



Exploring mobile money adoption among the informal sector in Anambra State-Nigeria

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Abstract

The aim of this study is to explore mobile money adoption among the informal sector in Anambra State-Nigeria. The proliferation of mobile phones in Nigeria has not enhanced m-Money adoption especially amongst the informal sector estimated at over 50 per cent of Nigeria's rebased gross domestic product (GDP). The study was based on a survey of 250 informal operators from some of the towns in the state out of which 224 responded. Four socio-demographic variables were combined with four impulsive variables: PU, PEOU, Customer awareness and perceived trust in one model and SmartPLS 3.2.7 was used to analyse the data. The aim of this combination was to explore how the demographics affect the impulsive variables that affect m-Money adoption. Results of the data analysed show that PU, PEOU, CA and PT have significant effect on m-Money adoption. It also shows that the demographic variables especially education and occupation affect the variables that influence adoption. Thus, awareness and education on a constant and continuing basis are fundamental to m-Money adoption by the sector that is reported to be more financially excluded than the formal sector. This is necessary in the sense that with the right type of education and awareness the informal sector can key into mobile money to improve their lot.

Keywords: m-Money; Informal Sector; Anambra State; Financial Inclusion; CBN; Awareness; TAM; Employment

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1. Introduction

Mobile Money is a strategy for reaching the informal sector and enhancing the financial inclusion of the unbanked and under-banked (Central Bank of Nigeria, CBN, 2012); most of whom are informal sector operators. In Nigeria, the informal sector is very large and is estimated to account for approximately 58% of the Nigerian economy (in Philips Consulting, 2014). In Anambra State the informal sector includes farmers, traders, artisans and craftsmen, professionals, etc.; and foremost among these are the traders engaged in commerce in major markets in the many designated towns in the state. It is projected that the traders are above 700,000 in number (Anambra State Government ANSG, 2013). Reaching this large number with m-Money for financial inclusion is essential. Recent country-wide surveys and practitioners' reports show that the adoption rate of m-Money is still a far cry from mobile phone explosion in the country (cf. Phillips Consulting, 2013). Despite the nationwide campaign on cashless policy of the Central Bank of Nigeria (CBN) aimed at reducing the high incidence of cash transactions in the economy, the use of mobile banking technology is still low. This is in spite of the wide spread mobile phone adoption in the country and could be due to lack of technology readiness given their demographics and exposure, their awareness and adoption of mobile phones and lack of trust on technology. Enhancing Financial Innovation and Access (EFInA) (2013) observed that the low adoption could be attributed to the risks, trust, system breakdown and availability as adoption is still at the urban and semi-urban areas limiting the access to the rural population. EFInA (2013) added that limited access to network agents, users not being able to withdraw money from an agent when they want, the money not being reflected on an account, the system being expensive, agents not having sufficient float on their accounts and delays in being able to deposit and withdraw funds account for low adoption.

Philips Consulting (2013) attributed low adoption to lack of technology readiness, demographics exposure, and awareness; Osakwe and Okeke (2016) relied on such variables as: Perceived usefulness (PU), perceived ease of use (PEOU), perceived trust, bank branch distance among others. This study relies on PU, PEOU, consumer awareness and trust to study m-Money adoption among the informal sector in Anambra State. Investigations have been done on consumer adoption of technology innovations (Okeke et al., 2017; Osakwe and Okeke, 2016, Phillips Consulting, 2013; Lule et al., 2012). However, none of these have dwelt on the informal sector. Studies conducted on innovation adoption have relied mostly on impulsive variables while only limited studies (Giovanis et al., 2012) combine three socio-demographics with impulsive variables in their model. Okeke and Okpala (2014) was based on a discrete analysis of demography and e-banking usage in Nigeria. This study was aimed at assessing the impact of the TAM variables of PU and PEOU; consumer awareness (CA), and perceived trust (PT) on informal sector adoption of m-Money. The study also sought to ascertain the relationship between socio demographics and the impulsive TAM variables that explain consumer adoption of m-Money among the informal sector in Anambra State, Nigeria.

2. Literature review

2.1. Mobile money

The definition of m-Money varies as it covers a wide scope of operations. Generally, mobile money is a term explaining the services that permit electronic money dealings over a mobile phone. It is as well described as

mobile financial services, mobile wallet and mobile payment (Ernst and Young, 2009). Mobile banking is the employment/engagement of a mobile phone to remotely log on to a bank account, mainly for account balance check-up and bill payment services. Mobile money refers to money stored using Subscriber's Identity Module (SIM) in a mobile phone as an identifier disparate/dissimilar to an account number in traditional banking. Notational equivalent is in value issued by an entity and is kept in a value account on the SIM within the mobile phone that is also used to transmit transfer or payment orders, while equivalent cash value is safety held elsewhere, naturally in a bank for the ease. The balance on the value account can be accessed via the mobile phone, which is also used to transmit instant transfer or payment orders (Adholiya et al., 2012).

