EMPIRICAL ASSESSMENT OF THE IMPACT OF INFORMATION TECHNOLOGY SYSTEM ON BANKING IN GHANA

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ABSTRACT

We explores the impact of the introduction of Information Technology and Information Systems (IT/IS) into the African banking sector and the Ghanaian High Street Banking in particular and how these technological advancements have gone a long way in changing the face of the banking industry in Africa. The study indicates that Ghana inherited its administrative structure from the Europeans who at a point in time ruled the country. The research concluded that the introduction of IT/IS technology has been generally accepted by the customers. Though Electronic funds transfer has been around for a number of years, only 4.9% of the clients are of the view that it has not caught up with customers due to the fact that it is generally not real time transaction as it needs to be reloaded any time the customer's account is used up. Among all the electronic banking systems in place, the ATM seems to be the most popular system of delivery with the banking industry with telephone banking catching up gradually as a result of the increasing use of mobile phones and fixed phone lines. Internet Banking is not very popular channel due to the low internet connectivity in the country.

Keywords: Ghana, Information Technology, Information System, Electronic Delivery System, Banking.

1.0 INTRODUCTION

The impact of information technology (IT) and information systems (IS) on the Banking industry cannot be over emphasized. Banking operations have moved on from the laborious manual handling of books and customer service delivery over the years to the sophisticated mode of operations we see at the banks on the High Street in the present age. Technology has dramatically changed the face of the banking industry so much that this would have been unthinkable a few years down the line for even the expects to have made such a prediction. The introduction of telecommunication into bank markets dates back to 1846 when the telegraph reduced stock price differentials between New York and regional stock markets (Garbade and Silver, 1978). The 1866 introduction of the trans-Atlantic cable equally enabled greater integration of securities trading in New York and London (idem, p. 827) (Barnardo, 2002). The central role of information processing in banking leads to an expectation that banking and finance companies will be strongly affected by technological innovation in general and applications of information and communications technologies (IT) in particular. The effects of IT/IS on banking organizations with reference to front office or external changes (product and service innovation) and back office or internal changes (operational function) brought about to banking organizations cannot be over emphasized. Banks all around the world have made huge investment to be able to achieve competitive advantage, compete worldwide and also obtain a market share. The development of easy to use cheap computers and software has made it possible for banks to invest in cutting edge technological innovations like the internet, telephone and SMS (short message services) to enhance their operations and cut the risk that come with investment.

Obviously, with regard to the adoption of new technology, risk taking was regarded as more profitable if not immediately more lucrative. It is also worth pointing here that this was one of the few occasions, if not the only occasion, when a British bank deliberately adopted “cutting edge” technology and when bank staffs appear to have been involved in the determination of technological specifications of that new technology. (Bernardo, 2002).

In Sub-Saharan Africa, developments in information and communication technology (ICT) are radically changing the way business is done. Electronic commerce is now thought to hold the promise of a new commercial revolution by offering an inexpensive and direct way to exchange information and to sell or buy products and services. This revolution in the market place has set in motion a revolution in the banking sector for the provision of a payment system that is compatible with the demands of the electronic marketplace (Balachandher et al, 2001).A number of studies have been carried out in this area and conclusion has it that IT/IS has had significantly positive effects on bank productivity, cashiers’ work, banking transaction, bank patronage, bank service delivery, and customer’ service. They concluded that, these have positive effect on the growth of banking and though cost has increased due to investment, returns have increased more than the cost (Balachandher et al, 2001; Roger, 2000; John and Jane, 1999). This study explores the impact of the introduction of Information Technology and Information Systems (IT/IS) into the African Banking sector with particular reference to the Ghanaian High Street Banking. The paper will also look at the way Customers perceive is the benefit from improved front office

technologies and if any the quality of services they now receive and how it compares with the one they have been used to before the introduction of IT/IS into the banking industry.

