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Adhering to International and Culture-related Usability Guidelines: A Basis for Developing Localized User-friendly Websites

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Abstract
Modern websites provide multiple forms of information such as images, text, audio, video, and different ways of accessing them. As the use of website becomes a global phenomenon, international usability guidelines are provided in order to enhance user experience. A major challenge lies in the lack of research data on the preferences of localized users. Without such data, many websites will be created that may not serve the needs of an intended user group, especially in a multi-cultural society. This will amount to a waste of time and resources. This paper describes web-design and usability guidelines and explains their importance to practice. It discusses why, when, and how these guidelines are applied in designing a responsive and easy-to-use website for any setting of choice. It emphasizes that, in addition to applying international usability standards and guidelines, website designers and owners should pay attention to culture-related usability preferences in order to develop localized and user-friendly websites. The paper highlights important features of websites that must be given priority in the design process. It draws attention to the need for an iterating process for usability testing of websites in order to improve their functions as information systems that serve the purpose of the owner and the needs of the users. The paper suggests more studies to be carried out with local website users, especially in Africa and the developing nations of the world, in order to develop usability guidelines that include the cultural preferences of the users.
Keywords: Usability testing, heuristics, websites, interactivity, culture-related usability, localized websites, user-friendly websites

1. Introduction

Industries and organizations are building websites in order to store and transmit information for a variety of reasons. Websites are designed to meet specific purposes; while some designers build websites for educational purposes, others build for business, religious or personal reasons (Boyd & Ellison, 2007). A common purpose for creating a website is to serve the information needs of its users. Therefore, it is necessary for anyone who intends to create a website, or who owns a website, to pay attention to how its particular audience interacts with the website. As an information system, the usability of a website is extremely important. This makes it necessary for website owners to invest time and resources in developing strategies for discovering the characteristics of their users, how they use the system, what their needs are and how the website is meeting those needs. It would be a waste of time and resources to build a website that is not usable by the audience or does not meet their needs. Users should easily access the information they need without difficulties when they visit a website (Brinck, Gergle, & Wood, 2001). Unfortunately, many websites fail this test.

This paper examines some of the international standards and guidelines on how to make websites usable and how to ensure that factors that make websites user-friendly are featured. It also examines the findings of studies that show the influence of culture on the website design process. The paper explains the need for website designers and developers to pay attention to the cultural preferences of the local users who are the primary audience of a website. It provides practical suggestions on how to maintain an effective and interactive website for organizations, institutions, businesses, and all those interested in using websites to transmit information. This paper highlights the importance of interactivity as a website feature that *must be given priority* in the design process. It draws attention to the need for an iterating process for usability testing of websites to improve their functions as information systems capable of serving the purpose of the owner and the needs of users.

2. Website Usability

In determining the success of a website, there are different factors to be taken into consideration. One of the major factors is usability. According to the International Standard Organization (ISO 9241-11), usability is 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" (p.10). This definition means that, for a website to successfully carry information and be able to serve the purpose of the user, it must be easy to learn, easy to use and easy to remember, and it must avoid errors (Battleson, Booth & Weintrop, 2001). Usability in the context of a website belongs to the realm of Human-Computer Interactions (HCI) where data gathering methods and

intellectual frameworks are used effectively to create interfaces between the system and the user (Carstens & Patterson, 2005). Nielsen (2012) presented five quality components of usability. According to Nielsen, for a site to meet the goals of usability, it must be *learnable*, *efficient*, *memorable*, *error free* and *satisfying to the user*. The fact that a website is easy to use is not by itself sufficient; it must have utility, which means that it should be functional in doing what the user needs. A usable website should have an easy design interface and be what the user wants. Designing effective websites requires identifying the needs of those who will use the website or who will visit the website; therefore, a usable website should be simple, easy to manage and fast to access, and it should always contain updated information (Nagpal, Mehrotra, Sharma, & Bhatia, 2013). Jiménez, Márquez, Moreno, Coret, & Alcantud (2012) found that many website developers do not follow established guidelines for usability and, as a result, fail to build accessible and usable websites for their users.

