International Journal of Marketing and Technology
(ISSN: 2249-1058)

CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1	**Current status and strategies of Electronic waste management in Bangladesh.** Md. Ziaul Haque, Mohammad Rezaul Karim and Mohammad Sarwar Hossain Islam	1-24
2	**Obstacles To Information System Adoption In Higher Learning Institutions (HLIS) In Dar Es Salaam-Tanzania**. Dr. George Kanire and Dr. Richard Nyangosi	25-43
3	**An Empirical Investigation Of The Determinants Of Deposit Money Bank's Investment In Treasury Bills In Nigeria (1970-2009).** Chris O Udoka and Roland Anyingang A.	44-61
4	**Self Consciousness Among The Atm Users Of E-Banking Service**. Armin Mahmoudi	62-75
5	**Role Of Banks In Financial Inclusion Process In India**. T. Ravikumar	76-102
6	**A Study Of Organisational Development: Exploring The Impact Of High Performing Employees Through Job Satisfaction**. Dr. Syed Khalid Perwez and S. Mohamed Saleem	103-127
7	**Community Participation In Minimizing Leakage: A Case Study In Manas National Park**. Birinchi Choudhury and Chandan Goswami	128-147
8	**Effect of After Sales Services of Cars in Building Customer Loyalty.** Mr. Nikhil Monga and Dr. Bhuvnender Chaudhary	148-171
9	**Foreign Direct Investment On India's Automobile Sector.** K. Rajalakshmi and Dr. T. Ramachandran	172-207
10	**Store Image Dimensions: Customers' Perception.** Ms. Sangeeta Mohanty	208-225
11	**Globalisation: Impact Of Fii's Investment On Stock Indices, Equity And Debt Markets, Market Capitalisation Of Bse And Nse And Exchange Rates Of India – (1999-2009).** Dr. Hala Raman	226-254
12	**Measuring The Women's Involvement In Purchase Making Decisions**. Atul Kumar	255-276
13	**Challenges, Methodologies and Management Issues in the Usability Testing of Mobile Applications.** Shashiraj Teotia, Shashi and Raviraj Teotia	277-292
14	**E Commerce In India – The Way To Shop**. Raj Kumar Sharma and Dr. Sambit Kumar Mishra	293-313
15	**M-Commerce Challenge Model for Quality control.** AMIT YADAV, SUMIT BHATNAGAR and SANJEEV PANWAR	314-331
16	**FDI and Indian Retail Sector – The Path Ahead.** Dr Surender Kumar Gupta	332-347

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Title

OBSTACLES TO INFORMATION SYSTEM ADOPTION IN HIGHER LEARNING INSTITUTIONS (HLIS) IN DAR ES SALAAM- TANZANIA

Author(s)

Dr. George Kanire
Lecturer,
Department of Computer studies &Management,
Kampala International University,
Dar es Salaam- Tanzania

Dr. Richard Nyangosi
Senior Lecturer,
School of PG Studies and Research,
Kampala International University,
Dar es Salaam-Tanzania

ABSTRACT:

Information system has become part of every activity in the modern times and in all organisations. The old perception about information system is fading day by day. This study is an attempt to examine the obstacles to proper management of information system. Considering higher learning institutions in Dar es Salaam, 200 questionnaires were collected from teaching and non-teaching staff that have access to information system facilities in three universities. The findings suggested that still hardware and network security pose greater threats to proper migration to digital environment in many learning organisations. It was concluded that there is a need to improve computing skills and design friendly systems in order to discourage improper working of information systems.

Key Words: Information System, MIS, Learning Institutions, Technology

1. Study Background:

The use of traditional information systems like paper and pen or call centres has some limitations (Cats, Baril and Thompson, 2003; Gross, and Aquisiti, 2005: Dzidonu, 2003). For instance, in most cases the tradition information systems are associated with high risks to keep files, high cost of operations, poor quality of speed and reliability. The brick and mortar organisations are mainly depending on paper work to collect analyse and store information. Similarly, this type of information system is associated with high cost of operation, low efficiency and speed in communication.

