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Small Marketing Firms' Intention To Adopt Pan-African Payment And Settlement System In Abia State: Integrative Model Approach

[1]Oloveze, A.O., [1]Obasi, R.O., [2]Ibok, N.I., [3]Onya, O.V., [4]Ogbonna, C. and [1]Oteh, O.U.
[1]Michael Okpara University of Agriculture, Umudike, Abia State
[2]Department of Marketing, Akwa Ibom State University, Akwa Ibom State
[3]Federal University Ndufu-Alike Ikwo, Ebonyi State
[4]Nnamdi Azikiwe University, Awka, Anambra State
Corresponding author: emrysoloveze@gmail.com

ABSTRACT:
Small enterprises like small marketing firms are generally noted for their significant economic contributions. They can scale up businesses to be involved in cross-border transactions. However, they are cumbered by hindrances from the environment, personal characteristics, and technology attributes, which eventually differ among available ones. The pan-African Payment and Settlement System (PAPSS) is a novel e-payment technology with attributes to mitigate small enterprises' challenges with cross-border payments. The drive is to encourage small enterprises to scale up and remove the involvement of third currency that has contributed to difficulties in commerce across nations. Thus, the study uses an integrative model to investigate small marketing firms' intention to adopt PAPSS. 245 samples were pooled from small enterprises' sampling frame in Abia State. An adapted structured questionnaire was used to generate data from the owners of small marketing firms. A structural equation model and descriptive statistics were used to analyze the result. Perceived compatibility was revealed as the strongest direct predictor of small marketing firms' intention to adopt PAPSS, while relative advantage was revealed to be the major indirect predictor of small marketing firms' intention to adopt PAPSS. The results implied that developers and managers of PAPSS need to focus marketing communications on its usefulness of PAPSS, simplicity, and benefits to small marketing firms. Thus, an appropriate policy drive is recommended on operational guidelines to clarify the operation, advantage of the innovation, and performance metric of PAPSS.

KEYWORDS: *PAPSS, Cross border commerce, e-payment, payment adoption, behavioral intention*

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INTRODUCTION

Recently, there have been dramatic developments in wireless communication, with e-payments being part of the developments. Huge developments are primarily in developed nations where non-cash transactions are improving so that the developed economies can be deduced to attain the status of a cashless society;

however, in developing Nations such as Nigeria, the adoption of a wide range of e-payments is seemingly dwarfed by the dominance of cash transactions (Varrella, 2021). This is irrespective of the momentary cashless period that promoted massive patronage of e-payment channels before the election period in Nigeria in 2023. With these circumstances in Nigeria, the attraction of e-payment transactions is still growing (Oloveze *et al.,* 2021a). Consumers have multiple options besides cash payments, while for businesses, there are growing avenues and opportunities provided by these transformations in payment transactions.

Globally, micro, small, and medium enterprises (MSME) activities to the economy attract states because of the potential impact on the economy. This includes the marketing institutions belonging to the micro, small, and medium enterprise classifications by SMEDAN and NBS in 2017. In Nigeria, these classes of enterprises perform essential functions and significant roles. They account for 96% of businesses conducted in Nigeria and 50% contribution to gross domestic product (GDP) (PwC, 2020). Their roles in any economy feel their impact on e-payments. They function as consumers and merchants in payments for products and pass payment information between businesses, the government, and consumers. Their significant impact on the economy calls for their extensive participation in the Internet economy to drive economic growth in Nigeria (Igudia, 2018). They can accelerate the industrialization and socio-economic transformation of any economy. Besides the activities of these enterprises within the nation, some engage in transactions across the nation's boundaries. In most OECD (Organisation of Economic Co-operation and Development) countries, there is evidence of transactions from these enterprises making meaningful contributions to overall exports. Though the level of involvement of the enterprises classified as medium-scale in cross-border transactions is improving, extant studies suggest low involvement of small enterprises (used interchangeably with small marketing firms) in cross-border business transactions (Mokhethi, 2019). In any case, they can contribute to the regional economy. The contribution, growth, and development can emanate from a country's innovative policies and provision of necessary infrastructure such as internet technology. However, these enterprises are cumbered by e-payment security and risk issues and poor awareness of the system's benefits (Igudia, 2018).

The adoption of e-payment systems in a developing nation like Nigeria is shown in extant literature to be abysmally slow compared to the developed nations. This is entirely expected because of the enormous differences between developed and developing nations in terms of education, technical know-how, incomparable strength of economy, infrastructural development and information technology, and capacity to evolve and adopt new digital technologies. These are huge gaps capable of producing significant differences in the adoption and usage of information technologies. Recently, the Nigerian government formulated policies to enhance internet facilities and boost e-payment facilities to encourage e-payment. Babalola (2022) said such efforts impacted adoption positively, though the Nigerian commercial ecosphere is still experiencing low acceptability.

Recently, a novel e-payment system – Pan-African Payments and Settlement System (PAPSS) – was launched in January 2022 to facilitate cross-border finance market payments. The design of PAPSS is such that it bypasses the need to convert local currency to exchanged currency while facilitating a reduction in transaction time, ensuring strict compliance and legality. It is argued to remove major forces inhibiting intra-African commerce and boosting African e-commerce. Concerning small marketing institutions, PAPSS is argued to have the capacity to handle fragmented payment and settlement systems, which are often one of the characteristic payment systems of small businesses (MSEs). Essentially, e-payments of this sort can assist small enterprises in gaining more accessible access to a more extensive customer base nationally, regionally, or globally (World Economic Forum, 2018). This is one of the primary drives of PAPSS. It sought to break trade barriers between nations, particularly from the payment aspect, by promising tight security, instant payment, and faster settlement of payment disputes. Small enterprises thrive on the ability to turn over investments. However, the chances are limited when there is a potential risk of loss of investments and poor turnover of investments. In other words, adopting a system becomes a challenge, and the success of the technology becomes more challenging. Notably, adoption is a function of several factors. Concerning e-payments, all e-payments do not receive the same acceptance given that there is evidence of failures of innovations as they are introduced in the market. The same innovation can have different adoption rates because of differences in social systems. The important note in this context is that while all innovations are equivalent units of analysis (Rogers, 1983), thereby justifying the resort to the study of different technological innovations using a selection of variables from the diffusion of innovation, technological acceptance model, theory of reasoned action, technology organization environment and unified theory of acceptance and use of technology yet all e-payment systems are not the same. Each e-payment system differs and can fail or

succeed depending on different factors. The differences in e-payment systems and their behavior associated with benefits and risks elicit different user reactions.

