

E-BANKING IN DEVELOPING ECONOMY: EMPIRICAL EVIDENCE FROM NIGERIA

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Abstract: This paper empirically examines the impact of e-banking in Nigeria's economy using Kaiser-Meyer-Olkin (KMO) approach and Barlett's Test of Sphericity which support the use of factor analysis in order to extract independent variables associated with e-banking. The paper explores the major factors responsible for internet banking based on respondents' perception on various e-banking applications. It also provides a framework of the factors which are taken to assess the e-banking perception. Due to emergence of global economy, e-business has increasingly become a necessary component of business strategy and a strong catalyst for economic development. E-banking has become popular because of its convenience and flexibility, and also transaction related benefits like speed, efficiency, accessibility, etc. The results of this study shows that e-banking serves several advantages to Nigerian banking sector. The customers (respondents) perception is that e-banking provides convenience and flexible advantages. It also provides transaction related benefits like easy transfer, speedy transaction, less cost and time saving. However, the study shows that the Nigerian customers have security, access, and no enough knowledge regarding e-banking services rendering by banking sector in Nigeria. The study suggest that critical infrastructure like power and telecommunication should be provided and with high level of stability to ensure the application of e-banking in Nigeria. Also, the relative skewed nature of banks location mostly in urban area should be addressed to ensure spread and accessibility by rural dwellers.

Key words: E-banking, Developing Economy, Empirical Evidence, Nigeria

1. Introduction

Financial services industry over time has opened to historic transformation that can be termed as e-developments which is advancing rapidly in all areas of financial intermediation and financial markets such as e-finance, e-money, electronic banking (e-banking), e-brokering, e-insurance, e-exchanges, and even e-supervision. The new information technology (IT) is turning into the most important factor in the future development of banking, influencing banks' marketing and business strategies. In recent years, the adoption of e-banking began to occur quite extensively as a channel of distribution for financial services due to rapid advances in IT and intensive competitive banking markets (Mahdi and Mehrdad, 2010; Dube, et. al., 2009). The driving forces behind the rapid transformation of banks are influential changes in the economic environment include among others innovations in information technology, innovations in financial products, liberalization and consolidation of financial markets, deregulation of financial inter-mediation. These factors make it complicated to design a bank's strategy, which

process is threatened by unforeseen developments and changes in the economic environment and therefore, strategies must be flexible to adjust to these changes.

The e-banking is transforming the banking and financial industry in terms of the nature of core products /services and the way these are packaged, proposed, delivered and consumed. It is an invaluable and powerful tool driving development, supporting growth, promoting innovation and enhancing competitiveness (Gupta, 2008; Kamel, 2005). Banks and other businesses alike are turning to IT to improve business efficiency, service quality and attract new customers (Kannabiran and Narayan, 2005). Technological innovations have been identified to contribute to the distribution channels of banks and these electronic delivery channels are collectively referred to as electronic banking, (Goi, 2005). The evolution of banking technology has been driven by changes in distribution channels as evidenced by automated teller machine (ATM), Phone- banking, Tele-banking, PC-banking and most recently internet banking (Chang, 2003; Gallup Consulting, 2008).

E-banking is the term used for new age banking system. E-banking is also called online banking and it is an outgrowth of PC banking. E-banking uses the internet as the delivery channel by which to conduct banking activity, for example, transferring funds, paying bills, viewing checking and savings account balances, paying mortgages and purchasing financial instruments and certificates of deposits (Mohammed, et. al., 2009). It is difficult to infer whether the internet tool has been applied for convenience of bankers or for the customers' convenience. But ultimately it contributes in increasing the efficiency of the banking operation as well providing more convenience to customers. Without even interacting with the bankers, customers transact from one corner of the country to another corner.

Electronic banking has experienced explosive growth and has transformed traditional practices in banking (Gonzalez, 2008). As per prediction of Maholtra and Singh, (2007) the e- banking is leading to a paradigm shift in marketing practices resulting in high performance in the banking industry. Delivery of service in banking can be provided efficiently only when the background operations are efficient. An efficient background operation can be conducted only when it is integrated by an electronic system. The components like data, hardware, software, network and people are the essential elements of the system. Banking customers get satisfied with the system when it provides them maximum convenience and comfort while transacting with the bank. Internet enabled electronic system facilitate the operation to fetch these result.

