



Research Paper

# E-Commerce Adoption and Firm Performance; Study Of Small and Medium Scale Enterprises in Sokoto State Nigeria

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## Abstract:

The paper examines the influence of e-commerce adoption on Firm performance of small and medium scale enterprises in Sokoto metropolis and to access the prerequisite on how to arrive the benefits, sells volume and profits on the implementation. Development of the Internet and the emergence of electronic commerce cause significant changes in the economy and communication technologies which cover the distance and time factors in persuading the driving force of globalization. E-commerce adoption readiness, on organisational performance on small and medium scale enterprises in Sokoto. These few studies came up with mixed findings. Hence, this study aims to fill up the gap that exists in the extant literature by employing quantitative survey method. Using 269 owner/managers of SMEs in Sokoto metropolis, north-western Nigeria. PLS-SEM 4.0 version was used for data analysis. It was found that e-commerce adoption is positively related to SME performance. Implication of the finding and suggestion for future research were also discussed.

**Keywords:** Adoption; E-Commerce; Firm performance; SMEs; PLS SEM

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## I. INTRODUCTION:

Sokoto, usually referred to as Sokoto State to distinguish it from the city of Sokoto, it is located at the extreme north west of Nigeria, near the confluence of the Sokoto River and the Rima River. As of 2005 it has an estimated population of more than 4.2 million people. Sokoto City is the modern-day capital of Sokoto State (and its predecessor, the North western State). Being the seat of the former Sokoto Caliphate, the city is predominantly Muslim farmers and traders, an important seat of Islamic learning in Nigeria. The Sultan who heads the caliphate is effectively the spiritual leader of Nigerian Muslims. Since its creation as a state in 1976 (from the bifurcation of the erstwhile North-Western State. Sokoto, as a region, knows a longer history. During the reign of the Fulani Empire in the 19th century Sokoto was an important Fulani state, in addition to being a city, of what was then west central Nigeria.

SMEs are organizations which can be described through their capital, scope and cost of projects, annual turnover, financial strength and number of employees amongst other things, such organizations must and can be

registered under any part of the Companies and Allied Matters Act (CAMA) in order to do business in Nigeria and this number varies across countries.

In addition, this is in line with the advantages inherent in internet such as speed, user-friendliness, low cost and wide accessibility which has allowed electronic business (e-commerce) to be increasingly diffused globally, bringing countries together into a global networked economy (Gibbs and Kraemer, 2004). So that Both buyers and sellers can significantly benefit from the usage of e-commerce (Zhu, 2004), those benefits can also be materialized for SMEs (Al-Qirim, 2007).

Anjori (2017) refers electroniccommerce or internet commerce, as the buying and selling of goods and services using the internet, transfer of money and data to execute these transactions. Abbadeen (2016) see Electronic commerce (E-commerce) as technological innovation that enables small to medium enterprises (SMEs) to compete on the same level with their larger counterparts. And it has the potential to improve efficiency and productivity in many areas and, therefore, has received significant attention in many countries of the world.

In Nigeria, the Central Bank of Nigeria in its monetary policies circular No. 22 of 1988 defined SMEs as enterprises which have an annual turnover not exceeding Five Hundred Thousand Naira (N500,000). The Third National Development plan of Nigeria (1975 – 1980) defined a small scale business as a manufacturing firm that employs less than ten people, or whose machinery and cost of equipment does not exceed N600,000. According to Organization for Economic Co-operation and Development OECD (2005) is considered to be independent firms that employ less than a given number of employees. However, SMEs were classified in terms of size, and financial assets. Firms that have up to 250 employees are classified as small and medium enterprises while small firms are those that have up to 50 employees and a firm with 10 employees or less were regarded as micro firms respectively

#### **Problem statement:**

Despite the prospective and enormous contribution of small and medium sector to continued economic development, small firms in Nigeria still do not meet up to expectation. Ongori (2008) stated some challenges faced by SMEs to be; poor infrastructure, bad governance, problems of undersized market, legal and organizational barriers, inadequate access to credit, and insufficient regional amalgamation. Latham (2009) confirmed that, the adoption of new technologies by SMEs is delayed by internal obstacles of the firm. However, Obong (2007) stated that the condition of infrastructures, particularly telecommunications infrastructure, creates a major barrier to the adoption of ICT in Nigeria. Corruption being is a problem around all over the world and is not peculiar to Nigeria alone. Dike (2005) also corruption case in Nigeria is very alarming and this affects the operations of SMEs one way or the other. Kutey (2009 cited in Apulu (2009). SMEs need to adopt and utilise change to promote the growth of their business.

