Website interface design: a study on the status quo of South African e-Commerce website interfaces

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Submitted October 2014    Edited, published December 2014

Field: Information Systems
Topic: Website Usability, HCI

Harvard Reference:
Abstract

The research aim of this study was to investigate the usability of the websites of South African e-commerce large retail concerns. A prior literature study indicated that other researchers found a fairly low percentage of retail e-commerce websites to have a high degree of usability. The research methodology included user testing on four of these websites. The sample consisted of the websites of four well-known retailers in South African e-commerce. In conclusion, the study has shown that these South African e-commerce websites lack usability in general. This result is useful to customers, retail companies and website developers.

Keywords: e-commerce, website usability, user interface

1. Introduction

Statistics and reports show that e-commerce has grown dramatically in the Africa Continent (Internet World Stats 2008). Also, the number of Internet users (South Africa) has grown from 4.6 million to 5.3 million. This rapid growth of local Internet usage and e-commerce has driven a lot of retail companies to conduct their business online. Retail e-commerce companies are dependent on their customers visiting their website or even becoming regular customers and purchasing their products.

Designing and maintaining a complex website can be a challenge, especially in countries like South Africa. There is a large span of diverse cultures, languages and level of Internet exposure in the country. The objective of this research was to identify and discuss the level of usability as experienced by customers when shopping on South African e-commerce websites. This was done by investigating four large South African retail e-commerce websites.

2. Background to Research Problem

Poor website interface design can result in serious impedance for users. Problems that users experience when they browse through or purchase from a website include; no clear navigational aids, not knowing where they are, not knowing how to recover from the mistakes they make and freezing pages. Such problems can cause user frustration, the users then leaving the website and not wanting to return to it. One of the most important approaches of Web designers should be to involve their users in the early stage of designing a website to try and eliminate problems that users would encounter.

The goal of website design is meeting the user’s needs. A lack of design standards when creating a website design interface will then not make the website usable. Brinck et al (2006) states that “Highly usable web sites are intuitive, they are transparent, and they support the users and allows users to accomplish their goals quickly, efficiently and easily.” According to Nielsen et al (2006): “… usability is a quality attribute relating to how easy something is to use”. Often online customers struggle to find what they looking for, leading to frustration when they do their shopping online. Against this background, this research aims at identifying and discussing the usability problems experienced (if any) by customers when shopping on South African e-commerce retail websites.

3. Research Problem

The research problem addressed in this research is the potential loss of income as experienced by retailers, through the lack of usability of their e-commerce website interfaces.

In order to clarify this problem, the research questions, research methods as well the objectives of the study are summarised in Table 1.

<table>
<thead>
<tr>
<th>Main research question</th>
<th>How do users experience the first time customer registration feature on South Africa e-commerce websites?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research sub-question</td>
<td>Research Method(s)</td>
</tr>
</tbody>
</table>
| What are the benefits of usability in an e-commerce website? | - Literature review  
- User testing | To increase the understanding of usability in website |
Why are there still websites that are poorly designed?  

| Design | To determine why e-commerce websites are not designed based on usability principles. | Literature review |

4. Literature Review

4.1 E-commerce

The literature lists numerous definitions for e-commerce (Barnard et al 2003, 2004; Becker 2008; Dietel et al 2001; Motjolopane et al 2007; Turban et al 2009).

These authors agree that e-commerce refers to the use of some procedure or transmission channel through which the giving and receiving of information or merchandise occur in order for the business to exist. Wen et al (2001) defines e-commerce as purchasing and selling of products, information (or services) through the Internet. On the other hand, the South African Department of Communication (2000) claims that e-commerce is any form of business or administrative transaction or information exchange that is performed using any form of Information and Communication Technology (ICT). For this study, e-commerce is defined as all those transactions being executed using as communication medium, the Internet - such transactions include customers buying products and services online.

There are different types of e-commerce, or e-commerce models established depending on who is involved in the transaction (Laudon et al 2007; Turban et al 2009). Since different types of e-commerce exist, this study will mainly focus on business-to-consumer. Table 2 lists the types of e-commerce that exists.

