Mobile Banking: The Change Agent of the Fintech Industry through Multidimensional Concept

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Abstract

Mobile banking is influencing the Fintech industry through multidimensional concept, yet, only a handful of studies have been done that shows the mediating construct and its effect on this concept in the Fintech industry. These notwithstanding, studies shows that this new revolution of banking has not reverberated well enough among banking clients. This paper was meant to identify the multidimensional constructs in the Fintech industry that impact on the usage of big devices like laptops for m-banking. A quantitative test, through the partial least square-structural equation modelling (PLS-SEM) of over 1 262 users of m-banking regarding this issue confirmed that internal influences (Intinflu) and external influences (Extinflu) plays a role. Users' trust in m-banking is determined by three dimensions: trust in technology (TrTec); trust in the e-vendor (TrEven); trust in a third party (TrTpt). Thirdly, users' perceived service quality is informed by three dimensions: interaction quality (IntaQ); system quality (SysQ); and information quality (InfoQ). In times like these, whereby the global economy is being driven by rivalry for superiority, studies of m-banking and how it is pivotal in the Fintech industry is important. The financial sector, particularly, the banks could increase acceptance and usage of this fintech behaviour when they pay attention to the outcomes shown by this study.

Keywords: Actual usage, BD, IPMA, mobile (m), m-banking, m-device, m-phone, SD

1 Background Study

Fintech is a broad term that encompasses various applications of technology in the financial services industry, hence the word "fintech" is derived from a combination of "financial" and "technology". It describes the use of technology to deliver financial services and products to consumers. There are many dimensions of fintech which are directed towards issues like:

- **Innovation:** Fintech products leverage cutting-edge technologies such as artificial intelligence, machine learning, blockchain, cloud computing, and biometrics enabled through mobile devices to create new solutions or improve existing ones for financial problems. Fintech products often challenge the status quo and disrupt the market with novel approaches.
- **Data:** Fintech products rely on data as a key resource and asset for operations. The products collect, store, analyze the data, and use the outcome to provide insights, recommendations, predictions, and decisions for customers and businesses.
- **Customer-centricity:** Fintech products are designed to meet the needs and preferences of customers, especially those who are underserved or unsatisfied by traditional financial institutions. For example, in conceptualizing the above listed innovation through mobile devices to provide mobile banking, studies need to further show which device (e.g., Laptop or smart phone) are preferred by clients when undertaking mobile banking. Fintech products such as mobile devices, often offer convenience, personalization, transparency, and lower costs to customers. These could be in the areas of banking, insurance, investing – anything that relates to finance. This current study is concerned with mobile-banking (m-banking), Fintech and its multidimensional concepts, and how this is changing the financial industry. Fintech is not new to the banking sector. However, the internet, combined with the widespread use of mobile devices like laptops, smartphones and tablets, means the speed of this change has accelerated greatly in recent years, and therefore, the need to know the dimensions upon which it operates.

Fintech is changing the world of finance for all of us in countless ways. For example, one can now open a bank account over the mobile device, enabled by the internet without physically visiting a brick-and-mortar bank. Clients can link the account to their smartphone and use it to monitor their transactions. They can even turn their smartphone into a "digital wallet" and use it to pay for things once they have money in their accounts.

Following from the above, one can simply say that, banking has gone through major transformational processes, whereby it is being encouraged on a m-computing technologies (a device that is portable using m-components like m-hardware and applications) to execute and supply solutions and applications like a typical computing device. These come in various sizes from palm or handheld computing device to a laptop computer. This concept has become known among researchers as m-banking. The calendar year 2000 saw the introduction of this m-banking concept but was met with many challenges, making the encounter unpleasant for consumers. Compared with online banking, m-technology misfunctioned due to restricted handsets attributes and narrow bandwidths, and this had consequences on the patronage degree. These, together with security issues to provide a

guaranteed mode of data transmission again made this brand-new concept even more frightening and uncertain to use (Dasgupta, Paul, & Fuloria, 2011; Wang, & Li, 2012; Hanafizadeh, Behboudi, Koshksaray, & Tabar, 2014).

The introduction of alternative m-phones like tablets, Ultra-mobile PCs, m-internet devices and PDAs were similar to most primary computers and laptops regarding ability and usability. This impacted and changed consumers' mindset. M-web browsing speeds increased dramatically due to broadband Internet access at attractive prices. These factors have contributed to a resurgence and enormous patronage of m-use, though not at the expected levels. The rippling effects of all the above dynamics are felt in the banking sectors, and banks are rolling out for m-banking. This has encouraged this current study to ask the following question (Q):

Q: *What are the multidimensional concepts changing the face of the fintech industry through m-banking?*

2 The concept of this study

In conceptualising a m-banking usage, this study believes that the phenomenon is driven by users' social norm, which is informed by two dimensions: internal influences (Intinflu) and external influences (Extinflu). Secondly, users' trust in m-banking is determined by three dimensions: trust in technology (TrTec); trust in the e-vendor (TrEven); trust in a third party (TrTpt). Thirdly, users' perceived service quality is informed by three dimensions: interaction quality (IntaQ); system quality (SysQ); and information quality (InfoQ).

Finally, user satisfaction levels that determine acceptance and usage are informed by the overall satisfaction obtained from the above multidimensional three second-order constructs, positively influencing MBCI. Then, depending on the control variable(s), these determine the actual usage. These lead to the model in Figures 1 which was based on the study of laptops, herein termed as bigger device (BD) when compared to smart phones which are mostly smaller devices (SD). As a theoretical framework for this paper, the following vital multidimensional constructs are usually used to study technological innovation and adoption such as m-banking.

