A conceptual framework for assessing universities websites within gulf region

Dr. Ashraf Badawood

College of Business / MIS /University of Jeddah
Jeddah Kingdom of Saudi Arabia

Abstract

The aim of this document is to review literature and evaluate the websites of universities situated in the Gulf region, with respect to student, teaching staff and management. Secondly, having a complete structure of such important points in place, aids in evaluating website through the Systematic Literature Review (SLR). Data was retrieved from Web of knowledge and other relevant source. Subsequent to scrutiny of research papers, all the appropriate data was obtained from these papers and articles to find a common aspect that justified the focal point of this research. The arbitrating variable was then studied independently with respect to the knowledge available from secondary data sources. Subsequent to obtaining the facts, we incorporated and arranged the information into a methodical order for moving over to the analysis phase for plugging in the gaps found in the study. Literature illustrated that for academic institution website, there are four important elements i.e. design quality, content quality, content organization and user-friendly quality.

Keywords: *Content quality, website evaluation, design quality, content organization, SLR, user interface*

1. Introduction

Innovations in the information technology and communications in the 21st century have led to an increase in the way Internet is used as the primary source of information in almost all the area [17] [34]. Educational establishments such as colleges and universities were among the initial adopters of website development to display information about them on the Internet; they have been affected by the revolution in information technology and communications [19]. Over the years the objectives of having a university or college website has evolved according to the need of the modern technological advancements and the rise in the number of Internet users. Most of university websites in the early 1990s were information oriented, where the primary motive was be found on the web [3] [13] [17]. But in recent times, academic websites are seen as a crucial element of educational institutions and are seen as their visible representations [13]. The objective of this document is to review literature and find out:

1. Points to consider while going through the websites of universities situated in the Gulf region, with respect to student, teaching staff and management

2. Having a complete structure of such important points in place, aids in evaluating website evaluation through Systematic Literature Review (SLR)

To attain the purposes mentioned, also to meet the need of the new generation of technology savvy students, educational websites should reflect on usability when designing and enhance their websites. Usability is seen as a primary and a significant feature of any user interface; it helps in determining the fineness of a website, along with it, it provides the managers an insight into probable issues [5] [8] [9]. Usability by definition 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" [38]. Past studies have revealed that tackling the usability of academic websites have helped students to benefit from the learning experience, boost their self-confidence, and push them to make use of the

website [14]. However, it is unfortunate, that most of the time the websites of the universities are designed on the observations based on the web designers and/or administrators in the university instead of the needs of students. Moreover, these designers who develop websites know very little about user interface designing and usability engineering, therefore they end up wasting the time of the website users leading to redundant web-traffic [12] [17]. There is no study that widely explores and evaluates the usability of academic websites using the Systematic Literature Review (SLR). In the past studies, the heuristic evaluation method was used which overlooked the aspect of most frequently visited pages by student users on universities' websites [10] [17] [22] [25]. Also, all of these previous researches used the quantitative records based on questionnaires prepared to spot problems regarding usability from the surveyors' perspective, on the tested educational websites. As a result, these studies did not offer any detail concerning any specific kind of usability issues. Lastly, there is a need for studies that evaluates the aspects of academic websites using the SLR with reference to the Arabic websites particularly in Gulf region.

2. Literature Review

Literature Review is divided into two parts. First part illustrate the practices adopted by Gulf region education website, while second part focus on factors essential to overcome the deficiencies and development of framework

2.1. About Gulf Region Education Websites

Technological reformation brought advancements in the practices in almost all the areas including educational establishments. Arab nations have been affected greatly due to the modernization of information and communications technology such as cultural resistance, language, lack of trust, huge costs of personal computers

and high cost of Internet connection. Using the heuristics evaluation method, researchers found many problem areas in university webpage's like ten educational institution evaluation issues as suggested by [10] [22] [31], or particular heuristics that were designed for universities' websites [17] [25] [39]. The most commonly identified usability issues found by in these studies in the tested educational websites were associated to:

• Old content [25] [33] [39];

• A need for navigational support [10] [25] [39];

• No consistency in the webpage [4] [10] [22] [25];

• Almost useless internal search [22] [25];

• Language problems (e.g. spelling mistakes in the website) [25];

• Wrong or inappropriate page design [10] [17];

• Incomplete information [39]; and

• Inappropriate menu designs [22].

