

Usability Issues with E-Commerce Websites in Nigeria

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Abstract - Usability issues are vital components for online-based businesses. With Nigeria integrating electronic payment into its financial system coupled with rising internet penetration in the country, several businesses have created an online presence and are cashing in on the opportunities. This has created a form of online competition among e-commerce businesses. This study employs the user test method to test the usability issues associated with E-commerce websites in Nigeria and how this affects the success of e-commerce businesses. We find several usability issues with all e-commerce websites tested and a general need for user-focused improvement on all the websites. We also find the issues of security and trust as salient to expand the e-commerce business in Nigerians. Based on the result and analysis, recommendations on usability, data policy, security, registration and other vital issues are offered.

Keywords: Usability, E-Commerce, User-Testing, Internet Penetration, Nigeria

I. INTRODUCTION

Internet technology has become a force to reckon with in the twenty-first century business environment. According to Ghobakhloo *et al.*, (2012), this technology is possible through intensified investment in computer-processing and data preparation appliances in the manufacturing and service industries and telecommunications infrastructure, and also due to its widespread usage in government agencies, educational organizations, and more recently in the households. The concept of e-commerce shows how businesses have evolved over the years using internet technology to improve their operations. Most businesses have taken the opportunities provided by internet technology to expand their operations.

E-commerce has a major role to play in the growth of the Nigerian economy (Khan and Uwemi, 2018). Haven integrated the electronic payment system into its financial system; several businesses in Nigeria have taken their operations online buoyed by the fast-rising internet penetration in the country. This has birthed a form of online competition among e-commerce businesses - a step that has reduced the flow of physical cash in the economy (Orimobi 2017). People now buy products from e-commerce websites from the comfort of their homes and receive the delivery at home. With a population of over 206 million people (Simona 2020) and fast-rising internet penetration- from 23.7% in 2015 to 46.6% in 2020 (Joseph, 2021) Nigeria's rise to prominence in e-commerce is unprecedented, and is

predicted to be amongst the biggest player in e-commerce (Cogniko, 2012). Nigerians spent over Six Hundred and Ten Million (\$610,000,000.00) Dollars in 2015 and Eight Hundred and Nineteen Million (\$819,000,000.00) Dollars in 2016 online through the PayPal platform alone. This amount represents over 25% improvement over the previous year, earning it a ranking of the third mobile (online) shopping nation worldwide by PayPal. The GM of PayPal E. Dahan described this phenomenon as Nigerians as haven "realized the world is their shopping mall." (Oyinkansola 2016). The implication is that there is a huge potential for growth in E-commerce businesses in Nigeria (Khan and Uwemi 2018). However, for e-commerce businesses to thrive and succeed, the impact of usability cannot be exorcised. The prospect of online businesses coupled with the proliferation of e-commerce websites in Nigeria necessitates a study on the usability of e-commerce websites in Nigeria to encourage adherence to industry best practices and build trust among customers.

As more organizations deploy internet technology to improve their financial outlay, to what extent does usability form the centerpiece of their design? What is the impact of usability on their online operations? How does usability affect the buying interest of the average e-shoppers in Nigeria? What other usability issues form the concern of the average Nigerian e-shopper?

This work aims to determine the usability of e-commerce websites in Nigeria, how usability affects the operations of e-businesses and make recommendations to improve the usability of e-commerce websites to enhance user experience.

The remainder of the paper is organized as follows: Section II to IV discusses related work. Section V discusses methodology. Section VI to IX discusses the user test method adopted in this work. Section X to XII discusses the experimental test and analysis of results. Section XIII to XV discusses the conclusion, recommendation and future thoughts.

II. LITERATURE REVIEW

Web usability is a concept that has been widely defined, discussed and analyzed since the advent of the first functional website. Website usability relates to

effectiveness, easy learning, task performance and remembrance, appealing appearance and satisfaction.

Evaluation of usability is a concept that describes the adherence of designers to usability principles. Abraham (2003) discussed ten factors as guidelines for evaluating websites, these include; content, speed, navigation, task appropriateness, visual design, compatibility, simplicity, consistency, error handling, and respect for users. Cappel and Zhenyu (2007) identified eleven factors subdivided into three main categories; web design error, web design conventions and design features as relevant to website usability.