Table 2: The different types of e-commerce found in the literature

<table>
<thead>
<tr>
<th>Types of e-commerce</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business-to-business (B2B)</td>
<td>The B2B model is an inter-organisational information system where a company deals with transactions between its own value chain and other business organization. B2B links business in the value chain to each other, enabling all types of transactions to be conducted over the Internet, more cheaply and timeously than before.</td>
</tr>
<tr>
<td>Business-to-consumer (B2C)</td>
<td>The B2C model represents retailing transactions between a company and individual customers. It takes place between a business and an individual consumer and supplying companies, such as buying of books or booking an air ticket or cinema tickets over the Internet.</td>
</tr>
<tr>
<td>Consumer-to-consumer (C2C)</td>
<td>The C2C model is where consumers sell to each other assisted by online markets, such as an auctioning site (e-bay).</td>
</tr>
<tr>
<td>Consumer-to-business (C2B)</td>
<td>The C2B model includes consumers who make use of Internet to sell products or services to organisations.</td>
</tr>
</tbody>
</table>


Companies that have implemented e-commerce in their organisation have been able to realise the benefit of e-commerce for their business and their customers. E-commerce benefits to customers include convenience (you can buy when you want to) and that you have many choices that allow you to decide on a product with better features at competitive prices. Another benefit that e-commerce offers is that it is cost effective for today’s busy shoppers. Table 3 summarises some of these benefits.
Table 3: Benefits of e-commerce for customers and organization

<table>
<thead>
<tr>
<th>Benefits to customers</th>
<th>Benefits to organisations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides customers with a variety of choices for products or services</td>
<td>Expands geographical reach therefore an organisation can have customers across the country and around the world</td>
</tr>
<tr>
<td>Enables customers to access products and services on a 24-by-7 basis uncontained by geographic boundaries</td>
<td>Reduces marketing, advertising cost-Internet marketing targets specific customers</td>
</tr>
<tr>
<td>Customer receives updated information and allows customers to exchange ideas and experiences</td>
<td>Organization brand image gets improved. Helps to improve customer service</td>
</tr>
</tbody>
</table>


It is clear that e-commerce provides many benefits for customers and organisations. Just like any other technology, e-commerce has its own limitations. Table 4 provides a summary of some of the limitations of e-commerce.

Table 4: E-commerce limitations

<table>
<thead>
<tr>
<th>Limitations</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor website design</td>
<td>Website needs to be appealing to current and potential clients, and it must be reliable with off-line marketing activities</td>
</tr>
<tr>
<td>Insufficient online strategy</td>
<td>A website should show the business objectives and achievements, and goals of business must match the corporate strategy</td>
</tr>
<tr>
<td>Poor Marketing</td>
<td>Marketing strategies should be clear, while targeting or giving information to the current customers. When the targeted market is not known it can result in a waste of resources</td>
</tr>
<tr>
<td>Lack of integrated business plan</td>
<td>A business plan should incorporate a budget including costs for website design and ISP fees, marketing, administration costs and maintenance</td>
</tr>
<tr>
<td>Transport and delivery system</td>
<td>The placing of an immediate order must be followed up with fast delivery of the goods. This may be easily accomplished for virtual goods such as music files</td>
</tr>
</tbody>
</table>


As much as there are challenges in e-commerce, it has experienced a high rate of growth, providing the sale of goods and services on the Internet. Many services have moved to the Internet, be it social networking, shopping or knowledge sharing, downloading music and others.
4.2 Website usability

It is claimed that usability is the most researched concept in Human Computer Interface Research (HCI). Mayhew (1999) defines usability as assessable component of a user product’s user interface that exists to some degree.

Nielsen (2003) points out that the usability attribute is one of the most significant elements of a user interface. It can be used to measure how easy a human user finds the interface to use. Nielsen (2000) also states that it is not an only entity but rather a multidimensional property. There are five attributes that are associated with usability;

- How easy is the system or website for the users to learn? (Learnability).
- Once users learned the system or website, how fast can they complete tasks? (Efficiency).
- Users must be able to learn the websites after some time of not using the system, and when they return using it again they must be able to use the system. (Memorability).
- When a user makes an error, how easily can they recover? (Errors).
- How satisfying the website is to use. (Satisfaction).

Visser et al (2011) argue that including usability as a design issue may increase the number of website visitors, leading to higher income for an e-commerce site. It is for this reason that an effective website design specification should include usability as requirement. A logical result of usability in a website is that customer satisfaction increases, this in turn leads to increased loyalty, customer trust and the organization increase their profits. A website which is perceived to be usable also earns trustworthiness, and usually offers benefits including an increase of return on investment (ROI). The aspects relating to ROI include increase of company market share and sales and revenues for an organisation. Research shows that about 65% of shopping events taking place online are not concluded successfully, since users cannot find what they are looking for on a website (Souza 2001). It is believed that customers do not visit the website again if they did not have a good experience at first. This can result in the user visiting other websites, seeing there are many options of websites to purchase from.

In another study on the usability of a government services website, it was proven that this specific site did include many basic usability features, but was lagging on the search engine visibility front (Weideman 2006).