Therefore, to fill in this imperative gap, this study extends the existing literature by empirically examining the influence of e-commerce adoption on SMEs firm performance in Sokoto Metropolis North Western, Nigeria.

## **II. Literature Review**

### **2.1 SMEs Firm Performance**

Performance is the actual outcome measured against organizational input. Through performance measurement, organizations would be able to focus on units that need upgrading by appraising the level of work progress in terms of time, quality and cost as well as amalgamating areas with higher output (Hansen & Wernerfelt, 1989; Ringim, 2012; Tomlinson, 2011). To a certain extent, a number of criteria are used in assessing SME performance. The key indicators used in measuring organizational performance include both the subjective and objectives (i.e. profitability, management performance, liquidity and leverage market share, quality of goods and services, human resource management) (Dess & Robinson, 1984). However, Kamyabi and Devi (2011) viewed performance as the measurement of financial ability of the firm such as the investment level, growth in sales and profit. Performance in optimal utilization of resources is related to productivity, effectiveness and efficiency (Berry, Sweeting, & Goto, 2006). In contrast, Man (2009) asserted that performance is the outcome of adapting effective management process. He posited that organizational performance can be measured using a number of criteria such as growth, productivity effectiveness and efficiency. Therefore, in line with the above argument, performance is conceptualized in this study as a measure of organizational success that comprises both financial and non-financial indices

### **2.2 E-commerce Adoption**

E-commerce Adoption on organisational performance on Small and Medium scale Enterprises in Sokoto metropolis: E-ELECTRONIC commerce is more than selling stuff online, it's using online resources and tools to do business better—more efficiently and productively. It's about making and saving money online. Vrazalic (2007) posit that e-commerce is an instrument for the exchange of business information, products and

services, which might affect a company's supply chain. E-commerce is not only restricted to buying and selling on the internet, but encompasses product exchange, services and information, or knowledge by using a personal computer or laptop via the Internet,

Thus E-commerce is the use of electronic communications and digital information processing technology in business transactions to create, transform, and redefine relationships for value creation between or among organizations, and between organizations and individuals. It involves all types of communications technology, including the WWW, email, private bulletin board systems or value-added networks, intranets and extranets. It uses all forms of communications technology: email, television, fax, mobile and landline phones. E-commerce can work for any business because it involves the whole business cycle from production, procurement, distribution, sales, payment, fulfilment, restocking, and marketing. It's also about relationships with customers, employees, suppliers, and distributors. It involves support services like banks, lawyers, accountants, and government agencies.

Several scholars on their empirical studies (Grandon, et al., 2011) argued that 'E-commerce is a strategy for growth especially by small and medium enterprises and assisting them to compete with large firms by gaining new customers in global markets. Electronic commerce systems can be categorised into two parts: the simplest level which covers the promotion and advertising of products and services, and electronic distribution of goods, and the second and advanced level which includes payment and distribution at local and global levels (Marcelo, et al., 2014).

Heeks (2007). Early studies in e-commerce adoption suggested that organisations undergo stages of growth in their adoption of ICT and e-commerce technology in a linear fashion, from one stage to a higher level, in a well-planned, sequential process. Moreover, The Nigerian Government is turning to small and medium scale industries and entrepreneurs as a means of developing the economy and solving problems (Latinwo and Ayozie, 2010).

Ayozie (2006), examined the role of small and medium enterprises play in the development of country is very important. SMEs have greatly contributed to the Nigerian development in terms of employment, revenue generation and marketing of goods and services. Onugu, (2005) According to Central bank of Nigeria report (2003), SMEs are very important economic catalyst in developing and industrialized countries, in developed countries 98% or more than belong to the Small and Medium scale sector. According to Kongolo (2010), SMEs are responsible for the growing forces of the largest growing economy China in terms of national GDP contribution which amount up to 60% diversification of product, scale of assets and creation of employment. In line with the above, this study came up with the following hypothesis:

H1: That e-commerce adoption significantly influences SMEs firm performance in Sokoto Metropolis.