Nathan and Yeow (2011) postulated that e-commerce websites be made simple, interactive and easy to use so that the average e-shopper in Nigeria will be able to use them to perform tasks that enable them to make purchases on these websites. Similarly, Nielsen (2012) pointed out five factors that promote usability in contemporary website design viz; learnability, efficiency, memorability, errors and satisfaction. In the same vein, Sabina (2013) identified five major factors including availability and accessibility, clarity, learn ability, credibility and relevance as key usability components.

This research seeks to consider the usability issues with e-commerce websites in Nigeria; How do these usability issues affect the e-commerce business of the organizations? Were usability issues considered at the stage of the design and implementation of the respective websites and have they been considered to improve user experience on the websites since they were first launched? This work attempt to answer these questions and make recommendations that could be implemented to improve the usability of e-commerce websites in Nigeria.

III. SOME WEB DESIGN FLAWS AND FEATURES

Major design flaws in websites happen as a result of not considering the end-users in the design process while others are as a result of not adhering to established design practices. Cappel and Zhenyu (2007) opined that introductory splash screens constitute a nuisance to users and generally conveys a poor user experience for those visiting the website. Another flaw in website designs is how the content of the web page hardly fit the display of the monitor (responsiveness).

Cappel and Zhenyu (2007) noted that scrolling left or right and up or down is a painstaking effort required of users in their web experiences. The absence of search capabilities and location indicator are other factors identified as common usability issues.

Fadeyev (2009) espoused the importance of good usability design and the downside of bad usability designs. He stated that websites that adhere to good usability practice offer a great user experience which leads to happy customers,

advising that customers should rather be left delighted and satisfied rather than being frustrated and annoyed with bad design.

IV. THE IMPORTANCE OF USABILITY TO E-COMMERCE

In his ten principles of good website design, Friedman (2008) stated that usability and utility and not the visuals determine the success of a website. These days, several businesses have taken their operations online (e-commerce) and see it as their means of increasing sales and expanding business activities. This has created an online competition among businesses to sell products to the same potential customers; this is the more reason why usability has become critical. The usability of the e-commerce website is central to the success of the organization.

Suárez (2016) identified online user satisfaction as a key indicator of success in the market as well as e-commerce. E-commerce websites should be free of error and appealing to the customer's satisfaction. Customers should be able to easily and conveniently find the products they seek or carry out simple tasks that will enable them to complete an order or make payment.

Nielsen (2012) hinted that if a user finds it difficult to do any of the above, they will leave the website and visit the next e-commerce website they know which is but a few clicks away.

Suárez (2016) linked website appearance, usability, and gender as relevant to satisfaction. Thus, the appearance and usability of e-commerce websites can translate to user satisfaction and increase visits and patronage from customers.

V. METHODOLOGY

This section discusses the methodology in usability testing and expatiates on the methods adopted in the work.

A. Usability Evaluation Methods

Usability evaluation methods are the techniques utilized to access the extent to which a website can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use (Hasan *et al.*, 2013). The method identifies difficulties faced by users on the website, with a view of developing measures that will reduce these difficulties. The measures are then implemented to ease job completion tasks.

B. Google Analytics

It is a web analytics tool that uses page-tagging to generate basic metrics as well as advanced metrics on numbers and percentages of visits, page views, clicks, etc.

C. Usability Inspection

Usability inspections are carried out by the website interface designer. This can be done individually or in a group. It is done by looking through the entire website interface and comparing its look, feel and functionality with generally known design principles or guidelines.

D. Heuristic Evaluation/Group Walk-Through

Heuristic evaluation involves the use of some expert evaluators to assess the user interface to determine if it conforms to a set of usability principles known as heuristics. Hasan et al. (2013 and Hasan and Abuelrub (2013) believes that the heuristic approach identifies much more usability issues.

Group walk-through is one of the widely applied usability evaluation methods. This usability evaluation method uses a group of stakeholders in the design and implementation process to jointly walkthrough all the tasks in the website that will eventually be carried out by the end-users. While they are walking through the respective tasks, the group identifies all the areas that could constitute difficulties for the end-user, and note adjustments that could be made to improve the associated difficulties.

E. User Testing

User testing is a usability evaluation method that uses a set of the intended users selected at random to test real tasks that customers will perform to complete a successful transaction. This usability evaluation method is used to test a website before its deployment and eventual use by real users. This evaluation method identifies the inherent usability issues for those that built the website or are maintaining it to implement and improve the user experience. The user test method is most practical because it engages real users and real tasks.

