

Uptake Of Information Communication Technology In Machakos County In Kenya: The Role Of Management Support And Regulatory Framework

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ABSTRACT

The role of management support and commitment on initiation and adoption process has often been considered to be crucial in organizations. The objectives of this study were to determine how uptake of ICT in Machakos County depend on management support, and government regulatory framework respectively. The study reviewed integration and adoption theories in understanding the adoption of a given technology. The target population was all the 1175 employees in Machakos County Government. The county governments, have ten distinct ministries – under supervision of County Cabinet Secretary, charged with varying roles in implementing information technology plans. These ministries included Administration, Lands, Water, Roads, Culture, Education, Agriculture, Trade, Finance and Health Departments. The sample was 10% of the population. This was a cross sectional study in which data was collected from a sample of 118 employees over a short term. Statistical Package for Social Science (SPSS) Version 21 was used to analyze the data using regression and correlation analysis. The study found that management support and ICT use and integration had positive and significant relationship ($r=0.180$, $p\leq 0.000$). It also found that government regulatory framework and ICT use and integration were positively and significantly related ($r=0.124$, $p\leq 0.027$). The study recommends that the Management should encourage and support the use of ICT in all areas in the county government as well ensure development of favourable ICT policies and procedures.

Keywords: Integration, ICT, Regulatory framework, Management support

INTRODUCTION

Top management support in information and communication technologies (ICTs) consist of initiatives and managerial beliefs that include how staff participates in the process of adopting and diffusing an organization's innovation of information technology (IT) in its large systems (Pudjianto & Hangjung, 2009). The top management is required to offer the needed commitment and support for the initiation and adopt process to be successful. The top management also has the power to influence organizational culture by influencing the behavior of others within the company. The organization will also be steered by the top management towards ensuring that the whole organization is able to participate in the e-government assimilation. This is done through strong support in terms of resource allocation in the e-government program. Schedler and Schmidt (2014) argues that management as an administrative unit makes an impact on success of strategy of e-government, in the sense of setting objectives and the course of the project; the establishment of structures, such as the organization of structures and processes, but also rules and incentives; and capacity building in

the sense of extending the organization's potential possibilities of action. According to Schedler and Proeller (2007), the activities are not carried out in isolation from each other but they should be integrated finely in the best way possible. It is thus the function of management to ensure that all the areas are finely integrated and consistently.

UN (2012), states that one-stop government will be able to materialize when the public officials commit to pursue their vision for a long time in a way that identifies and articulates different types of benefits of a one-stop government programme. In this case, the officials should be able to accept that there can be forms of resistance, which are prevalent in projects such as e-government. Appreciating that the traditions are deeply rooted in the public administration is also important. In this case, the leaders will be required to address and ensure the public understands what e-government portal and thus invite the opinion of personnel and thus emphasize the continuous communication and ensure the project is fully implemented.

How ICTs and e-government emerged becomes easy to enhance the internal administration in terms of efficiency. Therefore, it becomes easy to relocate the services of the government to a place where the citizens can be able to access them easily. Bertot, Jaeger, & Grimes (2010), argues that around the world, different governments have implemented ICTs to enhance their operations. ICT reinvention in government through investment and launching of high profile initiatives in the 1990s, is already being experienced in developed countries with an aim of attracting social and economic benefits. Moreover, growth may be stimulated through information infrastructure which may also lead to enhanced job creation, improvement in quality of life and increased productivity levels.

However, according to Cloete (2012), the levels of ICT implementation between developed and developing countries are hugely different. But public sectors especially in developing countries suffer from lack of computer applications. This results in fewer numbers of skilled people in ICT industry and inadequacy of infrastructure. Consequently, poor levels of ICT infrastructure are not only being experienced due to lack of finances but it is because of poor coordination which also makes technology use poor. If efforts are not well coordinated, duplication of ICT projects may result especially if every department implements their own ICT projects in their own style. There is lack of institutionalization of ICT policies in the national government. Therefore, it is challenging to come up with solid policies for the purpose of ensuring effective policies.

Many county governments face several challenges in inefficiency and effectiveness. These challenges have led to poor service delivery (Okiy, 2005). This has caused essential services to take a very long time. ICT has been used elsewhere including national governments and private sector to improve efficiency and thus resulting in better and quality service. The full potential and utilization of ICT integration is yet to be achieved at the county governments. This has been a challenge because county governments lack expertise, funding, infrastructural support and management support to integrate ICT into their operations. As a result of lack of integration, ICT usage in the counties is very low (Haliso, 2014).