Mobile money is also the provision of financial services to people using a mobile device (in World, 2012). These services include mobile payments, mobile banking and mobile finance. Mobile payments include person-to-person, government-to-person and business-to-business payments. Mobile money refers to the ability to make bank transactions and enquiries using a mobile phone. Mobile money entails the ability to access services regarding credit, insurance and savings through a mobile phone (Gencer, 2011). Therefore, mobile money refers to any transaction that requires the converting of money into electronic value using a mobile device and vice versa.

Besides a mobile phone, which is fundamental to the concept of mobile money, more structures are required in order to provide these financial services. It requires cash points wherever cash-in and cash-out transactions are made. Such points are run by 'agents'. Agents work with a mobile money operator or bank which buys money floats from the mobile money operator. They receive some commission for converting cash to electronic money and vice-versa. In order to operate, the mobile money operator needs a mobile network that has wide coverage so that it can reach as many clients as possible. The most cited example in the literature of mobile money is M-PESA of Kenya, a mobile money initiative supplied by Safaricom and Vodafone. Thus, mobile money makes use of an already existing communications infrastructure (Jenkins, 2008).

2.2. The informal economy in Nigeria

Informal sector is the segment of the urban economy of developing countries typified/epitomized by petty competitive individual or family firms, small retail trade and services, labour-intensive methods, free entry, and market-determined factor and product prices (Todaro and Smith, 2015). They note that the existence of an unorganized, unregulated, and mostly legal but unregistered informal sector was recognized in the 1970s, following observations in several developing countries that massive additions to the urban labour force failed to show up in formal modern-sector unemployment statistics. The bulk of new entrants to the urban labour force seemed to create their own employment or to work for small-scale family-owned enterprises. The self-employed were involved in an amazing array of activities, varying from street vending, hawking, knife sharpening, letter writing, and junk collecting to selling fireworks, drug peddling, prostitution, and snake charming. Others stumble on jobs as carpenters, personal servants, small artisans, mechanics, barbers as well as highly successful small-scale entrepreneurs with numerous employees (mostly relatives) and higher incomes (Todaro and Smith, 2015).

The informal economy in Nigeria is estimated to account for 57.9% of Nigeria's rebased GDP (in Philips Consulting, 2014). The National Bureau of Statistics (NBS) also states that the sector consists of over 17 million businesses and enterprises, and contributes significantly to job creation. It was estimated that between July 2012 and June 2014, 2.48 million jobs were created, with the informal economy contributing the most at 1.41 million (57%), the formal economy contributing 40%, and the public sector contributing 3%. A recent study by the Small and Medium Enterprises Development Agency (SMEDAN) revealed that MSMEs account for 80% of the total number of enterprises in Nigeria, and 75% of the total employment base (employing 32.4 million Nigerians). In addition, micro enterprises comprise 98% of all MSMEs in the country, whereas small and medium enterprises comprise 1% each (in Philips Consulting, 2014). The United Nations Development Programme's (UNDP) National Human Development Report (HDR) (2015) states that with the collapse of the manufacturing sector epitomized by rampant factory closures and relocation of Nigerian firms to neighbouring countries have led to the proliferation of poorly paid and unproductive self-employment in the informal sector. This means that the sector is still growing and expanding; as reported by the UNDP, the share of formal sector jobs created in 2012 dropped from 40.8 per cent to 36.6 per cent in 2013 while the share of informal sector jobs created in 2012 increased from 59.2 per cent to 63.4 per cent in 2013 (p.36). Although a large proportion of these enterprises will be classified under the formal sector, it is probable that an even larger proportion operate in the informal economy. Activities in the informal economy are often carried out using cash-based transactions. Electronic forms of payment, through bank transfers, mobile payment platforms and the use of cheques are not common and as such, records of informal transactions are often not available. ANSG (2013) estimated over 700,000 informal operations in the state pointing out that due to a number of reasons, it has not been possible to bring these traders into the tax net. As a result, the income by the informal sector worker or operator would not be reported for taxation.

