Exploring the Difficulties in Internet Banking Usage: The Case of Selected Nigerian Banks

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Abstract: This paper examines the variables associated with the usage and resistance of internet banking among bank customers in Nigeria. The issues identified include, the customers' belief that internet banking helps in achieving customers' personal requirements, conveniences, cost effectiveness. The key variables identified in relation to the internet banking usage are resistance to internet banking by customers as a result of information security, availability reliability of the system structure, safety and basic charges for internet banking website connections. A total of 152 returned and usable data with 24 items was used for the analysis of internet banking among the selected Nigerian banks. The collected data were analyzed using WINSTEP software to validate the instrument by a measure of Rasch analysis. The result indicates that the usage of internet banking is reinvigorated on the high side of dealings with distinct drop in business deals and service charges. The impact of this paper lies in the classification of various internet banking activities provided by the financial institution in Nigeria

Keywords: Internet banking usage; Bank customers; Rash analysis; item response theory

JEL Classification: E58

1. Introduction

Internet banking technology is changing at a very high range as a result of the emergence of information technology by designing and delivering personal financial service (Gangwar, Date, Ramaswamy, Irani, & Irani, 2015). The effective overview of the internet banking system has flattened the dimensions of sequential difficulties concomitant with the physical based banking system (Akinci, Aksoy, & Atilgan, 2004; Ifeonu, 2014). However, the cognitive and socioeconomic challenges to the effective uptake of innovation has post difficulties for the banking institution (Ndombi, Wakhungu, & Mutongwa, 2014). For instance the potential barriers for customers to use internet banking is related to individual perception on its usefulness, customer's ability to use it, its potential reliability & efficiency with associated costs of carrying out the transactions (Gill, Bunker, & Seltsikas, 2015; Parasuraman & Colby, 2015; Yang, 2009). The uniqueness of the paper is that it is contributing by employing a new method of analysis called Rasch measurement model Rasch (1966) in term of validating and assessing bank customers' acceptance and use of the new internet banking system.

The likelihood of a person (bank customers) in experiencing difficulties in carrying out a specific internet transaction with reference to bank customer's ability in using the internet banking system across the various customers using Rasch measurement model analysis. The Rasch measurement model the effort made by respondent is expected to relate to the certain ability level of the respondent. Hence, when an observed response from the respondent match closely or slightly deviate from the expected outcome, therefore we claimed that "the collected data fitted the hypothesized model" from the approach of rash analysis (Malik, 2014). Rasch measurement model analysis is to identify an unexpected response from the study respondents at various stages of ability to use the internet banking system via any technology device such as phone, tablet and laptop. The significant benefits of applying a Rasch measurement model are due to its independent nature of instrument with specific objectives. Also, when a sample size is small, the adapted instrument is not affected thereby ensuring stability in the model. The existing literature has shown that there is limited study that address the difficulties faced by bank customers' in the usage of the internet banking system (Akinci et al., 2004;

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Al-Ajam & Md Nor, 2015; Amin, Hamid, Lada, & Anis, 2008; Karjaluoto, Koenig-Lewis, Palmer, & Moll, 2010; Mehmood, Shah, Azhar, & Rasheed, 2014; Yang, 2009).

Therefore, relating the Rasch analysis with Item Response Theory (IRT) will pave way for classifying the difficulties in the usage of the internet banking system by bank customers in an emerging economy. Once the technical hitches are acknowledged, actions can be taken to resolve the issues. The use of Rasch measurement model in a study is unlike other method of accepting the bank customers to use internet banking system. The aim of the study is to examine the variables associated with the usage and resistance of internet banking among bank customers in conducting financial service transaction via internet applications. The results give a prospective value to the internet use of internet banking as an industry to build a larger and gratified internet banking system. There are another factor that is likely to influence the usage of an internet banking system which may include the level of operational cost, the value of the initial set-up cost, the network speed and the responsiveness of the data connection (Shah, 2009). According to Crabbe, Standing, Standing, and Karjaluoto (2009) risk and security may also raise concern over the usage of internet banking system concerns study uses Rash measurement model to address the difficulties faced by the bank customers in using internet banking system.

