

Factors Influencing Successful Deployment of Core Banking Application in a Financial Sector: An Application of Technology-Organization-Environment Framework

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ABSTRACT: Core banking diffusion in developing countries has been phenomenal in comparison to the many other technological devices implemented/introduced over the past 20 years. The success of this modality has spurred a lot of studies on consumers' adoption and usage. The purpose of this research is to understand factors that influence core banking deployments in the financial sector, specifically in the context of a developing country. This study has adopted the Technology-Organization-Environment (TOE) framework and a qualitative approach to analyze core banking technology deployments in a financial company in Ghana. Respondents were interviewed to understand mobile banking deployments and thematic analysis was used for the purposes of making conclusions on the data. However, the study found that variables in the TOE framework like the relative advantage of a given technology, the less complex a technology, management support, firm size, competitive pressure and customer expectation were seen to influence core banking deployments. Another finding was that core banking functionality was not just about installing the services for consumers to use, but for the company to perform a trial run before deploying the services to customers. The findings will serve as a guide for financial companies in the deployment of similar technologies in the future.

KEYWORDS: Core banking, Technology deployment, TOE framework, banking services, banking applications, IT adoption.

1 INTRODUCTION

Globally, software is increasingly deployed to support and transform entire business operations and activities [1]. Organizations deploy software or systems into their operations so as to enhance competitiveness and facilitate business growth and success [2]. It is becoming increasingly necessary for all businesses to incorporate IT solutions to operate their business successfully. Olugbode et al. [3] indicated that although organizations have different information systems because they have varying information needs, they all strive for competitive advantage through continuous improvement and efficiency of their business information system [4]. Today, the global financial industry has seen the benefit of technological innovations in service delivery channels being changed from the normal traditional services to an electronic service (e.g. Internet banking, mobile banking, Automated Teller Machine (ATM) services) [5]. Most financial institutions are now providing systems to support their work operations and to facilitate business growth. One of such is the core banking system [6]. According to Dehghan et al. [7], core banking is a term used to "portray the plethora of services provided by a group of

network bank branches". Dandapani [6] also presented that "core banking includes all electronic channels which are used by customers in order to deposit accounts; pay bills and purchase what they need". The author further indicated that core banking is relative to electronic banking where customers can perform any banking transactions electronically without necessarily visiting their banks. However, electronic banking provides banking services over electronic and communication networks which consist of automated teller machines (ATMs); electronic funds transfer at point of sales (EFTPOS); the Internet; and mobile devices [8]. In comparison to the other electronic banking channels, Internet and mobile banking are the newer ones which most financial institutions are using to offer services to the clients.

Core banking enables customer to use the Internet for the delivery of banking services [9]. Jenkins [10] indicated that the rapid increase of core banking is most noticeable in the developed world; this expansion is attributable to the availability of computers and easy access to the Internet. This wide access has made it easier for banks to deploy Internet banking in the developed countries. Similarly, the innovation of Mobile Banking can enhance client satisfaction and ultimately translate to increased productivity for these companies. It generally benefits, financial institutions advancing better proficiency and enhanced service quality, which also benefits clients through time improvement, prompt information and great convenience [11]. In spite of the tremendous ongoing developments in core banking systems resulting in better capabilities and economics, there are not enough published studies on the deployment of such technologies within the context of developing countries [12]. There are a few studies grounded on institutions based in Africa utilizing core banking technologies. For example, Abukhzam and Lee [13] conducted a study on factors affecting bank staff attitude towards e-banking adoption in Libya. The authors recommended that the investigation should be performed from the service providers' point of view in order to understand why particular technologies were selected and installed for customer use. In Kenya, Njuguna et al. [9] explored Internet banking adoption. According to the authors, bank operators must make an effort to understand the consumers' requirements and design a delivery of their products and services. Musiime and Ramadhan [14] also conducted a study on core banking adoption, specifically targeted toward Internet banking services and found that customers showed a positive attitude to Internet banking adoption and usage. Since, there is more study on consumers' issues in terms of core banking adoption, it is also very imperative to understand the reasoning behind its deployments. This research study hopes to fill this gap in knowledge and analysed raw data by exploring the factors that influence management of financial institutions to deploy core banking technology system in a developing country like Ghana and contribute to the development of the study of financial institutions in a new and boldly emerging market.

2 LITERATURE REVIEW

Lately, the development of information innovation and increasing competition among financial institutions has significantly impacted a lot of clients. Most financial institutions have rolled out an impressive number of improvements due to the acquisition of core banking applications. Though there have been many valuable studies on core banking in both developed and developing countries in recent years, a review of the literature has shown that many of these studies have concentrated more on adoption, diffusion and its usage from the customer perspective e.g. [15], [16], [17], [18], [19] and less on the deployment from an organizational perspective e.g. [12]. To discuss a few, Poon [17] conducted a study on users' adoption of e-banking services in Malaysia which is an aspect of core banking; and found out that privacy, security and convenience play an important role in determining the users' acceptance of e-banking services (ATM services, internet banking services). The author focused on individual user acceptance and did not really explain from the management perspective the importance of security and privacy issues in deployments. A study by Al-Smadi [18] revealed that perceived risk has the strongest influence on customers' attitude, which in turn influences customers' intention to use core banking services. The author study looks at consumer issues in terms of core banking adoption. The author tested some variables on individual adoption, but didn't really involve core banking providers (management decision).

