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Framework for Adoption of Cloud Computing in National Referral Hospitals in Kenya

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Abstract: **Cloud computing technology provides institutions improved access to information that will subsequently result in enhanced outcomes and increase savings on costs. There are also associated benefits like high flexibility, and scalability in coping with the high demand in the world. With cloud computing, it is now possible to get a share of offshore hardware, which is advanced in capabilities and features. The healthcare sector, just like other sectors, is getting services through cloud infrastructure and capabilities. The readily available resources when they are needed, are some of the benefits that come with the use of cloud computing. However, most institutions in Kenya have not adopted cloud computing, and thus, not achieved the envisioned benefits of cloud computing. The objective of this study was to determine framework for adoption of cloud computing in national referral hospitals in Kenya. The IBM Model of 2011 was used as a basis for the development of the framework. The study was carried out in Kenyatta National Hospital, and Moi Teaching and Referral Hospital. The research adopted a case study design that was quantitative in approach. The study had a target population of 3200 from the Moi Teaching and Referral Hospital, and 6000 from Kenyatta National Hospital. Moi Teaching and Referral Hospital, and Kenyatta National Hospital were taken as the two distinct stratum. Stratified random sampling then simple random sampling was used to obtain the respondents. A sample size of 368 was used. This sample size was proportionately divided to give Moi Teaching and Referral Hospital 129 respondents and Kenyatta National Hospital 239 respondents. A questionnaire that was both open-ended and closed-ended was used for collecting data. The data that was collected was cleaned, coded and analyzed with the aid of the Statistical Package for Social Science program. Both descriptive and inferential statistics was used to analyze the data. A response rate of 60% was achieved. Three factors were tested. These included management support, user preparedness, and technical support. Multiple regression results showed a significant positive effect of management support on adoption of cloud computing (β= .247, p<.05). Results indicated a positive significant effect of technical support on adoption of cloud computing (β=.333, *p*=<0.05). User preparedness was also found to have a significant positive effect on adoption of cloud computing (β= .455, p<0.05). Regression results gave a coefficient of determination R^2=.918 which means 91.8% of the variation in adoption of cloud computing can be explained by management support, technical support and user preparedness combined. It was therefore concluded that management support, technical support, and user preparedness are the critical factors that determine the adoption success of cloud computing in an organization. The research findings are useful to Kenya referral hospitals because it was used as major decision-making tools when assessing cloud computing adoption. In addition to this benefit, it will add to the knowledge in adoption of cloud computing in the health care sector. The output of the research was through the development and validation of a framework.**

Keywords: **Management Support, Technical Support, User Preparedness, Framework, Cloud Computing.**

1. INTRODUCTION

Cloud computing has come with many definitions. According to Wolf and Halter (2005), cloud computing is a technology where data and different applications are stored on servers which are located in a remote place and accessed by the users via the Internet. This technology of cloud computing allows businesses and consumers to get access to applications

without the need of installing them on their own on-site servers. It is an on-demand, self-service global network of networks technology which allows users to retrieve computing resources at any time at every place (Augusto *et al*., 2012). Cloud computing is an emerging technique and an example of this in the healthcare sector is the Microsoft healthful and Google health platform. Healthcare sector needs unchanged and consistent creativity and innovation so as to maintain cost effectiveness, efficiency and also for the provision of high quality services. One of the benefits of adopting cloud computing in the Kenyan referral hospitals is the fact that in the reduction or minimization of electronic health record startup costs or expenses like the system physical components, system programs or software, networking, the licensing fee and the personnel (Weinman, 2012).According to Augusto, Huch, and Kameas (2012), cloud computing has primarily improved the computing environment of several organizations and hence increased efficiency. The way information and data are stored in organization has also changed. The cloud computing brought about cloud storage. According to Carey and Lloyd (2009), cloud computing is one of the fastest growing technologies that has seen wide adoption because of the effectiveness in cost. Cloud computing has become a widely accepted technology that is used to have an edge over the competition for most organisations. Also, there are other benefits that are associated with cloud computing, which include reduced setup costs, reduced operational costs, improved service delivery, and streamlined operations. For an organisation to achieve these benefits, they have to understand how to successfully implemenmt cloud computing.