VI. THE METHOD ADOPTED IN THIS WORK

This work focuses on testing the usability of three e-commerce organization websites in Nigeria. These e-commerce websites are designated as websites A, B and C. Details of the websites are shown in Appendix A. The methodology employed for this work is User Testing.

Five participants were used to test the websites because according to (Nielsen 2000) "the best results come from testing no more than five users and running as many small tests as you can afford."

A. The User Testing Method

The user testing is composed of three main activities from which data can be collected and used to analyze the usability of the e-commerce website:

1. Interview of the participants that will individually test the websites.
2. Observation of each participant as they carry out all the pre-determined tasks on the website at a time (participants are encouraged to think aloud while performing the test).
3. Post-test interview or de-briefing of participants after completing the test for each website.

B. Pre-Test Interview

The pre-test interview is intended to collect data from the test participants. The data include the personal information of the participants, the attributes and features of the computer they are using, the nature of their link to the internet. The participants' computer competence in the use of the computer, internet skill and their e-shopping experience. Participants selected for the test is given a consent form to read through, fill and sign off. Participants are made to understand that they will not be paid for the test and that information provided will be treated with confidentiality and will only be used for the work. Participants are also given a usability note to read through to grasp the concept of usability and why it is being investigated. Again, participants are also given the pre-test evaluation form. The form will have fields that will require personal information of participants, the system they are using, their computer and internet skills and experience.

C. The User Test

The user test is made up of different tasks that will be carried out on each website. The task list will be handed to the participants to read through before they will complete all the tasks on one website and the next. After participants have read through the task list, demonstrations on how to think-out-loud during the test will be shown to the participants using any website as an example. As the participants begin the tasks, they are closely observed. Their body language and comments are recorded in a task action/comment form.

VII. POST-TEST INTERVIEW/DEBRIEFING

After carrying out the tests on each website, participants are interviewed. The questions they are asked are aimed at eliciting their overall impression about the e-commerce website tested. Their thoughts are expected to score the e-commerce websites on selected aspects of usability that apply to an e-commerce website and to know if they have formed the intention to purchase items from the website and if they will recommend the website to family and friends.

A. Source of Data and Information

The sources of information for the work include:

1. *Careful Observation of Users:* A careful observation of users while he or she performs the given task on the

websites was done to get an idea of the ease or difficulty of completing tasks. Interviews; the test subjects were interviewed before and after the test to determine what they think before the test and after the test. User utterances; the utterances users make (users are advised to think-aloud) while carrying out the pre-determined tasks, this gives an understanding of how the user feels while attempting to carry out the task or test.

2. *Time of Completion:* The time it took the user to complete the task shall also be recorded for consideration.

VIII. SOFTWARE AND OTHER MATERIALS REQUIRED

Software tools needed for this work include; a computer running Windows Operating System, a current version browser and Internet access via some network. A web browser that could be used includes Google Chrome, Mozilla Firefox, Opera, Internet Explorer. Connection to the Internet provided by a major internet provider.

IX. KEYS OF EVALUATION

Some key factors are used to determine the usability of the websites. These factors will essentially provide a guide on how the data generated from the test participants will be analyzed. The selected factors for the analysis of the websites are; Attractiveness of design, Ease of

understanding, Ease of navigation and Ease and simplicity of tasks.

X. RESULTS AND ANALYSIS

This section discusses the results of the test carried out.

A. Pre-Evaluation Results and Analysis

A total of seven (7) participants were interviewed for the overall test but out of the seven, an alternating five (5) participants were used to test each website. All the participants had varying degree of competencies in the use of the computer, the Internet and familiarity with e-commerce websites. Four (4) of the participants were males and the other three (3) were females. The ages of participants range between 23 years and 49 years. Five of the participants have over three years of experience in using the computer and only two participants have less than three years of experience in the use of computers. Four participants have already bought at least an item from an e-commerce website in the past and still intend to do so in the future. Three participants have not bought any item on any e-commerce website but intend to do so in the future. Participants rated themselves on a scale of one to five (1 to 5). Three participants (representing 43%) considered themselves to be very competent while two participants (representing 28.5%) are competent and the other two participants (representing 28.5%) have average competence on the use of the Internet.