2.1 Theory of planned behaviour

The theory of planned behaviour (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980) uphold people's intentions as the contiguous foundations of their behaviour and sees intention as an indication to capture people's drive for performing consented conduct (Ajzen, 1991). Sripalawat, Thongmak and Ngarmyarn's (2011) combined theory of planned behaviour and TAM and established that subjective norms are the most overriding influence in m-banking acceptance. Subjective norm is, however, due to external or internal influence (Bhattarcherjee, 2001).

2.2 Subjective (social) norm

2.2.1 Internal and external influences

Subjective norm is viewed as being made up of internal (interpersonal) and external (non-personal) influences (Bhattacherjee, 2001). Bhattacherjee refers to external influence as "mass media reports, expert opinions, and other non-personal information considered by individuals in performing a behaviour". In contrast, interpersonal influence refers to the "influence of friends, family members, colleagues, superiors, and experienced users who are recognised by potential adopters" (Bhattacherjee, 2001).

It should be emphasised here that the determinants of intention, as described by Ajzen (1991), are the person's acuity of social pressures placed on them to perform a behaviour in question, yielding to the social norm. Since it deals with prescriptions, this factor is termed subjective norm. Simply put, subjective norm and social norm are used interchangeably. Ajzen further maintains under the section "A Hierarchical Model of Perceived Behavioural Control" that control over the execution of a behaviour depends on the presence of various internal and external factors that may facilitate or interfere not invalidate the unitary nature of the construct.

Accordingly, this study's model captures social norms from external and internal influences, which are described as the perceived social pressures to perform or not perform a behaviour (Ajzen, 1991: 188). These play a crucial part in influencing people's acceptance and using new IT (Dwivedi et al., 2019) such as m-banking through BD.

For instance, South Africans depend on close friends and family members to influence purchase decisions (Njenga & Ndlovu, 2012: 8). Therefore, it could be inferred that the influencers are the ones who decide for their followers to use BD for m-banking depending on the influencer’s views such as weight, size or portability.

2.2.3 Socio-cognitive theory of trust

The theory of cognitive trust defines trust as a notion, valued by agents concerning its cognitive ingredients (Castelfranchi & Falcone, 2010). It treats cognitive trust as a relational construct between trust giver and trust receiver established in a given environment or context. Trust is a very significant factor of loyalty that cannot be taken for granted. For instance, many people worldwide refused to take the vaccine against COVID-19 because they do not trust its contents. The same phenomenon plays out on e-loyalty mostly, when such loyalty is multidimensional one such as:

2.2.4 Trust in e-vendor (website)

Many researchers have concentrated on various trust issues in electronic-business (Erkan, & Evans, 2016; Zhang, & Benyoucef, 2016) and indications are that people's trust in the online vendor is positively related to attitudes towards buying using a virtual setup (m-banking). The trust giver, in terms of this study, pertains to the user of m-banking (customer) while the trust receiver is the bank offering the services and the technology through which the user performs the banking transactions. Hence, if the user perceives BD such as a laptop to have the maximum computing power, a bigger screen than a smartphone and very travel friendly among other options, then it is likely that they will it to perform m-banking.

2.2.5 Trust in technology

A study conducted in South Africa by Wentzel, Yadavalli and Diatha (2013: 670) found that people's trust in technology-enabled financial services was the third most crucial construct

after attitude and perceived benefits. Trust in the Internet seeks to evaluate the degree of trust required, at which humans will perform a financial act relying on a machine. For illustration, the theory of reasoned action (Fishbein and Ajzen, 1975) thinks that beliefs directly affect attitudes and for that matter the higher the level of trust, the more favourable the attendant attitude (Farivar et al., 2017). Following trust in e-vender theory above, it could be said that the website representing the bank as a salesperson, as well as the BD (laptop) guaranteeing trust for the user, needs to be trusted to ensure complete formation of intentions.

2.2.6 Trust in the third party

Trust-creation can occur through the process of transference, whereby a third party guarantees trust in online transactions (Assensoh-Kodua, 2019). The formation of trust through the transference process necessitates the identification of proof sources and the establishment of links between the known entities or proof sources (third parties) and the unknown ones (online banks that the third party recommends as trustworthy). Hence, considering BD as third parties between the customer and the bank, if the customer is an American who prefers BD (Okazaki, 2005: 4), then the choice for m-banking will be obvious.

2.2.7 Perceived quality dimensions

Service quality is met when a given service meets customer expectations. This is very important in today's world of competition and creating customer loyalty. As noted in the above sections, quality could be attributed to how the provider interacts with users or the availability of a sound network required by users. Nevertheless, others may measure quality in terms of information and its accuracy.

2.2.8 Interaction quality

This reveals the quality of a user's interaction with the m-banking provider in service delivery. More often than not, users who have problems with their m-banking services will require assistance from providers. The interaction strategies that a representative of the provider adopts in handling these issues are fundamental in influencing the user's perception of service quality as an antecedent to satisfaction and continued usage. Thus, service providers must use reliable gadgets because, the user may know that, though smartphones have smaller screen sizes than laptops, they are great communication devices that make them appropriate for Internet surfing on the go. Thus, they enable m-banking anytime and anywhere, which promotes the phenomenon. Research has shown that interaction quality has the most significant effect on service quality (Alzaydiet al., 2018) due to the service's intangibility.

2.2.9 System quality

System quality involves reliability, response speed, ease of use, and navigational issues regarding users' m-devices. Assume the m-device used for m-banking was unreliable, difficult to use and had slower network capabilities, which made users wait for longer times to receive information and services, they will be dissatisfied and discontinue its usage. Suppose abrupt service interruptions compound such circumstances, and users have to begin transaction processes again. In that case, their behavioural outcomes will be compromised, as such occurrences will undermine users' experience and perception. Guo and Poole

(Shahpasandi et al., 2020) find that perceived complexity affects the flow in conducting online shopping.

