

The Adoption Of Information And Communication Technology In The Public Sector; A Study Of The Financial Management In The Ghana Education Service (GES)

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Abstract: The adoption and utilization of Information and Communication Technology (ICT) in financial management is gradually becoming a major requirement for improvement in the allocation efficiency and effectiveness of service delivery and productivity and in accessing funds from donor partners in the educational sector. This study therefore assesses the level adoption of ICT for financial management by the Ghana Education Service (GES) using the Technology Acceptance Model (TAM) as the research framework. Data was collected from a sample population of 60 officers from finance units under GES and analyzed using descriptive statistics. The findings include low level of adoption of ICT in Financial Management and identified major hindrances to ICT adoption which includes low level of ICT literacy, inadequate and obsolete equipment as well as cost of investment in ICT. Among the recommendations made are the need for the provisioning reliable ICT infrastructure and enforceable ICT Utilization policies by public sector organization.

Index Terms: Information and Communication Technology (ICT), Adoption, Financial Management, Technology Adoption Model (TAM), E-government, Ghana Education Service (GES)

1 Introduction

The innovations in information processing, telecommunications and related technologies, known collectively as information and communication technology (ICT) is having profound impact public as well as organizations by easing enquiry, saving time, and improving service delivery (Yasuharu, 2003)). It is therefore imperative for government institutions in the developing countries to adopt ICT to streamline their operations, improve competitiveness and increase the variety and quality of services provided (Alu, 2002). The percentage of GDP spent on education in Ghana has increased from 5.8% to 8.2% in 2011 (<http://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS>). With Ghana Education Service managing the pre-university education in Ghana, a large chunk of this resource is entrusted to the it. In the Ghana Education Service (GES) the preparation and submission of financial reports follows a bottom-up approach where the educational institutions and units submit prepare and submit to the district offices. These reports are then consolidated into district reports which are then forwarded to regional education offices for a consolidation into regional financial reports for onward submission to the head office (Director-General's Annual Report To Ges Council, 2011)). With the manual preparation and submission of financial reports, unmet deadlines are due to the delays along the value points in the flow of information. These delays often draw queries from GES Headquarters and affect the flow of financial information to the Ministry of Finance contributing to the slow release of funds to the district and regional directorates of education by the Ministry of Finance through Ghana Education Service (Anokye, 2011)). The diffusion of ICT in public sector organizations has contributed to a new dimension of complexity through the ability to store, process data and retrieve a vast amount of data both processed and unprocessed at high speed (Agboola, 2009)and for the Ghana Education Service the adoption of ICT would have widespread effect on educational, technical

and social policies (Sarfo, 2007)With increasing funding of education by the government, donors, NGOs and other stakeholders, the demand for timely and accurate financial reports is ever increasing (Bawumia, 2007)making the adoption and utilization of ICT in the preparation and submission of financial returns are long overdue (Boad, Dave, Andrew, & Simon, 2008) This study therefore assesses the adoption of ICT in the preparation and submission of financial returns in the Ghana Education Service by identifying the current challenges faced by finance officers in the units, district and regional offices in the preparation and submission of financial reports, and by examining the perception of ICT as a solution to the problem identified and recommend steps to improve the adoption and utilization of ICT in public sector organizations in developing countries such as Ghana.

2 Literature Review

Information and Communication and Technology (ICT) comprises computing and allied equipment (Wilson, 1992)and communications infrastructure which together facilitate the gathering and processing of data and subsequent storing and distributing and communicating information (Evans, 1990) . In other words ICT is a collection of hardware and software used in the collection, storage, processing, dissemination and use of information (Agboola, 2009) . Indeed, Information and Communications Technology (ICT) has become a catchword with different interpretations and viewpoints even among experts (Osterwalder, 2003). The rapid advances in technology drastically changed the traditional ways in which information was processed, communications conducted, and services made available (Sarfo, 2007). With respect to financial management, ICT combines accounting principles and concepts with the benefits of an information system which is used to analyse and record business transactions, prepare financial statements and provide accounting data for the intended users (Sloan, 2001).