Hasan et al. [19] explored a study in Bangladesh and found out that core banking services like e-banking offers several advantages to the Bengali banking sector. They further added that variables such as "organizational capabilities, perceived benefits, perceived credibility, perceived regulatory support, ICT industry's readiness, lack of financial institution's readiness and institutional influence" are factors that influence core banking adoption. Qureshi et al. [20] used Technology Acceptance Model (TAM) to evaluate customer acceptance of core banking (particularly; electronic banking) in Pakistan and observed that almost 50% of customers were banking online. The authors attribute customer acceptance to factors such as perceived usefulness, security and privacy provided by online banking. On the other hand, Theory of Reason Action (TRA) has been applied in Internet banking studies to predict the performance of behaviour and intention. For example, Shih and Fang [21] used TRA in Taiwan to examine the effect of customer attitude and subjective norms on Internet banking adoption and found that attitude has a significant effect on adoption intention, while subjective norm does not. Wan et al. [22] also used TRA to investigate the factors that influence Hong Kong bank customers to adopt four major banking channels services including

Internet banking and found that TRA was less applicable when a behavior is habitual. Hanudin [23] conclude that credibility is the heart of a core banking system and found computer self-efficacy as a major influence on perceived ease of use after using TAM to carry out his study on core banking adoption. Thulani et al. [24] also adopted the diffusion of innovation theory (DOI) to explore a study in the banking sector. Using this theory, the authors indicated that banks can gain an advantage by providing customers with the convenience of being able to perform banking transactions electronically or online at any time without having to leave home or the office. Chaipoopirutana et al. [25] also using DOI, notes that banks that made innovative use of the Internet gained favourable image and hence increased their value in the industry more than those that did not do so. This notion is also supported by Rambocas and Arjoon [26] who, after using DOI, claimed banks could improve their image in the industry through technological innovation. The evidence presented in this section indicates that theories such as TAM, TPB, and DOI have been used to carry out core banking research in developing countries.

In Africa, there are few studies based on institutions based in Africa utilizing core banking technologies. For example, Abukhzam and Lee [13] conducted a study on “factors affecting bank staff attitude towards e-banking adoption in Libya”. The authors recommended that the investigation should be performed from the service providers’ point of view in order to understand why particular technologies were selected and installed for customer use. In Kenya, Njuguna et al. [9] explored Internet banking adoption. According to the authors, bank operators must make an effort to understand the consumers’ requirements and design a delivery of their products and services. Musiime and Ramadhan [14] also conducted a study on core banking adoption, specifically targeted toward Internet banking services and found that customers showed a positive attitude to Internet banking adoption and usage. From the above review, it was observed that most studies conducted on core banking have used theories like TRA, TAM and DOI to study consumers’ adoption. However, it also seems that most of these studies are more on individual’s usage of core banking services (consumers). An in-depth scan through the literature reveals that researchers have given less attention to exploring core banking deployments or implementation from the perspective of core banking providers [13].

3 CONCEPTUAL FRAMEWORK

With respect to information technology (IT) project deployments, researchers have seen the important factors from non-deterministic theories which look at the environment, technology and organization and how it influences IT adoption, implementation and deployment projects. Such theories include Porter Five Forces and Technology-Organization-Environment (TOE) framework [27], [28]. On the other hand, some researchers have also seen important factors in deterministic theory which usually looks at the consumers’ perspective. Some of these successful deterministic theories employed in developing countries core banking research include: Technology Acceptance Model (TAM); Theory of Reason Action (TRA); Theory of Planned Behaviour (TPB); and Diffusion of Innovation (DOI) Theory [29], [30], [31]. Both deterministic and non-deterministic theories have been used in many researchers’ studies. From a careful review of the available literature, however, it seems more attention has been given to deterministic theories which give little room for the use of non-deterministic theories. The study found the Technology, Organization and Environment (TOE) framework very useful for the study. The TOE framework was originally introduced by Tornatzky and Fleischer [27]. The theory presents three categories of a firm’s context that influence its decisions [32]. The theory describes how the context of a firm is able to influence the adoption and implementation of innovations. The three elements as presented in the theory include technological context, the organizational context and the environmental context. The TOE framework was developed as a theory to study how firms adapt to IT innovations. TOE was adopted to provide an analytical framework that could be used by researchers and practitioners to study the adoption and assimilation of diverse kinds of IT innovations [33].