2. LITERATURE REVIEW

AFRICAN PERSPECTIVE

In Sub-Saharan Africa, developments in information and communication technology (ICT) are radically changing the way business is done. Electronic commerce is now thought to hold the promise of a new commercial revolution by offering an inexpensive and direct way to exchange information and to sell or buy products and services. This revolution in the market place has set in motion a revolution in the banking sector for the provision of a payment system that is compatible with the demands of the electronic marketplace (Balachandher et al, 2001).A number of studies have been carried out in this area and conclusion has it that IT/IS has had significantly positive effects on bank productivity, cashiers' work, banking transaction, bank patronage, bank service delivery, customer' service and bank service. They concluded that, these have positive effect on the growth of banking and though cost has increased due to investment, returns have increased more than the cost (Balachandher et al, 2001; Roger, 2000; John and Jane, 1999).

In 1995, Ghana became the first country in sub-Saharan Africa to have "full Internet Connectivity" Cheap and powerful computers, sometimes second hand, are widely available in sub-Saharan Africa. Web cafes are widespread in major cities of most African nations offering use of a personal computer (Sulzberger, Internet, 2000). This has also made it possible for individuals to acquire personal computers at a price as low as £80.00. Developments in information and communication technology (ICT) is changing the way business is done and governments across Africa have been promoting the use of this technology to open up their economies to the outside world. Africa has in the last few years seen an enormous activity in the field of ICT related conferences and initiatives on behalf of international and donor institutions. These initiatives became increasingly colored by the rhetoric of an emerging global Information Society and the need for an African answer to these developments. With regard to this Information Society two documents hold particular relevance: the ECAs Africa's Information Society Initiative (AISI): An Action Framework to Build Africa's Information and Communication Infrastructure and the ITUs African Green Paper. Leo Van Audenhove questioned these policy and implementation initiatives and their rhetoric and practice.

GHANA IN THE INFORMATION AGE IN BANKING

Ghana arrived late in the technological revolution which has taken the world by storm and this has meant that the state of infrastructure of Information Technology is just being developed unlike in the developed countries like the UK and USA where this phenomena begun over fifty decades ego. In spite of this, Ghana is coming up as other countries on the continent as governments have realized that without Information Technology, development and growth in all sectors of the economy will be highly impossible.

The government of Ghana has made a commitment to promote this ideal by setting up ICT villages to encourage the use of this technology. Electronic commerce is now thought to hold the promise of a new revolution by offering an inexpensive and direct way to exchange information and to sell or buy products and services. As in many other African countries, the internet has been warmly welcomed in Ghana. Five years ago, there were limited internet cafes in Ghana; now there are at least 250 in Accra alone, according to official Ghanaian figures. Nua Internet Surveys, a company in Ireland that tracks internet use, estimated that there were about 20 000 Internet users in Ghana last year (Emrakeb Assefa – HANA, 2005).Ghana moved up from 74th to 65th place in the World Economic Forum's (WEF's) Networked Readiness Index. The index measures the propensity for countries to exploit the opportunities offered by ICT. According to the WEF's Global Information Technology Report, the index is based on three pillars. The first relates to aspects of the environment of a given nation for ICT development, such as the regulatory regime and legal framework for ICT, available infrastructure and other factors; the second deals with actual levels of networked readiness of individuals, businesses and governments; and the third focus is on actual levels of ICT usage by these groups. The index ranks 104 countries on these criteria. 'There is a strong correlation between ICT spending and productivity, which is demonstrated in this research as a strong correlation between the rankings and global competitiveness,' says John Chambers, president and CEO of Cisco Systems, the reports sponsors (UNDP, 2005). This revolution in the market place has set in motion a revolution in the banking sector for the provision of a payment system that is compatible with the demands of the electronic marketplace (Balachanher et al, 2001).