2.3. Theoretical review

In order to grasp customers' acceptance of innovations, previous works have modified the TAM model (Davis, 1989) which is manifestly linked to the earlier theory of reasoned action (TRA). Concisely, TRA is about the relationships among beliefs, attitudes, and intentional behaviour (Fishbein and Ajzen, 1975). The TRA beliefs were substituted in the TAM by perceived usefulness (PU) and perceived ease of use (PEOU). As reported by Davis (1989), the successful adoption of any information system is driven by the user's approach towards acceptance of a new system. In other words, the quality and effectiveness of a system can only be justified by its level of users' acceptance. It is not surprising that TAM, plus its extended version, has been greatly used by academics in grasping the success factors trailing the adoption of mobile financial services (MFS) such as m-money (cf. Osakwe and Okeke, 2016; Chauhan, 2015; Dass and Pal, 2011; Tobbin, 2010). In the same vein, Morgan and Ravindran (2014) espoused a revised TAM, which they termed "A Reduced Form of Technology Consumer Product Adoption Model" (p. 6) to examine notable factors impacting the interaction(s) involving home Internet and mobile device use in the US context. The model integrates perceived affordability, perceived risk, and user demographics among others to assess US consumers' use of home Internet along with mobile devices (see Morgan and Ravindran, 2014). Similarly, from the viewpoint of the Kenyan consumers, Lule, Omwansa, and Waema (2012) used the extended TAM model by incorporating three variables- transaction

cost, perceived norm, and perceived self-efficacy – to explore m-Banking adoption in Kenya. The aforementioned studies dwelt on other aspects of financial innovations but this survey is on POS which has drawn restricted interest in this part of the world. TAM continued metamorphosis into the unified technology use and acceptance theory (UTUAT) which permits the integration of context/environment specific variables; (cf. Oteh, Ibok and Ntoh, 2017). This present study incorporates socio-demographics, consumer awareness and perceived trust toward mobile money adoption.

2.4. Research hypotheses

The aim of this study was to incorporate socio-demographics, consumer awareness, perceived ease of use, perceived usefulness, and perceived trust in evaluating m-Money adoption among the informal sector. The demographic variables used in the investigation are: gender, income, education and occupation and the aim is to ascertain how these demographics impact the impulsive variables to determine mMoney adoption with the informal sector.

2.4.1. *Perceived usefulness*

PU is defined as “the degree to which a person believes that a particular system would enhance his or her job performance.” This is the most prominent belief in TAM and clarifies that a user’s perception about latent benefits of using a technology-based product provokes positive feelings towards it (Davis, 1989; Davis et al., 1989). Some of the noted latent benefits for a user in the literature are the reduction of time and effort to complete a task, better control during interaction with the system, and greater expediency. Hence PU has been positively linked to attaining a value goal. A proxy for the PU construct is the „performance expectancy“ construct in the Unified Theory of Technology Acceptance and Use of Technology (UTAUT) model, posited by (Venkatesh et al., 2003). This model was developed based on an encapsulation of key predictor variables in predominant models. The authors set out to empirically compare predominant models and theories in an effort to create a parsimonious model that predicts direct determinants of usage or intention. Like PU, performance expectancy constructs have been found to be the strongest predictor of intention to use a technology-based product (Venkatesh et al., 2003). Thus, constructs that have direct connotations to usefulness have been used extensively in information systems research, and there is empirical evidence to show the strong predictive power of these constructs in accounting for consumer adoption of a technology-based product (Szajna, 1996). Hence the following hypothesis is proposed

H₁: PU has significant effect on adoption of m-Money by the informal sector.

2.4.2. *Perceived ease of use*

PEOU is the degree to which a person believes that a technology product requires little or no effort to use (Davis, 1989). PEOU is the other dominant variable in the TAM. A prospective consumer would opt for a product from a variety of available options if it entails little or no effort to use (Davis, 1989). In recent years/over time, numerous studies (e.g., Osakwe and Okeke, 2016) have produced results that show the

significant effect of perceived ease of use either impacting intention to use directly or indirectly. On this note, the two topic-specific empirical studies which employed the TAM found that its variables accounted for a significant percentage of the variance on intentions to use. Drawing on findings from a closely related study - adoption of mobile banking, Wang, Lin, and Tang (2003) suggest that to ensure a situation where a system is fully utilized, mobile-based products should be easy to learn and use. This implies that even though a technology-based product is deemed useful, if it is difficult to use, consumers will refrain from using it. PEOU is expected to influence PU and m-Money adoption; hence the following hypotheses are proposed:

H₂: PEOU has a significant effect on PU.

H₃: PEOU has significant effect on m-Money adoption.

2.4.3. Perceived trust (PT)

Trust is a critical factor in the success of the adoption of mobile platforms (Masinge, 2010). According to Kim et al. (2009), trust is a psychological expectation that the trusted party will not behave opportunistically. It is defined as the feeling of security and willingness to depend on someone or something (Kim et al., 2009). They further suggest that the adoption of mobile platforms has fallen short of the service providers' expectations and this is mainly due to the user's initial lack of trust. There is a difference between initial trust and the experience and knowledge based (Kim et al., 2009). Like the study conducted by Masinge (2010), this study focuses on the initial trust as the respondents have less experience with service providers with respect to the use of the mobile platform. The following hypothesis is proposed:

H₄: PT has a significant effect on adoption of m-Money.

