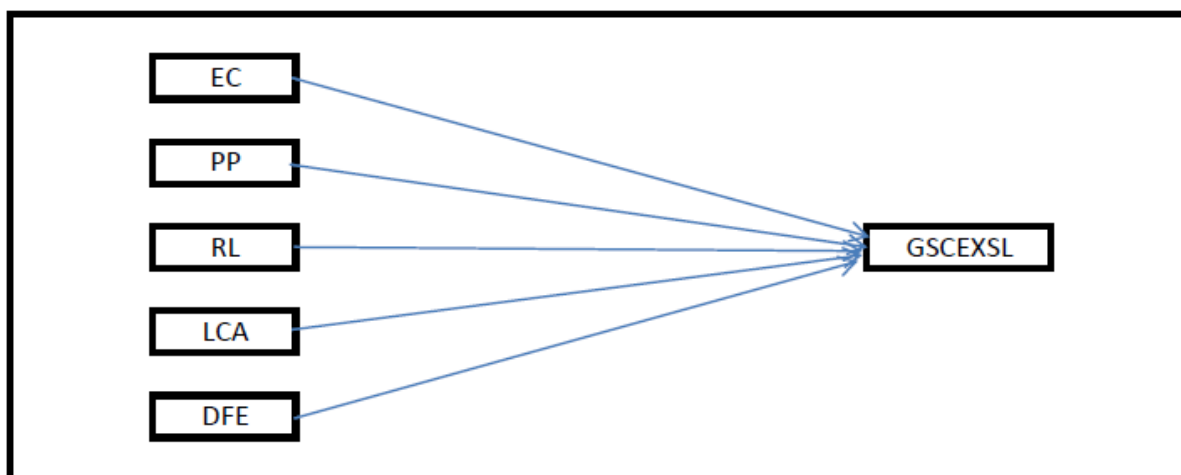
Root MSE	0.25923	R-Square	0.9403
Dependent Mean	4.15534	Adj R-Sq	0.9372
Coeff Var	6.23856		

**Table 25. Parameter estimates for model 6**

Parameter Estimates						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t	Variance Inflation
Intercept	1	-0.92569	0.39686	-2.33	0.0217	0
EC	1	-0.95163	0.16999	-5.60	<.0001	12.30377
PP	1	0.16697	0.21598	0.77	0.4413	28.90365
RL	1	-0.00758	0.09015	-0.08	0.9332	6.50446
LCA	1	0.42019	0.19942	2.11	0.0377	16.61923
DFE	1	1.53564	0.07946	19.33	<.0001	4.55562

### Model 7. Green Supply Chain Execution – Supply Loops (GSC EXSL)

Model 7 is associated with the five hypotheses namely  $H_{3E}$ ,  $H_{9E}$ ,  $H_{15E}$ ,  $H_{21E}$  and  $H_{27E}$  wherein the dependent construct is GSC EXSL (Green Supply Chain Execution-Supply Loops) and the independent sub-constructs are EC, PP, RL, LCA and DFE. Model 7 is depicted in figure 8.



**Figure 8. Model 7-Impact of GSC Practices on GSC EXSL**

The summary of the multiple regression output for model 7 is as follows:

When the five independent or predictor constructs namely EC, PP, RL, LCA and DFE are jointly regressed against the dependent or criterion construct GSC EXSL, which is interval scaled, the five individual correlations collapse into what is called as a multiple  $r$  or multiple correlation. The square of the multiple  $r$  which is also commonly known as R-square or  $R^2$  is indicative of the amount of variance in the dependent construct explained jointly by the predictors. In the case of model 7, the  $R^2 = 0.8792$  which means that 87.92 % of the variance of the dependent construct GSC EXSL is significantly explained jointly by the predictors EC, PP, RL, LCA and DFE at a significance level of  $\alpha = 0.05$  ( $p < 0.0001$ ), i.e., this does not hold true 0.0001 % of times. Table 26 shows the analysis of variance for model 7. Table 27 shows the computation of  $R^2$  value for model 7. Table 28 shows the computation of parameter estimates for model 7. Thus, the hypotheses  $H_{3Ea}$ ,  $H_{9Ea}$ ,  $H_{15Ea}$ ,  $H_{21Ea}$  and  $H_{27Ea}$  are substantiated. Since some of the parameter estimates are negative, as shown in the table 28 there appears to be an existence of multicollinearity. The effect of multicollinearity can be removed by using an advanced statistical analysis technique called as Principal Component Regression. On applying Principal Component Regression the centered and scaled data is as shown in the figure 20 and the new (revised) parameter estimates are obtained as shown in the table 21. Since all the revised parameter estimates are now positive, the effect of multicollinearity is no more there. So these revised parameter estimates are usable. They are the standardized coefficients of the

corresponding multiple regression equation for studying the impact of Green Supply Chain Practices on the GSCEXSL component of Green Supply Chain Performance. But what remains to be explored is the order in which the five Green Supply Chain Practices impact the GSCEXSL component of Green Supply Chain Performance. Sorting the revised parameter estimates shown in table 21 in the descending order of magnitude gives the descending order in which the corresponding Green Supply Chain Practices impact the GSCEXSL component of Green Supply Chain Performance. The Green Supply Chain Practices in the descending order in which they influence the GSCEXSL component of GSC performance is as follows: LCA, EC, PP, DFE and RL. The corresponding parameter estimates or standardized coefficients in that order are as follows: 0.118031818, 0.10440421, 0.099406806, 0.075069979 and 0.065727233. Accordingly, model 7 yields the following regression equation to explain the impact of the five Green Supply Chain Practices on the GSCEXSL component of Green Supply Chain Performance:

$$\text{GSCEXSL} = 2.312194848 + (0.104404210)(\text{EC}) + (0.099406806) (\text{PP}) + (0.065727233) (\text{RL}) + (0.118031818) (\text{LCA}) + (0.075069979) (\text{DFE})$$

**Table 26. ANOVA for model 7: GSCEXSL**

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	9.94681	1.98936	141.15	<.0001
Error	97	1.36711	0.01409		
Corrected Total	102	11.31392			

**Table 27. Computation of R<sup>2</sup> for model 7**

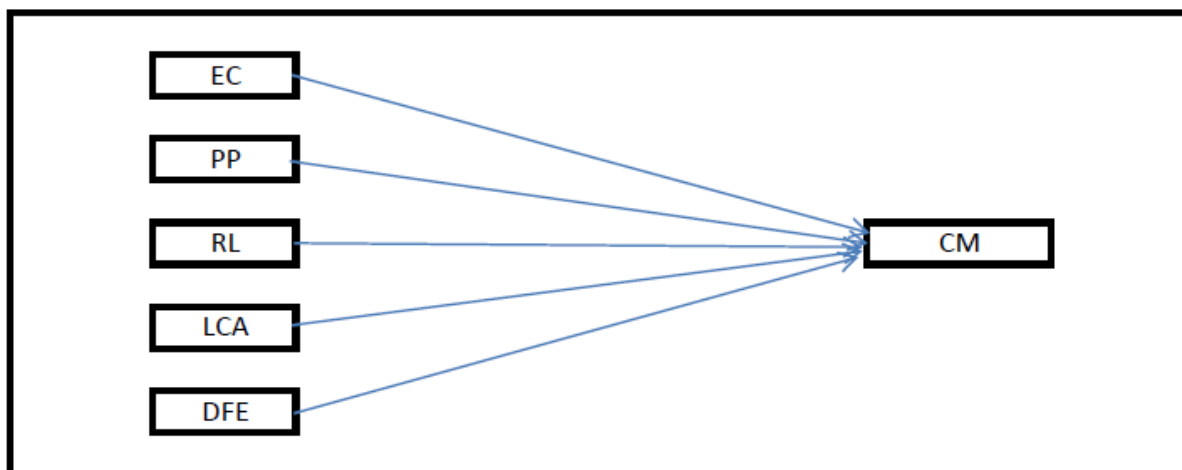
Root MSE	0.11872	R-Square	0.8792
Dependent Mean	4.36893	Adj R-Sq	0.8729
Coeff Var	2.71732		

**Table 28. Parameter estimates for model 7**

Parameter Estimates						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t	Variance Inflation
Intercept	1	1.85549	0.18175	10.21	<.0001	0
EC	1	-0.06797	0.07785	-0.87	0.3848	12.30377
PP	1	-0.07875	0.09891	-0.80	0.4279	28.90365
RL	1	-0.23473	0.04129	-5.69	<.0001	6.50446
LCA	1	0.63599	0.09133	6.96	<.0001	16.61923
DFE	1	0.23923	0.03639	6.57	<.0001	4.55562

### Model 8. Carbon Management (CM)

Model 8 is associated with the five hypotheses namely H<sub>4</sub>, H<sub>10</sub>, H<sub>16</sub>, H<sub>22</sub> and H<sub>28</sub> wherein the dependent construct is CM (Carbon management) and the independent sub-constructs are EC, PP, RL, LCA and DFE. Model 8 is depicted in figure 9.



**Figure 9. Model 8-Impact of GSC Practices on CM**

The summary of the multiple regression output for model 8 is as follows:

When the five independent or predictor constructs namely EC, PP, RL, LCA and DFE are jointly regressed against the dependent or criterion construct CM, which is interval scaled, the five individual correlations collapse into what is called as a multiple  $r$  or multiple correlation. The square of the multiple  $r$  which is also commonly known as R-square or  $R^2$  is indicative of the amount of variance in the dependent construct explained jointly by the predictors. In the case of model 8, the  $R^2 = 0.9005$  which means that 90.05 % of the variance of the dependent construct CM is significantly explained jointly by the predictors EC, PP, RL, LCA and DFE at a significance level of  $\alpha = 0.05$  ( $p < 0.0001$ ), i.e., this does not hold true 0.0001 % of times. Table 29 shows the analysis of variance for model 8. Table 30 shows the computation of  $R^2$  value for model 8. Table 31 shows the computation of parameter estimates for model 8. Thus, the hypotheses  $H_{4a}$ ,  $H_{10a}$ ,  $H_{16a}$ ,  $H_{22a}$  and  $H_{28a}$  are substantiated. Since some of the parameter estimates are negative, as shown in the table 31 there appears to be an existence of multicollinearity. The effect of multicollinearity can be removed by using an advanced statistical analysis technique called as Principal Component Regression. On applying Principal Component Regression the centered and scaled data is as shown in the figure 20 and the new (revised) parameter estimates are obtained as shown in the table 21. Since all the revised parameter estimates are now positive, the effect of multicollinearity is no more there. So these revised parameter estimates are usable. They are the standardized coefficients of the corresponding multiple regression equation for studying the impact of Green Supply Chain Practices on the CM component of Green Supply Chain Performance. But what remains to be explored is the order in which the five Green Supply Chain Practices impact the CM component of Green Supply Chain Performance. Sorting the revised parameter estimates shown in table 21 in the descending order of magnitude gives the descending order in which the corresponding Green Supply Chain Practices impact the CM component of Green Supply Chain Performance. The Green Supply Chain Practices in the descending order in which they influence the CM component of GSC performance is as follows: LCA, EC, PP, DFE and RL. The corresponding parameter estimates or standardized coefficients in that order are as follows: 0.2470523, 0.2185283, 0.2080683, 0.1571289 and 0.1375736. Accordingly, model 8 yields the following regression equation to explain the impact of the five Green Supply Chain Practices on the CM component of Green Supply Chain Performance:

$$CM = -0.488033297 + (0.218528332)(EC) + (0.208068271)(PP) + (0.137573596)(RL) + (0.247052261)(LCA) + (0.157128887)(DFE)$$

**Table 29. ANOVA for model 8: Dependent variable: CM**

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	45.15051	9.03010	175.57	<.0001
Error	97	4.98898	0.05143		
Corrected Total	102	50.13949			

**Table 30. Computation of R<sup>2</sup> for model 8**

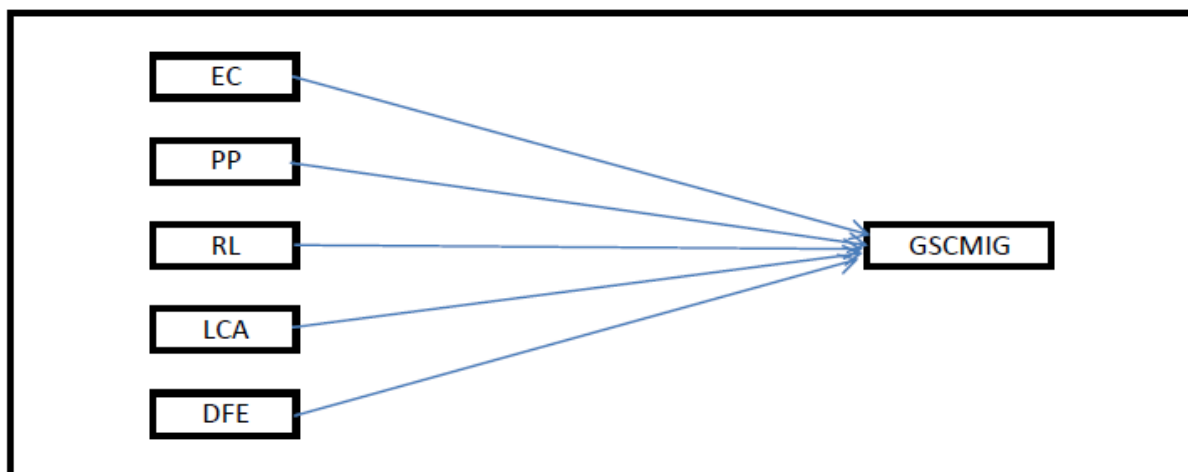
Root MSE	0.22679	R-Square	0.9005
Dependent Mean	3.81692	Adj R-Sq	0.8954
Coeff Var	5.94164		

**Table 31. Parameter estimates for model 8**

Parameter Estimates						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t	Variance Inflation
Intercept	1	0.46613	0.34719	1.34	0.1825	0
EC	1	-0.46090	0.14872	-3.10	0.0025	12.30377
PP	1	-0.11285	0.18895	-0.60	0.5517	28.90365
RL	1	0.40711	0.07887	5.16	<.0001	6.50446
LCA	1	-0.05143	0.17446	-0.29	0.7688	16.61923
DFE	1	1.08979	0.06952	15.68	<.0001	4.55562

**Model 9. Green Supply Chain Migration (GSCMIG)**

Model 9 is associated with the five hypotheses namely H<sub>5</sub>, H<sub>11</sub>, H<sub>17</sub>, H<sub>23</sub> and H<sub>29</sub> wherein the dependent construct is GSCMIG (Green Supply Chain Migration) and the independent sub-constructs are EC, PP, RL, LCA and DFE. Model 9 is depicted in figure 10.



**Figure 10. Model 9-Impact of GSC Practices on GSCMIG**



The summary of the multiple regression output for model 9 is as follows:

When the five independent or predictor constructs namely EC, PP, RL, LCA and DFE are jointly regressed against the dependent or criterion construct GSCMIG, which is interval scaled, the five individual correlations collapse into what is called as a multiple  $r$  or multiple correlation. The square of the multiple  $r$  which is also commonly known as R-square or  $R^2$  is indicative of the amount of variance in the dependent construct explained jointly by the predictors. In the case of model 9, the  $R^2 = 0.8908$  which means that 89.08 % of the variance of the dependent construct GSCMIG is significantly explained jointly by the predictors EC, PP, RL, LCA and DFE at a significance level of  $\alpha = 0.05$  ( $p < 0.0001$ ), i.e., this does not hold true 0.0001 % of times. Table 32 shows the analysis of variance for model 9. Table 33 shows the computation of  $R^2$  value for model 9. Table 34 shows the computation of parameter estimates for model 9. Thus, the hypotheses  $H_{5a}$ ,  $H_{11a}$ ,  $H_{17a}$ ,  $H_{23a}$  and  $H_{29a}$  are substantiated. Since some of the parameter estimates are negative, as shown in the table 34 there appears to be an existence of multicollinearity. The effect of multi-co-linearity can be removed by using an advanced statistical analysis technique called as Principal Component Regression. On applying Principal Component Regression the centered and scaled data is as shown in the figure 20 and the new (revised) parameter estimates are obtained as shown in the table 21. Since all the revised parameter estimates are now positive, the effect of multicollinearity is no more there. So these revised parameter estimates are usable. They are the standardized coefficients of the corresponding multiple regression equation for studying the impact of Green Supply Chain Practices on the GSCMIG component of Green Supply Chain Performance. But what remains to be explored is the order in which the five Green Supply Chain Practices impact the GSCMIG component of Green Supply Chain Performance. Sorting the revised parameter estimates shown in table 21 in the descending order of magnitude gives the descending order in which the corresponding Green Supply Chain Practices impact the GSCPLAN component of Green Supply Chain Performance. The Green Supply Chain Practices in the descending order in which they influence the GSCMIG component of GSC performance is as follows: LCA, EC, PP, DFE and RL. The corresponding parameter estimates or standardized coefficients in that order are as follows: 0.173503, 0.15347085, 0.14612482, 0.11035047 and 0.09661693. Accordingly, model 1 yields the following regression equation to explain the impact of the five Green Supply Chain Practices on the GSCMIG component of Green Supply Chain Performance:

$$\text{GSCMIG} = 1.580545635 + (0.153470848)(\text{EC}) + (0.146124824)(\text{PP}) + (0.096616930)(\text{RL}) + (0.173502995)(\text{LCA}) + (0.110350467)(\text{DFE})$$

**Table 32. ANOVA for model 9: Dependent variable: GSCMIG**

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	17.88517	3.57703	158.20	<.0001
Error	97	2.19328	0.02261		
Corrected Total	102	20.07845			

**Table 33. Computation of  $R^2$  for model 9**

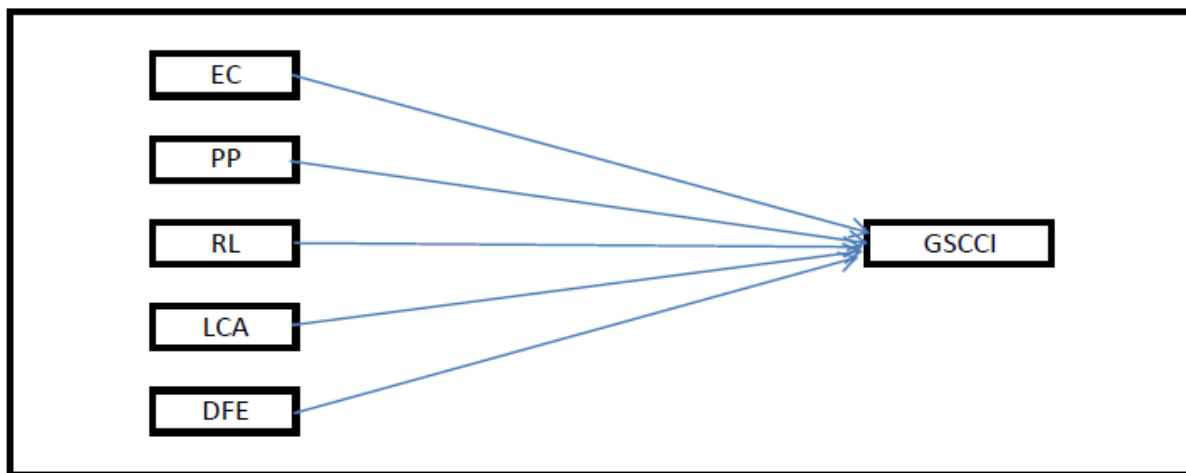
Root MSE	0.15037	R-Square	0.8908
Dependent Mean	4.60388	Adj R-Sq	0.8851
Coeff Var	3.26615		

**Table 34. Parameter estimates for model 9**

Parameter Estimates						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t	Variance Inflation
Intercept	1	0.92149	0.23020	4.00	0.0001	0
EC	1	0.01409	0.09861	0.14	0.8867	12.30377
PP	1	-0.13072	0.12528	-1.04	0.2994	28.90365
RL	1	-0.24706	0.05229	-4.72	<.0001	6.50446
LCA	1	0.84481	0.11567	7.30	<.0001	16.61923
DFE	1	0.26198	0.04609	5.68	<.0001	4.55562

**Model 10. Green Supply Chain Continuous Improvement (GSCCI)**

Model 10 is associated with the five hypotheses namely H<sub>6</sub>, H<sub>12</sub>, H<sub>18</sub>, H<sub>24</sub> and H<sub>30</sub> wherein the dependent construct is GSCCI (Green Supply Chain Continuous Improvement) and the independent sub-constructs are EC, PP, RL, LCA and DFE. Model 10 is depicted in figure 11.