In almost all African economies, there is growing evidence that customers are now associating quality of service in a bank with the banks possession of an online, real-time system. In fact, the possession of such a system is now judged to be the yard stick of high quality of service and if a bank does not have it then their customer base will be dwindling till it makes that level of investment in new technology to serve its customers. The possession of such a system is to a greater extent not only to serve the needs of the customers alone, but also to a larger extent improve productivity, efficiency, cut cost and improve profitability. A lot of financial institutions have made investment in this technology but it is not all the banks (particularly in Sub-Saharan Africa) that have the ability to make such investments due in part to where they are located in the country of operation or for lack of financial ability. This means therefore that, there is a two tear systems running at the same time in most countries in Africa Ghana not an exception. Thus in Ghana, there is the urban economy with its high-tech base and the rural economy still living in the previous century. With lack of financial resources, poor infrastructure, and the low level of education through lack of investment from central government, the rural economy with 60% of the Ghanaian population is not enjoying this new paradigm shift in the financial sector. The government of Ghana in the early 1990's according to a study published in 1994 by "allRefer"(1994), gave license to rural communities who established about one hundred (100) small banks (Rural Banks) to develop and cater for the rural population and their total assets in the banking systems was only 5 percent. These banks still use the minimum or no IT facilities in their operations and hence efficiency and productivity is minimal with high cost of operation.

Since the 1970's the financial sector has been one of the branches of economic activity that has benefited most from the development of computer and communication technologies (Diederen et al, 1990). Information technologies defined as the merger of computer and telecommunication technology has been considered as a new techno-economic paradigm. The implementation of the new IT/IS paradigm not only requires investment in IT/IS equipment but also includes changes in institutional structures. Diederen et al (1990) also showed that sectors such as banking, insurance and businesses in the Netherlands make use of information technologies at a high rate. The world of banking differs a lot from country to country even in the developed countries it could be realized that, the use of technology in the banking industry is not on the same level. When comparing the UK to Ghana, there seem to be a big difference in the level of services and the quality of services provided by the banks of these two countries. Due to different levels of economic developments, there seem to be a difference in the needs of banking and the banks in this two different countries have responded differently to the customer needs. Even in the same country, the levels of services are different due to the level of financial resources, infrastructure, and needs and the level of education particularly in sub - Saharan Africa and Ghana in particular. To this end, I will try to find out how technology has segregated between the "big and small" banks in Ghana. Rosenberg (1984) has found out that needs play different roles in different countries. Differences in resource endowment and demand conditions of an economy are showing the way. What kind of invention it will be profitable to develop and exploit. Each country has its own vision about what is important and what might be worth developing just in what specific country. Rosenberg contended that only those that are compatible with a country's needs would be successful ones. The level of technical knowledge as well as economic forces tend to push economies in different directions.

Thus, the society in the UK has for a long time been sophisticated due to the availability of education and investment. Banks were established very early in response to demand for the service and therefore these banks have developed over time and therefore had the finances to invest in new ideas. On the other hand, the society in Africa has remain backward due to lack of education and poverty in the general society and therefore the banks could not have recouped their investment should they even have the ability to invest in that kind of infrastructure. The banks in Ghana therefore developed in accordance to the needs of the populace. For this reason, whereas banks in the UK started investing in IT in the 1950's, it was not until the 1990's that computerization entered the banking industry in Ghana.

According to Roger (2000), more than most other industries, financial institutions rely on gathering, processing, analyzing, and providing information in order to meet the needs of customers. Given the importance of information in banking, it is not surprising that banks were among the earliest adopters of automated information processing technology. The technological revolution in banking actually began in the 1950s, well before it began in most other industries, when the first automated bookkeeping machines were installed at a few U.S. banks. Automation in banking became common over the following decade as bankers quickly realized that much of their labor-intensive, information-handling processes could be automated on the computer. A

second revolution occurred in the 1970s with the advent of electronic payments technology. Recognizing the importance of information security, the financial services industry during the late 1970s and early 1980s was also the first to implement encryption technologies on a widespread basis. The euphoria surrounding the Internet today seems very similar to that era, when the first nationwide credit card and electronic funds transfer systems were built.

