The Adoption of Internet Banking in Nigeria: An Empirical Investigation

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Abstract

This study examines the level of adoption of Internet banking in Nigeria. Twelve large on-line banks that retained their brand names after the consolidation were studied in terms of the functionality and interactivity of their websites. The model used is similar to that proposed by Diniz in 1998, with an additional factor on security measures. Main factors that inhibit the adoption of Internet banking in Nigeria are security and inadequate operational facilities including proper telecommunications and power. The results reveal that Internet banking is being offered at the BASIC level of Interactivity with most of the bank having mainly information sites and providing little Internet transactional services. The level of security of the banks was also low as most of the banks have not adopted 128 bit Secure Sockets Layer (SSL) encryption security measures. Most of the banks perform extremely well in providing up-to date information. However, further improvements on security and provision of key ingredients of Internet banking which includes confidentiality, effective communication integrity and availability, should be considered in order to satisfy customer's requirements.

Keywords: Adoption, Internet banking, functionality, interactivity

1. Introduction

Nigeria's First Bank, the African Banking Corporation was established in 1892. Banking legislation did not exist then, until 1952 when conventional banking system started with the industry witnessing a lot of regulatory and institutional advances. The industry was being controlled by at most five out of the 89 banks in existence before the commencement of the ongoing banking industry reformation in the country. Multiple branch systems is also one of the notable features of Nigerian banks, with a total of 89 banks accounting for about 3017 bank branches nationwide as at 2004 (Ezeoha, 2005). The industry is also faced with heavy challenges, including the over bearing impact of fraud and corruption, erosion in public confidence, a poor capital base, persistent cases of distress and failure, poor asset quality and so on. Part of the moves to resolve these ongoing problems include the banking reform initiated by the Central Bank of Nigeria in June, 2004, which is largely targeted at reducing the number of banks in the country and making the emerging banks much stronger and reliable (Ezeoha, 2005).

The ability of Nigerian banks to satisfy and retain their customers in the present post-consolidation era will no doubt depend

largely on the development of their Information Technology (IT) infrastructure. In the bid to catch up with global developments and improve the quality of their service delivery, Nigerian banks have invested much on technology, and have widely adopted electronic and telecommunication networks for delivering a wide range of value-added products and services. They have, in the last few years, transformed from manual to automated systems. The numerous advances in Internet technology has made considerable impact in business environs and have in particular brought about a shift in banking operations. This has necessitated the adoption of internet banking by banks. With the application of the Internet to banking, banks are able to work effectively and make high profits. The chief driving forces of internet banking among customers include better access to the services, better prices and higher privacy. Through internet banking, customers can transact banking operations at the comfort of their homes and office anywhere, anywhere. Ovia(2003) posited that the hype of e-commerce, e-banking and e-everything is gradually being embraced by Nigerian financial institutions who are poised to be in the vanguard of narrowing the digital divide. In its survey on the extent of e-banking adoption by Nigerian banks, the Central Bank of Nigeria (CBN), in September 2002, found out that of the 89 licensed banks in the country, only 17 were offering Internet Banking, 24 were offering basic telephone banking, 7 had ATM (Automated Teller Machines) services while 13 of the banks were offering other forms of e-banking. This implies that as of then, 19.1 percent of the banks were offering Internet banking, signifying that Internet banking was yet to take center stage despite its widely acclaimed benefits against the traditional branch banking practice (Ezeoha, 2005).

Part of the reasons identified by Ezeoha (2005) why Internet banking was having a moderate economic impact in the country includes a lack of adequate operational infrastructure like proper telecommunications and power. In addition, Internet usage in the country has been abused by cyber criminals, thus making its window unattractive for domestic banking operations and legitimate international operations. The inherent fear associated with patronizing Internet Banking services in Nigeria, Ezeoha added, is again reinforced by the growing evidence the word over that dubious Nigerians use fake bank websites to scoop funds from unsuspecting victims, and in some cases using existing bank sites for these crimes.

This study examines the current level of internet banking adoption in Nigeria. It identifies the major inhibiting factors to internet banking adoption in Nigeria and makes recommendations on how Nigeria banks can narrow the digital divide. The study concludes by adapting the Diniz model on internet adoption in the USA to propose a new model for Nigerian banks.