The study builds on existing literature on electronic payment. Literature on e-payment primarily focused on the individual consumer behavior of the e-payment system. Fewer studies have focused on business dimensions. The available ones in Nigeria considered e-payment adoption from qualitative research. Others ignored the differences between small and medium enterprises and studied them as one entity, disregarding the differences between them. The misleading dimension is the generalization of results to either enterprise class despite the sheer differences between these enterprises that can impact their intention to adopt an innovation. However, PAPSS is a novel e-payment system with no previous empirical record of its acceptance and usage.

Further, there is no comprehensive model that addresses the context of small marketing firms' adoption of this type of e-payment. This is often common with new disruptive technologies. The proposed integrative model attempts to bridge this gap. Besides, recent reports by Global Findex Report (2018) buttress the existence of poor adoption of e-payment of SMEs in Nigeria. This can emanate from a country's insistence on using a particular local payment system, which can negatively affect local businesses' venture into foreign trades when it is not aligned with the array of options in a foreign country's payment system. Thus, the importance of PAPSS is underscored by the delays in African payment transactions due to the lack of available foreign currency, poor relationships with correspondent banks, and impediments to intra-African e-commerce (Ubah, 2022a). However, e-payment systems are not the same, and acceptance is often a function of factors that can be significant in one clime but not in another. Differences in social systems buttress this. Thus, the study focuses on an integrative model that addresses the factors influencing marketing firms' adoption of the Pan-African payment and settlement system.

Marketing Firms

The marketing firms used in this study encompass all enterprises that are involved in at least one aspect of marketing, such as selling, advertising, merchandising, distribution, communication, assembling of rural produce, packaging, and transportation, among others, such as ones that include not limited to any other micro, small and medium enterprises that conduct marketing activities in their course business operations. In this context, marketing firms are considered a "standalone" or departmental function of a business organization. Thus, for the study, marketing firms cover standalone organizations and other business ventures that carry out an aspect of the marketing function, such as ones in the fashion industry, building materials, agricultural produce, and general healthcare products like cosmetics.

Micro, Small and Medium Enterprises (MSME)

MSME in Nigeria is classified from the size of the enterprise, the sector, the organization, the technology, and the location (SMEDAN, 2013). MSMEs are drivers of socio-economic transformation, wealth creation, job creation, income redistribution, and advancements in new products and processes (SMEDAN & NBS, 2017). Their development in Nigeria has often been affected by a combination of problems that include policy misfits and changes, problems inherent in operators, the external environment (SMEDAN & NBS, 2017), administrative problems, operating, strategic, and external problems (Etumeahu *et al.,* 2009). The vital roles they perform in local, national, regional, and global economies have drawn the focus of researchers and policymakers. Several studies have considered it from different dimensions, such as SMEs adoption of e-payment system (Xena & Rahadi, 2019; Igudia, 2018), intention to expand e-business systems use (Ifinedo, 2012), economic growth and development (Nguyen *et al.,* 2015), and access to finance (Idowu, 2014). However, the essential criteria for classifying MSMEs are in Table 1.

Table 1: Classification of MSMEs in Nigeria

SN	Size Category	Employment	Asset (# million) (excluding land and buildings)
1.	Micro enterprises	Less than 10	Less than 5
2.	Small enterprises	10 – 49	5 – less than 50
3.	Medium enterprises	50 – 199	50 – less than 500

Source: SMEDAN National Policy on MSMEs, 2015 in (SMEDAN & NBS 2017)

Pan-African Payment and Settlement System (PAPSS)

PAPSS is a novel e-payment technology designed to facilitate trade and payments across Africa and bridge the payment challenges associated with trade in Africa's more than 41 currencies (Aro, 2022). AfreximBank

developed it as a centralized payment market infrastructure to provide services that include processing, clearing, and settlement payments in intra-African commerce (Iyatse, 2022). It is an e-payment platform designed to facilitate the African Continental Free Trade Area (AfCFTA) creation of a single market by eliminating financial national boundaries and formalizing and integrating Africa's payment systems (Iyatse, 2022). It plays a dual role of operating as a national settlement agent for the involved African countries and as a direct participant (Uba, 2022b). The implication of PAPSS for businesses is assurance of an efficient and reliable payment gateway that provides firm support safety, instant flow of funds, and low cost to households and businesses (Aro, 2022). It is a payment gateway with a peculiar cross-border finance market payment structure designed to facilitate African trade, reduce excessive reliance on third currency, and remove the reliance on correspondent banks (Ukpe, 2022a; Aro, 2022). Essentially, its uniqueness creates a provision for customers in different countries to make payments in their currency while the seller in another country receives payment in their own currency (Uba, 2022a). Critically, the significance of PAPSS is captured in the reduction of challenges MSMEs face in import and export transactions and payments, given that PAPSS saves time, removes intra-trade associated with African commerce, and checks for compliance and legality (Uba, 2022a). SMEs, young entrepreneurs, households, and financial institutions are intended to be the beneficiaries of the novel technology (Ukpe, 2022a), such that CBN intends to motivate financial institutions to accept PAPSS and recommend it to businesses in Nigeria (Aro, 2022). The potential of PAPSS is projected to impact e-commerce in Africa (Aro, 2022) positively.

Antecedents of Electronic Payment System Adoption

Perceived relative advantage: "This is the degree an innovation is perceived as better than the idea it supersedes" (Rogers, 1983, p. 15). It is often related to TAM's perceived usefulness (Oloveze *et al.,* 2021b). It can be measured from the economic aspect, convenience, and satisfaction. The key focus is on the advantage it has over any other innovation. This attribute has been variedly studied to explain diffusion. Extant studies indicate it has a positive relationship with adoption (Chong & Chan, 2012). Studies have followed a partial adaptation of some of the attributes (Tan & Teo, 2000), while others have adapted all attributes in their study (Teo & Pok, 2003). The authors propose the following hypotheses:

H1. Perceived relative advantage significantly influences perceived ease of use
H2. Perceived relative advantage significantly influences intention to adopt PAPSS