Cloud computing in Kenya is still new. There is a lot of activity in the ministry of information communications and technology concerning the adoption of Internet applications that will make use of cloud computing technologies. Many industries in Kenya have been seen to rush to roll out cloud computing technologies in their processes. Although this is the case, there is no framework that has been developed that will act as a guide (Carey & Lloyd, 2009). It has the potential to support Internet applications that are used to manage the patient records and data. Cloud computing proves to be an option to be used in hospitals in Kenya. Physicians and other providers in Kenya hospitals lack efficient and reliable means of managing patient data, having good communication and collaboration with their colleagues who are within or without their health care facilities, and access and update the records of patients from any place is quite hard. This research will address success factors that are required for successful implementation of cloud computing in hospitals in Kenya (Carey & Lloyd, 2009).

Kenya referral hospitals have started adopting the latest technologies in their infrastructures. They are using technologies like cloud computing to gain competitive edge over the competition and improving the efficiency in their daily operations. Some hospitals in Kenya have managed to implement the technology while some are still struggling. Most of the county referral hospitals are still struggling to implement the cloud computing (Transparency International, 2011). Aga Khan Hospital, a private hospital, has implemented cloud computing successfully. Aga Khan has adopted PaaS from Microsoft.

Statement of the Problem:

According to Cloud computing World Forum Africa (2012), 55 percent of cloud computing implementation fail. There are factors that influence the success and challenges of cloud computing implementation. The factors vary from one sector to another (Cloud computing World Forum Africa, 2012). Although there are benefits that are achieved with the adoption of cloud computing in organizations, there are still many challenges that are faced by Kenyan national referral hospitals. Although there are some referral hospitals which have implemented the technology successfully, some have partially implemented, while others are still struggling to implement (Government of the Republic of Kenya, 2014). It raises the questions as to what is needed in order to successfully implement cloud computing. Although there are critical success factors which have been researched before, the factors do not fit referral hospitals in developing countries like Kenya (Government of the Republic of Kenya, 2014). Factors like compatibility, existing information systems policies, and the security level required within an organization, although relevant, do not count as much in the adoption of cloud computing in Kenya national referral hospitals.

The process of moving from legacy IT systems to virtual environments is complicated, and takes a lot of time. In addition, the move to a cloud computing environment is prone with security failures and lack of good will from management. There is a need to have a framework that was used in adopting cloud computing in referral hospitals. The reasons for disparity in the success of implementation in referral hospitals found in developing countries like Kenya has called for further inquiry into it. There is no framework that has been developed to help in implementing cloud computing in Kenya referral hospitals. There are no success factors to be followed in adopting cloud computing in Kenya referral hospitals.

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2. THEORETICAL FRAMEWORK

The process of implementing cloud computing framework in any organization will require that many factors be considered. There are many frameworks which have been proposed by many researchers regarding the adoption of cloud computing. A theoretical framework is a collection of theories and models that are used in undertaking a research. This is a logical development of variables which are considered to be relevant to the problem that is being investigated and have been verified through research processes like literature survey, interviews and observations. The literature review that was used in this research has been adopted from various researches and from existing literature.

The framework for this research is based on a model developed by IBM (2011) comprising of: (1) organizational environments, including top management support, re-engineering business process, effective project management, change management strategy, and institution-wide commitment; (2) people factors, including education and training, employee's attitude, project team and user involvement both at system requirements definition and cloud computing implementation; (3) technical problems, including suitability of software and hardware, IT maturity and data accuracy; (4) Cloud computing vendor commitment, including vendor support, vendor tools and vendor and client partnerships; and (5) Cultural impact including organizational cultures and computer culture. These models are chosen because they offer possibility to group complex issues of investigation together in a more manageable research overview for the researcher. Additionally, they seem the most complete models.

