

# A Critical Analysis of Electronic Transactions and its Intricacies

Chapman Eze Nnadozie

School of Science and Technology, Department of Computer Science, AbubakarTatari Ali Polytechnic, Bauchi, Bauchi State

**Abstract:** Globally, cashless society is growing as more individuals are migrating to the use of electronically based transactions. Electronic transaction, an agreement entered into or executed via electronic means and correspondence, can be undertaken on the Internet in the form of e-commerce, mobile banking, and point of sale (PoS) using personal automatic teller machine (ATM) card details. With the spread of mobile communication, electronic transactions forms the bedrock of this contemporary connected generation as it is making transaction of businesses faster, more convenient and cheaper. This paper examines the intricacies surrounding the use of electronic platforms against the usual conventional physical paper way of undertaking business transactions. The methodology undertaken include the use of research questionnaires administered on forty (40) respondents with the results summarized in 3-D clustered column bar charts. The findings have shown that e-transacting ability of efficiently handling huge transactions at minimal time frame makes it to be today's preferred choice for business transacting worldwide.

**Keywords:** Cashless society, E-commerce, Electronic transaction, Mobile banking, Point of sale (Pos)

## 1. Introduction

Over the last decades, people had been dependent on the usual conventional transaction which is through physical appearance and use of physical cash or checkbook. This way of banking has exposed many to all sorts of intrusions such as the risk of having the cash stolen, possible involvement in accident while going to the point of purchase, and waste of valuable time. Today, e-commerce which stands for businesses conducted electronically through the use of the Internet is becoming more popular as people prefer to resort to that technique to make purchases like mobile recharge, cash transfer, account balance check, payment of bills, and payment for purchased goods. Furthermore, electronic transactions can be performed in several other fronts such as in contract awarding, in government known as e-government, and in customs for clearing of goods and services.

Historically, payment system globally has evolved from the bartering system in the ancient days to the use of metal coins. From the metal coins, human beings also started using the credit cards as well as the US dollar as a global means of payment for transactions. Today, electronic payment is taking the center stage worldwide [1]. As at 2003, a survey showed that about 95 million mobile phone users made transactions using their mobile device. Today, there are many mobile payment apps thereby making it easy for one to do e-transaction using his mobile phone. It is estimated that by 2020 over 90 percent of mobile phone users will have done at least a transaction using the mobile device [1].

This study will be basically looking at the perceived benefits of e-transactions, and also identify the surmountable challenges that bothers on the use of electronic platforms for business transacting.

## 2. Objectives of the Study

This study is undertaken to;

- 1) Identify the benefits of e-transactions.
- 2) Identify the surmountable challenge that bothers on the use of electronic platforms for business transactions.

## 3. Research Questions

The following research questions had been advanced for this study.

- 1) Is the use of e-transaction more advantageous than the conventional way of paying for goods and services?
- 2) Is e-transacting faced with some forms of surmountable challenges?

## 4. E-transactions in Nigeria

Mobile commerce is growing significantly in recent times because of the availability of secured apps for e-transactions. Apps with the capability of storing user information safely is preferred by customers to those ones that would require you to fill all necessary information like address and full card number. A standard app is meant to have the ability of recognizing customer's specific device and storing securely the customer's essential details to shorten the process of making purchases via an e-commerce platform [2].

Mobile payments can be done in several ways. You can make a mobile payment by using an e-commerce company app like Jumia online, Konga, and Jiji platforms to make purchases via add to cart, supply address, and have the goods delivered with receipt of payment. You can also do the purchases and pay online using your ATM card details to get the order delivered later to your address. Another way is by using a mobile wallet (like Quickteller, and Paypal) to pay for diverse services, or any form of e-transaction. There is also another type of mobile payment which is the use of the merchant's point of sale (PoS) device to pay by presenting your ATM card and keying in the password for the specific amount to be transferred from your account to the merchant's account [1].