**Figure 11. Model 10-Impact of GSC Practices on GSCCI**

The summary of the multiple regression output for model 10 is as follows: When the five independent or predictor constructs namely EC, PP, RL, LCA and DFE are jointly regressed against the dependent or criterion construct GSCCI, which is interval scaled, the five individual correlations collapse into what is called as a multiple r or multiple correlation. The square of the multiple r which is also commonly known as R-square or R<sup>2</sup> is indicative of the amount of variance in the dependent construct explained jointly by the predictors. In the case of model 10, the R<sup>2</sup> = 0.9290 which means that 92.90 % of the variance of the dependent construct is significantly explained jointly by the predictors EC, PP, RL, LCA and DFE at a significance level of  $\alpha = 0.05$  ( $p < 0.0001$ ), i.e., this does not hold true 0.0001 % of times. Table 35 shows the analysis of variance for model 10. Table 36 shows the computation of R<sup>2</sup> value for model 10. Table 37 shows the computation of parameter estimates for model 10. Thus, the hypotheses H<sub>6a</sub>, H<sub>12a</sub>, H<sub>18a</sub>, H<sub>24a</sub> and H<sub>30a</sub> are substantiated. Since some of the parameter estimates are negative, as shown in the table 37, there appears to be an existence of multicollinearity. The effect of multicollinearity can be removed by using an advanced statistical analysis technique called as Principal Component Regression. On applying Principal Component Regression the centered and scaled data is as shown in the figure 20 and the new (revised) parameter estimates are obtained as shown in the table 21. Since all the revised

parameter estimates are now positive, the effect of multicollinearity is no more there. So these revised parameter estimates are usable. They are the standardized coefficients of the corresponding multiple regression equation for studying the impact of Green Supply Chain Practices on the GSCCI component of Green Supply Chain Performance. But what remains to be explored is the order in which the five Green Supply Chain Practices impact the GSCCI component of Green Supply Chain Performance. Sorting the revised parameter estimates shown in table 21 in the descending order of magnitude gives the descending order in which the corresponding Green Supply Chain Practices impact the GSCCI component of Green Supply Chain Performance. The Green Supply Chain Practices in the descending order in which they influence the GSCCI component of GSC performance is as follows: LCA, EC, PP, DFE, RL. The corresponding parameter estimates or standardized coefficients in that order are as follows: 0.1731767, 0.1531823, 0.1458501, 0.110143 and 0.0964353. Accordingly, model 1 yields the following regression equation to explain the impact of the five Green Supply Chain Practices on the GSCCI component of Green Supply Chain Performance:

$$\text{GSCCI} = 1.676963178 + (0.153182267)(\text{EC}) + (0.145850056)(\text{PP}) + (0.096435255)(\text{RL}) + (0.173176747)(\text{LCA}) + (0.110142968)(\text{DFE})$$

**Table 35. ANOVA for model 10: Dependent variable: GSCCI**

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	14.01715	2.80343	253.82	<.0001
Error	97	1.07135	0.01104		
Corrected Total	102	15.08850			

**Table 36. Computation of R<sup>2</sup> for model 10**

Root MSE	0.10509	R-Square	0.9290
Dependent Mean	4.69462	Adj R-Sq	0.9253
Coeff Var	2.23862		

**Table 37. Parameter estimates for model 10**

Parameter Estimates						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr >  t	Variance Inflation
Intercept	1	0.84773	0.16089	5.27	<.0001	0
EC	1	0.26804	0.06892	3.89	0.0002	12.30377
PP	1	-0.19873	0.08756	-2.27	0.0254	28.90365
RL	1	-0.11098	0.03655	-3.04	0.0031	6.50446
LCA	1	0.83509	0.08085	10.33	<.0001	16.61923
DFE	1	0.00637	0.03221	0.20	0.8436	4.55562

### PRINCIPAL COMPONENT REGRESSION

Table 38 shows the details of Principal Component Regression which was performed. There were ten response variables and five predictor variables. Missing value was not needed and one factor was extracted. A total of 103 responses were obtained during the survey for the analysis.

**Table 38. Details of Principal Component Regression**

Item head	Description
Factor Extraction Method	Principle Components Regression
Number of Response Variables	10
Number of Predictor Parameters	5
Missing Value Handling	Exclude
Number of Factors	1
Number of Observations Read	103
Number of Observations Used	103

Table 39 shows that the principal components collectively account for 72.5010 % of variation of the five dependent variables.

**Table 39. Percentage of variation accounted for by the Principal Components**

Percent Variation Accounted for by Principal Components				
Number of Extracted Factors	Model Effects		Dependent Variables	
	Current	Total	Current	Total
1	74.7760	74.7760	72.5010	72.5010

Table 40 shows the parameter estimates for the centered and scaled data pertaining to the GSC practices and GSC performance. Then the new (revised) parameter estimates are calculated.

**Table 40. Parameter estimates for centered and scaled data**

Parameter Estimates for Centered and Scaled Data										
	GSCPLAN	GSCPROC	GSCXPROD	GSCXLOG	GSCXPACK	GSCXMARK	GSCXSL	CM	GSCMIG	GSCCI
Intercept	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000
EC	0.2120412822	0.2178134646	0.2134287272	0.1865162919	0.2062362479	0.1584998144	0.1660297611	0.1650791419	0.1832041224	0.2109404337
PP	0.2435584032	0.2501885437	0.2451520734	0.2142394620	0.2368905275	0.1820587071	0.1907078804	0.1896159643	0.2104349825	0.2422939281
RL	0.1830151239	0.1879971569	0.1842126426	0.1609842287	0.1780047359	0.1368029040	0.1433020824	0.1424815927	0.1581254594	0.1820649696
LCA	0.2374967577	0.2439618883	0.2390507649	0.2089075020	0.2309948312	0.1775276570	0.1859615709	0.1848968303	0.2051977078	0.2362637527
DFE	0.1984717048	0.2038744964	0.1997703602	0.1745801857	0.1930381635	0.1483566221	0.1554046900	0.1545149057	0.1714799784	0.1974413050

The new (revised) parameter estimates are shown in the table 41 along with the intercept values. These new parameter estimates reveal that there is no effect of multicollinearity existing now. Hence these coefficients are dependable for building the ten regression equations.

**Table 41. New (revised) parameter estimates**

New Parameter Estimates										
	GSCPLAN	GSCPROC	GSCEXPROD	GSCEXLOG	GSCEXPACK	GSCEXMARK	GSCEXSL	CM	GSCMIG	GSCCI
Intercept	-1.733112398	-1.887141383	0.217714868	1.344753781	1.630605607	-1.942924586	2.312194848	-0.488033297	1.580545635	1.676963178
EC	0.311427967	0.320572971	0.221777918	0.153636718	0.159948591	0.309560444	0.104404210	0.218528332	0.153470848	0.153182267
PP	0.296521179	0.305228448	0.211162313	0.146282754	0.152292503	0.294743046	0.099406806	0.208068271	0.146124824	0.145850056
RL	0.196058173	0.201815371	0.139619360	0.096721352	0.100694966	0.194882481	0.065727233	0.137573596	0.096616930	0.096435255
LCA	0.352077842	0.362416519	0.250726008	0.173690515	0.180826261	0.349966556	0.118031818	0.247052261	0.173502995	0.173176747
DFE	0.223926708	0.230502259	0.159465444	0.110469733	0.115008172	0.222583898	0.075069979	0.157128887	0.110350467	0.110142968

Accordingly, the regression equations for predicting the ten component measures of GSC performance using the five component measures of GSC practices are as follows:

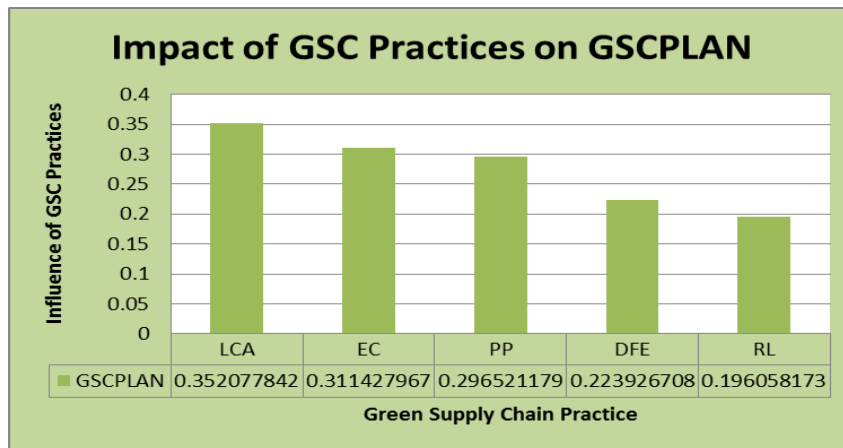
1.  $GSCPLAN = -1.733112398 + (0.311427967) (EC) + (0.296521179) (PP) + (0.196058173) (RL) + (0.352077842) (LCA) + (0.223926708) (DFE)$
2.  $GSCPROC = -1.887141383 + (0.320572971) (EC) + (0.305228448) (PP) + (0.201815371) (RL) + (0.362416519) (LCA) + (0.230502259) (DFE)$
3.  $GSCEXPROD = 0.217714868 + (0.221777918) (EC) + (0.211162313) (PP) + (0.139619360) (RL) + (0.250726008) (LCA) + (0.159465444) (DFE)$
4.  $GSCEXLOG = 1.344753781 + (0.153636718) (EC) + (0.146282754) (PP) + (0.096721352) (RL) + (0.173690515) (LCA) + (0.110469733) (DFE)$
5.  $GSCEXPACK = 1.630605607 + (0.159948591) (EC) + (0.152292503) (PP) + (0.100694966) (RL) + (0.180826261) (LCA) + (0.115008172) (DFE)$
6.  $GSCEXMARK = -1.942924586 + (0.309560444) (EC) + (0.294743046) (PP) + (0.194882481) (RL) + (0.349966556) (LCA) + (0.222583898) (DFE)$
7.  $GSCEXSL = 2.312194848 + (0.104404210) (EC) + (0.099406806) (PP) + (0.065727233) (RL) + (0.118031818) (LCA) + (0.075069979) (DFE)$
8.  $CM = -0.488033297 + (0.218528332) (EC) + (0.208068271) (PP) + (0.137573596) (RL) + (0.247052261) (LCA) + (0.157128887) (DFE)$
9.  $GSCMIG = 1.580545635 + (0.153470848) (EC) + (0.146124824) (PP) + (0.096616930) (RL) + (0.173502995) (LCA) + (0.110350467) (DFE)$
10.  $GSCCI = 1.676963178 + (0.153182267) (EC) + (0.145850056) (PP) + (0.096435255) (RL) + (0.173176747) (LCA) + (0.110142968) (DFE)$

**Table 42. Summary of the ten regression models**

Model	Hypotheses addressed	Dependent Construct	Independent Constructs	R <sup>2</sup>	p-value for significance level of α=0.05	Ref. table for ANOVA, R <sup>2</sup> , New parameter estimates.	Order of influence of GSC Practices on individual GSC Performance measure
1	H <sub>1</sub> , H <sub>2</sub> , H <sub>13</sub> , H <sub>19</sub> , H <sub>25</sub>	GSCPLAN	EC, PP, RL, LCA, DFE.	0.9606	p < 0.0001	8, 9, 10.	LCA, EC, PP, DFE, RL.
2	H <sub>2</sub> , H <sub>9</sub> , H <sub>14</sub> , H <sub>20</sub> , H <sub>26</sub>	GSCPROC	EC, PP, RL, LCA, DFE.	0.9901	p < 0.0001	11, 12, 13.	LCA, EC, PP, DFE, RL.
3	H <sub>3a</sub> , H <sub>9a</sub> , H <sub>15a</sub> , H <sub>21a</sub> , H <sub>27a</sub>	GSCEXPROD	EC, PP, RL, LCA, DFE.	0.9561	p < 0.0001	14, 15, 16.	LCA, EC, PP, DFE, RL.
4	H <sub>3b</sub> , H <sub>9b</sub> , H <sub>15b</sub> , H <sub>21b</sub> , H <sub>27b</sub>	GSCEXLOG	EC, PP, RL, LCA, DFE.	0.9050	p < 0.0001	17, 18, 19.	LCA, EC, PP, DFE, RL.
5	H <sub>3c</sub> , H <sub>9c</sub> , H <sub>15c</sub> , H <sub>21c</sub> , H <sub>27c</sub>	GSCEXPACK	EC, PP, RL, LCA, DFE.	0.9286	p < 0.0001	20, 21, 22.	LCA, EC, PP, DFE, RL.
6	H <sub>3d</sub> , H <sub>9d</sub> , H <sub>15d</sub> , H <sub>21d</sub> , H <sub>27d</sub>	GSCEXMARK	EC, PP, RL, LCA, DFE.	0.9403	p < 0.0001	23, 24, 25.	LCA, EC, PP, DFE, RL.
7	H <sub>3e</sub> , H <sub>9e</sub> , H <sub>15e</sub> , H <sub>21e</sub> , H <sub>27e</sub>	GSCEXSL	EC, PP, RL, LCA, DFE.	0.8792	p < 0.0001	26, 27, 28.	LCA, EC, PP, DFE, RL.
8	H <sub>4</sub> , H <sub>10</sub> , H <sub>16</sub> , H <sub>22</sub> , H <sub>28</sub>	CM	EC, PP, RL, LCA, DFE.	0.9005	p < 0.0001	29, 30, 31.	LCA, EC, PP, DFE, RL.
9	H <sub>5</sub> , H <sub>11</sub> , H <sub>17</sub> , H <sub>23</sub> , H <sub>29</sub>	GSCMIG	EC, PP, RL, LCA, DFE.	0.8908	p < 0.0001	32, 33, 34.	LCA, EC, PP, DFE, RL.
10	H <sub>6</sub> , H <sub>12</sub> , H <sub>18</sub> , H <sub>24</sub> , H <sub>30</sub>	GSCCI	EC, PP, RL, LCA, DFE.	0.9290	p < 0.0001	35, 36, 37.	LCA, EC, PP, DFE, RL.

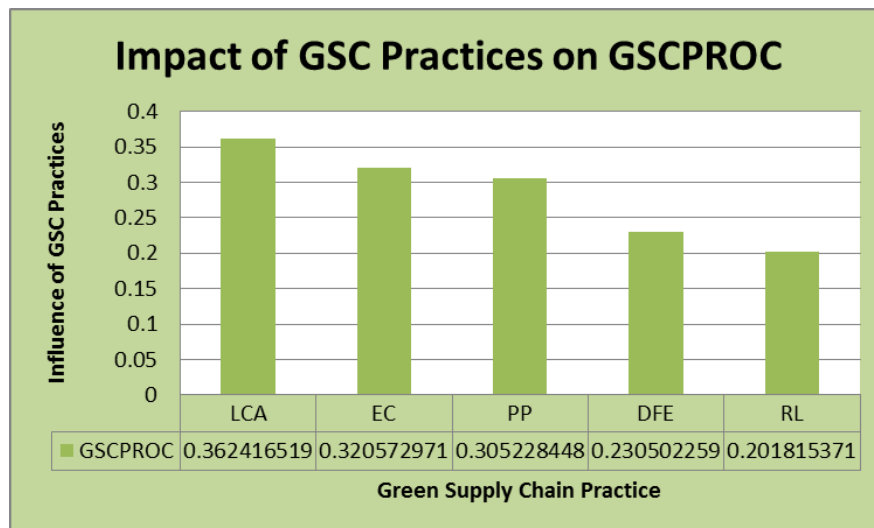
These ten regression equations can be used to scale the ten individual component performance measures of the construct “GSC Performance” based on the extent to which the individual components of GSC practices are used. Further, it is observed that each of the ten GSC Performance measures is influenced by the five GSC Practices in the same order. This means that there is a definite order in which GSC Practices impact GSC Performance measures.

Figure 12 shows graphically using a column chart, the influence of the five GSC Practices namely LCA, EC, PP, DFE and RL on the GSCPLAN component of GSC Performance.



**Figure 12. Order of influence of GSC Practices on GSCPLAN**

Figure 13 shows graphically using a column chart, the influence of the five GSC Practices namely LCA, EC, PP, DFE and RL on the GSCPROC component of GSC Performance.



**Figure 13. Order of influence of GSC Practices on GSCPROC**

Figure 14 shows graphically using a column chart, the influence of the five GSC Practices namely LCA, EC, PP, DFE and RL on the GSC EXPROD component of GSC Performance.

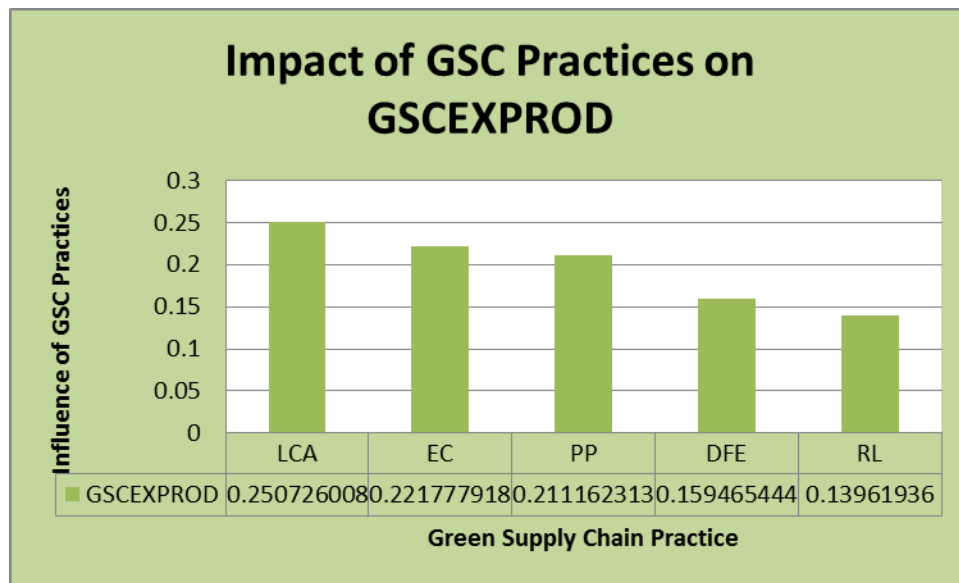


Figure 14. Order of influence of GSC Practices on GSC EXPROD

Figure 15 shows graphically using a column chart, the influence of the five GSC Practices namely LCA, EC, PP, DFE and RL on the GSC EXLOG component of GSC Performance.

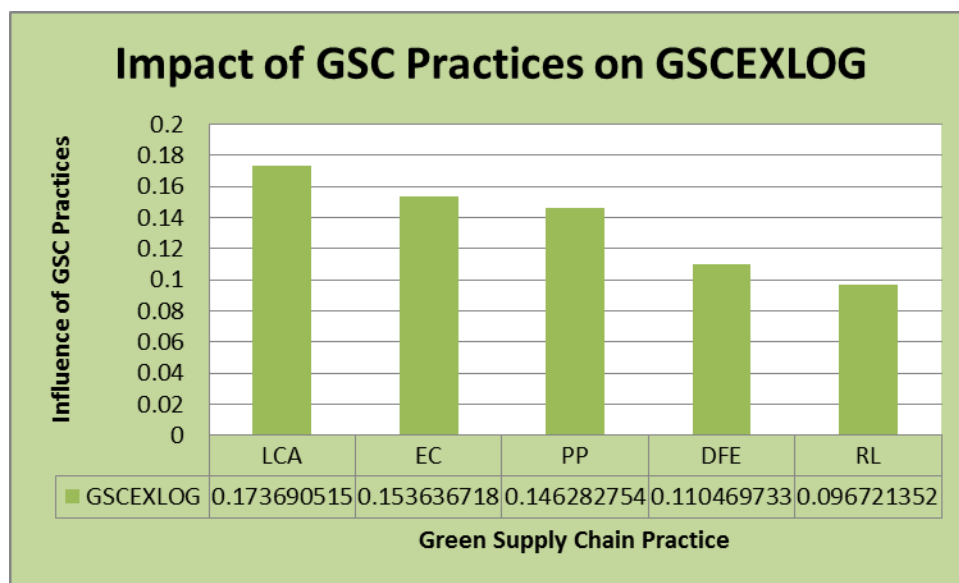
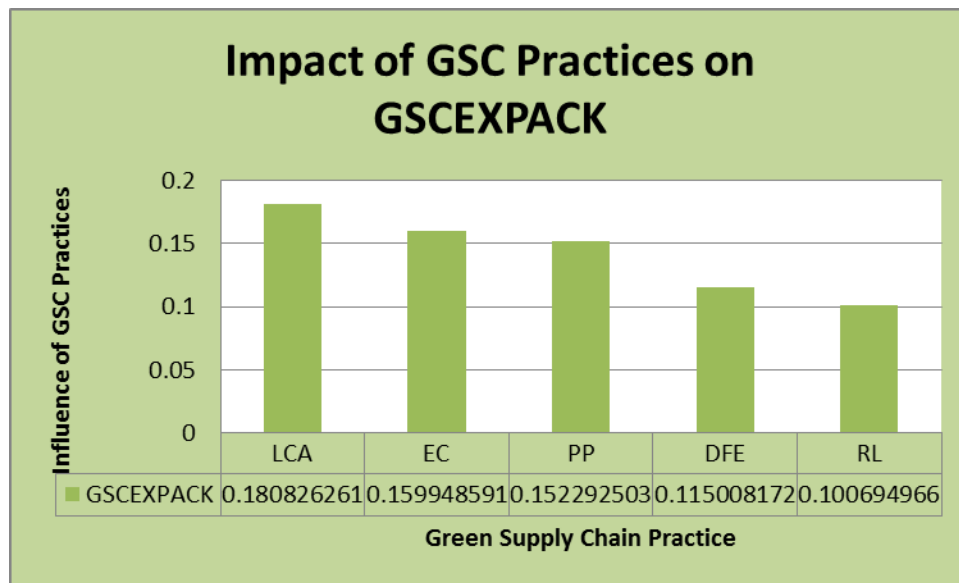


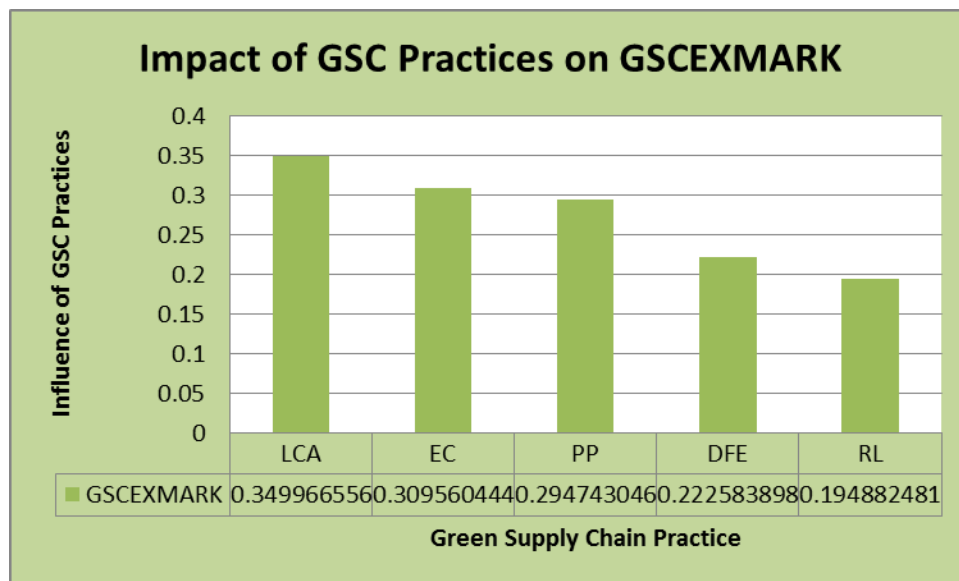
Figure 15. Order of influence of GSC Practices on GSC EXLOG

Figure 16 shows graphically using a column chart, the influence of the five GSC Practices namely LCA, EC, PP, DFE and RL on the GSCEXPACK component of GSC Performance.



