

E-COMMERCE USABILITY: DO WE NEED GUIDELINES FOR EMERGING ECONOMIES?

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ABSTRACT

Many retail companies in the emerging economies specifically South Africa, have made great efforts to utilize the benefits of e-commerce to expand their businesses. E-commerce websites must be well-organized and intuitive to use, so that users can communicate and interact with online retailers to complete transactions successfully. Usable websites therefore are pivotal for e-commerce success. The user is the most important factor for company to gain higher profits. Hence users should be the priority in designing websites. However, designing usable websites in South Africa has proven to be a challenge since the population varies greatly with regard to cultural background. This paper presents the results of a usability study conducted on South African B2C bricks-and-clicks retailers' e-commerce websites. The study employed two evaluation techniques namely; user evaluation and heuristic evaluation (HE). The results indicate South African users have unique needs which shouldn't be ignored.

KEYWORDS

Usability, retail, e-commerce, heuristic evaluation, user evaluation, emerging economies

1. INTRODUCTION

The retail industry is regarded as one of the biggest sectors in South Africa generating an estimated 15% of the global gross domestic product (GDP) and it accounts for 24% employment (Martim et al., 2009a; Seda, 2007). Electronic commerce (e-commerce) which operates on the backbone of the Internet could help the retailers generate additional revenue by reaching the markets they could not access using traditional systems. Regardless of the potential benefits of e-commerce, e-commerce in South African retail industry has not achieved its full potential (Martim et al., 2009a; Martim et al., 2009b). This paper examines the usability aspect of e-commerce websites as a factor which hinders e-commerce growth.

The usability aspect of user interface (UI) design has drawn the attention of many researchers over the years. Regardless of this, unused and/or under-used e-commerce still remains a reality. This is found more extensively in South Africa, a country with diverse languages and cultures, as designing a usable UI in such a context has proved to be a challenge (Barnard and Wesson, 2003; Barnard and Wesson, 2004; Macagnan and Greef, 2007; Martim et al., 2009a; Martim et al., 2009b; Singh, 2006).

The paper begins by building a theoretical background to present the importance of usability in e-commerce. It also presents the complexities designers experience while adopting usability guidelines. It then progresses to discuss an empirical study, assessing the e-commerce websites using user evaluation and heuristic evaluation. The paper then discusses the results of the usability evaluations and finally provides a conclusion.

2. THEORETICAL BACKGROUND

2.1 E-commerce Usability

In traditional shopping, the interaction between the customer and the retailer, determines the impression the customer have with the retailer. On the contrary, e-commerce website design presents the customers with a comprehensive image of the retailer. A usable and trustworthy web site provides users with a satisfying experience, thus increasing sales, market share and revenue for retailers (Chang and Chen, 2008). Souza (2001) reported that 65% of online shopping attempts end in failure because users cannot find what they are looking for. Moreover, customers do not return to a site if they do not have a good initial experience; this will ultimately result in website failure (Bias and Mayhew, 2005). Therefore, making websites more usable is smart business (Tullis and Albert, 2008).

According to Nielsen (1993), usability is a multidimensional property of a UI associated with the many attributes. Authors Dix et al. (2004) and International Standards (ISO 9126, 2000; ISO 9241, 1998) concur with Nielsen (1993) as shown in table 1. Even though these attributes depicted in table 1 are from distinctly different standards and perspectives, all focus on the same goal of a user's ease of use with a product. For the purpose of this paper Nielsen's (1993) usability attributes are adopted. When these usability attributes are ensured in a UI the website is rendered useful.

Table 1. Usability attributes comparison.

Dix et al (2004)	Nielsen(1993)	ISO 9241 (1998)	ISO 9126 (2001)
Effectiveness	Error tolerant	Effectiveness	Understandability
Efficiency	Efficiency	Efficiency	Learnability
Satisfaction	Satisfaction	Satisfaction	Attractiveness
Learnability	Memorability		Compliance
	Learnability		

It is important to note that other factors, such as culture, education; people's resistance to change, among others, can contribute to website failure (Barnard and Wesson, 2003; Barnard and Wesson, 2004; Macagnano and Greef, 2007; Martim et al., 2009a; Maswera et al., 2008). Taking a closer look at culture, cultural factors in the interface design and usability have been investigated over the years. Most of the research (Li et al., 2007; Marcus, 2006; Recabarren et al., 2008; Vatrapu and Pérez-Quñones, 2006) suggests that enhanced usability can be achieved by considering and understanding the users' culture. South Africa has been referred to as the "rainbow nation", a title which epitomises the country's diversity. South African people speak eleven distinct languages, and there are disparities within and between these various language groups in terms of socioeconomic standing and literacy (Pan South African Language Board., 2000; South Africa Info, 2009). Designing e-commerce websites for diverse users is a challenge.