Banks are currently making a lot of investment in IT as they have come to realize that this is the way forward if they wish to stay in business. Even the smaller rural banks through the ABB Apex Bank Limited, the umbrella body of the nation's rural/community banks is to be fully automated by the year 2007. Accordingly, computerization had begun in earnest and by 2006 the banking application software would have been developed for the process to be carried out and within five years ARB Apex bank hoped to attain full computerization at an estimated cost of three million dollars. This would ensure that all the 510 banks nationwide were networked for efficient and reliable banking service (Ghana News Agency, 2005).

People are surprised to hear the following: Ghana has 12 licensed, and three operational ISPs. Africa's only 10mbs wireless data and voice technology exists in Ghana, and the national energy company has a fiber network looping the lower half of the country. Three major wireless technology companies are competing to provide corporate intranets to commercial customers such as the ministries and banks, as well as private individuals. A landing station for the undersea Africa-One fiber cable from South Africa to Portugal is scheduled for 2002, positioning Ghana to dramatically reduce bandwidth costs, and become a regional access provider for West Africa (Awo and Quaison-Sackey, 2004).

Ghana and for that matter Africa is moving to the digital age in banking and IT/IS is playing a major role in contributing towards efficiency, cost effectiveness and better customer delivery the banks are therefore improving efficiency, effectiveness, cost reduction and improved staff and customer satisfaction and it is believed that the way ahead is a bright one.

3. METHODOLOGY

The focus of the research was on the innovative introduction of IT/IS into the banking industry in Ghana and how this innovation has impacted on both the customer and the bank alike. We adopted observation, interviews (use for the one-on-one interview technique based on Dillon's approach) of both customers and staff of banks, and questionnaires. We intend to use the Questionnaires to find out the perception of customers and the bank staff on the effect of the introduction of technology on the service delivery of these banks under survey.

We opted to use questionnaires in the survey for several reasons. The advantages of questionnaires are that of speed to beat the deadline for the project, economy and reduce the incidence of interviewer bias. . The response to this questionnaire will be analyzed in detail and presented in a table format for the purpose of the project as to how the introduction of electronic innovation has impacted on their individual businesses. The will be taken in a five-point Likert scale whereby

Unsure (U) =0; Disagree (D) =1; Strongly Disagree (SD) =2; Agree (A) =3; Strongly Agree (SA) =4.

4. RESULTS

TABLE 1: BANKS USAGE OF IT/IS

Not all the banks were contacted but contact was made with four banks but as was agreed with the bank managers, the identity of the banks will remain concealed as official permission was not obtained from their superiors for the survey. Basically, the banks were broken down into three categories made up of commercial banks, development banks and merchant banks. In all, sixteen (16) banks were identified for this project but this is not all banks in Ghana as all the banks could not be listed in this project. Also, six (6) delivery systems were identified for analysis for the project namely; Telephone banking, Branch networking, PC banking, ATM, Internet banking and EFTPoS. It could be seen that the ATM seems to be the most popular system of delivery with the banking industry with telephone banking catching up gradually as a result of the increasing use of mobile phones and fixed phone lines. Internet Banking is not very popular channel due to the low internet connectivity in the country.

TABLE 1

Table 1 list some of the major banks in Ghana and the service they do or do not provide

BANKS	TELEPHONE BANKING	BRANCH NETWORK	PC BANKING	ATM	INTERNET BANKING	EFTPOS
Commercial Banks						
Ghana Commercial Bank	**	*	**	*	*	
Barclays Bank	*	*	*	*	*	
Standard Charted Bank (GH)	*	*	*	*	*	
SG-SSB	*	*	**	*	**	

LTD.						
Metropolitan Allied Commercial Bank	**	**	**	**	**	
The Trust Bank	**	**	**	*	**	
Development Banks						
National Investment Bank	**	**	**	**	**	**
Agricultural Development Bank	**	**	**	*	**	
International Commercial Bank	**	**	**	**	**	**
The Trust Bank	**	**	**	*	**	
Merchant Banks						
Merchant Bank (GH) Ltd.	**	**	**	**	**	**
Ecobank (GH) Ltd.	*	**	*	*	**	
Continental Acceptance Ltd.						
First Atlantic Merchant Bank	**	**	**	**	**	**