**Figure 16. Order of influence of GSC Practices on GSCEXPACK**

Figure 17 shows graphically using a column chart, the influence of the five GSC Practices namely LCA, EC, PP, DFE and RL on the GSCEXMARK component of GSC Performance.



**Figure 17. Order of influence of GSC Practices on GSCEXMARK**



Figure 18 shows graphically using a column chart, the influence of the five GSC Practices namely LCA, EC, PP, DFE and RL on the GSCEXSL component of GSC Performance.

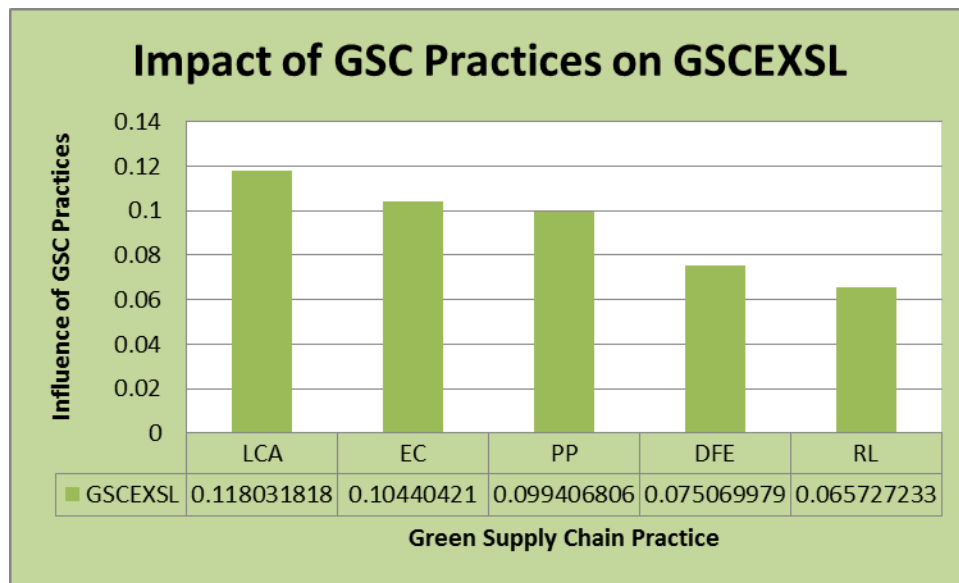


Figure 18. Order of influence of GSC Practices on GSCEXSL

Figure 19 shows graphically using a column chart, the influence of the five GSC Practices namely LCA, EC, PP, DFE and RL on the CM component of GSC Performance.

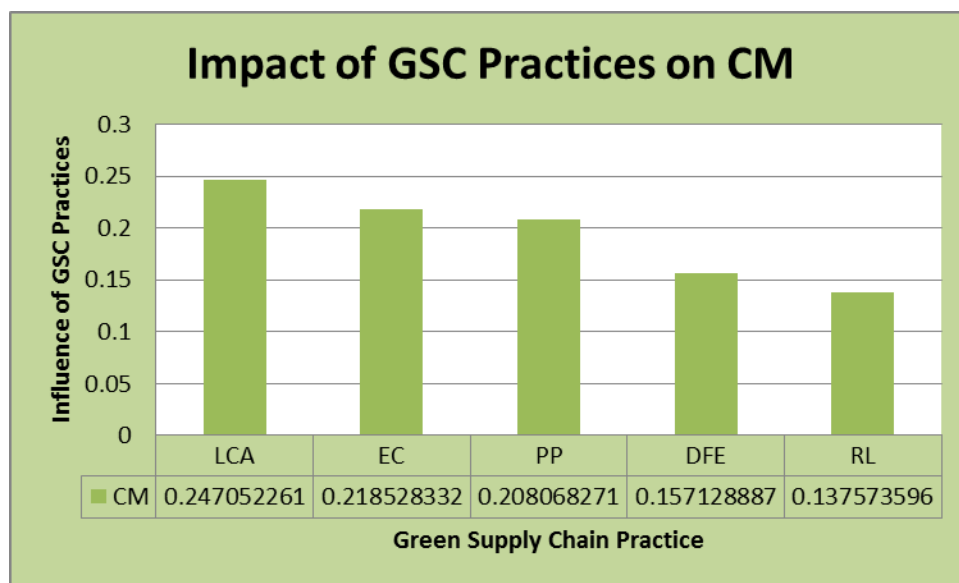


Figure 19. Order of influence of GSC Practices on CM

Figure 20 shows graphically using a column chart, the influence of the five GSC Practices namely LCA, EC, PP, DFE and RL on the GSCMIG component of GSC Performance.

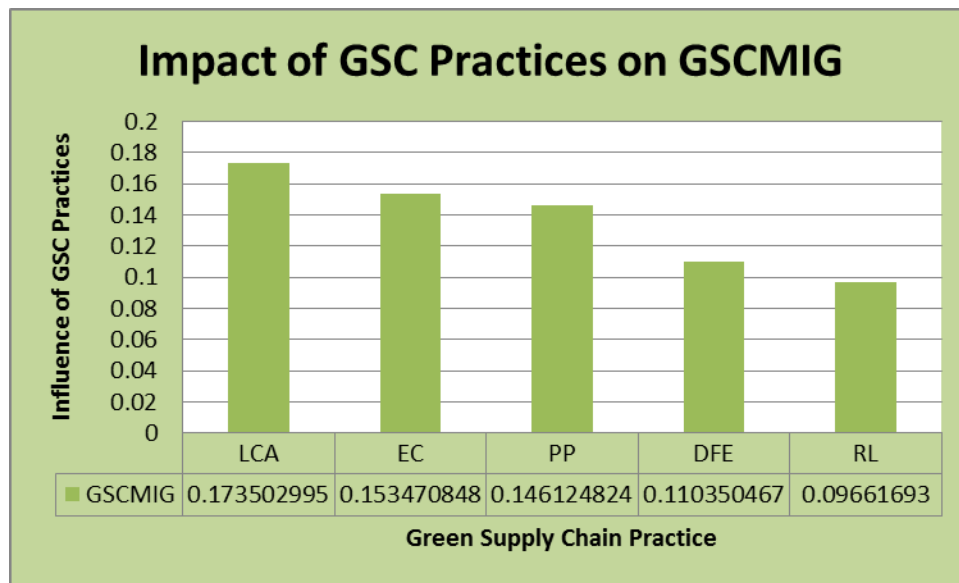


Figure 20. Order of influence of GSC Practices on GSCMIG

Figure 21 shows graphically using a column chart, the influence of the five GSC Practices namely LCA, EC, PP, DFE and RL on the GSCCI component of GSC Performance.

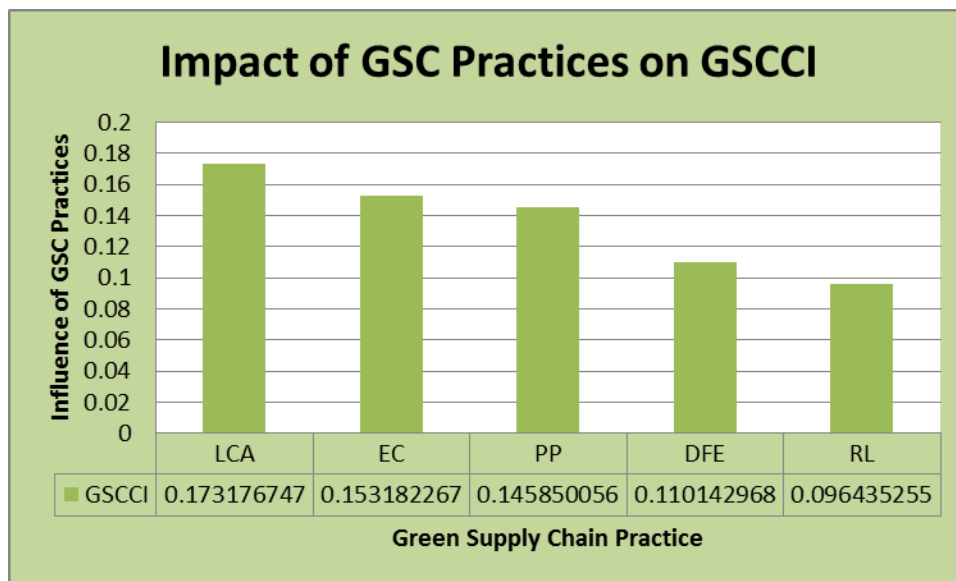


Figure 21. Order of influence of GSC Practices on GSCCI

Also the order of influence of each of the five components of GSC Practices on each of the ten components measures of GSC Performance is consistently in the descending order of influence of the GSC Practices namely LCA, EC, PP, DFE and RL. Also on the basis of communality estimates ( $h^2$ ) of the components of each of the five GSC Practices and on the basis of the communality estimates of the components of each of the ten GSC Performance measures it is possible to rank the order of the variables constituting them as established in [10], [11], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21], [22], [23] and [24].

## CONCLUSION

From table 6 it can be said conclusively that various sub-construct components of green supply chain practices namely Environmental Certification; Pollution Prevention; Design for the Environment; Life Cycle Assessment; and Reverse Logistics are positively associated in varying degrees with various sub-construct components of green supply chain performance namely Green Supply Chain Planning; Green Supply Chain Procurement; Green Supply Chain Execution-Production; Green Supply Chain Execution-Logistics; Green Supply Chain Execution-Packaging; Green Supply Chain Execution-Marketing; Green Supply Chain Execution-Supply Loops; Carbon Management; Green Supply Chain Migration; and Green Supply Chain Continuous Improvement. Further it is evident from the regression coefficients of table 41 and from Fig.12 through Fig. 21 that particular GSC Practices have a pre-dominance over the other ones in influencing the individual GSC Performance measures. In other words there is a definite ordering of each of the five component measures of GSC Practices in jointly influencing each of the ten individual component measures of GSC Performance. The descending order of influence of GSC practices on individual component measures of GSC performance is as follows: LCA, EC, PP, DFE and RL. The existing body of knowledge has established at a broad level that GSC Practices have an impact on GSC Performance. However, it has not been able to establish very conclusively as to which of these GSC Practices specifically impacts which of the GSC Performance measures. This study was set out to explore the unexplored linkages between GSC practices and component measures of GSC Performance. Several definitions of GSC Practices and GSC Performance emerged during a detailed literature review. But the impact of GSC Practices on GSC Performance measures using the combination of definitions of GSC practices and GSC Performance as used in this research study has not been explored before. The research study was set out to study the joint impact of five identified Green Supply Chain Practices on ten identified individual component measures of GSC Performance with reference to the Indian automobile manufacturing sector by means of an empirical study by administering a questionnaire on representatives of automobile manufacturing firms and plants.

The study could establish the fact that each of the five GSC Practices has a significant positive correlation with each of the ten individual component measures of GSC Performance which is evident from the correlation coefficients computed between each of them. This finding is in line with the findings in existing literature also. Also from this it was possible to find the order in which the five GSC Practices are correlated with each of the ten individual component measures of GSC Performance. Looking at it in the other way the study could also establish the order in which each of the ten GSC Performance measures is correlated with each of the five GSC Practices. This is a unique finding made by this study.

On doing regression analysis it was possible to establish ten regression equations each used to establish the joint impact of each of the five GSC Practices on each of the individual component measures of GSC Performance. In short since there are ten measures of GSC Performance, ten multiple linear regression equations were obtained. Each regression equation helps to establish a particular GSC Performance measure.

These ten linear multiple regression equations can be used to predict the individual GSC Performance measures.

A closer look at the coefficients of these ten linear multiple regression equations revealed these coefficients or the parameter estimates follow a particular pattern. In each of the ten multiple regression equations it was observed that the parameter estimates had a particular hierarchy. The parameter estimates were consistently highest for LCA followed by EC followed by PP

followed by DFE followed by RL. This means that whenever the five GSC Practices jointly impact GSC Performance measures, they do so in a particular order. And this order is consistent when applied to each of the ten GSC Performance measures. So it can be conclusively stated that there is a definite order in which each of the five GSC Practices will jointly impact each of the ten individual component measures of GSC Performance. This is a finding which has not been established by existing research. This is one of the key findings of this research work.

Accordingly, in line with the above discussion, in all ten models or multiple linear regression equations were obtained. The goodness of a model is measured by its  $R^2$  value. The  $R^2$  value is a measure of the amount of variance in the dependent construct explained jointly by the predictors or independent constructs. In the case of this research the dependent constructs are the ten individual GSC Performance measures and the predictors or the independent constructs are the five GSC Practices. By ranking the  $R^2$  values of the ten multiple regression equations it is possible to know which model (GSC Performance measure) is able to explain the joint variation of the five GSC Practices the most and also which model or (GSC Performance measure) is able to explain the joint variation of the five GSC Practices the least. Accordingly, we can get the ordering of GSC Performance measures as regards their ability to explain the joint variation of the five GSC Practices. This order is as follows: GSCPROC with a  $R^2$  value of 0.9901; followed by GSCPLAN with a  $R^2$  value of 0.9606; followed by GSCEXPROD with a  $R^2$  value of 0.9561; followed by GSCEXMARK with a  $R^2$  value of 0.9403; followed by GSCCI with a  $R^2$  value of 0.9290; followed by GSCEXPACK with a  $R^2$  value of 0.9286; followed by GSCEXLOG with a  $R^2$  value of 0.9050; followed by CM with a  $R^2$  value of 0.9005; followed by GSCMIG with a  $R^2$  value of 0.8908; followed by GSCEXSL with a  $R^2$  value of 0.8792.

This finding is a by-product of this research, but it has interesting insights. Practitioners can make use of this ordering of GSC Performance measures based on  $R^2$  to focus on improving a particular component measure of GSC Performance. It is important to know this ordering as it helps in prioritizing the GSC Performance improvement projects to be taken up first. Prioritizing is needed because most of the projects have financial implications associated with them.

The findings of this research also add to the existing body of knowledge as these are unique findings.

Based on the value of communality estimates ( $h^2$ ) of the variables constituting each construct it is possible to conclude about how much of each variable is accounted for by underlying factors taken together. Accordingly it is possible to arrive at the order of contribution of the variables constituting each of the sub-constructs of GSC Practices and GSC Performance.

Using this logic -

1. The five component variables of the construct EC (total  $h^2 = 3.824$ ) contribute in the following descending order: EC4 (0.975), EC5 (0.975), EC2 (0.974), EC3 (0.888), EC1 (0.011).
2. The eleven component variables of the construct PP (total  $h^2 = 9.287$ ) contribute in the following descending order: PP2 (0.963), PP9 (0.962), PP4 (0.962), PP11 (0.962), PP3 (0.868), PP10 (0.865), PP8 (0.774), PP5 (0.765), PP1 (0.736), PP6 (0.734), PP7 (0.691).
3. The fifteen component variables of the construct RL (total  $h^2 = 13.725$ ) contribute in the following descending order: RL13 (0.992), RL14 (0.992), RL4 (0.973), RL11 (0.973),

- RL13 (0.973), RL9 (0.961), RL7 (0.954), RL6 (0.938), RL15 (0.930), RL2 (0.98), RL12 (0.855), RL5 (0.843), RL10 (0.821), RL1 (0.811), RL8 (0.786).
4. The eight component variables of the construct DFE (total  $h^2 = 7.219$ ) contribute in the following descending order: DFE6 (0.987), DFE5 (0.966), DFE2 (0.944), DFE4 (0.928), DFE3 (0.917), DFE8 (0.878), DFE1 (0.801), DFE7 (0.794).
  5. The three component variables of the construct LCA (total  $h^2 = 1.867$ ) contribute in the following descending order: LCA3 (0.884), LCA2 (0.844), LCA1 (0.139).
  6. The five component variables of the construct GSCPLAN (total  $h^2 = 4.223$ ) contribute in the following descending order: GSCPLAN1 (0.915), GSCPLAN3 (0.915), GSCPLAN2 (0.885), GSCPLAN4 (0.808), GSCPLAN5 (0.698).
  7. The eleven component variables of the construct GSCPROC (total  $h^2 = 10.606$ ) contribute in the following descending order: GSCPROC8 (0.997), GSCPROC4 (0.991), GSCPROC1 (0.986), GSCPROC7 (0.983), GSCPROC10 (0.983), GSCPROC5 (0.981), GSCPROC2 (0.980), GSCPROC9 (0.980), GSCPROC6 (0.975), GSCPROC3 (0.899), GSCPROC11 (0.846).
  8. The seven component variables of the construct GSCEXPProd (total  $h^2 = 5.68$ ) contribute in the following descending order: GSCEXPProd5 (0.920), GSCEXPProd2 (0.893), GSCEXPProd7 (0.879), GSCEXPProd6 (0.850), GSCEXPProd4 (0.838), GSCEXPProd3 (0.809), GSCEXPProd1 (0.488).
  9. The twelve component variables of the construct GSCEXLog (total  $h^2 = 9.884$ ) contribute in the following descending order: GSCEXLog1 (0.953), GSCEXLog5 (0.907), GSCEXLog12 (0.905), GSCEXLog3 (0.895), GSCEXLog11 (0.894), GSCEXLog7 (0.859), GSCEXLog6 (0.839), GSCEXLog10 (0.836), GSCEXLog4 (0.808), GSCEXLog2 (0.729), GSCEXLog9 (0.685), GSCEXLog8 (0.570).
  10. The four component variables of the construct GSCEXPack (total  $h^2 = 3.975$ ) contribute in the following descending order: GSCEXPack1 (0.998), GSCEXPack2 (0.998), GSCEXPack4 (0.998), GSCEXPack3 (0.981).
  11. The four component variables of the construct GSCEXMark (total  $h^2 = 3.663$ ) contribute in the following descending order: GSCEXMark3 (0.982), GSCEXMark4 (0.982), GSCEXMark1 (0.892), GSCEXMark2 (0.807).
  12. The three component variables of the construct GSCEXSL (total  $h^2 = 1.82$ ) contribute in the following descending order: GSCEXSL3 (0.897), GSCEXSL1 (0.703), GSCEXSL2 (0.220).
  13. The seven component variables of the construct CM (total  $h^2 = 5.231$ ) contribute in the following descending order: CM1 (0.935), CM4 (0.883), CM5 (0.883), CM7 (0.83), CM2 (0.770), CM3 (0.528), CM6 (0.445).
  14. The five component variables of the construct GSCMIG (total  $h^2 = 4.629$ ) contribute in the following descending order: GSCMIG4 (0.963), GSCMIG1 (0.956), GSCMIG2 (0.943), GSCMIG3 (0.913), GSCMIG5 (0.852).
  15. The eleven component variables of the construct GSCCI (total  $h^2 = 9.956$ ) contribute in the following descending order: GSCCI5 (0.968), GSCCI1 (0.964), GSCCI6 (0.964), GSCCI4 (0.911), GSCCI8 (0.908), GSCCI9 (0.908), GSCCI11 (0.908), GSCCI10 (0.907), GSCCI3 (0.879), GSCCI7 (0.827), GSCCI2 (0.805).

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# Ability of Net Income in Predicting Dividend Yield: Operating Cash Flow as a Moderating Variable

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## ABSTRACT

The purpose of this study is to determine the ability of net income in predicting dividend yield with operating cash flow as a moderating variable on manufacturing companies of the consumer goods industry sector listed in the Indonesia Stock Exchange on the period 2012-2016. The sample is selected by using purposive sampling technique. The data analyzed by using moderated regression analysis. The result of analysis shows that, at the 0.05 level of significance, operating cash flow significantly influences the dividend yield, while net income does not affect the dividend yield. However, operating cash flow is able to moderate significantly the effect of net income on dividend yield. These results indicate that net income is unable to signal investors to predict dividend yields. However, net income will be a significant explanation of the dividend yield when operating cash flow acts as a moderating variable.

**Keywords:** net income, cash flow operation, dividend yield.

## INTRODUCTION

Investment is an activity of placing funds in one or more assets in the hope of obtaining future returns. Purchase of shares is one of the investment activities. The expected return on investment can be either capital gains or dividends. Capital gain is the rate of return obtained from the difference between the purchase price and the selling price of the stock. Dividends are the percentage of profits earned by investors based on the proportion of share ownership of a company [3; 6; 8; 11; 12; 20; 23; 27].

Financial market allocates investment funds to the most profitable projects by identifying information about investments characterized by the highest rate of return [14; 16]. For investors who behave risk aversion, will tend to choose the return on investment in the form of dividends rather than capital gains. Cause, dividend yield tends not to be influenced by market conditions so that it contains a lower level of uncertainty than capital gain.

The level of dividend yield is an indicator of increased welfare for investors. Investor's expectation on investment activity is to get the highest rate of return at certain risk level [11; 23; 25]. At a certain level of risk, investors tend to choose investments that generate the highest returns. Meanwhile, at a certain rate of return, investors tend to choose the investment with the lowest risk level. Therefore, investors are concerned to predict level of the expected dividend yield in the future. However, the level of dividend yield is not easy to predict. Many factors influence the company's dividend policy, some of which are net income and operating cash flow. The purpose of this study is to determine the effect of net income to dividend yield with operating cash flow as a moderating variable on manufacturing companies of consumer goods industry sector listed in Indonesia Stock Exchange on period 2012 - 2016.