2.4.4. Consumer awareness (CA)

Global Findex Report (2014) states among others that lack of awareness is a barrier to financial inclusion (International Bank for Reconstruction and Development/The World Bank, 2014). Consumers' awareness of electronic banking performs a significant function in their use of electronic banking. Colgate, Nguyen and Lee (2003) affirmed that when consumers made choices for different alternatives in the market place, the knowledge of the current alternatives was a factor for consumers to stay with their existing banking provider. As regards electronic banking, Sathye (1999), and Polatoglu and Ekin (2001) analytically supported the idea that consumer awareness had an influence on electronic banking adoption. Sathye (1999) discovered that the lack of knowledge about electronic banking and its advantages including the perception of it being non-user friendly add to the non-adoption of electronic banking. Moreover, Polatoglu and Ekin (2001) indicated that the more awareness and skills a consumer had about electronic banking, the simpler it was for the consumer to exploit electronic banking. Consumer's knowledge of electronic banking performs a vital role in their use for electronic banking. Colgate, Nguyen and Lee (2003) declared that when consumers reached decisions for different alternatives in the market place, the awareness of the current alternatives was a determinant for consumers to remain with their current banking provider. Another barrier to financial inclusion reported by The World Bank Group (2014) is lack of trust. Hence it is expected that awareness will lead to trust and adoption. Thus, the following hypotheses are proposed:

H₅: Consumer awareness has significant effect on perceived trust of m-Money.

H₆: Consumer awareness has significant effect on m-Money adoption.

2.4.5. Gender

Gender is a factor in consumption as men and women have diverse attitudes and behave otherwise in acquiring and using goods and services especially innovation. Like in relationships, men seem to be more adventurous hence going into a relationship is easy and getting out is also easy. For women going in is not easy and getting out is also not easy. Research shows that women have traditionally tended to be more communal-minded and men more self-expressive and goal-directed; women have tended to take in more of the data in their immediate environment and men to focus on the part of the environment that assists them achieve a goal (in Kotler and Keller, 2016). EFINA (2016) report that financial access is skewed towards male adults. Johnson and Arnold (2012), posit that mobile financial services give females increased access to finance than formal banking services because of the simpler registration process and less burdensome document requirements. In a study on adoption of internet banking services in Greece, Giovanis et al. (2012) found a significant positive relationship between gender and PEOU as well as PU. In a study on mobile, financial inclusion and development, Kim, Zoo, Lee and Kang (2017) say that with respect to gender, findings from literature are inconclusive. This study aims to ascertain the relationship between gender and the four variables: CA, PT, PU and PEOU; hence the following hypotheses are proposed.

H₇: Gender has a significant effect on consumer awareness of m-Money.

H₈: Gender has a significant effect on perceived trust of m-Money.

H₉: Gender has a significant effect on perceived usefulness of m-Money.

H₁₀: Gender has a significant effect on perceived ease of use if m-Money.

2.4.6. Income

Income of potential consumers affect their adoption of goods and services and m-Money is not an exception. Income in the informal sector is usually not steady as the operators in the sector are adversely affected by economic downturns. EFINA (2013) observed that irregular income as one of the top three barriers to having a bank account. Accordingly, EFINA (2016) reports that recession have had the negative effect especially on the bottom of the pyramid (B-O-P) population who do not have the means to cushion themselves against these shocks. In eastern Nigeria, remittances from the relatives overseas constitute an important source of income for family members at home. Withdrawing such remittances would require a bank account of formal banks. However, it is difficult to create new bank accounts for the low-income people as banks in developing countries often request a higher amount of deposit to open a bank account. Kim et.al. (2017) maintain that mobile financial services can fill such needs effectively since they require much simpler and affordable registration process and offer faster and easier transactions compared to those from formal financial institutes. The World Bank Group (2017) considered the provision of financial services at affordable

costs to the disadvantaged and low-income segments of society as one of the major enablers of economic development. In view of these the following hypotheses are proposed:

H₁₁: Income has a significant effect on consumer awareness of m-Money.

H₁₂: Income has a significant effect on perceived trust of m-Money.

H₁₃: Income has a significant effect on perceived usefulness of m-Money.

H₁₄: Income has a significant effect on perceived ease of use if m-Money.