Perceived Compatibility: "This is the degree to which an innovation is perceived to be consistent with existing values, past experiences, and needs of adopters" (Rogers, 1983, p. 15). Previous knowledge of related technology helps adopt an innovation. In this regard, an innovation that suits the needs and values of the adopter with previous experience with related innovation has a better chance of adopting the new technology. In essence, when the innovation is not suited to the existing values and norms in a given environment, adoption suffers except if there is prior adoption of the value system (Rogers, 1983). It impacts new technologies by helping to reduce uncertainties about their use (Su *et al.,* 2017). It is a critical factor that influences adoption spread, given that when compatibility is high, the speed of adoption is high (Pham & Ho, 2015). It is a predictor of perceived usefulness (Ramos-de-Luna *et al.,* 2016) and ease of use (Liébana-Cabanillas *et al.,* 2018a). There have been contrasting results on the influence of compatibility on adoption. Some studies indicate a significant effect (He *et al.,* 2006), while others show no significant effect (Kim *et al.,* 2010). Thus, the authors hypothesize:

H3. Perceived compatibility is significantly related to perceived ease of use
H4. Perceived compatibility is significantly related to perceived usefulness

Perceived ease of use (PEoU): This is about using a technological innovation (Davis, 1989). It is about users' perception in considering an innovation's use to be effortless (Venkatesh *et al.,* 2003). It has a significant impact on the adoption of technology (Moore & Benbasat, 1991). It has a dual effect on adoption through attitude and usefulness (Davis, 1989). It has been proven in extant studies (Liébana-Cabanillas & Lara-Rubio, 2017). Studies show contrasting results of its effect on attitude. Ramos-de-Luna *et al.* (2016) found a non-significant effect on attitude, while Oloveze *et al.* (2021a) and Liébana-Cabanillas *et al.* (2014a) found a significant result. The effect of PEoU is significant on perceived usefulness (Liébana-Cabanillas *et al.,* 2014a; Ramos-de-Luna *et al.,* 2019). Thus, the authors propose the following hypotheses:

H5. Perceived ease of use is significantly related to perceived usefulness
H6. Perceived ease of use is significantly related to small businesses' attitude in adopting PAPSS

Perceived usefulness (PU): It is a subjective perception of innovation in helping to improve the efficiency and completion of a task (Ramos-de-Luna *et al.,* 2019). Davis (1989) considers it the degree of believability towards an innovation enhancing effectiveness and job performance. It directly influences behavioral intention and attitude toward innovation (Ramos-de-Luna *et al.,* 2019). Extant studies show that it positively influences attitude (Oloveze *et al.,* 2021a; Ramos-de-Luna *et al.,* 2019) and behavioral intention (Kalinic *et al.,* 2019; Liébana-Cabanillas *et al.,* 2020a; Oloveze *et al.,* 2023a) while others confirm it as a mediating variable (Oloveze *et al.,* 2023b). Therefore, the authors propose the following hypotheses:

H7. Perceived usefulness is significantly related to small businesses' attitudes toward adopting PAPSS
H8. Perceived usefulness is significantly related to small businesses' intention to adopt PAPSS

Firm attitude: This is expressed through likes or dislikes. It is a multi-dimensional construct covering cognitive, emotional, and conative dimensions (Fishbein & Ajzen, 1975; Oloveze *et al.,* 2021a). It deals with feelings that could be favorable or not towards something (Premkumar *et al.,* 2008). It is vital in developing behavior (Plewa *et al.,* 2012) and adopting a technology (Schierz *et al.,* 2010). The vital aspect of it is that it can help minimize barriers that inhibit the adoption of technology (Liébana-Cabanillas *et al.,* 2014b) and work in favor of the intended adoption of the proposed e-payment system (Saghafi *et al.,* 2016). It has also been evaluated as a mediating variable (Li *et al.,* 2017; Oloveze *et al.,* 2021a). Thus, the authors hypothesize:
H9. Attitude of small businesses in adopting PAPSS significantly influences the intention to adopt this type of e-payment system

Firm Readiness: Firm readiness deals with the "availability of resources required for adoption" (Iacovou *et al.,* 1995). It covers physical assets and knowledge of the innovation by the individuals (Zhu *et al.,* 2003). In this regard, small business owners' lack of IT skills inhibits innovation adoption (Ifinedo, 2012). However, knowledge of it promotes e-business (Saffu *et al.,* 2007). Studies have evaluated firm readiness for novel technologies and found it significant on intention to adopt an innovation (Ifinedo, 2012). The following hypothesis was formulated:

H10. Firm readiness significantly influences intention to adopt PAPSS

Government Support: Studies have evaluated government support as influencing adoption using the technology-orgnisation-environment model (TOE) (Ifinedo, 2012). Government support is a fundamental aspect. In Nigeria, CBN plays this role. Concerning PAPSS, CBN has moved towards encouraging SMEs and young entrepreneurs to utilize the opportunity (Aro, 2022). The support emanates from a government agency that promotes the adoption of payment innovations (Ifinedo, 2012) because they are fundamental in adopting and spreading an innovation (Chau & Jim, 2002). Studies such as Teo *et al.* (1997) show that it is a significant predictor of the adoption of innovation, while Ifinedo, 2012) state contrary findings in others. Therefore, the authors formulate the following hypotheses:
H11. Government support significantly influences the intention to adopt PAPSS

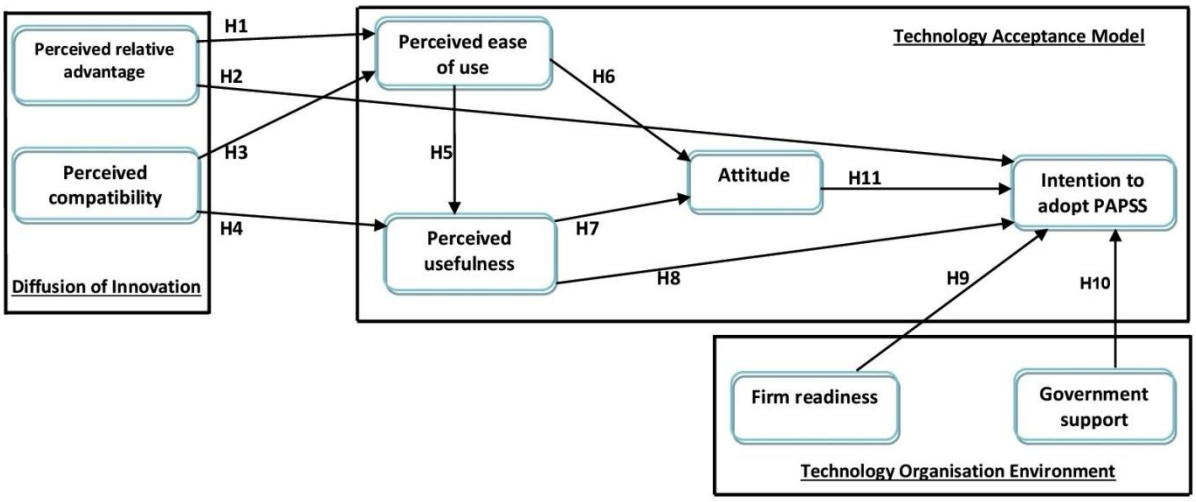

Figure 1: Proposed integrative model for pan-African payment and settlement system