Volume 7 Issue 2, February 2018

[www.ijsr.net](http://www.ijsr.net)

Licensed Under Creative Commons Attribution CC BY

Customer's ease of doing business makes both the customer and the merchant happy. This ease of business transacting is what electronic transaction guarantees as data can be flawlessly and proficiently handled [3]. For electronic transacting to excel worldwide, secured electronic transaction payment protocol needs to be implemented. This is because the use of pins and passwords are by no means adequate in securing electronic transactions. This development will definitely improve the lack of trust and security that bothers round e-transactions. Also, the integrity and confidentiality of transactions are needed [4]. Quite a number of risks are envisaged through e-transacting by both the consumer and the supplier/merchant. These risks include the use of stolen identity to make purchases at the detriment of the real owner, risk of a consumer making payment to a fake or fraudulent merchant and the risk of having a substandard good delivered to you after e-payment just because you did not go in person to acquire such goods [4].

Following the growth of electronic transaction globally, enabling laws had been enacted by different nations and continents to protect customers engaged in e-transaction. The main objective of enacting these laws is to protect the confidentiality of personal data, build trust between the parties involved in it, and have effective regulation of electronic transactions by competent authorities like the central bank of the issuing country to checkmate frauds [5]. Survey shows that MasterCard takes the lead in the implementation of much secured fast e-transaction across Africa. The most interesting part of it is the sending of a one-time password token for every transaction undertaken by the owner to authenticate it [6]. In the USA, report shows that over 14%, 39%, and an estimation of 70% of mobile users transacted diverse electronic payments in 2014, 2015, and 2016 respectively [1].

Every ATM is installed in such a way that payment card industry data security standard (PCI DSS) is followed to the later so as to facilitate investigations and easy dispute resolutions. Every ATM machine must be capable of accepting any bank card for transactions. This implies that stand-alone ATMs are not allowed. The installation of cameras on ATM machines as a security measure is meant to ensure that individual activities on the ATM are recorded except the capturing of someone's personal identity number (PIN) [7]. The global mobile payments monitoring and regulation (GMPM) system acquired by Central Bank of Nigeria (CBN) is used to keep track of all mobile money transactions, and is managed by Nigeria Interbank Settlement System (NIBSS). The system is aimed at checkmating customers' complaints and fraud management. [8]. E-money products are of four (4) basic types namely – ATM transactions, Web transactions, Point of sale (PoS) transactions, and Mobile payments. As at 31<sup>st</sup> December 2015, a total of twenty-one (21) mobile money operators (MMO) were registered/licensed by the CBN [8]. Table I shows the total number of licensed e-transaction companies in Nigeria.

**Table I:** Licensed e-transactions companies in Nigeria [8].

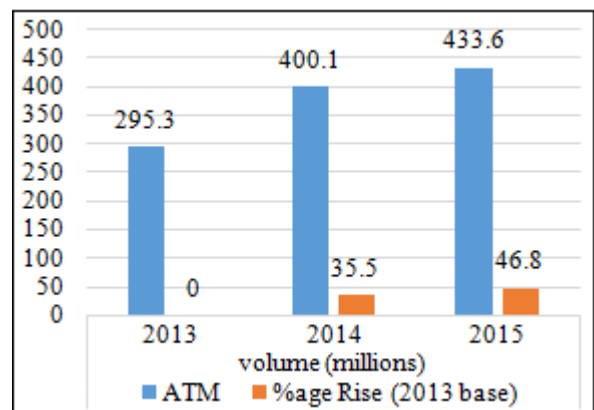
License Type	No. as at 31.12.2015
Domestic Card Service	4
Mobile Money Operators	21
Payment Solution Service Provider	3
Payment Terminal Service	14
Switches	6
Third Party Processors	2
Total	50

Table II shows in volumes the share of categories of e-payment channels between 2013 and 2015.