2. Review of Literature

Sathye (1997) surveyed the state of Internet banking in Australia and discovered at the end of September 1997 only two (2) banks had started Internet banking services out of 52 banks in Australia. The research surprisingly noted that Australia's biggest and most profitable bank was yet to start Internet banking. He therefore advised that serious attention be given to Internet banking, if Australian Banking is not to look medieval in the just changing world. Diniz(1998) presented a survey of websites of banks in the United States of America (U.S.A). His work divided the functionality of the websites in such a way to give insight on three different opportunities that the technology could bring to banks. The areas are; (i) information delivery (ii) transaction (iii) customers relationship. With 121 banks selected from all over the U.S.A that were already running a website, the study revealed that bigger banks were doing better at the basic and intermediary levels, and many banks were offering transaction services at the advanced level. He noted that banks have improved in their websites and that they are only in the beginning in terms of functionality.

Furst, et. al. (2002) developed statistical models to explain why banks choose to adopt Internet banking and why some choose to offer a relatively wider array of Internet banking products and services. They also investigated whether offering Internet banking affects a bank's profitability. The results revealed several significant differences in the profile of banks that offer Internet banking and those that do not. They observed that Internet banks rely more heavily in non-interest income and less on core deposits for funding than non-Internet banks do. In addition, the study revealed that Internet banks have better accounting efficiency ratio and higher returns on equity than non-Internet banks.

Corrocher (2002) investigated the drivers of the adoption of Internet banking. In order to understand its role with respect to the traditional activity and to offer a comprehensive picture of the diffusion of such a technology within the sector. The study investigated the relationship between Internet banking and the traditional banking activity in Italy in order to understand if these two systems of financial services deliveries are perceived as substitutes or complements by the bank. The study revealed that the banks seem to perceive Internet banking as a substitute for the existing branching structure, although there is also some evidence that banks providing innovative financial services are more inclined to adopt the innovation than traditional banks. The research submitted that future research is needed in order to identify more specific issues regarding the adoption of Internet banking in the financial sector in general and the pattern of diffusion of such innovation among banks in Italy.

Chung & Paynter (2002) surveyed the state of Internet banking in New Zealand by examining the websites of seven on-line banks using a tailored electronic-commerce model. The results revealed that most of the banks had up-to-date information on their websites and identified security and complication of Internet banking as most of the inhibiting factors. Al-Sahbagh & Molla (2004) explored the drivers and inhibitors of customers' Internet banking adoption in the sultanate of Oman. The study revealed that in Oman, only two banks offer Internet banking services. They however, noted that members of banks in Oman are considering going online, although Internet banking is still a relatively recent phenomenon in Arab countries.

Khan (2004) tested whether consumer adoption of online banking is affected by the distance to one's bank branch. The source of data was the survey of consumer finances (SCF) from the Federal Revenue Board. The research estimated a model for online banking use with household level data from the USA from 1998 to 2001. The results showed that in the 1998 SCF, 5% of the respondents report used online banking as a channel for doing business with their main financial institutions. By 2001, this share

increased to 17%. The results however revealed that distance to the closest bank branch does not affect likelihood of online banking use by a household and that household income and education positively and significantly affect adoption.

Achour & Bensedrine (2005) evaluated the current situation of internet based financial services in Tunisia. The research was carried out in two parts. The first part evaluated Internet banking services using the existing Herseys tailored model, while the second part presented the Tunisian online brokerage Network. The study revealed that Internet based services in the Tunisian financial sectors are still in the early stage of development and significant efforts be made in order for the technology to take off. Awamleh & Fernandes (2005) adopted Diniz model to evaluated websites of foreign and local banks in the United Arab Emirates (UAE). The study analysed the websites of banks on the United Arab Emirates using the Diniz model to access the extent of adoption of Internet banking. The results revealed that internet banking in the UAE is still in its infancy. The authors want proper development in the design, infrastructure and interface of Internet banking in the UAE to be established for customers to be encouraged to take full advantage of this technology.

