

Guidelines for Improving the Usability of E-Commerce Websites in the Arab World

Layla Hasan

Abstract: This research evaluates the usability of four popular e-commerce websites in the Arab world and identifies the strengths and weaknesses of the sites regarding their design. Based on the results, comprehensive guidelines are suggested for use by e-commerce companies in the Arab world to address the usability of their websites, thus enabling them to reap the advantages of having more usable e-commerce websites.

Keywords—usability, Arab world, guidelines, heuristic evaluation, e-commerce websites

I. Introduction

The continuous advancements in information technology have resulted in a significant increase in both the number of Internet users and the number of e-commerce websites. E-commerce is “an emerging concept that describes the process of buying, selling, or exchanging products, services, and information via computer networks, including the Internet” [1]. Unfortunately, the Arab countries face major challenges that prevent them from taking full advantage of e-commerce (e.g. inadequate telecommunications infrastructure and low speed of accessing the Internet).

However, despite these challenges the Arab world has witnessed major technological advancements, accompanied with significant growth in Internet users and the e-commerce market [2]. The growth of the e-commerce market in the Arab world requires the possible factors that help to make such websites successful to be investigated in order to reap the advantages of e-commerce. One of the key factors which in part helps to make e-commerce websites successful, is usability [3, 4]. The International Standards [5] identify usability as: “The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.” Nielsen and Norman [6] stress the importance of making e-commerce sites usable. They do not regard good usability as a luxury but as an essential characteristic if a site is to survive. Nielsen [7] explains the reasons behind this when he states that the first law of e-commerce is that, if users are unable to find a product, they cannot buy it

A variety of usability evaluation methods (UEMs) have been developed to evaluate human interaction with a product; these are aimed at identifying areas of improvement in the interaction in order to increase usability [8]. UEMs have been categorized differently by different authors. For example, Hasan *et al.* [9] categorized them according to how the usability problems are identified: for example, by users, evaluators or software. User-based UEMs usually involve users being observed while they undertake pre-defined tasks with the purpose of identifying usability problems (e.g. user testing) [10]. Evaluator-based UEMs involve having a number of expert evaluators assess the user interface to judge whether it conforms to a set of usability principles, known as “heuristics” (e.g. heuristic evaluation) [11]. Software-based UEMs use software tools to identify usability problems (e.g. web analytics).

Despite the growth in the e-commerce market in the Arab world, there is a lack of research that concerns the usability of such websites. No research was found that identifies design characteristics which should be considered when developing usable e-commerce websites in the Arab world.

This paper is organized as follows. Section 2 summarizes earlier research which has evaluated the usability of e-commerce websites while Section 3 presents the aims and objectives of the research. Section 4 summarizes the methodology used, Section 5 presents the results of the research, together with a discussion of the results in the light of the literature, and Section 6 presents the suggested guidelines. Finally, Section 7 concludes the research.

II. Evaluating the Usability of E-Commerce Websites

This section presents earlier research which employed various usability methods involving users or evaluators or software tools while evaluating the usability of various e-commerce websites. For example, Tilson *et al.*'s [12] study, which involved users in evaluating the usability of e-commerce websites, was aimed at investigating those factors that affected the usability of such websites. The researchers asked sixteen users to complete tasks on four e-commerce websites and report what they liked and disliked. Major design problems encountered by users while interacting with the sites were identified. These included: lack of pictures for the products; missing information about products; inappropriate text format; not obvious order of links; not displaying a running total on the shopping cart; and not being able to edit the quantity in the shopping cart easily.

The study conducted by Freeman and Hyland [13] also involved users in evaluating and comparing the usability of

Layla Hasan

Software Engineering Department / Zarqa University
Jordan
L.hasan2@yahoo.co.uk

three supermarket sites that sold multiple products. However, they employed observation as a user testing method followed by a post-test questionnaire. The results identified various usability problems on the three sites, which included: not being easy to add an item to shopping cart; not being easy to change the quantity in the shopping cart; unclear search results; and an ordering process that was not easy to complete.

Furthermore, Goh *et al.* [14] evaluated the usability of an online gift shop in Malaysia using four usability evaluation methods which involved users. These methods were: feedback capture after the task, retrospective think aloud, retrospective think aloud with eye movements, and observation. The results revealed the major usability problems that were found on the site, which related to: insufficient products offered by the site; difficulty to sign up to the site; unavailability of a comparison tool to compare the prices of the products; and the use of a small font on the site's pages.