There were some studies, which were found in the literature that concentrated on Arabic websites, for example a research done by [4] [12] [15] [33]. They gave a set of questions to 252 students to appraise the usability of nine university websites from gulf universities. The finding of the paper proved that in general the usability level of the websites was satisfactory. Though there were few weak areas in some features of the sites, associated with interface, design and functioning; the study did not offer facts about definite types of usability issue that users pinpointed on the university websites. Likewise, [27] examined 237 students to rate the nine university websites from gulf region based on usability standards. They also examined students to qualitatively describe what they liked and disliked about the websites' designs. Results displayed that the most common flaw on the websites were the website design, inconsistency with respect to the fonts and colors used in the websites, the dual language i.e. Arabic and English interfaces, the design of the

webpage, and almost no assistance for the Arabic language.

Only one research paper was found on the subject of Arabic websites, that which was carried out by [29]. She examined the comparative importance of the design factor in usability study of university websites from the viewpoint of 237 students. The results recognized those features of website design which the students found better for a more user-friendly educational website [40]. These feature included, logical arrangement of a site, navigation assistance, faster downloading of web pages, visually appealing design, and an updated website.

2.2. Factors related to University Website-Focus on Gulf

The university websites were also studied from diverse viewpoints. In [42] worked out on an academic structure for evaluating the quality of the website from the user's standpoint, while few others developed their studies on other definite aspects of the websites. In [23] built a structure to quantify the usability of websites, and other studied and appraised the designing of college and university websites. While some researchers focus on other features of the university websites. The criteria to assess web resources for usage within the context of intellectual research with respect to the subject of art history were brought out by [30]. [36] tried to search for solutions to user problems that involved assessing the university websites of South Africa on some major points.

The aim of the study is to bring out an academic, and wholesome and measurable structure for evaluating the quality of gulf educational websites so that clear criteria could be provided that would promote enhancements in website design and its application. Moreover, we aspire to develop a structure which is capable of dependable applications and acceptable for a wide range of websites irrespective of what service they offer. For this a SLR method was implemented which incorporated an extensive range of literature review, spotting of the

positive factors for success from previous research papers and literature on the university website. The paper suggested four elements that are wide-ranging and comprise all the earlier elements, so that they can be used as general criteria to assess different kinds of websites. These elements of the suggested criteria are content quality, design quality, content of organization, and user-friendly quality.

2.2.1. Content quality

Generally, it is agreed that the quality of the content is a significant element that is linked with the uniqueness of the information in the website. In 2002 Sook and Singh named this elements the king of all the elements of any website, the reason being that website content is the main source of valuable information to the customers [28]. Content quality has been referred by many researchers in various ways. Few researchers considered only the website contents without focusing on any other elements like [18] and [20], while few others thought content quality or information quality as the basic element of their study models. In case of content quality, it comprises well-timed, relevant, language and presentation of the information. Well-timed can be defined as the currency of any website's information and if the information is updated frequently, as well as, if there is clarity on when the site had been last updated [7]. Relevancy involves the extent of comprehensiveness of websites' information, full and offers the right stage of details.

2.2.2. Design quality

The element of design quality relates to the visual aspects of websites' design that appeals to the users and induces them to stay on the website for a longer time and view the website and re-visit it. Nearly all past papers deal with the design element for its significance. Every company sets a lot of importance and effort on website designs and tries to bring a lot of appeal and

novelty because poor and simple designs indicate that probable users in no way see outstanding material states [36]. [41] elaborately described about the twelve features that focus on the element of website design. Few academicians believe this element as significant in their study. According to [7] and [35] this element is called as design, display, or presentation of information. Vital features of an educational website comprise appeal, appropriateness, image display, color and text.

2.2.3. Contents Organization

This element deals with the rational grouping, classification, or website structure in order to aid the viewer to quickly arrive at the requisite information, easy navigation of the website, consistency in comfort ability within website layout, and keep the user informed that they still using the same website [1]. [20] suggested structure themes that widely cover most aspects of this element. Quite a many academicians had referred to the elements of organization feature as a portion of usability element in their respective study models, while others cited the organization element as a portion of other elements such as communication, content, information or navigation

2.2.4. User-friendly quality

This element has been included by almost all the past research papers or at least one indicator of user-friendly quality in their criteria model due to its vitality. This element deals with points that assist a user irrespective of their experience or education qualification to search the required information in a rational time period. The major elements are Reliability, Usability, Interactive features, Security and Customization [11].