TABLE I ANALYSIS OF PARTICIPANTS PROFILES

Participants	1	2	3	4	5	6	7
Gender	Female	Female	Female	Male	Male	Male	Male
Age range (years)	40-49	23-39	30-39	40-49	30-39	40-49	30-39
Occupation	Civil servant	Student	Law enforcement	International businessman	Athlete	Architect	Student
Level of education	Bachelor's work	Bachelor's work	Bachelor's work	Bachelor's work	Diploma	Master's degree	Bachelor's work
Computer experience	Over 3years	Over 3years	1-3years	Over 3years	1-3years	Over 3years	Over 3years
Internet experience	Over 3years	Over 3years	1-3years	Over 3years	1-3years	Over 3years	Over 3years
Operating system used	Windows	Windows	Windows	Windows	Windows	Windows	Windows
Browser used	Internet explorer	Chrome	Opera	Chrome	Chrome	Chrome	Chrome
Internet competence	Competent	Very competent	Average competent	Competent	Average competent	Very competent	Very competent
Familiarity with the company and website	A, B not C	A,B not C	A, B and C	A,B not C	A,B not C	A,B not C	A,B not C
Bought a product online	No	Yes	Yes	No	No	Yes	Yes
Intend to buy product in future	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Confidence to buy from known site	Yes	Yes	No	Yes	Yes	Yes	Yes
Confidence to buy from unknown site	No	No	No	No	No	Yes	No

Before the test, six participants (representing 85%) feel secure to buy products from an e-commerce website and only one participant (representing 15%) feel insecure to buy products from an e-commerce website. However, all participants except one expressed confidence in buying products from widely known e-commerce websites while one participant doesn't feel confident in buying from an unknown website. All the participants except one have heard of website A and B. but only one participant has heard of website C before participating in the test. The full analysis of the user profile is shown in Table I.

B. Participant Observations during the Tests

Participant's demeanor and utterances were observed for each website tested. The participants made comments concerning the tasks they were performing. For website A, at least 80% of the participant completed 75% of the required task without asking a single question. These participants were generally confident, focused and appear to know exactly what they were doing. These participants also made some comments concerning the mandatory nature of registration. For example, one participant commented "must I register before I buy a product or add my delivery address?" this seems like a feeling of frustration on the part of the user and this can have serious consequences for the website (Vila and Kuster 2012). This also bothers trust as they feel somehow insecure giving out their data on the websites. In any case, about 20% of the participants had to ask questions and seek a guide before successfully carrying out 25% of all the tasks they were meant to complete.

For website B, participants displayed varying levels of confidence about the tasks they were to carry out and made several comments as well. At least 80% of the participants were confident and quick to complete about 70% of the tasks assigned to them. Their comments were either "this is it" or "I found it" or "I need to click buy to register". Also, about 20% of the participants were either confused or did not know what to do to carry out a given task. The data show that 100% of participants who had less than three years of computer and internet experience asked 80% of the entire questions. They appear not to know the basic layout of an e-commerce website. They look around every page they visit, ask a question or two before knowing what to do.

For website C, participants also displayed a varying degree of confidence about the tasks they are to carry out and made several comments as well. All the participants were confident at performing 80% of all the tasks assigned to them. But the participants' complained about the speed at which the website loads. At a point, one participant was frustrated with a feeling of disgust. The participant's comments were "this website is disgusting" and "I hate this website."

But this same participant has over three years of experience in both using a computer and the Internet. This feeling of frustration was at variance with the other participants and it

may have been triggered by the slow speed of the internet at that particular time or by other factors.

C. Post Evaluation Results and Analysis

Post-test interview/debriefing was completed by the participant on each website tested. This section discusses participants' response on the key usability issues intended by the tasks to elicit.

On Website A: Participants 1, 4, 5, 6 and 7 tested website A.

Content, Organization and Readability: Four participants agreed while one participant strongly agreed that the website was informative. Two participants agreed while three participants strongly agreed that it was easy to find what they want. While three participants agreed that the website offered things of interest, one participant was neutral and the other also agreed.

Responsiveness: When asked if they had to scroll left or right before seeing content on the site, one participant strongly agreed, one participant agreed while the rest strongly disagreed.

Navigability and Links: When asked if there are alternative links and images, one participant disagreed, one participant was neutral while two participants agreed with one strongly agreeing.