Extant studies over the years used the TOE framework to study organisations, adoption of particular technologies. For instance, Mishra, Konana, and Barua [34] in their study used the TOE framework to describe the adoption of inter organizational systems. Further, in the context of electronic business, Zhu, Kraemer and Xu [35] deployed the use of the TOE to study the adoption of electronic business at the firm level. Again, there have been studies that used the TOE framework in an e-commerce perspective. For instance, Ghobakhloo et al. [36] used the theory to investigate the factors that affect the adoption of e-commerce within small and medium sized enterprises. Empirical studies testing the TOE have used adopted quite different factors for the technological, organizational, and environmental contexts, hence making the framework highly adaptable because of the freedom to vary the factors or measures for each new research context [37]. In other words, TOE identifies three aspects of an enterprise context that influence the process by which it adopts and implements a technological innovation: technological context, organizational context, and environmental context. Based on this, the researcher adopts the TOE framework to summarize possible key factors affecting core banking deployments. For each context, various factors have been identified from the literature, but only those that are considered relevant for core banking deployments are included in the framework (as shown in Figure 1).

3.1 TECHNOLOGICAL CONTEXT/ CHARACTERISTICS

Tornatzky and Fleizcher [27] opined that the technological context of adopting an innovative technology is both the internal and external technologies that are significant to the organization. Baker [32] in a similar view explained that these technologies are not only limited to those that are already used by the firm but also those technologies that are obtainable in the marketplace however the firm does not use them currently for its production purposes. This technology as referred to embraces equipment as well as processes involved in undertaking a task. Tornatzky and Fleizcher [27] further elaborated that technology is “knowledge embedded tool” and “is a mixture of social/behavioural elements and physical elements.” Similarly, it is important for human beings to understand a particular technological tool before they can be able to use. Consequently, they can teach others from the experiences they have acquired in using that particular technology. In this case there is an attitudinal change or behavioural change in using a peculiar technological tool which further leads the individual adapting to the use of the technology [32]. Two technological factors were considered in the study, namely: complexity and relative advantage.

Technology complexity: The complexity of a given technology may sometimes discourage its usage or deployment. According to Rogers [30], firms usually go in for a particular technology when they find it easy to use. The author defined technology complexity as “the degree to which an innovation is perceived as relatively difficult to understand and use”. Further, he stated that technology complexity usually correlate with the rate of adoption and deployments. Therefore, excessive complexity of an innovation is a hindrance to its implementation or deployment. For instance, Parisot [38] indicated that a technological innovation might confront faculty members with the challenge of changing their teaching practice to integrate the technological innovation into their instruction, so it might have distinctive levels of complexity. If hardware and software are easily to understand, then they might be implemented and adopted successfully for the delivery of course materials [39].

Relative advantage: Relative advantage is also an important determinant that can influence a firm or an organisation decision to implement a given technology. Rogers [30] defined this construct as “the degree to which an innovation is perceived as being better than the idea it supersedes”. The motivation behind the use of an innovation is spurred by the advantage of such innovation. Basically, there are no outright guidelines for what constitute a relative advantage. It relies on upon the specific observations and necessities of the user group. For instance, while innovators, early adopters, and early majority are more status-motivated for deploying and adopting innovations, the late majority and laggards perceive status as less significant. Also, Rogers [30] ordered innovations into two sorts: preventive and incremental (non-preventive) innovations. A preventive innovation is another thought that an individual receives now keeping in mind the end goal to bring down the likelihood of some undesirable future event [30]. Preventive innovation for the most part has a moderate rate of deployment and adoption so their relative advantage is profoundly uncertain. In any case, incremental innovations give beneficial results in a short period.

3.2 ORGANISATIONAL CONTEXT

Aside the technology context the second category that influences the adoption of technological innovation is the organisational context. This context depicts the size and scope, and managerial structure of an organization and its internal resources [33]. In addition to description of the constituents of the organizational context are also the linking structures that exist between employees as well as intra-organizational processes [32]. Similarly, Arpacı, Yardımcı, Ozkan and Turetken [40] included the extent of centralization of the firm, formalization, and the quality of its human resource. The management of an e-commerce website means the managing organization has to take total and complete responsibility for the logistics, overview, and functioning of the site. Management involves gathering, processing, and storing large chunk of information of customers. It is the hope of all customers that their personal and confidential information will be kept safe. As a good security practice, there are generally three requirements necessary for enhancing a secured e-commerce infrastructure. These include confidentiality, integrity and authentication. It is a model developed to guide policies regarding security in an organization. Confidentiality involves the procedures that limit how and who information is accessed in an organization. Integrity is the assurance customers have that the information they are provided with is trustworthy. However, in measuring organisational context, two factors were used, namely: organisational size and top management support.