2.1 The Use of ICT in Financial Management

Financial management is considered as the activities involved in obtaining and affectively utilizing the funds for the efficient functioning of an organization. These activities include financial planning, financial administration and financial control (Paramasivan & Subramanian, 2010). Information and Communications Technology (ICT) has emerged as a dynamic field in financial management today. In this fast-changing world, advanced computers and contemporary software allows people to use computer-based information systems effectively (O'Brien, 1993)(O'Brien, 2003). ICT has changed the way finance officers work. Technological advances in hardware and software have taken users of accounting information systems from the mainframe environment to mini and desktop computers and have become critical and integrated part of modern financial management system (Mensah & Marfo, 2009). While ICT has become the lens through which most vital accounting situations are viewed, there is evidence of accounting information systems being manual with accounting records are made with a pen, pencil and paper into accounting books (Mensah & Marfo, 2009). Modern day finance managers are expected to understand, use, evaluate and in some cases, design computer-based accounting systems. These require the accountant to be up-to-date with the dynamics of information technology (Alu, 2002). ICT facilitates the maintenance of continuous historical record, showing the results of past plans and activities for evaluation and modification. With the technological system of every organization being a reflection of its structure and needs, ICT-enabled financial management system is sometimes said to be a model of that organization (Winchara, 2010). The objective of ICT-enabled financial management is to monitor the monetary dimension of economic activity of an organization by processing data according to known rules and delivering precise information that is useful to those who plan and manage the organization's activities as well as to interested partners (Laudon & Laudon, 2009). One of the greatest usages of technology in organization is the ability of managers to access and communicate information on both local and wide area networks. Thus the organization's personnel and customers all over the world have become almost instantly accessible at the touch of a few buttons of keys (Evans, 1990). ICT has also made possible a new approach to the management of records and information systems. The electronic file, whether stored on disk or within the hard disk inside the computer, is replacing many paper-based systems of record-keeping. Hardly has a single office-based occupation been unaffected by the onward sweep of ICT applications. Accounts clerks now use accounting and financial applications more often than they used to employ electronic calculators (Evans, 1990).

2.2 Factors influencing ICT Adoption in Financial Management

Successful investment in technology can lead to enhanced productivity, while failed systems could lead to undesirable consequences such as financial losses and dissatisfaction among employees. Despite significant technological advances and increasing organizational investment in these technologies, the problem of underutilized systems plagues public sector organizations (Boad, Dave, Andrew, & Simon,

2008). Among the factors influencing the adoption and use of ICT in organizations are availability of skills in the organization and the adaptability of the human capital. It is postulated that organization with people who attained secondary schooling or higher educations are more adaptable than otherwise (Coleman, 2000). The importance of education to technology adoption is demonstrated in a number of studies which has produced evidence for skill bias in technological development (Montealegre, 1999). Education can matter in at least two ways. For one, better educated workers may have a comparative advantage with respect to learning and implementing new technologies. For another, technologies invented in advanced countries tend to be skill-complementary by design (Pohjola, 2003). Besides educational levels and adaptability, the adoption of ICT is also influenced by the industrial structure and exposure to new ideas and technologies. The exposure of the services sector to the benefits of ICT adoption has contributed to the sector accounting for more than half of all investments in information and communications technology in the most advanced economies (Gordon, 2000). The developments of accounting information system have provided opportunities for customization of financial reports to meet the needs of users-finance officers, directors, NGOs and development partners (Sloan, 2001). Indeed, the deployment of computerized accounting systems has become a major requirement for obtaining financial assistance from Ghana's development partners such that organizations that are not ICT-friendly are much less capable of getting any meaningful support from those development partners (Winchara, 2010). The GES has over the years, failed to access funds from such development partners largely because of its inability to adopt ICT in its operations (Director-General's Annual Report To Ges Council, 2011). Institutions are adopting and adapting ICT to make their accounting activities easier, quicker, and more accurate, since accounting records are analysed and financial statements are prepared within the system, which allows to save time of employees and avoid mistakes. Since many accounting information systems are equipped with error-reducing mechanisms and gather information regarding transactions electronically and automatically, data entry and computing errors are rare (Butch & Delong, 2001). ICT deployment facilitates substantial advantages as outlined by (Christiaens, Reyniers, & Rollé, 2010) which drives ICT adoption for financial management is;

- i. Substantial savings on salaries due to fewer staff requirement. Relatively cheap of the new technology when compare for instance the salary plus benefits for a secretary.
- ii. Substantial failing on overheads dare to reduction in office space required as disk storage replaces filing cabinets.
- iii. Speed and accuracy of obtaining, processing, storing and retrieving information to aid decision making
- iv. Improved communication between individual executives and their officers.