Cal Merchant Bank	**	*	**	**	**	
Prudential Bank (GH) Ltd.	**	**	**	**	**	**

Key: * Represents provision of service

** Represents bank does not provide service

TABLE 2: CUSTOMERS USE OF INNOVATIVE TECHNOLOGY

Table 2 is indicative of how customers use the innovative technology introduced into the banking industry. In analyzing the response from customers, it was found that 183 out of 251 respondents use a form of electronic channel in the various banks representing 72.9% of the responding population. The indication here could then be interpreted to mean that the introduction of IT/IS technology has been generally accepted by the customers.

Table 2: Response to the survey Questionnaire on customers' use of innovation in technology

Customer Response	Frequency	Percentage
Use	183	45.8
Do not Use	68	17.0
No Response	149	37.2
TOTAL	**400**	**100.0**

Table 3: IT/IS USE BY CUSTOMERS

The analysis of the above data in table 3 seem to indicate that ATM usage is a very popular electronic delivery channel of all the innovations introduced into the banking industry and this is indicated by the overwhelming percentage (58%) represented by customers who use this service.

Table 3: Type of IT/IS innovations used by customers

IT/IS Delivery Channel	Usage Frequency	Percentage Usage
Telephone Banking	42	23.0
ATM	106	58.0
EFTPoS	09	04.9
PC Banking	18	09.8
Other	08	04.3
TOTAL	183	100.0

Telephone banking is gaining in popularity due to the improvement of telephone services in the Ghanaian society and is represented by 42% of respondents. Though Electronic funds transfer has been around for a number of years (in various ways) represented only 4.9%, indications are that it has not caught up with customers due to the fact that it is generally not real time transaction as it needs to be reloaded any time the customer's account is used up on the plastic. On the other hand, since PC Banking is only used by selected businesses, it is understandable why the percentage is small (9.8%).

TABLE 4: CUSTOMERS USING ATM

Table 4 is devoted to the analysis of customers who are inclined to the use of ATM in Ghana. The table below gives us an idea of the usage as well as the penetration of ATM in the Banking services in Ghana**.**

Table 4: Usage of ATM by customers

Usage Per Month	Usage Frequency	Percentage Usage
>4 times	42	39.6
4 times	34	32.1
3 times	11	10.4
2 times	09	08.5
Once	03	02.8
Not at all	07	06.6
Total	**106**	**100.0**

The analysis of the above table (Table 4) indicates the number of times customers use the ATM in any number of month on the average and the results seem to indicate that, 42 out of 106 people representing 39.6% make visits to the channel for transactions rather than going into the bank premises to take out money, check their bank balance and print out statements. Only 6.6% of those responding to the interview indicated they never use the channel due to the fear of criminals. 32.1% use it 4 times; 10.4% use it 3 times; 08.5% use it 2 times; 02.8% use it once in a month.

TABLE 5: SATISFACTION OF CUSTOMERS TO DELOIVERY SYSTEM

Table 5: Response from customers to questionnaire

	SS		**FS**		**U**		**FDS**		**SDS**	
	Freq./%		**Freq./%**		**Freq./%**		**Freq/%**		**Freq/%**	
Satisfaction with delivery system	103	41	58	23	15	06	48	19	27	11
Response time of staff	124	49	59	23	07	03	47	19	14	06
Satisfaction with quality of service and product delivery	121	48	49	19	23	09	39	16	19	08
General customer satisfaction	138	55	47	19	05	02	43	17	18	07
Business improvement	128	51	66	26	02	01	38	15	17	07
	SA		**A**		**U**		**D**		**SD**	
	Freq./%		**Freq./%**		**Freq./%**		**Freq./%**		**Freq./%**	
Business advice improved with introduction of IT	127	51	86	34	08	03	21	08	09	04
Cash movement between banks	141	56	52	21	10	04	39	15	09	04
Speed of payment has improved	119	48	56	22	05	02	41	16	30	12
IT/IS has increased the cost of transaction	149	59	59	24	-	00	26	10	17	07