Organisational Size: Organisational size has also been seen as one of the most important determinants affecting technology deployment and adoption. Kimberly and Evanisko [41] indicated that organisational size consists of the organisation's resources, transaction volumes or workforce size. There are many reasons why large organisations have been considered more innovative than smaller ones. Organisational size is considered important for its structure and processes. Larger organisations are often associated with greater control, more resources and formalization [42]. However, all these

characteristics can assist innovation deployment and adoption within an organisation. Further, large organisations often have more complex and diversified resources, such as marketing skills, research activities, product development and financial resources, which contribute to organisational innovativeness [43].

Top Management Support: Tolbert and Zukar [44] presented that innovation and technology deployment would be more likely if the political environment within an organization has norms favouring the change. Thus, adopting core banking technology will depend on whether support from top management is available. Top management consists of individuals with power and authority to make strategic decisions; thus they can develop a clear-cut technology strategy while at the same time sending signals to different parts of the organization about the importance of the technology. Given the limited nature of organizational resources and the many competing projects, top management support ensures that a technological innovation project will get the required resources and capabilities.

3.3 ENVIRONMENTAL CONTEXT

The environmental factor refers to the external environment in which an organization operates and its condition for supporting the development of core banking services. Firms normally operate in an environment. In this environment, there could be competitors who operate in the same industry and dealings with the government [27]. Bose and Xin [45] further posited that the environment also combines the market structure and its characteristics. With respect to environmental factors, the study considers competitive pressure and customers' expectations.

Competitive pressure: The financial industry is a huge industry consisting of several competitors. Rivalry among existing competitors takes many familiar forms, including price discounting, new product introductions, advertising campaigns, and service improvements. High rivalry limits the profitability of an industry. The degree to which rivalry drives down an industry's profit potential depends, first, on the intensity with which companies compete and, second, on the basis on which they compete [28]. The intensity of rivalry is greatest if competitors are numerous or are roughly equal in size and power. In such situations, rivals find it hard to avoid poaching business.

Customer expectation: Customer expectations are beliefs about service delivery that serve as standards or reference points against which performance is measured or judged [46]. The fear of losing customers sometimes motivates a firm to deploy certain technology services to retain its customers. The success Customers require different needs which are of varying importance to them. Customer expectations are influenced by the social environment which includes advertising, marketing, and other communications, both with the supplier and with other sources. Hence, customers play a major role in terms of technology deployments.

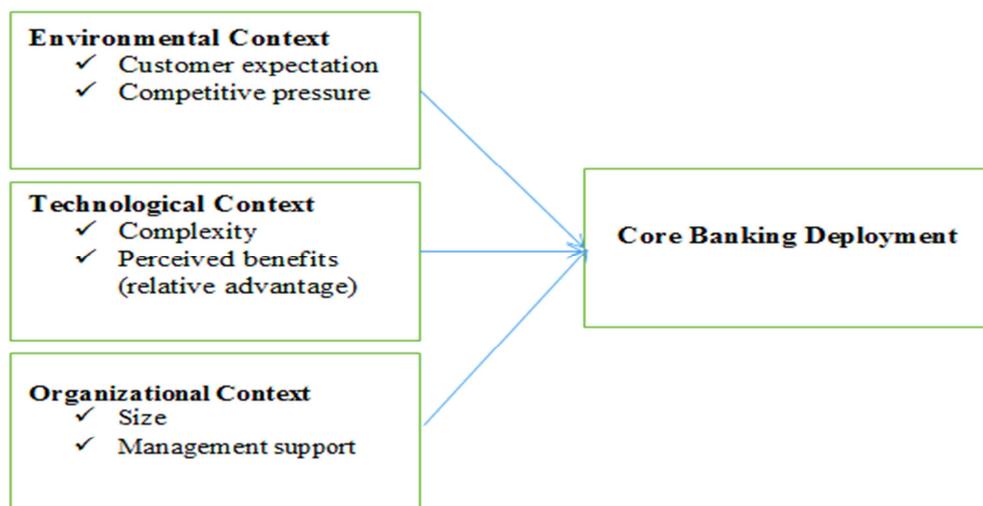


Fig. 1. Conceptual Framework for Assessing Core Banking Technology Deployment in the Financial Sector

4 METHODOLOGY

The study employed the interpretative case study approach. The reasons for the choice of interpretive case study is to get the opportunity to gather data on core banking information and to seek an understanding of the mutual interaction between

the phenomenon and its social and technical contexts. The study focused on City Investment Company (CIC). CIC is one the accredited financial company who deploy core banking services and also help other companies in the installation of the services. The company has large volume of customers through which they offer services to. A sample of 10 respondents in key positions was selected for an interview section. Upon permission to interview respondents, the author used a pre-tested voice recording device to capture all responses, whilst making necessary notes on paper. The paper notes served as a platform for follow up questions not originally in the interview guide. Both structured and unstructured interviews were employed to collect rich information on core banking services and its deployment. However, unstructured interviews were conducted since it usually offers complete freedom in terms of content and structure. The unstructured interview was used to get an in-depth view and narrative from the respondents. Similarly, structured interviews were also conducted to restrict the respondents to answer some key selected questions. The respondents includes; two marketing managers; three IT personnel; two service personnel, one human resource manager and two marketing personnel. These managers were selected because they form part of the decision making body of the company. However, each interview lasted approximately 35 minutes. The responses were recorded and later transcribed and edited. To ensure validity and reliability, the responses were sent to the respondents for assessment and to confirm if they were consistent with their responses.