How can designers deal with these challenges? One of the important steps in helping designers to design usable systems is to provide them with useful guidelines (Dix et al., 2004; Motjoloane and Warden, 2007; Nielsen, 2000; Rosenzweig, 1996; Scapin et al., 2000; Shneiderman, 1992; Van Duyn et al., 2007; Zaphiris and Kurniawan, 2007). However, many of these guidelines have not been validated by empirical or theoretical evidence, rendering them inapplicable in some contexts (Zaphiris & Kurniawan, 2007; Scapin et al. 2000). Moreover, in a South African context, although website developers follow some of these guidelines, they do not necessarily provide appropriate levels of website usability (Martim et al., 2009a). With this background in mind, this paper therefore seeks to determine if guidelines available in literature are suitable for designing South African websites.

2.2 E-commerce Guidelines and Usability Evaluation Techniques

In this paper guidelines are defined as a set of criteria which developers can use as a blueprint when developing websites. Many authors argue that using guidelines ensures consistency among products and services, thus providing higher levels of usability (Dix et al., 2004; Lannella, 1995; Nielsen, 2000; Nielsen et al., 2000; Rosenzweig, 1996; Scapin et al., 2000; Tarafdar and Zhang, 2005). However, Mariage et al. (2004) argue that the usability guidelines that are available are not straightforward for the following reasons:

- i) Identifying in the jungle of guidelines which ones need to be addressed for a particular website for a given target audience remains challenging,
- ii) Little or no guidance exists to provide assistance to developers to locate, select and gather guidelines relevant to their website,
- iii) Once identified, guidelines are not usable by themselves. Some guidelines are not precise enough to apply them unambiguously and to assess them objectively once applied.

The complexities mentioned above are even greater in South African context since there are not enough usability skills (Martim et al., 2009b; Singh, 2006), nor enough time for designers to consider the guidelines let alone the complexity which is involved in choosing the right guidelines to use. Worse yet, guidelines need to evolve with the evolving technology.

It is necessary to evaluate how much websites made by considering the guidelines satisfy the users, and to determine whether websites comply with the guidelines available in literature. Hence, it is necessary to evaluate websites for usability. Usability evaluation is concerned with whether a specific technology is easy to use (Lazar, 2005; Rubin and Chisnell, 2008). For the purpose of this paper, as described by Rubin and Chisnell (2008) and Dix *et al.* (2004), usability evaluation is seen as a way to assess the website in order to uncover usability problems, to determine whether the website is usable.

One technique of evaluating usability is user evaluation – evaluation that involves representative users (Holzinger, 2005). The thinking-aloud protocol can be adopted during user evaluation, where users are encouraged to verbalise their thoughts during evaluation (Nørgaard and Hornbæk, 2006). Heuristic evaluation is another cheaper, rapid and effective way for identifying usability problems. It involves an expert evaluating the interface against a set of usability principles called heuristics (Dix *et al.*, 2004; Faulkner, 2000; Zaphiris and Kurniawan, 2007). The section below discusses the methodology employed in this study.

3. METHODOLOGY DESIGN

3.1 Conceptual Framework

A conceptual framework of this study is presented in figure 1. The first stage aimed at; i) identifying and selecting websites and, ii) identifying participants to evaluate the selected websites. These participants were divided into two groups, the users and the experts. User evaluations were conducted first, thereafter heuristic evaluations were conducted. Finally data collected from the evaluations were analysed.