2.4.7. Education

The level of education of potential customers have been recognised as a factor in the perception as well as adoption of innovation in developing countries. This is more so with micro finance services in developing countries. Kim et.al. (2017, p.17) aver that “not only illiteracy, but also ‘financial illiteracy’ is a critical hindrance to financial inclusion”. Education is a crucial factor in development as educated people are better disposed to appreciate financial innovations like m-Money adoption. Analysts and researchers believe that with the right education and awareness, consumers will appreciate the perceived usefulness of m-Money (Osakwe and Okeke, 2016; EFInA, 2016). Consequently, the following hypotheses are put forward:

H₁₅: Education has a significant effect on consumer awareness of mMoney.

H₁₆: Education has a significant effect on perceived trust of mMoney.

H₁₇: Education has a significant effect on perceived usefulness of mMoney.

H₁₈: Education has a significant effect on perceived ease of use if mMoney.

2.4.8. Occupation

Occupation of the prospective consumers have been recognised as crucial in adoption. This study is on mMoney adoption among the informal sector that have been recognised as a safety net for many young graduates and others who could not secure employment in the formal sector. UNDP-NHDR (2015) depicts that the share of formal sector jobs created in 2012 dropped from 40.8 per cent to 36.6 per cent in 2013 while the share of informal sector jobs created in 2012 increased from 59.2 per cent to 63.4 per cent in 2013. This means that while informal sector jobs grew by 20.8 per cent, formal created jobs shrunk by 4.2 per cent within 2012 to 2013 (UNDP-NHDR, 2015). Informal sector is characterised by unsteady jobs and unstable income which has constrain access to formal financial services. Studies (Gan, et al., 2006 and Okeke and Okpala, 2014) show that occupation is significant in e-banking adoption. This study is on m-Money adoption among the informal sector and the following hypotheses are proposed:

H₁₉: Occupation has a significant effect on consumer awareness of m-Money.

H₂₀: Occupation has a significant effect on perceived trust of m-Money.

H₂₁: Occupation has a significant effect on perceived usefulness of m-Money.

H₂₂: Occupation has a significant effect on perceived ease of use if m-Money.

3. Methodology

This study concerns mobile money adoption among the informal sector in Anambra State, Nigeria. Four demographic variables and four impulsive variables were combined in the model to assess mMoney adoption among the informal sector. The impulsive variables are: PU, PEOU, CA and PT; and the study was based on original TAM model as PU and PEOU were drawn from the TAM. The four impulsive variables were each measured with four items on a five- point Likert scale of strongly agree, agree, undecided, disagree and strongly disagree; while the socio-demographics were measured singly and not based on attitude. Questionnaire was used to collect primary data and was designed in line with the patterns used in marketing research. A sample size of 250 respondents who are informal operators in Nnewi North, which is the second commercial nerve centre of Anambra State participated in the study. Data from already existing materials came from journals, discussion papers, annual reports, government publication/bulletins, among others. This is in alignment with studies in consumer behaviour specifically and marketing in general. The data was analysed with Structural Equations Modelling (SEM) which was used to test the formulated hypotheses using the SmartPLS 3.2.7 statistical software. Structural Equation Modeling (SEM) is a type of statistical models that seek to explicate the associations among multiple variables and measures the “structure” of interrelationships formulated in a series of equations (Ramayah, 2015). Researchers prefer PLS to covariance based (CB) SEM due to PLS’ versatility in terms of less rigid demands regarding sample size, non-requirement for normally-distributed data and its applicability to complex structural equation models with a sizable number of constructs (Hair et al., 2014, pp. 15-18).

A total of 224 copies of questionnaire were brought back and confirmed valid. This denotes a response rate of 89.6 percent and is considered high and acceptable. The demographic variables are: gender, income, occupation and education. Descriptive analysis of the responses shows that 65%(146) are males while 35%(78) are females. A total of 23.1%(52) earn below N50,000; 38.9%(87) earn N50,000 – N150,000 and 38.0%(85) earn above N150,000 monthly incomes. For occupation, 71%(159) are private firm employees while 29.0%(65) are self-employed. Majority of the respondents, 60.2%(135) have tertiary education while 39.8%(89) have basic education. The implication of the responses is that the respondents have reasonable education and are therefore capable of providing usable data for the study.

3. Results

Structural Equations Modelling (SEM) was used to analyse and validate our research hypotheses and the graphic output is shown in Figure 1. In the R^2 at CA=0.231; PT=0.379; PU=0.257; and PEOU=0.272. This means that the four socio-demographics explain 23.1% of variances in CA; 37.9% of variance at PT; 25.7% variance at PU; and 27.2% of variance at PEOU. Again, R^2 at MMA=0.491. This implies that all the variables explain 49.1% variances in mobile money adoption among the informal sector. In table 1, we have the discriminant validity assessment using the *Fornell-Larcker* criterion; while in Table 2 is the assessment of the structural equation model.