Ovia (2001), in his paper on the practices and potentials of Internet Banking in Nigeria, stated that the technology is understandably a very important tool for every banks competitive strategy. He noted that Nigerian Banks cannot immediately reap the digital dividends because of poor telecommunication infrastructure. He also submitted that the poor in Nigeria are financially forbidden from participating and that the recent rollout of Global System of Mobile Communication (GSM) in Nigeria cannot solve the telecommunication problems, given the high cost of tariff. Haung et. al. (2003) reports on the experience of first Atlantic Bank of Nigeria as it embarked on the implementation and introduction of Internet and mobile banking services. The author noted that, being a first mover (the bank pioneered Internet banking in Nigeria in November, 2000) in a given market can be crucial, not necessarily because of the immediate commercial benefits, but more because of the opportunity for developing customers trust in order to ensure the success of future innovation.

3. Research Methodology

3.1 Research Design

The websites of Banks in Nigeria, based on a model similar to that purposed by Diniz in 1998 was analysed to ascertain the adoption of Internet banking in Nigerian Banks. Diniz(1998) proposed a model to evaluate banks' websites in the United States of America (USA). The study was undertaken to learn about web banking models that are being adopted in the United States. The model provided a tool to classify and make comparisons between different kinds of banks from different groups and size. The model, however, divides the functionality of websites into three (3) different categories, viz.:

(i) Information Delivery: Since banks often work as information disseminators.

(ii)Transactions channels: as avenues for conducting loans actions in same way as in bank branch offices or ATMs.

(iii) Customer Relationship: as a tool to improve customer relationships.

Each of these categories of activities was further divided into three different levels of interactivity namely: BASIC, INTERMEDIARY and ADVANCED. The different levels of activities and their interactivity are shown in table1.

	BASIC	INTERMEDIARY	ADVANCED
Information Delivery	Electronic Brochure	Search Engine	Subscription
	News	Reports download	Advertisement
	Means of Contact	Recruitment forms	Discussion group
	Special Events	Hot links	Interface Customization
Transactional Channels	Opening Account	Balance Enquiry	Electronic Cash
	Cheque Book requests	Fund Transfer	Electronic Signature
	Card Requests	Bill Payments	Electronic Cheques
Customer Relationship	E-mail	Investment Advisor	Video Conference
	Suggestion forms	Calculations	Chart
	Complain forms	Software Download	Services Development

Table 1: Diniz Model.
Source:www.arraydev.com\commerce\jibc\980606.htm.

3.2   Proposed Model

The issue of security was necessitated and used as part of our proposed model because Nigeria has a reputation for Internet fraud in the world; having been regarded as the headquarters of Advance fee fraud or 419 (Ezeoha, 2005). In addition, the five million naira fraud perpetuated in First Atlantic Bank Limited (the bank that pioneered Internet banking in Nigeria in November, 2000) calls again to question the level of preparedness of Nigerian banks for the market offered through the services of Internet banking. The model is similar to that proposed by Diniz in 1998 with an additional column on security measures. The banks websites were evaluated based on our proposed model (see Table 2).

	BASIC	INTERMEDIARY	ADVANCED
	Electronic Brochure	Search Engine	Subscription

Information Delivery	News	Reports download	Advertisement
	Means of Contact	Recruitment forms	Discussion group
	Special Events	Hot links	Interface Customization
Transactional Channels	Opening Account	Balance Enquiry	Electronic Cash
	Cheque Book requests	Fund Transfer	Electronic Signature
	Card Requests	Bill Payments	Electronic Cheques
Customer Relationship	E-mail	Investment Advisor	Video Conference
	Suggestion forms	Calculations	Chart
	Complain forms	Software Download	Services Development
Security	User Name	Customer Code	Digital Signature/Certificate
Measures	Password/Change Password	Firewalls	SSL 128 Bit Encryption

Table 2: The Proposed Model

3.3   Population, Sample and Instrument

After the consolidation of banks, the banking industry in Nigeria now consists of 23 commercial banks, the Bank of Industry Limited, Federal Mortgage Bank of Nigeria, Nigeria Agricultural Co-operative and Rural Development Bank Limited and the Nigeria Education Bank (NEB). This study focuses on the twelve (12) commercial banks that retained their brand names after the consolidation of banks in Nigeria. The others and the banks that took on new names were excluded based on the fact that they either do not have websites or their websites were very rigid with only several pages of general information. The instrument used was our proposed Model.

3.4   Data Collection

Data on the sample banks was collected between March and May, 2006. The banks were evaluated using a binary score of zero (0) and one (1) for each feature in each of the functionality interactivity cells. A one (1) indicates the presence of a feature while a zero (0) indicates an absence of the feature. If the requirements in a feature are partially fulfilled, ½ a point was given.