3. LITERATURE REVIEW

Cloud computing is a relatively developing technology that holds much potential in supporting Internet applications and programs that are critical to the health care sector. Physicians and other health care providers are faced by the problem of coming up with an effective and efficient method of maintaining patients' health records, collaborating with their colleagues, within or without their hospitals, access and maintain patient's health records from any place in the world. However, the scalability, adaptability, resilience, cost effectiveness, and connectivity of the double integration cloud system provide a viable technique of improving the quality and efficiency of health care provision (Sridhar, 2009). Before the adoption of the cloud system, however, it is advisable for one to familiarize with the privacy and security concerns of the technology (European Federation for Medical Informatics, 2011).

The extent in which cloud computing has been adopted in Kenya referral hospital has not been defined. This is the missing concept that this study will focus on. As much as there are benefits that was achieved with the adoption of this technology, there is need to understand the extent in which it has been adopted in Kenya referral hospitals.

Many industries have been in the rush to roll out cloud-based applications in the recent past. However, the healthcare industry has been sluggish at fully adopting these cloud-based solutions. While some reasons given for the hesitancy are genuine privacy violation concerns and the need to secure patient's private health data in harmony with the Health Insurance Portability and Accountability Act (HIPAA) regulations, the slow adoption and implementation of cloud-based solutions in this industry can generally be attributed to the laxity in embracing technology (Carey & Lloyd, 2009).

One of the factors which facilitate the adoption of cloud computing in the Kenyan referral hospitals is the fact that everyone nowadays is surrounded by information technology and is starting to embrace it. There are various cloud computing trainings given to students together with certifications which promise that there would be success in the adoption of the latter. The training provides the students who learn medicine with the vital skills, knowledge and expertise in the rampant growing area of cloud computing, therefore making them to be conversant with the practices (Government of the Republic of Kenya, 2007).

The kinds of trainings offered to students are very comprehensive and cover a large number of topics including the basic concepts of cloud computing, management and identification of security, the critical success factors, advanced technologies, the deployment of the cloud, service management in the cloud, best practices as well as privacy and other uncertainties and the adoption and management schedule and the continuity of business (Park, 2012). It is through the certifications that people get motivated in adopting the technology of cloud computing since it addresses the demand from the businesses and the industry for persons who understand, assess, evaluate and implement cloud computing answers (Carey & Lloyd, 2009).

Leadership is another factor which leads to the successful adoption of cloud computing in the Kenyan referral hospitals. It is the ability to influence people and the leaders are the ones who initiate change in the firms. The leadership in the Kenyan referral hospitals is nowadays have embraced change and among the issues which are implemented by the leaders given that this is a technology world is the adoption of cloud computing (Carey & Lloyd, 2009).

The hospital managements in Kenya have understood the importance of cloud computing. In the adoption process to be successful, understanding is the greatest ingredient. There are also factors which have to be observed which include the following: relative advantage over the already existing solutions, compatible with the existing staff members and workers, processes, providers and technologies, the complexities of the hospital managements, usage and the ability to learn (Transparency International, 2011). Trialability which is also another factor which is the ability to use and test cloud computing and lastly, observability which indicates the outcomes which are observable to the primary stakeholders (Park, 2012). Cloud computing can be used publicly by users and hence it is cannot take long to be adopted by many users in the country. Using cloud computing is very secure and that's why the Kenyan referral hospitals trust in using it since it guarantees proper security for the facts and figures stored in the applications. The ability to integrate the public and private clouds makes it also easier for adoption of this type of computing in the country (Nir, 2009).

The expandability or scalability of the cloud is another crucial which lead to the adoption of the cloud. The hospital managements have found out that with the adoption and implementation of cloud computing, there will not be any necessity to buy or purchase any expensive software or programs or even hiring special professional skilled persons to use the technology within the hospitals (Transparency International, 2011).