Furthermore, a system of inferior quality may reduce users' perceived usefulness for it. For instance, difficulty accessing banking sites through laptops (BD) compared to Ultra-mobile Personal Conmputers (UMPCs) (SD), which is the most powerful computing device in the smallest form will compel the customer to go for the UMPC.

2.2.10 Information quality

Information quality refers to information relevance, accuracy, timeliness, unbroken characters (on BD) and comprehensiveness, giving clear directions to the least IT literate to perform banking. Low information quality may demoralise user satisfaction because users will have to spend much time searching and analysing information. This will affect their procedural difficulties and subsequent discontinuation behaviour. This is confirmed by Leung (2020) stating that content quality affects the m-TV user experience. Users adopting m-banking may do so on the premise that they can conduct banking at anytime from anywhere. If they are discouraged by irrelevant, inaccurate, outdated or limited information, users will perceive m-banking as low quality or useless.

2.2.11 Cognitive model of satisfaction decisions

In the cognitive model of satisfaction decisions (Oliver, 1981), satisfaction is postulated as an antecedent to post-exposure attitude and an immediate psychological state ensuing when the emotion neighbouring disconfirmed hope is attached with a consumer's initial emotional state about the consumption experience. These satisfaction decisions are usually built on perceived enactment. When this perceived enactment of expectation exceeds actual enactment, it is confirmed. Otherwise, it is disconfirmed, and this affects future usage intention.

The cognitive model of satisfaction decisions nevertheless fails to expose what brings satisfaction to the consumer. This could be the kind of gadget that was sold to the customer for m-banking, the credibility and trust of the e-vendor, or the quality of IT network used to sell m-banking services and products to the customer. This study seeks to determine how these impart satisfaction to users, thus affecting their intention to use m-banking continuously.

2.2.12 Continuance intention (CI)

Continuance intention is a well-established proxy for actual usage (Assensoh-Kodua, 2019). This is because continuance intention can lead to customer loyalty to generate a competitive advantage for firms seeking sustainable profitability. An understanding of the factors which influence continuance behaviour is, therefore, critical. M-banking user retention will ensure m-banking continuity and vice versa. Both IS continuance intention, and repurchase intention are influenced by the initial use or purchase experience and could therefore be applied to m-banking. Nevertheless, information system (IS) continuance (in this case, m-banking continuance intention) emphasises the continued usage of banking websites to perform banking transactions, instead of using a physical building while online repurchase underlines consumer behaviour. Given the importance of m-banking, retention and continuity of the phenomenon become crucial, and all efforts must be put in place to ensure that m-device

sizes are not creating discontinuation. This is vital because continuance usage is needed for business and investment purposes. M-banking continuance usage is an individual's intention to continue using a m-banking instead of just initial use or acceptance. It is worth mentioning that continuance intention is not the same as actual usage.

2.2.13 Actual usage

Actual usage is about inspiring a habit of m-banking among clients after the acceptance stage. When the need to perform banking arises and the circumstances that induce the customer to perform such banking through the appropriate m-device is enabled, actual usage can be created. When it becomes a habit among banking customers irrespective of the cost, we can talk about actual usage. Thus, for practitioners to inspire m-banking actual usage among their clientele base, it is crucial that they first understand the type of device that is likely to ensure this goal when the slightest cues to use are triggered without thinking about usage consequences. Until we create this situation and get past it, actual usage will remain a mirage.

3 Methodology and Data

3.1 Data collection procedure and participants

The constructs were formulated based on pre-validated studies and tailored to target clients who have ever used m-device (laptop), to undertake banking. This was after a pilot study among some eleven (11) staffs and workers at Durban University of Technology. The survey model was limited to a 5-point Likert scale set of responses that range from (1) strongly disagree to (5) strongly agree to ensure that only respondents within the said samples could find it meaningful. A total of 1 800 lists were surveyed, and 1 262 responses received, representing a 70 percent response rate. The 5-point Likert scale questionnaire also sought to gather data on the m-banking device of laptop that respondents use to do m-banking.

3.1.1 Descriptive statistics

The participants for this study were m-banking customers who prefer m-banking because of its convenience 555 (88%), better prices 10 (2%) and time-saving 59 (10%). These were accessed through an online agent in South Africa, where the study was based. South Africa is also known to be number two after China in terms of global adoption of m-banking (Assensoh-Kodua and Msosa, 2020).

If it needs to be meaningful in a study, the sample size must be at least ten (10) times the maximum number of indicators associated with an outer model (Hair et al. 2016). This study's participants of 1 262 valid responses (56% males) meet this requirement. Except for 34% of respondents, who indicated that they have no formal education, all the participants were educated and 2% have PhD degrees. A reasonable percentage of 36 have associate degrees. Most of the respondents (42%) fall within the ages between 36 and 45, followed by that of the 26 to 35-year age group (30%). This revelation supports a recent study by the Pew Research Centre (2015), which notes that there has been a drastic change in technological usage patterns amongst senior adults lately compared to some years ago. True to this statement, the current study has noticed a 69-point bulge from 8% in 2005 to 77% today. This is among the age group of 30 to 49. This group is the working class, spending between 0-15 minutes per week on m-banking (655).

3.1.2 Confirmatory factor analysis and measurement model evaluation

An exploratory analysis was undertaken from the extant literature to identify constructs and theories for this study then, the confirmatory factor analysis (CFA) technique of SmartPLS 3 (Ringle et al., 2015) content filtering system was used to confirm these factors. The study uses hierarchical modelling techniques, whereby values of the lower levels form proxies for those on each higher level and are defined by these lower levels. Therefore, the hierarchical structure was tested using CFA (Robinson et al., 2017). Before reporting the outcomes with PLS-SEM, reliability and validity were considered (Nitzl, 2016).