The level of profit distributed to investors depends on the company's dividend policy. Company policy relating to dividend payout is to determine whether the profit earned by the



company in any period will be paid in whole or in part to its investors as dividend yield [4; 20; 34]. Investors are always expecting high dividend yields, but companies have strategic considerations regarding sustainability and future growth of the company.

Kodrat and Herdinata [15] state that each "*rupiah*" of dividend payments will reduce the retained earnings that should be reinvested by the company through the purchase of new assets. The lost share of retained earnings shall be replaced by issuing and selling new shares. Based on these considerations, not all profits earned by the company will be paid as dividend yield to investors. There is a portion of the profits the company will reinvest as part of retained earnings.

The greater the proportion of the profits paid to investors as a dividend yield, the less the residual profits to be reinvested in the firm as part of retained earnings [31]. As a result, it will minimize the company's ability to increase future growth. The growth of companies that tend to decline, will eventually reduce the growth of dividends in the future.

Based on this description, the problem formulation in this study is as follows: 1) does net income affects dividend yield?, 2) does operating cash flow affects dividend yield?, and 3) does operating cash flow moderates the effect of net income on dividend yield? Several previous studies have conducted studies that analyze the ability of net income and operating cash flow in predicting dividend yield, but show inconsistencies in the results, thus becoming an interest to conduct this study.

## LITERATURE REVIEW

### **The Signaling Theory and Predictive Value of Accounting Information**

Signaling Theory suggests that stock prices will likely increase if there is an announcement of dividend increases, and vice versa. Based on this theory, it is not an increase or decrease in dividend that causes an increase or decrease in stock prices, but the prospects of the company contained in the announcement information. Because, according to this theory, dividend announcement has information content [8]. High performing companies will pay higher dividend yields.

Signaling theory describes an action taken by company management to provide a signal or a hint for investors about how the prospects of the company in the future [3; 34]. This signal is in the form of accounting information contained in the company's financial statements in a period. The information is expected to be useful for investors to make investment decisions. The company's management objective of publishing its financial statements is to signal investors to future prospects.

Profit is one of the accounting information contained in the financial statements. The financial statements are records of accounting information sourced from a company's financial transactions that are useful to describe the performance of the company in a period [24; 26; 30]. In order to be usefulness to the users for investment decision making, the accounting information presented in the financial statements should contain predictive value.

Predictive value is defined as the usefulness of accounting information for investment decision making by evaluating past, present, and future events [24; 27; 38]. The historical information presented in the financial statements is useful to predict the company's ability to improve the welfare of its investors, one of which is proxied in increasing dividend yield. Thus, the predictive value of the accounting information contained in the financial statements is useful for assessing the performance of a firm over a period. The predictive value contained in the

accounting information is expected to provide a signal for market participants to predict the sustainability and future growth of a company.

### **Theory of The Dividend Policy**

The dividend policy includes a decision on whether the profits earned by the company over a period will be distributed to investors as dividend yield or to be reinvested as part of retained earnings [2; 3; 7; 10; 20; 31; 34; 36]. The dividend distribution will give a positive signal about the company's performance in a period to investors. In general, the payment or distribution of dividends is made in cash.

Wiagustini [2010] mentioned that there are several factors that influence dividend policy, including: 1) cash position reflecting the company's liquidity. When a company is able to obtain sufficient net income, but management takes a policy to reinvest profits earned into real assets, then the company can't make a dividend in cash; 2) the need to make payments on the obligations of the company; 3) policies related to high levels of expansion that require substantial funds. Therefore, the profit earned is better retained; 4) company access in the capital market; and 5) shareholder positions in the tax group.

There are several theories underlying dividend policy, such as: Irrelevant Dividend, Bird-in-the-Hand Theory, and Tax Differential Theory. The Irrelevant Dividend Theory proposed by Miller and Modigliani (hereinafter referred to as MM Theory), argues that dividend payout has no effect on shareholder prosperity. Under these conditions, the value of the firm is determined by the earning power of the firm's assets. Thus, the value of the firm is determined by the investment decision. Bird-in-the Hand Theory proposed by Gordon and Lintner, argues that the increase in the company's equity cost is due to a decrease in dividend payouts, as investors are more confident of dividend payouts than the capital gains generated. This theory assumes that investors see a bird in hand is more valuable than a thousand birds in the air. Capital gain is seen as riskier than a more certain dividend yield. Therefore, investors will demand a higher profit rate for each dividend yield reduction. Tax Differential Theory proposed by Lizenberger and Ramaswamy, argues that in relation to the personal income tax, the relevant income for the investor is income after tax, so that the required profit is also after tax. In relation to this theory, investors prefer to receive a higher capital gain compared to high dividends. Investors tend to prefer companies to hold profit after tax and are used for investment financing rather than making dividend payments in cash [1; 8; 13; 15; 18; 22; 36].

### **The Dividend Yield**

Dividend yield is a dividend policy reflected in the dividend payout ratio. The dividend payout ratio is a share of the profits earned by the company and distributed to investors in the form of dividends for each common shareholding. Dividend payout ratio in period  $t$  is measured through dividend per share ratio in period  $t$  and earning per share in period  $t$ . Dividend per share reflects a measure of the amount of income distributed to investors in the form of dividends for each shareholding sheet. Dividend per share in period  $t$  is measured by dividend paid ratio in period  $t$  and number of shares outstanding in period  $t$ . Earnings per share represents a measure of the amount of income available to investors for each shareholding sheet. Earnings per share in period  $t$  is measured by comparison of earning after taxes in period  $t$  and number of shares outstanding in period  $t$  [5; 6; 21; 25; 27; 32].

This study uses dividend payout ratio as indicator of dividend yield. The higher dividend payout ratio is predicted to increase profits for investors. On the other hand, also assessed will weaken the internal financial, because it will reduce the retained earnings, and vice versa.

Therefore, in making dividend policy, it should consider the factors that will assist management in determining the share of the profits to be paid to investors as dividend yield.

### **Net Income and the Dividend Yield**

The share of the profit that can be distributed to investors as dividend income is part of the company's profits after deducting its fixed expenses (such as interest expense, tax expense). The share of profit is referred to as earnings after taxes or net income [27; 36]. The amount of funds that can be distributed as dividends or reinvested as retained earnings equal to the amount of net income obtained by the company in a period.

Profit is information contained in the income statement. Profit is seen as the best indicator of company performance achievement in a period. That is, high or low performance of the company is reflected in the large or small profits that can be obtained by the company in a period. Without profits it will be difficult for the company to maintain its sustainability. For investors, profits that can be obtained by the company is also very important, because investors are always expecting a rate of return from investment activities [29; 30; 32; 35; 38].

The level of net income is predicted to affect the dividend yield. That, the greater the profits earned by the company, the greater the dividend yield expected by investors in the future. The higher net income, the company is considered capable of achieving high dividend yield, and vice versa. Theoretically, companies that have the ability to earn high net income, are considered to make large dividend payouts. However, companies that have the ability to earn high net income may not necessarily pay large amounts of cash dividends, as the company may plan to use part of the net profit earned as retained earnings [20; 21].

Investors who engage in investment activities in the company's common stock expect to obtain dividend yield in the future. This raises the question, whether the high factor or low net income earned by the company can affect the dividend yield for investors? This study predicts that net income affects dividend yield. This prediction refers to the results of several previous studies [9; 28; 33; 37] which have proved that net income has a significant effect on dividend yields proxied by dividend payout ratio. However, it does not refer to the results of a study by Noviyanto [21] which proves that net income has no effect on dividend yield.

### **Operating Cash Flow and the Dividend Yield**

The policy of dividend distribution must be one of consideration of the availability of cash, because even if the company is profitable, but if the amount of available cash is insufficient to be paid cash dividend then the company is likely to take the decision to hold the profit to be reinvested. Therefore, the policy of dividend payout can't be determined only with the consideration of the acquisition of net income, but it is also important to consider the operating cash flow.

There are three activities in the cash flow statement [30; 32; 36], ie operating activities, investment activities, and financing activities. Of the three activities, which tend to be associated with dividend policy making is cash flow originating from operating activities. Therefore, operating cash flow is an indicator that reflects the ability of the company to pay its obligations, the ability to maintain its operations, the ability to pay cash dividends, and the ability to make new investments without relying on external funding sources.

Operating cash flow is one of the cash flow information that is the focus for the users of financial statements. This is because the operating cash flow is the main indicator to determine whether a company's operating activities are capable of generating sufficient cash flow to

finance the company's operations, repay loans, and distribute dividends without using external funding sources [38]. In addition, to maintain the sustainability of its business over the long term, a company must be able to generate positive net cash flow from operating activities. The positive net cash flows reflect the company having sufficient financing. Conversely, companies with negative net cash flows indicate that the company does not have the ability to raise cash from other sources over a relatively long period of time.

Operating cash flow is a cash flow from operating activities derived from the main income generating activities of a company. Generally, it comes from transactions that affect the determination of net profit (or loss) earned by a company for a period. The cash position reflects the availability of cash from a company. The availability of cash becomes an important factor in determining the amount of dividends to be paid to investors. Cash dividend is the cash outflow for the company. Therefore, if the company takes a policy to pay cash dividends to its investors, then there should be sufficient cash to make the payment. For companies that have a relatively small cash availability, the dividend payout ratio tends to be small, and vice versa [21; 31].

This study predicts that operating cash flow affects dividend policy. These predictions refer to the results of several previous studies [9; 18; 21; 28; 37] which have proved that operating cash flow significantly affects dividend policy. However, it does not refer to the results of a study by Masrifah [19] which proves that operating cash flow has no effect on dividend yield.

### The Conceptual Framework and Hypothesis

The conceptual framework is presented in Figure 1 below.

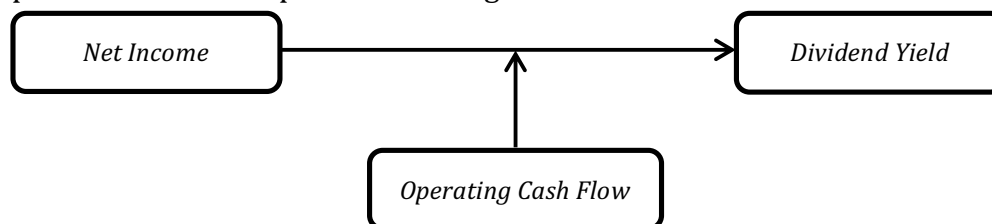


Figure1: The Conceptual Framework

Based on the conceptual framework, the following hypothesis are formulated:

**H<sub>1</sub>:** net income affects the dividend yield.

**H<sub>2</sub>:** operating cash flow affects the dividend yield

**H<sub>3</sub>:** operating cash flow moderates the net income effect on dividend yield

## METHODOLOGY

### Population and Sample

The population in this study is a manufacturing company in the consumer goods industry sector listed in the Indonesia Stock Exchange on the period 2012 - 2016, which amounted to 37 companies. Furthermore, the selected sample based on purposive sampling technique with the following criteria:

- a. Companies included in the population and publish summary of financial statements during the period 2012 - 2016;
- b. Companies selected based on criteria (a) once distributed cash dividends for the period 2012 - 2016; and
- c. Companies selected based on (a) and (b) have a positive net income in the financial statements published during the period 2012 - 2016.

Based on the sample selection criteria, then determined the number of samples of 29 companies. Furthermore, the number of observations is determined based on the pooling technique, ie the number of samples multiplied by the number of years of observation, then obtained the amount of data observed as much as 145 observations.

### Sources of the Data

The data used in this study is secondary data, sourced from a summary of financial statements published on the Indonesia Stock Exchange website ([www.idx.co.id](http://www.idx.co.id)).

### Variable Operational Definition

There are two categories of variables in this study: 1) dividend yield as dependent variable (Y), 2) net income as independent variable ( $X_1$ ), and 3) operating cash flow as moderating variable ( $X_2$ ).

- Dividend yield (Y), measured by dividend payout ratio, is ratio of dividend per share and earnings per share.
- Net income ( $X_1$ ) shows the amount of excess earnings after deducting the total expenses incurred in the income statement for a period.
- Operating cash flow ( $X_2$ ) shows the sum of all cash receipts transactions related to sales revenue and cash disbursements related to overall operating costs.

### Technique of Data Analysis

The data collected, then analyzed using moderated regression analysis. However, previously performed a classical assumption test to obtain the best regression analysis, linear, unbiased, and estimated (BLUE). The classical assumption test consists of: normality test, autocorrelation test, and heteroscedasticity test. In this case the classical assumption of multicollinearity test is not done, because in the formula of regression equation with moderating variables there are multiplication  $X_1$  (as independent variables) and  $X_2$  (as moderating variables) so that there is possible correlation between the two variables. The result of the classic assumption test shows that the analyzed data has fulfilled the three classical assumptions, so it can be continued to moderated regression analysis with equation formula as follows:

$$\text{Dividend Yield} = a + b_1 \text{ Net Income} + b_2 \text{ Operating Cash Flow} + b_3 \text{ Net Income} * \text{Operating Cash Flow} + e$$

$$DY = a + b_1 NI + b_2 OCF + b_3 NI * OCF + e$$

## RESULTS AND DISCUSSION

The results of moderated regression analysis are presented in Table 1.

**Table 1. The results of moderated regression analysis.**

Model	Regression Coefficient	Significance	Conclusion
Constants	1.767	0.005	
NI	0.015	0.463	Not significant
OCF	0.471	0.012	Significant
NI_OCF	0.423	0.027	Significant
R	0.601		
R square	0.512		
Adjusted R square	0.506		
F value	128.305		
Sig. F	0.000		

Source: the results of analysis (2017)

Based on Table 1 we can get the regression equation with the moderating variable as follows:

$DY = 1,767 + 0,015NI + 0,471OCF + 0,423NI\_OCF + e$ . Furthermore, at the 5% significance level, the results of the analysis show that:

- a. Net income did not affect the dividend yield with significance value of 0.463 ( $0.463 > 0.05$ ). That is, the hypothesis that net income affects dividend yield is unacceptable ( $H_1$  is rejected).
- b. Operating cash flow has significant effect on dividend yield with significance value 0.012 ( $0.012 < 0.05$ ). That is, the hypothesis that stated operating cash flow effect on dividend yield is acceptable ( $H_2$  accepted). Regression coefficient shows positive sign, meaning that operating cash flow have positive effect to dividend yield. The higher the operating cash flow reflects the higher the dividend yield, and vice versa.
- c. Operating cash flow is able to moderate significantly the effect of net income on dividend yield with a significance value of 0.027 ( $0.027 < 0.05$ ). That is, that the hypothesis that the operating cash flow moderate the effect of net income on dividend yield is acceptable ( $H_3$  accepted). The regression coefficient shows a positive sign, this indicates that the effect of moderation given is positive. This means that the higher the operating cash flow, the higher the effect of net income on the dividend yield.

The test results show that operating cash flow significantly acts as an independent variable and moderating variable. Therefore, it can be concluded that operating cash flow is a quasi moderator, that is, variables that moderate the effect of net income on dividend yield as well as become independent variables affecting dividend yield.

The adjusted R square value in the regression model with the moderating variable is 0.506 or 50.6%. This means that the regression model with operating cash flow as the moderating variable is able to explain the variation of dividend yield variable is 50.6%, while the remaining 49.4% is explained by other factors (e) outside the model and not observed.

F test results show the value of F of 128.305 with a significance value of 0.000 ( $0.000 < 0.05$ ). Thus, it can be concluded that net income and operating cash flow as independent variables and operating cash flow as a moderating variable simultaneously affect the dividend yield. In other words, regression models with moderating variables can be significantly used to predict dividend yields through net income and operating cash flows as independent variables and operating cash flow as moderating variables.

The results of this study indicate that companies that have the ability to obtain a positive net income, do not always reflect the amount of cash availability sufficient to make cash dividend payments. This is because, the income earned by the company as a net income indicator is not always in the form of cash, but there is a form of receivables. Sometimes when the net income earned by the company decreases, but because it has sufficient cash availability, the company may consider making cash dividend payments to its investors as a dividend yield. The amount of cash flows generated from operating activities is an indicator that determines whether the company's operating activities can generate sufficient positive cash flows to conduct the company's operating activities, repay loans, pay dividends, and make new investments without relying on external sources of funding.

The level of the ability of a company to earn a profit in a period will determine the choice of company dividend policy. Profit earned will be distributed as dividend yield to investors or will use it to be reinvested as part of retained earnings. In the event that a company is in a non-profitable condition, the tendency of profit to be obtained will be more widely used to improve the position of its capital structure. In addition, the amount of cash flow sourced from the

company's operations becomes an indicator that determines the ability of the company to obtain sufficient cash to distribute dividends to its investors.

Based on these results, it can be concluded that the value of net income that can be obtained by the company in a period is not the main thing used in considering the payment of cash dividend, but management must also consider the operating cash flow reflecting the cash availability in a period. Therefore, the company uses cash in making cash dividends, so the company must have sufficient cash availability to make the payment. When the available cash is insufficient for cash dividend payments, it is possible for the company to make a decision to withhold the profit to be reinvested instead of being paid to its investors as a dividend yield. These results support Pourheydari's [22] statement which suggests that the determinant of dividend payout is a stable cash flow. Thus, accountants as accounting information providers, should make operating cash flow as one of the important information for investors, containing predictive value and able to signal investors to predict future prospects, including predicting the company's ability to do so future cash dividend payout to investors as dividend yield.

### CONCLUSION

The results of this study prove that operating cash flow has a significant effect on dividend yield, while net income does not affect the dividend yield. However, when operating cash flow acts as a moderator it can strengthen the net income effect on dividend yield. That is, operating cash flow is able to moderate significantly the effect of net income on dividend yield. These results indicate that net income is unable to signal investors to predict dividend yields. However, net income will be a significant explanation of the dividend yield when operating cash flow acts as a moderating variable.

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# The Influence of Health Workers' Knowledge, Attitudes and Compliance on Implementation of Standard Precautions in Hospital-Acquired Infections Prevention at X Hospital Bantul

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## ABSTRACT

Prevention of infection is a form of efforts to maintain patient safety in health services in hospitals. However, the large number of health workers with low knowledge, inappropriate attitudes and non-adherence in the implementation of standard precautions makes increase the number of infections acquired in hospitals. This was an observational analytic study with cross-sectional design. Knowing the knowledge, attitudes and compliance to 99 health workers consisting of nurses and midwives in the inpatient room, intensive care unit and delivery room of X Hospital Bantul during July to August 2017. Data analysis using multiple logistic regression. There are three things that are assessed are knowledge, attitude and obedience. All aspects are assessed to have an effect on the application of standard precautions where compliance is the most influential factor in the application of standard precautions in the prevention of hospital-acquired infections.

**Keywords:** Knowledge; Attitude; Compliance; Standard Precautions; Hospital-Acquired Infections.

## INTRODUCTION

In the era of globalization, good service is an important factor in the implementation of health services in hospitals. Hospitals are required to provide health services that meet optimal service standards in order to compete with other hospitals. Some developed countries change quality to quality-safety, this shows not only improved quality but patient safety is also important in the implementation of health services [1].

Health services are a place for interactions between patients and hospitals involving patients, doctors, nurses and other healthcare professionals in sensitive relationships related to satisfaction, quality of care and hospital image [2]. Hospitals are health care institutions that run individual health services in a plenary manner providing inpatient, outpatient, and emergency care services and its implementation based on Pancasila and based on human values, ethics, professionalism, benefits, equity, equality, anti-discrimination, protection, patient safety and social functions [3].

Prevention of infection is a form of efforts to maintain patient safety in health services in hospitals. Infections that occur more than 48 hours after admission to the hospital are called Hospital-Acquired Infections (HAIs) [4]. The World Health Organization (WHO) describes hospital-acquired infections as an infected patient during hospitalization that is absent or

incubated at admission and exists after the patient is discharged from the hospital and the infection that a health worker obtains while working in the hospital [5].

The 2013 study in Europe was found to have a prevalence of hospital-acquired infections of 50%, consisting of 29% wound infections, 26% gastrointestinal infections, 19% pneumonia, 16% urinary tract infection and 4% sepsis [6]. Figures nosocomial infections continue to increase to 9% or more than 1.4 million hospitalized patients in hospitals worldwide. Research conducted by Perdalina Jaya and Infectious Disease Hospital Prof. Dr. Sulianti Saroso Jakarta in 2003, from 11 hospitals in DKI Jakarta surveyed obtained nosocomial infection rate for infections wound surgery 18.9%, urinary tract infection 15.1%, primary blood flow infections 26.4%, pneumonia 24.5% and other respiratory infections 15.1%, and other infections 32.1% [7]. High incidence rates of hospital infections serve as an indicator of the quality of health services, therefore infection prevention measures nosocomial is very important for health personnel in hospital [8].

All levels of hospital management play an important role in the spread and control of infections, especially health workers. A health worker is any person who devotes himself to the health sector and has knowledge and skills through education in the field of health which for certain types requires authority to make health efforts [9]. Health workers play an important role in the prevention of infection, because health workers make direct contact with patients while providing health services so as to provide an opportunity to transmit infection to patients [10]. Health workers are often exposed to microorganisms, many of which can cause serious infections or even cause death [11].

The ability of health workers to prevent infections in hospitals is a major goal in the implementation of quality health services. In order to provide quality health services, health personnel must have the knowledge, skills and attitude necessary to meet the needs and care of nursing / medical treatment of patients in the hospital [12]. Therefore every action taken by health workers can prevent the occurrence of infection through vigilance and implementation of the correct procedure. Such precautions may be carried out by applying the standard precaution in nursing care / medical treatment to patients in the hospital. Standard precautions are basic precautions that should be applied in all patient care [13].

