The Impact of Information Systems in Ethiopian Commercial Banks

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Abstract  Information System (IS) is revolutionizing the operations of business organizations; by giving a vital opportunity and by enabling work efficiency and maximize productivity. IS is becoming the main determinant for all activities of the organization. The availability of permeating and continuous information is becoming a determining factor of World’s economy. Quantitative research approaches were followed and this research is more of behavioral science research. Stratified sampling is used in order to divide the total population into two strata, so as to select one public bank and four private banks, from public bank strata, solely Commercial Bank of Ethiopia, and from private bank strata, Awash International, Birhan International, Debub Global and United Bank were selected. A confidence level of 95% and confidence interval of 8% was taken to calculate sample size using Cochran formula; SPSS Version 20.0 is used for analyzing data. This study evaluates the overall information system impact in Ethiopian commercial banks and the impact of IS components. The study used strategic management grid model to evaluate the impact of IS. Also, the impact of People, Hardware and Network, Software and Database, Service Delivery and IT Governance were also evaluated in order to identify the overall IS impact in Ethiopian banks. The overall IS has strategic impact.

Keywords: Information System; Commercial Banks; strategic management grid

1. INTRODUCTION

Information System (IS) is progressively becoming a precious and powerful tool driving development, supporting growth, promoting innovation, and enhancing competitiveness. Emerging information system offers opportunities for developing nations to leapfrog earlier stages of development (Kamel, 2005). Additionally, there is growing evidence that information system is becoming an increasingly powerful tool when used as part of an overall development strategy coupled with partnerships between governments, business, and civil society. The banking sector is an example in which information system have had great impact. It is important to note that the banking industry was one of the very first to utilize information technology back in the 1960s in the world, and has thus a record of influencing the development process through the technology (Kamel, 2005). IS has led the move from brick banking to concept of 'click banking' (Oppong, Adjei & Poku, 2014). However, some of the implementations of information technology in the banking sector in the context of developing nations are often hindered by a number of challenges, including lack of stability of the legislation, weak financial sector, poor technological infrastructure, and relatively small Internet and computer penetration (Lawrence & Tar, 2010). In recent years, developing nations are increasingly investing in building up and improving their technology infrastructure. The banking industry of Ethiopia is in the midst of an Information system revolution (Mistrak, 2015). A combination of regulatory and competitive reasons has led to increasing importance of total banking automation in this industry.

2. BANKING AND INFORMATION SYSTEM

There is growing evidence that shows information system is becoming an increasingly powerful tool for the overall development strategy (Kamel, 2005). Information system holds many advantages. The impact information system is felt across many industries and sectors. The banking sector is an example in which information system have had vital implications. As Krishna (2015) stated, ICT developments are becoming a mandatory to meet challenges of growth and in diversification of service. Today, the banking industries are growing intensely towards customer needs and wants especially in availability and diversification of services. Customer services and customer satisfaction are the prime work of
any system. Information system has been the reason for many new innovations including product designing and service delivery in the banking and finance industries (Vijayaragavan, 2014). “Technology has opened new product and services, new market and efficient delivery channels for banking industry” (Shah, 2014).

3. PROBLEM STATEMENT

Banking industry is one of the biggest users of IS. IS have given banks a potential they could only dream, and also given customers high expectations which may result in dissatisfaction of users. The introduction of IS service by the bank has positively impacted the rate at which customers visits banking halls and service provided (Obiri-Yeboah, Djan, & Kwarteng, 2013). As Miskin (2015) stated “Information technology has a big role almost in all business sectors.” The role at which IS is playing should be measurable and identified. Information Communication Technology (ICT) is not considered by management in the strategy plan of the business. Instead, it is perceived as a tool for operation and automation in the organization (Galliers & Leidner, 2003). Traditionally, information system has viewed as playing only supportive role by its practitioners. Nowadays, IS moved from its “traditional role as an application of back office support to one offering opportunities for gaining significant competitive advantage” (Rawani & Gupta, 2002).

IS has been playing operational or supportive role and many companies forgot the other role of IS (Galliers & Leidner, 2003). It is being increasingly viewed as having the power and ability to change main organizational directions, strategy, and redefine industry. “The level of dependence on IS and, the potential for using IS for strategic purposes varies among organizations” (McFarlan, McKenny & Pyburn, 1983) as cited in (Rawani & Gupta, 2002). Now, the question is who is a player and who is spectator? What is the responsibility of IS? What is the boundaries of IS and operational activities or organizational strategy and IS strategy? What is the affiliation between vision of the organization and the role of IS? Is IS allowed to impact on strategic plan? And what is the impact of IS? There is a gap between what managers understand about IS and its impact on the banks overall objective and its potential benefits and impacts.