Theoretical underpinning

The study used an integrated model that includes diffusion of innovation (DOI), technology acceptance model (TAM), and technology organization environment (TOE). DOI was propounded by Rogers (1983) in studying the adoption of technological innovation. It is a psychological theory aimed at describing the mechanism of adoption, the patterns, and the prediction of how and whether a novel technological system will be successful (Tan *et al.,* 2009). The theory considers that time is a condition for people to adopt an innovation, with the innovation serving as a unit of analysis rather than an individual. This is captured from individuals' perception of the innovation through perceived relative advantage, compatibility, complexity, trialability, and observability.

On the other hand, TAM was propounded by Davis (1989) and founded on the theory of reasoned action (Fishbein & Ajzen, 1975). TAM describes how and what factors contribute to changes in an individual's behavioral attitude when implementing new technologies. It explains why users adopt or reject a technology. When users are presented with new technology, several factors influence their decision about how and when they will use it. The primary factors under this model include perceived usefulness, perceived ease of use, and attitude. TOE was introduced by Tornatzky and Fleischer in 1990 as the process of technological innovation. It is a theory at the level of organization that focuses on technological context, organizational context, and environmental context as the vital firm variables influencing adoption decisions (Baker, 2011). Tornatzky and Fleischer (1990) consider the three contexts to exert a level of influence on the adoption of innovation. The technological context involves all available innovations in use and ones yet to be used by the firm. The availability of the technology and its characteristics are vital in considering the technology context.

The organizational context focuses on the firm's characteristics and resources in size, readiness, formal and informal linking structures between employees, intra-communication process within the firm, and slack resources (Baker, 2011). The environmental context focuses on the availability of technology, regulatory framework, and how the industry is structured (Baker, 2011). However, TOE is limitedly used because it appears to align with DOI theory (Baker, 2011; Rogers, 2003). Therefore, relative advantage and perceived compatibility from DOI were integrated into the model, given that complexity is similar to TAM's ease of use. At the same time, trialability and observability were dropped because of inappropriateness at the present stage of PAPSS. TAM's constructs were wholly integrated following its robustness and ability to deal with factors related to the adoption of information technology in literature. Lastly, TOE's firm readiness and government support were integrated to examine the role of readiness of the adopter and the supporting system in terms of technology from the federal government through its agencies.

METHODOLOGY

A cross-sectional survey design was used in this study to examine the small marketing firms' intention to adopt PAPSS in Abia State. This is because it is oriented towards determining the status of any given phenomenon. It is commonly used in studies on adopting electronic payment systems (Kabir *et al.,* 2017). In this regard, 245 samples were pooled from 2289 small-scale enterprises in Abia State following the recommendation of Adams (2020) in sampling from a known population. Purposive sampling and snowball sampling technique was used. With purposive sampling, the focus was on the characteristic of interest (Marketing firms in Aba and Umuahia that are characterized by 2 – 49 employees and 1 < 50 million assets), while the use of snowball sampling enhanced the recruitment of qualified respondents through referrals that were provided by the first contact.

The data was sourced from primary data using an adapted structured questionnaire. The items were adapted from related studies on e-payment systems. Perceived relative advantage and perceived compatibility were adapted from Moore and Benbasat (1991), perceived usefulness and perceived ease of use (Liébana-Cabanillas *et al.,* 2020), intention to adopt (Ramos-de-Luna et al., 2019), firm attitude (Liébana-Cabanillas *et al.,* 2018b), firm readiness, and government support (Ifinedo, 2012). The 7-point Likert scale used to measure the items ranged from 1=Strongly disagree, 2=Disagree, 3=Somewhat disagree, 4=Neither agree nor disagree, 5=Somewhat agree, 6=Agree, 7=Strongly agree. The questionnaire was administered online and self-administered.

Reliability and validity of instrument

Convergent validity was used to validate the scale (Pervan *et al.,* 2018). This was executed through factorial loads that should not be lower than 0.6 (Bagozzi & Yi, 1988) and average variance extracted (AVE) that

should not be below 0.5 (Fornell & Larcker, 1981). Construct reliability was conducted through Cronbach alpha and composite reliability to check the internal consistency of the items. This is a commonly adopted approach in quantitative studies that involves structural modeling (Liébana-Cabanillas *et al.,* 2020; Oloveze *et al.,* 2021a). The threshold is 0.6 for Cronbach Alpha (Hair *et al.,* 2006) and 0.7 for composite reliability (Hair *et al.,* 2010).

The data was analyzed using a structural equation model (SEM) through IBM SPSS 23 and AMOS 23. Factor analysis was conducted through rotated principal component analysis. This is necessary to identify the degree of unidimensionality of the scales and show through the commonalities how well the items are represented in the factor spaces (Molinillo *et al.,* 2020). Communality values with factors greater than 5 are acceptable (Molinillo *et al.,* 2020). The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity (Bartlett's test) were used to ascertain the sampling adequacy and significance of the p-value, respectively. This approach enables acceptance or rejection of the null hypothesis of no difference between the correlation matrix and identity matrix (Liébana-Cabanillas *et al.,* 2014a). Factor loadings less than 0.6 were dropped (Kalinic *et al.,* 2021). Confirmatory factor analysis was conducted to assess the validity and reliability of the measurement scales. The hypotheses were tested using SEM through a maximum likelihood approach, standardized path coefficients, and p-values at a 95% confidence interval.

RESULTS AND DISCUSSIONS

245 copies of the questionnaire were administered to respondents who own a small business/marketing firm in Abia State. 167 copies (68%) were successfully filled, meeting the response rate recommended in the literature. According to Saunders et al. (2009), a 50-70% questionnaire response rate is considered adequate for research. 78 copies (32%) were not returned. Of the 167 filled and returned copies, 22 (9%) were screened out due to inappropriateness (Either filled by staff or not within the scope of the marketing firm defined for the study). 145 (59%) copies were used. The 145 responses are deemed adequate for use in structural equation modeling. According to Boomsma (1985), the minimum threshold is within 100 or 200.