Hospital-acquired infections can be prevented by various measures, such as maintaining hand hygiene and the use of personal protective equipment. Hand hygiene is widely acknowledged as the most important activity to reduce the spread of disease, but evidence suggests that many health workers do not decontaminate hands as often as they need or use the correct technique [14]. Personal protective equipment is used to protect themselves and patients from the risk of cross-infection. Personal protective equipment includes items such as gloves, aprons, masks, eye protection, hats and footwear [13].

Research conducted in Korea on prevention of hospital-acquired infections showed 9.48% of nurses did not wash their hands and use personal protective equipment. The study was conducted to assess the awareness, compliance, attitudes and self-efficacy of the nurses for the control of HAIs [15].

## RESEARCH METHODS

This study was an observational analytic study with cross-sectional design conducted at X Hospital of Bantul, consisting of: inpatient room, intensive care unit and maternity room from July to August 2017. Sampling was done by random sampling through survey and

questionnaire consisting of questions on 99 health workers consisting of nurses and midwives who perform health services at X Hospital of Bantul.

### RESULT AND DISCUSSION

Characteristics of respondents viewed by age, gender, last education, occupation, length of work, marital status and employment status at X Hospital of Bantul.

**Table 1. Characteristics of respondents**

Characteristic	Frequency	Percen (%)
Age		
20-25 years old	9	9,1
26-30 years old	19	19,2
31-35 years old	36	36,4
36-40 years old	24	24,2
41-45 years old	11	11,1
Gender		
Male	12	12,1
Female	87	87,9
Education Level		
Associate's degree	70	70,7
Bachelor's degree	29	29,3
Type of Work		
Nurse	82	82,8
Midwife	17	17,2
Period of Work		
<5 years	31	31,3
5-10 years	38	38,4
10-15 years	19	19,2
15-20 years	10	10,1
>20 years	1	1,0
Marital Status		
Married	83	83,8
Unmarried	16	16,2
Employment Status		
Permanent	75	75,8
Honorary	13	13,1
Apprentice	11	11,1

At the age, it was seen that 9 respondents (9.1%) were 20-25 years old, 19 respondents (19.2%) were 26-30 years old, 36 respondents (36.4%) were 31-35 years old, 24 respondents (24.2%) aged 36-40 years and 11 respondents (11.1%) of the total number of respondents aged 41-45 years. From the description, the largest number of respondents of this study came from the age group 31-35 years that is as many as 36 people or equivalent 36.4% of the total respondents.

In the gender, 12 respondents (12.1%) were male and 87 respondents (87.9%) were female. From the description, the largest number of respondents of this study were women.

At the education level, 70 respondents (70.7%) have associate's degree education background

and 29 respondents (29.3%) with bachelor's degree education background. From the description, in this study the largest respondents came from the background of associate's degree education.

In the type of work, the number of respondents who have jobs as nurses are 82 respondents (82.8%) and midwives of 17 respondents or (17.2%). From the description, the nurse is the most types of work.

In the period of work, 31 respondents (31.3%) had worked for less than 5 years, 38 respondents (38.4%) had worked for 5-10 years, 19 respondents (19.2%) had worked for 10-15 years, 10 respondents (10,1%) have been working for 15-20 years and 1 respondent (1%) have been working for more than 20 years. From the description, respondents in this study at most are health workers who have worked for 5-10 years.

In marital status, 83 respondents (83.8%) were married and 16 (16.2%) were unmarried. From the description, marriage status of health personnel under study is already married.

In the employment status, 75 respondents (75.8%) were permanent employees, 13 respondents (13.1%) were honorary employees and 11 respondents or 11.1% were apprentices. From these data employees remain the most employment status.

**Table 2. Univariate analysis results**

Variable	Frequency	Percen (%)
Knowledge		
Poor	59	59,6
Good	40	40,4
Attitude		
Negative	76	76,8
Positive	23	23,2
Compliance		
Not Obey	76	76,8
Obey	23	23,2
<i>Standard Precautions</i>		
Not good	68	68,7
Good	31	31,3

In knowledge, health workers at X Hospital have poor knowledge about 59 respondents (59,6%) and 40 respondents (40,4%) have good knowledge. This shows the knowledge of health workers on the application of standard precautions in the acquisition of hospital-acquired infections is lacking.

In attitudes, health workers in negative attitudes of 76 respondents or (76.8%) and 23 respondents (23.2%) had a positive attitude. This shows the attitude of health workers to the implementation of standard precautions in preventing hospital-acquired infections is lacking.

At compliance, health workers who have disobedient level of 76 respondents (76.8%) and compliance rate of 23 respondents (23.2%). This shows that the compliance of health workers with the application of standard precautions in preventing HAIs is lacking.

In the standard precautions, 68 respondents (68.7%) were not good in the application of standard precautions and 31 respondents (31.3%) in the application of standard precautions. This shows the application of standard precautions by health workers in the prevention of hospital-acquired infections is lacking.

**Table 3. Chi-Square test result**

Variable	Standard Precautions				p
	Not Good		Good		
	F	%	F	%	
Knowledge					
Poor	51	86,4	8	13,6	0,000
Good	17	42,5	23	57,5	
Attitude					
Negative	62	81,6	14	18,4	0,000
Positive	6	26,1	17	73,9	
Compliance					
Not Obey	63	82,9	13	17,1	0,000
Obey	5	21,7	18	78,3	

The knowledge shows that health workers with poor knowledge and poor standard precaution counted 51 respondents (86.4%), while health workers with poor knowledge and good standard precaution application were 8 respondents (13.6 %). Health workers with good knowledge and poor standard precaution were 17 respondents (42.5%), while health workers with good knowledge and good standard precaution were 23 respondents (57.5%). From the results of fisher's exact test analysis of knowledge with the application of standard precaution obtained p value 0,000, then there is a correlation between knowledge with the application of standard precaution.

In attitudes of health workers who have negative attitudes and poor standard precautions are 62 respondents (81.6%), while health workers have negative attitude and good standard precaution application is 14 respondents (18.4%). Health workers who have positive attitude and improper application of standard precaution are 6 respondents (26.1%), while health workers have positive attitude and good standard precaution application is 17 respondents (73,9%). From the results of fisher's exact test analysis between attitudes with the application of standard precaution obtained p value 0,000, then there is a correlation between attitude with the application of standard precaution.

The compliance showed that health workers were not compliant and the application of poor standard precaution was 63 respondents (82.9%), while the non-adherent health worker and the application of good standard precaution were 13 respondents (17.1%). Adequate health workers and poor implementation of standard precaution were 5 respondents (21.7%), while obedient health personnel and good standard precaution were 18 respondents (78.3%). From the results of fisher's exact test analysis between compliance with the implementation of standard precaution obtained p value 0,000, then there is a correlation between compliance with the application of standard precaution.

**Table 4. Multiple Logistic Regression test result**

Variable	p	OR	Nagelkerke
Knowledge	0,037	3,409	0,472
Attitude	0,016	5,041	
Compliance	0,017	5,349	

Multivariate analysis in this study using multiple logistic regression test with p value <0.25,

this research all variables have an influence on the application of standard precautions. Compliance is the most influential variable in the application of standard precautions, with a p value of 0.017 and an OR value of 5,349 which means obedient health personnel tend to apply standard precautions 5,349 times than non-adherent health workers. Attitudes become the second influencing variable after compliance in the application of standard precautions, with p value 0.016 and OR 5,041 which means health workers with positive attitude tend to apply standard precautions 5,041 times than health workers who have negative attitude. Knowledge becomes the third influencing variable after compliance and attitudes in the application of standard precautions, with p value 0.037 and OR value of 3,409 which means that health workers with good knowledge tend to apply standard precautions 3,409 times compared to health workers who do not have good knowledge.

From Nagelkerke analysis it is known that the percentage of all variables is 47.2%, which means knowledge, attitude, and compliance can affect the application of standard precautions of 47.2%. While 52.8% comes from other factors that are not diteliti by researchers.

### **Influence Knowledge of Implementation of Standard Precautions in Prevention of Hospital-Acquired Infections**

The knowledge shows that health workers with poor knowledge and poor standard precaution counted 51 respondents (86.4%), while health workers with poor knowledge and good standard precaution application were 8 respondents (13.6 %). Health workers with good knowledge and poor standard precaution were 17 respondents (42.5%), while health workers with good knowledge and good standard precaution were 23 respondents (57.5%). From the results of fisher's exact test analysis of knowledge with the application of standard precaution obtained p value 0,000, then there is a correlation between knowledge with the application of standard precaution.

Some health workers at X Hospital have good knowledge. Good knowledge of health workers influences the application of standard precautions. In additions there are other factors, research entitled *Gambaran Pengetahuan Perawat Tentang Kewaspadaan Standar di RSUD Raden Mattaher Jambi* explained there are other factors that can affect compliance, such as education and employment. High education and long service life can influence the knowledge of health personnel in the implementation of standard precautions [16]. In this study, health workers at X Hospital have associate's degree and bachelor's degree education with the most working period is 5-10 years, namely 38.4% of total research respondents.

The knowledge of health workers on the application of standard precautions is also influenced by the availability of information about standard precaution which includes the availability of references or information and the accessibility of previous journals or research on standard precaution. Knowledge influences the application of standard precaution, a person with good knowledge tends to apply standard precautions in the hospital [17]. The study also explains the role of educational institutions to teach the principle of standard precaution that can provide knowledge about the applicability of standard precautions that can be applied at work. Increased knowledge of health workers on the implementation of standard precaution to prevent HAIs can be done by conducting training for health workers. Most health workers who are not trained in the prevention of hospital-acquired infections have low knowledge in infection prevention. Training is useful for improving the knowledge of health personnel in practice while working [18].

According to the results of the study, researchers can conclude the existence of the relationship between knowledge with the implementation of standard precaution caused by some health workers still have less knowledge in the application of standard precaution. Knowledge and skills on standard precaution can be enhanced through regular training to better the knowledge of health workers and prevent hospital-acquired infections.

### **Influence of Attitudes toward Implementation of Standard Precautions in Hospital-Acquired Infections Prevention**

In attitudes of health workers who have negative attitudes and poor standard precautions are 62 respondents (81.6%), while health workers have negative attitude and good standard precaution application is 14 respondents (18.4%). Health workers who have positive attitude and improper application of standard precaution are 6 respondents (26.1%), while health workers have positive attitude and good standard precaution application is 17 respondents (73,9%). From the results of fisher's exact test analysis between attitudes with the application of standard precaution obtained p value 0,000, then there is a correlation between attitude with the application of standard precaution.

A person's attitude is a precipitating factor for the formation of an action against a particular object. Attitude is a reaction or response to a stimulus or object and is an emotional reaction to social stimulus. Attitude is not an act or activity but it can affect action or behavior [19].

In this research there are some health workers have a negative attitude toward the implementation of standard precaution. Negative attitude of health workers in X Hospital of Bantul is influenced by the habit that formed in hospital environment. The negative attitude of health personnel is also influenced by the lack of reference in the implementation of standard precaution and the lack of facilities provided by the hospital so that the implementation of standard precaution is not in accordance with the recommended procedure. Implementation of inappropriate precaution standards has become one of the risks of spreading infection in hospitals.

In this study there are some health workers who are negative do not apply standard precautions. Attitudes relate to the application of standard precautions consisting of the application of hand hygiene and the use of personal protective devices [20]. A person with a negative attitude is less likely to implement standard precautions and a person with a positive attitude tends to apply standard precautions in serving patients.

There is a correlation between attitude and the application of standard precautions. Negative attitudes of respondents are due to a limitation in interaction with patients and their application procedures that take time [21]. However, in this study, most health professionals said they did not feel the use of personal protective equipment limited the interaction and application of hand hygiene did not take much time.

According to the results of the study, researchers can conclude an increase in attitude is very necessary health workers to prevent the spread of hospital-acquired infections. Increasing attitudes of health workers can be done by getting used to apply standard precautions in health services in hospitals. Usually the implementation of standard precautions can be realized if a good cooperation is established from the hospital with health workers in the form of providing facilities and supervision of the hospital so that health workers always apply standard precautions.

## **Effect of Compliance with the Application of Standard Precautions in Prevention of Hospital-Acquired Infections**

The compliance showed that health workers were not compliant and the application of poor standard precaution was 63 respondents (82.9%), while the non-adherent health worker and the application of good standard precaution were 13 respondents (17.1%). Adequate health workers and poor implementation of standard precaution were 5 respondents (21.7%), while obedient health personnel and good standard precaution were 18 respondents (78.3%). From the results of fisher's exact test analysis between compliance with the implementation of standard precaution obtained p value 0,000, then there is a correlation between compliance with the application of standard precaution.

Non-compliance in the application of standard precautions can be caused by many factors. The drive for a person to take precautions depends on a health belief that is perceived threat of injury or illness and consideration of benefits and cost. The perceived threat of injury or illness refers to the extent to which a person thinks illness is a threat that will adversely affect him, if the perceived threat increases then prevention behavior will increase as well [22]. Health workers who feel themselves at risk and are easily infected more likely to comply with standard precautions guidelines or procedures [23].

Occupational safety factors are another factor that can affect compliance. Occupational safety hospitals have health workers 2.9 times more adherence to run standard precautions and health workers who are trained in standard precautions 5.7 times more compliant in practice [24].

Lack of time is the cause of non-compliance [25]. In order for better time management, training on time management for health workers is required. The training aims to help individuals become aware and aware of how to use the time organized and can make priority in their implementation. With time management, work can be done effectively and efficiently with the results of work obtained will be more qualified.

According to the results of the study, researchers can conclude the compliance of health workers in the hospital due to lack of continuous and ongoing training and lack of awareness of individuals to always apply standard precautions in health services.

## **CONCLUSION**

Based on the results of the study and discussion, it can be concluded that knowledge, attitude and compliance have a significant influence on the implementation of standard precautions, where compliance is the most influential factor in preventing hospital-acquired infections in X Hospital of Bantul.

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## Trickle-Down Economics; Is it Valid in Egypt?

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### ABSTRACT

Several research papers have been conducted to investigate whether the trickle-down effect is valid in countries such as India, Switzerland, Indonesia, and others. This paper tries to get an answer to the same question for Egypt. The paper found no evidence to the trickle-down economics for the Poor in Egypt. Econometric analysis assured that high economic growth rates in Egypt were accompanied with increase in poverty rates. Decline in poverty rates in Egypt, which rarely to appear, that the Egyptian society witnessed during 1990s were largely attributed to government anti-poverty measures implemented during the Economic Reform and Structural Adjustment Program (ERSAP). These measures were mitigation policies related to Economic Reform program that the Egyptian government executed starting 1991 under IMF and World Bank supervision. Finally, the paper concluded that it is better to the Egyptian government to change its dependence on trickle-down theory of economic development into bottom-up economic development approach.

**Keywords:** Trickle-down effect; Poverty in Egypt; Economic growth; Capital formation, ERSAP.

### INTRODUCTION

Researchers like Ravallion and Datt (2002), Mellor (1999), Dollar and Kraay (2002), Fan et al. (2000) and the World Bank (1995), have concluded that the increase in economic growth rates cause a reduction in the incidence of poverty. On the other hand, Fishlow (1995) refuted this claim where he found that the rise of economic growth rates did not achieve decrease in poverty rates in Latin America. This was because the existence of extreme inequality, as Fishlow (1995) concluded.

In the Egyptian context, it is noted that since 1960s, Egyptian governments have directly intervened to help the poor and reduce the incidence of poverty. On the same road, since 2014, Egypt concentrated to reduce poverty through stimulating economic growth. This is done through expanding government spending on infrastructure development, such as roads, New Suez Canal project, and establishing a new administrative capital; all of which have indirect relationship with both economic growth and poverty reduction. However, the literature (Ravallion and Datt, 2002) found that there is an insignificant correlation between the two variables; government spending on development and poverty reduction. Moreover, (Dollar and Kraay, 2002) found a negative correlation between these two variables in a cross country study. In this context, papers that have researched to investigate the effect of government direct intervention have found that a positive effect on poverty reduction has been made by government expenditure (Fan et al, 2000).

On the light of this debate in the literature, the paper tries to find out whether the trickle-down effect has taken place in Egypt or not. The economic analysis will be extended to include the impact of capital formation. The paper will test the relationship between capital formation, economic growth, and poverty level in the Egyptian economy.

The paper is planned as follows. Second section discusses the problems occur when investigating whether the trickle-down effect has, or has not, existed in Egypt. Third section tests the empirical relationship between changes in poverty rate in Egypt and either changes in economic growth or capital formation. Finally, in section 4, the paper illustrates an explanation to the research results.

## **THE RELATIONSHIP BETWEEN POVERTY, ECONOMIC GROWTH, AND CAPITAL FORMATION**

### **Problems with investigating trickle-down effect in Egypt**

Evaluating the trickle-down effect in Egypt is considered a complicated issue since there is no single era where the Egyptian government intervene to help the poor in the last fifty years. As a result, to test for the existence of trickle-down effect in Egypt, it is needed to choose a period where the Egyptian government did not implement direct interventions to assist the poor. Therefore, the optimal era to be chosen for testing such an effect is the start of Economic Reform and Structural Adjustment Program (ERSAP) that the Egyptian government initiated on 1991. It was the era where the Egyptian government began liberalizing the Egyptian economy and follow the market oriented economic system. Starting 1991, the Egyptian government economic philosophy was based on expanding the private sector role in economic activities in order to create greater job opportunities that would be a vehicle to poverty reduction. Consequently, several economic policies and regulations have been introduced to enhance business climate and investment levels in the Egyptian economy. Capital accumulation was considered the main engine for economic growth and jobs creation. Therefore, to obtain a complete vision about the trickle-down effect in Egypt, it is better to investigate not only the effect of economic growth on poverty but also to examine the relationship between capital formation and poverty. The study is considering capital formation as a proxy for capital accumulation.

### **Directions for poverty rates and economic growth rates in Egypt**

During 1990's and the first decade of the Third Millennium, the Egyptian government continued following the market oriented economic system through privatization, liberalizing interest rates and exchange rate, and attracting foreign investments to promote capital accumulation in the Egyptian economy. It seemed that the different Egyptian governments during President Mubarak role agreed to apply the trickle-down economics approach, especially during Nazif government that was appointed on July 2004 until the first revolution on 25<sup>th</sup> January 2011. Nazif government was considered the extremist Egyptian government to apply the trickle-down economics approach since it reduced taxes on high income groups by 50 percent through the new Income Tax Law ratified in 2005. In addition, several businessmen were appointed as Ministers in the Egyptian government and in high positions in the Egyptian Parliament, a phenomena that was named as "Capital and Authority Marriage". Consequently, those businessmen policymakers introduced policies and laws that gave great incentives to private sector and high income groups on the hope to rise investments, economic growth, and create more jobs to eradicate poverty. The government succeeded to increase both GDP and GDP per capita growth rates to become 7.2 and 5.3 percent in 2008 respectively. However, the percentage of the Egyptian population lying under the poverty line climbed sharply during this decade where it was 17.1 percent in 2003, directly before Nazif government, and climbed to 25.2 percent in 2011. As a result, the first revolution took place with loud calls towards economic and social justice.

Through the era between the two revolutions 2011 – 2013 and because of political troubles, poverty rates continued to rise where it reached to 26.3 percent in 2013 and 27 percent in 2014. On the other hand, GDP growth rates also decreased to become only 2 percent on

average during the fiscal years 2010/2011 – 2013/2014. Moreover, GDP per capita growth rates were negative during these three fiscal years achieving an average of -0.14 percent.

In 2014, the Egyptian government initiated another economic reform program with the help of the IMF and World Bank technical and financial assistants. The IMF Executive Board approved this reform program and agreed to lend Egypt \$US 12 billion support under the IMF's Extended Fund Facility (EFF). The recent Egyptian economic reform program aimed at restoring the economic stability of Egypt and paving the way for higher long-term growth. The government has taken several reform policies that are bold but necessary while trying to protect the poor. The reform program was based on restructuring subsidies, especially with regard to eliminating energy subsidies, and introducing a new Value Added Tax law in order to restoring macroeconomic stability and sustainable public finances. In addition, the Central Bank of Egypt liberalized the foreign exchange market through crucial devaluation for the Egyptian Pound; therefore, the Egyptian foreign exchange market got rid of foreign currency shortages. Also, monetary policy focused on reducing inflation rate, which reached to a historical record exceeding 35 percent by July 2017, through rising interest rates to absorb liquidity. Moreover, wide-ranging structural reforms have been taken to enhance business environment in order to boost economic growth and create job opportunities. For example, a new Investment Law was introduced by the end of 2017 granting a lot of incentives to all types of investors. In addition, several measures were approved to facilitate doing business such as less red tape in industrial licensing, and easier access to finance for small and medium-sized enterprises.

On the other hand, the Egyptian government is trying to shield the poor from the adverse effects of these severe economic changes. As a result, the government reallocated part of the reduced energy subsidies towards social public spending on health and education. In addition, programs for targeted cash transfers were initiated to help the poor overcome sharp increases in prices.

Consequently, recent economic reforms taken by the current Egyptian government reflect that the same philosophy of trickle-down economics is there. Therefore, it is necessary to investigate whether it is a suitable philosophy for the Egyptian economy or not.