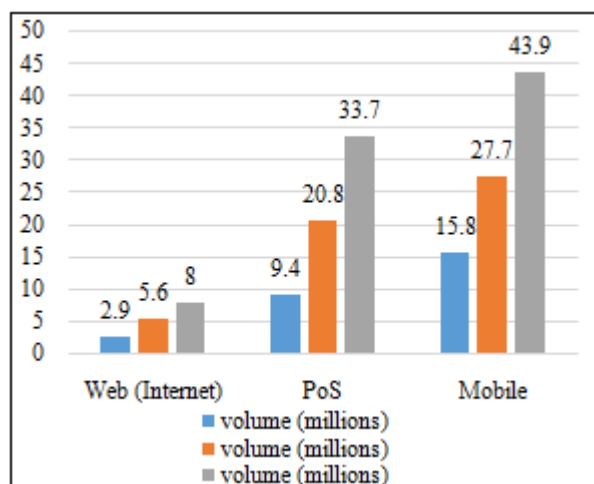
**Table II:** Volumes of electronic payment transactions, 2013 to 2015 [8].

e-payment channels	Volumes (millions)		
	2013	2014	2015
ATM	295.3	400.1	433.6
% of totals	91.3	88.1	83.5
Web (Internet)	2.9	5.6	8.0
% of totals	0.9	1.2	1.5
PoS	9.4	20.8	33.7
% of totals	2.9	4.6	6.5
Mobile	15.8	27.7	43.9
% of totals	4.9	6.1	8.5
Totals	323.4	455.6	519.2

Figures 1 and 2 present bar charts illustrating the increments in the usage of both ATM cards and other e-payment channels respectively in the years 2013, 2014, and 2015.



**Figure 1:** Increase in ATM users volume



**Figure 2:** Other e-payment channels volume increase

**Table III:** Values of electronic payment, 2013 to 2015 [8].

E-payment channels	Value (N <sup>o</sup> billions)		
	2013	2014	2015
ATM	2828.9	3679.9	3970.2
% of totals	88.9	83.5	80.2
Web (Internet)	47.3	74.3	91.6
% of totals	1.5	1.7	1.8
PoS	161.0	312.1	448.5
% of totals	5.1	7.1	9.1
Mobile	142.8	339.2	442.4
% of totals	4.5	7.7	8.9
Totals	3180.1	4391.4	4952.7

## 5. The Intricacies of Electronic Transactions

Electronic transaction, no doubt is vital for the rapid growth of economic indices of every country across the globe. However, there is no technology concept that does not have issues for its improvement and effective utilization. Electronic transactions have been utilized in areas like e-commerce, issuance of letters of credit, and in customs operations to ease clearance of goods and services [9].

Electronic transacting has made the use of letters of credit (LOC) easier. LOC refers to a legal document obtainable from financial a institution which covers the cost of goods that a buyer requests from a (foreign) wholesaler. With the letter of credit both the buyer and the wholesaler is more confident of the transaction. In most cases, the wholesaler could got paid in full by the local bank of the retailer. The retailer in turn will now refund the bank gradually as stipulated in their agreement.

Notwithstanding, before the deal is finalized, the financial institution in its part will ensure that the goods are of expected quality and quantity. Furthermore, genuine documents are collected from the retailer and the wholesaler [9]. In most cases, the buyer and the seller do not know each other well. Therefore, the bank is there to secure the transaction and build trust between both parties. The documents often required to be presented by the seller include bill of lading, proof of insurance or documents that indicate the shipment of the items for examination. Upon compliance, the bank pays the beneficiary and the applicant will in turn be required to pay bit by bit via agreed terms of credit [9].

The International Chamber of Commerce in its wisdom introduced the electronic version of Uniform Customs and Practice for Documentary Credits (eUCP) to supplement the usual custom clearing documentation across the world. This led to improved and more secured electronic transactions globally as transactions are now faster and very cost efficient [9].

ICT is making the processing and actual awarding of contracts by governmental agencies easier via the use of e-contracting platform. The countries like Australia have been effectively using such platform to award contracts in its industrial sector, especially construction projects like buildings and roads. This is achieved using an online collaborating system to communicate with each party. However, this system can be prone to risks of security breaches [10]. To minimize risks of e-contracting, the use of

secure electronic mails (e-mails) messaging is very important [10].

Public key infrastructure (PKI) forms the basis for digital signatures. This enables organizations to sell their products (like software) more securely on one device/user basis. Digital signatures cannot be hacked because each user is equipped with a PKI as well as a password [11].