To assess reliability and validity, the CFA served as a data filtering system to cut through all constructs' noise to present the study with only those that meet the widely established cut-off points. The reliability test reflected the actual scores on the factors relative to it error (Ooi, & Tan, 2016) through the Cronbach's alpha's (α) estimation and the composite reliability (CR) offered overall reliability for stability and equivalence (Arpaci, 2016) to estimate correlations between the item and the factor (Henseler, 2017). The validity was measured by the estimate of convergent validity and discriminate validity. Convergent validity shows the extent to which items of a specific factor represent the same factor, and is measured using standardised factor loading, which should be greater than 0.707 and significant at 95% (Benitez-Amado et al., 2017). As shown in Table 3.1, all items exhibited loadings higher than 0.707 on their respective factors except (0.592^{**}) to provide evidence of acceptable convergence validity.

Table 1: Construct scores, Cronbach's (α), rho_A, CR and AVE for BD

	Loadings	VIF	Cronbach's Alpha (α)	CR	AVE
Internal influence			0.941	0.958	0.850
IntInflu1	0.859***	3.006			
IntInflu2	0.867***	6.364			
IntInflu3	0.865***	6.749			
IntInflu4	0.971***	3.037			
External influence			0.876	0.915	0.729
ExtInflu1	0.838***	2.160			
ExtInflu2	0.783***	2.435			
ExtInflu3	0.780***	2.084			
ExtInflu4	0.794***	2.124			
Trust in technology			0.910	0.944	0.848
TrTec1	0.838***	3.240			
TrTec2	0.877***	3.900			
TrTec3	0.919***	2.646			
Trust in e-vendor			0.882	0.920	0.743
TrEve1	0.738***	3.204			
TrEve2	0.766***	4.285			
TrEve3	0.764***	4.647			
TrEve4	0.912***	1.376			
Trust in third-party			0.889	0.932	0.820
TrTpt1	0.732***	2.072			
TrTpt2	0.852***	4.033			
TrTpt3	0.979***	3.307			
Interaction quality			0.926	0.947	0.817
IntaQ1	0.930***	2.926			
IntaQ2	0.929***	3.163			
IntaQ3	0.818***	3.999			
IntaQ4	0.791***	3.296			
System quality			0.904	0.933	0.776
SysQ1	0.849***	2.254			
SysQ2	0.795***	2.318			
SysQ3	0.876***	3.642			
SysQ4	0.830***	3.109			
Information quality			0.932	0.952	0.831
InfoQ1	0.916***	3.447			
InfoQ2	0.889***	4.365			
InfoQ3	0.977***	3.803			

InfoQ4	0.859***	3.136			
Overall satisfaction			0.964	0.969	0.886
OvalSat1	0.860***	4.236			
OvalSat2	0.943***	**5.730**			
OvalSat3	0.966***	**9.287**			
OvalSat4	0.961***	**10.318**			
M-banking continuous intention			1.000	1.000	1.000
MBCI1	1.001***				
MBCI2	**0.592****	1.000			
MBCI3	0.756***				
Actual Usage			1.000	1.000	1.000
ActUsg1	1.000***	6.749			
ActUsg3	0.859***	1.000			
ActUsg5	1.000***	3.006			

*The values of CR and Cronbach's alpha are above 0.7, indicating that the factors have good reliability (Fornell and Larcker, 1981; Henseler, 2017; Bagozzi and Yi, 2012). ns (non-significant) weights were not deleted to keep content and face validity of the concerned constructs (Benitez-Amado, Henseler and Castillo, 2017).

Since the study's model was combined with the "Mode B" formative, multicollinearity should be assessed (Benitez-Amado et al., 2017) to know if there are unnecessary repetitions of items amongst constructs measures. This is done through the variance inflation factor (VIF) values. VIF values greater than 10 indicate multicollinearity, which should be a source of grave concern for any study. As observed from Table 3.1 results only OvalSat4 (10.318) exhibited slightly higher values. Thus, multicollinearity is not a problem in this study (Benitez-Amado et al., 2017).

The average variance extracted (AVE) is the most accepted measure of convergent validity of factor models. AVE greater than 0.500 means that reflective constructs are unidimensional (Fornell & Larcker, 1981).

Discriminate validity tells the reliability of measures and the extent to which a given construct is genuinely distinct from other constructs. A commonly used statistical measure compares the AVE with the correlated squared root (Fornell & Larcker, 1981) and when the AVE is greater than the square root of the inter-factor correlations (Fornell & Larcker, 1981) then discriminant validity test is passed.

Table 3.3: Fornell and Larcker (1981) criteria for BD

	ActUsg	Ext Influ	InfoQ	Int Influ	IntacQ	MBCI	Oval Sat	SysQ	Tr Even	Tr Tech	Tr Thpt
ActUsg	**1.000**										
ExtInflu	0.097	**0.854**									
InfoQ	0.178	0.322	**0.912**								
IntInflu	0.120	0.637	0.283	**0.922**							
IntacQ	0.051	0.210	0.431	0.185	**0.904**						
MBCI	0.139	0.115	0.334	0.063	0.201	**1.000**					
OvalSat	0.190	0.493	0.623	0.491	0.356	0.252	**0.941**				

SysQ	0.181	0.353	0.845	0.365	0.407	0.278	0.695	**0.881**			
TrEven	0.129	0.182	0.531	0.196	0.407	0.305	0.435	0.534	**0.862**		
TrTech	0.117	0.232	0.464	0.236	0.279	0.185	0.440	0.484	0.603	**0.921**	
TrThpt	0.053	0.211	0.414	0.193	0.245	0.070	0.380	0.458	0.520	0.507	**0.905**

Note: Values in a bold along the diagonal is the square root of AVE for each factor.