Table 1. Discriminant validity assessment

CA	Education	Gender	Income	MMA	PEOU	PT	PU	Occupation	
CA	0.719								
Education	0.356	1.000							
Gender	-0.032	-0.095	1.000						
Income	-0.041	-0.106	0.001	1.000					
MMA	0.543	0.745	0.027	-0.023	0.777				
PEOU	0.537	0.407	-0.023	0.168	0.627	0.685			
PT	0.584	0.217	0.101	-0.092	0.529	0.506	0.677		
PU	0.583	0.406	0.047	-0.155	0.432	0.326	0.407	0.607	
Occupation	0.414	0.302	-0.019	-0.086	0.388	0.347	0.128	0.341	1.000

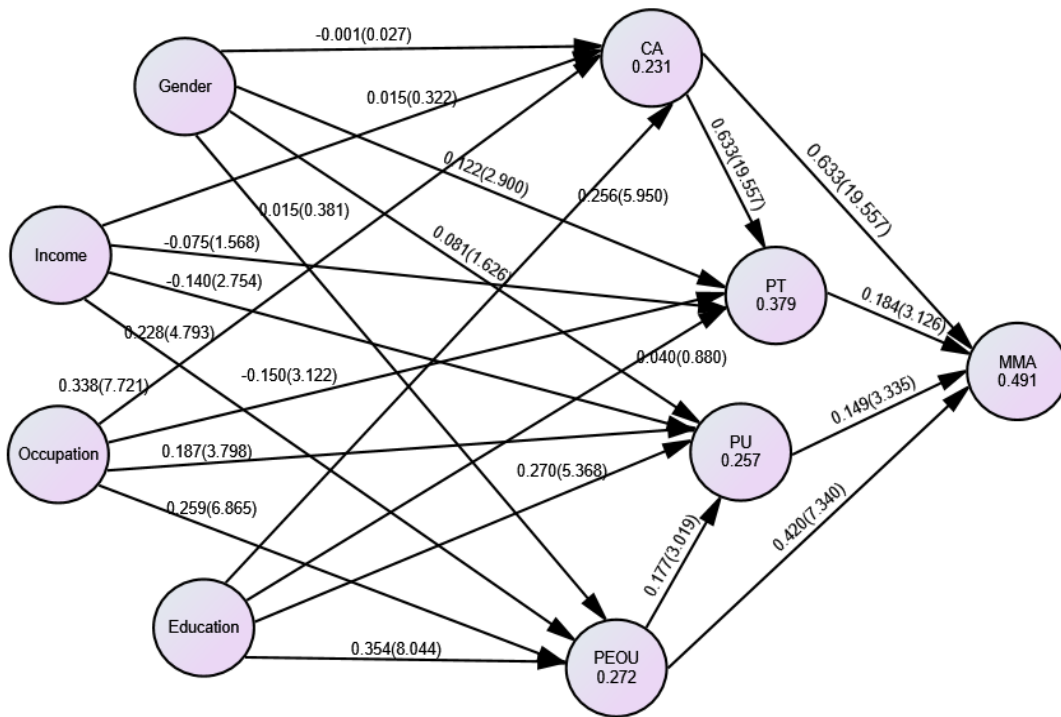


Figure 1. The Research SEM Model

The measurement model involves the analysis of internal consistency, convergent as well as discriminant validity of the constructs. The reliability measures are well above the recommended 0.6 which is an indication of adequate internal consistency; and is also an indication that the data merit further analysis. The latent constructs also show adequate convergent and discriminant. Based on Hair, Hult, Ringle and Sarstedt, (2014) *Rules of Thumb*, convergent validity of study constructs indicating average variance extracted (AVE) ≥ 0.5 . Convergent validity is also verified when items loading on their associated factors are above 0.5 (Hair *et al.*, 2010), which is so in this case. To assess discriminant validity, a matrix of loadings and cross loadings in Table 2 is constructed. As a Rule of Thumb (Hair *et al.*, 2014) all indicator's outer loadings on a construct should be higher than all its cross loadings with other constructs. Hence, we can conclude that there is enough evidence to infer confidence in the discriminant validity of the measures.

The PLS-SEM method was also used to confirm the hypothesised relationships between variables in our model. The significance of the paths in Figure 1 were tested using a bootstrap resample procedure. After performing the PLS-SEM analysis, the SEM obtained are illustrated in Figure 1. Additionally, Table 2 shows the model's standardised path coefficients and the statistical significance which is used for the hypothesis's validation.