The payment security requirement for consumer and merchants evolves round confidentiality, integrity, authentication and repudiation/non-repudiation. Confidentiality for both parties means the assurance that data debunked in the course of transacting the business is protected from unauthorized access. Integrity refers to the assertion that whatever is ordered paid for and subsequently supplied remains in conformity with what was displayed on-screen. Authentication to the consumer means that the merchant is real and trustworthy. On the other hand, for the merchant, it means that the consumer is supplying correct data like address and is using his valid payment instrument [4]. Repudiation means that the consumer reserves the right to cancel/reject an order if he feels dissatisfied with the product on sight. However, to the merchant he does not want a situation whereby a consumer denies a transaction after delivery. Liability is a property in which neither of both parties wants to bear the blunt of fraudulent e-transactions [4].

## 6. The Advantages and Disadvantages of E-Commerce

Before now, in developing nations there has been only the conventional payment method which is either cash on delivery or bank payment into the merchant's account to have goods delivered [12]. Today, technology has evolved making it possible for the buyer to pay using electronic payment methods which include the Automatic Teller Machine (ATM) card details, e-banking, and e-cash. E-commerce, which is the major part of e-transaction, is growing as internet users grow in number [12][13]. It has both advantages and disadvantages. The benefits/advantages are much. One of the benefits is that of convenience on the part of both the seller and the buyer as required goods can easily be spotted through the search mechanism incorporated in the site [12][13][14][15]. Geographical location of the seller is not a problem as the buyer can get the products delivered to him irrespective of the distance thereby making it cheaper. This means that the reach of e-commerce can range from local to regional, regional to national or even national to international in scope. Business is therefore often transacted at ease anywhere anytime [12][13][14]. Transaction affirmation is often immediate once the details of payment are valid [13]. E-transactions as a whole is generally time saving. This is because the buyer can at the comfort of his home or office crosscheck products for comparison from different shops to make his choice within a minimal time frame [13][14]. There is reduced cost in marketing as there are no need for much advertising as most of the world's population have access to the Internet [12]. This will invariably lead to increased profits for the merchants/sellers [12]. Similarly, cost of doing business is saved when a seller sells his product digitally through digital

signature like in the case of software, movies, video, and books [15]. Furthermore, e-commerce permits the use of a platform to showcase a huge range of goods and services from different sources without resort to acquiring a very huge space to accommodate them [15].

The disadvantages of e-commerce are also many. The fact that the internet is open for anyone to connect to and use may give room for hackers to take advantage of the opportunity to defraud and steal people's personal information. In otherwise, when the system is compromised, privacy will be bridged leading to the stealing of people's personal information for fraud related offenses [13][14][15]. Moreover, some of the products a consumer buys may sometimes be lacking in desired quality as the customer is not physically present to make his choice [13]. Delay in the delivery of the goods can also be unprecedented as it may take longer time than anticipated to have some products delivered to the customers [13][15]. On the part of the merchant, sometimes there could be system breakdown which would require enormous resources to fix. Therefore, at this point in time maintenance becomes an issue that would sink much funds of the merchant [13][14]. When there is hardware failure and it takes the merchant much time to fix, the result would be damaging as patronage from customers will cease and the merchant will incur much losses [14].

## 7. Methodology

The methodology adopted by the researcher is the use of two (2) sets of questionnaires to collect data for collation. These were administered to forty (40) respondents randomly selected among the staffs of Abubakar Tafari Ali Polytechnic Bauchi. The questionnaires were retrieved and the simple percentage method applied to determine the percentage position of each of the summed responses. The results obtained from each of the questionnaires were artistically represented using 3-D clustered column bar charts. At the end, the findings of this paper were compared with the existing findings of previous researchers.

The data collected is hereby presented in tables IV and V for further analysis.