Based on the above model, we made an evaluation of the banks' websites available and we have assigned to each bank, a 'Grand Score' simply obtained by the addition of the model items. A bank can get the maximum score of 36 points (being the total number of model items). A ranking of 1 – 6 of the Nigerian banks was then established from these scores as an indication of adoption of Internet Banking.

4. Results and Discussions

4.1   Website Evaluation Scores

This section provides an overview of the website evaluation scores of the twelve (12) commercial banks investigated. For each level of interactivity and each dimension, the score of each bank is shown in Table 3. The overall score obtained by each bank is the summation of points scored from each of the four dimensions. The maximum is 36 points.

4.2   Ranking of Evaluation Scores

From the evaluation scores in Table 3, we utilized a ranking of 1 – 6 as earlier stated. This is shown in Table 4. Lastly, we examined the relationship between the four functionality scores and the three interactivity scores by plotting a graph of all the possible combinations that resulted (Figures 1 – 4). Figure 1 shows no obvious relationship between information delivery and transaction channels. This seems to shows that banks in Nigeria are using their well-developed information sites to cover for their non-transactional activities. Figure 2 shows some relationship between information and relationship. This is quite obvious since the quality of customer relationship is dependent on a large extent on the nature of information delivered. Figure 3 shows also a clear relationship between transaction and security. This is quite obvious since the nature of the transaction in most cases is dependent on the extent of the security measures available. Figure 4 shows a positive correlation between customer relationship and customer security. This shows that the more banks relate with customers the more they are likely to feel secured with internet banking activities.

The results revealed that Internet Banking in Nigeria is being offered at the BASIC level of interaction. Analysis shows that scores for banks at basic level are quite high. Banks had scores between 4.5 and 11 out of the maximum score of 12 points. These scores, however, reduced drastically as the level of interactivity increases. This is depicted in Figure 5. The Banks were found to have mainly information sites. They all have high scores at the information level of activity functionality than any other level. Scores were between 4 and 9.5 out of the maximum 12 points. This is depicted in Figure 6.

The scores at the transactional level of activity functionality were lowest. Banks had scores between 0 and 4 showing little Internet transactional services being provided. Ranking of evaluation scores shows that more than half of the banks evaluated had scores below the half mark of 3 points out of the total 6 points. This is depicted in Table 4. Security measures functionality scores were not high compared to the level of information being provided. It had a frequency of 35(48.6%). Not all the banks, for example, have adopted the 128 bit SSL encryption security measures.

5. Conclusion

This paper investigated the level of adoption of internet banking in Nigeria. The study adopts the Diniz (1998) model and proposes an additional factor on security measures, to evaluate twelve (12) large on-line banks in Nigeria. It also identified security and inadequate operational facilities including proper telecommunications and power as the major inhibiting factors to internet banking. However, the study showed 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. Although the level of adoption of internet banking remains insignificant, internet banking will continue to play a significant role in the development and delivery of banking products and services in Nigeria. Even amidst the regulatory deficiencies identified by Ezeoha (2005), the rising cases of internet related frauds from Nigeria have made the internet banking environment very complex.

6. Recommendation

In order to ensure a successful practice of Internet banking in Nigeria, we recommend the following:

- The Nigerian government should help in reducing the cost of interconnectivity and general Information and Communication Technology (ICT) access. This will ensure public access to cheap and fast telecommunication services.

- The rising cases of Internet related frauds in Nigeria have made the Internet banking environment in Nigeria very complex. In addition to regulating cyber activities in Nigeria, there should be a promulgation and objective enforcement of necessary electronic banking laws and policies in line with international standards as suggested by Ezeoha (2006).

- Acquiring software that would be capable of handling the emerging divergence in the banking system is also a challenging issue as banks are already complaining of the huge cost of integration. Ezeoha (2006) suggested that the Central Bank of Nigeria would have to ensure that cost is not a hindrance in the needed systems integration among the emerging banks, especially since most applications in use, prior to consolidation, lacked the capacity and scope to match the new trend in the industry.

- The developments of banks websites should go beyond information purposes. Banks should put in place procedures for maintaining and updating their websites, including the various security features and key ingredients of Internet banking which includes confidentiality, integrity, availability and effective communication.