4. THEORETICAL FRAMEWORK

McFarlan and McKenney, in 1983, devised a very useful grid for assessing a company’s use of IT a model called the ‘Strategic Grid Method’ (Corboy, 2007). By addressing four ‘quadrants’: support; factory; transition/turaround; and strategy, each of which represents a situation for the company, McFarlan’s model and explanation on how IS or IT is related to strategy and business operations in a company (McFarlan & McKenney, 1983). Though, it is observed that the method does not provide us with valid operational measures which could potentially have great use in empirical research studies (Al-Hatmi, 2012). According to Abdullah Al-Hatmi (2012), this method represents the present and future impact of IT application on the business.

Depending on the study, a company can be placed in the four quadrants as follows (Corboy, 2007).

- **Low Present: Low Future Impact:** - IT has support role and has little relevance and simply supports existing processes.
- **Low Present: High Future Impact:** - IT has turnaround role and it will feature more on the business agenda in the future. The company believes that IT will have a major impact on their business model in the future.
- **High Present: Low Future Impact:** - Here IT is said to have a factory impact. It is important in terms of day-to-day operations but it is not felt that there are any major IT developments on the horizon that will fundamentally alter the nature of the business.
- **High Present: High Future Impact:** - Here IT has strategic role. In this quadrant, IT plays a crucial role both in terms of its present impact and in terms of how future IT developments are viewed as impacting on the organization. The role IT strategy plays in the formulation of the overall business strategy is critical.

5. RESEARCH DESIGN

Two paradigms describe much of the research in the Information Systems discipline which are behavioral science and design science (Purao, et al., 2008). This research is more of behavioral science and adds elements from design science (Hevner, March & Park, 2004). Because, some of the objectives like identifying metrics to measure use of IS, identifying the impact of IS can be achieved through behavioral science approach. There are three approaches to conduct behavioral science research: Qualitative, Quantitative and Mixed approaches. Mixed approach is combination of Qualitative and Quantitative approach (Kaufman & L.Kaufman, 2005) (Creswell, 2012). Quantitative method measure quantitative or numeric description of trends and attitudes or opinions of a population by studying the sample population and generalizes or infer on total population (Creswell, 2014). Therefore, in this study quantitative methods were employed to ensure effectiveness of the research process and enhance the findings by sampling the population and also because of its reliability and objectivity.

There are 17 Commercial banks, one Development bank and one Central bank in Ethiopia. Private and public commercial banks were included. In Ethiopia, there is one public bank; besides private banks, there are 16 private commercial banks; and no foreign banks. Stratified sampling was employed by dividing the total population into sub population called strata (Ross, 2005). The total population of banks was classified into two strata which are private banks and public banks. Again...
private bank’s stratum is sub-divided into four strata according to their year of experience in business because it gives equal representing bank from different age of experience. Commercial Bank of Ethiopia from public bank strata and Awash International Bank, United Bank, Birhan Bank and Debub Global Bank from the private bank strata were selected. Sample size is calculated using Cochran formula with 95% confidence level and confidence interval of 8 (Cochran, 1977) (Israel, 1992) (Singh & Masuku, 2014)

6. FINDINGS

The result of the study is obtained from 5 point Likert scale questionnaire with 65 factors. The finding of the research is represented and interpreted as the following. There are five sub sections which are people, hardware and network, software and database, service delivery, and IT governance. According to Bourgeois, IS has the succeeding component which are software, people, hardware, network and procedure (Bourgeois, 2014). Procedure component of IS is discussed in category of IT governance; and like any systems information systems also have an output or deliverable which is discussed in category of Service Delivery. Hence, hardware and network components and software and database are considered together in order to eliminate repetitiveness. The sixth factor discussed the overall impact of IS in Ethiopian commercial banks by joining the above five components.

6.1 The People Component

The people component scored low present impact and high future impact. This located people according to McFalan and McKenney strategic management grid model on turnaround impact. It is playing high future impact which may benefit the banks in future while both quantitative and qualitative data shows latest IT infrastructure and yet there is no enough skilled and motivated manpower to effectively utilize the infrastructure.

6.2 Hardware and Network Component

Hardware and network component has high present impact and high future impact. This according to McFalan and McKenney strategic management grid model, hardware and network is located on strategic impact. The banks are benefiting high impact of Hardware and Network right now and it has the capacity to benefit them in future which hold the future need of the bank. The management should give appropriate emphasis to hardware and network.

6.3 Software and Database Component

Software and database have not high or low impact. Both present and future impact of software and database are not neither low nor high. This shows software and database component has impact better than low and impact less than high. In this case, further research is needed to assess the impact of software and database.

6.4 Service Delivery

Service delivery has high present impact and low future impact. This according to McFalan and McKenney strategic management grid model, service delivery is located on factory impact. This shows, commercial banks are giving services which satisfy their customers for day-to-day activity. In order to gain high future impact, the banks should evaluate customer satisfaction and add more banking service and advance in technology.

6.5 IT Governance

IT governance includes the broader corporate governance principles while focusing on management and usability of information systems to achieve the corporate vision. The impact of IT governance framework is resulted as follows. IT governance has low present impact and high future impact. This, according to McFalan and McKenney model, IT Governance is located on turnaround impact.