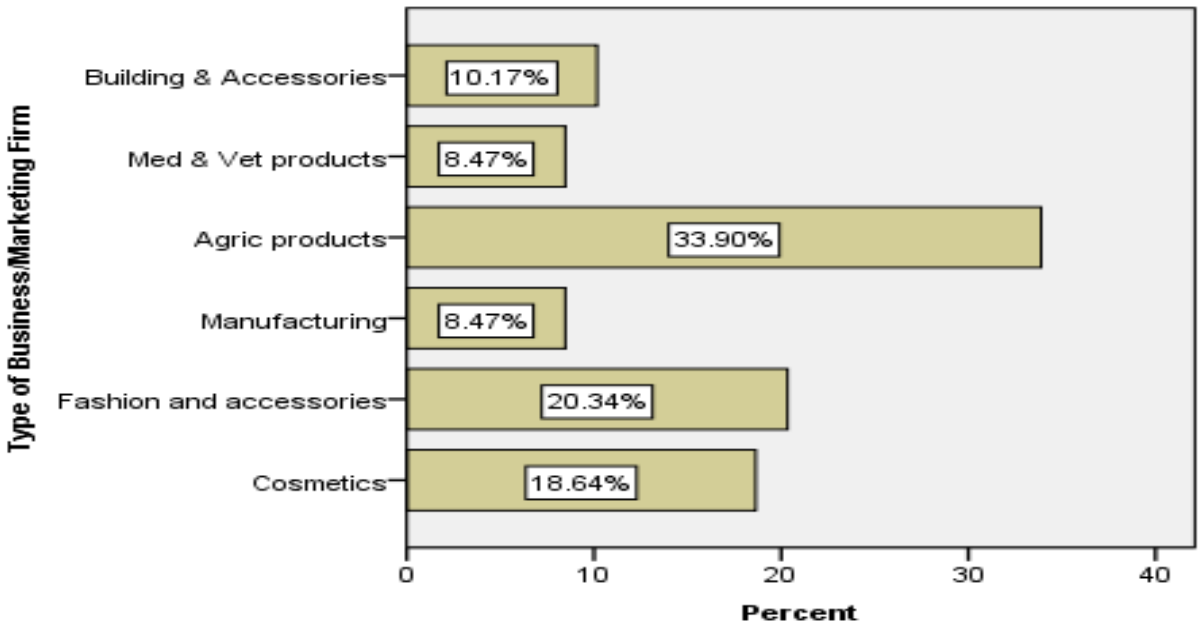

Figure 2: Type of marketing firm involved in the study

Figure 2 reveals the different types of marketing firms that participated in the survey. Firms dealing with agricultural products (33.90%) were the highest participants in the survey. This is followed by firms in fashion and accessories (20.34%) and firms in cosmetics (18.64%). Firms that deal in building and accessories had 10.17% representation. In comparison, firms that deal in Medicals and veterinary products and manufacturing had 8.47% respectively.

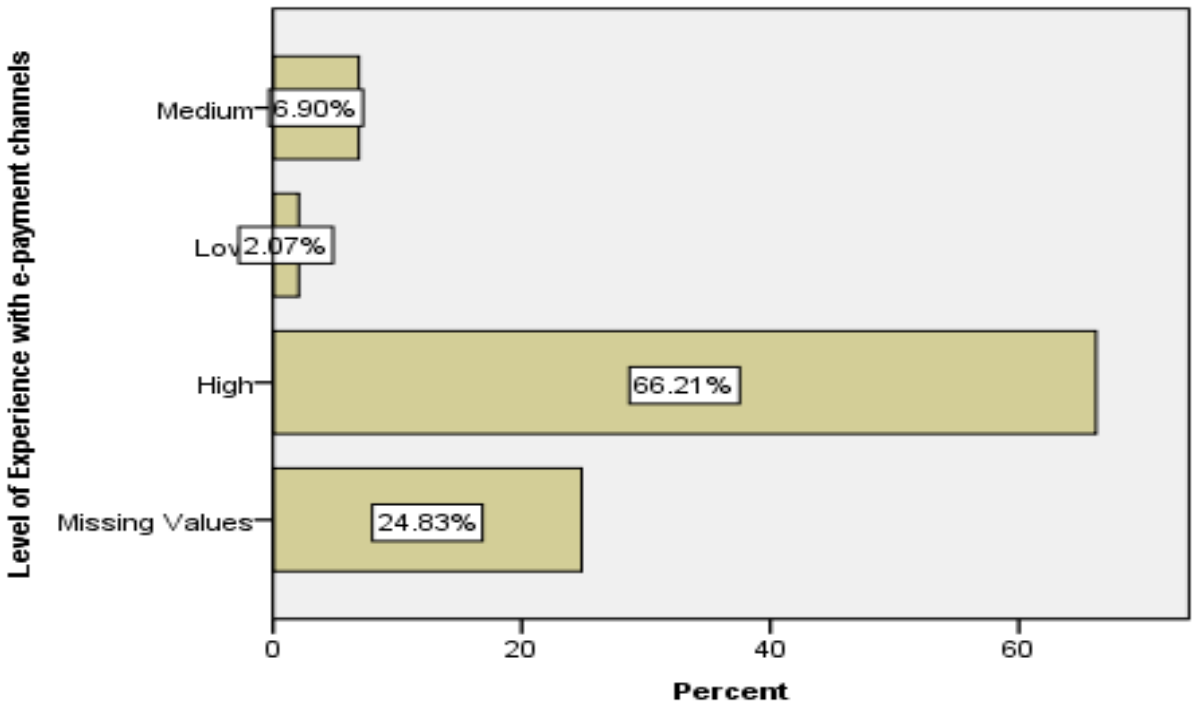

Figure 3: Level of experience of marketing firms with e-payment channels

The level of experience of the marketing firms with the operation of e-payment channels is shown in Figure 3. The indication is that the marketing firms have a high level of experience with e-payment channels given its account of 66.21% from the survey. Some other marketing firms confirmed a medium level of experience at 6.90%. A low level of experience is recorded at 2.07%. In comparison, about 24.83% accounted for missing values, which resulted from respondents not providing answers to the questionnaire item on their level of experience with e-payment channels.