2. Literature Review

An extensive research has been done on the acceptance of new technologies in various disciplines from marketing to psychology and information management systems (Ramayah et al, 2009). There are theories that can be integrated to serve as the theoretical framework for the discussion on of internet banking usage as an innovation. Consequently, a variety of models for investigating and understanding the factors influencing the acceptance of new technologies have been suggested. These include, among others, Ajzen's Theories of Reasoned Action and Planned Behavior (TRA, 1975; TPB, 1985), Davis' (1989) Technology Acceptance Model (TAM), Roger's (1995) Innovation Diffusion Theory (IDT) and Vinkatesh et al (2003) Unified Theory of Acceptance and Use of Technology (UTAUT)

The Diffusion Innovation theory has been validated as an influential framework to explain the usage of innovation related issues with the users (Moore & Benbasat, 1996). Existing study using the DIT has found the inclusion of external factor in a model are important to show whether individual difference has the effect of the use or acceptance of an innovation (Hong & Zhu, 2006; Zhu & Kraemer, 2005). DIT has been applied to a wide range of information technology study by Liu, Darabi, Banerjee, and Liu (2007). However, there are limited study to have examines the variables associated with the usage and resistance of internet banking among bank customers by employing DIT framework with an additional external factor in Nigeria.

Previous literatures were aimed relatively on e-commerce, e-retailing and e-banking (Ayo, Adebiyi, Afolabi, & Ekong, 2008; Collier & Bienstock, 2006; Faloye, 2014; Khanifar & Molavi, 2012; Odumeru, 2003; Sparling, Toleman, & Cater-steel, 2007). However, cautiousness is essential to take place since we are relating the result from earlier generations of study to the new technology environment. Not only has the emerging technological environment differed but the target users of e-tax system which may have diversified educational and economic background. As a result, it is essential to examine the usage of e-tax system with different type of taxpayers in a different environment (Fu, Chao, & Farn, 2004).

Although, researchers' on the usage of information system has investigated the replicated some theory like Diffusion Innovation Theory and agreed with their prediction of adopting e-tax system by users Arbore, Soscia, and Bagozzi (2014), but the fundamental factors of the theory DIT construct do not fully show the specific variables that influences the any technology at the usage stage that may affect its implementation (Kelly, Lawlor, & Mulvey, 2010). As noted by (Cao, Jones, & Sheng, 2014; Karp & Fletcher, 2014; Kisska-Schulze (2014); Rogers, 2002) future usage of need to address how other factors influences the usage of any new innovation. Conversely, factors influencing the usage of

internet banking are likely to differ with the context and target user (Chu & Wu, 2004;Mahadeo, 2009; Wang, 2014). Studies reveal that trust has a remarkable influence on the preparedness of customers to involve in an online transaction because of their personal and sensitive information (Briggs, Simpson, & De Angeli, 2004; Humphrey, Mansell, Paré, & Schmitz, 2003).

The Technology Acceptance Model (TAM) developed by Davis (1989), suggests two fundamental factors influencing an individual's acceptance of a new technology, namely; perceived ease of use (PEOU) and perceived usefulness (PU). PEOU is defined as the extent to which the user anticipates the target system to be effortless, while the PU measures the user's subjective probability that applying a specific technology will increase their job performance (Fu, Farn & Chao, 2006). Derived from the Theory of Reasoned Action (TRA), TAM is an intentions based model which is normally customized to meet the extensive needs of information technology research (Money &Turner, 2004). The key hypothesis of TAM is that the actual use of a new technology is a function of behavioral intentions, which also depend on users' attitudes (Seyal, Rahman, & Rahim, 2002). The Rasch measurement model is one of the items response theory and it is based on the underlying latent trait modeling (Sharma, Khandelwal, & Rathod, 2014). It is hereby used to extend the theory of acceptance model by identifying bank customer's ability in doing transaction online through the technology application such as phone and computer.