- The Nigerian government, in collaboration with the banks, should educate and inform its citizens and customers on the workability and effectiveness of Internet banking. This will instill more confidence in the customers and hence guarantee their patronage of Internet banking services.

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	Name of Bank	Informational			Transactional			Relationship			Security			Total Functionality				Total Interactivity			Grand Score
		Bas	Int	Adv	Bas	Int	Adv	Bas	Int	Adv	Bas	Int	Adv	Info	Tran	Rel	Sec	T.Bas	T.Int	T.Adv	
1	First Bank of Nigeria	4	2.5	1.5	1.0	2.0	0.5	2.0	1.0	0.0	2.0	1.0	1.0	8.0	3.5	3.0	4.0	9.0	6.5	3.0	18.5
2	United Bank for Africa	4	3.5	0	1.5	1.0	0.0	3.0	1.0	0.0	1.5	1.0	1.0	7.5	2.5	4.0	3.5	10.0	6.5	1.0	17.5
3	Union Bank Plc	3.5	1.0	1.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	5.5	2.0	1.0	0.0	6.5	1.0	1.0	8.5
4	Zenith Bank	4	4.0	1.5	0.5	0.0	0.0	2.5	1.0	0.0	2.0	2.0	1.0	9.5	0.5	3.5	5.0	9.0	7.0	2.5	18.5
5	Diamond Bank	2.5	1.5	0.0	2.5	1.5	0.0	2.5	2.0	0.0	1.5	1.0	0.0	4.0	4.0	4.5	2.5	9.0	6.0	0.0	15.0
6	Guaranty Trust Bank	3.5	3.5	2.0	0.5	1.0	0.0	3.0	2.0	0.5	1.5	1.0	0.5	9.0	1.5	5.5	3.0	8.5	7.5	3.0	19.0
7	Intercontinental Bank	3.5	3.5	2.0	0.5	0.0	0.0	2.0	2.5	0.0	2.0	2.0	1.0	9.0	0.5	4.5	5.0	8.0	8.0	3.0	19.0
8	Oceanic Bank	4	3.5	0.5	2.0	1.0	0.0	3.0	1.0	0.0	2.0	1.0	0.5	8.0	3.0	4.0	3.5	11.0	6.5	1.0	18.5
9	Afribank	4	0.5	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.5	0.0	4.5	0.5	0.0	5.0
10	Wema Bank	3.5	2.0	0.0	0.5	0.0	0.0	0.5	2.0	0.0	1.5	1.0	0.5	5.5	0.5	2.5	3.0	6.0	5.0	0.5	11.5
11	Ecobank Plc	3	1.5	1.0	1.0	0.0	0.0	1.0	0.0	0.0	2.0	1.0	0.5	5.5	1.0	1.0	3.5	7.0	2.5	1.5	11.0
12	FCMB	2.4	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	4.5	0.0	2.0	2.0	6.5	2.0	0.0	8.5
	Total	42	29.0	9.5	12.0	6.5	0.5	23.0	12.5	0.5	18.0	11.0	6.0	80.5	19.0	36.0	35.0	95.0	59.0	16.5	170.0

Table 3: Evaluation Scores of Bank's Website (Author's Field Survey, 2006)

S/N	Name of Bank	Grand Score	Rank
1	First Bank of Nigeria	18.5	3.08
2	United Bank for Africa	17.5	2.92
3	Union Bank Plc	8.5	1.42
4	Zenith Bank Plc	18.5	3.08
5	Diamond Bank Ltd.	15	2.50
6	Guarantee Trust Bank (GTB)	19	3.17
7	Intercontinental Bank	19	3.17
8	Oceanic Bank	18.5	3.08
9	Afribank Plc	5	0.83
10	Wema Bank Plc	11.5	1.92
11	Ecobank	11	1.83
12	FCMB	8.5	1.42
	Total	170.5	28.42