Other studies have involved evaluators using the heuristic method to evaluate the usability of e-commerce websites. Chen and Macredie [15], for example, employed this method to investigate the usability of four electronic supermarkets. The results revealed common usability problems and common strengths (good design features) that were identified on the websites. Examples of the common usability problems that were identified on the sites were: a lack of clearly marked exits to leave an unwanted site; not being easy for users to switch between help and work; and a lack of clear help and support for users. Examples of the common strengths that were identified on the websites included: aesthetic and minimalist design where clear information was displayed on each page; and effective use of colors on the site's pages (simple and consistent color schemes were used).

However, Barnard and Wesson [16, 17] employed both user testing and heuristic evaluation methods together to investigate and identify usability problems and also to determine design issues that were significant for e-commerce sites in South Africa. Several usability problems were identified by experts and users by employing heuristic evaluation and the user testing method on the selected South African e-commerce sites. The problems included: inappropriate design of the product listing pages; unavailability of product comparisons; inadequate product descriptions; inadequate information about the company; and unpleasing design of the sites.

As an alternative, Hasan *et al.* [18] suggested a methodological usability evaluation approach for e-commerce websites in developing countries. To develop the framework Hasan *et al.* [18] evaluated the usability of three Jordanian e-commerce websites using three usability methods (user testing, heuristic evaluation and web analytics), and provided a detailed explanation of the usability problems that were found on the tested websites. Examples of the problems were: misleading links, links that were not obvious, weak navigation support, inaccurate results from the internal search, poor structure, illogical categorization of menu items, irrelevant content, missing information about the products, misleading images, inappropriate page design, inappropriate quality of

images, inappropriate choice of fonts and colors, long ordering process, and compulsory registration.

iii. Aim and Objectives

The aim of this research is to suggest guidelines to improve the usability of e-commerce websites in the Arab world. The specific objectives for the research are:

1. To evaluate the usability of the most popular e-commerce websites in Arab countries;
2. Based on objective 1, to determine the common strengths and weaknesses of the selected websites;
3. Based on objective 2, to suggest guidelines to improve the usability of e-commerce websites in the Arab world.

vi. Methodology

The heuristic evaluation method was used in this research to evaluate the usability of the most popular Arab e-commerce websites. Comprehensive heuristics, specific to e-commerce websites, were used in this research, which was adapted from earlier research [19].

The most four popular e-commerce websites in the Arab world were identified by referring to earlier research [2]; these were then used for the purpose of this research. The websites were: Souq.com, Sukar.com, Namshi.com and MarkaVIP.com.

Four evaluators participated in this research: two usability specialists and two web experts. Each of the four evaluators evaluated the four e-commerce websites in four different sessions; the heuristic sessions followed a similar procedure. At the beginning of each session, the web expert was asked to explore the studied website for 15 minutes and then try buying anything from this site. After the exploration, the heuristic guidelines were given to him/her to be used as guidelines while evaluating each website. The evaluation was carried out independently by each evaluator, and completed over four months (June 2014 to September 2014).

The heuristic evaluators' comments on the compliance of each site to each heuristic principle were grouped together for each site, and then organized under the categories and sub-categories of the heuristic guidelines. Each heuristic sub-category of each website was examined to identify problems and strengths. The problems and strengths were then classified. Similar problems and strengths were grouped together and examined to identify common areas of usability problems and common areas of good design (strengths) across the four websites. The list of common strengths, as well as common usability problems that were identified on the selected websites, are explained in the results section.

v. Results and Discussion

A. Common Strengths on E-Commerce Websites

This section presents the common strengths that were identified on the tested e-commerce websites. Ten positive factors were identified on the websites and they were categorized under five main areas based on their type:

- Navigation and links: an active link to the shopping cart was displayed on the home page of the websites.
- Content: three positive factors were identified on the websites regarding their content: The first related to the fact that all the websites displayed up-to-date information. The second related to the fact that all the websites did not have “under construction” pages. The third related to the fact that all the websites displayed a dedicated “about us” page.
- Accessibility and communication: two positive factors were identified regarding this area. The first related to the fact that the entire websites supported the Arabic language; they displayed their content in both the English and Arabic languages. The second related to the fact that it was easy to find and access the four websites using search engines.
- Design: one positive factor was identified regarding this area and related to the fact that nowhere did any of the websites have broken images.
- Purchasing process: three positive factors were identified on the tested websites regarding this area. The first related to the fact that the websites supported alternative methods of payment, including cash on delivery. The second related to the display of information for ordering and delivery which was very clear on all four websites. The third related to the clear display of information about the four websites’ security policy, and guarantee and privacy policy.