### **Types of e-commerce**

Kurnia, et al., 2015). The major different types of e-commerce are: business-to business (B2B), business-to-consumer (B2C), business-to government (B2G), consumer-to-consumer (C2C), and mobile commerce (m-commerce). B2B e-commerce is simply defined as e-commerce between companies. This is the type of e-commerce that deals with relationships between and among businesses. E-markets are simply defined as Web sites where buyers and sellers interact with each other and conduct transactions. Eg IBM, Hewlett Packard (HP), Cisco and Dell etc. Cisco, for instance, receives over 90% of its product orders over the Internet.

- Business-to-consumer e-commerce, or commerce between companies and consumers, involves customers gathering information, purchasing physical goods (i.e., tangibles such as books or consumer products) or information goods (or goods of electronic material or digitized content, such as software, or e-books) and, for information goods, receiving products over an electronic network.
- Business-to-government e-commerce or B2G is generally defined as commerce between companies and the public sector. It refers to the use of the Internet for public procurement, licensing procedures, and other government-related operations.
- Consumer-to-consumer e-commerce or C2C is simply commerce between private individuals or consumers. This type of e-commerce is characterized by the growth of electronic marketplaces and online auctions, particularly in vertical industries where firms/businesses can bid for what they want from among multiple suppliers. For example, eBay, allows online real-time bidding on items being sold in the Web
- Consumer-to-business (C2B) transactions involve reverse auctions, which empower the consumer to drive transactions.
- M-commerce (mobile commerce) is the buying and selling of goods and services through wireless technology-i.e. handheld devices such as cellular telephones and personal digital assistants (PDAs).

### **Research Objectives**

The main objective of the study is: -

- To determine the effect of e-commerce adoption on SMEs firm performance

### III. Research Methodology

It is a cross-sectional research design where the data were collected only at a given point in time (Kumar, Talib, & Ramayah, 2013; Zikmund, Babin, Carr, & Griffin, 2012). A total of 269 questionnaires were distributed using face to face contact with SME owner/managers in Sokoto metropolis in north-western Nigeria, 149 questionnaires were returned and useable for the purpose of this study. Variables under study were measured using the adapted items from previous studies. All questions were on a 5-point Likert scale. Owners/managers of the firms are chosen as unit of analysis. PLS SEM 4.0 was used in the data analysis; a second generation analysis technique which came to overcome the shortcomings of the first generation statistical techniques like of Manova, Factor analysis, Analysis of variance. It also considered important in testing measured, latent variables and complex model (Hair *et al.*, 2014).

### IV. Analysis and Result

Smart PLS 4.0 was used to test the validity and reliability measures of the constructs. The model involving E-commerce adoption and SMEs firm performance was examined, which employed measurement and structural approach by Chin (1998).



#### Measurement Model

Assessment of indicators loadings, internal consistency reliability using composite reliability, convergent validity of (AVE) average variance extracted, as well as discriminant validity using square root of AVE, establishing the goodness of measures. Hence, to achieve the measurement model criterion, six (6) items were deleted from the dependent variable are FP1, FP3, FP4, FP6, and FP7 as it did not satisfy the minimum requirements (Chin, 1998; Hair, Black, Babin, Anderson, & Tatham, 2010; Hair *et al.*, 2014) and the deletion applied to all other variables. In this regard, instruments adapted in this study found reliable, since all the adapted items meet the threshold of 0.4 and above, and all the indicators loading ranges from 0.68 to 0.80 are suitable for further analysis. Similarly, Hair, Ringle, and Sarstedt (2011) recommended that composite reliability value ranges from 0.70 is accepted, while this study obtained values of 0.86 to 0.88 which considered suitable. However, to determine the convergence validity using AVE. AVE values in this study ranges from 0.53 to 0.54 which is above the minimum benchmark of 0.50 (Hair *et al.*, 2011). Lastly, discriminant validity was also achieved; the calculated square root of the AVE ranging from 0.73 to 0.76 higher than the loadings of other constructs and cross-loadings (inter-correlations of the construct with the other constructs in the model) indicating satisfactory discriminant validity (Chin, 1998; Fornell & Larcker, 1981). Table 1 present the indicators loading, composite reliability, Cronbach alpha and AVE while Table 2 present discriminant validity. Equally, measurement model of the study was shown in Figure 2.