The poor and inadequate ICT facilities has led to poor level of awareness of internet facilities among policy makers, and low levels of computer literacy and ICT skills, It has also officials at the county government and broadly the ruling class at large. This has further reduced the level to which academic institutions are involved in network building to mitigate challenges against the use of ICTs (Ndou, 2004). When seeking services from county government offices, one is never sure when the intended service will be done. A lot of useful time is wasted as one waits

in the long queues. With the adoption of ICT, there is a bit of improvement. However, it appears that ICT adoption has not reached its full utilization. The transition is visible but it is very slow (Magutu & Lelei, 2010).

The main objective of the study was to establish the role of management and support and government regulatory framework on ICT uptake in Machakos County Government. The specific objectives were to determine how management support and uptake of ICT in Machakos are related; and to establish the relationship between government regulatory framework and uptake of ICT in Machakos.

LITERATURE REVIEW

Three theories have been reviewed based on studies similar to this study. These theories are Resource Based View Theory, Technology Acceptance Model and Rodger's theory of Diffusion of Innovation, . The main theory that underpinned this study is Rodger's Theory of Diffusion of Innovation. Rodger's theory of innovation's diffusion was the most appropriate in understanding the adoption of a given technology.

Theoretical review

The main theory anchoring the study was Roger's theory. The theory of Diffusion of Innovation was coined by Rodgers in 1962. The theory argued that innovation is an idea that an individual perceives to be new. This idea or product, according to this theory, spreads over certain of period of time to a specific social systems or population. This is the result of adopting a new idea where people get to embrace something they did not have before. It can also be part of the idea because people embrace the idea they had over a certain period of time. It can be a behavior, product or idea. According to the theory, the idea being embraced should be new and it should be perceived as innovative (Sahin, 2006). In a given population the idea or product or behavior does not get embraced at the same time. There are people who will embrace the idea faster than other. Therefore, it is important to understand that the population will not adopt the idea at the same time (Rodgers, 2003). Rodger's theory of innovation diffusion is crucial in the process of trying to understand how the idea is to be adopted. In this study, the Rodger's theory of innovation helps in understanding the Integration of ICT by county governments. According to the theory, adoption occurs as people turn to an innovative way of doing something. On the other hand, rejection is used to explain the concept of not using a certain innovative way. This concept will largely be employed in studying the resistance to Integration of ICT in County Governments.

In tandem with Rodgers theory, it is important to understand four main elements in the diffusion of innovations. These are the communication channels, innovation, social system, and time (Sahin, 2006). Rodgers (2003) defined innovation as a practice, project or an idea, that is viewed by a unit of adoption or an individual to be new. In the process, county governments regard Integration of ICT as an innovation since it fits the aforementioned description. Communication is regarded as the process where those involved exchange views with one another with the aim of reaching a common understanding. Communication is achieved happens along channels between sources. To enhance the diffusion of Integration of ICT in county governments, it should be ensured that the system is communicated through the most effective channels. It is further observed that innovation diffusion process includes a time dimension. More so, individuals' innovativeness is affected by the nature of social system, , which is argued to be the main criterion for categorizing adopters.

Empirical review

Integration and ICT use is regarded by County Governments as innovation. The communication component of ICT enables creation and sharing of crucial information among individuals. Channels of communication are used as media through which information is passed from one source to the other. It is imperative that effective channels are created to facilitate communication in County Governments. The time dimension of innovation diffusion is crucial since timely innovation affects its uptake in the social system which has direct impact on an individual's ability to innovate.

Management support, and ICT Uptake

Pudjianto and Hangjung (2010) defines top management support in ICT as beliefs and initiatives for support that managers have to encourage staff to participate in adopting and spread of innovation in IT especially concerning large systems within the organization. The commitment and support of top management has in the past been regarded to have an important role to play during the process of adoption and initiation. This team is bestowed with the mandate of influencing the behaviour of other members in organizations. Top management can use long term strategic vision in encouraging the whole organization in learning and participating in assimilation of e-government. Furthermore, top management can use strongly support the organization by allocating the required resources appropriately for e-government program.