2.1. Rasch Measurement Model

An easy way to comply with the review paper formatting requirements is to use this document as a template and simply type your text into it. Headers, footers or page numbers must not be included. The paper must be set as follows: The application of Rasch analysis is widely used in the area of educational psychology, medicine, management and sport (Smith, 1996). In recent times, another field of study such as Management has validated some instrument by using Rasch analysis (Crabbe et al., 2009; Karjaluoto et al., 2010; Malik, 2014; Mehmood et al, 2014; Ndombi et al, 2014; Shah, 2009; Yang, 2009; Yu, 2012). The fitting characteristics of Rasch measurement model is by identifying the difficult items and attempt to find a solution to them by rewording the items in a simple and easy to understand ways. Also the most important thing attached to measurement model is "specific objective and stability" of items (Bojuwon & Bojuwon, 2015). The process by which the reliability of an identified difficult performing tasks within the diverse group of respondents is called "Specific objective". While the ability to obtain a reliable and valid response with a small either a small or large sample size is said to be "Stability".

On the other hand, the integration of Technology Acceptance Model and the Diffusion innovation theory in this study has brought about a specific focus on the emergence of information technology issues and the reliability, validity and parsimony of the items. A host of empirical research studies has applied the TAM model, due to its parsimony and the multitude of experiential support for it (Wang, 2002). For specific studies on usage of internet based technologies, TAM has been proven to be a valuable, authoritative and robust model in describing the usage criteria by the customers (Horton, Buck, Waterson, & Clegg, 2001). Among the studies that have successfully applied TAM and found it to have almost accurate predictive power are but not limited to; Wang, 2002; Chang, Li, Hung, & Hwang, 2005; Wu & Chen, 2005; Fu et al, 2006; Hussein, Mohamed, Ahlan & Mahmud, 2011. This study, chose to apply TAM as the main theory to explain what motivates the self-employed taxpayers in Nigeria to use the countries new online tax system. We hypothesized that both PEOU and PU had significant positive effects on the use of the online tax system in Nigeria.

3. Methodology

This paper sample is selected from some Nigerian financial institution. A total of 5 Nigerian banks was selected for the study with an invitation, send to the management of the banks to carry out the research through their customers who are using internet banking. The aim of the study was briefly introduced to the respondents in terms of the system configuration, and fees charge for the use of internet banking, transaction speed, customer services, and some limitation to the use of internet banking.

3.1. Survey Methods

The items of the study were adapted and modified from the review of existing literature on the usage of new technology and its determinants. Most of the important literature where the items were adapted are the work of (Al-Ajam & Md Nor, 2015; Amin et al., 2008; Crabbe et al., 2009; Gangwar et al., 2015; Gill et al., 2015; Mattila & Hanin, 2015; Muhammad, 2015; Yang, 2009). The items were face validated with 5 experts with more than 8 years working experience in the banking system. This survey items were modified based on the feedback from the expert point of view such that it would be easily understood by large proportion banking customers that are using the technology "Internet banking." Furthermore, the random test of our study was administered to the public to identify the most challenging and problematic items in the study. With the above steps, the items was designed and administered to the respondents.

3.2. Items Selection

On the application of Rasch analysis, the relationship that exists concerning data and the prototypical is examined based on the developed hypothesis with the underlying variable (Bond & Fox, 2013). If an instrument is thoughtful to have loaded in two different variables the instrument will give the impression of noisy outer value when appraising the goodness-of-fit on the data with the model (Smith, 1996). The goodness-of-fit indices are understood from the statistical evidence of the subjective mean square of (Infit MNSQ) value and outlier-sensitive fit mean square of (Outfit MNSQ) value. The threshold value of the Infit and Outfit MNSQ you ranged from ±2 to fit the difficulties in the model to the data. In conclusion items 16 through 18 were deleted due their misfit. The original 26 items was reduced to 24 items used in the analysis of the study.

3.3 Items Analysis

The respondents' response to the 24 items administered and analyzed using WINSTEPS software as a statistical package to estimate the $ø_{i\ for}$ each of the bank customers and I each of the items in the larger units. The estimated parameter of the model could be standardized using maximum-unconditional likelihood estimation technique (Bond & Fox, 2013; Reise, Widaman, & Pugh, 1993). The item's configuration were with "system security" (6) items, "system basic fees" (4), "service and transaction fees" (3), "transaction and reply fees" (5) items and "customer service and others" (6) items. The response was based on a five point Likert scale, namely from "1=strongly disagree to 5=strongly agree".

The Rasch measurement, analysis of this study starts by first computing the raw score of person items in estimating the person's strength and ability on difficult items. The person's ability to respond to items was later transformed into legit to identify the model fit. This is followed by the determinants of the item difficulty with more than two response category. The reason for these standardization is to categorize the likelihood of respondent indicating any specified group of item in term of their level of age or degree to the validation of items given threshold.