KEY: SS = strongly satisfied SA = strongly agree

FS = fairly satisfied A = agree

U = unsure U = unsure

FDS = fairly dissatisfied SD = strongly disagree

SDS = strongly dissatisfied D = disagree

From table 5 above, the analysis of customer response as to their satisfaction with the delivery system seem to indicate that out of the 251 respondents to the survey, 161 representing 64% indicated satisfaction with the delivery system. 30% of the respondents representing 75 of the total population indicated their dissatisfaction with the delivery system whereas 15 of the respondents who constituted about 6% of the respondents said they were unsure. But on the whole, it could be said that customers were satisfied with the system.

The response of customers to the question as to the response time of bank staff to service to customers indicated that, 183 respondents out of the 251 representing 72% of the population surveyed said the response time of staff to customers has improved as Table 5 showed. Out of the total population surveyed, 61 respondents representing 25% indicated their dissatisfaction with the quality of staff response after the introduction of IT/IS technology. A total of 7 out of 251 respondents representing 3% said they were unsure of whether or not service has improved.

Customer response as to the satisfaction with the quality of service and product delivery, the indication was that, 170 out of 251 respondents were satisfied with the service and product delivery of the IT/IS system whereas 58 of the respondents representing 24% said they were not satisfied with the system. 23 of the respondents representing 9% said they were unsure of whether or not IT/IS has brought any improvement. From Table 5 above, the response of customers as to their general satisfaction to the with the innovation showed that 185 out of the 251 respondents representing 74% satisfied with the system as against 24% who were not satisfied and a further 5 respondents constituting 2% saying they were unsure as to if they were or not satisfied with the innovation brought about by IT/IS.

The analysis of the information in Table 5 concerning question to customers as to whether there has been an improvement in business since the introduction of electronic delivery into their banks indicated that, 194 representing 77% out of the 251 people surveyed indicated they were satisfied while 22% representing 55 out of the 251 respondents said they were not satisfied and a further 1% said they were unsure if their business has shown any improvement.

Customers response as to whether the innovative technology has improve the advice they receive from their bankers, showed that 213 out of the 251 respondents representing 85% of the population agreed with the suggestion but 12% disagreed the advice they were receiving has in anyway done anything to improve their business. 8 out of 251 representing 3% indicated they were not sure whether or not advice has improved.

As to the response to the question whether cash movement between their banks for the purpose of business transaction indicated that 193 out of the 251 respondents representing 77% acknowledged that branch networking has made it possible for them to move money between banks with ease. 48 respondents making 19% said they disagree and a further 10 respondents representing 4% were not sure.

Customer response as to the question if the innovation in the electronic delivery channels has speeded up payments they made to their suppliers and customers seem to indicate that, 175 of the 251 respondents representing 70% said they agreed against 71 out of the 251 representing 28% disagreed. 5 of the 251 representing 2% of the respondents were unsure if the speed of their payment has improved.

Analysis of information in table 5 as to whether the innovation introduced has made the cost of their transaction at the bank increased saw an overwhelming 208 out of the 251 respondents agreeing with the accession while 43 out of the 251 representing 17% of the respondents disagreed with the accession.

TABLE 6: PERCEPTION OF BANKING STAFF TO ELECTRONIC SYSTEM

Table 6: Response of bank staff to questionnaire

	SA		**A**		**U**		**SD**		**D**	
	Freq./%		**Freq./%**		**Freq./%**		**Freq./%**		**Freq./%**	
IT/IS has improved banking operations	09	38	10	42	01	04	02	08	02	08
Time spent on transactions has improved	11	46	09	37	-	00	01	04	03	13
Quality of decisions has improved	13	54	07	29	03	13	-	00	01	04
Customer numbers has gone up	15	63	08	33	-	00	-	00	01	04
Productivity of staff has increased	12	50	07	29	02	08	-	00	03	13
Efficiency levels has improved							-			

	12	50	09	38	02	08		00	01	04
Staff motivation level has gone up	13	54	09	38	01	04	-	00	01	04
Error level has reduced	14	58	10	42	-	00	-	00	-	00
The cost of service delivery has reduced	09	38	11	46	01	04	02	08	01	04

KEY: SA = strongly agree A = agree U = unsure SD = strongly disagree D = disagree

The analysis of Table 6 lists the response giving by the bank staff (Including the bank managers of the various banks included in this project) to the questionnaire distributed to the 24 them.