The results of this research, which revealed the common strengths on the selected e-commerce websites in terms of their design issues, are different from the results which were obtained by the study undertaken by Chen and Macredie [3] which also presented common strengths on e-commerce websites. As summarized in Section II, Chen and Macredie [3] identified two common strengths on the selected e-commerce websites; these related to clear information on pages and the effective use of colors. However, the selected Arab websites in this study had usability problems regarding those two issues, as shown in Section 5.B. The difference between the results can be explained by the different contexts in which the research was conducted.

B. Common Usability Problems on E-Commerce Websites

This section presents the common usability problems that were identified on the selected e-commerce websites. The

problems are categorized under six main areas based on the type of problem:

- Navigation and links problems: five common usability problems were identified on the websites related to this category:
 1. Misleading links: a link did not explicitly indicate the destination page which it would open.
 2. The site included an active link to the home page through its logo on the home page of the website.
 3. Weak navigation support: this is related to the fact that it was not easy to return to the home page of the site, and it was not easy to navigate around the site’s pages.
 4. Links not working properly: this is related to links that, when clicked, did not open the destination page; they stayed on the same page.
 5. Ineffective/inaccurate internal search function results.

A comparison between the results of this research and earlier studies regarding the navigational problems that were identified on e-commerce websites showed that there was a similarity between the results of this research and the results of only one study which was also undertaken in one of the Arab countries (Jordan) [18]. As shown in Section II, Hasan *et al.* [18] identified three navigational problems on the selected Jordanian e-commerce websites relating to misleading links and weak navigation support, as well as inaccurate results of the internal search function. These were also identified in this research on the selected Arab e-commerce websites. This stresses the importance of considering and improving the navigational usability problems that are still being identified only on Arab e-commerce websites.

- Organizational problems: two common usability problems were identified on the websites related to this category:
 1. Illogical organization/categorization of the navigation menu items: this was because related menu sub-items were not grouped together.
 2. The site architecture was not simple: this is related to the deep architecture of the tested websites.

The results of this research are also comparable only with the results of the research that was undertaken on e-commerce websites in Jordan [18]. Hasan *et al.* [18] identified the same usability problems on the selected Jordanian e-commerce websites which were also identified in this research. This also stresses the importance of considering those usability problems which are still found only on e-commerce websites in the Arab world.

- Content problems: five common usability problems were identified on the websites related to this category:
 1. Insufficient information of the content of the shopping cart on the top menu: this is related to the fact that the total price of the items in the shopping cart was not displayed on the shopping cart item that was displayed on the top menu.

2. Missing information: this is related to the fact that the site did not display information regarding the availability of the products in the store.
3. Repetitive links/data: this is related to the display of similar links/data on the same pages of the site.
4. Content of a page was inappropriate: this is related to the fact that the site displayed pages with unclear content for users.
5. Misleading information: this problem related to the fact that two websites (Sukar.com and MarkaVIP.com) displayed products which were sold out.

A comparison of the results of this research with the results of earlier studies showed that there were similarities between them regarding some of the content problems. The similar problems related to: missing information about products [12, 16, 17, 18], not displaying a running total on the shopping cart [12], and irrelevant content [18]. These findings show that those common usability problems concerning the content of e-commerce websites could be overcome by considering earlier research which already identified them and suggested considering such important issues.

- Accessibility and communication problems: three common usability problems were identified on the tested websites related :
 1. Useful information to enable easy communication with the company was not displayed (e.g. physical address, telephone or fax numbers).
 2. The site did not work properly with different monitor resolutions,
 3. The download time of the pages was inappropriate (e.g. the download time for the websites' pages was too long).

A comparison between the results obtained by this research and the results obtained by earlier work regarding this area showed that the usability problems that were identified by this research are unique and have only been identified on the selected Arab e-commerce websites. This suggests that importance should be accorded to these problems as other e-commerce websites in various countries are already overcoming such usability problems.