This study employed SLR and examined the factors in analyzing the quality of various other websites, before suggesting a comprehensive structure for evaluating the website quality irrespective of the kind of service that it gives. The elements of the structure, its checklist and indicators are summed up in the Table. Also, our structure has the capability of consistent applications across the broad range of websites irrespective of the service offering. These elements with their indicators are fit for website design of university websites.

3. Methodology

Methodology of the research is to find previous available research studies that relevant to the topic and the most logical synthesis and literature analysis of this illustrative research is based on the following:

Phase 1: Data collection - Finding relevant and most fitting papers in reputable and esteemed university databases

Phase 2: Data screening - Extraction of information and arguments for justifications

Phase 3: Data integration - Integration and arrangement of research outcomes

Phase 4: Data analysis - Scrutiny of integrated knowledge base

Phase 5: Data conclusion - Findings and results

3.1. Data sources

A thorough search was conducted for relevant studies that included published work as a secondary source of data. Close to 64 research papers related to the topic were assessed, out of which 37 studies were found to be of relevance to the scope of this research paper. Hence those findings were included. In addition, the evaluation by and large was focused on the most recent data that was found on the topic to include as recent information. This led to eliminating many papers, so that the study could be focused on the most recent 25 studies which are relevant to the research. In spite of that, there were some exceptional cases which were included in order to fill in data or gaps in the literature.

3.2. Inclusion and Exclusion

The paper has employed four approaches to draw from the data extracted out of related studies.

First, we looked for database in the internet, searching with keywords like 'website evaluation', 'Quality of website', 'Education website affecting factors'.

Second, we did an "ancestor search" which is by scrutinizing references of the chosen research articles to obtain areas of previous database searches that helped to reach the source of the topic to get a better insight into the study that is being the research contemplated.

Third, we searched in a descending way by looking for researches which cited evaluation of Gulf region university websites by searching the internet. And finally, we excluded any unpublished and/or un reviewed work, which left us with 25 articles that were most relevant.

3.3. Screening

Subsequent to scrutiny of research papers, all the appropriate data was obtained from these papers and articles to find a common aspect that justified the focal point of this research. The arbitrating variable was then studied independently with respect to the knowledge available from secondary data sources. Subsequent to obtaining the facts, we incorporated and arranged the information into a methodical order for moving over to the analysis phase for plugging in the gaps found in the study. It was an essential requirement of the study to manage the data and conduct a meticulous selection of the content to find a valid basis for this research paper.

In conclusion, the findings of the study were accomplished so that the results of this study could be included.

4. Content Analysis for Education Website Quality

Table 1 shows the factor related to academic institution website and their classification, while Table 2 presents author support for all the classified factors.

Table 1: Factors and their Classification

Classification	Factors	Codes for alternatives
1	Contents	A – Timely
		B – Relevant
		C – Multicultural
		D – Variety of presentation
		E – Objective
2	Design	A – Attractive
		B – Appropriateness
		C – Colors
		D – Images, video and sound
		E – Text
3	Content Organization	A – Indexing
		B – Mapping
		C – Consistency
		D – Links
		E – Logo
		F – Domain
4	User Friendly	A – Usability
		B – Reliability
		C – Interactive
		D – Security
		E – Privacy