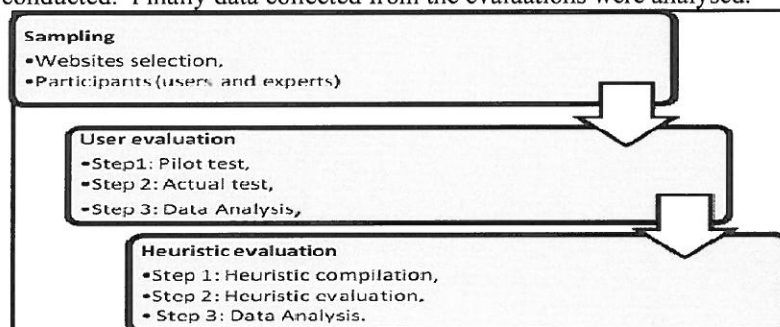


Figure 1. Conceptual framework

3.2 Sampling

3.2.1 E-commerce Websites and Item Selection

Three South African retail e-commerce websites were selected using a judgmental sampling described by Blumberg *et al.*, (2008). In this case, the websites had to be fully functional B2C retailer e-commerce

websites. Websites selling CDs were selected with the motivation behind this choice was based on research conducted by Hart (2008). Hart found that the products bought most widely online by South Africans are: (1) music, (2) books and (3) DVDs. The fourth website, an international website, was selected as a benchmark against which to compare the South African websites for usability purposes. For the purpose of this paper the websites will be referred to as; *South African website 1*, *South African website 2*, *South African website 3* and *international website*.

3.2.2 Users and Expert Selection

Nine users were selected using judgmental and random sampling procedures. In this case a background questionnaire was used to gather biographical and Internet usage information of prospective users. Based on the responses received, judgmental sampling was applied whereby; users aged 18 years owning a credit card were selected. Users were grouped into three experience levels; Beginner, intermediate and expert. Then a simple random selection of three users per experience group was done. On the other hand using judgmental sampling five experts were verbally requested to participate in the study. The experts had to have at least one year experience in HCI and usability.

3.3 User Evaluation

During the evaluations, users were observed whilst they performed main tasks namely; finding information, comparing information and purchasing a product. The user interactions with the websites were recorded using *Morae software*. During the tests users were encouraged to think aloud. Hereafter, users completed satisfaction questionnaire. The results of satisfaction questionnaires are described by Martim et al., (2009b).

3.4 Heuristic Evaluation

Guidelines proposed by Nielsen (2000), Nielsen *et al.* (2000), IBM (1999), Barnard and Wesson (2003; 2004) (shown in table 2) were combined and converted to form heuristics since they are comprehensive and were specifically developed for e-commerce websites.

Table 2. Summary of e-commerce guidelines

E-commerce component	Guidelines
Category pages	Home pages should show the purpose of the site. Purchasing from the home page should be supported. Product listings should be limited to three pages. Different navigation options should be allowed. Images on category pages should identify known items.
Product pages	Product pages should provide individual product information. Details that cannot be seen from images should be explained. All prices should clearly be displayed. Customers should be informed of delivery times. All product options should be specified on the same page. Customers should select all product options before putting items in the shopping cart.
Trust	Detailed company information should be provided. All costs should be shown. No outdated information should be given. Policies and guarantees should be clearly stated, and returns clearly explained. Registration should only be done when absolutely necessary, and then benefits should be clearly explained.
Placing an order	Customers should be able to add items to their shopping carts easily. Customers should receive confirmation that an order has been received. Customers should be able to change orders before or after submitting them.
Selling strategies	Offer customers incentives to entice them into purchasing. And allow customers to customise aspects of the site.

4. DISCUSSION OF RESULTS

4.1 Visual Design

Table 3 provides a summary of the findings regarding general look and feel of the websites.

Table 3. Visual design usability issues

Issue Description	Issue Description
Information layout	The <i>international website</i> and <i>South African website 1</i> and <i>2</i> were cluttered with advertisements and information. As a result, users encountered navigation problems.
Font sizes	Most users commented that the text on the screen was easy to read on South African websites, but when they came to the search results pages they complained that the font sizes were too small.
Use of colour	The users found that one SA website used too much red in terms of colour and this resulted in users missing crucial information which was intended to assist and guide them. For instance, many users did not read the error messages displayed in red.
Purpose of the website	The user satisfaction ratings and the heuristic evaluation showed that; all websites gave a clear indication of what the particular website sells. The language was easy to understand and product images were clear in all websites.

From the findings in table 3, this paper concludes that users prefer well-organised websites with minimal text. This conclusion is supported by the literature that visual design is important for overall user satisfaction (Muyllé et al., 2004). The style of visual presentation, the readability of the text, the number functions and types of image and colour affect the users' immediate reactions.

4.2 Searching

To find the product (in this case a CD) all nine users used the search facility. Users liked the fact that all websites had a search function and this may have been enhanced by the fact that the search was visible in all websites as indicated by the experts. The following table 4 summarises the search function usability issues.