3. Usability Guidelines

There are differing website usability guidelines suggested by various bodies and scholars. These include the guidelines published by the U.S Department of Health and Human Services, the ISO standard and the Joint Information Systems Committee for Higher Education in UK (JISC). Some scholars (Green & Pearson, 2006; Bevan, 2005**)** have also developed some useful usability guidelines. For the scope of this paper, I shall look at the website usability guidelines developed by Leavitt and Shneiderman (2006) for the U.S. Department of Health and Human Services (HHS). I will concentrate on the guidelines from this document because of its comprehensive nature and the depth of its research. Three items from this usability guideline document will be discussed.

3.1 Usability Guidelines from the U.S. HHS Department

In the usability guidelines offered by the U.S. Department of Health and Human Services the researchers, Leavitt and Shneiderman (2006), presented 209 guidelines for web design and usability. These guidelines were drawn to help those who have the responsibility of developing and managing websites to have an up-to-date best practice guide providing accessible information to users. Its main focus is information-oriented websites, but its principles can also be applicable to the design of other websites. Some of the guidelines were based on research concerning design process and evaluation, homepage, optimizing the user experience, accessibility, navigation, text appearance, page layout, and hardware and software. This paper will highlight only three of the guidelines – Navigation, Accessibility and Homepage – because of their necessity in all types of websites.

3.1.1 Navigation

Navigation helps users to link and locate pages on the website. Its aim is to help users access and find information easily. Websites need to be effective and efficient in order to serve users' purposes. In designing a website, keep navigation pages short. Always include a site map that helps users locate information and gives an indication of the user's location on the website.

For guidelines on navigation, the following provisions were proposed by the U.S. department of HHS:

i. Avoid creating or directing users to pages that do not include navigational options. When users click on links on web pages, they should be able to go back to the previous page if they want to without difficulties. This means that the back button should not be disabled.

ii. Navigation elements should be made distinct from one another and should be grouped in such a way that they can easily be found on each page. This grouping should be done consistently across each page. The navigation scheme should be common for each page. Each element in the navigation should be different from the others so users can differentiate them.

iii. When there are longer pages that contain several sections that are different from each other on the website, the navigation element for that page should contain sub-clickable elements which are known as 'anchor' or sometimes described as 'within-page' links. These sub menus can help users quickly navigate the content of the parent page to determine if it contains the information they need.

iv. The position of navigation menus is important. Placing the primary navigation menu on the left side of the panel makes the greatest impact on the user. Navigation time is faster when the navigation menu is positioned on the left side. It is also important to keep the secondary and tertiary menus together because this results in best navigation performance.

3.1.2 Accessibility

Websites should be designed to accommodate people with disabilities such as the deaf, the blind, or the aged. To make a website more accessible, the use of assisted technologies is necessary. The U.S. Department of HHS guidelines have the following provisions to ensure accessibility of websites:

i. Users with disabilities should be considered in the design of websites so that they are able to out fill and submit forms online with ease. Online forms should be placed in such a way that everyone can access and complete them without difficulty. This guideline also extends to the

use of radio buttons and text buttons. People with disabilities should be able to interact with these functions effectively.

ii. The use of color is important and may serve various purposes for different users. Designers should see that the information that is conveyed with colors is also available without colors, since some users have difficulty in discriminating colors. It should not be assumed that color alone can be used as an indicator of important activities on the site. Designers should bear in mind that there are users with color vision deficiencies.

iii. People with certain disabilities should be able to skip repetitive navigation links. Designers should take cognizance of this and create a means in which users are able to skip repetitive navigational links if they wish to without having to spend too much time reading over them again. (Even those who have no disability may appreciate this feature.)

iv. If there are images, video or some sort of non-text information on the website, there should be an equivalent text or sound that helps explain the non-text information. Provide a feature that will enable the user to hover the mouse over an image and see in text what the image is about or hear a sound that says what the information is conveying.