### **Data for the three variables**

Data on GDP and GDP per capita growth rates are taken from the World Bank's web site<sup>1</sup>. While data for poverty rates in Egypt were taken from the Central Agency for Public Mobility and Statistics (CAPMAS), the Household Income, Expenditure, and Consumption Survey (HIEC) for the years from 1990/1991 until 2015/2016. The poverty rate for 2016 that reached to 39.8 percent was estimated by the author using the income classes presented in the HIEC for the year 2015/2016 and the statistic that CAPMAS announced about Egypt's poverty line to increase to 800 EGP monthly per person. As a result of the economic decisions taken by the Egyptian government during 2016, inflation rate reached to a historical record where it rose to 35.2 percent in July 2017. Consequently, these drastic economic conditions have its negative implications on both poverty line and the incidence poverty rate in Egypt. The study is using the methodology of head-count ratio (HCR) to measure poverty rate in Egypt. The HCR is the proportion of the population lying below the poverty line. Since the study aims to investigate whether the percentage of the Egyptian people living below the poverty line has decreased

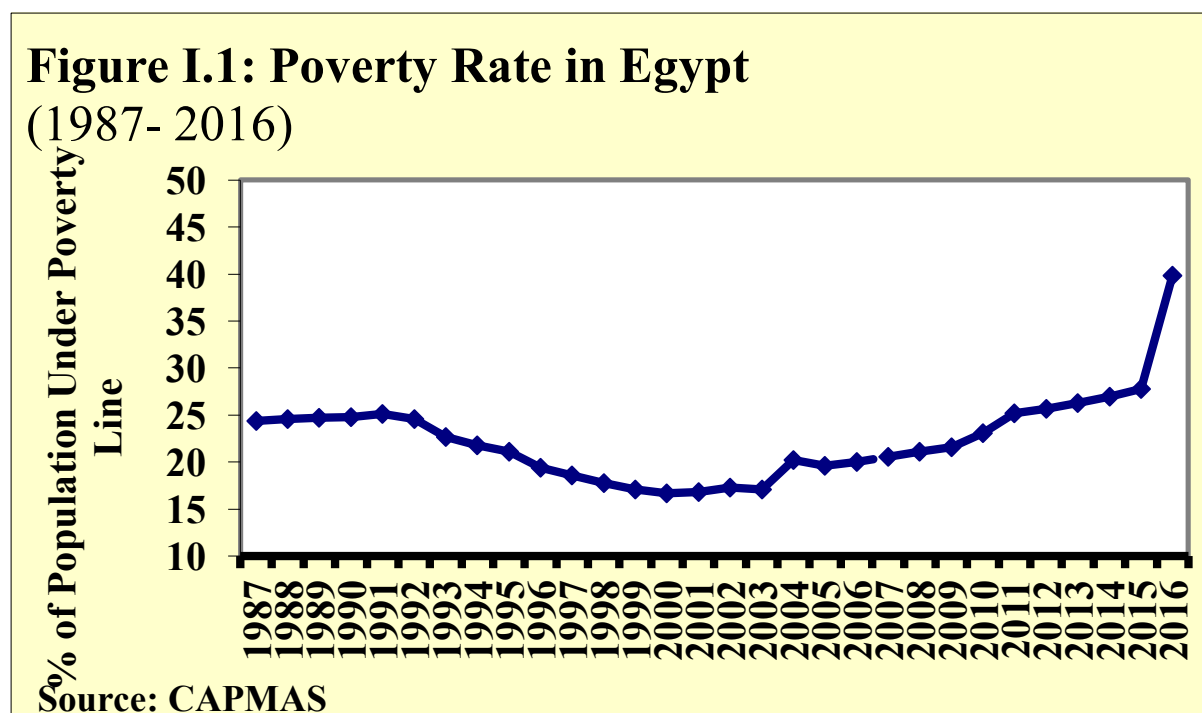
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<sup>1</sup> The link for GDP rates is: <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=EG>.  
The link for Capital Formation is: <https://data.worldbank.org/indicator/NE.GDI.TOTL.ZS?locations=EG-ET-SS-SD>.

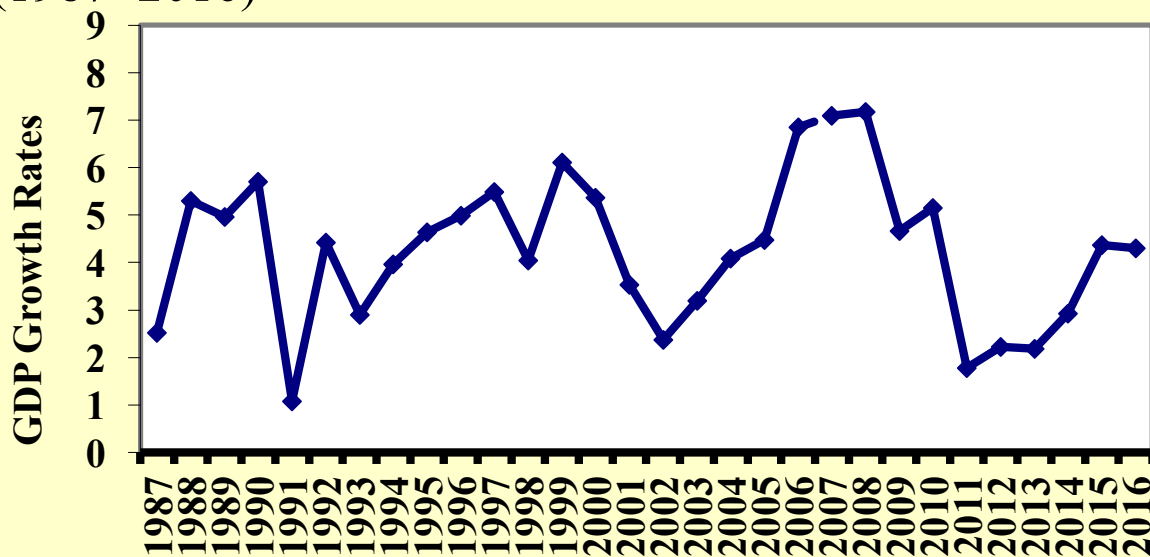
over time or not; using HCR is the optimal choice to estimate the relationship between economic growth and poverty rate in Egypt.

It is noted that CAPMAS conducts HIEC every five years since 1995. Consequently, there are several gaps in the poverty rate data. To overcome this problem, the study will interpolate these missed data.

The study is conducted using annual data through the period 1987 to 2016 with 30 observations for each variable. The study chose to start the analysis from 1987, four years before the start of the first economic reform program implemented in Egypt (ERSAP), in order to examine the impact of ERSAP initiated in 1991 on poverty rate in the Egyptian society. The following Figure 1 illustrates the trend of change for the three variables; the poverty rate, the GDP growth rate, and the capital formation.

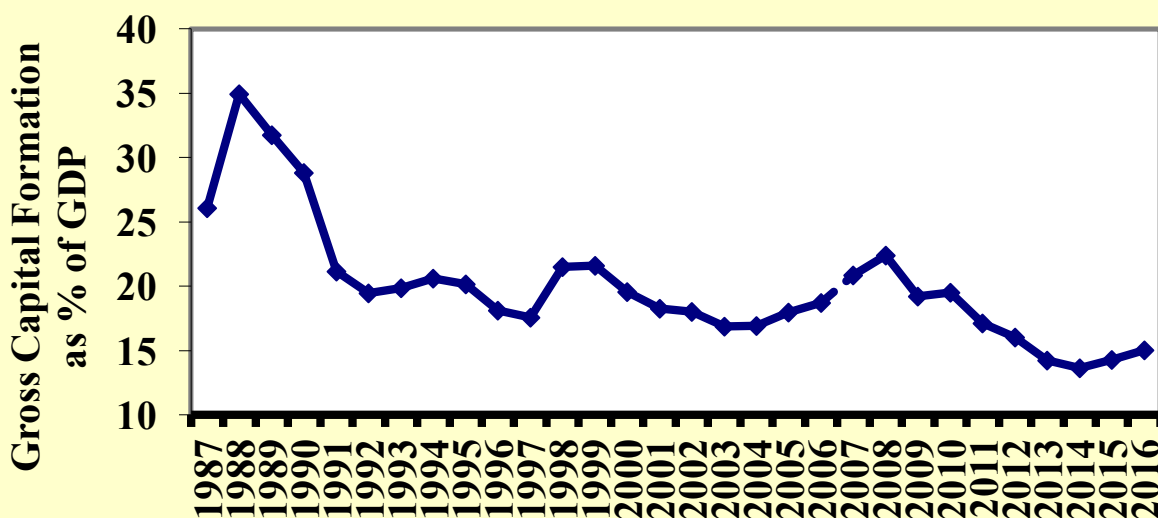


**Figure I.2: GDP Growth Rates in Egypt (1987- 2016)**



Source: World Bank

**Figure I.3: Capital Formation Rates in Egypt (1987- 2016)**



Source: World Bank

According to Figure 1, it seems that poverty rate was stable during the period 1987 until 1991. Then it started to decline after initiating ERSAP in 1991 until 2003. It began to rise since 2004 in an accelerated base until 2015. After 2015, poverty rate increased sharply because of the recent economic reforms.

With regard to GDP growth rates, it was volatile during the period 1987 until 2008. It reached to its peak in 2008 with 7.2 percent. Starting 2009, it declined and reached to its minimum in

2011 with 1.78 percent. After the first revolution, growth rates have increased gradually reaching 4.3 in 2016.

For gross capital formation as percentage of GDP, it increased to its peak reaching 35 percent of GDP in 1988. Then it has declined gradually to reach 15 percent in 2016, less than half of its level in 1988. This sharp decline for this variable reflects crucial deterioration in public investments during the last 25 years in the Egyptian economy.

### **EXPERIMENTS AND ANALYSIS FOR INVESTIGATING THE RELATIONSHIP BETWEEN GROWTH, CAPITAL FORMATION, AND POVERTY RATE**

#### **Augmented Dickey-Fuller (ADF) unit root test results**

To investigate the relationship, first, it is needed to test the stationarity of the time series of the three variables included in the model. The reason behind this is that many time series are non-stationary and needed to determine its degree of integration. To do so, the Augmented Dickey – Fuller (ADF) test provided in (Dickey and Fuller, 1981) is conducted. The ADF test can be represented as follows;

$$\Delta Y_t = \Phi \cdot Y_{t-1} + \sum_{i=1}^k \Phi_i \cdot \Delta Y_{t-i} + \varepsilon_t \quad (1)$$

Where  $k$  represents the number for lags for  $\Delta Y_{t-i}$  that has to be in a level which saves the degrees of freedom and allow for the presence of autocorrelation in  $\varepsilon_t$ .

In this context, the autoregressive coefficient  $\alpha_0$  is as follows;

$$Y_t = \alpha_0 Y_{t-1} + \varepsilon_t$$

It can be adjusted to;

$$\Delta Y_t = (\alpha_0 - 1) Y_{t-1} + \varepsilon_t$$

If  $\alpha_0$  is less than 1, then  $Y_t$  is integrated of order zero. If not, then we test;

$$\Delta \Delta Y_t = (\alpha_1 - 1) \Delta Y_{t-1} + \varepsilon_t$$

If  $\alpha_1$  is less than 1, then  $Y_t$  is integrated of order one. This process is continued until stationarity is reached.

Using E-views 7, the study found that there is an evidence of a unit root in all the three variables which indicates that the three variables are all non-stationary. Table 1 presents results for ADF tests where poverty rate is (POVR), GDP growth rate is (GDPGR), and capital formation is (CF).

**Table 1. Augmented Dickey-Fuller (ADF) unit root test results**

ADF (With trend)	POVR	GDPGR	CF
In Levels	-2.13	-3.14	-1.09
In First Differences	-2.72	-4.58	-2.81
In Second Differences**	-6.33	-6.41	-4.25
Critical Values 5% level	-3.5312	-3.5312	-3.5312
Integration Level	I(2)	I(2)	I(2)

\*\* Significant at 5% level

Source: Author own estimations using the specified data series.

The study found that the three variables are integrated of order two I(2). Consequently, it follows that co-integration among these variables has to be tested.

**Co-integration Test and Johansen Technique Results**

In case of a multivariate co-integration test, Johansen’s co-integration method (Johansen, 1988) is highly recommended to use. The model of these three variables support Johansen’s vector auto-regression (VAR) model in second differences since the three variables are I(2). This technique examines two hypothesis. The null hypothesis of no co-integration versus the alternative one stating co-integration. The test yields two likelihood ratio statistics related to the number of co-integration vectors, the maximum eigenvalue and the trace statistics. This framework is used to test the long-run relationships between poverty rate, GDP growth rate, and capital formation in Egypt. The Akaike Information Criterion (AIC) is used to determine the number of lags used in the VAR model and it selected one lag to be the optimal lag for all variables.

The results, presented in Table 2, show that there is an equilibrium relationship between the three variables in the long-run. The null hypothesis R = 0 is rejected which means the existence of long-run relationship between poverty rate, GDP growth rate, and capital formation in Egypt.

**Table 2. Results for Co-integration Test between POVR, GDPGR, and CF.**

No. of CEs	Eigenvalue	Likelihood Ratio	5% Critical Value
R = 0	0.435	35.126*	29.97
R = 1	0.054	4.85	15.86
R = 2	0.012	0.683	3.86

\* Long-run trace test indicates 1 co-integration equation Significant at 5% level.

Source: Author own estimations using the specified data series.

The following equation provides the long-run relationship between variables;

$$POVR = 11.2 + 0.9 GDPGR - 0.7 CF$$

$$(-2.97) \quad (-1.58) \quad (1.486)$$

It shows that poverty rate (POVR) is positively impacted by changes in GDP growth rate (GDPGR) and negatively affected by capital formation rate (CF). According to this long-run equation, a 1 percent increase GDP growth rate leads to 0.9 percent increase in poverty rate in the Egyptian economy; On the other hand, a 1 percent increase in capital formation causes a



decline in poverty rate by 0.7 percent in the long-run, other things hold equal. These two coefficients are significant; R-square and R-square adjusted are 0.63 and 0.57 respectively.

In order to describe a short-run interactions for this model of three variables, the Vector Error Correction Model (VECM) is used to derive the short-run model from the long-run one. This enable the study to estimate the poverty rate response to and changes (or shocks) in both GDP growth rate and investment level in the Egyptian economy. Table 3 illustrates VECM estimates;

**Table 3. VECM estimates between POVR, GDPGR, and CF.**

	POVR	GDPGR	CF
Error correction co-integration equation	-0.66 (-5.263)*	-0.15 (-1.35)	0.21 (1.198)
$\Delta\Delta\text{POVR}(-2)$	0.054 (0.385)	0.062 (0.399)	0.28 (1.369)
$\Delta\Delta\text{GDPGR}(-2)$	0.43 (2.799)	-0.34 (-1.98)	0.086 (0.458)
$\Delta\Delta\text{CF}(-2)$	-0.21 (0.458)	-0.18 (-1.444)	-0.19 (-2.02)
C	-0.56 (-2.56)		
R-square	0.63		
Adj. R-square	0.57		
F-statistic	8.233	2.895	1.874
Akaike Information Criteria		-5.128	

\* t-values in parentheses.

**Source: Author own estimations using the specified data series.**

In the short-run, results in table 3 show that a 1 percent increase in GDP growth rate raises poverty rate by 0.43 percent. Also, the error correction coefficient is negative and significant = -0.66 which means that 66% of the deviations from the long-run equilibrium will be reversed in the coming years. It is an indication to a so fast adjustment which can only happen because of government (or any external institution) interventions to help the poor and alleviate poverty. For capital formation, results show that 1 percent increase in capital formation as a percentage of GDP decrease poverty rate by 0.21 percent. Also, coefficients are significant; R-square and R-square adjusted are 0.63 and 0.57 respectively. These results assure the long-run analysis.

The above analysis provides that the trickle-down economic growth theory has not been proven to be valid in Egypt. It seems that economic growth in the Egyptian economy is biased to the rich segmentations in the Egyptian society. Moreover, the capital formation as a percent of GDP have been declining across the last 30 years which makes the situation to reach the worst. Therefore, declines in poverty rates that appeared separately during the last 30 years are due to government intervention to eradicate poverty. However, the most important question that needs an answer is, in a labor-surplus economy with low levels of wages, why did trickle-down economics is not valid in Egypt? In the following section the study will try to explain answering this important question.

### **Explaining Why the Trickle-down Economics is Not Valid in Egypt**

The study attributes why the trickle-down effect did not take place in Egypt due to high inequality that have been increasing across the last 30 years in the Egyptian society. High inequality in distributing income, jobs, subsidies, and social benefits is attenuating the impact of growth on poverty reduction in the Egyptian economy (Marotta, Yemtsov, El-Laithy, Abou-Ali, Al-Shawarby, 2011). The rich is achieving economic gains more than the poor. As an example, the following table shows that the economic growth during 2005 to 2008 was biased against the poor in Egypt. The table 4 presents percentiles of the distribution. For example, the ratio of consumption between population at the 25<sup>th</sup> percentile and population on the 10<sup>th</sup>

percentile (which is poorer) is presented as p25/p10. The table illustrates a widening of distribution at the top, expressed by p90/p50 and p75/p50, and at the bottom, expressed by p25/p10.

**Table 4. Indices of Inequality for Consumption by Urban and Rural Areas during 2005-2008.**

	Lower Half of the Distribution		Upper Half of the Distribution		P90/p10	Gini
	P25/p10	P50/p25	P75/p50	P90/p50		
<b>Total</b>						
2005	1.26	1.33	1.36	1.95	3.27	28.67
2008	1.32	1.33	1.38	1.98	3.48	30.46
<b>Urban</b>						
2005	1.33	1.41	1.38	2.04	3.84	30.23
2008	1.33	1.37	1.42	2.13	3.87	32.34
<b>Rural</b>						
2005	1.23	1.27	1.26	1.56	2.42	20.43
2008	1.29	1.31	1.28	1.59	2.68	21.99

**Source: Calculations are taken from (Marotta, Yemtsov, El-Laithy, Abou-Ali, Al-Shawarby, 2011) based on HIEC 2005-2008.**

Moreover, even with regard to subsidies, the richest segmentations are acquiring the majority of energy subsidies in Egypt as represented in Table 5.

**Table 5. Benefits Achieved by Several Income Groups in the Egyptian Society from Energy Subsidies during the Fiscal Year 2004/2005**

Income Segmentations	Average Household's Share of Subsidies in EGP	Percentage of Total Population in Egypt
The Lowest Income Segmentation	234	20%
The Second Segmentation	314	20%
The Third Segmentation	551	20%
The Fourth Segmentation	640	20%
The Fifth Segmentation (The Highest Income Group A)	873	18%
The Fifth Segmentation (The Highest Income Group B)	1789	2%

**Source: The Egyptian Parliament, Budget and Plan Committee, Additional Subsidies for Petroleum Products Report, 2008.**

It seems that energy subsidies distribution is highly distorted and biased towards the richest income segmentations in the Egyptian society. The highest 2 percent income class is acquiring 1789 LE while the lowest income class, the poorest 20 percent in the Egyptian society, is acquiring only 234 LE.

In addition, the Egyptian economy has been suffering from monopolistic practices in several fields of the economy. Monopolists increase the intense of poverty in Egypt through the continued and accelerated rise of overall price level causing high rates of persistent inflation.

### CONCLUSION

The analysis which has been explained in this paper states that the trickle-down economics is not valid in Egypt. When poverty rates decline in the Egyptian economy, it is attributed to government interventions to reduce poverty. In Egypt, economic growth is biased to the richest segmentations in the Egyptian society. We can call that the economic growth in Egypt

during the last 30 years was pro-poor growth. Therefore, it is not wise to say that higher economic growth would always cause poverty reduction. Capital formation has a significant positive impact on poverty reduction in the Egyptian economy. However, during the last 30 years capital formation as percentage of GDP has been declining gradually which help increase poverty rate. The study recommends that the Egyptian government increase labor-intensive projects instead of depending on infrastructure and mega projects that are capital-intensive. In addition, it is recommended that the Egyptian government continue subsidies reform through liberalizing the energy products prices and targeting the poor with income transfer programs. Moreover, to combat poverty in Egypt, the government must destroy monopolistic practices through increasing competition in markets and punish the monopolists. Also, it is recommended to redirect the saved resources from subsidies reform towards spending on education and health care. More public spending on education and health care means increasing capital formation as percentage of GDP and higher investment levels on Egyptian human capital. Of course, this will have positive impact on alleviating poverty in the Egyptian society. More investments in Egyptian human capital will enable the poor Egyptians to get jobs, either inside or outside Egypt, and earn higher income which enable them to escape from poverty circle. Finally, it is better for the Egyptian government to replace its philosophy of trickle-down economics by the philosophy of from bottom-up economic development framework.

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# Analysis of Effect Pay Equity Indirect Incentive System Toward Organizational Commitment of Employees At The Hospital In Yogyakarta

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## ABSTRACT

There is one of the government hospital in Yogyakarta that has been applying the remuneration system in an indirect incentives. Based on regulation in there, we can give a question of whether there is a pay equity for those who play the role. The emergence of reward inequality can affect organizational commitment, where organizational commitment greatly affects professional work situation. This research is a quantitative analytic research. The data retrieval technique uses a questionnaire containing closed questions with the choices of answers that have been scored. The sampling method is stratified random sampling. This result indicates that there is positive influence of pay equity toward organizational commitment.

**Keyword:** indirect incentive; organizational commitment; pay equity.

## INTRODUCTION

Now the world of hospitals in Indonesia faces many challenges. As a result of the increase of welfare, education and awareness of their rights as consumers, the people increasingly need good health care, friendly, and quality is no exception health services in hospitals [1]

Efforts to improve the quality of hospital services is not easy, the causes that often arise from the reduced quality of service, such as decreased organizational commitment from employees in the hospital. Organizational commitment is necessary in a hospital, because the creation of a high commitment will affect the professional work situation. The hope can improve the quality of hospital services.

Organizational commitment can be influenced by several factors, including personal factors, work experience, organizational structure characteristics, and job characteristics. One of the most sensitive factors is related to the rewards in it including salary and incentives, this can be a driving force for people to work and affect the morale and discipline of employees, although working well and holding ethics is a must for the employee while performing the duties he or she is responsible for [2] In establishing a reward policy (remuneration), hospitals should pay attention to the principle of justice. When an employee receives a reward from the hospital, then there are three possibilities that are felt, that is, the rewards received according to the

workload, less than the workload or more of the workload. If what happens is that employees feel the rewards received less than the workload, then employees will feel the existence of injustice so that a reaction emerged from them [3]

Rewarding services that are felt to be fair and reasonable for employees will provide job satisfaction for them and are expected to create good quality work in a hospital environment that can ultimately achieve hospital goals. According to Sastrohadiwiryo (2002) every agency should strive to provide compensation that is proportional to the existing workload so that the purpose of agencies to improve the expected output can be supported through the creation of a useful and efficient workforce. Most of the funding for the increase in human resources derived from the hospital's functional income is used for employee benefits. This fee is distributed monthly to all employees, both structural and functional based on the Director's Decree (SK), according to the division pattern of benefits.