According to Christopher, et. al., (2006), E banking has become an important channel to sell the products and services and is perceived to be necessity in order to stay profitable in successful. There is a growing interest in understanding the users' experience (Pyun, 2002), as e-banking is observed to be a larger concept than user satisfaction. From this perspective, assessing the user experience is essential for many technology products and services (Salehi, et. al., 2008). Customers have started perceiving the services of bank through internet as a prime attractive feature than any other prime product features of the bank. Customers have started evaluating the banks based on the convenience and comforts it provides to them.

This study aims to explore the major factors responsible for e-banking in Nigeria based on respondents' perception on various internet applications, participants perception about e-banking and whether the user and non-user perception differs. The three critical factors of interest are convenience and flexibility, transaction related benefits, and demographic variables (gender, location, etc.)

2. Review of Literature

The concept of e-banking is a delivery channel for banking services. Banks have used electronic channels for years to communicate and transact business with both domestic and international corporate customers. With the development of the Internet and the World Wide Web (WWW) in the latter half of the 1990s, banks are increasingly using electronic channels for receiving instructions and delivering their products and services to their

customers. This form of banking is generally referred to as e-banking or Internet banking, although the range of products and services provided by banks over the electronic channel vary widely in content, capability and sophistication. E-banking is defined as the automated delivery of new and traditional banking products and services directly to customers through electronic, interactive communication channels. The definition of e-banking varies amongst researchers partially because electronic banking refers to several types of services through which bank customers can request information and carry out most retail banking services via computer, television or mobile phone (Daniel, 1999; Sathye, 1999). Salehi and Zhila, (2008), describes e-banking as an electronic connection between bank and customer in order to prepare, manage and control financial transactions. Electronic banking can also be defined as a variety of following platforms: (i) Internet banking (or online banking), (ii) telephone banking, (iii) TV-based banking, (iv) mobile phone banking, and e-banking (or offline banking).

E-banking includes the systems that enable financial institution customers, individuals or businesses, to access accounts, transact business, or obtain information on financial products and services through a public or private network, including the Internet or mobile phone. Customers access e-banking services using an intelligent electronic device, such as a personal computer (PC), personal digital assistant (PDA), automated teller machine (ATM), kiosk, or Touch Tone telephone. While some literature restricts the use of the term to internet banking (Daniel 1999), elsewhere the term is limited to retail banking (Aladwani 2001) or both retail and corporate banking (Simpson 2002). The common definition for e-banking, and the one used in this paper, comes from the Basel Committee Report on Banking Supervision (1998), "e-banking refers to the provision of retail and small value banking products and services through electronic channels. Such products and services can include deposit-taking, lending, account management, the provision of financial advice, electronic bill payment, and the provision of other electronic payment products and services such as electronic money".

Karjaluoto, et. al., (2002) indicated that banks have the choice to offer their banking services through various electronic distribution channels technologies such as Internet technology, video banking technology, telephone banking technology, and WAP technology. They also indicated that Internet technology is the main electronic distribution channel in the banking industry. In other words, e-banking as an online banking that involves the provision of banking services such as accessing accounts, transferring funds between accounts, and offering an online financial service.

Wang, et. al., (2003) claims that in the 1990s e-banking was under-utilised as business organisations used it only to market their products and services. Thornton and White (2001), examined customer orientations and usage of financial distribution channels in the Australian financial industry, found that more recently most financial institutions, faced with competitive pressure after the introduction of deregulation in 1983, have rethought their strategies to take full advantage of IT. Rafiu (2007) opines that the challenge to expand and maintain banking market share has influenced many banks to invest more in making better use of the Internet. The emergence of e-banking had made many banks rethink their IT strategies in competitive markets. This findings suggest that the banks that fail to respond to the emergence of e-banking in the market are likely to lose customers and that the cost of offering e-banking services is less than the cost of keeping branch banking.

This notion was also confirmed in a study conducted by Jasimuddin (2004) examined the role of e-banking in Saudi Arabia. He indicated that the majority of Saudi banks had taken advantage of Internet technology to establish web sites but few offered e-banking services. He suggested that if the Saudi Arabian banking industry wished to be successful in the global economy it would need to integrate Internet technology into its banking strategy.

Ayo (2006) investigated the prospects of e-commerce based on ability, motivation and opportunities (AMO) model and observed that virtually all companies have online presence. The paper reported the motivation and opportunities for e-commerce as low based on lack of e-Payment infrastructure and access to information and communication technology (ICT) facilities. Also, in an empirical assessment of customer acceptance of e-

Commerce carried out in Germany, Buse and Tiwari (2006) observed that: the highest mobile users are top management, followed by self employed, salaried class, students and others. Government employees were found not to patronize mobile banking; the most favoured reason for carrying out mobile banking is ubiquity, next is overview of bank account, followed by immediacy; and the highest fear of customers about mobile banking is that of insecurity, next is cost, and uncomfortably.