6.6 The Impact of Information System in Commercial Banks

The overall information system has high present and high future impact. The people component has turnaround impact; hardware and network has strategic impact; software and database needs further research; service delivery has factory impact and IT governance has turnaround impact. The overall IS impact has scored high present impact and high future impact. According to McFalan and McKenney model, the overall information system has strategic impact.

7. DISCUSSION

The impact of information system which reflects the present and future impact of information system on the Ethiopian commercial banks might vary from banks to banks. Factors affecting information system is people, Hardware and Network, Software, Service Delivery and IT governance and they are measured and evaluated to assess the role played by information systems. The performance of the people component is not good enough to achieve corporate vision through strategic plan. The technology and banking systems are unmatched with people skill. If the managements of commercial banks give a little more attention to the human resource, the present impact would be high and the impact could be strategic. The banks are benefiting high impact of hardware and network right now and it has the capacity to benefit them in future which hold the future need of the bank. Further research is needed to assess the impact of software and database because both present and future impact of software and database are neither low nor
high. Every information system has an output or delivery. The delivery could be tangible product or intangible service. According to McFalaln and McKenney model service delivery has factory impact. This means, the bank should restructure its delivery methods and research the market need and add additional delivery mechanisms if necessary in order to achieve high future service delivery impact. The interview made shows some ways to add deliverables to the bank and the interviewee stated that. The banks did not purchase all the necessary deliverability and functionality of the core banking system even if it has increased effectiveness and efficiency, yet some functionality like identification code for each customer and other functionalities are need to be added. The other is less number of POS and ATM machines and enormous downtime has affected the banks service. IT governance is the decision and accountability model to encourage use of IT. IT governance goes in to the broader corporate governance principles while focusing on management and usability of information systems to achieve the corporate vision. Lack of IT strategic roadmap which guides the bank toward achieving long term according with the mission and vision of the banks has greatly affected the future impact of IT governance. Proper placement of IS in organizational structure is a base for good IT governance. Not just putting IT Executive on top. It should also incorporate with other committee members from business and IT background.

The main objective of this research is to evaluate impact of information system; and it is done using strategic management grid framework based on five constructs of information systems (The People Component, The Hardware and Network Component, The Software and Database Component, Service Delivery and IT governance). The result of the above five components gave the overall impact of IS by concatenating them together. The overall IS impacted the bank by increasing effectiveness and efficiency of the banks which enabled them minimize cost, increase accessibility, and by enabling instant transaction.

In (Misrak, 2015) and (Senait, 2011) study, the relation between IT governance and strategic alignment was shown clearly and in this study, the relation between IT governance and impact of information system in Ethiopian commercial banks is studied. While, using same model in India, Rawani and Gupta studied role of information systems in Indian Banks. They found, information system is playing strategic role in foreign and private banks, and it is playing support role in public bank (Rawani & Gupta, 2002). And yet, they did not study the impact of people or employees, IT governance and service delivery in the bank. This study incorporated the people component, IT governance and service delivery in addition to the components they studied. Their finding show that IS is playing strategic role in Indian commercial banks.

8. CONCLUSION

Information systems are becoming very essential tool to undertake day to day activity. The competitiveness of the organization is based on the effective use of information system. The efficient use of information system will give organizations with many opportunities and easy decision making process by giving critical data for the manager(s) also allows organization to research new way of doing business. An information system is becoming a change agent in the organization and it is going farther from automation of operation and supporting the existing system. Efficient and effective management is necessary to enjoy benefits of IS.

Banks are the major user of information system to create value to operation and increase accessibility and productivity. Automation of banking system is a vital need for all banks to attract customers and survives in the business. Research on the banking industry provides vital information about the management of information system. Banks use information system to automate operation and to reduce error with increased effectiveness and efficiency. The primary objective of information system in all commercial banks is to effectively and efficiently serve customers. Research demonstrates problems in measuring the effects of information systems in organization. Evaluation of information systems impact is major research area to assess the gap and to give further recommendation and also appropriate attention. If necessary, restructure and reorganize IS recourses to utilize high benefits of information system.

This study has demonstrated the impact of information system in Ethiopian banks. Information system has strategic impact in Ethiopian commercial banks. In banking service delivery, Information system has factory impact. The governance of information system has turnaround impact. This show top managers should restructure IS process and should give appropriate attention so that the banks realize high IT governance present and future impact; and better strategic alignment of corporate strategy with IS strategy. However, studying the impact of IS is a difficult endeavor that requires competent methodologies and framework. This methodologies and frameworks should be reviewed and updated with the evolving technology and role of IS. In addition, lack of standardized metrics of measurement has effect on measuring the impact of IS (Misrak, 2015). Therefore, IS researchers should develop standardized metrics for measuring the impact of IS.

9. REFERENCE


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Elshalom received the degree in information science, in 2013 and his masters' degree in 2016 from Addis Ababa University. He also received degree in general management from Mekane Yesus Management and Leadership College, in 2013. He is a research student of Addis Ababa University and PESC Information Systems College. His interests are in business information system, information systems project management, information system management and system design.