The Influence of Usability Requirements on the User Interface Design of Responsive Website Templates

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ABSTRACT

Purpose – The purpose of this research paper is to examine the Influence of Usability Requirements on the User Interface Design of Responsive Website Templates.

Approach – To achieve the research goals, a random sample of 237 website designers, website testers, graphic designers and webmasters were randomly selected from a research population of 25 companies working in the website development sector in Jordan.

Results – The outcome showed the Influence of Usability Requirements (Efficiency of use, Intuitiveness and Low perceived workload) on the User Interface design of Responsive Website Templates.

Conclusions – This paper provided new contribution to the existing knowledge related to the website design usability in terms of what is the Influence of the Usability Requirements on the Interface Design of Responsive Website Templates.

Keywords: Website Design, Responsiveness, User Interface Design.

1 INTRODUCTION

Information systems design is centered on the organizational goals and the technical expertise, human, hardware and software capabilities and tools available at hand. This approach neglects to take into consideration the true user of the information system (Adkisson, H.P. 2002). The end user is the most important players in the system user interface design since he/she is the one who shall end up using the system (Dyson, et al 2000). The user centric design of information systems promotes and lectures about taking into consideration the end user point of view when designing an information system user interface.

The problem with most website and graphic designers is that they design the user interfaces based on their own perspectives. This creates a problem of adaptation by the end user to the existing system (Fakun, et al 2002). Therefore the system should be designed in a manner that shall reflect and coincide with the end users attitudes and intended behavior and beliefs. The idea behind this approach is to provide a user interface that is efficient and satisfactory to the end user needs.

It is users' needs and preferences that need to be takin into consideration while designing software or a website system. Users must interact with the system designers in order to provide them with what they fees is right and easy to use to be implemented in the final release of the systems user interface (Sefelin, et al 2003). This approach shall reflect and accommodates the user's preferences, emotions, beliefs and needs in the intended user interface design providing a satisfactory and user friendly user interface.

2 USABLILITY

Systems analysts define usability as the degree of interactivity between the user and the user interface of a website, a web application or a software system. The term user friendly is immediately linked to a user interface design that is easy to be used by the end user, by providing all the needs of the end user in an effective and efficient manner leading to an interactive usage session (Zimmerman, et al 2002).

Usability in user interface can be measured by the end user engagement with the user interface. It is best achieved by allowing the end user to work on different tasks and functionalities within the system and monitor his reactions and register his feedback about the user interface under design. The behavior, feelings and reactions of the user can show what are the tasks which needs additional work and redesign in order to create a pleasant user interactive experience with the proposed user interface.

In the case of designing a user interface for a website that is going to be used by several people at the same time, the designer need to measure feedback from several intended users of the proposed system (LeDoux, L.C., et al 2005). Whenever there are difficulties or unpleasant experience is recorded the user interface must be amended to reflect the user needs in the end user interface.

Usability implies that an interface is easy to use by all visitors to a website. Websites are different in nature than software applications where online and offline helps files or manuals are available to be consulted by the end user whenever the need to conduct a certain task or functionality that is not clear outright (LeDoux, L.C., et al 2005)..

Simplicity in the user interface design for a website is the key for the successful usage of the website by its visitors. From the user's point of view the site needs to be usable meaning it needs to be easy to navigate and reach the needed information and conduct the required tasks in the shortest number of mouse click (Bernard, M. et al 2002). Something between two to three clicks in the maximum. Not reaching the information needed or the inability to do what is needed leads to user frustration by the website and may lead to leaving the site and not coming back again.

Websites that are poorly designed lacks usability and can lead to higher costs for the organization in terms of time and money. In the long run it shall lead to system failure to achieve its intended purpose of generating revenues and building a sustainable and lasting customer relationship (Dumas, J. 2001).

Usability requirements of a website user interface design are based on the following three pillars (Foraker Labs 2016):

- – Efficiency of use: to achieve what is needed rapidly limited or not flaws
- – Intuitiveness: a comfortable user interface that is easy to use and navigate
- – Low perceived workload: the user interface has to look easy to use and does not provide any frustrating functionalities

3 Website Design

The migration of organizations from physical brick and mortar business model to click and mortar or pure play model made it essential for organizations to put extra effort in the design of their websites. Websites are the storefront of your business. It needs to be attractive, intuitive and easy to use and navigate (Mobrand, K.A. et al 2002). Your products and services and all your business activities are reflected in the organization website. If users find it easy to use and friendly and accessible from all devices they tend to spend longer time on your website and coming back more often converting their visits to revenue. The opposite of this is true leading to losing potential customers in the process.

