The Relevance of Web Design for the Website Success: A heuristic analysis

Flavián Carlos¹, Gurrea Raquel² and Orús Carlos³

¹ University of Zaragoza, Department of Economy & Business Studies, cflavian@unizar.es
² University of Zaragoza, Department of Economy & Business Studies, gurrea@unizar.es
³ University of Zaragoza, Department of Economy & Business Studies, corus@unizar.es

Abstract

The growth of the Internet and the electronic commerce is developing with a great speed in the last years. In this line, the increase of the competence is bringing a great interest in examining the factors of acceptation and success of a website. Thus, many studies have emphasizing the design of a website as a critical aspect for the achievement of a successfully virtual store. Concretely, the aim of this study is to identify the key factors that influence the degree of success of the websites. Specifically, we focus on the specific elements related to the web design. A heuristic analysis, which is based on the assessments of a multidisciplinary group of experts, was carried out in order to find out and better understand the good and bad practices of two well-known websites. The literature review and the results of the test allowed us to identify the critical aspects related to web design and to offer some managerial implications in order for designers to get an efficient e-commerce website.

Key words: Electronic commerce, web design, usability, web atmospherics, heuristic.
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1 Introduction

In the last years, the diffusion of Internet as a new retail channel is developing with a great growth. In a market with a target of more than 1300 million people ([29]) and more than 70 thousand million dot-com websites in the world ([12]), the opportunities of trading are almost infinite. Sales through the web are up to 70 billion US$ in United States in the second half of 2007, which means an increase of 20% for the same period last year ([14], [62]).

Regarding this development of online businesses, a great increase of competence is occurring. In this context, there has been arising a great body of research focused on the factors that affect the success of an e-commerce website. In this line, many studies have identified the web design as a key factor for the development of a good interface for satisfying the consumer needs. A good design is relevant for companies to survive in the extremely competitive World Wide Web (e.g. [37], [50], [58]). Moreover, web design is important to get higher levels of satisfaction with the website [34] or to increase the online purchase intention of the consumer [57].

In this context, there is a growing and special interest among managers in knowing the key factors that could help them to achieve their websites’ success. This professional interest has been moved to the academic scope, in which a great number of researchers have focused on identifying the aspects that influence the businesses’ levels of acceptance and success on the electronic channel (e.g. [30], [60]). Thus, the goals of this research are the following:

1. to identify the key factors that could determine the success of the websites, focusing on the specific aspects related to the web design;
2. to develop a heuristic test in order to know good and bad practices carried out by relevant firms on the Internet nowadays; and
3. to propose some managerial guidelines with the aim of suggesting adequate design of the websites.

2 Factors Affecting the Website Success

Recently, a great number of authors have made efforts in order to delimit the concept associated to a successful website. In this sense, the marketing literature has emphasized the consumers’ perspective in order to establish how an e-commerce website must be for the achievement of success. Specifically, some authors have pointed out the main characteristics of websites’ quality from a consumer view ([2], [63]); some others have stressed the consumers’ beliefs and perceptions of the value created by the websites ([33], [60]), the importance of achieving the online customer satisfaction [68] and the impact on his purchase intention [50]. Thus, it seems reasonable to propose that, in general terms, a successful website, on the context of the electronic commerce, "is one that attracts customers, makes them feel the site is trustworthy, dependable, and reliable and generates customer satisfaction” [38].

In this line, there is a growing interest in the main factors that affect the levels of acceptance and success of the website. We have to stress the research made by Jarvenpaa and Tood [30], who examined online consumers’ perceptions with in order to identify the aspects that could influence on their attitudes and intentions to buy on the Internet. These authors argued that the aspects related to the perceptions about the products, the shopping experience (e.g. required effort, convenience), the services (e.g. adequate information and attractive appearance) and the perceived risk (e.g. pay, possible dissatisfaction), affect significantly the consumers’ attitudes and intentions to buy. In a similar way, Lohse and Spiller [39] analyzed the relationship between the features of the virtual store and the traffic and sales levels on the website. Their results suggested that the costs associated to the information search processes were the main determinant of those dependent variables. As a consequence, the authors noted the importance of the website design and more specifically, the easy of navigation for the increase the number of the visits to a website.