The services provided by the cloud are quality and up to date and that is what has steered the hospitals towards the adoption of the technology. There are sufficient resources to be used in the staffing or recruiting of very high skilled professionals who will work and ensure proper maintenance, security and quality of the facts and figures in the hospitals (Sridhar, 2009). Another very critical factor that leads to the adoption of cloud computing in the Kenyan referral hospitals is the availability of its services throughout the day that is twenty four hours for a full week. This helps in keeping the patients lively as they wait to be attended to by their respective physicians (Sridhar, 2009).

Cloud computing allows users to keep their documents and files safely in a remote area other than having to purchase hard drives or installation of server in the hospital offices. Skype which is a cloud computing tool is very essential in the Kenyan referral hospitals where it is used when the physicians are away from their patients. They can give instructions through messages; they can also examine their patients through the use of cameras which enable the linking of one user and another via Google+ and also video chats which are available with the Gmail account users (Nir, 2009). The flexibility given by cloud computing is a factor that has recently initiated its adoption by the Kenyan referral hospitals. The hospital staff can be able to access their files whenever they need to at any time and location without restriction. The can also gain access to the facts and figures when the feel like even when they are working from their remote areas or outside their respective offices. Due to this factor, hospital managements have embraced the technology so that they can be able to have their patients attended to at all times, unlike when it had not been adopted. The fact that cloud computing is quick has also made it successful in its adoption in the Kenyan referral hospitals. It is very easy to setup a Gmail or Hotmail account and to use it in emailing. All that is needed or required is only the system and internet connectivity which are the very available resources within the Kenyan referral hospitals (Cloud computing World Forum Africa, 2012). There is no measurement that has been taken to gauge the real extent to which cloud computing has been adopted in referral hospitals in Kenya. The literature available focuses on the parameters that are to be considered in the adoption. This is the gap that the study will strive to seal. The researcher will measure the extent of cloud computing adoption in referral hospitals.

The concepts of the factors that need to be considered when adopting cloud computing has not been dealt with conclusively. The factors that have been suggested are general and no factors have been researched for referral hospital.

Hence the study formulated the following hypotheses:

Hypotheses:

H_{01} : Management support does not significantly affect cloud computing adoption

H_{02} : Technical support does not significantly affect cloud computing adoption

H_{03}: User preparedness does not significantly affect cloud computing adoption

4. METHODOLOGY

The research was based upon the philosophical and methodological foundations of logical positivism. A logical positivist researcher deduces and formulates variables, hypotheses and operationalizes definitions based on existing theory (Durgee, 1984). Contemporary social science research is dominated by logical positivism (Anderson, 1983; Hunt, 1991). The research adopted a case study design that was quantitative in nature. According to Robinson (1993) a case study design is the development of a detailed and intensive knowledge about one case, or a small number of cases which are related to one another.

Target population was 3200 and 6000 employees of Moi Teaching and Referral Hospital, and Kenyatta National Hospital respectively. The respondents included heads of IT department and IT managers (representing institution management), project managers, system administrators, technical staff and users as they are identified as the most appropriate informants for this study. The sample size of this study was based on Krejcie, *et al*. (1998), statistical table for determining sample size from a population. From the target population of 9200, a sample size of 368 was obtained. Stratified random sampling method will be used so as to obtain a true representation of the population that is heterogeneous from the two strata of KNH and MTRH. This often improves the representativeness of the sample by reducing sampling error (Tabachnick and Fidel, 2010). After using the stratified random sampling simple random sampling will be used to proportionately obtain the respondents from each stratum.

Questionnaires were employed in primary data collection. The items in the questionnaire (Appendix B were closed-ended. They were all be based on a five-point likert scale and the respondents were required to indicate their level of agreement with the items using the key: 1: Strongly Disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly Agree. The likert scale was used so that the researchers obtained interval scale data that is amenable to parametric statistics. The pilot tests were carried out in Machakos county referral hospital using 10% of the sample which is 0.1 x 368 =37 as recommended by Cooper and Schindler (2010).