3.1.3 Homepage

An effective design of the homepage is very important because it portrays an overall picture of the website and determines the first impression. A homepage should be very clear in presenting the purpose of the site, and the link to the homepage should be on every page of the website. According to the HHS guidelines:

i. Users should be able to have access to the homepage at whatever point they are on the website, since users tend to return to the homepage to start something new. In trying to link the homepage to all the pages on the website, it is a bad practice to place a logo on every page to represent the homepage; not all users will know that the logo is a link to the homepage. The best thing to do is to have the label '*Home*' on all pages to designate the link to the homepage.

ii. The homepage should contain all major options. The most important links should be on the homepage. The information on the homepage must be very selective and should convey vital information so that users will, at a glance, have a sense of what the website is all about and whether the site contains the kind of information they need.

iii. Homepage length should be limited. Those elements that are attention-grabbing should be placed on top. Important information must not be placed in an area that cannot be seen on the first screen. Users should not need to scroll all the way down before finding important information on the homepage. Information that is placed below the fold may be missed; therefore, avoid placing vital information below the fold, that is, at the bottom of the homepage.

iv. If there are major changes made to a website, they should be announced in a conspicuous space on the homepage. When you decide to make a major change to the view or structure of the website, it is essential to announce in advance on the homepage the information about the proposed changes so that users will be aware. Do not surprise your users with changes they never expected; that may confuse them. When you make changes to the website, users should be told exactly what those changes are, when they were made and how they can still find the information they seek on the website.

4. Importance of Usability Guidelines

The importance of usability guidelines can be seen from different perspectives: e-commerce, government, health, education and a host of other sectors. For e-commerce, for instance, Green and Pearson (2006) argued that a "usable web site creates a positive attitude toward online stores, increases stickiness and revisit rates, and eventually stimulates online purchase" (p.67). Governments provide information and services to their citizens that are necessary for the improvement of their lives. Users who access government websites have different abilities or disabilities. A blind person cannot access information in the same way as one who is not blind; an older adult has a different cognitive ability from a young person; children comprehend the content differently from adults. This means that a one-size-fits all website may be insufficient to satisfy the needs of a variety of information users. Thus, there is a need for guidelines for website design.

Studies have been conducted to show how important usability guidelines are, and why usability is necessary for a website to be successful in accomplishing its goals. Karreman, Geest, and Buursink (2007) evaluated two different websites. One was a non-adapted website, and the second was an adapted website that was chosen based on the easy-to-read guideline that was implemented in designing the site. The authors wanted to find out whether the easy-to-read website was more accessible and usable for people with intellectual disabilities. They found that the website that was adapted based on easy-to-use guidelines was appreciated by people with intellectual disabilities, while people who were termed not intellectually disabled had no problems

using either website. The study concluded that guidelines for an easy-to-read website should be followed in creating websites for people with intellectual disabilities.

Kurniawan and Zaphiris (2005) carried out an extensive review of the literature on human computer interactions (HCI) and the literature that deals with aging. Not surprisingly, they found that older people have different needs from younger people. However, the study noted that, apart from visual impairment, which is a known factor affecting older people on the web, other serious factors that are sometimes not taken into account are the cognitive and motor impairment that pose some difficulties for older adults in their interaction with the web. The authors pointed out how older users can be distracted by on-screen animation, which has negative effects on their cognitive sense. They also suggested the use of sound to help the visually impaired. They pointed to the decline in working memory as one factor that makes older people hesitate to use the Web, but acknowledged that if the website is properly designed and the users are properly trained, older people can navigate without difficulty.

With the development of smartphones, attention has also been drawn to the design of websites that can be easily accessed on mobile devices. Lobo, Kaskalogu, Kim, and Herbert (2011) enumerated the difficulties of accessing information through a mobile device due to its small screen size. Thus, websites meant to be displayed on mobile devices such as smartphones should be designed to fit these small devices. Much improvement has been made in this area, and developers of websites are now making web interfaces that are appropriate for the small devices; this increases access and enhances user experience. However, since technology changes rapidly, the pace of design innovation has to be maintained in order to meet the demands of the time by adjusting the method, the process and the features of the web interface.

5. Application of Usability Guidelines on Websites

Looking at the importance of usability guidelines as stated in the above section, it is necessary to examine their application to websites. Why do we need to apply these guidelines? When are these guidelines to be applied? How do we get these guidelines to be effective on the website? These are questions that website owners, designers and developers should take note of in their decision to create a website.

Nielsen (2012, "Why Usability is Important") states succinctly why usability guidelines are necessary to the survival of e-commerce: "If a website is difficult to use, people leave. If the homepage fails to clearly state what a company offers and what users can do on the site, people leave. If users get lost on a website, they leave. If a website's information is hard to read or doesn't answer users' key questions, they leave." Websites should be central transmission systems for information that should communicate messages to an intended audience with a purpose. Business websites, for example, are meant to be productive, but when consumers abandon a website because it is difficult to use, then the business stands to lose.