RSUD Panembahan Senopati Bantul is a type B hospital that implements a remuneration system in the form of service incentive since June 2011 ( Surat Keputusan Direktur RSUD Panembahan Senopati Bantul Number 36/01/2011 about the Approval of Remuneration System at RSUD Panembahan Senopati Bantul). The service incentive remuneration system is calculated based on indirect indexing made by the RSUD Panembahan Senopati Bantul Distribution Team. Indexing is a way or device to determine the amount of individual employee scores in accordance with the workload. This indirect index calculation is based on: (1) basic index; (2) competency index; (3) risk index; (4) emergency index; (5) position index; and (6) performance index (Regulation of Bupati Bantul Number 23 Year 2014 About Remuneration System of RSUD Panembahan Senopati Bantul ).

So far, service incentives in RSUD Panembahan Senopati Bantul have increased from year to year, but it is not maximal because of some indices indirect index calculation there are still indicators that are felt unfair is performance indicator. Performance indicators are calculated based on absenteeism, while the attendance system at RSUD Panembahan Senopati Bantul still uses manual. Procurement of equipment and programs of electrical attendance have been done, but have limitations, difficult maintenance, and easily damaged. In addition, performance appraisals are based solely on attendance and absenteeism, there is no difference between timely attendance and late attendance.

On the other hand, the time division of services to employees is uncertain or not timely. Until now the written policy regulation that service incentives are distributed after the 20th of the following month. But most employees feel less satisfied because after the 20th they have to wait until the 31st. Uncertainty awaiting division of services makes employees find out for themselves the certainty of service incentives to a third party (bank) or to the Distribution Team Incentive Services

In addition, many employees also assume that there is no difference In addition, many employees also assume that there is no difference between smart and diligent employees with employees who are less smart and lazy. They will get the same service. So there are employees who argue that services that should be able to improve performance through a high commitment to the hospital would make them less motivated and even some are not motivated at all. The new thing that recently made employee fret that is starting on April 1, 2015, based on the Surat Keputusan Direktur Number : 106/2015

On the appointment of non-civil servant employees of RSUD Panembahan Senopati in Bantul has just lifted 155 non-civil servants (including old and new employees). Previously, the plan to add employees due to the addition of new wards in the hospital, but until now the new ward has not been opened, while new employees have entered. If this is not followed up immediately, it will certainly affect the amount of hospital income and the impact is on the employee.

Based on the above description, the authors are interested to raise the topic about the influence of pay equity analysis system of indirect service to the organizational commitment of employees at RSUD Panembahan Senopati Bantul.

### MATERIAL AND METHODS

This research is a quantitative analytical research. The research design used is cross sectional approach. This research is designed to analyze the influence of independent variable that is pay equity system of distribution of indirect benefit to dependent variable that is organizational commitment.

Data source used in this research is primary data. Primary data is data that is directly mendaptkan and used as a source of research and direct observation on the place the author conducted research through observation with interested parties. [4] Primary data collection was done by using questionnaire. The contents of the questionnaire include respondent data consisting of gender, age, education level, position in hospital, length of work and questions about variables to be studied ie pay equity and organizational commitment.

Data collection method used is survey method by using questionnaires distributed to respondents. The sampling method used is stratified random sampling. [5] The data obtained then analyzed further. The steps taken are preparation of questionnaires, distribution and data collection materials.

After getting the number of samples according to stratum (Stratified random sampling), the questionnaires were distributed to the respondents. To avoid filling error, the researcher gives an explanation on how to fill the questionnaire.

### RESULTS

**Table 1. Percentage Of Pay Equity**

Category	Frekuensi	Percentage
Low	10	11,4
Moderate	55	62,5
High	23	26,1

Based on the table of percentage pay equity above can be seen that from 88 respondents, 10 respondents (11.4%) fall into low category, 55 respondents (62.5%) included in the medium category, and 23 respondents (26.1%) high category.

**Table 2. Percentage Of Distributive Justice**

Category	Frekuensi	Percentage
Low	18	20,5
Moderate	42	47,7
High	28	31,8

Based on the percentage table of distributive justice above it can be seen that from 88 respondents, 18 respondents (20.5%) fall into the low category, 42 respondents (47.7%) fall into the medium category, and 28 respondents into high category (31.8%)

**Table 3. Percentage Of Procedural Justice**

Category	Frequence	Percentage
Low	8	9,1
Moderate	50	56,8
High	30	34,1

Based on the above procedural procedural justice table it can be seen that from 88 respondents, 8 respondents (9.1%) fall into low category, 50 respondents (56.8%) are in medium category, and 30 respondents (34.1%) high category.

**Table 4. Percentage Of Organizational Commitment**

Category	Frequence	Percentage
Low	2	2,3
Moderate	44	50,0
High	42	47,7

Based on the organizational commitment variable table above it can be seen that from 88 respondents, 2 respondents (2.3%) fall into low category, 44 respondents (50%) included in medium category, and 42 respondents (47,7%) included in high category.

**Table 5. Percentage Of Affektive Commitment**

Category	Frequence	Percentage
Low	0	0
Moderate	40	45,5
High	48	54,6

Based on the above affective commitment aspect table it can be seen that from 88 respondents, 0 respondents (0%) fall into low category, 40 respondents (45.5%) are in medium category, and 48 respondents (54.6%) are included in high category.

**Table 6. Percentage Of Continuance Commitment**

Category	Frequence	Percentage
Low	12	13,6
Moderate	29	33
High	47	53,4

Based on the table of continuous commitment aspects above can be seen that from 88 respondents, 12 respondents (13.6%) fall into the low category, 29 respondents (33%) entered in the category of moderate, and 47 respondents (53.4%) included in the high category.



**Table 7. Percentage Of Normative Commitment**

Category	Frequence	Percentage
Low	1	1,1
Moderate	34	38,6
High	53	60,2

Based on the normative commitment aspect table above it can be seen that from 88 respondents, 1 respondent (1.1%) fall into low category, 34 respondents (38.6%) fall into the moderate category, and 57 respondents (60.2%) high category

**Tabel 8. Regression Linear Analysis**

Variable	Regresion Coeficient	t-count	Sig.
<i>Pay equity</i>	1,311	5,829	0,000
Konstanta = 39,354			
Adjusted R <sup>2</sup> = 0,275			
F hitung = 33,975			
Sig. = 0,000			

The result of t test statistic for Pay equity (X) with Organizational Commitment (Y) is 1,311 with significance level 0.000, because the significance is less than 0,05 ( $p < 0,05$ ). This result indicates that there is positive influence of Pay equity X) Organizational Commitment (Y). The adjusted R<sup>2</sup> value of 0.275 indicates that the pay equity variable contributes to the Organizational Commitment of 27.5%, while the rest of 72.5% is explained by other factors not analyzed in this study.

## DISCUSSION

From the statistical result known that there is positive influence of pay equity to Organizational Commitment in RSUD Panembahan Senopati Bantul thus hypothesis proven H<sub>0</sub> rejected and H<sub>a</sub> accepted. Pay equity contributes to Organizational Commitment in RSUD Panembahan Senopati Bantul of 27.5%. These results indicate that with a good perception of the benefits received by employees, then the commitment of employees within an organization ie the hospital will also be higher.

The results of one support research which shows that there is influence pay equity remuneration system to Organizational Commitment with value Exp. (B) of 3.769 [6].

The existence of a high commitment can affect the performance of employees who can further improve the quality of service to patients. The other results of research indicate that there is a significant influence simultaneously between continuance, affective and normative commitment to the performance of nurses Pavilion Cendana RSDM, supported in this research ( $p = 0.000$ ). [7] Employee success to achieve goals describes organizational success. This means that the performance of nurses as the carrying capacity in consideration to increase good commitment to the organization.

The first sub-hypothesis testing results of the study indicate that organizational Justice is directly and strongly influences organizational commitment. [8] These results reinforce the results of this study that equity fairness has an effect on organizational commitment with a significant value of 0,000 ( $p < 0.05$ ).

The outcomes of this analysis reveal that there is a close and significant relationship between

organizational justice and organizational commitment. [9] It supports this research that there is a strong and significant relationship between equity and organizational commitment. Wise organizational justice will encourage employees to perform well, respect individual rights, avoid discrimination, provide equal opportunities for staff development to create more intimacy, friendship, respect, reciprocity between staff and managers in providing health services.

Health issues are a shared responsibility of individuals, communities, governments and the private sector. Hospital as a chain of health services has the main function of healing and health maintenance. In order to perform the function, the hospital must be able to run the proper management and create harmony and comfort in working. Pay equity that is proven to affect organizational commitment may be a challenge to the high demand for health services and customer expectations for optimum service delivery.

The achievement of Organizational Commitment at RSUD Panembahan Senopati Bantul is good to improve employee performance and patient's safety in the hospital, increase the trust of patient and society and reduce the incidence of unwanted. This can be realized if the hospital implements policies either distributive or fair procedural policies to employees, so that employees are motivated to provide maximum service to patients.

Based on the findings of the research results and supported the existence of previous theories and research that to increase RSUD Panembahan Senopati Bantul, the hospital can increase awareness of the importance of Pay equity covering aspects of distributive justice and procedural justice. Quality health services, fair and equitable and having the highest degree of health and easy service from professional health personnel is the goal of health services.

### **CONCLUSION**

There is effect of pay equity to Organizational Commitment in RSUD Panembahan Senopati Bantul. Pay equity contributes to Organizational Commitment in RSUD Panembahan Senopati Bantul of 27.5%. this is evidenced by the value of t count of 5.829 with a significance value of 0.000 ( $p < 0.05$ ) on the regression equation that is formed.

### **SUGGESTION**

Based on the above conclusions, then the suggestions that can be given are as follows.

1. Can apply the results of research that has been obtained during the lecture so as to give positive footprint in the world of work
2. Based on the results obtained, pay equity and Organizational Commitment in Panembahan Senopati Bantul Hospital is considered good enough and need to be improved
3. The results of this study can provide information and reference reading for all parties who need it primarily related to the influence of pay equity on organizational commitment.

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# **The Advertising Market and the Evolution of the WEB: A study about the company Rock Content**

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## **ABSTRACT**

**The article aims to study and understand the tools available on the web and relate these tools to the concept of digital marketing, introducing new ways of business, through the creative economy and entrepreneurship. The methodological procedure chosen for the investigation of this work was the exploratory research. The research was developed through the qualitative method, with interviews as instrument of data collection. The type of research technique was classified as semi-structured interview, in which communication professionals in the company Rock Content answered a questionnaire, with a view to obtaining previously information about the demands of the advertising market, the difficulties and the challenges encountered in the daily life of these professionals. In this perspective, the present study discusses concepts raised by the literature on the web and entrepreneurship, insofar as this scenario of the advertising market in the web is analyzed.**

**Keywords:** Web; Digital marketing; Entrepreneurship; Creative economy.

## **INTRODUCTION**

New information technologies have changed the strategies companies use to address the consumer. Digital marketing and web 2.0 are strategies in this new scenario, in which the offerings reach the public more easily and quickly, leaving the consumer closer to the market offers, making it easier to consume and offering the consumer Power to evaluate products and services instantly. This evolution of technology changes not only the approach and prospecting but also the way companies execute the Customer Service System and manage crises related to communication problems. The Internet enables the company to receive consumer feedback, and what was previously done through surveys and telemarketing, is done today by analyzing the interests of each consumer on the Internet, based on the history of searches and sites visited. In this way, there is also a need for companies to become more attractive to their audience, because in social networks there is not only commercial information, such as prices and hours of operation, but also content of interest to their audience, adding value to the brand.

In a global scenario, changes in the forms of work, employment, sales and purchases are observed. The work tools have evolved, especially those related to the new technologies scenario, and thus, the relevance of the investigation of this subject is more and more remarkable. The formal, formal jobs are giving way to new types of work. There is an increase in the entrepreneurship rate of freelancers. The economy in general has been showing a new format through ideas, the so-called "creative economy" (MACHADO, 2009).

The world of work, in a general perspective, has undergone profound changes, driven by technological, organizational and market innovations (WRIGHT, SILVA and SPERS, 2010). According to data from the IBGE (2015), drawn up by Folha de São Paulo, it can be observed that in Brazil the number of self-employed workers has decreased, and the number of self-employed workers has increased. In this scenario, new business opportunities such as entrepreneurship and the creative economy are favored, as shown by data from the GEM (2015) research sponsored by SEBRAE. The survey reveals that 52 million Brazilians between the ages of 18 and 64 were involved in creating or maintaining a business as an entrepreneur. Entrepreneurship obtained a rate of 39.3%, the highest rate in the last 14 years, which means that every 10 Brazilians, 4 already have a company or are involved in the construction of a new company.

In this context, there is a potential market for those who work in the advertising area, considering the need of companies to have experienced professionals in business communication. This professional is not only responsible for propagating products and services offered by the company, now he is also responsible for adding value to the brand in social networks, producing quality content, working the brand image online. That way, the company will stand out from its competitors. It is noted that business communication is inserted in this discussion to seek a contribution on the interest of the consumer public and the actions of organizations.

Companies should focus on integration among sectors, internal communication, marketing, products and services, and institutional, which deals with the image and presence of the organization, as well as seek channels that privilege and improve communication with the organization (KUNSCH, 2003). In this research, we seek to understand how digital marketing can be worked by communication professionals in the advertising market. Therefore, in this study, the question is: what is the role of web evolution in changing marketing and in the performance of communication professionals in a content marketing company?

Rock Content, a content marketing company with more than two thousand professionals from diverse segments such as marketing, Information Technology, consulting, education and e-commerce from all over Brazil, carried out a survey with about two thousand marketing professionals that indicates That 69% of respondents use content marketing to generate brand recognition and customer loyalty. There is a big difference in behavior with US marketing companies, where 93% use content marketing as a strategy to retain customers. "We know there is more room for breakthrough and intrusive advertising, giving way to practices like Content Marketing, Inbound and Content Marketing," says Vitor Peçanha, co-founder of Rock Content. (MIDDLE & MESSAGE, 2016).

The consumer is more experienced and is not only looking for good offers, therefore, contents and experiences become increasingly important to attract him. With the change in the way communication is handled, the profile of consumers also shows a significant change in the professional profile of the communication area. This new professional is influenced by the new format of the Web, web 3.0, which brings with it several marketing tools, which stand out for the low cost and the high index of precision of the investments.

Since this new era of communication is recent, there is little academic information on the subject; Thus, the present study is necessary in the search for new information and a general synthesis about the new market, the business format, the profile of the professional and the new tools. In the mentioned context, seeking to deepen the

Knowledge on the new advertising market, this work aims to achieve the following objectives: contribute to the discussion of identity, image and brand positioning in the Web; Understand the dynamics of consumer interaction with web 3.0 advertisers; Understand the new practices of the advertising market based on new content marketing tools and identify the cost benefit advantages for a company that works with Web 3.0.

### **Entrepreneurship: transformations in the advertising market**

Competitiveness in the current market is growing steadily and it is necessary to undertake, promote changes, innovations. This entrepreneurial profile becomes necessary not only to stand out and succeed in the market, but also to contribute to the process of economic development. The entrepreneur is not only responsible for the increase in production, undertaking involves promoting changes in business and society, as was quoted by HISRICH and PETERS (2004).

According to the definition of Schumpeter (1985), to undertake is to radically transform a certain sector or activity where one is acting. A new cycle of growth that breaks the continuous economic flow. This innovation causes changes in the economic routine of the entrepreneur or the company in which he operates. The author defines that the entrepreneur is "the one who makes new combinations of the productive means capable of promoting economic development" (Schumpeter 1985: 49)

Brazil stands out in the world scenario in the entrepreneurial sector due to the scenario of financial and political crisis since the year 2013. There are several programs in the country that help the entrepreneur and the microentrepreneur, such as SEBRAE, which sponsors the GEM survey, which Year of 2015 raised data that prove the great rise of the activity in the country. In the year cited, the entrepreneurship rate reached 39.3%, the highest in the last 14 years, while in 2002, the figure was just over 20%.

In view of the concepts of entrepreneurship and the economic situation of the country conducive to such activity, we are going to meet the evolution of the web, marketing and advertising market. These factors, as well as the constant technological evolution, become tools available to the present day entrepreneur

### **Changes in the economy: creativity as a significant element in the economy era creative**

The creative economy, considered a modality of enterprise, is based on a market that differs from conventional standards, seeking intelligent, creative, innovative solutions. According to John Howkins (2001), in his book "The Creative Economy", the activity is based on the intellectual capital for the creation, production and distribution of products and services. The activities of the sector are linked to knowledge and produce tangible and intangible, intellectual and artistic goods with creative content or economic value.

The term Creative Economy was first cited in 1994 in Australia in a "public policy document focused on culture and art, called Creative Nation. And in 1997 used by the Department of Culture, Media and Sport "(COSTA and SANTOS, 2011, p.03). According to Unesco (2010), the activity covers fields such as arts, design and fashion, cinema, radio, television, media, tourism. However, it is not only related to technology, since part of the creative production is artisanal. In spite of following an innovative line, the creative entrepreneur must also be connected to conventional processes, such as analyzing the market, identifying opportunities, defining products or services, setting goals, segmenting and positioning his product, and defining sales strategies.

The growth of the category, even in a time of recession of the global economy, is due to the fact that this is an alternative measure, which offers a faster and more effective response. As Gabriel Pinto, coordinator of the FIRJAN Creative Industry program, told O Globo newspaper (2016), "the creative professional is an option to produce better, more efficiently and effectively."

According to data provided by SEBRAE (2015), the sector has more than two million companies and generates R \$ 110 billion equivalent to 2.7% of the total Gross Domestic Product (GDP) produced in the country. The figure reaches R \$ 735 billion, considering the production of the whole chain, equivalent to 18% of the national GDP in 2015. According to the Report of the Creative Economy in 2013, this activity moved around USD 624 billion worldwide In 2011, registering an annual increase of 12.1% in developing countries. According to the report of the newspaper O Globo, the GDP of the sector grew 70% in the last decade in Brazil. It was one of the few sectors that continued to grow in the global economic crisis in 2008 and today is among the fastest growing and generating jobs.

Problems more easily than when organizing individually, the collaboration between users is greater and becomes important, in these fundamentals arise social networks. According to O'Reilly (2005), information on the third generation of the Internet is also understood by machines. In this way, the organization of the content offered by the network allows the search appliance to search for what the user needs, knowing the user profile through their interests, being able to exclude or focus on certain results in their search according to what matters in fact To the user, based on determining this interest the profile of this user on social networks.

Boyd (2008) argues that the profiles used in most online social networks evolved from social dating networks: this way, there is always a category that contains user demographics (age, sex, addresses, etc.) , Interests (favorite books, favorite songs, movies, etc.), photographs and a short description of what this user is looking for when establishing his / her profile in terms of relationships (if you just try to establish friendships or if profile creation has a more Sentimental or professional).

Thus, a new organization and use of the internet are proposed, focusing on the structure of the sites and the user. The third generation of the internet, along with social networks and the changing environment in which people interact, also stimulates commerce, determining to companies that the customer approach needs to follow the parameters of Web 3.0. In addition to the need to change the way in customer service, there was also the lack of professionals capable of understanding the languages, the tricks of the relationship with the user via social networks and with experience in advertising, acting within the company, showing which strategy should be adopted so that the products or services of this company have visibility, in addition to taking advantage of the dynamics of the third generation of the internet, which enables a more concrete and sincere feedback about the product offered, which should be used as raw material to improve it. In this way, the advertising professional has become indispensable in medium and large companies that want to highlight their points of difference from competitors. According to Henrique Cesar Nani (2009), in his study about the importance of social networks as a competitive advantage in corporate business, some companies are already looking for professionals who use social networks to interact with their clients to improve communication and gain competitive advantage in Competitors (NANI and CANETE, 2009).

The evolution of the web contributed to the relationship between the company and the clients by making instant contact with the company, solving communication problems that would

previously be solved by the SAC or ombudsman. In addition, it is possible to access the customer's purchase profile through social networks, making it easier to get leads and sales, making ads that impact customers taking into account the content that users usually access, thus improving communication between them.

### **The Semantic Web and the reflexes in the labor market**

By leveraging data collected through user surveys, social networks, preferences, location and consumer behavior on the Internet, the "Semantic Web" promises to completely modify the market and consumption, causing technology media to perform tasks that were previously fulfilled by users. Berners-Lee (2001, p. 2) states that "the Semantic Web is an extension of the current Web, where information has a clear and well defined meaning, enabling better interaction between computers and people." To interpret commands, to understand the context of the user's way of life, in order to perform searches and present to the consumer which product is most suitable for a given purchase, making consumption faster and more efficient, based on the cost and benefit offered by the product or According to the culture in which the consumer lives and in his / her purchasing condition. In this way, companies must increasingly care for a close relationship with their customers so that these Semantic Web mechanisms understand this identification and always present that mark when requested. On the other hand, companies will have access to information from their end consumer, such as their behavior, preferences, social class and all information to store in database, knowing their target audience, making it easier to determine marketing strategies to achieve this Easily. According to Dziekaniak and Kirinus (2004):

*The Semantic Web aims to incorporate semantics into information. This will not only allow users to understand information but also machines. It aims to provide frameworks and semantic meaning to the content of web pages, creating an environment where software agents and users can work cooperatively (DZIEKANIAK and KIRINUS, 2004, p.21).*

This environment cited by Dziekaniak and Kirinus (2004) allows an interaction between computers and people that makes the web identify the tastes of each user. In this way only products and services that he usually uses or are offered are offered to this consumer.

