

Evaluating the Determinants of Fin-Tech Adoption in University Students Using Structural Equation Modeling

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Abstract ; *The study aimed at identifying the determinants of Fin-Tech adoption in Nigerian University Students, where Federal university of Kashere and Gombe State University were selected. One hundred (100) well-structured questionnaires (developed in-line with prior literature) were issued to the students of Federal university of Kashere and Gombe State University, out of which 79 were responded to. To accurately measure the perceptions of users toward Fin-Tech, the UTAUT Model was adopted. For data analysis, SEM was employed. Cronbach alpha value and AVE, and the convergent validity all confirm the reliability and validity of the research instrument. The SEM result reveal that performance expectancy and facilitating conditions have significant effect on students' intention to adopt Fin-Tech in a positive manner. However, both effort expectancy and social influence have insignificant effect on students' behavioral intention to adopt Fin-Tech. The study suggests that further research can be carried out using more universities. Moreover, in-line with prior studies, further studies from this same region can add other factors like perceived risk, gender, etc to their studies.*

Keywords: 1.Fin-Tech, 2.Technology Adoption.

Introduction

Formal financial institutions such as banks do not operate in rural areas where the unbanked population lives in developing countries leaving over 1.7 billion adults without access to and use of basic financial services (Okello & Mpeera, 2019). The GSM Association (GSMA) (2016) also puts that over a billion people in developing markets do not have bank accounts but have mobile phones. Due to the lack of formal banking channels, the unbanked population is susceptible to high transaction costs and theft as they resort to informal financial network.

Fin-Tech therefore became the major force shaping the structure of the financial services industry in Africa, being a region with unique economic and demographic environment. The extent of financial exclusion drives the adoption of Fin-Tech across the continent. By increasing access to financial services to this population, Fin-Tech has the potential to continuously change the financial services landscape and play a pivotal role in improving financial inclusion.

Although, level of adoption in South Africa and Kenya is around the 35% global average, adoption is said to be generally low in other parts of Africa (Mihasonirina & Kpodar, 2012). The variation in adoption among different economies suggests that factors determining consumers' willingness to adopt/use may differ across continents and countries, hence, the need to evaluate the factors in the Nigerian context.

1.2 Research Objectives

- i. Assess the effect of Performance Expectancy on Fin-Tech user's intention to adopt or continue use
- ii. Assess the effect of Effort Expectancy on Fin-Tech user's intention to adopt or continue use
- iii. Assess the effect of Social Influence on Fin-Tech user's intention to adopt or continue use
- iv. Assess the effect of facilitating condition on Fin-Tech user's intention to adopt or continue use

2.1 Adoption Models

Factors like performance expectancy, effort expectancy, social influences and facilitating conditions are important factors that influence behavior intention (Venkatesh et al., 2003). Behavior intention was also assessed through behavioral and technological factors with two main constructs: ease of use and usefulness (Davis et al., 1989). The factors to consider for this study will be determined by the nature of the adoption model selected, hence the Unified Technology Use and Acceptance Theory (UTUAT) will be used.

2.2 Empirical Review and Hypothesis Development

Several researchers consider performance expectancy as a significant influencer of the adoption and subsequent usage of information systems and mobile devices (e.g., Thakur, 2013). The study by Al-Saedi et al. (2020) focused on the external factors of the UTAUT model and found that performance expectancy was the most significant predictor of the intention to use mobile payment systems. Similarly, the research the Thakur (2013) further confirmed that performance expectancy was a positive predictor of intention to adopt mobile payment services

However, a study by Jaradat and Rababaa (2013) found that performance expectancy was only that third most potent predictor of intention to use M-commerce services in Jordan. Past studies have also found support for the role of performance expectancy in predicting intention to use e-wallets (e.g., Madan and Yadav, 2016). The results of a study by Isa et al. (2017) deviated from the UTAUT model and revealed that performance expectancy was not a significant predictor of consumer intention to use mobile payments.

Recently, a survey by Al-Saedi et al. (2020) that used the external factors of the UTAUT model found that performance expectancy was the most significant predictor of the intention to use mobile payment systems. In the same vein, an earlier study by Latha and Vatchala (2019) also found that performance expectancy was a significant predictor of the intention to use mobile payments.