Extra care should be takin into consideration when designing websites. The tools to design a website are freely and publically available. The sophistication of the design does not mean by any way that your website is considered usable by the end user (Rosenholtz, R., et al 2005). Organizations should not relay on third party templates when building a website since these templates are not specifically designed and test to the users of your website. Tailor made themes must take into considerations by all means the user needs, beliefs and attitudes before starting to build the intended organizational website.

3.1 Responsive User Interface Design

Responsive website user interface are fluid designs, meaning the content moves freely across all screen and their resolutions and all across all devices. Whether the user is using a desktop computer, a laptop, an IPad or a mobile phone, the site is being customized to that particular devices and all content is displayed on the screen with ease (Foraker Labs 2016). There is nothing needed to be installed or configured by the user to navigate the system and reach the information or conduct the transactions sought.

Using a web browser the user enters and navigates the site and the theme adapts itself to the screen size of the user device used to browse and view the site content. The technology is based on using HTML 5, Java and CSS templates that customize the site based on the browsing screen. The need to responsive website designs and themes has grown rapidly in the past couple of years since the number of mobile devices has grown dramatically (Foraker Labs 2016). Google as recently increased the rating of responsive website and moved them up the search engine ranking as a friendly responsive websites.

4 Importance of this research

This research is important since it is the first attempt to identify the Influence of Usability Requirements on the User Interface Design of Responsive Website Templates. Organizations website masters, managers and designers, shall learn how to make use of designing responsive websites and turning customer's visits into revenue for the organization and there by creating a money generation machine for the organization by following few easy and simple steps in the user interface design process.

4.1 Research Problem

The research problem shows that the website designers do not take into consideration the user view point when designing a website template. There is also the need to incorporate usability requirements in the user interface design and their relationship and influence on the design of

responsive themes and templates. The literature review identified three dimensions that shall be used as a basis for building the research model. These dimensions are: Efficiency of use, Intuitiveness and Low perceived workload.

4.2 Research Objectives

The research aims at supplying a model that measures the Influence of Usability Requirements on the User Interface Design of Responsive Website Templates. Although the research was conducted in Jordan it is intended for the outcome to be universal to be adopted by website designers all over the world.

The following model builds for the research argument by studying the influence of the independent variables of Usability Requirements (Efficiency of use, Intuitiveness and low perceived workload) on the User Interface Design of Responsive Website Templates.
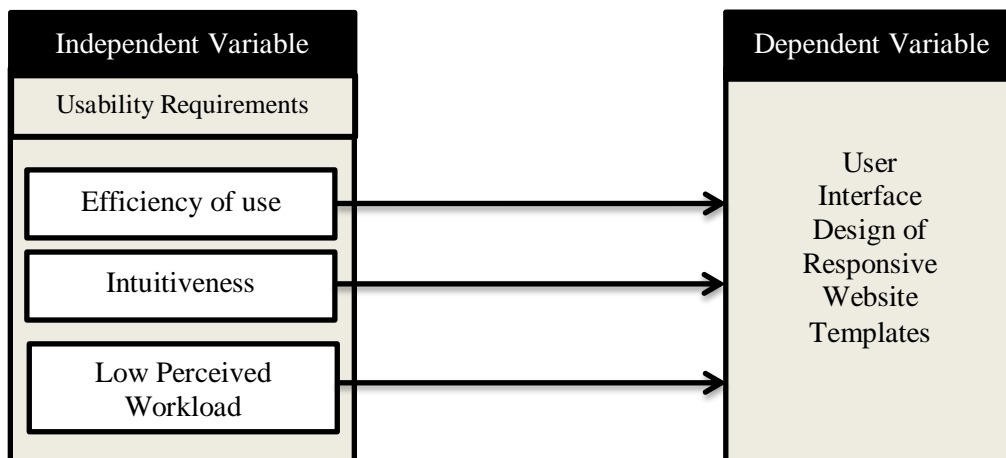
4.3 The proposed model

Figure 1: Research Model

4.4 Research Hypotheses

Ho: There is no significant moderate effect of Usability Requirements (Efficiency of use, Intuitiveness and low perceived workload) on the User Interface Design of Responsive Website Templates at level ($\alpha \leq 0.05$).