Moreover, it seems remarkable the research carried out by Keeney [33], who presented a model based on the perceived value by users comparing the online shopping and the traditional shopping. Through a series of in depth interviews of Internet users, this author built a list of the characteristics that generate value in the electronic exchange of goods and services, labelled “objectives of the buying”. These objectives were classified on “fundamental objectives” (the ends that a decision maker may value in a given context) and on “mean objectives” (the methods to achieve the ends). All these attributes could affect the levels of users’ satisfaction. In this way, Torkzadeh and Dhillon [60] took the previous research as a point of reference to develop instruments for measuring those users’ objectives. The authors identified and validated two measurement scales: for mean objectives, considering the product choice, payment, vendor trust, shopping travel and shipping errors; and for fundamentals objectives, regarding aspects such as the convenience, ecology, or relationship between the vendor and the customers.

We could also mention the study developed by Liu and Arnett [38], who focused on the key factors of the website success in order to enhance the customer satisfaction. With this aim, the authors identified the aspects related to the information provided by the website, the familiarity with it, the emotions that it generates, and the quality of its service and system, as determinants of a successful e-commerce website. After taking the evaluations for a group of experts, they concluded that the success of an electronic commerce website depends on four main factors: the quality of the information and the service, the ease of use of the system, the emotions of hedonic pleasure provided, and the quality of the design of the website.
Besides, Ranganathan and Ganapathy [50] analyzed the key characteristics of the electronic commerce websites in order that may encourage the purchase intention of the online consumer. Their results revealed that the aspects related with the security are the most outstanding in getting positive online purchase intent, as well as the privacy of personal information, the quality of the visual design, and the importance of offering a good information and navigation.

Taking into account all above, it is possible to identify the most studied factors in the specialized literature as the determinants of the website success. In this line, we could point out the aspects related to the convenience of the new digital medium, which is one of the main advantages of the electronic commerce for the consumers ([18], [23]). The Internet users also value the importance of the security and privacy of the transactions, as it has been recognized in the literature (e.g. [11], [40]). In the same way, we could note the relevance of presenting high quality information, good contents and an efficient and attractive navigation. These aspects have been identified by [3] and [21] as the most important advantages of the online activity. Moreover, it seems remarkable the fact that the majority of these studies emphasize the relevance of the website design for getting optimal results in the virtual channel.

3 Website Design: A Key Factor for the Online Success

The design of websites has been largely studied from multiple perspectives, most of them have identified the factors that could influence the website degree of acceptance and success ([7], [20], [22], [25], [35], [37], [52], [65]). As Internet and Electronic Commerce have been growing, there have been arising different points of view for determining which could be the key factors of website design. This research is focused on the main analysis perspectives within the marketing discipline. These research lines are motivated by the conection of successful interfaces which will be able to generate positive responses on users ([63], [68]).

In this sense, the usability studies the website elements that make it easy to manage for the customer. These aspects could lead to higher levels of satisfaction, trust and loyalty towards a specific website ([6], [16], [34]). More specifically, Nielsen [43] defines the usability of a website as the ease with which the user can learn to manage the system and memorise the basic functions, the efficiency of design of the site, the degree of error avoidance and the general satisfaction of the user. In particular, the usability is a quality attribute that assesses how easy the user interfaces are to use and we can identify five dimensions or quality attributes: learnability, efficiency, memorability, errors, and satisfaction [45].

Following this line, the usability can also be understood as a tool for measuring the quality of a website [50]. Thus, the ease of use of a system could improve a more complex learning and a higher ability to anticipate how that system will perform. Specifically, there have been studies indicating that usability improves the best understanding of the contents and tasks that the consumer has to know for the achievement of a goal (e.g. to place an order), which actually reduces the probability of error and improves the level of trust [42]. Besides, usability is related to the consumer ability to identify where he or she is and what he or she can do in each moment of the navigation.