H1. Nigeria University Students' Performance Expectancy on Fin-Tech positively Influence their behavioral intention to use Fin-Tech.

Prior empirical studies on technology adoption support effort expectancy as a determinant impacting people to use mobile banking, which shows that users want services that are easy, simple, and fast to use. Moreover, Hatmawan (2019) recommends that Fin-Tech payment service providers create applications with features that are easy to understand and learn so that users are more interested in using them. A study by Voronenko (2018) revealed that effort expectancy was a significant determinant of the intention to use a mobile wallet.

The survey by Madan and Yadav (2016) found a positive relationship between effort expectancy and intention to use a mobile wallet. In addition, effort expectancy had the most substantial effect on the intention to use a mobile wallet. Another study by Abrahão, et al. (2016) revealed that effort expectancy was a positive and significant predictor of intention to use systems. Similarly, another study by Oliveira et al. (2016) also showed that effort expectancy was significantly related to the adoption of mobile payment. Further support on the positive relationship that was revealed in a study by Trivedi (2016). This study showed that effort expectancy was a critical determinant, especially among millennials who prefer easier completion of task without much complexity.

On the contrary, a survey by Slade et al. (2015) revealed that constructs such as performance expectancy, social influence and perceived risk were significantly related to intention to adopt mobile payments, but effort expectancy did not significantly affect mobile payments. Similarly, a study by Patel (2016) found that effort expectancy did not show a significant impact on intention to use mobile wallet services. However, the outcomes of past studies as shown above are inconsistent or contradictory. As a result, rooted in UTAUT, this study hypothesizes;

H2. Nigeria University Students' Effort expectancy on Fin-Tech Consumers influence their Behavioral Intention to use Fin-Tech

Interpersonal influence affects people's opinions and attitudes, and the influence process can result in agreements. Therefore, social influence is typically associated with a consumer's attitudes, behaviours and opinions that are influenced by interactions of certain other individuals. Social influence is closely related to subjective norms.

The result of a study by Prabhakaran, Vasantha and Sarika (2020) showed that social influence had a high impact on the intention to use mobile wallets. A survey by Leng and Lada (2011) revealed that social influences had a moderate effect on consumers intention to adopt mobile payments. Khatimah et al. (2019) also found that behavioural intention of e-money by consumers was positively influenced by social influence. A study by Alshare et al. (2011) studied the role of culture and found that social influence is a positive and significant predictor of users' intention to use mobile devices in societies that practice collectivism cultural values. Contradictory results were also found in some studies (e.g., Kwateng, Atiemo & Appiah, 2019; Arine, Zain and Rashid, 2020; Isa et al., 2017). This may be because millennials are technology savvy and willing to try new things and take the risk of using new technology. The study Kwateng, Atiemo and Appiah (2019) revealed that social influence did not significantly impact consumers intention to adopt systems or technologies. Therefore, this construct specified in the UTAUT model also shows contradictory results from past studies.

H3. Social Influence on Nigeria University Students influences their behavioral intentions to use Fin-Tech.

Past researchers have examined the impact of facilitating conditions on the intention to use systems or technology (Abidin et al., 2017; Teo, 2009). The study by Abidin et al. (2017) revealed a significant positive relationship between facilitating conditions and intention to use or adopt financial service systems or technology. Another related study on the intention to use the electronic payment system revealed that facilitating conditions had a positive impact on the customer acceptance of the electronic payment system (Isa, et al., 2017). Another study by Teo (2009) found a positive relationship between facilitating conditions and usage of technology, but the attitude towards usage mediated the relationship.

On the contrary, some studies have found that facilitating conditions were not a predictor of intention to use systems including mobile wallet (Arine, Zain & Rashid, 2020; Alkhunaizan & Love, 2012). The study by Arine Zain and Rashid (2020) found that facilitating conditions did not affect the intention to use e-wallets in Brunei. Similarly, the survey by Alkhunaizan, and Love (2012) also found that facilitating conditions did not show significant influence on the usage of mobile commerce.