5. RESULTS

The respondents were required to provide information about their gender, age, and Education. The gender distribution of the survey respondents was 59. 9% male and 40.1% female. The age distribution was 4.1% less than 20 years, 32.0% were in the age bracket 21-30, 19.8% age bracket 31-40, 23.9% age bracket 41-50, and 20.3% were above 50 years old. Thus majority were in the age bracket 21-30. This can be attributed to the fact that this age bracket is youthful and not averse to technology and thus were eager to fill the tool that addressed an ICT aspect. For the educational level results indicated that 8.1% had masters, 36. 5% had degree level, 47.7% had diploma level and 7.7% had Certificate level.

When asked about their role in the cloud computing system implementation, 7.7% indicated they were project managers, 4.1% were developers, 8.1% were system administrators, 4.1% network administrators, 4.1% support/technician were, while a majority, 72.1%, were users. The study sought to determine which cloud computing infrastructure the respondents were you familiar with i.e. have used or interacted with. 27.9% were familiar with software-as-a-service, 40.1% with platform-as-a-service, and 32.0% have used infrastructure-as-a-service.

Descriptive statistics of means, standard errors, and standard deviation were obtained for the variables adoption of cloud computing, management support, technical support, and user preparedness. Adoption of cloud computing was measured using 10 question items on a five -point likert scale. The mean value for this variable was 2.8563 with SD=1.22243. This meant that the level of Adoption of cloud computing is above average on a five point likert scale. For management support, it was measured using 10 question items on a five -point likert scale and mean was 2.6437 with SD= .99343. This meant management support was average on a five point likert scale. Considering technical support, it was measured using 11 question items on a five -point likert scale mean value for this variable was 2.8563 with SD=1.22243. This meant that the level of technical support computing was above average on a five point likert scale. For user preparedness, it was measured using 8 question items on a five -point likert scale mean value for this variable was 2.8699 with SD=1.46660. This meant that the level of user preparedness was above average on a five point likert scale. The results are presented in Table 1.

Both kurtosis and skewnness were used to determine the normality of the data distribution for the variable under study. The skewnness statistic and kurtosis statistic obtained for the variables of interest in this study were in the range -.345 to

.594 for skewnness and -.910 to .930 for kurtosis. According to Hair *et al*, (2010) the requisite range for normally distributed data is between -1.00 and +1.00. All the values of skewnness and kurtosis fell in the range -1.00 and +1.00 and it was concluded that the distribution of data for the variables was normal.

Multicollinearity was assessed using Variance Inflation Factors (VIF). A threshold of Variance inflation factor of 10 is suggested Kleinbaum *et al.*, (1988). The variance inflation factor values for adoption of cloud computing, management support, technical support, and user preparedness are in the range of 1.957-2.817 and are less than the set threshold which indicate that multicollinearity was not an issue. The results are presented in Table 2.

Correlation analysis was done to determine relationships between the study variables. Pearson product moment correlation coefficient was used. This test was done as a precursor to regression analysis so as to determine whether the variables were linearly related. The results as presented in Table 3 show a significant positive correlation between adoption of cloud computing and management support (r = .777, p=0.000). For between adaption of cloud computing and technical support, there was a positive significant correlation (r = .849, p=0.000). It was also established that there was a strong positive correlation between adaption of cloud computing and user preparedness (r =.890, p=0.000) that was statistically significant at 95% confidence level. The results of the correlation analysis are presented in Table 3. Hypotheses set were tested using multiple regression method and the model set constructed.