Schedler and Schmidt (2014) shows that the management of an administrative unit has a relevant influence on the development of e-government in that it becomes active in three different fields of intervention: strategy, in the sense of setting objectives and the course of the project; the establishment of structures, such as the organization of structures and processes, but also rules and incentives; and capacity building in the sense of extending the organization's potential possibilities of action. Schedler and Proeller (2007) add that these activities are not conducted in isolation from each other but should be adapted to each other as finely as possible. It must be the goal of management to act in all these areas in as integral and consistent manner as possible.

Although the whole government is normally accorded widespread support major problems still remain abound especially with departmental silos, which can help reduce fragmentation and enhance coordination within the organization (UN, 2012). E-government barriers are both technical and non-technical. According to Al-Rashidi (2009), successful e-government is at least 80% about people, and processes and at most 20% technology. Leaders' management skills are important to have a successful e-project. Top leadership should therefore adhere to the principles of management through planning and regulations of operations, decision making, and control over actions of human being and use the human resource management approach of controlling, organizing, directing, and planning to coordinate resources so as to achieve the desired goals.

Government regulatory framework, and ICT Uptake

The proliferation of ICTs and e-government makes it possible for internal government administration to be improved in a more efficient and effective manner. ICTs also enable relocation of government services away from the confines of government offices to be closer to the citizens. Bertot, Jaeger, and Grimes (2010) state that around the world governments have been active in using ICTs in their processes. Government reinvention using ICTs has increased as evidenced by investment and this is highly visible in most government processes since the 1990s.

Mengiste (2010) reports that in developing countries, public sector lacks power and infrastructure as well as computer applications. The study observes that although inadequate financial resource has been cited as one of the causes, uncoordinated use of technology at different levels in the government is another factor. As a result, it is possible to duplicate ICT projects when different departments implement their own ICT projects which are not compatible in the entire government.

There is lack of institutionalization of ICT policies in the government. Solid guidelines to be followed in this area have been a major challenge. There has been fragmented initiatives characterizing ICT application in administration processes making inter-governmental agency horizontal coordination difficult. It has also been observed that it costs less to manage ICT operations in administration compared to the challenges of efforts needed to coordinate manual processes. In manual processes, there are risks related to loss of legitimacy and power, or finance and enforcement mechanisms and thus creates a relative disadvantage for ICT to be relevant.

Directive, standards, subsidy, and innovation emerged as prime factors that are important in e-government. In an UNCTAD report of 2009, liberalizing markets through expansion and network infrastructure improvement can help create an environment conducive for impactful uptake of ICT in government. The report also argues that the government needs to provide an electronic transaction environment with legal and regulatory frameworks for support and in addition take steps towards enhancing diffusion of ICT. Market challenges can also be overcome through enhanced demand for aggression and by supporting the development of ICT skills (Cloete, 2012). Also lack of current information regarding use of ICT within businesses which hampers their efforts towards formulating and mentoring policies and strategies may be alleviated by developing better data through ICT.

Conceptual framework

The conceptual framework for the study provides linkages of principles and broad ideas extracted from the field being studied and representing them in a diagrammatic form. Figure 2.1 is a diagram showing how the variables used in this study are interrelated. From the Figure the dependent variable is integration and use of ICT. Its indicators include Cost reduction, Quality of service delivery, improved access to information, Transparency and Improved decision making. The independent variables are ICT infrastructure, staff capacity, management support and Government regulatory framework.

The following hypotheses were used in the study based on the conceptual framework.

H₀₁: There is a significant relationship between Management support and ICT uptake

H₀₂: There is a significant relationship between regulatory framework and ICT uptake