With reference to the design factors of a website, we could state that a good design should ensure a high level of usability [8]. An attractive design can evoke feelings of pleasure in the use of a website. Consequently, the best usability, in the sense of a comfortable atmosphere, can create a positive bias in the consumer. In this regard, we could stress the work carried out by Keeker [32] who proposed some guidelines in order to improve the ease of use of the website and to encourage people to enjoy and become engaged in an experience. The author based on a well-known group of online firms to identify the key aspects and to offer some recommendations related to the content of the website (such as the information, the use of media -animation, sound, graphics-), the ease of use (provide goals to users, navigation, feedback), the promotion of the content (i.e. location, frequency of updates), the specific content related for the media (i.e. community, customization) and to the affective response of the consumer.

In a similar way, Palmer [48] established and validated measures of the websites’ usability and design, identifying aspects related to the response time (download delay), the organization of the contents (navigation), and the information and contents of the website (content). The research also showed that the characteristics of the media richness, such as the capability of the website for customizing the appearance and the contents (interactivity), and the presence of feedback, were determinants of the success of a website.

In the same line, the marketing literature has studied how the factors that define the store environment influence the consumer’s mood and purchase behaviour ([4], [13], [53], [61]). Design factors related to visual cues (e.g., layout, colour) are important in order to get a positive response of the consumer and to facilitate consumer goals [15]. This issue has been taken to the web environment, and has been adapted to e-commerce. Daley [9] defines web atmospherics as the intended design of web environments to generate positive effects (cognitive and affective) on the consumer in order to increase positively the consumer responses. Among these responses we can find a higher number of visits or a longer time browsing in the website, in order to turn the user of a website into a client. In this sense, Van der Heijden and Verhagen [63] examined the image elements in a virtual store that could improve the purchase intention in the user, identifying the most important factors of design. We can also take into account the study carried out by Kim and Stoel [35], who demonstrated that the factors of web appearance can lead to higher consumer satisfaction. The development of a good website design turns into a key question, since it will determinate the entry of the consumer to the store [41].
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Into the website design, the marketing literature has revealed that visual aspects play an important role for the website success. Specifically, we can mention studies as of [10] and [15] who analyzed the influence of web atmosphere on consumers, and demonstrated that the insights of this atmosphere influence on his cognitive and affective states, and as a consequence on the purchase behaviour towards the website. Tan and Wei [58] proposed that the appearance of a website is an instrumental factor that improves the perception of information in order for subjects to perform better cognitive mapping and assessment of decisions for execution. More specifically, these authors suggest that the graphical representations such as icons, colours, images and animations, give website a higher vibrancy. This fact could improve the degree of individuals' satisfaction with the web page and the navigation sensations [67].

As a consequence, the results of these studies indicate that a great part of the literature remark the relevance of the aspects related to the ease of navigation, ease of use, content and information, security and privacy or an appropriate appearance. These factors are determinants of consumers’ behaviour and consequently, of the website success for the e-commerce. However, it seems remarkable the relative lack of consensus in the literature about how those factors have to be managed. So, it seems necessary to develop a series of guidelines for designing interfaces that satisfy the users and the organizations’ needs.

4 Methodology

The heuristic evaluation ([44], [47]) is a method to find out the design problems and good practices in a user interface. This evaluation involves having a small set of evaluators who examine the interface and judge its compliance with recognized usability principles, namely “heuristics”. Given the fact that one person will never be able to find all the key issues in an interface [46], this method requires of several experts who assess the design effectiveness of a website. In spite of the fact that this approach is not as effective as testing with real users [64], heuristic evaluation represents a cost-effective method which gathers a high proportion of usability and design problems with few evaluators (four or five) [56]. Thus, its main advantages are that it is a method quick to use and provides insights into usability and design problems. Heuristic evaluation is performed by having each individual evaluator inspecting the interface alone. Only after all evaluations have been completed the evaluators are allowed to communicate and have their findings aggregated. This is important in order to ensure independent and unbiased evaluations.