Hypothesis 1(H_{01}) stated that management support does not significantly affect cloud computing adoption. The results (β= .247, p<.05) suggested that management support has a positive significant effect on cloud computing adoption. Hence hypothesis H_{01} was not supported. The results suggest that as the level of management support increases, so does the level of cloud computing adoption. These results support the assertion by Low, Chen, and Wu (2011) that top management support plays a significant role as it involves the provision of resources, simulation of services and re-engineering of procedures. The needed resources for its adoption will probably be allotted by top management after acknowledging the advantages of cloud computing and encourage the organizational members to execute the change. The management will be against its acceptance when they miss the mark in deriving the advantages of cloud computing to their business. Thus the degree of support provided by the higher management in adopting cloud computing for business use is referred as top management support.

Quinn (2012) contended that there exist two diverse grounds for mitigating the beneficial relationship between top management backing and cloud computing. The abundant disbursement of organizational resources (e.g., financial, technical, and human) for the perfect acceptance and execution of adopting cloud computing can be initially assured by powerful top management backing. Secondly, top management can offer lasting vision, suggestions, backing, and the responsibility to produce a favorable environment for the cloud computing to reduce organizational conflicts on adopting cloud computing. Hence, it is very possible that organizations with a firmer top management support for cloud computing would most probably accept such systems.

Hypothesis 2 (H_{02}) predicted that technical support does not significantly affect cloud computing adoption. The results indicated that technical support has a significant positive effect on cloud computing adoption (β=.333, p=<0.05). Hence hypothesis H_{02} was not supported. The results suggest that as the level of technical support increases, so does the level of cloud computing adoption. These findings are in consonant with Toh and Ngai (2006) who argued that adoption of cloud computing is technology is impacted by the technological readiness of organizations, which are technology infrastructure, and IT human resources. Implemented network technologies and enterprise systems, which offer a platform on which the cloud computing applications can be built is referred by technological infrastructure.

Hypothesis 3 (H_{03}) stated that user preparedness does not have significant effect cloud computing adoption. The results found that there exists a positive significant effect of user preparedness on cloud computing adoption (β= .455, p<0.05). The results rejected the hypothesis $H_{03.}$ The finding suggests that higher user preparedness leads to higher cloud computing adoption. Bayo and Lera (2010) corroborate these findings by arguing that the execution of cloud-computing-associated IT applications is provided with the knowledge and experiences of IT human resources. Only if users have the necessary infrastructure and technical efficiency, cloud computing services can become part of value chain activities. Hence, users that have technological readiness are more ready for the acceptance of cloud computing. The Regression Results are Presented in Table 4. The coefficient of determination for the multiple regression results was R^2=.918. Thus 91.8% of the variation in adoption of cloud computing can be explained by management support, technical support, and

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user preparedness combined. ANOVA results based on the F-test (F= 810. 510, *p=000*) showed that the multiple regression model was robust enough to explain the adoption of cloud computing using management support, technical support, and user preparedness as the critical success factors.

From the regression analysis the following model was constructed to explain the effect of individual factor on the adoption of cloud computing.

ACC=-.041+.247MS +.333TS+.455UP

Where:

ACC: Adoption of Cloud Computing

MS: Management Support

TS: Technical Support

UP: user preparedness

Framework for Adoption of Cloud computing:

The study found that management support, user preparedness, and technical support are critical for the success of implementation of cloud computing in the Kenyan national referral hospitals. Hence based on the study findings the following framework, as captured in figure 1, was obtained for the implementation of cloud computing.