- Design problems: eight common usability problems were identified on the tested websites related to this category :
 1. Inappropriate choice of font color and font size: this is related to the fact that the websites did not use appropriate font colors on some of their pages, and they also used a small font size on some other pages on their websites.
 2. Misleading images: this problem related to the fact that three websites displayed text images which looked clickable but were not.
 3. Inappropriate menu design: this is related to the fact that all the websites used large size pictures in the items of the menus which made the menu too wide.

4. Inappropriate page design: this problem related to the fact that all the websites had problems regarding the design of their pages, such as: some pages were too long, the pages' margin was not sufficient, inappropriate page titles or page titles not described.
5. The use of pop-up windows: the sites used pop-up windows for the subscription form, or the sign-in form, or the register form pages.
6. Inconsistency in the language of the interface: this is related to the fact that pages in the English interface of the four websites opened pages with Arabic content, and vice versa.
7. Inappropriate use of images: this problem related to the fact that adequate images to show the product details were not displayed on three websites.
8. Inappropriate orientation of pages: this problem related to the fact that the scroll bar on the English interface of the three websites' pages was displayed on the right, while the scrollbar of the Arabic interface of the three websites' pages was displayed on the left of the pages.

The results of this research regarding usability design problems on e-commerce websites are comparable with the results of earlier research. Earlier research identified four out of the eight design problems that were identified in this research, which related to: inappropriate use of images [12, 18]; inappropriate choice of font color and font size [14, 18]; inappropriate page design [12, 16, 17, 18], and misleading images [18]. This shows that e-commerce websites in various countries are not considering design issues while developing e-commerce websites.

- Purchasing process problems: three common usability problems were identified on the websites related to this category:
 1. The sites forced users to register with the site in order to proceed to the checkout process.
 2. The ordering process was not easy: this problem related to the fact that the ordering process was long and had repetitive steps.
 3. The site did not support alternative methods of delivery.

The results of this research are comparable with the results of earlier work regarding two of the usability problems concerning the purchasing process, which related to: ordering process that was not easy [13, 18] and compulsory registration [18]. This shows that, despite the importance of making the purchasing process easy in e-commerce websites, e-commerce companies are still not considering this issue when developing their websites.

VI. Guidelines for Usable E-Commerce Websites

The results of this research suggest comprehensive guidelines should be used in order to develop usable e-

commerce websites, specifically in the Arab world. The guidelines consist of six main design areas, as follows:

Guidelines for Usable E-Commerce Websites	
Navigation and links	
A link name explicitly indicates the destination page which it will open	
No active link to the home page on the home page of the site	
Navigational links are obvious in each page so that users can explore and find their way around the site and navigate easily	
An active link to the shopping cart is displayed on the home page	
The existence of an effective internal search. It must be fast and accurate, and provide useful, concise and clear results	
Organization	
Architecture is not too deep so that the number of clicks to reach goals is not too numerous: e.g. it does not require clicking more than 3 links	
Logical organization/categorization of the navigation menu items	
Content	
The total price of the items in the shopping cart is displayed on the shopping cart item that is displayed on the top menu	
The information regarding the availability of the products in the store is displayed	
The content is non-repetitive	
The information is sufficient and relevant to users' needs: e.g. content is clear and concise	
The information is up-to-date, current, often updated	
Products which are sold out are not displayed	
No "under construction" pages	
Dedicated "about us" page is displayed	
Accessibility and Communication	
Useful information to enable easy communication with the company is displayed	
The website works properly when changing the monitor resolution.	
Download time of the pages is appropriate	
The website supports the Arabic language	
The site is easily identifiable and accessible from search engines	
Design	
Appropriate choice of font color and font size	
Appropriate use of images (e.g. images make a contribution to the understanding and navigation of the site)	
Appropriate menu design	
Appropriate page design: e.g. headings are clear (concise and descriptive titles and headings), page margins are sufficient, minimum number of long pages	
No pop-up windows are used	
Consistency in the language of the interface	
Appropriate orientation of pages	
No broken images	
Purchasing Process	
No compulsory registration to the site	
Ordering process is easy	
The site supports alternative methods of delivery	
The site supports alternative methods of payment including cash on delivery	
Complete information about ordering is displayed	
Information about security guarantee and privacy policy is clearly displayed	

VII. Conclusions

This research employed the heuristic evaluation method to evaluate the usability of four popular e-commerce websites in the Arab world for the purpose of suggesting guidelines for developing and/or improving the usability of e-commerce websites in the Arab world. The results showed that the selected e-commerce websites had common strengths in terms of the design issues, and also had common usability problems.