Users are of primary importance when it comes to making decisions on a website's design. It would be a mistake for authors of websites to create content and structure from their own perspective instead of their users' (Chiew and Salim, 2003). Al-Badi, Ali, and Al-Balushi (2012) offered three reasons why web designers and developers should pay attention to usability guidelines. These are: 1) out of fairness, people with a disability should be able to access the same information as everyone else, 2) it is the law in some countries, and 3) it is good business for anyone to be able to get his needs met online regardless of ability. It is apparent that meeting the users' needs is central to determining the usability of a website. How, then, do you ensure that your website meets usability guidelines based on the target users? This question points out the need for usability testing.

6. Usability Testing of Websites

To ensure that your website meets usability guidelines, it is essential to undertake usability testing of the website. There are different ways of testing this usability. One of them is heuristics, in which experts evaluate the quality of a website using a standardized set of criteria (Sutcliffe, 2002). The judgment of experts alone, however, is not sufficient to ensure the usability of a website. Web designers and developers should employ other supplemental usability testing methods, including testing the design with real users of the website to ensure that designers are making the best design decisions for their users (Hart, Chaparro, & Halcomb, 2008). Usability testing is conducted by observing the way users carry out their tasks and assessing the users' performance quantitatively. This is done by documenting the time it took to complete the task, the number of times the user failed to retrieve a required content, and the number of times the user was unable to follow the correct pathways (Rotondi et al. 2007). Website usability can be assessed using several parameters including attractiveness, personalization, security, use of multimedia, complexity or ease of use, aesthetics, speed, type of information and ease of navigation (Nagpal et al., 2013).

The question of how many users must be assessed in usability testing for effective results is still debated among researchers. Recommendations have been offered by various scholars. Nielsen (2012) recommended testing five users at a time to identify usability problems. Several small tests, he said, should be done instead of a single expensive study. These tests can be repeated in an iterative process and the design modified or revised

after each test in order to correct problems as they are identified. It is not sufficient to listen to what people say about the website; the best way is to observe what they do. Nielsen advised that user testing should be started early in the design process and should be a continuous process for the life span of the website.

However, Zaphiris, Ghiawadwala and Mughal (2005) warned that care must be taken with the number of guidelines that are applied, since too many guidelines may inundate the designer and affect how they are applied. They pointed out that "if the guidelines are potentially too long, general and not too specific, then a lot of time may be expended by the users of the guidelines in trying to interpret them according to the context of the user interface, with the designer not knowing when and how they can be used" (p. 1900).

The application of international usability guidelines also raises the question of adaptability. The idea of adaptability of guidelines has led to recommendations for determining other guidelines based on the culture and local needs of targeted users.

7. Culture-related Usability Preferences

Although the use of international guidelines in ensuring usability of websites is essential, it is also very important for website developers and designers to take cognizance of the demand of their local audience. In a study of the application of international standards and guidelines to usability of websites with perceived local standards in Iran, Mousavi and Marthandan (2012) found that, although international standards and guidelines are very relevant to the preferences of local users, they are only a partial reflection of their interests. They concluded that usability has culture-related elements which must not be ignored during the website design process. Therefore, in addition to the application of international standards and guidelines to determine usability of websites, it is necessary to understand the preferences of the primary users of the website within their culture and environment, and to apply those preferences in the design process. This challenges website developers, owners and researchers to do more research into the preferences of their local users before designing a website.

Several previous studies (Vatrapu, & Pérez-Quiñones, 2006; Smith, Dunckley, French, Minocha, & Chang, 2004; Cyr, & Trevor‐Smith, 2004; Frandsen-Thorlacius, Hornbæk, Hertzum, & Clemmensen, 2009; Clemmensen, Hertzum, Hornbæk, Shi, & Yammiyavar, 2009) have supported the need to include culture-based assessment in determining the usability of websites. These studies provided practical ways to implement culture-based website designs that support the preferences of local users in addition to international standards and guidelines. Becker (2002) developed a usability assessment model in order to meet the needs of localized websites because she found that website usability varies depending on the different types of websites they are applied to. Becker's usability assessment model pointed out some important components that any organization setting up a website should consider. Organizations need to know what their strategic goals for using the web are, what their target market in their localized environment is, how computer literate their target market is, and what their user factors are in general. The answers to these questions are necessary considerations for the usability of the website of any organization. Websites must meet certain usability standards in order to meet the needs of a variety of users.