Table 2 and 3.3 show that all the AVEs (values on the diagonal) are more significant than the square root of the inter-factor correlations, thus demonstrating reliability for the measures. This displays the uniqueness of the factors.

However, recently, research providing a more reliable discriminant validity test - the Heterotrait-Monotrait (HTMT) ratio, has been advanced. This maintains that discriminant validity scores should be <0.85 amongst the square root of the inter-factor correlations. Again, from the test results provided in Table 3 it is shown that this criterion is met. Therefore, the research instrument factors are genuinely distinct from each other (Henseler, 2017).

Table 3: Heterotrait-Monotrait ratio (HTMT) for BD

	ActUsg	**Ext Influ**	**InfoQ**	**Int Influ**	**IntacQ**	**MBCI**	**Oval Sat**	**SysQ**	**Tr Even**	**Tr Tech**	**Tr Thpt**
ActUsg											
ExtInflu	0.103										
InfoQ	0.184	0.356									
IntInflu	0.124	0.698	0.301								
IntacQ	0.053	0.232	0.461	0.196							
MBCI	0.139	0.121	0.347	0.064	0.207						
OvalSat	0.192	0.535	0.646	0.516	0.370	0.254					
SysQ	0.190	0.396	**0.920**	0.396	0.444	0.293	0.730				
TrEven	0.135	0.203	0.578	0.211	0.447	0.324	0.451	0.591			
TrTech	0.122	0.259	0.503	0.255	0.304	0.193	0.469	0.533	0.668		
TrThpt	0.056	0.234	0.448	0.206	0.268	0.074	0.402	0.505	0.581	0.558	

4 Analysis of the Important Performance Matrix of BD

The importance-performance matrix analysis (IPMA), also known as an impact performance map, or priority map analysis (Ringle & Sarstedt, 2016, p. 1866) is a technique used to examine an item's performance as well as its importance on a nomological net to gauge two effects. The objective is to ascertain the (unstandardised) total effect of the importance of a predecessor construct on a targeted construct (e.g., the effect of the reasons of BD on MBCI) (Hair et al., 2016, p. 276; Hair et al., 2018, p. 105).

This item's overall effect shows its importance while its mean value, which ranges from (0 to 100) shows its performance (Höck et al., 2010, p. 201) on the matrix. Thus, a unit increase in the predecessor's performance (say, OvalSat) affects the performance of the target construct (MBCI) by the same magnitude of this predecessor's unstandardised total effect (Hair at el., 2016, p. 278).

Figures 1 show pictorial presentations of the unstandardised data for the BD m-banking users on a matrix. A full understanding of how to read the figures is vital to assist any banks' leadership improve low performance by focusing on high importance (Hock et al., 2010). The IPMA is carried out by reading the paths coefficients` relative importance as depicted by the thickness of the lines while the values in the constructs (circles and ovals) depict the degree of performance

From the IPMA diagrams, some important signals can be observed by looking at the thickness of the lines. The users of BD see the perceived quality based on system quality and information quality as the most important factors for m-banking, as well as see service quality as the factors that lead them to satisfaction (0.516). The target constructs' performance for this same construct was 71 654. Thus, to the BD users, service quality eventually leads them to attain satisfaction (Figure 1).

The users graded quality (71.654), trust (65.379) and social norm (55.878) as their performance matrixes, in that order of importance. The performance figures also prove that to be (26.909).

Another interesting result noticed from the IPMA is that the m-banking continuance intentions scored 81.259 which is a good sign that, with the appropriate policies and strategies in place, m-banking users will use their laptops to perform banking business. Since the reasons for preferring BD moderated these constructs, it is prudent that the study discusses these outcomes and why they serve as control variables for the sake of their impacts next**.**