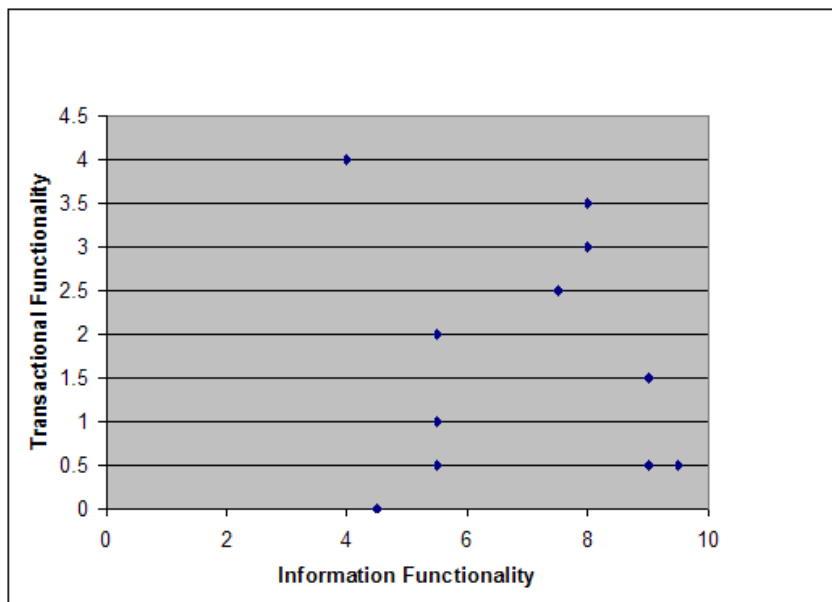**Table 4: Ranking of Evaluation Score**

Figure 1: Relationship between Information Delivery and Transaction Channel
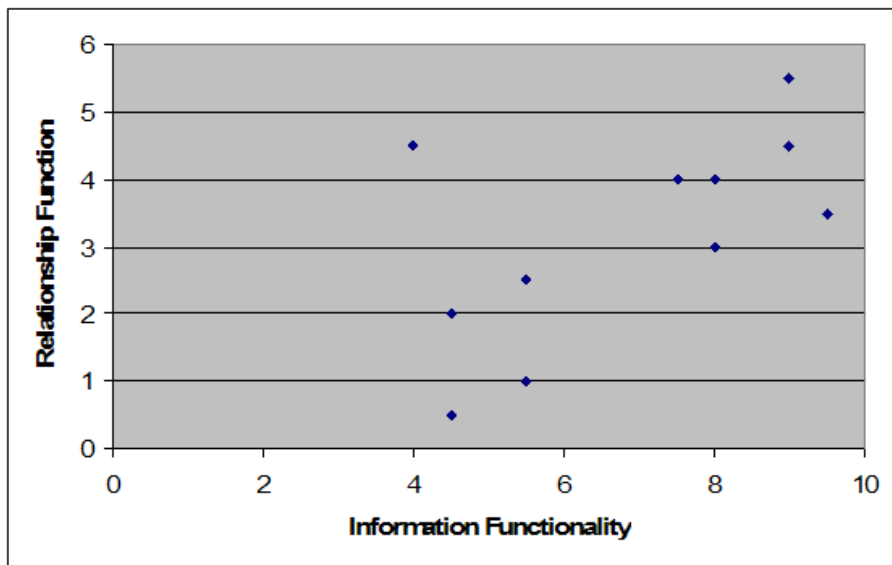
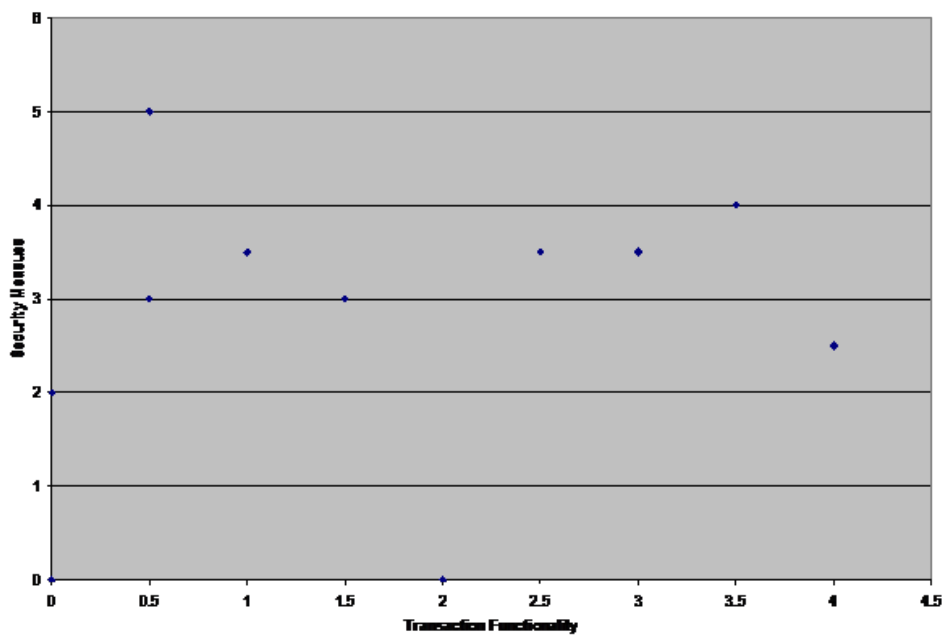**Figure 2: Correlation between Information Delivery and Customer Relationship**