Location: Three participants agreed that they can easily identify where they are on the site, one participant was neutral while the other strongly agreed. In the same vein, three participants agreed that the website is easy to navigate, one strongly agreed while the other was neutral. Also, two participants were neutral on the ease of identifying links, two agreed while the other strongly agreed.

User Interface Design: One participant was neutral about it, one agreed while three participants strongly agreed.

Consistency: One participant disagreed that the website was consistent, one participant agreed while three participants strongly agreed that the website was consistent. In the same vein, three participants agreed that the website was well designed while the other two strongly agreed.

Effectiveness: Two participants were neutral about the ease of use of the website while three participants strongly agreed.

Security: One participant disagreed that the website was secure for users, three participants strongly agreed while one participant agreed.

Improvement: It was an affirmative 'YES' from all participants except one that the website is in dire need of improvement.

Task-Completion Time: it took five (5) minutes for participant 1 to complete each task; participant 5 took an average of ten (10) minutes to complete each task while participant 7 took the longest time of twelve (12) minutes on the average to complete each task – even though participants 1, 5 and 7 said they were competent, average competent and very competent respectively with the Internet.

On Website B, participants 1, 2, 4, 5 and 6 were used for the usability test.

Content, Organization and Readability: Three participants agreed that the website was informative while the other two participants strongly agreed. One participant was neutral about the ease to find an item of need, one participant agreed while three participants strongly agreed.

Responsiveness: Two participants strongly agreed that one has to scroll left or right when reading content, two participants disagreed with this while one participant was neutral.

Navigation and Links: One participant strongly disagreed that there were alternative links and images, two participants agreed and the other two participants strongly agreed. Three participants agreed that they can easily identify links and two strongly agreed. One participant was neutral about the ease of navigation on the website while the other four strongly agreed.

Location: three participants agreed that they can easily identify where they are while the other two agreed.

User Interface: Only one participant was neutral to the set of questions; the rest agreed and or strongly agreed that (i) the website was appealing (ii) consistent and (iii) well designed.

Effectiveness: One participant was neutral, three participants agreed and one participant strongly agreed that the website was easy to use.

User-Focused: One participant was neutral, two participants agreed and the other two strongly agreed that the website was user-focused (friendly).

Security: One participant disagreed, one was neutral, two participants agreed and one strongly agreed that the website offers security to users.

Help: One participant disagreed that the website offers help to users for errors made, three agreed and one participant strongly agreed.

Improvement: All except one participant agreed that the website needs improvement.

Task Completion Time: Participant 1 and 2 used an average of six (6) minutes on each task, participant 5 took an average of thirteen (13) minutes (as maximum) to complete each task. Overall, a cumulative average of 9.2 minutes was used by each participant on tasks on website B.

Website C: Participants 1, 3, 4, 6 and 7 were used for the usability test.

Content, Organization and Readability: One participant was neutral that the website was informative, three participants agreed, while one participant strongly agreed. On the ease to finding products of want, one participant was neutral about it, two participants agreed while two participants strongly agreed.

Responsiveness: Two participants agreed, one participant was neutral, one disagreed while one strongly disagreed that one has to scroll left or right when reading content.

Navigation and Links: Two participants were neutral on the availability of alternative links and images, one participant disagreed while two participants strongly agreed that there were alternative links and images. On the ease of navigation, one participant disagreed, three participants agreed while one participant strongly agreed that the website was easy to navigate.

Links: Four participants were neutral while only one participant agreed that it was easy to identify links.

Location: Three participants were neutral while two participants agreed that they can easily identify where they were on the website.

User Interface: One participant agreed, one participant strongly agreed that the website was appealing and attractive while the other three were neutral.

Consistency: One participant disagreed, two participants were neutral about the consistency of the website and two participants agreed to the consistency of the website. In the same vein, one participant disagreed that the website was well designed, three participants agreed while one participant strongly agreed.

Effectiveness: Opinions were diverse on this issue; one participant strongly disagreed, one participant was neutral, two participants agreed while one participant strongly agreed that the website was enjoyable.

Ease of Use: Two participants strongly disagreed; two participants were neutral while only one participant agreed that the website was easy to use.

User Focus: Three participants were neutral, while two participants agreed that the website was user-focused.

Security: Three participants were neutral, while two participants agreed that the website offers security for users.