Table 4. Searching usability issues

Issue Description	Issue Description
Non error tolerant	Users made spelling errors and as a consequence no results were displayed in <i>South African website 1</i> and <i>3</i> .
Relevancy of the results	User observation also showed that numerous unfiltered results were displayed in the <i>South African website 3</i> , which included CDs unrelated to the users' search
Results navigation	The navigation of the results was challenging in all South African websites. <i>South African website 1</i> and <i>South African website 3</i> did not provide navigation buttons on the search results pages this proved to be a challenge for South African users. The <i>South African website 2</i> provided next and previous button but users complained that these buttons were not visible enough and the users liked the fact that <i>International website</i> provided these navigation buttons.
Sorting of results	All the websites provided a sorting facility; however, in <i>South African website 3</i> the website sorting facility was not functional, which left the users frustrated since they could not find what they were looking for.

From table 4, it can be concluded that the search facility in *South African websites* needs to be adapted to assist users in finding the items more easily. Users spend very little time on a website; hence if they have to search for items with no success they will leave the website.

4.3 Finding Product Information

Users were requested to find CD information such as title, release year, availability, price, delivery charges, and the total price. All *South African websites* provided product reviews and prices in South African rands (ZAR) which was good. The *international website*, on the other hand, provided prices in dollars (\$). Users struggled to convert to \$ to ZAR, as no way was provided for doing so. The *South African websites* did not provide delivery and taxes information, this information was only computed and provided during checkout. The *international website* provided shipping discounts and a link for users to obtain more information. The expert review also showed that all costs were not shown in *South African websites*.

Further user observation revealed that *South African websites* do not provide all the product details, for instance CD availability. Despite this, the satisfaction questionnaire shows that the South African website, *South African website 1*, was rated higher than the *international website*. It can be concluded that South African users should be provided with relevant information that is easy to understand in order to assist customers in making informed choices thus enhancing trust.

4.4 Shopping Cart

The following table presents the issues uncovered while using the shopping cart.

The holistic findings of the HE show that the *international website* followed the guidelines for developing the shopping cart best, followed by *South African website 1*.

Table 5. Shopping cart usability issues.

Issue Description	Description
Feedback	Strong feedback was not provided when an item was added to the shopping cart in all <i>South African websites</i> .
Shopping instructions in empty shopping cart	South African websites do not provide shopping instructions in an empty shopping cart, neither are users provided with an option for printing the contents of the shopping bag.

4.5 Checkout

The checkout button in all South African websites was visible. Users had difficulty finding the checkout button in *international website*: one user commented that “the button is just off”. Users also did not like the placement of the “Buy” button in *South African website 3* since they had to scroll down to locate it. In general, users preferred the checkout process in *South African website 1* and *international website*.

4.6 Registration

From the evaluations it was found that users could not complete a sale without registering. Moreover the registration procedure was complicated in all South African websites. Information about why users have to login was not displayed in *South African website 1*. Even though, this information was provided in *South African website 2*; nevertheless, owing to the registration problems encountered by users in the website, the information lost its meaning, since it was not used by the users.

The findings also show that in *all websites* users were not notified about the benefits associated with registration. Furthermore, customers were not given an option to exclude themselves from marketing lists at the time of registration. As seen from the user observation, users were reluctant to provide details such as e-mail address and date of birth owing to security and trust issues. Moreover, users indicated that they do not like receiving marketing e-mails and e-mail reminders.

This paper therefore concludes that, in order to improve customer trust, users need to be assured of security issues, as the literature shows that this is critical for building trust with customers (Wang and Emurian, 2005).

5. CONCLUSION

Usability issues uncovered from user observations were affirmed by the experts during the HE. For instance, search issues included unfiltered results, trust issues, complicated registration processes, difficult navigation, and cluttered website layout. All these are issues hindering e-commerce growth. The study concludes that some South African e-commerce retailers are aware of usability issues and have ensured the usability of their websites. However, more work needs to be done to provide usable systems based on the cultural preferences of South African users. This is evident from the HE findings which show that *international website* adheres to most of the guidelines while *South African website 1* did not comply with all the guidelines. On the other hand, based on the user observation findings, users preferred the *South African website* to that of *international website*. Therefore, guidelines that are contextualised to the needs of South African users are required. These findings of this study will be used to develop guidelines for designing South African websites.

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