Cost and source of funding also influence the adoption of ICT for financial management in the public sector. Cost and source of funds for initial set up as this can be very

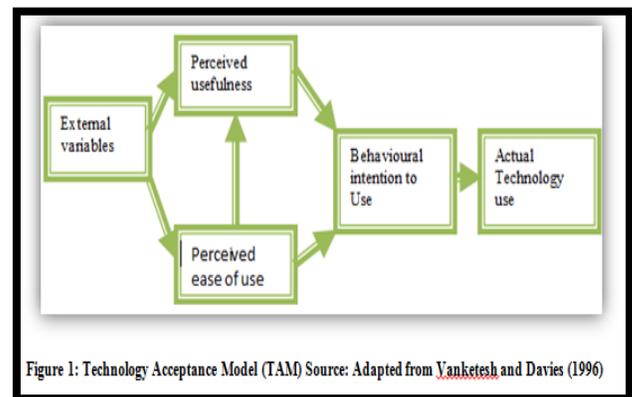
expensive. Again there is loss of time and disruption caused by transferring from manual to electronic system. Furthermore, software available may not necessarily meet operational expectations of the establishment and may require a customized one. All these processes may be cumbersome and time-consuming and can negatively influence an institution to adopt ICT (Evans, 1990).

2.3 ICT Utilization in the financial Management of the Ghana Education Service (GES)

Sub-Saharan Africa remains in a state of a quandary as to how best to participate in the global information age. For a region that lags behind the world in most aspects of development, the age of technology presents new challenges (Winchara, 2010). Since the region does not contain adequate technological infrastructure nor went through the requisite technology learning curve, it risks falling even further behind if the right strategies for catching up with the rest of the world are not pursued (UN-DESA, 2012) (ITU, Measuring the Information Society, 2012). The Ghana Education Service (GES) mandated with the implementation and the co-ordination of the national education policy on pre-tertiary education. This makes it responsible for Basic and Second-cycle education, a critical stage of education for young learners (Director-General's Annual Report To Ges Council, 2011). The Service is to ensure universal access to quality formal education and training for all Ghanaian children of school-going age. This could only be achieved through the effective management of resources and supervision of the teaching and learning process in all schools and institutions of learning under the Service (Biney, 2012). There is a general opinion that any meaningful transfer and adoption of technology, with a focus on improving human development across Sub-Saharan Africa, remains problematic and with unfulfilled dreams. This notwithstanding, a few African countries are making headways in the adoption of ICT (ITU, Measuring the Information Society, 2012) (ITU, Measuring Information Society 2013, 2013) The Ghana Education Service (GES) over the years have made some effort to adopt ICT in its financial management with the training of its Accounts Officers on the use of computers to process financial information in late 1990. It was during the late 1990 that the donors who rolled out the DFID intervention made the then District, Municipal and Metropolitan Accountants undergo about one month computer training. This was a system worth sustaining by GES but was made to die after existing staff have gone through the training. After this programme GES again introduced ARKPACK software. This computer programme was very useful in the preparation of monthly transaction trial balance. However, following lack of funding, the programme eventually fizzled out (Education Strategic Plan 2003 to 2015; Policies, Trgets and Strategies, 2003). Given the adoption of the ICT4AD policy in 2003, E-government is gaining momentum with a number of government institutions have initiating strategies to diffuse ICT in their operations (<http://www.nita.gov.gh/eGhana-Project>). There is on-going deployment of Internet infrastructure across the country to facilitate the institutionalization of e-government. There has also been institutional, regulatory and legal framework such as the Electronic Transaction Act put in place effective diffusion of E-government in Ghana (Bediako, 2012).