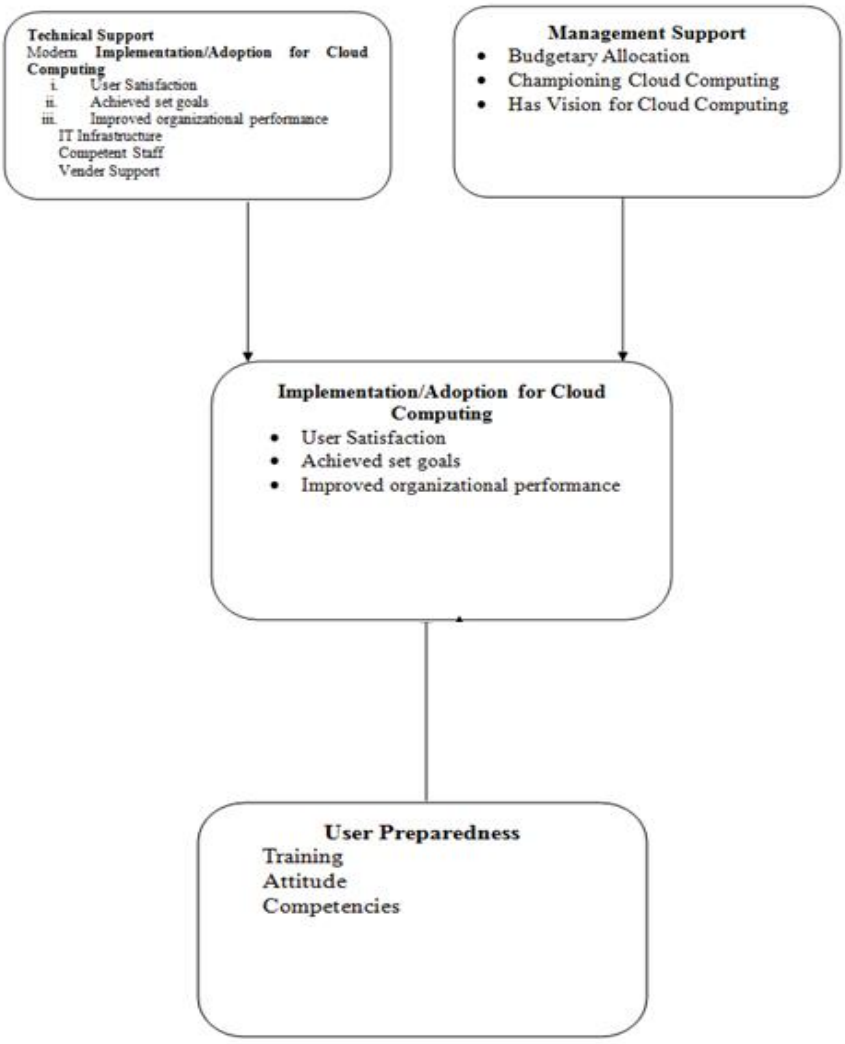

Figure 1: Cloud Computing Adoption Framework

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6. DISCUSSION OF THE FRAMEWORK

The framework in figure 4.1 obtained from the findings of this study does indicate that there are three factors that are cardinal for the success of adoption of cloud computing in an organization. The independent variables are management support, technical support and user preparedness. This three critical success factors do have a great bearing on the level of adoption of cloud computing in an institution. Thus adoption of cloud computing depends on management support, technical support and user preparedness for its success.

Considering management support, this is part of the organizational and operational factors. The level of support that the management and especially top management gives to the cloud computing project in an organization impacts on the success of the project. With respect to management support, cloud computing is a capital intensive project. This in effect means that it requires the blessing of the management for its success. The management will have to put in place deliberate measures to ensure that the cloud computing adoption or implementation comes to fruition.

Further, technical support is of the essence in adoption of cloud computing in an institution. Cloud computing is a technical area that needs specialized attention for its success. There is need to build a cross-functional project team that incorporates business and technical experts essential for the success of cloud computing adoption. Support from user departments is critical since there is need for communication and cooperation between different departments in an organization. This will allow the smooth flow of the requisite information and expertise among the departments.

Lastly, user preparedness is key to the success of adoption of cloud computing. This is one of the people factors that deals with equipping the staff users of cloud computing with the necessary knowledge, skills and attitudes in readiness for adoption of cloud computing. This will improve the competency of the system users and thus the success of cloud computing in the organization. The usability of cloud computing technology is a function of the level of preparedness of the eventual users.