Having established the context of the analysis, we selected a group of academic and business experts on both formal and conceptual issues. Specifically, the group was multidisciplinary as it included five experts in different areas such as Marketing, Usability, Information Systems and New Technologies. During the evaluation session, the evaluator goes through the interface several times, inspects the various dialogue elements and compares them with a list of recognized heuristic principles [55]. These heuristics are general rules that seem to describe common properties of usable and well-design interfaces. It is important to note that we asked the experts to put themselves in the user’s place in order to assess the websites’ features from a user point of view. The heuristics were also based on user’s principles and tasks.

Consequently, a heuristic test is not only an excellent instrument for identifying design problems, but also is a good opportunity to discuss the positive aspects of the design. In this way, we developed a heuristic test according to Sutcliffe [54] who included measures of the appearance of the websites as well as the usability principles -heuristics- established by Nielsen [44] and purposed an assessment process based on three stages concerning the website itself. Firstly, an evaluation of the attractiveness of the website was made in order to check out if the website is able to attract the users’ attention. Secondly, the aspects related to navigation and usability of the website were assessed, where the structure and the contents play an important role. Finally, the design of the website must be focused on providing an efficient transaction process, so evaluators scored different characteristics such as the transaction paths, feedback or security.

Thus, we focus this research on the practices of some of the most recognized websites in the last time, attending to several references in research articles (e.g., [19], [21], [27], [49], [53], [55]), awards and rankings of the best designed websites (e.g. [28], [59], [66]. In this line, the test was applied to the Amazon (www.amazon.com) and EasyJet (www.easyjet.com) interfaces, in order to get evaluations from two different business activities. We asked experts for their evaluations of the websites based on the stages proposed by Sutcliffe [54], and the test consisted on an informal report that we processed in order to provide the most relevant aspects of design in that websites.

5 Heuristic Results

5.1 Amazon (www.amazon.com)

- Regarding the visual appearance of the front page of Amazon (see Figure 1), experts’ evaluations state that the website presents a clear presentation, using non-saturated background colour, which avoids an overload in the users’ mind. The main menu is highlighted in a pale blue colour on the left-side of the site,
and the search engine is in a dark blue colour on the top-centre. According to the experts, this allows Amazon to attract the user attention to these points, since the structure of the menus and the search engine of this website is one of its greatest strengths ([24], [31]). The central part of the website contains the product novelties, offers and sales, with a use of good quality images and colourful headlines, which underlines the updating feature of the site and reinforces its appearance. The scroll of the front page is pointed as a bit long, which may cause a negative effect on the user (in a sense of too much information in the home page) or may be an unnecessary effort made by the website (the user may not bother scrolling down to the bottom of the page, so that he or she does not watch this part).

![Amazon front page](image)

Figure 1. Amazon front page

- With reference to the aspects related to the structure and navigation of the website, we could point out that the main source of success of Amazon is based on these features [15], which has been supported by the experts’ reports. In this sense, we could mention the quality of the search functions, which are clearly categorized and available in all the different pages of the site, and the search engine that allows a general search as well as a refined one but with a more specific items engine (see Figure 2). All the experts agreed about the simplicity of the navigation and the fitness of the structure of the contents. These aspects imply an adequate degree of users’ freedom within the website. Besides, the evaluators pointed out the good quality of the specific information about products, qualifying it as “complete”, “comprehensive”, or “accuracy”, as well as the availability of additional information (such as reviews, good quality images, or the possibility of 360° view). However, the evaluators noted the absence of a “map of the site” button in order for users to control the navigation. In this line, we could advise to make shorter scroll down cutting out the content of each page or by means of the use of spread labels.

- In the sense of the shopping or transaction process, the five evaluators complain about the fact of the users have to register in the Amazon’s website in order to make a purchase, even when the user only wants to know how the site performs the shopping orders. Thus, it would be desirable to offer the possibility of making a simulated purchase or to explain how the shopping process is carried out. In spite of this fact, the experts’ evaluations for the questions related to the transactions are quite positive. The shopping process is completed is four simple stages. In fact, one of the most salient processes for the Amazon’s success is its one-click-to purchase process [39], where the registered users can make a purchase with just one click a stage (see Figure 3). Besides, the evaluators positively assess the existence of relevant information in every phase of the process, according to security, privacy and delivery statements.
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Figure 2. Amazon navigation and search functions

Choose a shipping address
Is the address you’d like to use displayed below? If so, click the corresponding “Ship to this address” button. Or you can enter a new shipping address.