2.4 Theoretical Framework: Technology Acceptance Model (TAM)

Institutional effort is important in the diffusion of ICT, however, the acceptance and use of these technologies by individuals within the organization is essential for its institutionalization (Zucker, 1987). A number of theoretical models have been used to explain user acceptance and usage behaviour of information and communication technologies in various scenarios. One of the most widely used theoretical models is the Technology Acceptance Model (TAM) (Davis, 1989) (Huynh & Yaling, 2013). The technology acceptance model is often used to present the causal relationships between external variables, perceived usefulness, perceived ease of use, attitude toward using and actual usage behaviour. TAM is thus an informative representation of the mechanisms by which design choices and other exogenous factors influence user acceptance and usage behaviour. TAM could therefore be applied in the contexts of forecasting and evaluating user acceptance of information and communication technology. TAM is an adaptation of the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980) with a prediction that perceived ease of use and perceived usefulness determines individuals' behavioural intention to use a technology (Taylor & Todd, 1995). TAM further predicts that the effect of external variables such as system design characteristics on intention is mediated by the key beliefs of perceived ease of use and perceived usefulness. TAM has received extensive empirical support through validations, applications, and replications by researchers and practitioners, suggesting that TAM is robust across time, settings, populations, and technologies (Venkatesh & Davis, A Model of Antecedents of Perceived Ease of Use, Development and Test, 1996). This study however uses TAM and an analysis tool for the assessment of the utilization of ICT in the Financial Management of Ghana Education Service (GES).



The simplicity of TAM combined with its predictive power make it easy to apply to different situations (Venkatesh, Determinants of Perceived ease of Use: Integrating Control, Intrinsic Motivation and Emotion into the Technology Acceptance Model, 2000). However, is argued that the predictive nature of TAM results provides insufficient understanding for system designers to enable user acceptance for new information and communication systems (Mathieson, 1991). Hence TAM has been criticized for not facilitating an understanding or explanation of

acceptance in ways that guide development beyond suggesting that system characteristics impact ease of use (Venkatesh & Davis, A Model of Antecedents of Perceived Ease of Use, Development and Test, 1996). For instance there are other external variables apart from design features that affect the ease of use (Venkatesh, Determinants of Perceived ease of Use: Integrating Control, Intrinsic Motivation and Emotion into the Technology Acceptance Model, 2000). Specifically, it is important to emphasize that although perceived ease of use has been employed extensively in user acceptance research in general and TAM research in particular, very little has been done to understand the determinants of perceived ease of use (Thompson, 1997). From Figure 1 above, TAM has two main constructs which are both influenced by external variables. Perceived ease of use is the extent to which the decision to adopt the technology is predicated on minimal effort required in learning and using such technology (Venkatesh, Determinants of Perceived ease of Use: Integrating Control, Intrinsic Motivation and Emotion into the Technology Acceptance Model, 2000). Perceived ease of use thus measures an individual's assessment of the effort required for using a new innovative technology or system. TAM relies on the individual's quest to minimize effort in their behaviors (Ajzen & Fishbein, 1980), triggering a relationship between perceived ease of use, intention to use and usage behavior (Davis, 1989). The other TAM construct, perceived usefulness is measures the extent to which individuals within the organization believes the new innovative technology would enhance productivity which then influence the behavioral intention to use and actual use of the information and communication technology (Mathieson, 1991). The main constructs of TAM, Ease of Use and Perceived usefulness of a technological innovation are influenced by varieties of variables known as external factors. These external variables are regressed against the two main construct to identify the statistical relationship that exist between the external variables and the main determinant constructs. The selection of these predictor variables have however differed from study to study to adapt to the context of the assessment (Ajzen & Fishbein, 1980) (Coleman, 2000) (Teo, Wei, & Benbasat, 2003).

3 Research Methodology

Purposive sampling technique was used through questionnaires to survey financial administrators and other officials of Ghana Education Service (GES) for this study. The sampling method was deemed the appropriate means of getting respondents knowledgeable and well abreast with the subject matter (Sarantakos, 2006). In all, 70 questionnaires were sent out to the various educational units under GES out of which 60 responses were received. The table 1 below provides the details of the responses and the institutions surveyed.