**Table IV:** Questions posed to verify research question one (1).

No	Identifiable benefits	Options		
		Strongly agree	Partially agree	Disagree
1.	E-transactions are cheaper.	32 (80%)	05 (12.5%)	03 (7.5%)
2.	E-transactions are rising in patronage.	30 (75%)	06 (15%)	04 (10%)
3.	E-transactions are easier.	36 (90%)	03 (7.5%)	01 (2.5%)
4.	E-transactions are time saving.	32 (80%)	06 (15%)	02 (5%)
5.	E-transactions are very profitable.	32 (80%)	06 (15%)	02 (5%)
6.	E-transactions can process huge volumes of orders at once.	30 (75%)	08 (20%)	02 (5%)

**Table V:** Questions posed to verify research question two(2)

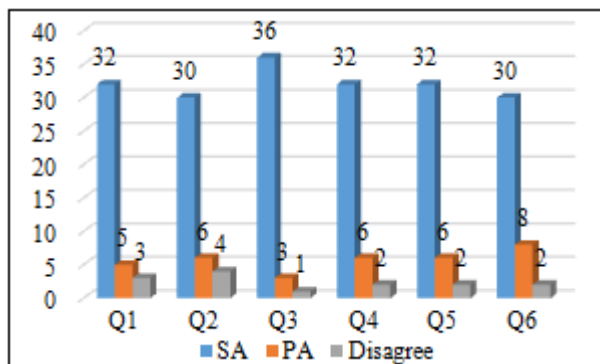
	Identifiable challenges	Options		
		Strongly agree	Partially agree	Disagree
1.	E-transactions are protected by enacted laws to secure transactions.	34 (85%)	04 (10%)	02 (5%)
2.	E-transactions are prone to hacker's attack.	20 (50%)	18 (45%)	02 (5%)
3.	E-transactions sites can crash leading to merchant's loss.	32 (80%)	06 (15%)	02 (5%)
4.	E-transactions can lead to fraud.	34 (85%)	04 (10%)	02 (5%)
5.	E-transactions can lead to purchase of fake items.	30 (75%)	07 (17.5%)	03 (7.5%)

## 8. Results and Discussion

The findings of this research will be discussed based on the responses of the forty (40) respondents in order to verify the identifiable benefits of e-transactions over the conventional way of transacting businesses as well as to appraise the possible security challenges that this technology poses. Each question is analyzed and comparisons of the findings made with the findings of previous authors.

The research question one (1) seeks to find out whether the use of e-transaction is more advantageous than the conventional way of paying for goods and services. To confirm this assertion, five questions were posed to the respondents. Question 1 seeks to verify if e-transactions are cheaper. The research finding shows that 32 representing 80% of the respondents strongly agree that e-transactions are cheaper. This finding is in line with the finding of [12], [13], and [14] when they asserted that geographical location is not a problem as the buyer can get the products delivered to him irrespective of the distance thereby making it cheaper. Pertaining to question 2, there is indeed a rise in the patronage of e-commerce platforms as 30 (75%) of the respondents strongly agree to this. This is in line with the findings of [12] and [13] when they said that mobile e-commerce is growing as internet users grow in number. A total of 36 respondents representing 90% of the respondents affirms that e-transactions are easier to do than the conventional paper-counter transactions. This is in line with the findings of [3] which stated that customer's ease of doing business makes both the customer and the merchant happy. Similarly, the finding of this research is in line with the findings of [12], [13], [14], and [15] which stated that both parties operate in ease as required goods can easily be spotted through the search mechanism that is incorporated in the site. Questions 4 and 5 seeks to find out whether e-transaction is time saving and very profitable respectively. 32 (80%) of the respondents asserted to both. This is in line with the finding of [8] when which ascertains that improved and more secured electronic transactions globally has led to transactions being faster and very cost efficient. Similarly, the finding is in line with that of [9] which stated that electronic transactions globally are now faster and very cost efficient. In response to question 6, 30 persons representing 75% of the respondents strongly agree to this assertion that e-transaction platform can process huge volumes of orders at once. This finding is in line with [3] which stated that the ease of business is what electronic transaction guarantees as

data can be flawlessly and proficiently handled. Figure 3 shows a bar chart summarizing the students' responses on the benefits of e-transactions which seeks to verify research question one (1) as earlier stated.