4. Data Analysis and findings

4.1 Response Rate

The report on the response rate are based on the bank customers who are using internet banking or transacting personal of their business. The proportion of the response rate from each of the banks shows the reality of bank customer using the internet banking system in Nigeria. The total number of 250 questionnaire administered, only 160 were returned. Out of the total of 160 returned, 152 were used for the analysis. The remaining 6 were discarded as a result of not properly answered. The distribution of the questionnaire to different five different banks customer types were detailed in Table 1. A total of 50 questionnaires each were distributed to five different bank customers (First bank, First city monument bank, Guarantee trust bank, United bank of Africa and Zenith bank. PLC).

Table 4.1. Respondents Response Rate

Types of Banks	Total Send	Received Frequency	Percentage
First Bank PLC.	50	37	24.3
First City Monument Bank PLC	50	22	14.5
Guaranty Trust Bank PLC	50	34	22.4
United Bank For Africa PLC	50	31	20.4
Zenith Bank PLC	50	28	18.4
Total	**50**	**152**	**100**

The respondents of this study comprised of bank customers who are using the internet banking for different forms of transaction in Nigeria. Table 4.2 exhibits the frequency distribution of the demographic variable of the respondents which include gender, educational background.

Table 4.2 Respondents Demographic Profile

Variables	Frequency	%
Gender		
Male	99	65.1
Female	53	34.9
Total	**152**	**100**
Educational Qualification		
School Certificate	30	19.8
Graduate	82	53.9
Postgraduate	40	26.3
Total	152	**100**

Furthermore, from the results in table 6.2 above show that a total number of 99 (65.1%) were males while 53 (34.9%) were females representing the gender of the respondents. As for respondents educational qualification, the analysis shows that 30 (19.8%) have school certificate holders. Also, 82 (53.9%) of the total respondents were graduate holders. Lastly, the postgraduate degree holder with response of 40 (26.3%).

4.2 Discussion of Result

The ability of the respondents to participate in the usage of internet banking was examined using the Rasch analysis by employing WINSTEPS software. Rash analysis was carried out to measure the suitability of each item category. This analysis was followed with the unidimensionality of the survey item to decide whether the item categories are applicable. The identification of difficult items is reflected in the item separation index (ISI). The result indicates that the items separation index was 4.96 which is quite higher than the recommended threshold 0f 3.00 (Duncan, Bode, Lai, Perera, &

Investigators, 2003). On the other hand, the PSI shows the ability level of the respondents. The person separation index 2.18 and an items separation index higher than 2.0 is evidence of an effective separation index (Duncan et al., 2003). Furthermore, the item's reliability of the survey was 0.96 which considered quite high and impressive (Bond & Fox, 2013). The (INFIT MNSQ) goodness of fit were between 0.99 and 1.00 signifying that the data used for analysis fitted for the Rasch measurement model. In all, the result gives a strong sustenance for the model in Table 1. The output generated from MINISTEPs software include the item's reliability at 0.96, person reliability at 0.83, items infit Z standard infit for person reliability at-. 2 and person unfit z standard off-. 3 respectively.

4.3 Items Difficulty Estimates and Goodness-of-fit Statistics

The raw value of the analysis is shown in Table 3 to indicate the item difficulty assessments when the main of the score of the respondents are set to start on zero based default method. Raw scores are used in a ranking order of how difficult the items are and the person reliability level. When the items indicate a low core it means the item is perceived easier by the respondent and they will be able to answer the question easily. By way of divergence, items with high raw value are perceived as tough to answer by a majority of the respondents.