Table 2:   Literature Support

Author(s)	Contents					Design					Content Organization						User Friendly				
Classification	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	F	A	B	C	D	E
Singh and Sook (2002), Rahimnia and Hassanzadeh (2013)		√		√	√	√	√	√			√			√			√	√	√	√	
Molla and Licker (2001)	√	√			√			√		√	√	√			√						
(Algudsi & Alkhaledi, 2015; Heimlich and Wang (1999))	√	√			√		√	√			√		√			√	√	√			
Barnes and Vidgen (2002)	√				√	√			√	√	√	√	√	√			√				
Signore (2005)	√				√			√			√				√						
Yeo and Jin (2006); (Hamdan, 2013)						√		√			√			√	√						
Tan and Tung (2003); (Sodin & Habib, 2014)						√	√	√						√				√	√	√	
Leuenbach et al. (2006)	√				√		√				√			√				√			
Osborne and Rinalducci (2002), (Weber, 2004)	√	√				√			√		√	√	√	√			√				
Lin and Joyce (2004), (Parahoo, Harvey, & Tamim, 2013)		√				√		√	√	√				√							
Hussin, Suhaimi, and Mustafa (2005)											√		√			√					
Zhang and Dran (2001), (Gokah, Gupta, & Ndiwani, 2015)	√	√				√			√				√	√			√				
Palmer (2002)		√				√								√							
Moustakis, Tsironis, and Litos (2006)			√	√										√	√						
Lee and Seyedin (2002), (Gokah et al. 2015)		√			√		√		√					√				√			√
Lagerini, Paterno, and Scorcia (2006) Kasis (1998)				√			√				√	√	√								
											√	√	√				√				
(Bauer et al., 2006)		√		√	√	√		√						√	√		√	√			
Abou-Zahra (2006)			√								√										
Davis et al. (1989)	√			√	√	√							√				√	√	√	√	√

5. Finalization of structures

Figure 1 indicates the final structure mandatory for website assessment of an educational institution. The focus should be on four major components i.e. Design quality, content quality, content organization and user-friendly.
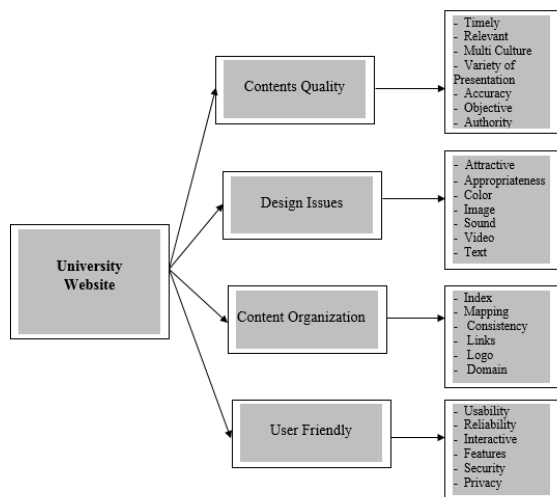

Fig 1: Proposed Research Framework

6. Conclusion

Till date, there are very few papers which have tried to assess the performance of the website from technical appearance and prospective of student, faculty and administrators. Nearly all previous papers have failed to distinguish the measurements with regard to service offerings and technology [6] [9] [33] [40]. Abovementioned methods may not be sufficient to measure the functioning of the website from both assessments that of website and technical appearance. The current literature on evaluation of educational website quality does not contain any standards which are regularly agreed-upon for website study. Therefore, this study categorizes assessment features into three things namely: contents organization and design, design issue and user friendly including ease of use [9]. The new structure that is suggested is likely to help researchers and practitioners from taking on a new course on educational website assessment and

evaluation [23] [24] [25]. This structure can be used an assessment guide to assist the practitioners to spot the pros and cons of their education institution websites, particularly, gulf region universities and institutions. It also aids them in enhancing their website with clear objectives [1]. The developed framework is helpful for gulf region, especially when a new institutional website is developed and goes on online this structure can be applied to assess the website's complete functioning; or else, when a website has a very good functional design, but is having issues in its online transaction completion, causing problems of online service quality and usability. The gulf institutional website administrators use these two aspects to carry out the assessment. Further, proposed framework provides structural integrity especially the physical accessibility of the website into the structure [2] [24] confirmed that website accessibility is specially vital to public websites that offer all types of clients including disabled people. Thus, the public websites must offer a high standard and qualified physical accessibility performance [32]. When it concerns the scholarly researchers, as elaborated before, this structure is to give a new course and proposes a scope for further study on website assessment that call for specifications on detailed facets. This paper is responsible for earliest effort to suggest a new website assessment structure. As it is still in the early stages, there are quite a many research questions that remain unanswered; these surely call for justified efforts for any potential research.