In response to the question that the introduction of electronic delivery channels has improved banking operations, an overwhelming 80% being 19 out of the 24 surveyed indicated that they did agree with this assertion with 16% representing 4 out of the 24 respondents disagreeing to this whereas 1 person was uncertain as to whether this assertion was true or fouls.

The time spent by staff on transactions at the banks where innovative technological had been introduced was found to have speeded up significantly as 20 of the respondent to the survey representing 83% indicating that the time spent on any one transaction has been reduced significantly as against 4 respondent representing 17% of the population rejecting the suggestion that time spent on transaction has in anyway improved.

As to the question whether the quality of decision by the banks on loans and overdrafts has improved with the introduction of innovative technology, 20 out of the 24 respondents representing 83% said they were in agreement to the fact that decisions making in this regard has been very much improved were as only 1 (4%) person responded by negating the view. 3 respondents were not sure as to whether it was the IT/IS innovation that has enabled the bank to make such good decision or not.

From the Table above, it could be seen that, the response to the question as to whether customer numbers have increased due to the introduction of innovative technology, 23 out of the 24 respondents said they did agree that the number of customers has gone up significantly as against 1 (4%) person indicated disagreement to this fact. The staffs of the banks were asked whether productivity has improved with the introduction of the electronic delivery channels to the banks

where they worked and the response to this indicated that, 19 out of the 24 bank staff agreeing with the assertion as against 3 respondents representing 13% disagreeing with this fact and a further 2 respondents making 8% said they neither agreed nor disagreed with this assertion. Staff of these banks surveyed were further asked as to whether the efficiency level has improved with the introduction of these technological innovations and respondent indicated with 21 out of the 24 staff responding to the survey representing 88% indicating their agreement with the assertion and 1 (4%) person disagreeing with this fact with a further 2 respondents representing 8% neither agreeing nor disagreeing to this fact.

From the Table above, the staff in response to the question as to whether the introduction of electronic delivery channels have in anyway improved the motivational levels of staff in the work they did seem to indicate that, 22 out of the 24 respondent representing an overwhelming 92% agreeing with this assertion, 1 (4%) person disagreeing with this, and a further 1 (4%) person neither agreeing nor disagreeing with the assertion.

The response to the question to staff as to whether the error level in the delivery of their services has reduced with the introduction of innovative technology indicated an overwhelming 100% of the respondents agreeing to this fact with none disagreeing nor remaining neutral to the question.

A further question was put out to the staff of the banks as to if in their opinion the cost of service provision has reduced with the introduction of innovative technology, 20 respondents out of the 24 representing 84% indicating their agreement, 3 out of 24 representing 12% disagreeing with this fact and 1 (4%) respondent neither agreeing nor disagreeing with this fact.

11.0 CONCLUSION

For more than three decades the banking industry in Ghana and for that matter Africa has been in the “dark” with little or no investment in technological infrastructure which has been the engine of growth for banks across the world. The banking industry has been operating in the same infrastructure inherited after independence or with worsen infrastructure than before.

In the past decade or so, banks have been making frantic effort to invest in technological innovations to enable them gain competitive edge over their competitors as technology has been shown to improve the efficiency of banks both in the back as well as the front office. Customers have generally been happy at what is going on but a lot needs to be done.

It appears that the story of technological innovation in retail banking in Ghana seems to have much in common with similar developments in the banking sectors experienced in other developing African countries. However, work still remains to be done by these banks with the help of government to bring these banks to the levels of banking in South Africa let alone in Europe and America.

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