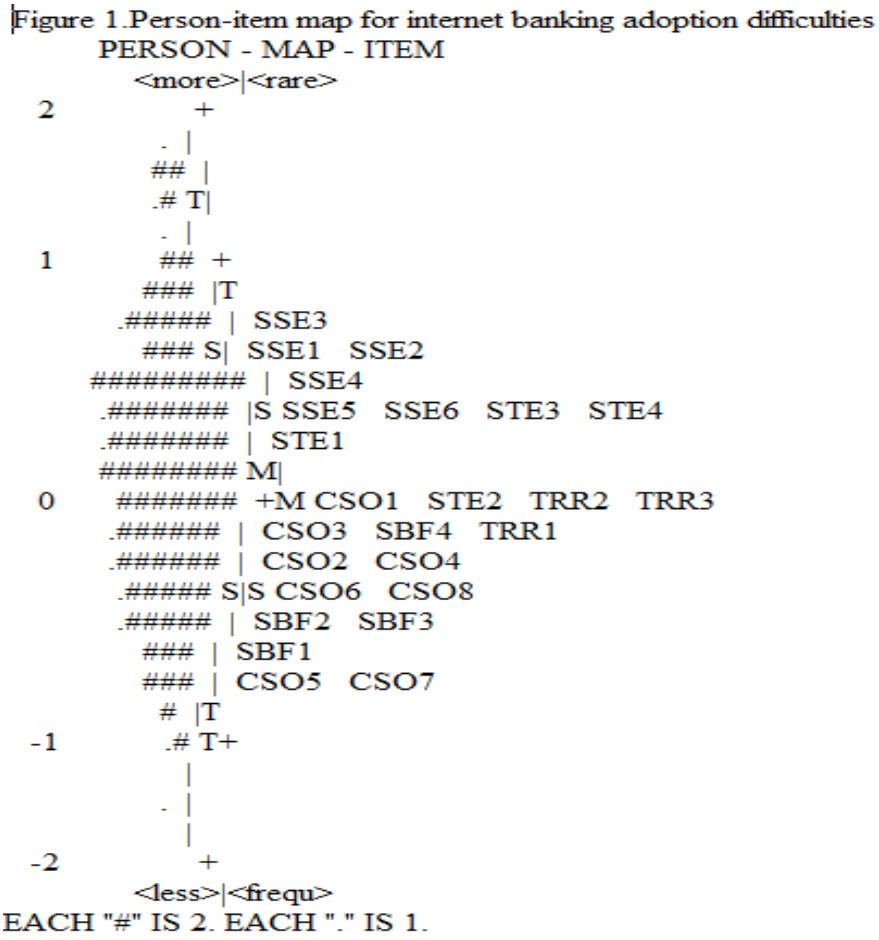
Table 3. Item Estimates and Fit Statistics from 181 internet banking customers

Item no	Raw score	Estimate logit's	Error*	Infit MNSQ	Outfit MNSQ
5	187	0.505	0.06	1.74	1.74
6	54	0.075	0.06	1.64	1.63
7	21	0.094	0.06	1.62	1.59
1	82	0.094	0.06	1.37	1.40
2	181	0.054	0.06	1.35	1.38
3	181	0.145	0.06	1.26	1.27
8	181	0.044	0.05	1.23	1.22
12	181	0.024	0.03	1.14	1.17
4	181	0.044	0.03	1.12	1.15
21	181	0.034	0.03	1.14	1.10
23	181	0.014	0.03	1.06	1.02
22	179	0.033	0.03	1.06	.98
9	181	0.022	0.03	94	.96
19	181	0.021	0.02	.93	.90
18	181	0.071	0.04	.92	.91
10	181	0.031	0.02	.90	.87
11	181	0.041	0.03	.84	.84
20	342	0.021	0.01	.83	.82
25	342	0.011	0.03	.78	.77
24	342	0.015	0.01	.68	.68
24	342	0.023	0.01	.61	.61
14	342	0.012	0.01	.52	.53
13	342	0.001	0.01	.51	.52
16	342	0.005	0.01	.47	.48
17	342	0.003	0.01	.44	.45
15	342	0.011	0.01	.42	.44
Items reliability	0.96		Person reliability	0 .83	
Item separation index	4.96		Person separation index	2.18	
Items infit MNSQ	1.00		Person infit MNS	0 .99	
Items infit Zstd	-.3		Peron infit Zstd	-.2	

A graphical demonstration of items difficulty assessment is detailed in Figure 1. The Codes "M" "S" and "Symbolize mean and standard deviation of items with lower levels of checks. The commitment of items SSE 1and 2 (reasonable service fee) and CSO1 (Internet banking system practicability). The