Based on the results, comprehensive guidelines were suggested to be used specifically to evaluate and/or improve the usability of e-commerce websites in the Arab world. The

suggested guidelines could support the future design of effective e-commerce websites in the Arab countries.

References

- [1] Turban E., King D., Lee J., Warkentin M. and Chung M., *Electronic Commerce; A Managerial Perspective*, International Edition. New Jersey: Pearson Education, Inc., 2002.
- [2] Paypoll Insight, E-commerce in the Middle East 2012-2015, 2013.
- [3] Chen S. and Macredie, "The Assessment of Usability of Electronic Shopping: A Heuristic Evaluation", *the International Journal of Information Management*, vol. 25, pp. 516-532, 2005.
- [4] Green D. and Pearson J., "Integrating Website Usability with the Electronic Commerce Acceptance Model", *Behaviour and Information Technology*, vol. 30, no. 2, pp. 181-199, 2011.
- [5] ISO 9241-11, 1998. International Standard First Edition. Ergonomic Requirements for Office Work with Visual Display Terminals (VDTs), Part 11: Guidance on Usability. <<http://www.idemployee.id.tue.nl/g.w.m.rauterberg/lecturenotes/ISO9241part11.pdf>>, [accessed 03.04.13].
- [6] Nielsen J. and Norman D., *Web-Site Usability: Usability on the Web isn't a Luxury*, 2000. Information Week. <<http://www.informationweek.com/773/web.htm>>, [accessed 21.12.13].
- [7] Nielsen J., *Usability 101: Introduction to Usability*. Useit.com. <<http://www.useit.com/alertbox/20030825.html>>, 2003, [accessed 14.02.14].
- [8] Gray W. and Salzman C., "Damaged Merchandise? A Review Of Experiments that Compare Usability Evaluation Methods.", *Human-Computer Interaction*, vol. 13, pp. 203-261, 1998.
- [9] Hasan L., Morris A., and Proberts S., "A Comparison of Usability Evaluation Methods for Evaluating E-commerce Websites", *Behaviour & Information Technology Journal*, vol. 31, no. 7, pp. 707-737. July 2012.
- [10] Brinck T., Gergle D. and Wood S.D., *Usability For The Web: Designing Websites That Work*. Morgan Kaufmann Publishers, 2001.
- [11] Nielsen J. and Mack R.L., eds. *Usability inspection methods*. John Wiley & Sons. New York, NY, 1994.
- [12] Tilson R., Dong J., Martin S. and Kieke E., "Factors and Principles Affecting The Usability Of Four E-Commerce Sites", in *the Proceedings of the 4th Conference on Human Factors and the Web (CHFW)*, AT&TLabs, USA, 1998.
- [13] Freeman M.B. and Hyland P., "Australian Online Supermarket Usability", Technical Report, Decision Systems Lab, University of Wollongong, 2003.
- [14] Goh K.N., Chen Y.Y., Lai F.W., Daud S.C., Sivaji A., and Soo S.T., "A Comparison of Usability Testing Methods for an E-Commerce Website: A Case Study on a Malaysia Online Gift Shop," In the Proceedings of the Information Technology: New Generations (ITNG), 2013 Tenth International Conference, Las Vegas, NV, USA, 15-17 April 2013.
- [15] Chen S. and Macredie R., "The Assessment Of Usability Of Electronic Shopping: A Heuristic Evaluation", *International Journal of Information Management*, vol. 25, pp. 516-532, 2005.
- [16] Barnard L. and Wesson J., "A Trust Model For E-Commerce In South Africa", in *the Proceedings of SAICSIT 2004*, pp. 23-32, 2004.
- [17] Barnard L. and Wesson J., "Usability Issues For E-Commerce In South Africa: An Empirical Investigation", in *the Proceedings of SAICSIT 2003*, pp. 258-267, 2003.
- [18] Hasan L., Morris A., and Proberts S., "E-Commerce Websites for Developing Countries – A Preliminary Multi-faceted Evaluation Approach", *Online Information Review Journal*, vol. 37, no. 2, pp. 231 – 251, 2013.
- [19] Hasan L. "Usability Evaluation Framework for E-Commerce Websites in Developing Countries", PhD Thesis, *Institutional Repository, Loughborough University*, 2009.