5 PRESENTATION/DISCUSSION OF FINDINGS

City Investments Company Limited (CIC) is regulated by the Bank of Ghana under the Banking Act, 2004 (Act 673) as amended by the Banking Amendment Act 2007 (Act 738). The company was permitted to carry on the business of Finance House in all aspects and other businesses and agencies incidental thereto, including, but not limited to the Funds Management; Business Finance; Consumer Credit Finance and Personal Loans; Issuance of Guarantees and Bonds and Business Appraisal and Advisory Services. However, the Company's management has made an assessment of its ability to continue as a going concern and is satisfied that it has the resources to continue in business for the foreseeable future. In addition, the company strongly believes that the acquisition of new clients, reaching out to existing ones and nurturing relationships will accelerate the expansion of its business and help grow profit levels. This section further discusses how TOE framework influence core banking deployments. Two factors were used to measure technological factors, namely; complexity and relative advantage. Two factors were also used to measure organizational factors, namely: organisational size and top management support. Two factors were also used to measure the environmental factors which consist of competitive pressure and customers' expectations. The abstract should state briefly the purpose of the research, the principal results and major conclusions.

5.1 TECHNOLOGICAL FACTOR

Complexity: Perceived complexity is the degree to which an innovation or technology is difficult to understand and use. New ideas that are simpler to understand are adopted faster than those requiring the adopter to develop new skills and understanding. This case finding indicates that more than 40% of CIC customers have subscribed to core banking services. During its deployments, the company has not faced complaint about the sophistication of the technology. CIC made the application very simple and easy to use. The company tested the application on the employees before deploying it to the market. This finding is consistent with the work of Akbulut [47], who found that the complexity of a technology has a major effect on the deployment and adoption decision. The author further added that if the technology is easy to understand, customers' adoption and usage will be high. Chewlos et al. [46] also added that complexity is a strong inhibitor of intent to deploy and adopt innovation. Hence, technology should not be difficult to understand.

Relative advantage: Benefits and risks are important factors for core banking deployment. This degree of perceived superiority of a technology at the deployment stage solidified the confidence of the bank to deploy the technology. The case study revealed that perceived relative advantage was one of the significant factors that influenced the deployment of the core banking technology at CIC. This finding supports the finding of previous studies of Rogers [30], who depicted that the benefit of a technology influences individuals to use it. In addition, to date, the core banking system deployment by CIC has improved customer services, business efficiencies, and cost reductions. For instance, in customer services, CIC was able to reduce pressure at the teller area and waiting times through the direction of the functions to some core banking modules like mobile banking and payment. Additionally, the core banking services provide convenience, ease of access and use. The technology has promoted more efficient and effective business processes in the activities of CIC to address the fast increasing retail banking transaction volumes without additional staffing costs. This profitable finding was indicated in the interview with the loan administration officer;

“The deployment of the core banking has translated into the reduction of counter pressure because customers no longer come into the banking halls. They only come to the banking hall if it is really necessary. Moreover, a client’s data are accessed more quickly, which further enable tellers attend to them more swiftly thereby reducing turnaround time and increasing efficiency and customer experience”.

5.2 ORGANISATIONAL FACTOR

Organisational Size: The size of an organisation is determined by its resources, transaction volumes or workforce size. It is one of the most important determinants that affect technology deployment and adoption in an organization. CIC has a lot of financial and human resources, as well as defined processes to support various core banking initiatives. For instance, most of the resources needed for the deployment of the technology were bought from vendors. The case study shows that CIC has been proactive in the deployment of core banking to become more competitive. This finding is contrary to earlier findings of Salwani [48] and Zhu, Kraemer and Xu [49] who indicate that large organizations are usually conservative and slow to technology deployment and adoption. In an interview with one of the company’s sales personnel, he narrated that;

“Our core banking application is provided by another company which provides the service based on the number of users may subscribe to. I believe the structure of my company also affected our core banking deployment in that the software has to be modified to suit each department’s and staff’s role. In addition, the size of the firm determines which modules in the core banking software, for instance will be used and also the hardware (servers etc.) to back this software with”