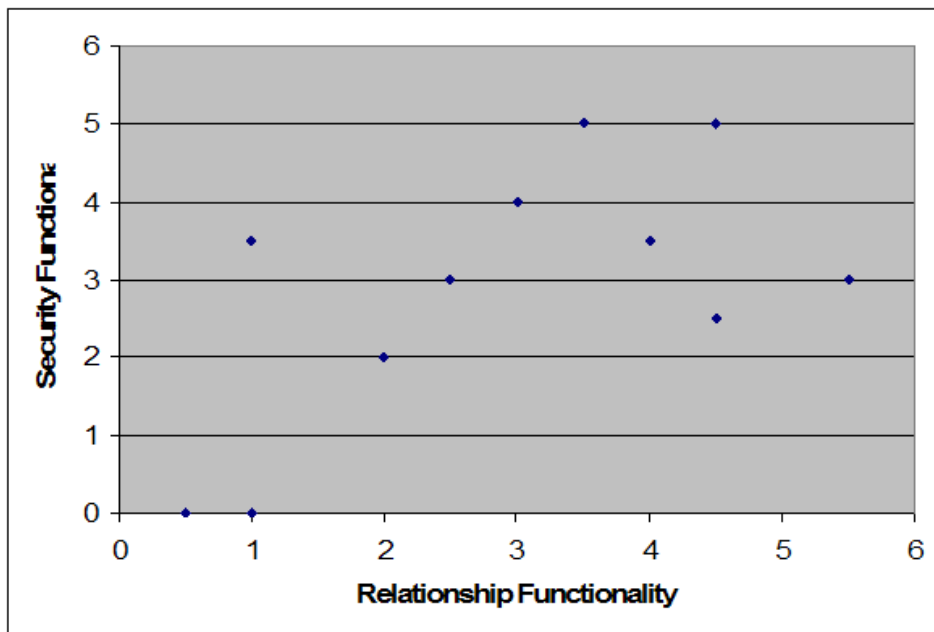**Figure 3: Relationship between Transaction Functionality and Security Measures**