Mahdi and Mehrdad (2010) used chi-square to determine the impact of e-banking in Iran and their findings from the view points of customers is that, e-banking cause higher advantages to Iranians. In other words, Iran banks provide services that the customers are deriving satisfaction with particular reference to the use of e-banking. In a similar study, Jayawardhena and Foley (2000) explore e-banking as a new delivery channel arguing that e-banking may help to overcome the inherent disadvantages of traditional banks; it is very clear that if e-banking conducted successfully it leads to big volume of transactions. Further, Birch and Young (1997) argue that the internet may be exploited as a new delivery channel by the financial services industry to completely reorganize the structure of banks. It means that conducting e-banking in Iran leads more usage of ATM in Iran. The authors came to conclusion that the active ATM in banking sectors will cause cash circulation decreases, the efficiency of banking sector will increase, as: a. client banking costs decrease (less cash fees to pay), b. shop keeper / service provider costs will decrease, and c. bank costs decrease (cash storage, less checking and processing costs), customers have not enough knowledge related to e-banking in Iran. Accordingly the null hypothesis is rejected also. The authors believe that the lack of enough information on e-banking in Iran may cause less efficiency of Iranian banks. To achieving high efficiency both bankers as well as Iranian legislators should introduce e-banking services at mass level.

Chiemeke et al. (2006) conducted an empirical investigation on adoption of e-banking in Nigeria. The study identified the major inhibiting factors to Internet banking adoption in Nigeria such as, insecurity, inadequate operational facilities including telecommunications facilities and electricity supply, and made recommendations on how Nigeria banks can narrow the digital divide. Also, the report revealed that Internet banking is being offered at the basic level of interactivity with most of the banks having mainly information sites and providing little Internet transactional services.

Similarly, Agboola (2006) investigated electronic payment systems and tele-banking services in Nigeria. The findings revealed that there has been a very modest move away from cash. Payments are now being automated and absolute volumes of cash transactions have declined. The result of the study revealed that tele-banking is capable of broadening the customer relationship, retain customer's loyalty and enable banks to gain commanding height of market share if their attendant problems such as, ineffectiveness of telecommunications services, epileptic supply of power, high cost, fear of fraudulent practices and lack of facilities necessary for their operation were taken care of.

Thus, going by the findings of most studies, we can argue that the literature on the impact of e-banking is inconclusive especially in developing economies and serve as an open ground for more research in the area of e-banking.

Framework of the factors

We mention that this research survey focuses on finding the customers' perception on various internet application related with e-banking. Various factors which contribute to the customers' perception such as convenience, flexible virtual banking system, reliability, time factor, real time access to information, saving transaction cost, on-line bill payments, digital signature for security, faster transfer, easy to use, user friendly, low transaction fees, any time and anywhere banking facility, access to current and historical transaction data, facility of fund transfer to third party, etc, (see Divya and Padhmanabhan, 2008) and speed, operational efficiency, better cash management, expanded financial reach (Mahrdi and Mehrdad, 2010). Some of the factors are discussed below.

1. Digital signature for security: Security is rated as the most important issue of online banking. There is a dual requirement to protect customers' privacy and protect

against fraud. Digital signature is a precautionary measure to prevent malpractices and tampering the information. It is a form of enhanced authentication (Williamson, 2006).

2. Convenience way of operating banking transactions: Online banking is a highly profitable channel for financial institutions. It provides customers convenience and flexibility and can be provided at a lower cost than traditional branch banking (Beer, 2006).

3. Faster transfer: The fundamental advantage of the e-banking is the transfer of the information about the money's worth to any place at any time with a mouse click's distance (Dube, et. al., 2009)

4. Reliability: Kamel (2005) identified one of the very important service quality dimensions of e-banking service quality is reliability. The online banking environment has grown tremendously over the past several years and will continue to grow as financial institutions continue to strive to allow customers to complete money transfers, pay bills, and access critical information online. Authenticating customers logging onto their online banking service has become a crucial concern of financial institutions (Williamson, 2006)

5. Time factor: Liu and Arnett in their study identified time factor as one of the prime factor that in e-banking service quality feature for the customers. Saving time is an importance factor which influences the customers prefers to use e-banking. (Beer, 2006). Banks can make the information of products and services available on their site, which is, an advantageous proposition.

6. Real time access to information: The banks started e-banking with simple functions such as real time access to information about interest rates, checking account balances and computing loan eligibility. Then, the services are extended to online bill payment, transfer of funds between accounts and cash management services for corporate organizations (Mohammed, 2009).