The summary statistics in Table 2 reveal the respondents' responses to the questionnaire items in the Likert style. The conventional method of weighted average value is used which was derived from which was derived from the total mean of the eight variables ($\frac{44.38}{8}$) = 5.55. Most respondents had a low perception of perceived ease of use, relative advantage, perceived compatibility, and government support following the low mean values of the respective variables to the weighted average value. However, perceived usefulness, firm attitude, firm readiness, and intention to use PAPSS had high respondents' perceptions following the high mean values of the respective variables to the weighted average value.

Table 2: Summary statistics of estimation data

Variable	SD	D	SWD	N	SWA	A	SA	Mean	SD	Decision
Perceived Ease of Use	7 (4.83%)	4 (2.76%)	8 (5.52%)	14 (9.66%)	36 (24.83%)	43 (29.66%)	33 (22.76%)	5.54	1.50	Low perception
Perceived Usefulness	6 (4.14%)	4 (2.76%)	5 (3.45%)	13 (8.96%)	33 (22.76%)	53 (36.55%)	31 (21.38%)	5.65	1.46	High perception
Firm Attitude	5 (3.45%)	7 (4.83%)	5 (3.45%)	6 (4.14%)	36 (24.83%)	53 (36.55%)	33 (22.76%)	5.72	1.46	High perception
Perceived Relative Advantage	5 (3.45%)	8 (5.52%)	4 (2.76%)	18 (12.41%)	33 (22.76%)	42 (28.97%)	35 (24.14%)	5.43	1.54	Low perception
Perceived Compatibility	4 (2.76%)	9 (6.21%)	5 (3.45%)	18 (12.41%)	38 (26.21%)	46 (31.72%)	25 (17.24%)	5.45	1.44	Low perception
Firm Readiness	3 (2.07%)	6 (4.14%)	2 (1.38%)	3 (2.07%)	10 (6.90%)	36 (24.83%)	50 (34.48%)	5.63	1.50	High perception
Government Support	1 (0.69%)	6 (4.14%)	6 (4.14%)	5 (3.45%)	24 (16.55%)	35 (24.14%)	33 (22.76%)	5.36	1.43	Low perception
Intention to Use PAPSS	5 (3.45%)	6 (4.14%)	5 (3.45%)	6 (4.14%)	41 (28.28%)	53 (36.55%)	29 (20%)	5.60	1.43	High perception

Evaluation of measurements

Firstly, the items lower than 0.6 were dropped (Hair *et al.,* 2006). This includes PRA2 and PRA3, PC1, PEoU4, PU3, FR3, GS3, and INT_PAPSS1. The exploratory analysis through the principal components was adopted to investigate the unidimensionality of the scales. Using the Kaiser Meyer Olkin coefficient (KMO) result, 0.964 confirms the sampling adequacy. According to Shrestha (2021), it ranges from 0.8 to 1.0. Bartlett's test of sphericity value of 3369.082 at p=0.000 justifies the rejection of the null hypothesis of equality of the population variances. Thus, the variables correlate well to the point that the correlation matrix significantly diverges from the identity matrix. Both results justify the factorability of the data. Secondly, the reliability of the scales that were examined through the Cronbach Alpha and Composite reliability, as revealed in Table 3, indicates that there are no reliability concerns because each of the reliability scores of the items exceeded the 0.6 minimum threshold in literature for Cronbach Alpha (Hair *et al.,* 2006) and 0.7 for composite reliability (Hair *et al.,* 2010) respectively. The validity of the items was conducted using convergent validity. This was investigated through the factorial loads, which must not be lower than 0.6 (Bagozzi & Yi, 1988; Pervan *et al.,* 2018), and average variance extracted, which is required not to be lower than 0.5 (Fornell & Larcker, 1981). As revealed in Table 3, each variable satisfied this condition, thus confirming the absence of validity issues.

Table 3: Measurement model evaluation

Variable	Item	Factor Loads	Cronbach Alpha	Composite Reliability	Average variance extracted	R^2
Ease of use	EoU1	0.817	0.905	0.809	0.665	0.815
	EoU2	0.747				
	EoU3	0.729				
Perceived usefulness	PU1	0.742	0.935	0.806	0.468	0.915
	PU2	0.774				
	PU4	0.770				
Firm attitude	FA1	0.687	0.954	0.795	0.492	0.938
	FA2	0.695				
	FA3	0.726				
	FA4	0.697				
Perceived relative advantage	PRA1	0.673	0.932	0.627	0.456	-
	PRA4	0.678				
Perceived compatibility	PC2	0.698	0.927	0.773	0.532	-
	PC3	0.771				
	PC4	0.717				
Firm readiness	FR1	0.760	0.904	0.763	0.518	-
	FR2	0.681				
	FR4	0.716				
Government support	GS1	0.700	0.822	0.708	0.548	-
	GS2	0.779				
Intention to adopt PAPSS	INT2	0.825	0.960	0.887	0.724	0.906
	INT3	0.874				
	INT4	0.853				

The structural model in Figure 1 was assessed using the recommended indicators in literature (See table 4), and the R^2 in Table 3. The model fit indices in Table 4 revealed that the structural model has a good fit when assessed against the recommended thresholds referenced in Table 4. Similarly, the high R^2 values of the individual variables in Table 3 confirm an adequate explanation of the variation in dependent variables by the respective independent variables.

Table 4: Model fit indices

Fit indices	Recommended value	Value in the model	Reference
CMIN/DF	<3	2.015	Bentler and Paul (1996)
RMSEA	<0.08	0.084	Hu and Bentler (1999)
NFI	>0.90	0.903	Bentler and Paul (1996)
RFI	>0.90	0.875	Schumaker and Lomax (2016)
IFI	>0.90	0.949	Pituch and Stevens (2016)
TLI	>0.90	0.933	Schumaker and Lomax (2016)
CFI		0.948	Bentler and Paul (1996)

Notes: Root mean squared error of approximation (RMSEA). Comparative fit index (CFI). Tucker-Lewis index (TLI). Normed fit index (NFI). Relative fix index (RFI). Incremental fit index (IFI). Comparative fit index (CFI). Tucker-Lewis index (TLI). Standardized root mean squared residual (SRMR).