These are some of factors led virtual organisations, expecting to cut cost, improved data access and collection efficiency. Whereby, it was from those reasons given (Pedler et al, 1997) argued that; some of organisations opt to have computer based system into their organisations. Targeted to benefit from accumulated knowledge on how managing of people, technology and finance as well as infrastructures. Rather, the discrepancy happening in the computer based information systems are caused by technical failures like user access e.g. traffic jams and poor signals. Others are few users connected to IS due to economic challenges. For instance, Chachage (2001) on his study argued that, cost related to infrastructures development and

maintenance is too high e.g. reliable source of power (electricity) and both computer hardware and soft ware. However, still there are many philosophical questions on issues about security, integrity, availability and capability management. Others are how to manage human resources and their impact on system i.e. both physical and logical actions against the systems (Dzidonu, 2003).

Either (Post, 2003) shows that, the learning organisations or business entities need to administer critical researches on security issues. E.g. access control (physical and logical), hazards (data loss, scammers) and IS/IT failures in order to keep updates and propose interventions. Likewise, evaluating how application of these systems can survive risks and uncertainty when happens, in order to maintain virtual network sustainability and maintenance. Also, keep focus on some issues like infrastructure development, information technology and management challenges in order to achieve effective communication (ITU, 2006).

Furthermore (SIDA, 2001) argued that, these challenges can be categorised in four areas of concerns such as all issues related to ethics to enhance security. For instance, observing computer crimes /fraud, auditing and how to control the information systems. The next category is accessibility led by infrastructure development which goes together with challenge of having reliable source of energy. The third category is the technology application to meet organisation desire e.g. networking (connecting stakeholders), brand management, research and development. Menon and Byungtee (1996) consolidated that, examining the information system application helps to improve designing and integrate issues related to stakeholders interests like health and safety on developing a system friendly to both environment and users.

Before designing and implementation of these systems, the process needs to be critically examined and check its impact on minimizing operation costs, improved quality and organisation profitability. On the other hand (URT, 2003) explained that, the computer based systems failure is to the detriments of system security, capability and quality which takes away from organisations fortune or resources. Also added by (Philips and Baltzan, 2008) that, these resources include hardware, software and human resources as well as finances invested to achieve competitive advantages. That is through data loss, poor inventories systems, poor interactions and interface.

Objectives of the Study:

The main aim is to enhance learning organisation capability to collect and store information which can be used for strategic decision and planning. There are ongoing challenges in many of the organisation almost 75 percent of existing organisations. Most of them are straggling to have dynamic power source, organisation size, location as well as exposure due to information technology operation costs.

Specifically the study intended to observe some factors related to:

- To examine human and economic obstacles to IS adoption in HLIs
- To explore network and system security obstacles to IS use in HLIs.

2. Literature Review:

This section will focus on the review of related studies which on which a strong background of this research is based. The intensive review of literature indicated that not many studies have been conducted in East Africa, even in many parts of the world; studies have only focused on other organisations especially business leaving leaning organisations.

Wahid (2004) clearly identified that; it is only 4 percent of people who are living in rural use internet. He added that, the rate of internet users grow by 1 percent and not significant. Meanwhile, there were some challenges like language barrier, lack of expose to the majority accessing the information technology especially the use of computers. (Chachage, 2001) From the available studies made by (Kapange, 2003) comments that, majority of sub-Saharan countries experiencing poor connectivity due to technical, policy and economical challenges. Either, the other challenges base on poor infrastructure development. But, also there is great concern on IT professionals (expertise) as well as user exposure towards management information systems.

Due to poor connectivity majority of learning organisation find it difficult to acquire potential information resources within the given time. Apart from poor connectivity the information system can be redundant depending upon several factors such as data sources, collection techniques and Data processing mechanism (ADB, 2008). Due to increase on service providers, competition, the distribution efficiency has increase as well as coverage. For instance,