Table 2. Assessment of the structural equation model

Effects	Std. Beta	Std. error	t-values	P Values	Decision
PU -> MMA	0.149	0.045	3.335	0.001	<i>Supported</i>
PEOU -> PU	0.177	0.058	3.019	0.003	<i>Supported</i>
PEOU -> MMA	0.420	0.057	7.340	0.000	<i>Supported</i>
PT -> MMA	0.184	0.059	3.126	0.002	<i>Supported</i>
CA -> PT	0.633	0.032	19.557	0.000	<i>Supported</i>
CA -> MMA	0.123	0.052	2.381	0.018	<i>Supported</i>
Gender -> CA	-0.001	0.046	0.027	0.979	<i>Not Supported</i>
Gender -> PT	0.122	0.042	2.900	0.004	<i>Supported</i>
Gender -> PU	0.081	0.050	1.626	0.104	<i>Not Supported</i>
Gender -> PEOU	0.015	0.039	0.381	0.703	<i>Not Supported</i>
Income -> CA	0.015	0.048	0.322	0.748	<i>Not Supported</i>
Income -> PT	-0.075	0.048	1.568	0.117	<i>Not Supported</i>
Income -> PU	-0.140	0.051	2.754	0.006	<i>Supported</i>
Income -> PEOU	0.228	0.048	4.793	0.000	<i>Supported</i>
Education -> CA	0.256	0.043	5.950	0.000	<i>Supported</i>
Education -> PT	0.040	0.046	0.880	0.379	<i>Not Supported</i>
Education -> PU	0.270	0.050	5.368	0.000	<i>Supported</i>
Education -> PEOU	0.354	0.044	8.044	0.000	<i>Supported</i>
Occupation -> CA	0.338	0.044	7.721	0.000	<i>Supported</i>
Occupation -> PT	-0.150	0.048	3.122	0.002	<i>Supported</i>
Occupation -> PU	0.187	0.049	3.798	0.000	<i>Supported</i>
Occupation -> PEOU	0.259	0.038	6.865	0.000	<i>Supported</i>

As shown in Figure 1, the four impulsive variables: PU, PEOU, PT and CA are determinants of m-Money adoption by the informal sector. The four variables explain a total of 49.1 per cent of variance in m-Money adoption (Figure 1). From Table 3 we see that PU ($\beta=0.149$, $t=3.335$; $\rho=.001$); PEOU ($\beta=0.420$, $t=7.340$; $\rho=.000$); PT ($\beta=0.184$, $t=3.126$, $\rho=.002$); and CA ($\beta=0.123$, $t=2.381$, $\rho=.018$). We also wanted to know the relationship between PEOU and PU and the information in Table 3 is PEOU -> PU ($\beta=0.177$, $t=3.019$, $\rho=.003$); and the relationship between CA and PT which is ($\beta=0.633$, $t=19.557$, $\rho=.000$). Therefore, $H_1 - H_6$ are validated and confirmed since they are statistically significant.

Table 3 also presents the results of the effect of socio-demographics on the impulsive variables. The four demographics explain 23.1 per cent of variations in customer awareness; and 27.2 per cent of variations in

PEOU. Additionally, the four demographics with CA explain 37.9 per cent of variations in customer PT while with PEOU explain 25.7 per cent of variations in PU. The path Gender – CA ($\beta=-0.001$, $t=.027$, $\rho=.979$), Gender – PT ($\beta=.122$, $t=2.900$, $\rho=.004$); Gender – PU ($\beta=0.081$, $t=1.626$, $\rho=.104$); and Gender – PEOU ($\beta=.015$, $t=0.381$, $\rho=.703$). Based on these H_8 is validated and supported while H_7 , H_9 and H_{10} are not supported. The path Income – CA ($\beta=.015$, $t=.322$, $\rho=.748$); Income – PT ($\beta=-.075$, $t=1.568$, $\rho=.117$); Income – PU ($\beta=-.140$, $t=2.754$, $\rho=.006$); and Income – PEOU ($\beta=.228$, $t=4.793$, $\rho=.000$). Based on these, H_{11} - H_{12} are not supported while H_{13} – H_{14} are supported and validated since they are statistically significant. Education – CA ($\beta=.256$, $t=5.950$, $\rho=.000$); Education – PT ($\beta=0.040$, $t=0.880$, $\rho=.379$); Education – PU ($\beta=.270$, $t=5.386$, $\rho=.000$); and Education – PEOU ($\beta=.354$, $t=8.044$, $\rho=.000$). Based on these, H_{15} is supported and validated; H_{16} is not supported; H_{17} – H_{18} are supported and validated since are statistically significant. The path Occupation – CA ($\beta=.338$, $t=7.721$, $\rho=.000$); Occupation – PT ($\beta=-.150$, $t=3.122$, $\rho=.002$); Occupation – PU ($\beta=0.187$, $t=3.798$, $\rho=.000$); and Occupation – PEOU ($\beta=.259$, $t=6.865$, $\rho=.000$). Based on these, H_{19} – H_{22} are supported and fully validated since they are statistically significant.