7. Queue management: One of the important dimensions of e-banking service quality is queue management (Agboola, 2006).

8. Saving transaction cost: Improving customer service, increasing market reach and reducing costs are now basic expectations of Internet banking services. If consumers are to use new technologies, the technologies must be reasonably priced relative to alternatives. Otherwise, the acceptance of the new technology may not be viable from the standpoint of the consumer (Al-Sukhar, 2005). Internet banking model offers advantages for both banks and customers. The Internet provides the banks with the ability to deliver products and services to customers at a cost that is lower than any existing mode of delivery. Another factor that would stand in the way of consumer adoption of e-banking is the cost factor.

9. Easy to use and user friendliness: Ease of use is an important determinant for the customer preferring the internet banking (Beer, 2006). In a study conducted by Karjaluoto, et. al., (2002); reported that ease of use of innovative product or service as one of the three important characteristics for adoption from the customer's perspective. The user friendliness of domain names as well as the navigation tools available in the web-sites is an important determinant for ease of use.

10. Any time and anywhere banking facility: Online banking users say that convenience is the most important factor, online banking lets them access their accounts from anywhere and at any time (Maholtra and Singh, 2007)

11. Access to current and historical transaction data: A customer can check balance by logging into banks website through a user name and password. In this way he can enquire balance, status of cheques, perform funds transfers, order drafts, request issue of cheque books etc (Gupta, 2008). Customers prefer to view account balances, transaction history and updates get e-statements, credit card and debit card transaction history and updates, checking the status of their credit card accounts, viewing information regarding their account, information on their fixed deposits on line.

3. Research Methodology

Research design

An exploratory research design was considered the most suitable approach in view of the nature of the problem being investigated. A structured questionnaire adapted and modified as used by Divya and Padhmanabhan, (2009) was used as the main data-gathering instrument. The questionnaire was divided into four sections. Section A captured basic demographic information regarding the banks such as age of the bank, capital base and the number of branches nation wide. Section B captured information about the adoption and usage of e- banking services. Section C sought to determine the perceived benefits of e-banking and while section D captured information about the nature of the challenges faced in the adoption and usage of e-banking. The last two sections used a five point Likert Scale battery where the respondents were asked to indicate the extent to which they agree/disagree with various statements. The Five-Point Likert's scale having the ratings of "strongly disagree" (1) and "strongly agree" (5) were used. Due to commercial confidentiality and sensitivity of the banking information the questionnaire was designed in a manner that did not require the respondents to reveal their names nor their banking institutions.

Data collection

The study sample consisted all the 25 commercial banks in Nigeria. All the commercial banks in Nigeria are head quartered in either Abuja (the Capital city) or Lagos, hence it was imperative to focus on these branches as they generally reflect technologies by sister branches. All the twenty-five (25) banks filled and returned the questionnaires. Data was collected over a period of three months commencing from the second week of January 2010 to the fourth week of March 2010. Statistical Package for Social Sciences (SPSS) version 10 was used as the statistical analysis tool while descriptive statistics were computed and used in the interpretation of findings.

A total of one thousand (1000) questionnaires were randomly administered to customers from diverse employment background and bankers. Seven hundred and fifty (750) were returned, which represents 75.00% of the total respondents or participants.

4. Empirical Analysis and Interpretation of Results

Factor Analysis was performed with 20 statements related with e-banking features. The Kaiser-Meyar-Olkin (KMO) for was .754 and significant Barlett's Test of Sphericity supported the use of factor analysis in order to extract independent variables associated with e-banking. The degree of common variance among the twenty variables is "mediocre" which reflects if a factor analysis is conducted, the factors extracted will account for fare amount of variance but not a substantial amount.

An exploratory principal component factor analysis was done using SPSS 16.0. Varimax rotation was used to identify the underlying factors for e-banking features. Items with eigen values greater than one were extracted and all factor loading greater than 0.5 were retained. Twenty items yielded 6 factors explaining 88.05 percent of variance as shown in table 1.