References

[1] Abanumy, A., Al-Badi, A., & Mayhew, P. (2005). E-Government website accessibility: in-depth evaluation of Saudi Arabia and Oman. Electronic Journal of e-Government, 3(3), 99–106.

[2] Abou-Zahra, S. (2006). A Data Model to Facilitate the Automation of Web Accessibility Evaluations. Electronic Note in Theoretical Computer Science, 157, 3-9.

[3] Al-Fadhli, M., Corrall, S., & Cox, A. (2016). Factors Underlying Technology Adoption in Academic Libraries in Kuwait. New Review of Academic Librarianship, 1-21.

[4] Alqudsi, T. M., & Alkhaledi, R. M. (2015). Website usability: the case of Kuwaiti middle school students. The Electronic Library, 33(3), 557-572.

[5] AlRoobaea, R., & Mayhew, P. J. (2014). How many participants are really enough for usability studies? Paper

presented at the Science and Information Conference (SAI), 2014.

[6] Aydarova, O. (2013). If Not "the Best of the West," Then "Look East" Imported Teacher Education Curricula in the Arabian Gulf. Journal of Studies in International education, 17(3), 284-302.

[7] Barnes, S., & Vidgen, R. (2002). An integrative approach to the assessment of e-commerce quality. Journal of Electronic Commerce Research, 3(3), 114–127.

[8] Bauer, H. H., Falk, T., & Hammerschmidt, M. (2006). eTransQual: A transaction process-based approach for capturing service quality in online shopping. Journal of Business Research, 59, 866-875.

[9] Benslimane, Y., & Yang, Z. (2006). Linking commercial website functions to perceived usefulness: A free disposal hull approach. Mathematical and Computer Modeling, 46, 1191-1201.

[10] Bhattacherjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. MIS Quarterly, 25, 351-370.

[11] Bodin, M., & Habib, E. (2014). Using Coastal Louisiana to Develop Hydrologic Web-based Learning Modules.

[12] Chow, A. S., Bridges, M., & Commander, P. (2014). The Website design and Usability of US Academic and public libraries. Reference & User Services Quarterly, 53(3), 253-265.

[13] Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. Management Science, 35, 982-1003.

[14] Evans, J. R., & King, V. E. (1999). Business-to-business marketing and the World Wide Web: Planning, managing and assessing web sites. Industrial Marketing Management Science, 28, 343–358.

[15] Gledec, G. (2005). Evaluating web site quality. Paper presented at the Seventh Internet Users Conference (CUC2005), Croatia.

[16] Gokah, T. K., Gupta, N., & Ndiweni, E. (2015). E-Learning in Higher Education–Opportunities & Challenges for Dubai. International Journal on E-Learning, 14(4), 443-470.

[17] González, M. F. J., & Palacios, B. T. M. (2004). Quantitative evaluation of commercial web sites: an empirical study of Spanish firms. International Journal of Information Management, 24, 313-328.

[18] Granath, K. (2005). Evaluating web pages. Available at: http://www.lib.umt.edu/research/guide/int_evalweb.htm. Retrieved Feb. 18, 2016

[19] Hamdan, A. (2013). An Exploration into" Private" Higher Education in Saudi Arabia: Improving Quality and Accessibility? The ACPET Journal for Private Higher Education, 2(2), 33.

[20] Heimlich, J., & Wang, K. (1999). Evaluating the Structure of Web Sites. Environmental Education and Training Partnership Resource Library, Ohio State University Extension, USA.

[21] Hussin, H., Suhaimi, M., & Mustafa, M. (2005). E-Commerce and ethical web design: applying the BBBOnline guidelines on Malaysian web sites. The International Arab Journal of Information Technology, 2(3), 218–226.

[22] Kanis, H. (1998). Usage centered research for everyday product design Applied Ergonomics, 29, 75–82.

[23] Lautenbach, M. A. E., Schegget, I. S., Schoute, A. M., & Witteman, C. L. M. (2006). Evaluating the Usability of Web Pages: A Case Study.

[24] Leporini, B., Paternó, F., & Scorcia, A. (2006). Flexible tool support for accessibility evaluation. Interacting with computers, 18, 869-890.

[25] Liao, C., Palvia, P., & Lin, H.-N. (2006). The roles of habit and web site quality in e-commerce. International Journal of Information Management, 26, 469-483.