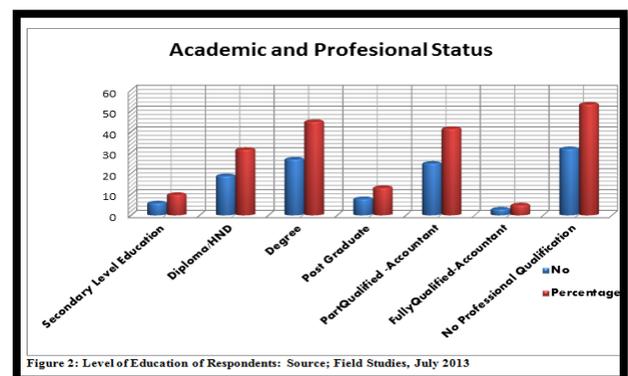
Sampled Unit	Number
Municipal/District Education Offices	20
Second Cycle Schools	24
Technical/ Vocational schools	10
Chief Accountant	1
GES Headquarters Accounts	2
Reg. Education Office Account	3
Total	60

The justification of this sample is based on the homogenous nature of the study population in terms of their work as financial management from the smallest unit to the national headquarters. Hence, the 60 responses received is representative enough since there is homogeneity in the study population is homogenous with respect to the problem being investigated (Blaikie, 2000) (Sarantakos, 2006). The Statistical Package for Social Science (SPSS version 16.0) and Microsoft Excel was employed to process and analyse the data collected. The analysis were presented using descriptive statistical instruments (Creswell, 2003) (Cohen & Manion, 1994) such as charts and histograms to analyse the external variables influencing perceived ease of use and perceived usefulness.

4 Data Analysis

4.1 Level of Education

Education is key variable which facilitate understanding and appreciation of new technologies. Highly educated people are more adaptive and there has direct relationship with perceived usefulness and perceived ease of use. Hence the study sought to find out the level of education of the respondents. The results are presented in figure 1 below.



Among the respondents, 19 % have secondary school level education, 29 % were Diploma/ HND graduates, while 39 % were degree holders. 13 % of the respondents have post-graduate level education. On the whole, the level of education of respondents was quite high which is likely to have positive influence on the ease of use. 25% of the respondents were part-qualified professionally as accountants while majority of 32 percentages are yet to pursue professional qualification as accountant. However 3% of the respondents were qualified accountants

4.2 Years of work experience

The number of years that respondents have spent in their

works place can influence their level of understanding and appreciation of existing problems in the organization. While this can have positive influence on perceived usefulness of ICT in the organization, it could also lead to resistance to change especially where the old workforce is apprehensive of job security and the need for retraining. Table 3 is a presentation of the years of working experience among the respondents.

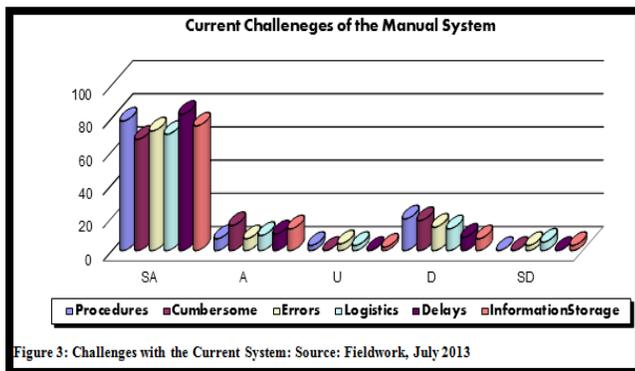
Period	Frequency	Percentage
1-5	2	3
6-10	7	12
11-15	9	15
16-20	11	18
20 and Above	31	52

Source: Fieldwork, July 2013

3 % have below 5 years of work experience, 12 % have between 6 to 10 years, 15 % have 11 to 15 years, 18% have worked for between 16 and 20 years whilst 52 % has over 20 years and above in the GES. The large majority of the respondents have over 10 years of experience. This could be explained by the fact that financial administrator is a senior position. The promotion to such based on qualification and long service. The respondents could thus appreciate very well the challenges involved in financial management in their institutions.