4.3 e-Commerce User Interface

e-Commerce website design involve complex issues, including shopping carts, large catalogues, payment security issues, etc. Some authors suggest that certain features that make a website effective must be included. Coopee et al (2000) recommend that websites include easy payment processing and website security user tracking. Also: the company information must be easy to find online, customers must have reason to visit the website, the site must be visually appealing to users and navigation must be clear and simple (Cell 2000). According to Najjar (2001), search, contact us, registration and shopping carts are major features of an e-commerce website. Cyr et al (2004) points out that users have differences in preferences of website design, access to product details, navigation and availability of products.

5. Research Approach

This section of research presents an overview of the proposed methods used in the study. Various methods will be used to collect data. Authors described research design by means of a plan or blueprint of how one aims to conduct research. It is a detailed outline of how an investigation takes place, in other words it specifies how data is collected. The process of data collection includes the instruments and tools for collecting and analysing data. In other words, it assists the researcher in answering research questions in a logical manner. Depending on the type of data and approach followed, research can use qualitative, quantitative or mixed methods. The choice of method is determined by the type of data to be collected and the epistemology in which the study originates. The difference between qualitative and quantitative methods is outlined in the research methodology section following.
5.1 Research Methodology

The term research methodology refers to systematic methods used for conducting the study (Neuman 2011). These include tools used for investigation such as interviews, observations and questionnaires. Research methodology can be divided into qualitative and quantitative approaches (Neuman 2011):

- The purpose of qualitative research is to gather or rather generate words as opposed to numbers and explore the meaning or reality. Qualitative research focuses on events, ideas and emotions. It involves the researcher closely in the study that is being conducted and usually collects evidence through unstructured interviews, observation or participant’s observation.
- Quantitative research focuses on variables that can be measured or labelled with numbers, isolates the researcher and usually collects data through structured interviews and surveys.

This study is qualitative in nature since participants were observed by the researcher through a during pilot study conducted on a sample of participants. Four South African e-commerce websites were used. The data collection instruments used were recordings, observations, notes and user comments.

5.2 Sampling

Sampling refers to a process of selecting and examining a specific part or group of a research population focusing on selected number of participants representing a research population. It is also a method where units of observation are selected (Blumberg et al 2008). Two types of sampling can be used namely, probability and non-probability sampling. Probability sampling technique are based on random selection.

Non probability sampling is where the probability of each element of the population is not known. Examples of non-probability sampling include: purposive, snowball and target sampling. Purposive sampling consists of two types namely, judgemental and quota sampling.

- **Judgemental sampling** - takes place when an investigator chooses samples that comply with certain criteria.
- **Quota sampling** - is to take out a sample with the same amounts of characteristics as the population and represents the population.

Two samples were used for this study, namely the participants and four South African e-commerce websites. The website had to meet the following criteria:

- All leading retail companies visited by South African online shoppers and based on a business to consumer e-commerce model.
- Top online retailer that online shoppers are aware of, who sell goods such as clothes, accessories and food online.

Based on these criteria, the following e-commerce website were chosen (see Appendix A):

- Woolworths
- Pick n Pay
- Makro
- Truworths

After identifying the websites, the next step of sampling was to select participants that took part in evaluating the e-commerce websites. The participants were a group of 10 post-graduate Information Technology (IT) students. They were asked to perform various tasks on the selected websites. The tasks specified were; registering on the website, finding products, and starting the purchasing process. They were instructed to progress each task up to the point where payment was requested, where they had to abandon the process at that point. In this research the participants were referred to as users. These users would then determine if the websites were usable or not when they perform these tasks. Their responses were then used to evaluate if the website is usable or not.

5.3 Data Collection

Data was collected from users and the user testing was performed on the websites. User testing was selected since it can help in identifying usability problems. A number of researcher’s recommend making use of both heuristic evaluation and user testing to recognize different kinds of usability problems (Desurvire et al
1991; Fu et al 2002; Jeffries et al 1991; Nielsen 2003). This project made use of user testing to help to identify aspects of an e-commerce website interface design that could cause customer difficulty, confusion or mis-understanding. Problems also include errors, delays or failure to complete a task. User testing can provide insight into user preference with the information that is gathered during user testing. It then enables website designers to improve the interface for the next design. During user testing, users recorded their experience while they performed the tasks. Since the user testing involves human beings it is important to consider ethics as discussed below.

5.4 Ethical Considerations

Ethics research is about doing things right while conducting research. The main reason why ethics were addressed in this project was to make sure the participants were not harmed and that participants were informed of all the aspects of the project. The participants were asked to read and complete an informed consent form (see Appendix B). The author explained to the participants that the information they provide would only be used for research purposes, and participants were not forced to take part in the study. Further, they were allowed to withdraw from the research if they felt like doing so. Participant’s involvement was on a voluntary basis and the information they provided was kept confidential.