H4. Nigeria University Students' perception on Fin-Tech facilitating conditions influence their behavior to adopt Fin-Tech

3. Methods

Data Collection – Survey

The study focused on Nigeria Universities, taking two Universities from Gombe state namely; Gombe State University and Federal University of Kashere. To collect data for the study, a 15 items well-structured questionnaire (on 5 point scale) was developed with reference to prior studies.

Sample and Tools/Technique for Data Analysis

The sample of the study is made up of the students from the two universities in Gombe state of Nigeria, namely; Federal University of Kashere and Gombe State University.

The study uses Structural equation Modeling (SEM) to analyze the data with the use of Smart-PLS. After ensuring reliability and validity of the research instrument via Cronbach alpha value and AVE, and the convergent validity respectively, the Structural Model was then analyzed to identify the significant factors determining the customers’ behavioral intention towards Fin-Tech in north eastern part of Nigeria.

1. Result and Discussion

a. Measurement Model Assessment

The study employs Confirmatory Factors Analysis (CFA) for testing the reliability and validity of the research instrument. All constructs, including performance expectancy (PE), effort expectancy (EE) social influence (SI), facilitating conditions (FC) and behavioral intention (BI) were included.

Table 4.1: Reliability and Validity of Research Instrument (Construct)

Factor	Item	Questions	Factor Load	Cronbachs Alpha	Composite Reliability	AVE	T-Stat	P-Val.
Performance Expectancy	PE1	Fin-Tech applications are extremely useful to me on a daily basis.	0.808	0.707	0.836	0.630	2.985	0.003
	PE2	Fin-Tech applications help me accomplish tasks on time	0.800					
	PE3	Fin-Tech apps increases my productivity	0.773					
Effort Expectancy	EE1	Learning how to use the Fin-Tech app is easy for me	0.855	0.707	0.838	0.636	0.508	0.612
	EE2	My interaction with the Fin-Tech app is clear and understandable	0.842					
	EE3	It is easy for me to become skillful at using the Fin-Tech app	0.685					
Social Influence	SI1	People who are important to me think that I should use the Fin-Tech app	0.828	0.675	0.820	0.606	1.867	0.062
	SI2	People who influence my behavior think that I should use the Fin-Tech app	0.836					
	SI3	People whose opinions that I value prefer that I use the Fin-Tech app	0.658					
Facilitating	FC1	The Customer care are always	0.808	0.711	0.838	0.633	2.551	0.011

Conditions		ready to solve issues when reached out to.						
	FC2	Mobile wallet is compatible with other technologies I use	0.785					
	FC3	I can get help from others when I have difficulties using the Fin-Tech app	0.795					
Behavioral Intention	BI1	I intend to continue using the Fin-Tech app in the future	0.878	0.822	0.894	0.737		
	BI2	I will always try to use the Fin-Tech app in my daily life	0.857					
	BI3	I plan to continue to use the Fin-Tech app frequently	0.840					

Source: SEM Output (Appendix I)

The composite reliability value, the Cronbach alpha value and AVE (average of the variance extracted) can be used in determining the reliability of the research instrument. An AVE value above 0.5 is considered good (Barclay, Higgins & Thompson, 1995), while for Cronbach alpha, the value must exceed 0.7 before it is considered good (Hair, Black, Babin, & Anderson, 2006)

In Table 4.1 we can see the values of composite reliability above 0.8, Cronbach's alpha above 0.7 except for Social Influence (SI) - 0.675 and AVE value (average variance extracted) all above the 0.5 threshold. Thus, the said instrument is reliable and can be used for the study.

To ensure the instrument's validity, the research used the attributes of factor loading for the convergent validity. The recommendation for standardized factor loading value was 0.70 or higher (Hair, Hult, Ringle, & Sarstedt, 2013)

b. Results of Structural Model (SEM)

Path Coefficients						
	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	
EE -> BI_	0.054	0.065	0.107	0.508	0.612	
FC -> BI_	0.315	0.306	0.124	2.551	0.011	
PE -> BI_	0.294	0.291	0.099	2.985	0.003	
SI -> BI_	0.208	0.212	0.112	1.867	0.062	

To determine the significant relationships between behavioral intentions of Fin-Tech users and the factors identified through factor analysis like performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC), a multivariate analysis technique like covariance-based structural equation modeling was used.