Research, reducing the possibility of brands reaching people they do not want to communicate. Luiz Manuel Silva Cunha (2002, p.10) states that "the Web is a broad source of dissemination of information in the main areas of knowledge and provider of various services, such as: information and news searches, e-commerce and entertainment".

As mentioned at the beginning of the topic, the third generation of the web, or semantic web, provides a great amount of information about the user, being possible to access personal data about the user's behavior, their tastes, preferences, their locations, etc. With the great volume of information available, an alert is raised for the issue of privacy in the online environment, the user must be concerned and caution that there is a limit on this data access, so that his privacy is preserved.

Thus, the need for a professional in the area of communication and marketing in the company to transform this feedback obtained through the Semantic Web into ideas and plans for the relationship with the consumer. This professional does not need specific training, must have mastery of Semantic Web management tools such as applications and storage clouds. Many of these tools are presented in the academic environment, such as Google Adwords and Facebook Ads. This professional should always keep abreast of new tools and possibilities for



prospecting and approaching consumers on the web. Therefore, it is clear that the Semantic Web changes both consumption and the market, including the advertising market. Opening the possibility of hiring newly trained professionals, who had access to the tools and methods of Semantic Web work in an academic environment, enabling them to the job market.

### **Digital Marketing as a tool for prospecting and relationship with the client**

Marketing is an essential tool to gain a competitive and sustainable advantage, developing from a focus on the client and the search to recognize and fulfill their desires and needs. According to Kotler (2000, p.30), it means "the art of selling products or services". Digital marketing, in turn, consists of communication actions adopted through the Internet, cellular telephony and other digital means to propagate products, services and even affirm the posture of the brand, conquering new clients and improving the network of relationships. Cruz e Silva (2014) cite an evolution of marketing, which begins to present new concepts. And nowadays digital marketing, which uses the internet and other electronic channels to expand the market, and improve the relationship of the company with its customer. Also according to Cruz e Silva (2014), the advancement of technology and the growth of the internet are related to the emergence of digital marketing.

It should be noted that this marketing encompasses the practice of promoting products or services through the use of electronic distribution channels to reach consumers quickly, in a relevant, personalized and more efficient way. This type of marketing acts strategically, adapted to digital media, achieving the same efficiency of direct marketing, boosting the effects of traditional marketing. In addition, it translates into strategic, economic and operational actions (Strategic, Economic and Operational) adapted to the digital media, in order to obtain, in these channels, the same efficiency and effectiveness of direct marketing and at the same time potentialize the effects of traditional marketing. In their operation, channels, media and digital tools are usually used.

Facebook can be taken as an example of the vehicle of digital marketing, quickly winning the public and in a short time overtaking competitors, using simplicity and speed of execution. Due to the success made by Facebook, some companies have invested in the creation of customer communication departments, which allow greater proximity to the customer. The tool provided by Facebook for these companies are the Fan pages, which work with Facebook Ads, to reach people who use the social network that are directly in the target of that company.

In this way, a new style of consumer emerges: consumer 2.0, which becomes more demanding, informed, attentive, always looking for the product or service that can meet their needs, always aiming at the cost benefit and experience of other consumers, Through the exchange of information, give great feedback so that companies adjust their errors and enhance their characteristics.

Another example of marketing strategy adopted by companies is Search Engine Optimization (SEO), which is nothing more than optimizing a website to be better understood by search engines such as Google (OLIVEIRA, FERREIRA, CASIMIRO et al., 2014 ). In this way, SEO seeks the best positioning of a site on a search results page. SEO is an unsecured practice, that is, no company or person can ensure that your site comes first in a search because the only thing that could be the search engine itself, such as Google or Yahoo.

The authors Cruz e Silva (2014) conclude on the existence of several tools and strategies of social marketing and, in order to be successful in the process of attracting online clients, one must use such strategies, such as content marketing, Marketing in social media, viral

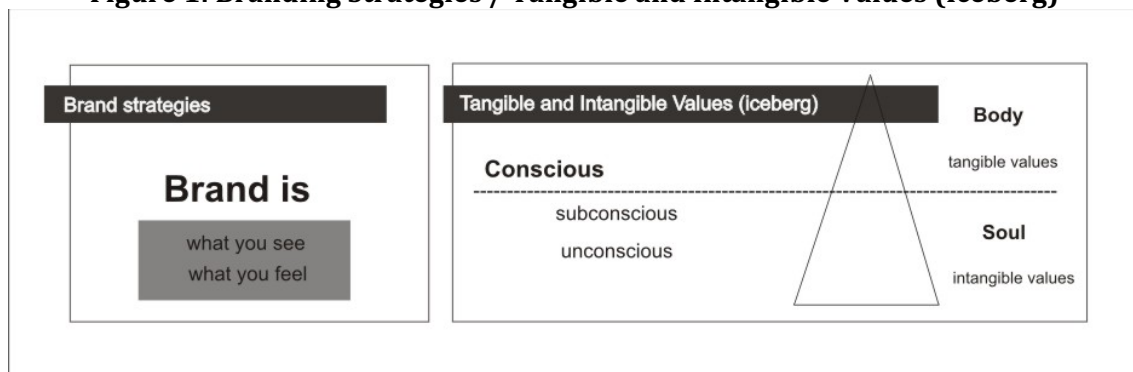
marketing, email marketing, online advertising and constant monitoring and analysis of results achieved.

### Branding building the brand image

The process of building and managing brand facing the market is called Branding. This process is responsible for determining attributes that will come to represent the essence of the brand in the market, such as name, logo, slogan and visual identity. The Branding process aims to build and strengthen the brand image, making it have more value than the product or service offered by it. According to Sampaio, "branding can be defined as the set of marketing tasks - including its communication tools - aimed at optimizing brand management" (2002, 27). Aaker (1996, pp. 7-8) defines brand value as "a set of assets (and liabilities) linked to the name of a brand that add up to (or subtract from) the value provided by a product or service to a company And / or for consumers".

Two similar products can be evaluated differently by the consumer depending on how the companies supplying these products position themselves and establish their brand. In this way, branding is necessary so that the product of a particular brand stands out from another similar product. In addition to identifying and differentiating the brand by its symbol, slogan, logo and identity, the characteristics of the brand can carry intangible values that correspond to the psychological and financial value of the organization. The tangible value corresponds to the brand-owned goods that are palpable, that is, that are concrete, such as properties, machines and stocks. Cobra (2003) conceptualizes the tangible and intangible characteristics of the brand and develops a scheme to present these concepts:

**Figure 1: Branding Strategies / Tangible and Intangible Values (Iceberg)**



**Source: Cobra (2003, p.209).**

In this way, the performance of communication and marketing professionals in companies of different areas is essential, because an effective brand management adds competitive benefits in the long term, becoming a point of difference of the competing companies. Gilbert Churchill states in his book "Marketing: Creating Value for Customers":

*A good branding strategy is important because it helps marketers develop and maintain a positive image among buyers. Consequently, a reputation for quality and value can attract new customers as well as encourage existing customers to become loyal to the brand or to try out other products of the same brand. In this way, organizations can increase sales with lower costs. Positive associations with a brand can even persuade people to give the organization a second chance when it slips or encounters problems. In general, strong brands can be the most valuable assets of an organization (CHURCHILL, 2005, p.250).*

Encompassing the tangible and intangible values of brands is extremely important when strategizing and making decisions in the marketing of the company, as these factors will make the brand to be accepted by its target audience, thus determining the equity value of this brand.

### **Rock Content: the pioneering company in Content Marketing in Brazil**

As a result of the great rise of digital marketing, and more and more companies seeing themselves as necessary in expanding their performance to the internet, there is an understanding of creating new strategies to ensure that this online process works well. One of these strategies is content marketing, concept defined by director Rock Content company Vitor Peçanha (2017) as:

*Content Marketing is a way to engage with your target audience and grow your network of customers and potential customers by creating relevant content and valuable, engaging, engaging and engendering value to people so as to create a positive perception of your brand and thus generate more business (VITOR PEÇANHA, 2017).*

Content marketing is based on optimizing the creation of quality content and directing it to the right audience at the right time. Traditional marketing is no longer as effective as before, according to marketing companies. Nowadays, companies are increasingly working in spaces where the consumer has more autonomy at the time of purchase, where a greater diversity of options is available. While in the traditional way the focus is on the product or service to be sold, in this new way the marketing is geared to the needs of the customer, to get to it at the right time, and thus to provide it with content that is really useful and interesting.

Another proposal of content marketing is to create a brand image and add value to it. With this quality content, the relationship between brand and customer will be broader, the interaction will be greater, thus, the possibility of new purchases increases as a kind of loyalty of trust and customer satisfaction with the brand. After a successful purchase and satisfaction, it is more likely that this consumer makes a purchase again with the same company, than looking for other unknown companies.

In order for content marketing to succeed, you need to define strategies and plan accordingly. In this way, Rock Content organizes its work in a way that follows 3 steps: planning, execution and measurement.

The initial ones, in the planning, stage that covers the whole process before the execution, listing goals, channels (blog, social network, email, etc.), and documents that are useful, studies are done like: Of the brand, interview clients, market research. Always focusing on strategies that will bring real benefit to the company. Such strategies can be: generate brand awareness, generate leads, generate engagement with the brand, educate the market, generate sales, optimize the purchase process, increase the customer's lifespan.

The second part of the process, the execution, part of the point in which the finished planning is done, must be followed correctly during this stage, keeping the frequency of content generation and distribution. It is worth mentioning that some changes may be necessary during the process. Thus, Rock Content strives to stay true to planning, and at the same intensity strives to identify possible changes to be made and make any adjustments. The company workflow is divided into 2 strands, tools and documentation. It uses the cloud service as a tool,

In order to facilitate access and sharing among the team members, the data stored there in the marketing plan. The documentation has a strict care. According to the "Content Marketing Trends" survey conducted by the company itself, 84% of professionals suggest that a well-documented strategy becomes more successful. Thus was created the "Global Marketing Manifesto", containing all the objectives, key performance indicators, principles, language and organization of the company. Each "persona" has an individual space, the topics covered are mapped in spreadsheets, expenses and results achieved with the media are also documented.

Rock Content determines a well-structured routine: it works with quarterly cycles in all departments. Thus, every 3 months, new macro objectives are defined for the following quarter. Monthly meeting for analysis of results and definition of the editorial calendar, including co-marketing partnerships and guest posts. Weekly meeting on Mondays to review results, align team members, and make decisions. It is in this meeting that the possible changes of the plan are made, if necessary.

In the third stage of the process, the team proposes to make the measurement, when the metrics of the strategies are analyzed. This step is more practical compared to traditional marketing, because in digital marketing the results are simpler to measure. The key performance indicator will measure the level of success of a campaign. Combined indicators can point to the success and completion of a strategic business objective. These indicators can be: tanned on Facebook, followers on Twitter, views on YouTube videos, number of sales, time spent to make a sale. These factors are taken into account when you set a goal in the planning process.

Content Marketing has proven to be a successful strategy with good results, but the strategy must be careful not to be invasive, with the approach being done in an intelligent and subtle way. As an example of e-mail marketing, it is necessary to make tests, dosing and varying the volume of e-mail, until finding out what quantity and frequency has more acceptance of the public and has more positive effects, an exaggeration besides being able to annoy the user , Will cause the server itself to classify you as spam.

### **METHODOLOGICAL PROCESSES**

The research was classified as exploratory and descriptive. The method to perform the analysis of the primary and secondary data that were collected. This research consists of an interview with those responsible for the marketing and communication sector of Rock Content company, aiming at a study, in order to delve into the new tools and marketing strategies made available by Web 3.0, which have become a challenge for those who work In the area of communication. The interview was carried out in the company and a semi-structured script was used, containing 10 questions (Appendix A).

### **DATA ANALYSIS**

During a visit to the company Rock Content, we interviewed Lais Bolina, responsible for the company's marketing. The purpose of the interview was to understand content marketing and understand the role of internet evolution in the new way of advertising, as well as to understand marketing strategies for prospecting and customer loyalty. According to Laís Bolina, Rock Content has existed for four years and is a pioneer company in content marketing in Brazil. For her, content marketing is a very consolidated strategy abroad and that enables customer service through the internet, video conferencing and e-mail, facilitating customer service throughout the country.

When asked how content marketing works in practice, Laís cites Google's example as an online search platform and claims that 70% of consumers access the first three links pointed to by the site. Consumers do not usually access the second pages of the research or search other means of information. Content marketing acts at the time of this search, pretending to be the response that a potential customer searches for when accessing a search engine. The company does not run after the customer, the content marketing strategy makes the customer's need take you to the company. This adds to the audience segmentation process, as only the consumer who is really interested in a certain product will contact the person who markets the product.

According to Laís, content marketing is a strategy 62% cheaper than traditional marketing, regardless of the size of the company, whether small, medium or large. This strategy has many positive results, so Rock Content segments the type of sales and customer service so that each team is focused on the size of the company they usually meet using different strategies to meet the needs of each customer.

Rock Content attracts its own customers using its own content marketing strategy and teaches customers how the strategy works. After that, the company plans together with the client content mapping and strategy tracking, searching for keywords related to the customer's business and examining the competitors in the customer's success sector. When setting the agenda, the planning sector launches this planning to the freelance base, which produces texts for blogs.

Rock Content has a base of more than 20,000 freelancers who are segmented by subjects and scored from one to five points, the highest rated have a preference in contracting content. The customer approves the content through the Rock Content online platform where he can manage the content produced, the guidelines and obtain analytical data on the customer interaction on the web. After the content is posted to blogs and social networks of the client, the company makes this content accessed by the target in the Internet search tools.

To adapt to the constant changes on the web, Rock Content provides its employees with continuous access to necessary information, such as program updates, new applications, ranking strategy and change in search engines, such as Google algorithm updates. For this to be possible, the company organizes times of content sharing, such as the "Rock School", where employees search for updates and present to colleagues once a week. Therefore, employees exchange information acquired in blog, updating the content of the team. These new features are posted on the Rock Content blog and are available to customers and the general public. In addition, Rock Content also has a university set up for the company, so employees have access to courses and materials such as "How to use Marketing to scale your sales", "How Content Marketing can help Your agency and your clients" and "Student Mapping Content Mapping".

Laís states that most companies that require marketers require certified candidates issued by Rock Content, such as content marketing. In addition, Rock Content provides a tool called the "gamma academy" that functions as a talent recruiter and directs these students to start-ups. Rock Content students generally seek to qualify for the job market, there are also companies that are looking for Rock Content to specialize their employees.

A successful case cited by Laís is the "Beard" customer, an e-commerce product for men, focused mainly on the care of the beard and hair, which, with the help of Rock Content, increased by 487% the number of sessions in 456% the number of users in 268% page views since when you started using the content marketing strategy. Beard's greatest difficulty in finding Rock Content was to produce relevant, quality content for the company's audience.

Beard's goal was to get this audience engaged and active. The solution found by Rock Content was the production of 9 monthly articles for the blog, all optimized with good SEO practices and specific keywords, plus an e-book per month always focused on style and products.

Laís Bolina concludes in the interview that content marketing arises as a result of technological advancement, and consequently of people's migration to the Internet. With this, the consumer profile has changed: now it has access to a greater amount of information and thus has more autonomy at the time of purchase. Because it is a more strategic and complex process, content marketing requires the professional to train more, stay current and always seek new knowledge.

It is observed that the evolution of the web and the emergence of its last format, Web 3.0, is related to the emergence of new forms of work, business, such as the creative economy; And with the expansion of existing formats such as entrepreneurship. The evolution of the web, in a certain way, opens space for the entry and strengthening of these activities in the market.

The format to consume information has evolved, the consumer has more authenticity at the time of purchase, you will find more options available. The internet, the platform that is largely responsible for this change, has expanded in recent years and attracts more and more users, who are potential consumers from the point of view of advertising. In the field of the internet, the emergence of social networks stands out. Not only the internet, but also the other digital means that creates the Digital Marketing. With the share of the internet user population growing, and thus, when consumers are migrating to the online medium, it was necessary to study and create new marketing standards; A new format, with different strategies for working the marketing of a company on the web.

As a relatively new situation, companies should not only aim to attract customers and sales. Before that, it is necessary for the company to work on the image of its brand in the internet and its positioning. With this, the branding, process of construction and management of marks, is something primordial for the entrance of a brand in the web. The brand, which previously focused on selling its product / service, now turns to the needs of its customers. Brands should position themselves best in Web 3.0 to understand and meet those needs. The relationship between company and customer and the position of each party has changed, become more dynamic, the consumer becomes more important in this process of the advertising market.

With all these changes, new market practices and new tools to work are emerging. Content Marketing, Email Marketing, Viral Marketing, Online Influence Marketing, Google Adwords and Facebook Ads exemplify these new practices and tools. They will serve for brand positioning, image building, relationship, customer capture and maintenance, data analysis, audience segmentation and sales. These practices being well applied and utilized by companies will create it in the market. In this new format, the cost of advertising is lower, segmentation is more efficient, only the audience that has real potential will have access to the content, data analysis is more complete as the tools offer a greater volume of data. A company well established in the online medium also has in its favor the fact that the internet reaches more spaces, thus dialoguing with public of all the regions.

Beard is an example of how content marketing is a more accessible and effective strategy and that along with the evolution of the internet has helped small business owners to become "authority" in the field in which they operate. This image that the brand passes is not due to the size of the company, but to the work of content marketing, which proposes to attract the

customer not by the price, promotion or quality of the product, but through information in which that customer searches the internet. This experience brings the customer back to the brand site to seek more information, strengthening brand authority in the business.

In an interview with Rodrigo Normandia, the businessman said that he has reduced his investment with Google Adwords by 70% after investing in Content Marketing. Beard believes that Digital Marketing is one of the main pillars of the

Consumes content such as the Newsletter and E-book made purchase on the company's website. In this way, the Blog helps the company to spread the information about the products marketed and their use, facilitating to convince the customer that the product actually works, giving the customer an experience of use even before the purchase of the product.

The businessman also tells that whenever he gives the business card at events and barbershops, people say that they follow the Blog or Instagram. The entrepreneur highlights the importance of Digital Marketing and Content Marketing by making a comparison of what people see most smartphones, which are always within reach of what printed newspapers and television.

### **FINAL CONSIDERATIONS**

This research aimed to study and understand the tools available on the web used in the advertising market. Content Marketing, a strategy used by the company Rock Content, is thought as a tool for prospecting and interaction with the customer. This tool is perceived in the digital marketing scenario, where it became an effective strategy for marketing and branding after the advent of the Semantic Web. According to Rock Content, it's a strategy 62% cheaper than traditional marketing. This possibility has spurred new forms of business, based on creative economics and entrepreneurship. Rock Content is an example of entrepreneurship and the variety of new businesses made possible by Web 3.0. In addition to running Content Marketing for its customers, the company has also opened a university that teaches its students and employees the tactics and constant changes in digital marketing. In this way, Rock Content bets on the creative economy as a source of income and knowledge.

In order to obtain information about the requirements in the advertising market, a visit was made to the company where a research and interview was developed. From the analysis of the data, it was clear the importance of the professional in the area of communication and marketing, as this should always be in search of knowledge about the news and updates of the web.

It is pertinent to highlight that when using Content Marketing as a strategy, a new tool in the market, companies need to constantly renew themselves due to the numerous updates of the tools available on the web. Therefore, Rock Content provides its employees with a full scholarship at any Rock Content University course, these courses do not work as a degree, but as a specialization for the communications and marketing professional who wants to work with digital marketing, named "University Rock Content "sounds pejorative because it gives the idea that the courses offered by the company would qualify a professional as a graduated person, which usually happens on the contrary, the graduate professional seeks the company to specialize in a certain marketing technique, The company organizes events in which employees discuss and present each other with updates that can determine how to run a campaign. In addition to giving access to new strategies to employees, this strategy helps in the process of building and managing brand facing the market, which makes the consumer recognize Rock Content as an authority in Content Marketing, highlighting the company of its

competitors.

Therefore, it is concluded that a company that is successful in building the identity and positioning of the brand on the web can, in addition to winning new customers, loyalty to those who already know the brand. These clients, in turn, interact and build with the company the image of this brand, evaluating and positioning itself on the quality of the product or service provided by the brand. In this way, the marketing and advertising professional should always be aware of new trends in the Internet and the preferences of their target audience in order to be able to outline the best approach strategy for the Web 3.0 target.

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## **APPENDIX A - QUESTIONS OF THE INTERVIEW WITH LAÍS BOLINA, RESPONSIBLE FOR MARKETING ROCK CONTENT**

1. How does Content Marketing work in practice, how many communication professionals and other areas are needed for the Content Marketing process to run successfully?
2. Content Marketing is a great tool of relationship with the client. Is it also effective in prospecting new customers? What are the methods to approach new customers?
3. In view of the constant renewal of social media management tools, how do Rock Content professionals keep up to date and bring those updates to customers and students?
4. Cite a case or give an example of a customer who was able to change the relationship with the end customer and his image in the market using Content Marketing.
5. After completing Rock Content courses, which companies require employees who have technical knowledge and Digital Marketing and Content Marketing?
6. How is Rock's relationship with its customers? What are their goals in pursuing Rock Content? When these goals are presented, is Rock Content responsible for the diagnosis or prognosis?
7. Students of the course of SEO, Digital Marketing and Content Marketing, when joining Rock, are looking for jobs in the job market or an opportunity for entrepreneurship?
8. Where did the need arise to invest in a marketing company that also acts as a college?
9. What Rock Content relationship with students and clients? After graduating, is there a partnership?
10. What advantages can be highlighted in the new format of marketing (Digital Marketing) in relation to traditional marketing where the focus was on the product?
11. What factors contributed to the emergence and growth of content marketing?
12. Can content marketing indirectly generate "word-of-mouth" marketing?
13. Can it be said that the process of content marketing requires a more skilled professional compared to traditional marketing?
14. Can you say that this new format of marketing, is more complex and laborious than the traditional?