Top Management: Innovation of IT would be more likely if the political environment within an organisation has norms favouring the change. Thus, deploying a technology will depend on whether support from top management is available. Top management support has been identified as crucial in the acquisition, deployment and diffusion of innovation. However, a great leadership must be transformational and leaders must be able to empower and motivate their employees, define and articulate a vision, build and foster trust and relationships, adhere to accepted values and standards inspire their employees to accept change, meet organizational objectives on multiple levels, and build a strong brand name for their business. In light of this, it is, very important to consider whether leadership development in CIC had a strong impact on the deployment of organisational innovation capability such as its core banking technology. As one respondent stated;

“In this world, we are moving towards IT so if you are not IT inclined, you will be left out. So as a financial company, if you don’t do these things, you fall out especially now that technology keeps changing; in other words, the top management is aware of this technological innovation and does not need anybody to prompt them on it before implementing the technology. Its natural, everybody agreed to it especially having in mind the satisfaction of customers”

Findings from this are consistent with Masrek, Jamaludin and Hashim [50] study. According to the authors, top management support is crucial in the acquisition, deployment and diffusion of innovation. Therefore, we conclude that top management support positively impacts core banking deployment in CIC.

5.3 ORGANISATIONAL FACTOR

Competitive Pressure: Competition has also played a major role in core banking technology deployment. Services given by one organization can attract the other who can then retaliate. From the case, the environmental property stems from peer pressure on using a new technology. It has been recognized that this pressure is a driving force for using the core banking technology by pressing organizations to constantly be on the hunt for a competitive edge. This serves as an explanation for the reason why CIC is operating in a competitive mode. In order to survive, the company’s challenge was to provide quality services rapidly at affordable prices by making the right connections to create and enhance value for customers, clients and stakeholders. As the loan administration officer said:

“It is competitive to deploy core banking. If I can do something on my phone without going to join long queue, which one would you prefer? Would you rather join a bank with such improved technology or you would prefer to join a long queue?”

It was not only the case that other financial institutions in the industry were deploying the core banking technology and so CIC also deployed but rather because CIC wanted to deploy a superior technology.

Customer Expectations: Customers generally expect reliable, speedy, and convenient services from providers. Since their expectations serve as standards or reference points against which performance is measured or judged, CIC equally took these

factors into consideration to provide their customers with mobile accounting services, mobile brokerage services and financial information services. Customers require different needs to be met which are of varying importance to them and their expectations are influenced by the social environment which includes advertising, marketing and other forms of communication. Customer retention and loyalty is one of the many motivators that stimulate CIC to respond to the demands of their customers by providing them with this core banking services especially mobile banking. In this vein, it was found that consumers' demand for a greater variety of core banking services was a factor that influenced CIC to deploy the mobile banking technology in Ghana. When consumers are satisfied with the products and services provided by the CIC, they are more likely to be committed to the company and in turn refer a friend or family for similar services. The value systems, behaviour and attitude of Ghanaian people have gradually evolved as a result of a relatively unstable economy from an easily trusting and amenable to a culture characterized by distrust and uncertainty, and avoidance with a pointed focus on self-preservation. An IT Manager explains that Ghanaian customers are curious and skeptical about the state's ability to protect their interests and to assure their security and convenience. Consequently, a lot more people are reluctant to subscribing to the services even if it is billed as free. He said;

"There are a few people on it, but compared to the account retail base, subscription is very low. Roughly, it's only about some few percentages of customers that are currently using it".

He added:

"Our main issue is our customers' perception about legislations. Though we constantly convince them that legislations are already in place, they seem too negative that they have not heard about these. Even so, they do not trust the legislations because the legislations may not be mature".

6 CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

This study began with the aim to understand how core banking systems and deployments in a developing country context and how TOE framework influences its deployments. Previous research on core banking had focused more on adoption, use and diffusion. Therefore, studies on the deployment of applications used by developing countries' banks to offer services remain under explored. Although, researchers have used many theories to investigate the core banking phenomenon, these theories are predominantly deterministic which are unable to account for how the technology, organization and environment influences core banking deployments. It is in response to these limitations in the literature, which this research drew on the information systems, interpretive case study approach and the TOE framework to investigate core banking deployment in Ghana. In summation, the study found that the core banking functionality deployment process is complex and may go beyond installation to include activities such as requirements gathering and demonstrations. Also, both the company providing core banking services and their customers sometimes experience certain challenges in the services. This study points to several avenues for further research. Clearly, it is impossible to outline every possible avenue worthy of further investigation. Therefore, the following has been found particularly interesting, relevant and significant for future research. This study's contribution lies in the use of few factors of the TOE framework. Future research can extend the framework by incorporating other factors to study core banking deployments in a different organization. This study focused on only one financial company that is locally owned. However, there are foreign investment companies operating in the country as well. Future studies can look at how the foreign banks handle core banking deployment to see if their findings will differ from those of this study. In all, core banking has been seen as a useful technology that has helped organizations, firms and companies to achieve a competitive advantage.