5.5 Research Delineation

This study focused on South African retail e-commerce websites and did not include international e-commerce websites. User testing was done by participants in the city of Cape Town. Only four test websites were used.

6. Findings and Analysis

For all four websites, participants had to select and “purchase” two items, each valued at less than two hundred rands. The purchasing task involved a few steps to be completed; the user had to provide personal details, providing delivery information, confirming the payment and they had to enter their credit card details.

In one case the total of the purchasing of items was inaccurate - the price of second item was not included in total purchase in three of the websites used (Pick n Pay, Makro and Truworths). Nielsen (2003) describes the importance of showing pricing information for all products because this assists the customer in making informed choices. The Woolworths website was the only one which allowed the participants to do their shopping without requiring them to register. Pick n Pay, Truworths and Makro required participants to first register in order to purchase the products. During the purchasing process participants spent almost twenty minutes on entering their delivery details on the Pick n Pay website while they were making a purchase. The second task that the participants were asked to do was to find a product on all four websites.

Participants had to find two products on all the websites. One participant was unable to find a product on the Makro website. In the Truworths and Woolworths website the participants could find products they were looking for. On the Makro website, when participants were looking for a product in some cases a message was displayed: “Sorry out of stock”.

The majority of participants could not locate the shopping carts icon in three of the four websites. Only the Woolworths cart was easy to find. On the Woolworths website every time a participant added a product to the cart, the website displayed how many items were in the shopping cart. When the participants were done with shopping, the Woolworths website displayed the basket summary before checkout and the last step was asking the user for the online account details. In the Makro website, the majority of users were not pleased with its navigation as it was slow and some participants said it was a complex process. There were a lot of pop-up advertisements while participants were shopping and the search query provided on the website was not useful. When they searched for items they could not find them.

For all four websites the participants were not eager to provide their personal details while doing the shopping. Most of them noted that it was a long process to complete and they did not want to receive marketing advertising information about the shops. Also, they would have preferred to first browse the website once they found the products, then register to buy the items they liked. Participants also complained that they did not know where they were while navigating the website. Some websites did not display or provide the name of the page they were on. In other cases, products were advertised but when clicking on them, they were out of stock. In terms of visual design, most participants commented on the website layout, including the following:
The Woolworths website was a bit cluttered and the text on screen was in a rather small font size; their products were all in groups; the language used on website was easy to understand; the images and colours used where clear.

In the process of finding a product, users were pleased that websites had a search function. However, they did not like the fact that when they made a spelling error, the search function results displayed a blank page or no results at all. Users commented that it might have helped them to be shown the results of their search so that they can correct their own mistakes.

On the Makro website, the “Next” and “Previous” buttons were provided but users commented that the buttons were not visible enough. They also noted that the websites were cluttered with advertising information, and at one point the users could not find the “Add to cart” button.

Users preferred websites with less text and did not like too much red inked text. Comments were made that they could not read the read text with ease, and it made them miss some important information on the website.

7. Discussion of Results

The findings from Section 6 were taken by the researcher during the “think-aloud” session, when the users were performing the tasks. It is quite clear that some South African e-commerce websites have standard features, but they are not as usable as the participants would have liked them to be. The usability issues that were noted include that homepages were cluttered, the website navigation was poor, finding information was difficult, the navigation of the website was challenging and users often did not know on which page they were.

The registration process was difficult and time-consuming. These issues resulted in the users being frustrated as they could not find the products they were looking for. They also experienced a lack of trust that discouraged them, and caused them to not enjoy the online experience. The findings also point out that websites do not notify the user of the benefits of registering, leaving them unsure as to whether they should register. Users were not comfortable to provide their personal details due to trust and security issues. This must be seen against previous research having shown that it is important for websites to build trust with customers (Wang et al. 2005).

8. Limitations of the study

The study was subject to some limitations. Firstly, on the first day of user testing, users experienced bandwidth problems due to the network connection being very slow. Most times users had to frequently refresh the websites in order to continue with user testing. However, all users managed to finish the tasks asked of them. Secondly, the sample size of four websites could be a limiting factor. While recognizing these limitations, the results from user observation enabled the researcher to draw a conclusion.

9. Conclusions and recommendations

This section summarizes the results based on the sub-research questions and their objectives outlined in Table 1. The significance of the research will also be described as well as stating recommendations for future research. Recalling the main research question from Table 1:

How do users experience the first time customer registration feature on South Africa e-commerce websites?

The answer to the research question is that it was a somewhat negative experience, due to trust and usability issues.