The structural parameter estimates and hypothesis testing results were shown above. This study aims at identifying the significant factors determining Fin-Tech adoption by Nigerian University Students.

The path diagram of this study revealed that only two of the factors including performance expectancy (PE) ($\beta=2.985$, $p=0.003$) and facilitating conditions (FC) ($\beta=2.551$, $p=0.011$), evidently influence in a positive manner, the behavioral intentions of the sampled Fin-Tech users from the north eastern Nigeria. However, effort expectancy (EE) ($\beta=0.508$, $p=0.612$) and social influence (SI) ($\beta=1.867$, $p=0.062$) are not significantly related to the behavioral intentions of Fin-Tech users from the same region. Thus, the Structural Model of the determinants of Fin-Tech adoption by Nigerian University Students is presented below.

c. Summary of Result

Of the four constructs, performance expectancy shows the strongest link or relationship to users’ behavioral intention to use Fin-Tech in the Nigerian universities. The finding is in consistent with studies like Al-Saedi et al. (2020), Madan and Yadav (2016), Thakur (2013) etc, although it is contrary to Isa et al. (2017). The Fin-Tech apps or gateways are used in performing a number of banking operations including money transfers, online payments, card less withdrawal and other bill payments among others without necessarily visiting the bank premises. Current and potential users, each with their distinct need of the Fin-Tech gateways consider performance expectancy to be the most significant factor determining their intention to use Fin-Tech. While some attached its success to convenience and the ability to save them time, others rather focus on its ability to improve their productivity significantly.