mobile telecommunication companies tried to reduce the chain of information supply by connecting people direct to global environment. Likewise this environment has created government regulatory boards to open up for information liberalisation. Some of incumbent suppliers has been privatized, and run by multi-nation telecommunication and networking companies e.g. in Tanzania there are different companies providing mobile phone services including Vodacom, Air Tel, TIGO, and Zantel. Others are IPP media, news papers, radio and TV station. According to AICD-ITC (2009) the study made on infrastructures development in Africa identified that, there were sector liberalization into six countries. These countries included Côted'Ivoire, Ghana, Senegal, South Africa, Tanzania, and Uganda. Further, the AICD-ITC study (2009) revealed that, the ITC industry has a positive effect on other sectors of development sectors. For example, the amount of revenue generated through telecommunications sector reached 5.6 percent contribution of GDP. It was 3.5percent increase as compared to what earned by non-liberalized countries. But, also the communication industry is growing faster on both coverage and revenue generation. There are several techniques recommended by ISO/IEC27002 (2005) that, the information systems security can be managed and controlled through the data collection means and create strategic sources of information. Also, the whole data processing component needs to be monitored against logical, administrative and physical exposure to danger (risks) which can cause system redundancy. So, there must be a plan for Hazard /risk management as well as employees Health and safety regulations. Meanwhile, data storage capability and distribution efficiency needs to be taken into consideration. If, a proper management is not done they are subjected to unauthorized data access as well as theft. Learning organisations have to make sure that, the data security is of important to provide individual privacy, confidentiality and data integrity. Apart from, above explained criteria for security control. Learning organisation shall emphasize on doing maintenance, keeping update signals and auditing to maintaining system security. These are practical code of conduct established by regulatory boards including Association for Computing Machinery, British Computer Society, Uniform Computer Information Transactions Act , ISO and IEEE. The purpose is to guide computer professionals and users decisions or action towards professional and social conducts. The code of conduct categorically falls under into three areas e.g. personal code of conduct, informal code of ethical behaviour in working areas and exposure to formal codes of ethics (Johnson, 2001).

The recent literatures on MIS for instance (Dzidonu; 2003, ADB; 2008 and ITU; 2006) explained clearly that, the Sub-Saharan countries are facing inadequate Capacity to invest on ICT infrastructure and skills acquisition. But, according to SIDA, (2001) argued that, the existing institutions are characterised by poor administration of user participation on idea generation and knowledge management. This habit inhibits the potential use of personal mystery or skills. From which the learning organisations have the choice to improve design, implementation and delivery of quality services to customers. On the other hand Kapange (2003) comments that, Poor connectivity to server and data sources to access information by individuals as well as users. Likewise, most of the institutions find it difficult to retain skilled staffs, because of labour mobility from developing countries to developed countries. This groups of key staffs shifts looking for green pasture and rewarding services. Apart from the above, limitation (URT,2003) added that, majority of learning organisations in sub-Saharan Africa are experiencing high cost of connectivity due to poor management skills and inadequate infrastructures. According to Kanire (2010) comments and borrowed experience from developed countries shows that, a sustainable and effective MIS performance; depends upon organisation focus on customer value, enhance innovation through R&D as well as building human resources capability i.e. creativity, participation, awareness and information access.

The use of ICT enabled to build capacity and sensitization of both employees and employers. It has a significant effect on decision making e.g. Decision support systems or the use of ERP software to plan and manage resources. Meanwhile, the computer networks, web pages and Internet technologies opened a way towards software expert and skills for cost reduction and project management. But, also to gain exposure on scientific and technical information issues (security and privacy issues). Other benefits involve international exposure i.e. global market, improved data access and increased data storage capacity (Leon,2008)

From the recent studies made by (FAO, 2009 and AICD-ITC, 2009) comments that, there are special challenges in order for Sub-Saharan Africa to achieve a fair digital divide. Among other challenges identified are unskilled labour supervision to enhance motivation for creativity and knowledge enhancement. Similarly, the local technical knowledge is poorly handled to deal with the existing problem. Therefore, it is difficult to trace product efficiency as well as quality assurance. Either this, management failures can be traced on several ICT projects with poor risks management, or lack of finance and capital investments on infrastructures. According to study

made by (Al-Mashari, Ghani and Al-Rashid, 2006) identifies that, resources plan and management it can be done through software like ERP software. The software can be applied to collect, analyse, design and implement business solutions. For instance, organisation like Boeing uses the ERP software to manage its supply chain customer relationship and deliver customers orders in time. Added by (Kroenke, 2008) that, the ERP software enabled information flow across the organisation, and it can be used to manage customer value or Total Quality Management (TQM).

3. Research Methodology:

This study is descriptive survey in nature. The population of the study included employees of four universities in Tanzania based in Dare s salaam. The research targeted 400 academic and non academic staff members from computing departments of the sample universities using a well structured questionnaire. However, only 229 questionnaires were collected whereby 34 of them were incomplete. Efforts were made to fill them but only 200 finally became usable. In the questionnaires scaling techniques were used to measure the lever of agreement with the statements given. The weights were assigned from 5=strongly Agree to 1 strongly disagree. Before sending the instrument for data collection, the instrument was validated by consulting computer/ ICT experts and other research experts give some inputs on the items before it is taken to the field. The data received through questionnaires were analysed with the help of excel software and then presented on tables using percentages and frequencies.