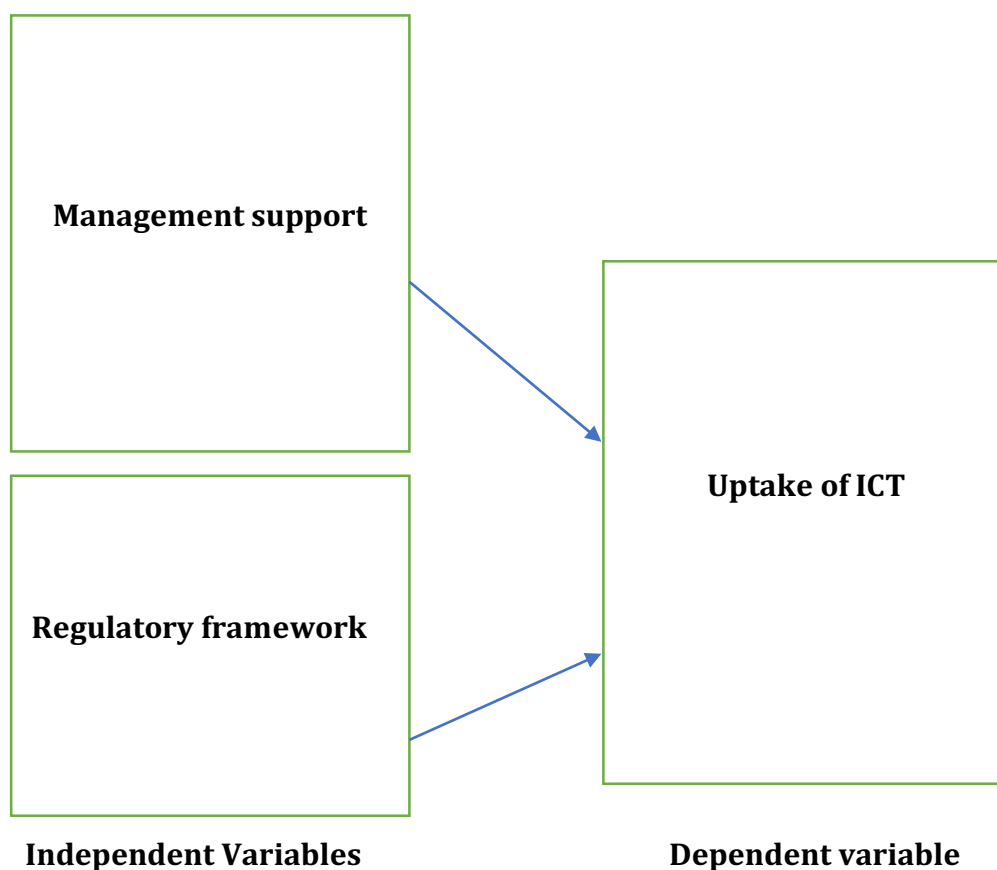


Figure 2.1: Conceptual framework

METHODOLOGY

Cross sectional design was adopted in this study and a total of 1175 employees of Machakos County Government was the target population. The sample size was 118 or 10% of the population (Mugenda & Mugenda, 2003). The study adopted stratified proportionate random sampling in which departments of the County Government were used as strata. The study used questionnaire method to collect data from the respondents. Pilot study was conducted on select employees and results used to improve validity and reliability of the instrument. Tests for reliability returned Cronbach's alpha values of 0.7 and above for the three variables. Primary source was the main basis for obtaining data which was collected by research assistants using drop and pick method. Regression and correlation analysis in Statistical Package for Social Science (SPSS) Version 21 was used to analyze the data. Multiple linear regression model of the form: $Y = \beta_0 + \beta_i X_i + \varepsilon$ where Y =dependent variable (ICT uptake), X_i = independent variables, β_i = regression coefficients, β_0 = Constant, and ε = error term. Ethical considerations were adhered to during the study by obtaining a permit for research from National Commission for Science, Technology, and Innovation (NACOSTI). Consent was obtained from respondents and informed of their rights and that their names and personal details shall not be explicitly disclosed in the report.

RESULTS AND DISCUSSION

Demographic and preliminary analysis

At the end of the data collection, a total of 111 questionnaires were received representing an overall response rate of 94%. Sixty percent (60%) of the respondents were male implying that the responses were tilted towards male employees. The age group with most respondents was 26-35 years representing 36% of the total returned questionnaires. More than half (54%) of

them had university education, and analysis by duration in employment showed that 67% of the respondents were 4-5 years old in Machakos County Government.

Correlation analysis using Pearson's approach return a positive and significant but weak correlation ($r=0.318$, $p\leq 0.000$) between ICT uptake and Management Support. The analysis also show that ICT uptake was positively and significantly but weakly correlated with Government regulatory framework ($r=0.192$, $p\leq 0.027$). These positive and significant correlation results between ICT uptake and respective independent variables indicate that there could be a positive and significant relationship between ICT uptake and respective ICT factors under investigation.