4.3 Current Challenges in the Financial Management in GES

To understand the current state of affairs, the respondents were asked about the current challenges faced in the financial management of their units. Respondents were asked to indicate the challenges of manual returns as follows: Strongly Agree (SA); Agree (A); Undecided or Uncertain (U); Disagree (D); Strongly Disagree (SD) to the problems with manual financial management system identified in (Butch & Delong, 2001).

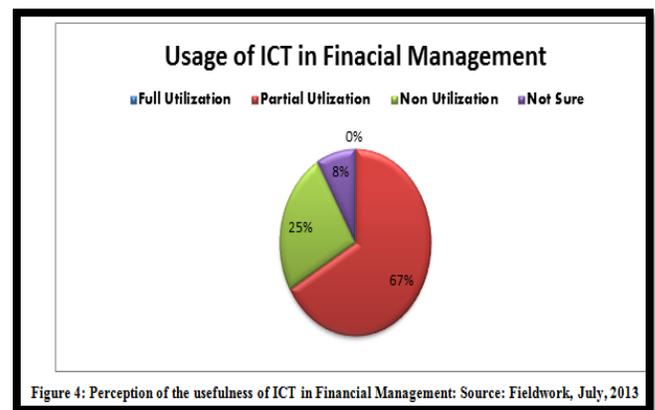


As indicated Figure 4, 78 % of the respondents strongly agreed, followed by 7 % who agreed whilst 19 % of the respondents disagreed in that the manual system leads to the use of accounting procedures that are not consistent with any standards or standard under which they operate. The majority of the respondents were of also either strongly agreed or agree that the processes involved in financial

management manually is tedious given the volume of entries that has to be done. Again, repeating several processes that required checking and cross-checking at different stages is very cumbersome. 67 % of the respondents strongly agreed that the manual system is tedious and cumbersome whilst 15 % agreed. With regards to errors 72 % of the respondents strongly agreed, thus the majority of the respondents felt errors are major challenges in the preparation and submission of financial returns. The majority of the respondents (70 %) strongly agreed that logistical constraints were one of the difficulties in financial returns. This was confirmed through personal observation that found that most of the offices where the respondents worked lacked basic equipment such as computers, photocopiers and fax machines. 82 % of the respondents strongly agreed that there are delays in the preparation and submission of returns. With the current manual system, schedule officers, finance officers and heads of the various units and schools are not able to prepare and submit financial reports on schedule. From Figure 4, most of the respondents (75 %) agreed strongly that there are difficulties in storing and retrieving financial information confirming

4.4 Perceived Usefulness of ICT in Financial Management

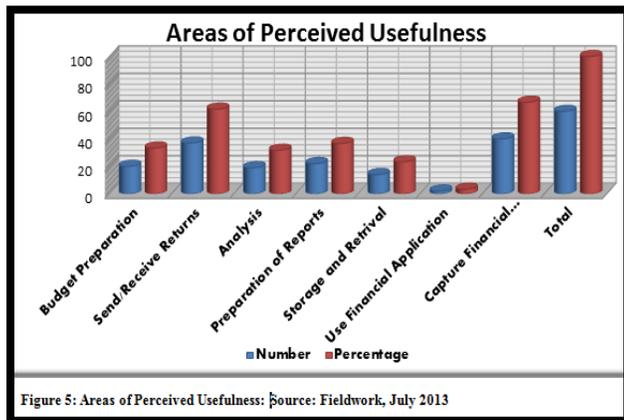
The respondents were asked their view about the Usefulness of ICT in solving the problems identified in the manual system to financial management.



The overwhelming majority of the, 67% respondents partially use ICT in line of work normally for capturing financial data in Excel, None of the respondents fully used ICT and 25% do use ICT at in their line if work.