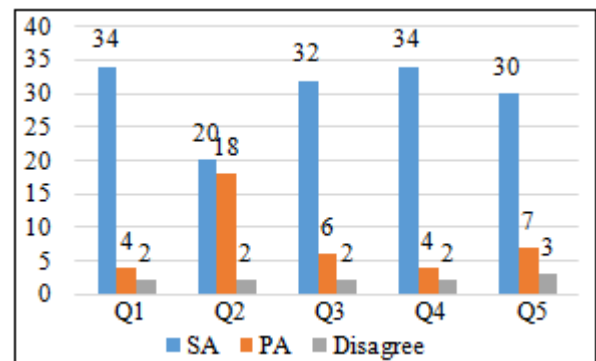


**Figure 3:** Bar chart representing the questionnaire analysis on the benefits of e-transactions.

The second set of questionnaire seeks to find out the forms of surmountable challenges that can be faced due to the undertaking of e-transactions. In response to question 1 which stated that e-transactions are protected by enacted laws to secure transactions, 34 (85%) of the respondents strongly agree to that. This finding is in line with the finding of [5] which affirms that enabling laws has been enacted by different nations and continents to protect e-transaction customers. Similarly, this finding is in line with [8] which argue that the Central Bank of Nigeria has acquired a global mobile payment monitoring and regulation system meant to checkmate customers' complaints and fraud management of e-transactions. Question 2 seeks to find out whether e-transacting are prone to hacker's attack. The finding shows diverse views as 20 (50%), 18 (45%), and 2 (5%) strongly agree, partially agree, and disagree respectively to this assertion. This finding in which 50% of the respondents strongly agree is in line with the findings of [13], [14], and [15]. Their findings show that hackers can take advantage of the fact that the internet is open for everyone to defraud and steal people's personal information. Similarly, the finding of [10] shows that e-contracting systems can be prone to risks of security breaches. On the otherhand, those that partially agree falls in line with the finding of [10] which ascertains that digital signatures cannot be hacked because each user is equipped with a PKI as well as password. Question 3 seeks to find out whether e-transaction platform can crash leading to merchant's losses. 32 (80%) of the respondents strongly agree to this assertion. This finding is in line with [14] which stipulates that serious hardware failure can cause the merchant to incur much losses in its business. Question 4 is on whether e-transacting can lead to fraud. In response to this question, 34 (85%) of the respondents strongly agree that it can lead to fraud. This assertion is in line with the finding of [4] which states that a consumer can make payment to a fraudulent merchant. Similarly, the assertion is in line with the findings of [13], [14], and [15] when they said that a compromised system would lead to the stealing of people's personal information for fraud related offenses. Question 5 seeks to find out whether e-transactions can lead to the purchase of fake items, and 30 (75%) of the respondents asserted to this view. This assertion is in line with the finding of [4] when he said that there is a possibility

of having a substandard good delivered to you after e-payment.

Figure 4 shows a bar chart representation of responses on the surmountable challenges that can be faced while undertaking e-transactions.



**Figure 4:** Bar chart representing questionnaire analysis on the surmountable challenges of e-transactions.

## 9. Conclusion

The use of ICT in transacting of businesses amounts to considerable efficiency in the part of both the individuals concerned and the society in general. Electronic transactions amidst several other benefits lead to save of valuable time, cheaper, easier to perform, very profitable, and capable of handling huge volumes of orders at once. These benefits have led to its rise in patronage by many individuals. However, some surmountable challenges abound such as the transaction being prone to hacker's attack resulting to fraud and stealing of people's personal information, possibility of the site crashing leading to losses on the part of the merchant, and possibility of the customer having fake goods delivered to him after making an e-payment. These challenges, notwithstanding are surmountable because every state has enacted laws meant to secure e-transactions and boost customers confidence on its usage.

In conclusion, the findings therefore, show that e-transactions are more advantageous than the conventional way of paying for goods and services despite some few surmountable challenges they are posed with.