Based on the above we derived the following sub-hypotheses:

Hoa: There is no significant moderate effect of Efficiency of use on the on the User Interface Design of Responsive Website Templates at level ($\alpha \leq 0.05$).

Hob: There is no significant moderate effect of Intuitiveness on the on the User Interface Design of Responsive Website Templates at level ($\alpha \leq 0.05$).

Hoc: There is no significant moderate effect of low perceived workload on the on the User Interface Design of Responsive Website Templates at level ($\alpha \leq 0.05$).

4.5 Methodology of the research

4.5.1 Sample and Population

The research population is made up of website designers, website testers, graphic designers and webmasters working at 25 website development companies in Jordan. A total of 237 valid questionnaires were used out of 475 distributed (Sekaran, 2006). The number of returned questionnaires was 255, the difference of 18 questionnaires were discarded since they were incomplete.

4.5.2 Measures and Data Collection

Usability Requirements variable measure, based on Foraker Labs of Boulder, Colorado (2016). Foraker Labs provides web application development and user-centered design services for clients around the world.

The research was conducting based on the literature review, related websites and the results of the questionnaire that was distributed on web development companies in Jordan.

5 Results and Discussion

The results from the questionnaire were tested statistically using multiple regression testing and the following results were achieved:

Ho: There is no significant moderate effect of Usability Requirements (Efficiency of use, Intuitiveness and low perceived workload) on the User Interface Design of Responsive Website Templates at level ($\alpha \leq 0.05$).

Table (1) shows the effect of Usability Requirements (Efficiency of use, Intuitiveness and low perceived workload) on User Interface Design of Responsive Website Templates. The regression model achieve a higher degree of fit, as reflected by (R) and (R2) value (0.593) , (0.351), which asserted that (35.1%) of the explained variation in User Interface Design of Responsive Website Templates can be accounted for Usability Requirements (Efficiency of use, Intuitiveness and low perceived workload). Additionally, the regression results in Table (1) for the Efficiency of use shows a slope value of (0.567); (0.512) and (0.476) for the regression line. This suggested that for a one unit increase in Usability Requirements (Efficiency of use, Intuitiveness and low perceived workload) can significantly predict a (56.7%); (51.2%) and (47.6%) increase in User Interface Design of Responsive Website Templates. As well as Table (1) shows that the analysis of variance of the fitted regression equation is significant with F value of (90.136). This is an indication that the model is a good one. Since the p-value is less than (0.05), it shows a statistically significant relationship between the variables at (0.95) confidence level.

The results also indicate that Usability Requirements (Efficiency of use, Intuitiveness and low perceived workload) has an effect on User Interface Design of Responsive Website Templates with a coefficient of (0.567); (0.512) and (0.47.6). Thus, Usability Requirements (Efficiency

of use, Intuitiveness and low perceived workload) actually affected on User Interface Design of Responsive Website Templates. This further supported the hypothesis:

Usability Requirements (Efficiency of use, Intuitiveness and low perceived workload) on User Interface Design of Responsive Website Templates, Usability Requirements (Efficiency of use, Intuitiveness and low perceived workload) has an effect on User Interface Design of Responsive Website Templates at level   ($\alpha \leq 0.05$).

Table (1): Multiple Regression Analysis - Influence of Usability Requirements (Efficiency of use, Intuitiveness and low perceived workload) on the User Interface Design of Responsive Website Templates

		β	Sig*
Dependent Variable	Efficiency of use	0.567	0.000
	Intuitiveness	0.512	0.001
	low perceived workload	0.476	0.000
User Interface Design of Responsive Website Templates	R	0.593	
	R2	0.351	
	F	90.136	
	Sig*	0.000	

Conclusions

Based on the results and discussions above, we conclude that Efficiency of use had the largest influence on User Interface Design of Responsive Website Templates with a beta of 0.567 at a significance level of 0.000. This indicates that 56.7 of the variation in User Interface Design of Responsive Website Templates is based on the Efficiency of use. Intuitiveness had the second largest influence Beta number of 0.512 and the at last the Low perceived workload had an influence of Beta number at 0.476 at significance level of 0.000. Given these results that were conducted in Jordan we propose other studies to be conducted in other regions and countries to enrich the usability research fields.

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