Discussion

Testing of Hypotheses

Maximum likelihood estimation was adopted as a measure in the structural equation modeling. The minimum sample size required for this approach is 100 – 150 (Ding *et al.,* 1995), which is satisfied in this study. Further, the p values were used to decide the acceptance or rejection of the stated hypotheses. Generally, seven significant hypotheses satisfied the respective p-value thresholds, as revealed in Table 5 and Figure 4. Four hypotheses were rejected because they exceeded the decision criteria, as indicated in Table 5 and Figure 4. Therefore, with H1 and H2 formulated from perceived relative advantage, H1 (β=0.874, p≤0.000) confirms the significant influence of perceived relative advantage on perceived ease of use of PAPSS by the marketing firms. This is a discovery given that previous studies have avoided the impact of perceived relative advantage on the potential users' perception of ease of use of the innovation. H2 (β= -0.290, p=0.573) is rejected because the result is insignificant. The result is inconsistent with similar innovation results (Chong & Chan, 2012; Tan *et al.,* 2009). However, this can be accounted for by the novelty of the innovation as the knowledge of its benefits and use approach is yet to be diffused in society. H3 and H4 are formulated from perceived compatibility. H3 (β=0.031, p=0.885) is rejected because the p-value is not significant. The finding is not consistent with previous results on similar technologies (Liébana-Cabanillas *et al.,* 2018a). The novelty of PAPSS could explain this given that where the users are not knowledgeable about the innovation, there is the probability that users will have a poor understanding of its values to the needs of the business. The result of H4 (β=0.572, p≤0.000) confirms the significant effect of perceived compatibility on perceived usefulness. This is consistent with related studies on payment channels (Ramos-de-Luna *et al.,* 2016). H5 and H6 are formulated from perceived ease of use. Both hypotheses, H5 (β=0.421, p≤0.000) and H6 (β=0.362, p≤0.000), are significant thereby confirming the effect of perceived ease of use on perceived usefulness [This is consistent with related studies on payment channels such as Ramos-de-Luna *et al.* (2019)] attitude of marketing firms to intention to adopt PAPSS [This is consistent with literature on payment channels such as Liébana-Cabanillas *et al.* (2014a)]. H7 and H8 are formulated from perceived usefulness. Both hypotheses were statistically significant at (β=0.628, p≤0.000) and (β=0.618, p≤0.025) respectively. Thus, H7 reveals that perceived usefulness is significantly related to the marketing firm's attitude in adopting PAPSS. This supports similar literature on payment channels (Ramos-de-Luna *et al.,* 2019). Similarly, H8 validates the significant effect of perceived usefulness on marketing firms' intention to adopt PAPSS. This corroborates findings from related literature (Liébana-Cabanillas *et al.,* 2020). H9 (β=0.053, p=0.904) is rejected because the p-value is not significant. H10 (β=1.025, p=0.258) is not significant. Thus, the hypothesis is rejected. The result of H11 (β= -0.486, p≤0.026) confirms the significant influence of firm attitude on intention to adopt PAPSS but with a negative effect.

Table 5: Hypothesised relationships

Hypotheses	Std. β	Unstd. β	S.E	CR	*P*	Decision
H1: Perceived relative advantage→ Perceived ease of use	0.874	.755	.19	3.99	0.000	Yes
H2: Perceived relative advantage→ Intention to adopt PAPSS	-.290	-.262	.47	-.56	0.573	No
H3:Perceived compatibility→ Perceived ease of use	0.031	.031	.21	.15	0.885	No
H4: Perceived compatibility→ Perceived usefulness	0.572	.616	.10	6.13	0.000	Yes
H5: Perceived ease of use→ Perceived usefulness	0.421	.454	.10	4.59	0.000	Yes
H6: Perceived ease of use → Firm attitude	0.362	.400	.12	3.31	0.000	Yes
H7: Perceived usefulness→ Firm attitude	0.628	.644	.11	5.72	0.000	Yes
H8: Perceived usefulness→ Intention to adopt PAPSS	0.618	.601	.27	2.24	0.025	Yes
H9: Firm readiness→ Intention to adopt PAPSS	0.053	.052	.43	.12	0.904	No
H10: Government support→ Intention to adopt PAPSS	1.025	1.266	1.12	1.13	0.258	No
H11: Firm attitude→ Intention to adopt PAPSS	-.486	-.461	.21	-2.23	0.026	Yes

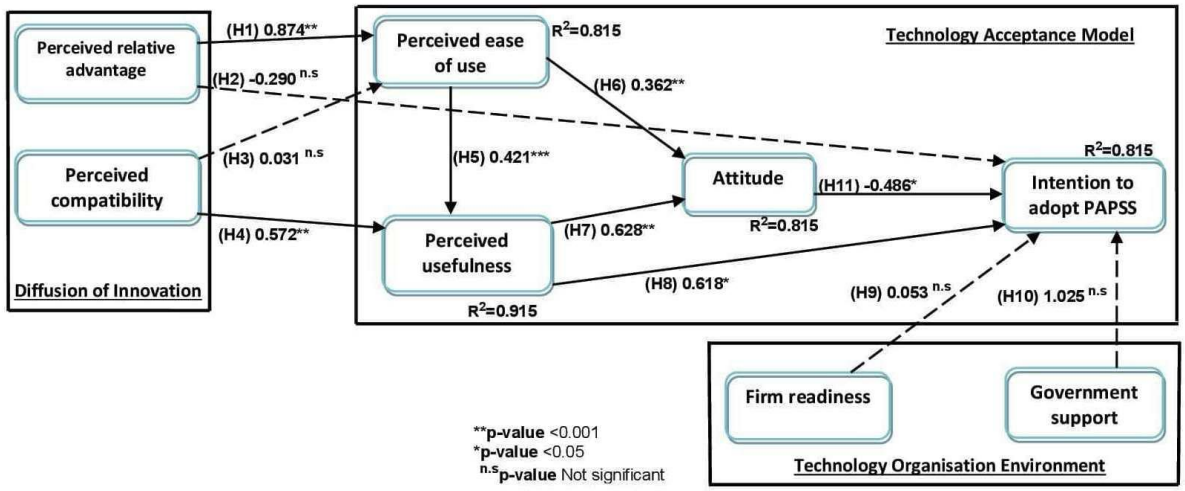

Figure 4: Result of the proposed integrative model for pan-African payment and settlement system

Theoretical implications

The results posit varying levels of theoretical implications. The model indicates that some variables are directly related to the intention to adopt PAPSS. In contrast, others can impact adoption through indirect measures. Firstly, the perceived relative advantage does not directly affect the intention to adopt PAPSS. However, it indirectly influences the attitude of the marketing firms to PAPSS through perceived ease of use. The implication is that the indirect source of influencing the adoption of PAPSS is a crucial driver towards influencing the attitude of the marketing firms in adopting PAPSS. This is important because, given the high effect level of the variable (0.874), implying that a unit increase in perceived relative advantage will positively increase how marketing firms perceive ease of use by 0.874 units, holding other variables constant.