4.5 Perceived Areas of Usefulness

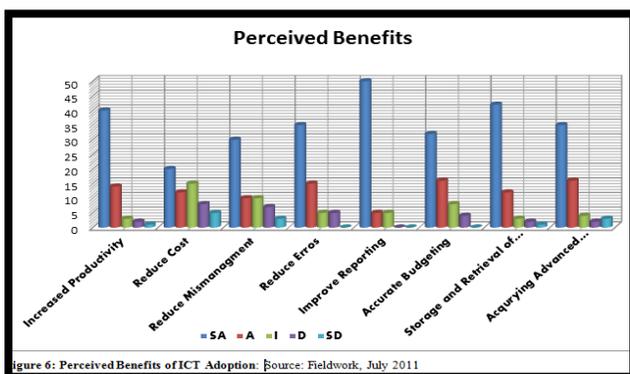
The study further sought the areas where the financial managers perceive ICT's usefulness in their work. The figure below presents the response.



From Figure 5, assessed the activities that ICT can be used to perform, 37 making up of 61% of the respondents indicated sending and receiving returns. This is followed by 20 mentioned budget preparation while the preparation of financial returns was mentioned by 22 of the respondents. Only two of the institutions surveyed use financial management software.

4.6 Perceived Benefits of adopting ICT in financial Management

The respondents were asked to rank the benefits that they perceive would result from ICT adoption in financial management of their institution.

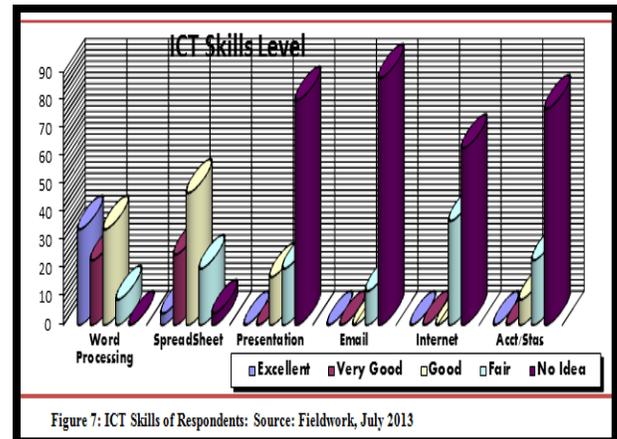


More than half of the respondents (54%) indicated that ICT could enhance productivity by ensuring accuracy, speed, flexibility and timely delivery of financial returns, 51% believe that adopting ICT for their work would facilitate the acquisition of advanced knowledge in ICT use but only 32% of the respondents indicated that ICT reduces cost of financial Management. The above finding confirms that assertion made by Sloan (2000) that the application of ICT in organizations is beneficial first to the organization and second to the individuals who utilize it.

4.7 Perceived Ease of Use of ICT in Financial Management in GES

The perception of ease of use of a technology can be influenced by the exposure of the potential users to similar technology (Coleman, 2000). The study sought to assess identify the level of expertise of respondents in computing by asking them to rate their skills in basic computer applications. Respondents were asked to rate their skills

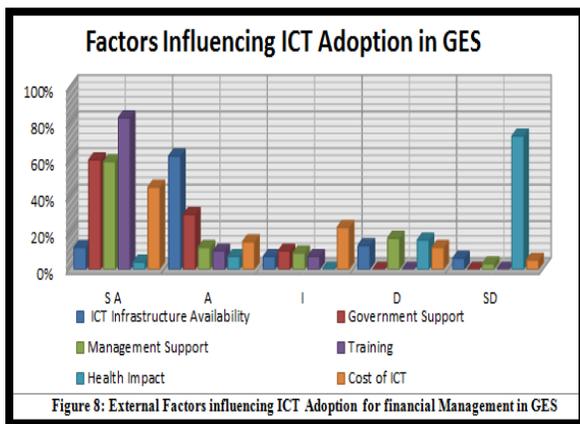
ranging from Excellent, Very Good, Good, Fair and No Capability.