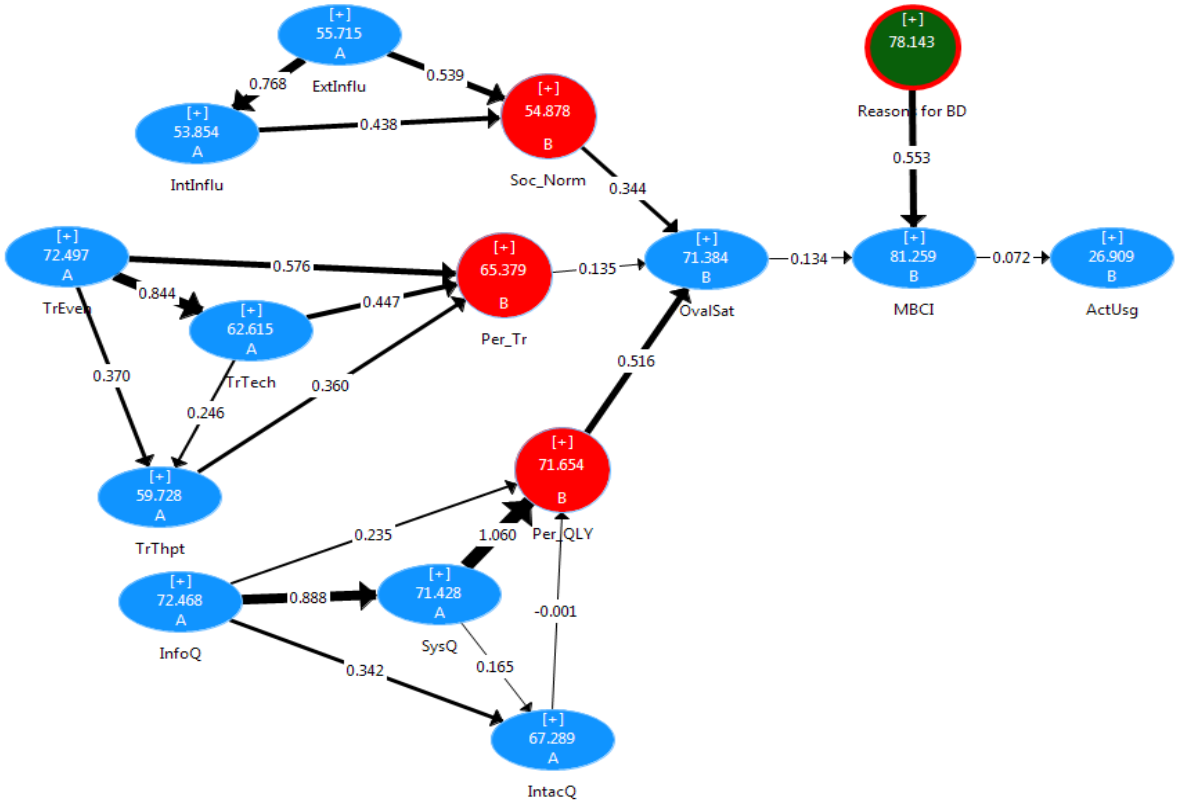

Figure 1: The IPMA of BD users

5. Discussion and Implications

It is known that m-phones and laptops surpass all other m-device used to access the m-Internet (Gerpott, 2011, Gerpott, et al., 2013; Planing, 2014; Kapoor et al., 2014; Baptista & Oliveira, 2016; Dwivedi, & Williams, 2015). A case in point is the reference of the survey between Japanese (55% for SD) and the USAs (12% for BD) (Okazaki, 2005). This attests to device size preferences, which could lead us to new scientific discoveries when investigated thoroughly.

This study has also shown that BD users see the service quality as the most influencing considerations but with some reservations regarding the importance and performance. The path coefficient between interaction quality and perceived quality of BD at -0.001 means that users do not consider their bankers' interactions as important and instead serve as a deterring factor in their m-banking experience. This could be due to the numerous advertisements from the e-vendor during the waiting period for a consultant. Research needs to be done to know what kind of messages will serve users' best interest during this waiting time instead of promoting banking products that could be boring and irritating. The users attributed 1.060 importance to their system quality. This could be credited to the technological power and network issues that normally abode well for BDs. No wonder that all things being equal, the bigger the device, the more expensive it cost. Fintech companies must investigate the exact size of device that will generate this rating from their clientele base

and invest in it. This, together with good interaction and information quality, will constitute a perfect system that can be the 'silver bullet.

As already indicated, the thicker lines in Figures 1 highlights the critical paths for users when deciding on important influencing constructs. Again, the greater the value of a particular construct, the more performance users attach to that construct. Almost all the performance results are encouraging. For example, the exogenous constructs of overall satisfaction (71.384), MBCI (81.259) and actual usage (26.909) are significant.

However, the BD skewness that looks like a normal distribution (-0.5 and 0.5) (Assensoh-Kodua, 2023) means most of these gadgets will be more predictable by the banks, using standard deviation to forecast future returns. Again, since it has a lower skewness than the it will most likely be the safest gadgets to invest in by the banks because they would be more predictable in terms of demand by the clients. This uncertainty needs further investigation. The lesson from this is that the ideal device size should be less than a standard laptop but big enough.

A great source of worry for customers is, however, the problem in the trust dimensions. Thus, fintech institutions should protect their m-banking customers from cyber-attacks by adding an appropriate security layer(s) before they log in to their m-applications. They should engage clients on social media and educate them on new strategies meant to make their m-banking adventure free from any hiccups. This should be done openly, transparently and frequently. Trust is very crucial in demanding loyalty. The more sceptical people become, the higher they put up resistance to buy into this concept.

6. Limitations and Recommendations and conclusion

6.1 Limitations

The first self-introspection in this study is the sample size for the pilot study. Given the limited number of participants, it became clear during data analysis that this number alone could not point out all the issues which needed to be corrected before the actual data collection. This subjected the analysis phase to a back-and-forth deletion and re-specification process, making the data to suffer torture. A major setback, though, is the selection of only laptop for the study when m-devices come in a variety of sizes.

6.1 Recommendations for future consideration

M-banking has indeed been a transformative force in the fintech industry, acting as a change agent through a multidimensional concept. Here are several avenues for further studies in which m-banking can play more role:

A. **Financial inclusion:** M-banking has significantly contributed to financial inclusion by providing banking services to people in remote or underserved areas. It has brought millions of unbanked and underbanked individuals into the formal financial system. What need to be done to sustain this for the foreseeable future must be on our research agenda always.
B. **Data analytics:** M-banking generates a wealth of data about user behaviour and preferences. Fintech companies can leverage this data to offer personalized financial advice, targeted product recommendations, and improved customer experiences.