Secondly, the perceived compatibility does not influence perceived ease of use. However, it significantly impacts how marketing firms perceive the usefulness of the innovation. The result projects the significance of linking compatibility to usefulness to elicit positive user reactions. This is important as a unit increase in perceived compatibility will positively increase marketing firms' perception of the usefulness of PAPSS by 0.572 units, holding other variables constant.

Thirdly, perceived ease of use performs a dual function on the intention to adopt PAPSS. Theoretically, it directly impacts how marketing firms perceive the usefulness of PAPSS and the nature of their attitude to its adoption. While the dual effect indicates a positive relationship, the simplicity associated with PAPSS depends on the ability of PAPSS to significantly contribute to improved performance and also favourableness of the users towards its adoption. The users' agreement with its usage defines the favourableness, PAPSS being a good decision and idea, and seeing it from a convenience perspective.

Fourthly, perceived usefulness also has a dual effect on the marketing firms' intention to adopt PAPSS. It indirectly impacts the firms' attitude to adopting PAPSS and directly influences the intention to adopt

PAPSS. This project perceived usefulness as the most significant factor in adopting PAPSS. This is because the effect values of the indirect effect (0.628) and direct effect (0.618) are both high, being the only factor with significant direct and indirect influence.

Fifthly, firm attitude is a significant predictor of intention to adopt PAPSS. While extant literature indicates a positive relationship, this study indicates a negative one. The theory is that a unit increase in firm attitude leads to decreased marketing firms' intention to adopt PAPSS. Though this theory is somewhat discordant, it emphasizes that other causes could explain it, such as the data collection happening during the period in Nigeria where there was a rising rate of data breaches and peaked payment network issues occasioned by the Naira redesign and scarcity.

Managerial implications

One of the fundamental managerial implications of the result is that the managers of the PAPSS design and focus marketing communications on the usefulness of PAPSS to marketing firms and small businesses. For instance, the communication efforts should emphasize instant payments, transaction speed, and support of the CBN and commercial banks. The indirect effect of perceived relative advantage on intention to adopt PAPSS over existing methods implies that managers must devise strategies such as viral marketing to encourage recommendations, referrals, and invitations to try out the payment innovation.

Practical implications

The results reveal the practical implications with the findings that indicated the significant dimensions fundamental for the success of PAPSS in Abia State, Nigeria, particularly among marketing firms and small businesses. Practically, perceived usefulness and Firm attitude are the primary direct determinants of adopting PAPSS. Therefore, offering improved performance and better value increases the chance of adopting PAPSS. Moreover, perceived relative advantage, the primary indirect determinant, reveals the importance of marketing firms and small businesses to payment innovation that can offer superior value to what they are presently using in receiving payments.

CONCLUSION AND RECOMMENDATIONS

The study considered the adoption of PAPSS by marketing firms in Abia State with a focus on marketing firms classified to be operating as entirely a marketing firm, a business organization with marketing functions, and within the classification of being a small business. The focus of the source of the information was on the owners of these marketing firms. The statistical approaches adopted in evaluating the results revealed critical findings. Factors such as perceived ease of use and usefulness perform critical dual functions in impacting acceptance of PAPSS. When the direct effect on intention to adopt PAPSS is examined, firm attitude and perceived usefulness are the critical factors. However, the firm's attitude to intention to adopt PAPSS has an adverse relationship. However, the paths indirectly leading to the adoption of PAPSS play critical roles in the intention to adopt PAPSS. The crucial paths involve perceived relative advantage, compatibility, ease of use, and usefulness. Among these factors, perceived relative advantage is the most critical factor that calls for attention. On the other hand, government support and firm readiness are not essential drivers at this stage of PAPSS, indicating that factors from the diffusion of innovation and technological acceptance model significantly impact the adoption of the innovation. In conclusion, marketing firms' intention to adopt PAPSS depends on the decision makers' understanding of its simplicity, enhanced performance benefit, perceived usefulness, compatibility with values and belief in e-payment channels, and the present attitude state.

Several recommendations are presented from the results of the study. The critical role of communication is essential to deepen the awareness of the benefits of PAPSS. This is because the result of perceived relative advantage and perceived usefulness indicates that the value is placed on whether PAPSS is better than the option they have and the nature of the usefulness of PAPSS in improving their payment performance. Thus, the critical role of strategic communication is necessary to tailor the benefits of PAPSS to the decision-makers of marketing firms. Secondly, the firm's attitude is fundamental, as expressed by marketing firms' owners. The adverse relationship implies that other factors could impact the attitude in having an adverse reaction to adopting PAPSS. This calls for the direct involvement of commercial banks and the Central Bank of Nigeria in communicating the benefits and instant payment nature of PAPSS. Given the direct role of commercial banks in the PAPSS payment process and their custody of customer data, they can impact the deeper involvement of marketing firms by designing and tailoring direct marketing programs to the uniqueness of the marketing firms involved in cross-border trades. Lastly, policymaking is essential,

particularly in operational guidelines. This will clarify the operations of the interested participants and provide room for understanding the advantage of the innovation, security, and performance metric of PAPSS.

Limitations and future lines of study

The study followed a cross-sectional approach, implying that time could impact the result when a longitudinal survey approach is adopted. This calls for concentration on a design approach that is not influenced by a short time. Secondly, the sample unit involves units not entirely marketing firms, thereby opening future lines of study for concentration on marketing firms. The variables used in this study do not imply an exhaustive inclusion of factors with the probability of influencing the adoption of PAPSS. Thereby, future lines of study are encouraged to integrate other factors such as the personal innovativeness of the owners, trust, risk, and security of PAPSS. PAPSS may have the strong support of Afrexim Bank and Central Bank of African countries; however it is essential to comparatively evaluate users' preference because there are other payment sources such as Flutterwave and Paystack. This could provide interesting results on factors conditioning the preferences of users. Lastly, experience is essential in adopting innovation of this sort. Thus, evaluating how previous experience (with related payment channels) moderates adoption can provide a direction on the strength of the relationships.

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