4. Discussion

This study is concerned with m-Money adoption among the informal sector. The pioneering TAM model consists of two variables: PU and PEOU as bases for adoption of an information technology innovation. On the strength of literature reviewed, we included two variables: consumer awareness and perceived trust which we deem as drivers for an innovation adoption like m-Money in the informal sector. Four demographic variables: gender, income, education and occupation were also used in the study model. Questionnaire was the channel for data gathering and the proposed model provided reasonable evidence on a sample of 224 respondents/potential users of m-Money innovation. The elements in the proposed model are necessary in understanding informal sector adoption of m-Money.

The findings of this study show that CA, PT, PEOU and PU have significant impact on m-Money adoption by the informal sector. Table 2 shows that among these variables, PEOU has the highest impact followed by PT, PU and CA. The findings in this study agree partly with Giovanis et al. (2012) on PU and PEOU. The findings also agree with Okeke, Nwatu and Eze, 2017; Osakwe and Okeke, 2016, Lule, Omwansa, and Waema, 2012). The findings in this study also show that PEOU have a direct effect on PU of m-Money which agrees with Giovanis et al., (2012). Our analysis also show that CA has very impact PT of m-Money adoption among the informal sector and financially excluded. These findings agree with previous studies (eg. Oteh et al., 2017; Osakwe and Okeke 2016; Adesina and Ayo 2010; and Rusu and Shen, 2011) and continued to show significant impact on mobile payments adoption.

Regarding the impact of the demographic variables, gender has no significant effect on CA, PEOU and PU but has significant effect on PT. Regarding the impact of gender on PEOU and PU, this finding contrasts with Giovanis et al. (2012), but lends credence to Kim et al. (2017) that with respect to gender, findings from literature are inconclusive. Income has no significant effect on CA, and PT but is significantly related to PU and PEOU. The World Bank Group, (2017) considered the provision of financial services at affordable costs to the

disadvantaged and low-income segments of society as one of the major enablers of economic development. This largely explains the significance effect on PU and PEOU of income. The informal sector considers m-Money useful in their operations. Education has no significant effect on PT but is significantly related to CA, PU and PEOU. The level of education of a potential consumer is important in adopting an innovation and in assessing and keying into government programmes designed for the poor. Occupation showed significant effect on the four variables. This finding agrees with Gan et al., 2006 and Okeke and Okpala, 2014 earlier cited in the literature. This is an indication that demographic variables are important as they show reasonable indirect effect with the m-Money adoption by the informal sector.

5. Conclusion and implications

The purpose of this inquiry was to delve into m-Money adoption among the informal sector. Several theories have been employed in studying adoption of innovations like m-Money and they are TAM, extended TAM, and innovation diffusion theory among others. This study was based primarily on the original TAM model using PEOU and PU and adding customer awareness and perceived trust. This study has added to the few existing literatures on m-money adoption among the informal sector. It established like many other studies that PU and PEOU impact significantly and positively on m-Money adoption. Above all, the study is an extension of TAM hence two variables: CA and PT were added to show how they combine with PU and PEOU to impact adoption of mobile money by the informal sector. The study shows that CA, PT, PU and PEOU significantly and positively impact mobile money adoption. The second objective of this study was to assess how demographic variables of Gender, Income, Education and Occupation impact the impulsive variables and on m-Money adoption. Findings from the analysis show that the four demographic variables especially occupation and education impact the TAM variables of CA, PT, PEOU and PU to impact m-Money adoption.

These have implications for research. The implication for practice is that as Mobile money is still very much at infancy in Nigeria, the operators and regulator ought to involve the customers more by creating serious awareness on the use of mobile money for paying and receiving instead of the traditional methods. This study has established that PEOU and PU positively and significantly impact mobile money adoption. It also demonstrated that consumer awareness and perceived trust positively and significantly impact mobile money adoption. The study equally established that demographic variables education, occupation and income affect the impulsive variables that impact m-Money adoption. Awareness creation need to take into consideration the demographic variations of the informal sector operators; hence awareness creation need to take into consideration the socio-demographics of informal sector operators. With the right type of awareness and education, the informal operators can utilise m-Money to access government service and other services to better themselves. This will also enhance financial inclusion among these group of operators. ANSG (2013) said that getting the over 700,000 informal operators into the state tax net is important as it will aid planning and other purposes. Enhancing m-Money adoption among the informal sector is a veritable step toward mainstreaming the sector and improving financial inclusion.

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