The first sub-research question (see Table 1) aimed to increase the understanding of usability on an e-commerce website. This question was answered using the literature and the results of the user testing on four e-commerce websites. Usability issues were then identified during user testing. These include: registration, visual design of website, search functionality, finding information and product and shopping cart icons.

Some suggestions of future research that can be done are as follows:

- Research could be done on the websites of other sectors of the economy.
- Specific issues can be isolated for future research, including the trust problem, the difference in perception between cultural groups, etc.
This research concludes some South African e-commerce retail websites have major usability problems, and more work needs to be done to gain the trust and loyalty of users.

The outcome of this research is significant to customers, retail companies and Web developers. With improved e-commerce website interfaces, customers will experience less frustration. Finally, the website designers need to understand the users that they are creating the websites for. Part of the solution is the adoption of user centred design (UCD), and the involvement of users during the design and implementation of a website.

Acknowledgements

I would like to express my appreciation to my supervisor, Prof Melius Weideman, for guidance, motivation, constructive comments, criticism, and most of all having patience when the going was tough for this project. I would like to thank Mr Andile Koka for advice and ideas - also my colleagues and family. Lastly, my thanks go to the participants who volunteered for this project. Without their support and encouragement this project cannot have been possible.

Glossary

**E-commerce** - Transactions taking place over the Internet. These transactions include buying and selling of products and services.

**Interface** - The part of a program enabling user to communicate with a computer.

**Participants** - Group of people on which measurement is done and recorded.

**Registration** - Method that sets up the customer accounts to record their information and preferences.

**Usability** - Multidimensional entity with attributes such as memorability, learning, satisfaction, errors and efficiency. If these attributes are incorporated in website design, the outcome is likely to be a useable website.

**User centered design (UCD)** - Involvement of user in the early focus website design.

**User testing** - Observation of user behaviour.

**Users** - People who use e-commerce website to do transactions

**Website** - It is a collection of one or more webpages that are related and can be accessed by visiting any page using a browser program.

References


World Wide Worx. 2010. *SA will experience strong internet growth over the next 5 years*. Online: http://colindaniels.co.za/2010/05/05/sa-will-experience-strong-internet-growth-over-5years-says-goldstuck/ [5 May 2011].
Appendices

Appendix A

Figure a: Woolworth’s co.za website - 5 September 2014
Figure b: Pick n Pay.co.za website - 5 September 2014
Figure c: Makro.co.za website - 5 September 2014
Figure d: Truworths.co.za website - 5 September 2014
Appendix B

Dear Participant,

I invite you to please participate in a research study of my B.Tech: Information Technology Management studies. The information provided here will help you to decide if you will like to participate. Please take note before you agree to take part in the study you need to understand what is involved.

WHAT WILL BE REQUIRED IN THE STUDY?
You will be presented with a website and required to perform various tasks and assessing how easy or difficult the websites are to use. Please note the assessment will be on the websites, we will not be assessing your abilities in any way. The session should not take more than 3 hours, your comments will be recorded, and you will be given time to “talk aloud” while doing the tasks. The comments you provide will be used only for the study not anything else besides that.

IS THERE INCENTIVES FOR PARTICIPANTING IN THE STUDY?
Lunch will be provided as thank you gift for being part of the project.

WHAT ARE YOUR RIGHTS AS PARTICIPANT IN THE STUDY?
Taking part in the study is voluntary, you can decide to take part or not. You can withdraw at any time you feel you do not want to take part anymore; you do not have to state your reason for doing so.

WHAT ARE THE POSSIBLE BENEFITS THAT MAY COME FROM THIS STUDY?
By being part of the study will make a contribution in understanding online customer needs – it will also help retail companies to understand the importance of having a usable website.

WHERE IS THE STUDY TAKING PLACE?
Should you wish to take part in the study please note the following:
• You need to report to the Information Technology B.Tech lab building which is where the study will take place.
• Agree to stay not more than three hours.
• The study will be conducted on 5 September 2014 from 9am – 12pm.

FINAL WORD
Your participation and co-operation in the study will be appreciated, should you agree to take part in the study please sign the informed consent.

Informed Consent

I would like to confirm that the researcher has explained to me the nature of the study. I am aware that the results of the study, including personal details, will be anonymously kept confidential in the research report. I understand my participation is voluntary and I may wish to withdraw from the study at any time. I had an opportunity to ask questions and out of my own free will, I declare herewith my acceptance of all conditions and that I will participate in the study.

Participant’s name: ______________
Participant’s signature: ______________
Date: _____________________________

Researcher’s name: ________________
Researcher’s signature: ______________
Date: _____________________________