This paper recommends that those responsible for decisions concerning the development of a website as an information system for their businesses or organizations should not neglect to evaluate their audiences based on their characteristics. This is especially important for users in Africa and other developing countries because the international usability guidelines, although very relevant for a wider audience, have been criticized for failing to account for local cultural preferences of users across the globe. The well-known international standards and usability guidelines originate from the United Kingdom and the United States. Even the HHS guidelines from the Department of Health and Human Services of the United States (Leavitt & Shneiderman, 2006) admit that some innovative web page designs may not have been anticipated by the HHS guideline writers, and that creative web designers may create usable websites with elements outside the guidelines presented in the document. The document calls for a balance in enforcing the guidelines with a process of exemption. (A process of exemption calls for web designers to evaluate the guidelines to determine what may be adapted to their situation and what may not.) It cautions web designers to use the process of exemption as needed when using the guidelines. This gives room for creativity.

Therefore, in addition to using these international usability guidelines, website owners and designers, especially in Africa, Asia and the developing countries, must pay attention to localized usability guidelines built upon the preferences of their local users when making their design decisions. A major challenge lies in the lack of research data on the preferences of localized users, particularly in Africa, which is a highly multi-cultural continent that is only gradually being influenced by technological advancement and Internet penetration. The majority of people in Africa access the Internet through mobile devices such as smartphones, which will influence how users interact with websites. This paper suggests more aggressive research efforts in Africa and other developing parts of the world in order to develop culture-related usability standards that are drawn from research data with users.

Although the guidelines discussed above, whether international or culture-based, are very important in

designing a usable website, an important feature that must not be neglected in all design considerations is the interactivity of the website. It is essential to examine interactivity as an important element that makes a website more user friendly.

8. Interactivity of Websites

Interactivity has been defined in various ways by different scholars; there has not been general agreement on the operational definition of interactivity. Some scholars define interactivity based on how participants report their experiences of a system, others define it by focusing on the different ways information is transferred from one participant to another, while others arrive at their definition of interactivity by looking at the characteristics of the medium based on the features of the technology (Ariel & Avidar, 2015). Kiousis (2002) gave a more consolidated definition of interactivity by bringing together other definitions. He presented interactivity as "the degree to which a communication technology can create a mediated environment in which participants can communicate (one-to-one, one-to-many, and many-to-many), both synchronously and asynchronously, and participate in reciprocal message exchanges" (p. 372). Kennedy (2004) sees interactivity as involving the relationship of two entities: the user and the instructional source or the information system.

Researchers have explained the concept of interactivity in different contexts such as visualization and HCI. Ariel and Avidar (2015) explained that interactivity is not an exclusive feature of the new media; it is also a feature of the traditional media. Therefore, in discussing interactivity, it is necessary to specify the context of discussion. In this paper, the central focus is on interactivity in relation to websites. Interactivity of websites is very essential for users' acceptance and use of the site. Websites that are more interactive yield positive effect and draw better quality ratings from users; they influence users' quality of relationship with a brand, and thus enhance the brand's image (Hart, Sutcliffe, & De Angeli, 2013; Voorveld, Van Noort, & Duijn, 2013). Colleen (2015) found that a more interactive website leads to a more positive attitude of the digital natives toward using the website. (Digital natives are those exposed to the Internet from childhood; the term is often used to distinguish them from digital immigrants, whose exposure to the Internet began later in life.)

To ensure website interactivity, researchers have provided various conceptualizations of interactivity. Van Noort, Voorveld, and van Reijmersdal (2012) presented a three-dimensional website interactivity. The first dimension is based on a two-way communication between the website owner (organization, person or entity) and the user, and between the users of the website. The communication process here should be reciprocal through the provision of features such as the ability to ask questions and receive answers. The second dimension is based on the level of control and influence that the user has on the communication process. The user should have control and influence over features such as the choice of language and what to download. The third dimension is the ability to engage the website in discussion that takes place in real time. The website should have features that allow synchronous communication such as chat features.