Address Book
Choose a shipping address

Name: Xxxxx Xxxxx
Address: Xxxxx, Xxxxx, Xxxxx, Xxxxx
Country: Xxxxx
Phone: Xxxxx

Or enter a new shipping address
Be sure to click “Ship to this address” when done.

Full Name:
Address Line 1:
Address Line 2:
City:
State/Province/Region:
ZIP/Postal Code:

Figure 3. Amazon shopping process

In general, this virtual store was qualified as a very complete store, with powerful search functions which allow an efficient exploration of the large assortment of the website. Besides, the customization of the store provides interactivity between the consumer and the vendor, which can lead to the creation of more durable and reliable relationships.

5.2 EasyJet (www.easyjet.com)

- Firstly, the experts note the ease with which they recognized the EasyJet website. The use of the colour of the company is present in the front page (see Figure 4), which also supplies to the site a great vividness. The reports also showed good assessments of the aesthetics of the website, with a special mention to the location of the sales and banners, which created favourable and unfavourable opinions (see Figure 4). On one hand, some evaluators assess positively the locations, positioning the main bargain in the left-central side of the website in order to call for the user attention, and the banners in the right side, taking a small part of the site. Besides, the ads are related to additional and complementary products and services. On the other hand, negative assessments for the locations were also gathered. There is a sparse placement for the main business activity of the company. Despite occupying the central part of the front page, the search process is not appealing. The experts agreed in assessing in a right way the short scroll of the front page (see Figure 4), since almost all the elements of the website are showed in the first visual screen. In this
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sense, one evaluator considers negatively the location of the information about the company in the scroll-down and in a small font size.

Figure 4. EasyJet front page

- According to the design aspects of navigation, there is a basic menu easily identified on the front page (see Figure 4), with contents about related services and additional information of interest. These options linked with other pages, which were all assessed as similar in the structure of the pages, the contents and the appearance. The search function is considered as the first stage of the shopping process, where the simplicity of the navigation is well-assessed by the experts. In this line, once the user search for a flight, the website goes straight in one way, so the search function becomes the shopping process. Therefore, all the contents displayed in the navigation remark as concise and timely for the purchase, such as prices, dates, sales and flights (see Figure 5). Several experts positively evaluate the numbered and entitled steps of the booking. The next steps are assessed as ease to navigate, with an efficient step-by-step shopping path. Nevertheless, the experts perceive a slightly decrease in the use of visual elements, like picture icons or some appealing attributes. It would be desirable to find a better match between the front page of the website and the next interfaces. The lack of a map of the site is also found as a negative aspect.

- We could state that the shopping process is inherent to this website. Since the moment that the user skips the home page, all the following pages are related with the shopping process. The overall evaluations are positive for this task, emphasizing the aspects like the simplicity of the process. The absence of a visual line with the stages of the transaction is perceived. However, the experts do not assess this as a negative aspect because of the simplicity of the process and the presence of numbered steps at the top of the web pages (see Figure 9). Regarding the security and privacy aspects, the heuristic test remarks the presence of clear information related to these concerns. Again, the experts report that there is relevant additional information, but there is no visual support in order to emphasize these contents (see Figure 6).

In this study we have focused on the assessment of the design aspects of the virtual store.
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Figure 5. EasyJet navigation and content design cues

Figure 6. EasyJet shopping process

As an overall assessment, we could report that EasyJet has received the best evaluations in terms of the simplicity of the shopping process and the navigation, providing ease of use and usefulness to the system. Displaying a simple searching and shopping process could attract more users to the website in order for experienced and inexperienced users to engage in a purchase.