## References

- [1] Rampton, J. (2016). *The evolution of the mobile payment in 2015*. Available at [www.techcrunch.com/2016/06/17/the-evolution-of-the-mobile-payment](http://www.techcrunch.com/2016/06/17/the-evolution-of-the-mobile-payment). Retrieved on the 10<sup>th</sup> day of December 2017.
- [2] Jaracz, J. (2017). *E-commerce: control your mobile destiny. A white paper published by Mobile Payments Today. Sponsored by Spreedly*. Available at [www.mobilepaymentstoday.com/e-commerce-control-your-mobile-destiny](http://www.mobilepaymentstoday.com/e-commerce-control-your-mobile-destiny). Retrieved on the 10<sup>th</sup> day of December 2017.
- [3] Transaction Network Services (2017). *Comprehensive business continuity management essential to keeping data flowing*. Available at

- www.atma.com/whitepapers/...Retrieved on the 10<sup>th</sup> day of December 2017.
- [4] Centeno, C. (2002). *Securing internet payment – the potential of public key cryptography, public key infrastructure and digital signature*. Available at [www.europarl.europa.eu/protection](http://www.europarl.europa.eu/protection). Retrieved on the 10<sup>th</sup> day of December 2017.
- [5] Kuwait Government (2014). *The central agency for information technology. Law no. 20 of 2014 concerning electronic transactions*. Available at [www.csb.gov.kw/Magazine\\_E](http://www.csb.gov.kw/Magazine_E). Retrieved on the 12<sup>th</sup> day of December 2017.
- [6] World Stage Press Release (2015). *MasterCard Survey: Mobile payment excites Nigerians*. Available at [www.worldstagegroup.com/index.php?active=news&newsid=27963&catid=31](http://www.worldstagegroup.com/index.php?active=news&newsid=27963&catid=31). Retrieved on the 6<sup>th</sup> day of December 2017.
- [7] Central Bank of Nigeria (2016). *Annual Report 2015*. Available at [www.cbn.gov.ng](http://www.cbn.gov.ng). Retrieved on the 6<sup>th</sup> day of December, 2017.
- [8] Central Bank of Nigeria (2016). *Guidelines on operations of electronic payment channels in Nigeria*. Available at [www.cbn.gov.ng](http://www.cbn.gov.ng). Retrieved on the 6<sup>th</sup> day of December, 2017.
- [9] Cronican, W. P. (2013). *Electronic letters of credit and the need for default rules*. Available at [www.scholarlycommonsapacific.edu/mir/vol45/iss/...](http://www.scholarlycommonsapacific.edu/mir/vol45/iss/) Retrieved on the 6<sup>th</sup> day of December 2017.
- [10] Christenson, S. et. al. (2007). *Final report electronic contract administration – legal and security issues*. Conducted by Cooperative Research Centre (CRC) for Construction Innovation. Available at [www.eprints.qut.edu.au/13264](http://www.eprints.qut.edu.au/13264). Retrieved on the 10<sup>th</sup> day of December 2017.
- [11] Tavella, J. (2008). *Facilitating online transactions with digital identities*. An article from [gt news.com](http://gtnews.com). Available at [www.gtnews.com/banking](http://www.gtnews.com/banking). Retrieved on the 10<sup>th</sup> day of December 2017.
- [12] Wikibooks (2017). *E-commerce and e-business/e-commerce applications: issues and prospects*. Available at [https://en.wikibooks.org/wiki/E-Commerce\\_and\\_E-Business/E-Commerce\\_Applications:\\_Issues\\_and\\_Prospects](https://en.wikibooks.org/wiki/E-Commerce_and_E-Business/E-Commerce_Applications:_Issues_and_Prospects). Retrieved on the 15<sup>th</sup> day of January 2018.
- [13] Enkillage.org (2017). *E-commerce advantages and disadvantages*. Available at <https://www.enkivillage.org/e-commerce-advantages-and-disadvantages.html>. Retrieved on the 15<sup>th</sup> day of January 2018.
- [14] OnlineCmag Team (2017). *Advantages and disadvantages of online processing systems*. <http://www.onlinecmag.com/advantages-disadvantages-online-transaction-processing-systems/>. Retrieved on the 15<sup>th</sup> day of January 2018.
- [15] Khurana, A. (2017). *Advantages and disadvantages of ecommerce*. <https://www.thebalance.com/ecommerce-pros-and-cons-1141609>. Retrieved on the 15<sup>th</sup> day of January 2018.