4. Results and Discussion:

This section presents the results and interpretations of the study on the role of stakeholders and the challenges towards information systems quality, security and capability. The discussion based mainly on stakeholders influence as well as technical and ethical issue e.g. computer crimes, privacy, health and safety. It was from this understanding, this study attempt to propose how learning organisations can manage activities related to data collection, analysis and dissemination of the information. Also, improved access to knowledge and critical search networks in order to boost the economic-social situation of learning organisations. Apart from

that, above discussion this study attempts to make contribution towards existing literatures which tries to explain how to manage risks. Furthermore, it analyses the strategic information issue or failure on information security, quality and capability to achieve learning organisation competitive advantages. Information systems and ICTs have been always a boon to learning institutions, especially universities and other colleges offering higher education. This research was an attempt to analyze the academic and non- academic staff's opinion regarding stumbling blocks to smooth adoption process of ICTs and information systems.

Network challenges

Table 1: Network and System security obstacles

Variables	SA	A	N	D	SD
Inadequate data access due poor supported server	120 (60)	60 (30)	4 (2)	2 (1)	14 (7)
Unreliable connectivity and signals failure for resource integration.	150 (75)	19 (9.5)	8 (4)	13 (6.5)	10 (5)
System integrity and access control	80 (40)	50 (25)	10 (5)	40 (20)	20 (10)
Back up challenge	171 (85.5)	24 (12)	2 (1)	1 (0.5)	2 (1)
E-ecosystem and environment hazards	87 (43.5)	30 (15)	6 (3)	33 (6.5)	44 (22)
Inappropriate use computer ethics, law and principles	128 (64)	51 (25.5)	4 (2)	7 (3.5)	10 (5)

Among other challenges identified by this particular study is as follows: majority of respondents identified that, higher learning institutions facing poor connectivity. This is led by inappropriate

IT skills to manage networks. For instance, servers are poorly supported or not configured with available internet service providers (ISP). Therefore it causes other problems such as unreliable connectivity and signal failures. Likewise, 60 percent of respondents comments that the same problem led into inadequate data access. This is due to available systems failure to accommodate access ports. On other words the system can accommodate little number of users in a small geographic area.

The above problems have impact on system resources integration since the internet connection is poorly accessible. For example, some big files and picture downloading needs internet with high speed. But, due to unreliable connection the network will timeout from accessing data files from servers. Almost 75 percent of users identified to be facing this problem. Hence, it can influence the system intruders/ malicious people to access hanging/dropping packets. So apart from unreliable connection the situation attracts other problems related to security. Almost 40 percent of respondents reported that, no integrity from available data existing in computer information systems. The respondents admitted that, computer crime is another challenge caused by unauthorized users.

Either this study revealed that, majority about 85 percent of higher learning institutions facing back up challenge. That is available data or resources from the system are not secured from disasters. When any security systems failures happen data cannot be recouped. The available information can perish due to failures caused by risks. Eg risks such as fire outbreak, virus attack, intruders (stolen data). The majority users about 64 are at risk to face security challenge in the existing computer systems. But, these problems have a root from poor technical skills to manage resources. The problems affect more than 43 percent of computer system users in higher learning institutions. Similarly, inadequate political commitment to provide enough IT resources such as: human resources, hardware, software and telecommunication systems.

The study findings concur with study made on IT by ITU (2006) which shows that, there is insignificance increase rate of information technology users a by only 2 percent. Then it was consolidate by Wahid (2004) that, only 4 percent of Tanzanians who are connected to computer internet. Although majority of IT users lives in urban areas, but most of them were identified to use modems and mobile phone internet. That means in most of academic institution are part of this challenge. On the other hand the study conducted by UNESCO (2008) and Powers (2008)

agreed that, the demand for internet services increased alarmingly. But, Sub-Saharan countries political commitment on IT policy to develop IT infrastructures is not adequate. The available data from (ITU, 2006 and URT, 2003) shows that, only less than 30 percent of Tanzanians who can access internet through mobile phone and internet café. For instance, a study done by SIDA (2001) identified that there is insignificant the number of information technology users.

Therefore much effort needed on both infrastructure development as well as users empowerment. Or creating awareness on the range services offered through IT and trains IT staffs.