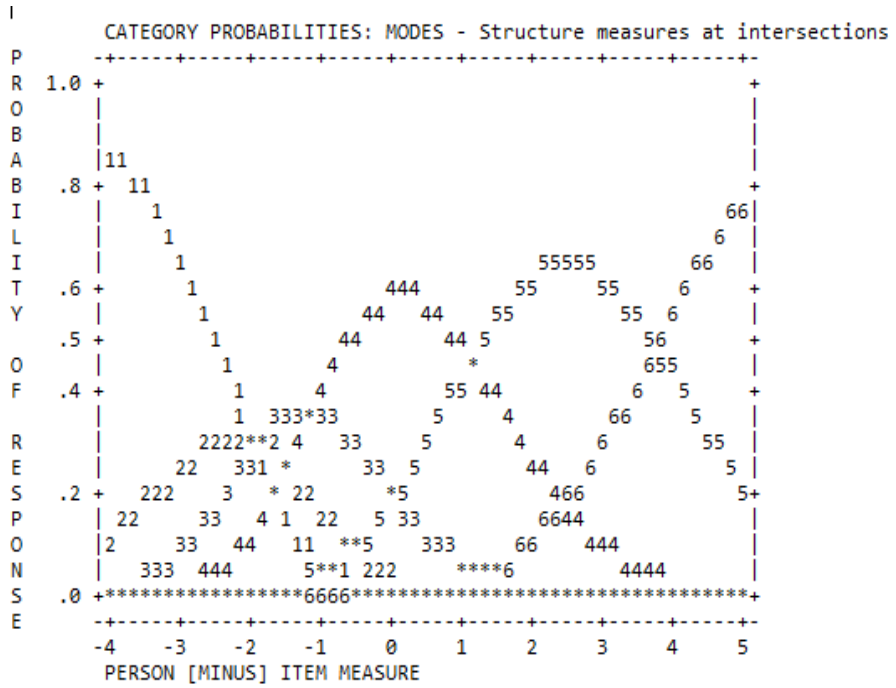
indication of item with fewer check shows a higher commitment which includes item STE 2 (Internet banking configuration to meet customers need) and item SBF 2 (internet banking saves time).

Figure 1. Person-item map for internet banking usage difficulties



Further analysis details in figure 2, demonstrates the likelihood of an individual classification of question by giving the modification in the assessments of person ability and item difficulty. For instance, if the individual's aptitude is with logit's lesser to the difficulty item with -1 on the x axis. That shows the person's probability of endorsing a value of 5 which is close to 0, of endorsing a value of 4 which is close to 0.6, of endorsing a value of 3 which is close to 0.5, of endorsing a value of 2 which is close to. 45 and finally, endorsing a value of 1 is closer to.2. Therefore, this individual is prospective of authorizing group +5 on this item because of its higher ability answer difficult item. The person with the ability to answer a difficult question higher than +5 on the x-axis most are able to respond to a value of 6. It is the likelihood of accomplishment of the item specified on an individual ability with the difficult items.

Figure 2. The Likelihood curves for Internet banking usage rating scale



5 Conclusion and Contribution

The result indicates that internet banking usage is reinvigorated with high level of dealings in a distinct drop of business operation fees which include: prompt operation, beneficial deal fees, applied internet banking system and reduction in internet business operation fees. Preferences were communicated to the STK system transaction charges are measured reasonably. On the other hand, variable impeding internet banking usage is associated to the extents of system structure and business operation. The majority of the bank customers regarded the security code given when doing online transaction are perceived to be unsafe. General perception of the internet users.

Furthermore, the impact of the present paper lies in the management of the various internet banking service providers based on the associated difficulties faced by the customers. This is based relatively in categorizing factors related to the users' acceptance of a new innovation. This paper gives more insight to the individual customer transaction that lead to users' difficulties. The use of the Rash measurement, analysis model to examine the variables associated with the usage and resistance of internet banking among bank customers in Nigeria. This is hereby based on individual imitations and intention characteristics in the past literature founded in theory of acceptance model. In conclusion, this makes a unique impact to the present paper. The Internet banking system structure needs more cyber security with a competitive base fee structure. The banks must work harder with the service provider to have an integrated device that can be installed in all form phones and computer system for an ordinary bank transaction. Further study could be conducted comparing various population the gender differences in the use of internet banking system.

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