As indicated in Figure 7, 34% of the respondents showed excellent knowledge in word processing, 23% were very good, 34% good and 9% fair. 47% very good knowledge in spread sheets 25% have good knowledge, 4% had excellent knowledge in Spread sheets whilst (4%) having no capabilities. None of the respondents had excellent or very good knowledge in PowerPoint applications. 17% of the respondents had a good knowledge in PowerPoint whilst 20% indicated they have a fair idea. 66% of the respondents had no capability in the use of PowerPoint. With more than half of the respondents (66%) showing no capability in PowerPoint applications. Only 12% of the respondent that took part in the study had a fair knowledge in e-mailing. 88% of them indicated that they are not capable to use the computer to send e-mails. With recorded 0% for the levels excellent, very good and good. 37% of the respondents confirmed they had a fair level of understanding in how to browse on the net for information related to financial returns. The rest of the respondents that is 63% indicated that they were not capable of using computers to browse on the net. Moreover, none of the respondents had excellent, very good, or good knowledge in internet browsing. It was revealed that, 9 percent of the respondents had a good knowledge in the use accounting tools or programmes. 23 percent of the respondents had a fair idea, whilst, 77% showed no capability in the use of accounting softwares

4.8 External Variables affecting the adoption of ICT

The research framework, TAM postulates that external factors influence perceived ease of use and perceived usefulness which in turn influence use intentions and user behaviour. The study therefore sought to identify the external variables in GES which could influence the two main constructs.



The figure 8 above indicates that 12 % of respondents strongly agreed that limited ICT infrastructure could negatively influence adoption of ICT in the operations while 62 % agreed, 12 % disagreed, and 13 % strongly disagreed and 7 % expressed no opinion. A large majority of the respondents, 60 % strongly agreed that the government support could influence the adoption of ICT in the operation, 30 % agreed with 10 % of them undecided. 59 % of the respondents strongly agreed that management support could influence the adoption of ICT in their line of work. 12 % agreed, 17 % of disagreed, 3 % strongly disagreed whilst 9 % were not certain. 83 % of the respondents strongly agreed that training could influence both ease of use and perceived usefulness of ICT in their work 10 % agreed while 7 % expressed no opinion with none disagreeing. 73 % of the respondents strongly disagreed that health concerns could affect the adoption of ICT in their operations 7 % agreed while 16 % agreed with 4 % strongly agreed. The study also revealed that 60 % of the respondents indicated that cost of ICT infrastructure for financial management can influence its adoption in their work. 45 % strongly agreed, 15 % agreed, while 23 % were not certain. 12 % of the respondents disagreed while 5 % strongly disagreed.

5 Summary of Findings and Conclusion

Given the problems identified with existing financial management in GES, the perception of the respondents of ICT as the ideal solution is overwhelming. This is evidenced in the potential benefits the respondents expect from ICT among which are improvements in productivity through accuracy, speed, and timely preparation and submission of financial returns. However the ease of use of ICT in financial management could be hindered by the current level of skills possessed by the financial officer. Again most of the staff has been on the job over 10 years, an indication that most of them are advanced in age. Such workforce is more likely to resist change, be apprehensive of technological innovations with regard to their job security (Christiaens, Reyniers, & Rollé, 2010). However there is certain level of ICT appreciation and knowledge among the staff making them more likely to adopt and use any financial management systems introduced (Damanpour, Szabat, & Evan, 1989). Although the Technology Acceptance Model (TAM) provides an effective framework for studying technology adoption at the individual level, the external factors identified in the study calls for institutional efforts to

move staff beyond the voluntary adoption by individual espoused by TAM. Such Institutional factors would provide a catalyst for individual adoption of the technology in the organization (Gilbert & Cordey-Hayes, 1996). Among the institutional intervention to influence the perceptions of potential users are training, government support, quality and accessible ICT infrastructure through government support and well as top management support through the appointment of an e-champion to drive ICT innovation in GES. The framework future studies into the adoption of ICT in government institutions should therefore incorporate some aspects of institutional theory especially the institutional drivers of innovation (Dacin, Goodstein, & Scott, 2002) (Tolbert & Zucker, 1983) and well as institutionalization processes of innovations (North, 1990) (Zucker, 1987). These would address the external variables outside the realm of the individual in the adoption and use of technology in an organization since the institutional environment plays significant role in worker adaptation and learning process that would also influence the usage intentions and behaviours.

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