REFERENCES

- [1] L. Stepulevage and M. Mukasa, "The social relations of large scale software system implementation". *Information Communication and Ethics in Society*, 3, 189-197, 2005.
- [2] B. Fisher and R. Kenny, "Introducing a business information system into an engineering company". *Journal of Information, Knowledge and Systems Management*, Vol. 2, pp 207-221, 2002.
- [3] M. Olugbode, I. Elbeltagi, M. Simmons and T. Biss, "The Effect of Information Systems on Firm Performance and Profitability Using a Case-Study Approach. *The Electronic Journal Information Systems Evaluation Volume*, 11(1), pp. 11-16, 2008.
- [4] D. Chaffey and S. Wood, "Business information management: Improving performance using information systems", Pearson Education Limited, Essex, 2005.

- [5] S. A. Ojeka and A. Ikpefan, "Electronic commerce, automation and online banking in Nigeria: challenges and benefits". *International Journal of Innovation in the Digital Economy*, 3 (1), 11-26, 2012.
- [6] K. Dandapani, "Internet banking services and credit union performance". *Managerial Finance*, Vol. 34, No. 6, PP. 437-446, 2008.
- [7] M. Dehghan, M. Ghafoorifard, B. Shamsi and S. N. Heydari, "The Effect of Implementing Core Banking Services on Profitability: Case Study of All Branches of a Private Bank in Mashhad", *International Journal of Management, Accounting and Economics*, Vol. 2, No. 6, 2015.
- [8] R. Boateng and A. Molla, "Developing E-banking capabilities in a Ghanaian bank: preliminary lessons. *Journal of Internet Banking and Commerce*, 11 (2), 1-10, 2006.
- [9] P. K. Njuguna, C. Ritho, T. Olweny and P. Wanderi, "Internet Banking Adoption in Kenya: The Case of Nairobi County". *International Journal of Business and Social Science*, Vol. 3 No. 18, 246, 2012.
- [10] H. Jenkins, "Adopting Internet banking services in a small island state: assurance of bank service quality". *Managing Service Quality*, 17 (5), 523-537, 2007.
- [11] T. Zhou, Y Lu and B. Wang, "Integrating TTF and UTAUT to explain mobile banking user adoption". *Computers in Human Behaviour*, 26(4), 760-767, 2010.
- [12] G. Kannabiran and P. C. Narayan, "Deploying Internet banking and e-commerce—case study of a private-sector bank in India. *Information Technology for Development*, 11: 363–379, 2005.
- [13] M. Abukhzam and A. Lee, "Factors Affecting Bank Staff Attitude towards E-Banking Adoption in Libya", *EJISDC*, 42, 2, 1-15, 2010.
- [14] A. Musiime and M. Ramadhan, "Internet banking, consumer adoption and customer satisfaction" *African Journal of Marketing Management*, Vol. 3(10), pp. 261-269, 2011.
- [15] M. Joseph, C. McClure and B. Joseph, "Service quality in the banking sector: the impact of technology on service delivery". *International Journal of Bank Marketing*, 17/4, 182-19, 1999.
- [16] A. Riyadh, S. Aktera and N. Islam, "The Adoption of E-banking in Developing Countries: A Theoretical Model for SMEs". *International Review of Business Research Papers*, Vol. 5 No. 6, pp. 212-230, 2009.
- [17] W. Poon, "Users' adoption of e-banking services: The Malaysian perspective. *Journal of Business & Industrial Marketing*. Volume 23, Number 1, 59–69, 2008.
- [18] M. O. Al-Smadi, "Factors Affecting Adoption of Electronic Banking: An Analysis of the Perspectives of Banks' Customers". *International Journal of Business and Social Science*, Vol. 3, (17), 294, 2012.
- [19] S. A. Hasan, A. Baten, A. Kamil and S. Parveen, "Adoption of e-banking in Bangladesh: An exploratory study". *African Journal of Business Management*, Vol. 4(13), pp. 2718-2727, 2010.
- [20] T. M. Qureshi, M. K. Zafar and M. B. Khan, "Customer acceptance of online banking in developing economies". *Journal of Internet Banking and Commerce*, 13 (1), 2008.
- [21] Y. Shih and K. Fang, "The use of a decomposed theory of planned behavior to study Internet banking in Taiwan. *Internet Research*, 14 (3), 213-223, 2004.
- [22] W. N. Wan, C. Luk and C. W. Chow, Customers' adoption of banking channels in Hong Kong, 2005.
- [23] A. Hanudin, "Internet banking adoption among young intellectuals". *Journal of Internet Banking and Commerce*, 12 (3), 2007.
- [24] D. Thulani, C. Tofara and R. Langton, "Adoption and use of Internet banking in Zimbabwe: an exploratory study. *Journal of Internet Banking and Commerce*, 14 (1), 1-13, 2009.
- [25] S. Chaipooipirutana, Y. Chatchawanwan and V. Vij, "Diffusion of innovation in Asia: a study of internet banking in Thailand and India". *Innovative Marketing*, 5 (4), 27-31, 2009.
- [26] M. Rambocas and S. Arjoon, "Using diffusion of innovation theory to model customer loyalty for internet banking: a TT millennial perspective. *International Journal for Business and Commerce*, 1 (8), 1-14, 2012.
- [27] L. Tornatzky and M. Fleischer, The process of technological innovation. New York: Lexington, 1990.
- [28] M. E. Porter, The five competitive forces that shape strategy. *Harvard Business Review*. 78-93, 2008.
- [29] V. Venkatesh, M. G. Morris, G. B. Davis and F. D. Davis, "User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478, 2003.
- [30] E. M. Rogers, Diffusion of Innovations (4 ed.). New York: The Free Press, 1995.
- [31] F. D. Davis, "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology". *MIS Quarterly*, 10(3), 318-340, 1989.
- [32] J. Baker, "The Technology–Organization–Environment framework. In Y.K. Dwivedi et al. , *Information Systems Theory: Explaining and Predicting Our Digital Society*", *Integrated Series in Information Systems*, Vol. 1, pp. 232-245, 2012.
- [33] T. Oliveira and M. F. Martins, "Literature Review of Information Technology Adoption Models at Firm Level". *Electronic Journal Information Systems Evaluation*, 14(1), 110-121, 2011.