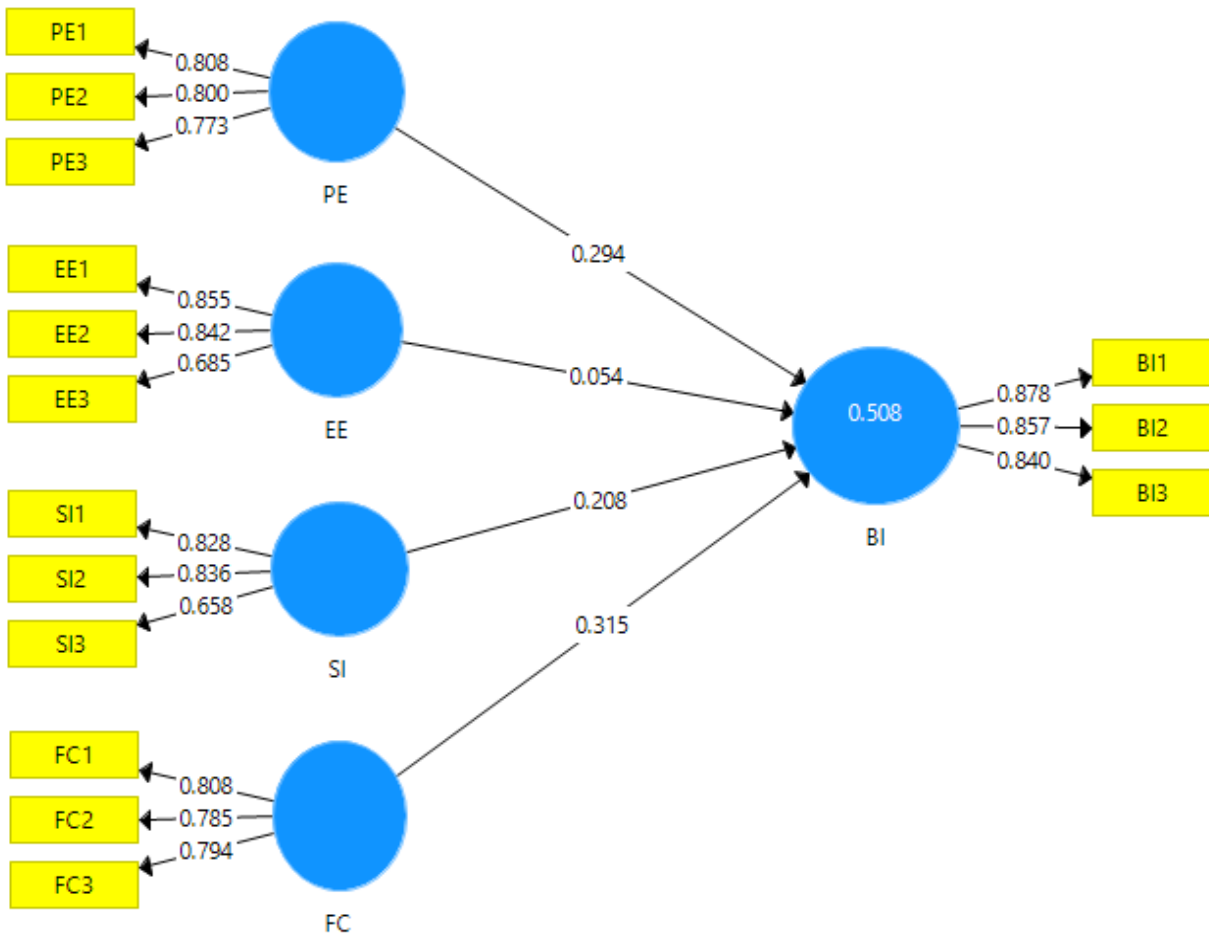


Fig. 1: Structural Model

Another strong factor affecting behavioral intention is facilitating condition. This finding is consistent with previous studies Chuang, Liu, & Kao (2016) and suggests that even though Infrastructure and services to support Fin-Tech may be limited at the moment, users seem to show more concern toward it. Availability of access to resources that are necessary to facilitate the completion of a function or service (Cheong et al., 2004), can play significant role in luring users adopt Fin-Tech, including an attentive customer care where any obstacles can be removed and help, or assistance will be readily available.

Contrary to the above, effort expectancy does not show significant effect on behavioral intention. This finding is inconsistent with studies like Venkatesh et al., (2012), Leng and Lada (2011), Alshare et al. (2011) etc which found that effort expectancy has significant effect on behavioral intention, suggesting that activities like registration procedures, top-up procedures, and other important functions/operations of any Fin-Tech Apps should be made very easy.

Similarly, Social influence also fails to have any significant effect on behavioral intention to adopt Fin-Tech. This contradicts studies like Leng and Lada (2011), Alshare et al. (2011), Khatimah et al. (2019), Prabhakaran, Vasantha and Sarika (2020) all in support of Social Influence's significant effect on behavioural intention. They are of the view that Family, friends and colleagues are all sources of positive recommendations about new technologies that may encourage customers to adopt them (Beldad & Hegner, 2018). Although, these set of studies and lot more shows that many people from various settings tends to seek recommendation from others (Moon & Kim, 2017), the findings of this study suggest otherwise, stressing that word-of-mouth does not influence potential users' intention to adopt Fin-Tech in Nigeria. As it seems, people just use them in-line with their perception towards its performance and facilitating condition.

5. Conclusion and Frontier for further studies

The study seeks to identify the significant factors determining Nigerian university students' intention to adopt Fin-Tech. In line with prior studies, four Factors were selected at first including performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC), and these were all later identified by Factor analysis. The results of Confirmatory Factor Analysis (CFA) also confirmed these four factors. While Cronbach alpha value and AVE were used in ensuring the reliability of the research instrument, factor loadings were used in ensuring its validity via the convergent validity. All the fit indices show good model fit to the data and the model is acceptable.

Results show that performance expectancy and facilitating conditions significantly affects people's intention (Nigeria University students) to adopt Fin-Tech in a positive manner. However, same result reveals that effort expectancy and social influence are not significantly affecting the people's intention. Thus, we can conclude that students from Nigerian Universities use Fin-Tech apps mainly for the sake of convenience, time saving and its ability to improve their productivity. This study only cover two universities (from Gombe State). As such further research can be carried out using more universities. Moreover, in-line with prior studies, further studies from this same region can add other factors like perceived risk, gender, etc to their studies.

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