C. **Financial literacy and education:** M-banking apps often include educational resources and tools that can help users improve their financial literacy. This must be studied to empower clients to make better financial decisions.
D. **Emerging technologies:** M-banking is often at the forefront of adopting emerging technologies such as blockchain for secure transactions, AI for customer service, and m-wallets for contactless payments. Given that the above issues are pretty new, we need to invest in their proper functioning.
E. **Financial innovation:** The fintech industry thrives on innovation, and m-banking has been a catalyst for new financial products and services. For example, peer-to-peer payments, robo-advisors, and crowdfunding have gained popularity through m-platforms in only some limited areas on the globe.
F. **Accessibility and convenience:** M-banking has made financial services accessible 24/7. Users can check their balances, transfer money, pay bills, and more from the convenience of their smartphones, reducing the need for physical branch visits. The argument as to whether we can live without physical bank and the interaction it provides still remains unresolved. This creates disloyalty to the concept of m-banking.
G. **Cost reduction:** Traditional banking operations can be expensive due to brick-and-mortar branches. M-banking reduces these costs significantly, allowing financial institutions to offer services at lower fees and often without minimum balance requirements. Is this just a catch to lure us all into accepting m-banking, and thereafter come up with the real cost?
H. **Security and authentication:** Advanced security measures like biometrics and two-factor authentication have made m-banking more secure than ever. How far has this helped build trust among users for researchers to investigate the trust concept and its multidimensions for improvements?
I. **Integration with other services:** M-banking apps can be integrated with various other services like insurance, investment, and lending platforms. This makes it easier for users to manage their entire financial lives in one place. To achieve this in a world of 'information age' needs more studies.
J. **Global expansion:** M-banking has enabled financial institutions to expand their reach globally without the need for physical infrastructure. Users can travel and conduct transactions seamlessly. Interoperability of networks in a "borderless world" for all is still a challenge to us which needs to be considered.
K. **Regulatory compliance:** M-banking apps often come with built-in compliance features, helping institutions to meet regulatory requirements more efficiently. Such regulations are normally bias, and country specific in a world of global village.
L. **Customer engagement:** M-banking allows for personalized communication and engagement with customers. Institutions can send alerts, updates, and offers directly to users' devices, enhancing the overall customer experience. The type of engagement melted out to customers can make or break their m-banking actual usage levels which is completely different from acceptance levels.

6.3 Conclusion

Indeed, m-banking has acted as a change agent in the fintech industry by not only making financial services more accessible and convenient but also by fostering financial inclusion, driving innovation, and improving overall financial literacy. Its multidimensional concept

encompasses technology, security, data, and customer-centricity, driving the evolution of the entire financial ecosystem. M-banking is changing the face of the Fintech industry. Trust in the trust receiver (e-vendors) is one of the most important ingredients which customers look for before giving their trust or utilising m-banking. Device analytics work behind the scenes to assess devices vulnerability and share this information with their social networks. Therefore, Fintech organisations have to add more system protections to their gadgets to protect the customers' access to their m-banking application in order to protect the financial institutions and their customers from cybercriminals. Banks should interact with service participants to determine why they do not wish to accept or continue with m-banking and provide individuals with the appropriate advice. Bank representatives assuring clients of policies to mitigate any misfortunes that may occur to them can help build current and potential clients' confidence. It might take a while before the message sinks into them, but continuous interaction and promotion of m-banking on social networks certainly pay off in the long run.

References

Alhidari, I. S., Veludo-de-Oliveira, T. M., Yousafzai, S. Y., & Yani-de-Soriano, M. (2018). Modeling the effect of multidimensional trust on individual monetary donations to charitable organisations. *Nonprofit and Voluntary Sector Quarterly*, *47*(3), 623-644.

Alzaydi, Z. M., Al-Hajla, A., Nguyen, B., & Jayawardhena, C. (2018). A review of service quality and service delivery. *Business Process Management Journal*.

Arpaci, I. (2016). Understanding and predicting students' intention to use mobile cloud storage services. *Computers in Human Behavior*, *58*, 150-157.

(Assensoh-Kodua) (2023). Fintech: Controversies and Complexities around Device Size for Mobile Banking**.** 7th International Conference on Applied Research in Management, Economics, and Accounting (IARMEA) in print.

Assensoh-Kodua (2019). This thing of social media! Going business or socialisation? Solving the great dilemma. Emerald-forecast: September 2019. https://www.emerald.com/insight/content/doi/10.1108/FS-04-2019-0028/full/html

Assensoh-Kodua, A. & Msosa, S.K., (2020). Mobile banking in an Emerging Economy: Facilitating Factors and Challenges. *Academy of Accounting and Financial Studies Journal*, *24*(4), 1-12.

Baptista, G., & Oliveira, T. (2016). A weight and a meta-analysis on mobile banking acceptance research. *Computers in Human Behavior*, *63*, 480-489.

Benitez-Amado, J., Henseler, J., & Castillo, A. (2017, July). Development and update of guidelines to perform and report partial least squares path modeling in Information Systems research. In *Proceedings of the 21st Pacific Asia Conference on Information Systems*.

Bhattacherjee, A. (2001). An empirical analysis of the antecedents of electronic commerce service continuance. *Decision support systems*, *32*(2), 201-214.

Castelfranchi, C., & Falcone, R. (2010). *Trust theory: A socio-cognitive and computational model* (Vol. 18). John Wiley & Sons.

Commerce Research, *6*(3), 160. Retrieved from: https://search.proquest.com/openview/ f47e2ffa8e60f40ccc00b35554d692a5/pdf.

Cruz, P., Neto, L. B. F., Munoz-Gallego, P., & Laukkanen, T. (2010). Mobile banking rollout in emerging markets: evidence from Brazil. *The International Journal of bank marketing*, *28*(5), 342-371.

Dwivedi, Y. K., & Williams, M. D. (2015). Examining the role of three sets of innovation attributes for determining adoption of the interbank mobile payment service. *Information Systems Frontiers*, *17*(5), 1039-1056. Retrieved from: https://link.springer.com/article/10.1007/s10796-014-9484-7.

Dwivedi, Y. K., Rana, N. P., Jeyaraj, A., Clement, M., & Williams, M. D. (2019). Re-examining the unified theory of acceptance and use of technology (UTAUT): Towards a revised theoretical model. *Information Systems Frontiers*, *21*(3), 719-734.

Erkan, I., & Evans, C. (2016). The influence of eWOM in social media on consumers' purchase

intentions: An extended approach to information adoption. *Computers in Human Behavior*, *61*, 47-55.