Hypotheses Tests

The primary objective of this study was to establish the role of management in the uptake of ICT in Machakos County Government. Two hypotheses were formulated to guide the study. Regression techniques based on the model presented in the methodology were used as the basis for testing these hypotheses. Table 4.1 gives the results of these tests.

Table 4.1 - Overall model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.715 ^a	.511	.502	.4397694

a. Predictors: (Constant), Management support, Government policies

Table 4.2 - Regression coefficients

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.	
	B	Std. Error	Beta			
	(Constant)	1.472	.453		3.245	.002
	Management support	.180	.048	.318	3.748	.000
1	Regulatory framework	.124	.055	.192	2.241	.027

a. Dependent Variable: ICT uptake

Table 4.1 shows, the results for the overall model for the two hypotheses of the study. It indicates an R-Square of 0.511 which is significant ($F=7.76$, $p\leq 0.000$). This implies that the overall model may explain 51.1% of variations in ICT uptake in a way that one unit change in the two management factors causes 51.1% change. Tests for the individual variables are presented in Table 4.2. The tests are based on hypothesis Ho1 which predicted a positive effect of management support and ICT uptake, and hypothesis Ho2 which predicted a significant relationship between ICT uptake and regulatory framework.

From the Table, tests for hypothesis Ho2 which predicted that "there is a significant relationship between Management support and the integration and use of information and communication technology" indicate a regression coefficient of 0.180 and R-Square of 0.318. This means that whenever management support of the county government changes by one unit, this results in a significant 31.8% change in ICT uptake ($p\leq 0.000$). The Table also provides results for hypothesis Ho2 which said that "there is a significant relationship between regulatory framework and ICT Uptake." The results show a regression coefficient of 0.124, and

R-square of 0.192. These results imply that when government regulatory framework change by one unit, a corresponding positive and significant variation of 19% ($p \leq 0.027$) takes place in ICT uptake.

The results for the hypotheses tests imply that the empirical model for this study may take the form $Y = 0.472 + 0.318X_1 + 0.192X_2$ where Y =ICT uptake, X_1 =Management support, and X_2 =Government regulatory framework.

DISCUSSION

This overall objective of this study was to establish if selected management factors affect ICT Uptake in Machakos County. The study has established that there is a strong positive and significant relationship between the two variables ($R=0.511$, $p \leq 0.000$). This finding is consistent with Nzuki and Kyalo (2014). The study respectively found that management support, and government policies and regulation have some effect on ICT uptake.

The first objective aimed to determine if there is a relationship between management support and ICT Uptake. The findings indicate that management support and integration and use of ICT were positively and significantly related. This is in agreement with Schedler and Schmidt's (2004) findings which established that management of an administrative unit has a relevant influence on the development of e-government. The second and final objective of the study had sought to establish if government policies and ICT Uptake are positively related. This study found that there is a positive and significant relationship between the two variables. This finding finds support in Ndou (2004) who arrived at similar findings in their study.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study established that ICT uptake is affected by the both independent variables. Individually, the study established that whenever management support changes by one unit, a variation of 31.8% is experienced by ICT use and support. The study thus concludes that management support has an effect on ICT Uptake. Specifically, it is evident from the study that top management support and commitment play a crucial role in any initiation and adoption process of ICT related programmes. Management has great power to influence other members' behaviour within the organizations. Through long term strategic vision, top management can encourage the entire organization to learn and participate in ICT integration. Lastly, the study also found that whenever government regulatory framework change by one unit, a variation of 19.2% in ICT uptake happens as a result. The study thus concludes that government regulatory framework have a positive and significant effect on the ICT integration and use. Failure to make effective use technology manifests not necessarily due to lack of financial resources but also as a result of absence of coordination at different levels of the government. Duplication may result when different departments implement their own ICT projects without paying attention to compatibility with other departments.

Recommendations

The study recommends that management of Machakos County Government should encourage and support the use of ICT in all areas in the county government. Internet should be introduced where the county staff can access information at the click of the button. It is also important to motivate the staff otherwise the same staff will use ICT to frustrate and delay delivery of service. The management should also empower the ICT section through increased resource allocation, both human resource and funding. Finally, the study recommends for the development of favourable ICT policies and procedures. The county government should make

sure that the ICT policy is well known to all the employees and that policy guidelines are followed to ensure a smooth and successful ICT integration in the County government offices.

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