6 Conclusions and Managerial Implications

In the last years, the high competition in the new electronic environment has involved a great interest among the practitioners in the key attributes that affect the levels of acceptance and success of the commercial websites. In this line, it is remarkable the interest of e-businesses in developing websites which satisfy the users as much as possible.
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In order to identify these key aspects, this research has analyzed the most relevant studies and empirical evidences about the factors of success of an e-commerce website. More specifically, this research has focused on the aspects related to the website design that could influence the users and consumers' perceptions and behaviours. Moreover, a heuristic evaluation has been carried out for two recognized and high impact websites. This methodology is considered as an excellent tool to identify design problems and to discuss the positive aspects of the web design.

Thus, the literature review and the heuristic evaluation allow us to state the importance of web design in order to get positive outcomes in the electronic commerce context. However, to achieve an efficient design is not an easy task, since there are a lot of factors to take into account, not only in terms of design itself, but also in terms of possible costs derived from the implementation and maintenance of the website, and the possible losses in the download speed because of the use of design tools. Herein, it emerges a challenge for e-businesses, since the limited dimensions of the computer screen provoke that designers have to carefully manage the design alternatives, displaying the options that reflect the essence of the website in the best way and satisfy the users and consumers' needs.

Bearing in mind all aforementioned, we could offer some recommendations which may improve the effectiveness of a website. Firstly, given the fact that the shopping window in an e-store is the same as the computer screen [15], it seems reasonable to put our attention into the websites' navigation and appearance cues. The websites' design managers should make an effort to offer a navigation characterized by simplicity [21]. In this way, the possibility of enjoy a free navigation leads to consumer's positive outcomes, such as higher satisfaction with the website and a higher purchase intention ([51], [68]). Also, the addition of sophisticated search engines in the websites is a key aspect highlighted for improving the users' evaluations of a website [37]. The websites managers should take care on the effectiveness of their search engines, offering timely and accurate answers to the consumers' requests. Furthermore, the websites should provide good levels of download speed [39] of the page. In this sense, a more downloading pages delay, derived from overloads in the contents or even in the use of images, could lead the users to avoid the website and leave it. Thus, it is necessary to get a well-balanced equilibrium between the appearance of the website and its downloading speed. Finally, the management of the visual features is revealed as the main tool in order to improve the attractiveness of a website. As a consequence, the development of a website with a good use of images, graphics, icons, animations or colours, may represent a potential source to offer a more vivid website and to get a positive response by the consumer [17], [22], [36], [67].

As important as the development of an adequate website structure is the fact of displaying a good content able to satisfy the needs of the online consumer. Organizing and managing the information displayed in a website in an efficient way could become another key issue in order to achieve the success of an online business. Specifically, we could highlight that the effectiveness of the information content significantly affects the user degree of involvement and favours his purchase intention [51]. Consequently, it seems recommendable to display the contents with timely, updated, understandable and relevant information.

The information related to the shopping processes has been also revealed as a critical factor [53]. More specifically, the designers should take care of the information quality related to the products and services supplied in the e-store [26] and to offer any additional information that could be useful for the consumer [39]. Besides, the e-businesses should emphasize the importance of the security and privacy concerns over the commercial transactions (e.g. [50], [60]).

Among the limitations of our study, we would mention the subjective character and the trade-off between rapid use and detailed advice of the heuristic evaluations. Consequently, we must propose some interesting future research lines. In this way, it could be convenient to develop user tests in order to identify possible differences between the perceptions of different groups of consumers when navigating through a specific website. Thus, we could check if the results of the heuristic evaluation would be in accordance with the users' perceptions. In addition, it would be interesting to analyze the impact of all key attributes on the users' perceptions and behaviours through experimental evaluations. This method could be appropriate for our research since it is particularly useful when the website is being designed [5]. Moreover, it would be interesting to analyze some moderating effects in the relationships. Specifically, it could be interesting to include the moderating effect of Internet user experience. Thus, it seems reasonable to think that users with a greater level of Internet experience perceive a higher ease of websites use, but also they ask for more sophisticated web pages.

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