There are other factors that determine the interactivity of a website. Ha and James (1998) hold that for a site to be considered interactive it should allow for: playfulness, choice, connectedness, information collection, and reciprocal communication. They believe that these factors will accommodate individual differences in communication needs because some audience members may want only low levels of communication, with the freedom to navigate within websites and the fun of selecting different options without direct contact with the owners of the website. On the other hand, some audience members will want immediate assistance from owners for needs such as information on technical support to solve an immediate problem.

According to Ghose and Dou (1998), websites can be interactive when there is the availability of an electronic feedback mechanism; for a commercial website, for instance, this includes the ability to order products or services online and the availability of other searchable features. This mechanism is very important because, for Internet-based e-commerce, interactivity should aim primarily at fulfilling its potential to have favorable short-term and long-term effects on consumer behavior (Schlosser, 2000). It should be able to make consumers more attentive to information while online (Berthon, Pitt, & Watson, 1999). Auger (2005) argued that interactive sites, particularly commercial websites, should have the potential to satisfy customers more effectively and convert visitors into buyers. This need should bring about a response between the communicator and the audience in the attempt to facilitate each other's communication needs.

There are different types of website interactivity. Mabrito (2001) discussed three types of interactivity: navigational, functional, and adaptive. Navigational interactivity involves the user's simply clicking on hyperlinks to be taken to the next page. In functional interactivity, the user utilizes the computer (or other device used) to access the website in order to achieve a certain goal. Adaptive interactivity is described as the highest level of interactivity because it gives users the ability to augment or alter the page, such as by posting a message to a bulletin board. Hoy and Lwin (2007) advised that interactivity should be viewed as a characteristic of the individual, rather than the medium, because it is the person who chooses to interact. Therefore, the user should always be the subject of attention when designing an interactive website.

Some scholars have offered additional ways to determine the interactivity of a website (Petrie & Power,

2012; Cheng & Chen, 2008). Cheng and Chen (2008), for example, referenced six dimensions:

- Selectivity, which is the amount and variety of users' choices.
- The effort that any user of the media system must exert in accessing information.
- Responsiveness, which is based on how a medium is responsive to the user in the process of using it.
- Information use monitoring that shows how well information selection can be monitored across an entire population of users.
- The degree of difficulty for user in adding information.
- Facilitation of interpersonal communication, either by allowing users to respond to messages at their convenience (asynchronous) or allowing for concurrent participation (synchronous)

According to Borsook and Higginbotham-Wheat (1991), the following can be used to measure interactivity: immediacy of response, non-sequential or non-linear access to information, adaptability, feedback, a sufficient number of user options, bi-directional communication channels and interruptibility. (Interruptibility is defined as the length of time required for any giving sequence before allowing further input.) Downes and McMillan (2000), on the other hand, provide a five-dimensional description of what should be the standard for determining interactivity. Their description is more focused on computer-mediated communication: direction of communication, timing flexibility, responsiveness and the perceived purpose of communication, sense of place, and level of control.

Although the general concept of interactivity is understood, it still remains unclear whether new media scholars can work out a standard measure by which a medium can be termed as not meeting the standard of interactivity. The dominant feature of the measurement of interactivity found in the literature is the ability of the user to have control over the medium. From examination of the literature on interactivity, user control seems to be the one term that is agreed upon by most scholars as a strong measure for interactivity. Scholars also agree that sophisticated website design that does not allow for easy navigation by the user does not encourage interactivity. Interactivity and simplicity are two significant determinants of usability (Lee, Moon, Kim, & Mun, 2015) it seems that, as more new media technologies evolve, the present measure of interactivity may also evolve. Therefore, interactivity will be an ever-fresh concept to define in the future. This calls for new media scholars to be more involved in continuous research to expand our knowledge on this concept.

In conclusion, this paper recommends the application of usability guidelines in the design process of websites. It emphasizes that, in addition to the international standards and guidelines for usability, it is also essential to pay attention to the cultural differences of users. Therefore, there is a need to understand the preferences of localized users of a website and incorporate them into the usability assessment. Future research should be directed towards examining the user experience of local website users in Africa and the developing nations of the world in order to develop usability guidelines that include the cultural preferences of these users. This may help in developing and designing websites that meet the needs of local users within the range of available technology and the Internet penetration of the region.

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