Table 2: Human and Economic obstacles

Variables	SA	A	N	D	SD
Inadequate skills to develop education software e.g. C,C+, java and Web programming	117 (58.5)	53 (26.5)	10 (5)	12 (6)	8 (4)
Un configured software to match operation systems (upgrading)	136 (68)	16 (8)	25 (12.5)	13 (6.5)	10 (5)
Computer crime and risk management	121 (60.5)	11 (5.5)	22 (11)	19 (9.5)	27 (13.5)
Shortage of computer hardware	98 (49)	33 (16.5)	11 (5.5)	30 (15)	28 (14)
Challenge on energy and IT high cost of operation	160 (80)	8 (4)	20 (10)	7 (3.5)	5 (2.5)
Poor infrastructure development and political will	77 (38.5)	50 (25)	40 (20)	15 (7.5)	18 (9)
Geographic challenge (dispersed building locations)	134 (67)	45 (22.5)	1 (0.5)	17 (8.5)	3 (1.5)

The findings show that, almost 60 percent of employees from the selected high institution in Dar-es-salaam are unable to access data/information. This is due to various failures on the available information systems. For example, although majority of the higher leaning institutions have computer information systems in place. But, still they use of paper works for processing and disseminate information across the institutions.

Other challenges revealed by this study were: short fall on IT skill which counts up 58 percent of systems challenges. Majority said that, unreliable energy sources affects 80 percent of IT operations. Either inadequate ICT infrastructures is another problems seems to affect 38 percent of current IT systems. This is due to the reason that, there were adequate efforts committed to locate enough budgets for both IT facilities and human resources. It also increase 67 of the operation costs because, the budget is not enough to buy new IT infrastructures. Therefore the organisations use a lot of costs to maintain the obsolete infrastructures. Consequently, it has led into failure on data sharing and access.

Either, the poor technical skills caused some failures on strong network connectivity or internet speed for loading pages. Because, the majority IT professionals fail to identify issues to address due to language barriers / practical knowledge. For instance, higher learning institution needs to have people with skills to command and develop learning software. But, this study revealed that majority of IT staffs has inadequate understanding on technical languages. Similarly, failures on how to apply computer languages such as C,C+ and web programming just to mention few. So this is among the reasons, why majority are not motivated to use computer information systems for communication purposes. The problem affected 60 percent of IT users in higher learning institutions. No proper plan for backup system, poor risk management plans and system protections. It includes protecting computer systems against computer crimes and natural hazards.

Furthermore the study revealed that, apart from poor access and poor availability of services. The capacity for higher learning institutions to cover a wide geographic coverage is compromised by technical aspects as well. For instance the use of online technologies such as: virtual learning, online chat and other learning management technologies. It is from the given technologies the higher learning institutions are able to share the knowledge to peripheral, remote and worldwide.

Hence, inadequate skills have led to inappropriate procedures and sometimes failure to protect unethical computer operations .Also failure to undertake risk management and maintenances are other causes of computer systems failure. Whereby, some institution ignores to locate enough budgets for maintenances or buying IT facilities. The majority of the institutions in Dar-Es-salaam are still using the old systems. E.g available infrastructures such as software and hardwares are obsolete therefore, need to upgrade and make configuration. From which it becomes difficult to configure net works and other operations. Most of challenges identified are cause by either political commitment to invest on ICT infrastructures or poor coordination of available resources.ie human resources, have inadequate technical skills and managerial capacity to run ICT facilities.

Similarly, the country is facing challenges related to energy sources, which yield some difficulties to run ICT facilities. Almost 70 percent of energy supplied in Tanzania comes from hydro-electric. Mean while there is no enough rainfalls to provide hydro- electric power. But, this challenge can be traced from both inappropriate use of biodiversity/ natural resource such vegetation and water sources. On the other hand the study revealed that, there is poor location of economic activities. But also natural resources are poorly managed which led into e-ecosystems challenges. It is from this understanding that, the higher learning institutions are facing multiple challenges. This is the main reason why ICT operations are not contributing much on knowledge sharing.

5. Conclusion:

Information system has become part of every activity in the modern times and in all organisations. The old perception about information system is fading day by day. This study attempted to examine the obstacles to proper management of information system. The findings suggested that still hardware and network security pose greater threats to proper migration to digital environment in many learning organisations. It was concluded that there is a need to improve computing skills and design friendly systems in order to discourage improper working of information systems.

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