Help: One participant strongly disagreed, one participant disagreed, and one participant was neutral while two participants agreed that the website offered help to visitors. Similarly, one participant disagreed, two participants were neutral while two participants agreed that the website reflects the business zeal of the owners.

Speed: Three participants were neutral while two participants agreed that the webpages load fast. *Improvement:* all participants agreed that improvement was needed to improve the website.

Task Completion Time: Participant 1 spent an average time of six (6) minutes on each task, participant seven (7) took up to thirteen (13) minutes to complete each task. Overall, the five participants took a cumulative average of 9.6 minutes to complete each task.

XI. CONCLUSION

About 40% of the participants needed help-links to enable them to complete at least two of the tasks easily. These participants all had less than three years of experience in the use of the computer and the internet and had not bought any product from an e-commerce website before. Thus, it will be fair to conclude that users with little computer and internet experience who had not bought any product from e-commerce websites will find it difficult to understand and use the website compared to those with more experience. About 40% of the participant stated that help links were needed in the website to aid users. 60% of the participants who had over three years of experience in the computer and the internet had also bought products from at least a third of the websites under investigation.

This implies that users who are competent in computer and internet use and have experience in online shopping find it easier to navigate e-commerce website they come across for the first time. But users with little experience in computer and internet use will find it difficult to navigate and use e-commerce websites. Up to 80% of the participants commented during the (buying task) that they will not be able to complete the task of buying a product because they have to complete their registration as a customer on the websites. This is due to the registration process which must be completed before a user can buy a product. The apprehension expressed towards the registration process that precedes buying shows that the actual end-users will act similarly and this will impact negatively on new e-shoppers. This is directly connected to safety, security and trust.

Another very important issue noticed with all the websites tested was that once customers have registered with the e-commerce site, it was difficult to unsubscribe. Test participants continue to receive adverts and emails from the websites even after they had unsubscribed from the website.

This could be related to non-functional links or a deliberate ploy to keep subscribed customers perpetually. This is not pleasant to most participants and maybe to potential customers too. Online customers should be treated with respect. Lastly, despite the seeming good rating by all participants on the website, all participants recommended general improvement on all the websites. This indicates that usability is a major issue with all the websites tested and if not taken care of may impact negatively on the growth of e-commerce generally.

XII. RECOMMENDATIONS

The ability of visitors to navigate and carry out tasks such as searching for products, adding them to cart, registering as a customer on the website, adding or changing delivery address, making payment on the website and contacting customer care depends on their computer-and-internet-use experience. Users with high experience can accomplish the above tasks with ease but users with minimal experience will have some level of difficulty. It is therefore recommended that e-commerce websites in Nigeria incorporate interactive applets or help-links in their respective websites. This will enable e-shoppers with minimal or no experience in computer or internet use to find and buy products on the websites with ease. All the websites tested requires a long registration process before a transaction can be completed for a first-time e-customer.

When a first-time user clicks the buy button, the user is prompted to register. A serious user would want to continue and complete the registration process. But the apprehension expressed by many indicates that not all first-time visitors will be willing to go through the process. It is recommended that e-commerce websites use cookies so that first-time visitors can be differentiated from regular e-customers. This can be used to categorize customers as a guest or one-time users who will not be required to go through the entire registration process (that might make them lose interest in buying the desired product) and regular customers.

Participants were unwilling to divulge information too quickly; this is not unconnected to a perceived feeling of insecurity and distrust in the system. Security and trust are serious usability issues that need to be addressed at all cost. To gain the trust of most and potential Nigerian e-shoppers, e-businesses must incorporate trust-building measures. They should also at the point of registration display to users their data use policy; this will (to an extent) build trust among potential customers.

If a user feels secure about a website, the user will freely do business with the website; in the same vein, insecurity will drive away potential customers. E-businesses in Nigeria should improve on their security features, to gain and build trust among the populace. This will in turn increase their share of the market value of the billions spent online by Nigerian e-shoppers and divert the attention of the Nigerian e-shoppers from foreign online shops.

XIII. FUTURE THOUGHTS

Haven presented the outcome of each test separately in this work, we intend to do a comparative analysis of the entire result from all the websites, this will give an indication of a trend and help make a general statement about e-commerce websites.

XIV. APPENDIX A DESIGNATION OF WEBSITE TESTED

Website	Designation
Konga (konga.com)	A
Jumia (jumia.com.ng)	B
Dealdey(dealdey.com.ng)	C

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