[26] Lin, O., & Joyce, D. (2004). Critical success factors for online auction web sites. Paper presented at the 17th NACCQ.

[27] Luo, X., & Seyedian, M. (2003). Contextualmarketing and customer-orientation strategy for e-commerce: An empirical analysis. International Journal of Electronic Commerce, 8, 95–118.

[28] Molla, A., & Licker, S. P. (2001). e-Commerce systems success: an attempt to extend and re specify the Delone and Maclean of IS success. Journal of Electronic Commerce Research, 2(4), 131–141.

[29] Moustakis, V., Tsironis, L., & Litos, C. (2006). A model of website quality assessment. The Quality Management Journal, 13, 22–37.

[30] Osborne, C., & Rinalducci, J. (2002). Evaluation of Web Based Resources within the Art History Discipline, Technical Report, University of North Carolina.

[31] Palmer, J. W. (2002). Web Site Usability, Design and Performance Metrics. Information System Research, 13, 151-167.

[32] Parahoo, S. K., Harvey, H. L., & Tamim, R. M. (2013). Factors influencing student satisfaction in universities in the Gulf region: does gender of students matter? Journal of Marketing for Higher Education, 23(2), 135-154.

[33] Rahimnia, F., & Hassanzadeh, J. F. (2013). The impact of website content dimension and e-trust on e-marketing effectiveness: The case of Iranian commercial saffron corporations. Information & Management, 50(5), 240-247.

[34] Schrum, L., Davis, N., Jacobsen, M., Lund, A., Ferhan Odabasi, H., Voogt, J., & Way, J. (2015). A Global Perspective: Current Trends and Issues in ICT for 21st Century Education.

[35] Signore, O. (2005). A comprehensive model for web sites quality. Paper presented at the Seventh IEEE International Symposium on Web Site Evolution (WSE'05).

[36] Singh, I., & Sook, A. (2002). An evaluation of the usability of South African university web sites. Paper presented at the 2002 CITTE Conference, Durban,South Africa.

[37] Tan, F., & Tung, L. (2003). Exploring website evaluation criteria using the repertory grid technique: a web designers' perspective. Paper presented at the Second Annual Workshop on HCI Research in MIS, WA.

[38] Tong, J. P. C., Duffy, V. G., Cross, G. W., Tsung, F., & Yen, B. P. C. (2005). Evaluating the industrial ergonomics of service quality for online recruitment websites. International Journal of Industrial Ergonomics, 35, 697-711.

[39] Waite, K. (2006). Task Scenario Effects on Bank Web Site Expectations. Internet Research, 16, 7-22.

[40] Weber, A. S. (2014). Education, development and sustainability in Qatar: A case study of economic and knowledge transformation in the Arabian Gulf. Education for a knowledge society in Arabian Gulf countries, 24, 59-83.

[41] Yoo, S., & Jin, J. (2004). Evaluation of the home page of the top 100 university web sites. Academy of Information and Management Sciences, 8(2), 57–69.

[42] Zhang, P., & Dran, G. (2001). Expectations and ranking of website quality features: results of two studies on user perceptions. Paper presented at the 34th Hawaii International Conference on System Sciences, Hawaii

Dr. Ashraf M. Badawood received his B.S. degree in hospital care management from King Abdualziz university, Jeddah, Saudi Arabia in 2004, the M.S. degree in management information systems from Lawrence technological university, Southfield, Michigan, the USA in 2008, and the doctoral degree in management information technology from Lawrence technological university, Southfield, Michigan, the USA in 2012. He received the 2012 Meritorious PhD Paper Award in the category PhD Student/Faculty at the Information Systems Educators Conference in November for "A Systematic Approach to Faculty Development Toward Improved Capability in Tertiary Teaching in a Blended Learning Environment."
He worked in Taif university for almost 4 years and during that period he held various positions that are head of MIS department, vice dean of eLearning deanship, and dean of business school. Currently he is working in Jeddah university in MIS department.
His research interest includes mobile learning, eLearning, CRM systems, website development, and ERP systems. He has been published in various journals and conference, including ICIEET, EEE, IJCSI, ISECON, ISEDJ and other Arabic journals.