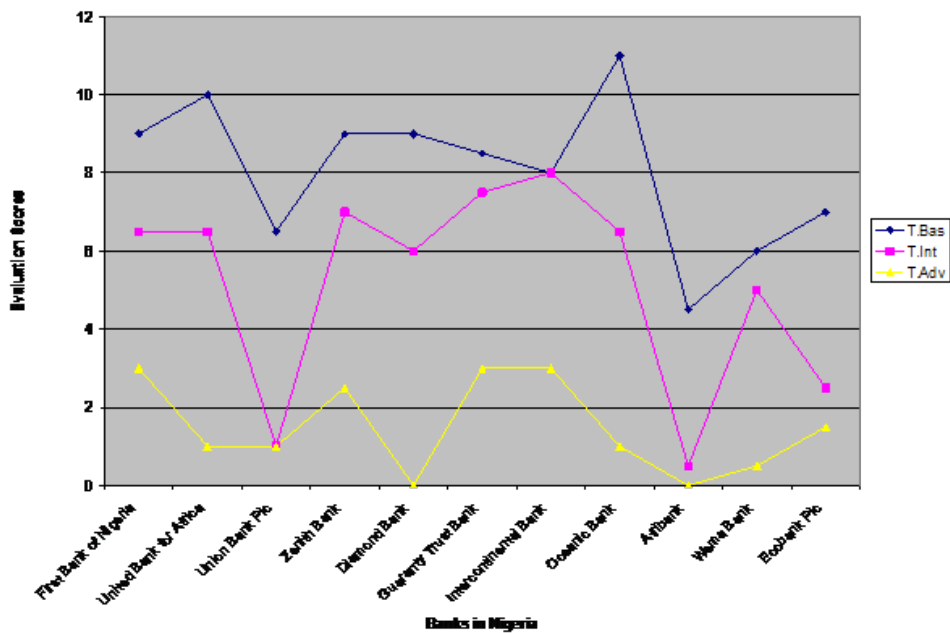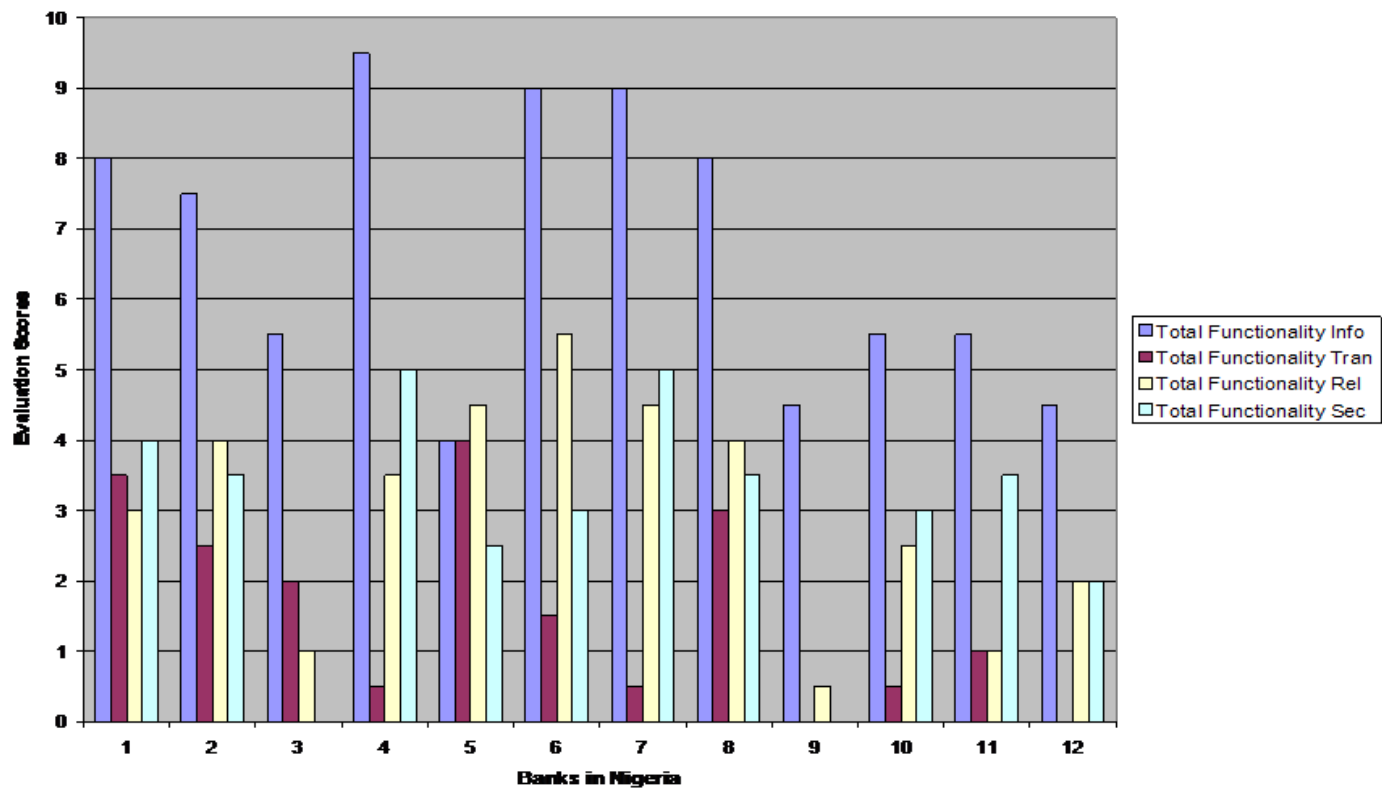**Figure 4: Correlation between Customer Relationship and Security Measure**

Figure 5: Levels of Interactivity

Figure 6: Levels of Activity Functionality