**Table 1**  
Factor loading, CR, Cronb Alp, and AVE

Items	Factor Loading	Composite Reliability	Cronbach Alpha	AVE
FP10	<b>0.68</b>	<b>0.88</b>	<b>0.86</b>	<b>0.53</b>
FP11	<b>0.74</b>			
FP14	<b>0.67</b>			
FP15	<b>0.78</b>			
FP16	<b>0.69</b>			
FP17	<b>0.67</b>			
FP26	<b>0.74</b>			
ECA1	<b>0.72</b>	<b>0.84</b>	<b>0.77</b>	<b>0.54</b>
ECA2	<b>0.72</b>			
ECA4	<b>0.74</b>			
ECA5	<b>0.65</b>			

ECA7 **0.77**

Source; Researcher

**Table 2**  
Discriminant Validity

Constructs	ECA	EP
ECA	<b>0.72</b>	
EP	0.58	<b>0.71</b>

Source; Researcher

**Testing the effects of E-commerce adoption on Firm Performance**

In testing the effects of E-commerce adoption on Firm performance, the study used PLS in estimating the direct effects among the variables (ECA and EP) at 0.00 level of significance. Table 3 presents the direct hypothesis

Table 3  
Hypotheses for direct relationship and indirect relationship (ECA and EP)

Hypothesis	Beta	STD Error	T-Statistics	P-value	Decision
ECA -> EP	0.34	0.08	4.24***	0.00	Supported

\*\*\*P<0.001, \*\*P<0.01, \*P<0.05

Coefficient of Determination for Direct Relationships ( $R^2$ )

Assessment of structural model also involves coefficient of determination ( $R^2$ ) of endogenous construct (Hair *et al.*, 2014; Hair *et al.*, 2011, 2012; Henseler *et al.*, 2009). According to Chin (1998); Hair *et al.* (2011); Hair *et al.* (2014) and Hair *et al.* (2016)  $R^2$  values of 0.75, 0.50 and 0.25 shows substantial, medium and small  $R^2$  values respectively. Similarly, Falk and Miller (1992) suggest an  $R^2$  value of .10 as a minimum acceptable level. Hence, this study  $R^2$  value of the endogenous construct (ECA and EP) is medium with (0.50) values. Table 6 presents the  $R^2$  values of the endogenous constructs.

Table 6

Variance Explained in the Endogenous Latent Variables

Latent Variables	Variance Explained ( $R^2$ )
Firm Performance	50%

Assessment of Effect Size ( $f^2$ )

Evaluation the coefficient of determination of the endogenous latent variable  $R^2$ (EP), the next criterion evaluates the effect size ( $f^2$ ) as recommended by Hair, Ringle, and Sarstedt (2013).Cohen (1988) describes  $f^2$  values of 0.35, 0.15 and 0.02 as having large, moderate, small effects respectively. However, Chin, Marcolin, and Newted (2003), highlighted that, smallest strength of  $f^2$  of exogenous variables on endogenous variables should be considered with an effect. The effect size in this study is small, medium and large having the values of 0.13, 0.18 and 0.50 which are considered suitable.Hence, the effect size for exogenous variable could be evaluated using the formula below (Cohen, 1988; Selya, *Etal*, 2012). (See Table 7)

$$\text{Effect size: } f^2 = \frac{R^2 \text{ included} - R^2 \text{ Excluded}}{1 - R^2 \text{ Included}}$$

Table 7

Assessment of the Effect Size for Mediating Relationships: F-Square

Constructs	$R^2$ Included	$R^2$ Excluded	$f$ -squared	Effect Size
ECA-EP	0.50	0.37	0.13	Medium

### **Predictive Relevance of the Model**

Assessment of predictive relevance of the model is done through blindfolding method in Smart PLS 4.0, result was evaluated using cross validated redundancy. The relevance values of the model for the dependent variable is 0.22 as shown in Table 8. The model predictive relevance values in this study is suitable. Model with  $Q^2$  above zero has predictive relevance as stated by Geisser (1974), and Stone (1974) Similarly, Chin (1998) stated that model predictive relevance can be considered medium. Consequently, based on Chin (1998), the model has medium predictive relevance. Table 8 and Figure 4 presents the result of the model predictive relevance.