Table 1. Rotated Component Matrix

Factors	Items	Factor Loadings	Variance Explained	Reliability (Cronbach's Alpha)
1. Time factor			15.345	.812
2. Security			17.560	.765
3. Queue management			12.565	.764
4. User friendly			14.420	.910
5. Fund transfer			15.2085	.650
6. Accessibility			13.075	.673
			88.05	

The variables above are considered as fundamental consideration associated with e-banking. General perception about e-banking was gauged by 20 items. Out of which six items were related with convenience and flexibility and 9 items were related with transaction related benefits, and 5 items were related to access or location. All items were measured on a scale of 1 to 5. From the questionnaire convenience and flexibility related items clubbed together and average score taken to gauge the respondents' perception about convenience factor. Out of total respondents 84 % respondents felt that e-banking is very convenient and flexible. And same percentage that is, 84% from total users agrees or strongly agrees that e-banking is convenient. They felt that it gives benefits like no queuing in bank and one can do anytime and anywhere banking. Approx 79% of total respondent agreed that internet banking has transaction related benefits. These benefits include efficient and speedy transfer of funds with lower transaction cost. And, with e-banking can check transaction details regularly without any hassle. This result found support in Mahrddi and Mehrdad, (2010); Divya and Padhmanabhan, (2009) but contrary to Buse and Tiwani (2006).

Generally, most banks in Nigeria are located within the city or urban centres where infrastructure is available. Therefore, examining e-banking with respect to location became insignificant since banking services are rural-biased. Thus, the study has location challenge by rural and peri-urban dwellers in Nigeria who are compelled to move to the city to access banking services.

Table 2: Testing of factors which contribute to the customers' perception

Factors	Items	Cronbach Alpha
Convenience and flexibility	<ul style="list-style-type: none"> • -A convenient way of operating banking transactions - A - Avery flexible virtual banking system • - Save time as compared to conventional banking • - No queuing in bank branches • - Easy to use/ user friendly • - any time /any where banking facility • 	0.840
Transaction related benefits	<ul style="list-style-type: none"> -saves a lot of transaction cost -transaction is efficient - it has lower transaction fees - it allows speedy transfer - it allows easy access to transaction data both recent and historical -it can check transaction details and statement regularly - it gives facility to fund transfer to third party - Speed - Better cash management 	0.793

Source: Variables (factors and items) source from Divya and Padhmanabhan (2008)

The bio-data of participants is summarized in Appendix 1:

The bio-data in appendix 1 shows that out of 750 participants 411 (54.80%) are male and 339 are female. It means that the majority of participants are male. Majority of the respondents were between the ages 31 to 40 years, which represent 51.90% followed by ages 41 to 50 years with 29.60%. Relating to job position, most of the respondents were from the private sector 37.60% followed by public sector 32.14%. While 43 (5.73%) were clerks and others (teacher, student and housewife) 55(7.33%).

Regarding to educational background, out of 750 respondents 326(43.47%) had bachelor degree or higher national diploma (HND) followed by Diploma and national certificate of education (NCE) 120(16.00). Master degree had 195(26.00) participants. The least number of participants had PhD degree and Professor 109(14.53%). The location of the participants shows that most of the respondents resides in urban area 509(67.87), peri-urban 204(27.20), and rural area has the least with 37(4.93). The ratio of participants with respect to customer and bankers shows 448(59.73%) and 302(40.27%) respectively.

5. Conclusion

The banking industry play a significant role in supporting economic development through efficient financial services (Dube, et. al., 2009; Salehi and Azary, 2008). Nigerian banks have embraced innovative banking technologies and e-banking services in recent years. Almost all banks have invested in expanding and improving the Information Technology systems and a number of new e-banking services have been developed. All the 25 commercial banks operating in Nigeria have declared e-business as one of the core strategies for the future development. At the same time, e-banking acceptance depends probably on bank service quality, customer preferences and satisfaction.

The analysis done with the help of statistical tools clearly indicate the factors responsible for e-banking. Factor analysis results indicate that security, user friendly, queue management, accessibility, time factor and fund transfer are major factors. Out of total respondents' about 88% agreed that e-banking is convenient and flexible way of banking and it also has various transaction related benefits. Thus, Providing e-banking is increasingly

becoming a matter of need to banks to continue to compete in a globalized work and gain market competitive advantage.

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Appendix 1: Bio-data of participants or respondents

Variable	Category	Frequency	Percentage
Gender	Male	411	54.80
	Female	339	45.20
Age	20 – 30	54	7.20
	31 - 40	389	51.90
	41 – 50	222	29.60
	51 & above	85	11.30
Job Position	Clerk	43	3.73
	Private sector	282	37.60
	Public sector	241	32.14
	Public servant	129	17.20
	Others	55	7.33
Education	Diploma/NCE	120	16.00
	Degree/HND	326	43.47
	Master	195	26.00
	PhD/Professor	109	14.53
Location	Rural	37	4.93
	Peri-rural	204	27.20
	Urban	509	67.87
Participants	Customer	448	59.73
	Banker	302	40.27

Source: Field Survey 2010 (January – March)