- [34] N. Mishra, P. Konana and A. Barua, "Antecedents and Consequences of Internet Use in Procurement: An Empirical Investigation of U.S. Manufacturing Firms". *Information Systems Research*, pp. 103-120, 2007.
- [35] K. Zhu, K. L. Kraemer and S. Xu, "Electronic business adoption by European firms: a cross-country assessment of the facilitators and inhibitors", *European Journal of Information Systems*, 12(4), 251-268, 2003.
- [36] M. Ghobakhloo, D. Arias-Aranda and J. Benitez-Amado, "Adoption of e-commerce applications in SMEs, *Industrial Management & Data Systems*, Vol. 111 No. 8, 2011 pp. 1238-1269, 2011.
- [37] J. Baker, "Information Systems Theory: Explaining and Predicting Our Digital Society". In Y. K. Dwivedi, M. R. Wade, & S. L. Schneberger (Eds.). New York: *Springer*, 2011.
- [38] A. H. Parisot, Technology and Teaching: The adoption and diffusion of technological innovations by a community college faculty (Doctoral dissertation, Montana State University, 1995).
- [39] M. H. Martin, "Factors influencing faculty adoption of Web-based courses in teacher education programs within the State University of New York, 2001.
- [40] I. Arpacı, Y. Yardımcı, S. Özkan and O. Turetken, "Organisational Adoption of Information Systems Technologies: A literature Review. *International Journal of eBusiness and eGovernment Studies*, 4(2), 37-50, 2012.
- [41] J. R. Kimberly and M. J. Evanisko, "Organisational Innovation: The influence of individual, Organisational, and Contextual Factors on Hospital Adoption of Technological and Administrative Innovation", *Academy of Management Journal*, 24(4), 689-713, 1981.
- [42] G. Lee and W. Xia, "Organizational size and IT innovation adoption: A meta-analysis. *Information & Management*, 43(8), 975-985, 2006.
- [43] F. Damanpour, "Organizational complexity and innovation: Developing and testing multiple contingency models" *Management Science*, Vol.42, No.5, pp. 693-716, 1996.
- [44] P. S. Tolbert and L. G. Zucker, "Institutional sources of change in organizational structure: The diffusion of civil service reform. *Administrative science Quarterly*, (38), 1880-1935, 1983.
- [45] R. Bose and X. Luo, "Integrative framework for assessing firms' potential to undertake Green IT initiatives via virtualization – A theoretical perspective". *Journal of Strategic Information Systems*, 2011.
- [46] P. Chwelos, I. Banbasat and A. S. Dexter, "Research report: empirical test of an EDI adoption model". *Information Systems Research*, 12(3), 304-21, 2002.
- [47] A. Y. Akbulut, "An investigation of the factors that influence electronic information sharing between state and local agencies". *Proceedings of 8th Americas Conference on Information Systems*, Dallas, Texas, USA, 2454-2460, 2002.
- [48] M. I. Salwani, "E-commerce usage and business performance in the Malaysian tourism sector: empirical analysis" *Information Management & Computer Security*, 44, 350-359, 2009.
- [49] K. Zhu, K. L. Kraemer and S. Xu, "The Process of Innovation Assimilation by Firms in Different Countries: A Technology Diffusion Perspective on E-Business". *Management Science*, 52(10), 1557–1576, 2006.
- [50] M. N. Masrek, A. Jamaludin and D. M. Hashim, "Determinants of Strategic Utilization of Information Systems: A Conceptual Framework." *Journal of Software*, Vol. 4, No. 6, 2009.