Table 8  
*Model Predictive relevance  $Q^2$*

<b>Total</b>	<b>SSO</b>	<b>SSE</b>	<b>1-SSE/SSO</b>
FP	905	704.50	0.22

## **V. DISCUSSION**

This study *examines the influence of e-commerce adoption on Firm performance of small and medium scale enterprises in Sokoto metropolis* Statistically, result revealed that, the study hypothesis was found positively significant. The First and only hypothesis, H1, e-commerce adoption and FP relationship is significant ( $\beta = 0.34$ ,  $t = 4.24$ ,  $p = 0.00$ ). This result is consistent with the findings of some previous studies which established the positive significant relationship between E-commerce adoption and FP (Mahliza, 2019; Wirdiyanti et al., 2023) It indicates that small and medium enterprises owners feel their business performance are positively influenced by their adoption of e-commerce using IT. Similarly, the same as the results of previous studies that e-commerce adoption, significantly and positively affects the Firm performance (Abebe, 2014; Hanum&Sinarasri, 2017; Ikhsan et al., 2016; Ningtyas et al., 2015). The higher adoption of e-commerce by small and medium enterprises, it will lead to the superior performance of businesses. Wider use of e-commerce will have a greater positive impact on business performance. This finding indicates that Firm performance reflected through profit, sales and marketing is positively affected by the adoption of e-commerce using IT. This finding interprets that small and medium enterprises who adopt e-commerce using IT feel that profits are increasing, the sales volume of products is growing and the area of marketing is expanding. (Hennig-Thurau et al., 2010).

E-commerce succeeds in shortening the distance between customers and the firm through the use of new information, which is obtained by technology-based relationship, to create products based on customers' need (Igwe et al., 2014). E-Commerce adoption also provides benefit in the context of communicative functions that include promotion products and services as well as interaction with customers (Abebe, 2014). The adoption of e-commerce by enterprises can increase the level of corporate benefits such as increased sales volumes (Gilaninia et al., 2011).

## **VI. CONCLUSION**

Based on the justifications above, the adoption of e-commerce using IT by small and medium enterprises has proven to influence firm performance. Small and medium enterprises who adopt e-commerce using IT feel that profits are increasing, the sales is growing and the area of marketing is expanding. The higher adoption of e-commerce using IT by small and medium enterprises, it will lead to the superior performance of SMEs. The adoption of e-commerce using IT by small and medium enterprises is not influenced by owner characteristic. The e-commerce adoption using IT by small and medium enterprises is affected by several factors which are perceived benefits and external environment. Perceived benefits become the maximum factor that influence e-commerce adoption. Small and medium enterprises feel operational costs are decreased, customer services are done optimally and business functions are getting easier so that they are adopting e-commerce using social media.

### **Implication**

This finding can be implicated for central or local government policy in the term of e-commerce. This finding can be an important input for government as policy maker in designing policies in order to facilitate and enhance IT knowledge and IT skill of small and medium enterprises for helping them in adopting e-commerce. It is because characteristics of small and medium enterprises that reflected through IT knowledge and skill have proven to be insignificant towards e-commerce adoption. This study contributes new empirical evidence on e-commerce adoption conducted by small and medium enterprises. This finding can be used as a reference for

academics and researchers. This finding can signify the adoption of e-commerce IT in developing countries because small and medium enterprises (SMEs).

### **Limitation**

In discussing the limitations of this study, it is possible to further study to allocate more resources to target a larger sample to replicate the result of this study. Comparison of the research model can be also conducted over several countries (developing vs developed countries) to test for generalisability, particularly in different geographic regions. The contrasting contexts may provide some interesting results. Future research can also use smart PLS latest version or any other second generation analysis technique in order to re-confirm the model.

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