Farivar, S., Turel, O., & Yuan, Y. (2017). A trust-risk perspective on social commerce use: an examination of the biasing role of habit. *Internet Research*.

Fishbein, M., & Ajzen, I. (1975). Intention and Behavior: An introduction to theory and research.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, *18*(1), 39-50.

Foroudi, P., Gupta, S., Sivarajah, U., & Broderick, A. (2018). Investigating the effects of smart technology on customer dynamics and customer experience. *Computers in Human Behavior*, *80*, 271-282.

Gerpott, T. J. (2011). Attribute perceptions as factors explaining Mobile Internet acceptance of cellular customers in Germany–An empirical study comparing actual and potential adopters with distinct categories of access appliances. *Expert Systems with Applications*, *38*(3),2148-2162. Retrieved from:https://doi.org/10.1016/j.eswa.2010.08. 001.

Gerpott, T. J., Thomas, S., & Weichert, M. (2013). Personal characteristics and mobile Internet use intensity of consumers with computer-centric communication devices: An Exploratory empirical study of iPad and laptop users in Germany. Telematics and Informatics, 30(2), 87-99. Retrieved from: https://doi.org/10.1016/j.tele.2012.03.008.

Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.

Hair, J. F., Sarstedt, M., & Ringle, R. M. (2018). Advanced issues in partial least squares structural equation Modeling. Sage.

Henseler, J. (2017). Partial least squares path modeling. In *Advanced methods for modeling markets* (pp. 361-381). Springer, Cham.

Hock, C., Ringle, C. M., & Sarstedt, M. (2010). Management of multi-purpose stadiums: Importance and performance measurement of service interfaces. *International Journal of Services Technology and Management*, *14*(2-3), 188-207.

Leung, L. (2020). Exploring the relationship between smartphone activities, flow experience, and boredom in free time. *Computers in Human Behavior*, *103*, 130-139.

Mazzucchelli, A., Chierici, R., Ceruti, F., Chiacchierini, C., Godey, B., & Pederzoli, D. (2018). Affecting brand loyalty intention: The effects of UGC and shopping searches via Facebook. *Journal of Global Fashion Marketing*, *9*(3), 270-286.

Mentz, H. (2011). *Customer-based brand equity of the major cellphone network service providers amongst principal estate agents in the Gauteng province of South Africa* (Doctoral dissertation).

Nitzl, C. (2016). The use of partial least squares structural equation modelling (PLS-SEM) in management accounting research: Directions for future theory development. Journal

of
Accounting Literature, 37, 19–35. http://dx.doi.org/10.1016/j.acclit.2016.09.003

Njenga, K., & Ndlovu, S. (2012, October). On rational choice, risk and utility in mobile banking. In *2012 e-Leadership Conference on Sustainable e-Government and e-Business Innovations (E-LEADERSHIP)* (pp. 1-9). IEEE.

Okazaki, S. (2005). New perspectives on m-commerce research. *Journal of Electronic Commerce Research*, *6*(3), 160. Retrieved from: https://search.proquest.com/openview/f47e2ffa8e60f40ccc00b35554d692a5/pdf.

Oliver, R. L. (1981). Measurement and evaluation of satisfaction processes in retail settings. *Journal of retailing*.

Ooi, K. B., & Tan, G. W. H. (2016). Mobile technology acceptance model: An investigation using mobile users to explore smartphone credit card. *Expert Systems with Applications*, *59*, 33-46.

Planing, P. (2014). *Innovation acceptance: the case of advanced driver-assistance systems*. Springer Science & Business Media. https://books.google.co.uk/books/hl/en.

Puspitasari, L., & Ishii, K. (2016). Digital divides and mobile Internet in Indonesia: Impact of smartphones. *Telematics and Informatics*, *33*(2), 472-483.

Ringle, C M., Wende, S & Becker, J-M. (2015). SmartPLS 3. Bonningstedt: SmartPLS. Retrived from htt://www.smartpls.com.

Ringle, C. M., & Sarstedt, M. (2016). Gain more insight from your PLS-SEM results The importance-performance map analysis. Industrial Management & Data Systems, 116(9), 1865–1886. https://doi.org/10.1108/IMDS-10-2015-0449.

Robinson, D. A., Nhat Hoang, D., & VanderPal, G. (2017). Leadership flaws and organisational stages. *Robinson, David A*, 105-118.

Shahpasandi, F., Zarei, A., & Nikabadi, M. S. (2020). Consumers' Impulse Buying Behavior on Instagram: Examining the Influence of Flow Experiences and Hedonic Browsing on
Impulse Buying. *Journal of Internet Commerce*, *19*(4), 437-465.

Sripalawat, J., Thongmak, M., & Ngramyarn, A. (2011). M-banking in metropolitan Bangkok and a comparison with other countries. *Journal of computer information systems*, *51*(3),
67-76.

Tarasewich, P., Nickerson, R. C., & Warkentin, M. (2002). Issues in mobile e-commerce. *Communications of the association for information systems*, *8*(1), 3.

Waters, R. (2000). Rival views emerge of wireless Internet. *Financial Times FT-IT Review*, *1*.

Wentzel, J. P., Diatha, K. S., & Yadavalli, V. S. S. (2013). An application of the extended Technology Acceptance Model in understanding technology-enabled financial service adoption in South Africa. *Development Southern Africa*, *30*(4-5), 659-673.

Yu, C. S. (2012). Factors affecting individuals to adopt mobile banking: Empirical evidence from the UTAUT model. *Journal of electronic commerce research*, *13*(2), 104.

Zhang, K. Z., & Benyoucef, M. (2016). Consumer behavior in social commerce: A literature review. *Decision Support Systems*, *86*, 95-108.