According to Yin (1994), validity of the framework deals with the relevance and meaningfulness. Pederson *et al. (*2000) suggests that results should be evaluated with respect to five aspects: Internal logic, truth, acceptance, applicability, and novelty value. Internal logic evaluates the condition that the reslts are based on known and accepted theories, and that there is connection between the starting point, the hypotheses or research questions, and the results. This refers to an assessment regarding the ability of the theoretical and practical results to be used in order to explain the real phenomenon.

The validation of the research findings and hence the proposed cloud computing adoption framework was done through two methods. Firstly the methods used to collect the data were validated. For this research the tool used to collect data was piloted and the results of the pilot study confirmed the validity of the questionnaire. The questionnaire was close ended and on a five point likert scale that yielded quantitative data. The data was used to obtain an econometric model that captured the relationship between the critical success factors of management support, technical support, and user preparedness. It is on the basis of the model that the proposed framework was constructed.

Secondly, the researcher enlisted the consultancy services of the supervisors and ICT experts who were given the framework and their comments were used to fine tune the framework further. The Experts and supervisors considered the appropriateness critical success factors of management support, technical support, and user preparedness on cloud computing adoption.

7. CONCLUSION

This study successfully extended knowledge by studying and testing whether management support, technical support, and user preparedness affected adoption of cloud computing. Many innovative organisations have found that cloud computing adoption is providing them with the flexibility to take control of their innovation processes while streamlining other business processes, and controlling cost. It is in management's interest to evaluate the critical success factors for the adoption of cloud computing. This study has demonstrated that management support, technical support, and user preparedness go a long way in ensuring that the adoption of cloud computing is a success. Providers of cloud system services require suitable platforms for developing and installing their applications. They are facing the challenge of integrating technology-oriented system with business processes and this can be overcome by considering management support, technical support, and user preparedness as the remedy for the challenges. Based on the findings of this study and

analysis of relevant studies, critical success factors for adopting cloud computing were analyses. Therefore, it can be useful for the organizational decision maker to evaluate adoption of cloud computing against the prism of the critical success factors of considering management support, technical support, and user preparedness in their enterprises.

In conclusion, the findings of this study have important implications for academic, management practice and human resources. As scholarly inquiries into the notion of critical success factors for the adoption of cloud computing has remained conceptual to date, this research is one of the attempts to test the concepts in an empirical setting. The managers will find useful implications that are relevant and can be used to endorse the validity of incorporating management support, technical support, and user preparedness in order to enhance the successful implementation of cloud computing.

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APPENDIX – A

List of Tables:

Table 1: Descriptive Statistics

Variab4e	Minimum	Maximum	Mean		Std. Devi
	Statistic	Statistic	Statistic	SE	Statistic
Management Support	1.10	4.30	2.6437	.06667	.99343
Technical Support	1.36	3.82	2.8199	.08008	1.19313
User Preparedness	1.13	3.50	2.8699	.09843	1.46660
Adaption of Cloud Computing	1.30	7.50	2.8563	.08204	1.22243

Table 2: Collinearity Statistic for variables

		Collinearity Statistics	
		Tolerance	VIF
	Management Support	.419	2.386
	Technical Support	.355	2.817
	User Preparedness	.511	1.957

Source: Survey Data (2015), N=222

Table 3: Correlation Matrix (N=222)

	1	2	3	4
1. Adaption of Cloud Computing	1			
2. Management Support	.777**	1		
3. Technical Support	.849**	.751**	1	
4. User Preparedness	.890**	.610**	.684**	1

Source: Survey Data (2015), N=222

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

Table 4: Regression Results

	Unstd Coefficients		Std Coeff.	t	Sig.	Collinearity	
	B	Std. Error	Beta			Tol.	VIF
Constant	-.041	.069		3.591	.000		
Management Support	.247	.037	.200	6.677	.000	.419	2.386
Technical Support	.333	.033	.325	9.981	.000	.355	2.817
User Preparedness	.455	.023	.545	20.071	.000	.511	1.957

Source: Survey Data (2015), N=222

*Values of unstandardized registration coefficients, with standard errors in parenthesis while *p <0.05 indicates the value is significant at 95%.*