

Website Usability Evaluation of the Faculty of Education, Qasr Bin Ghashir

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تقييم سهولة استخدام الموقع الإلكتروني لكلية التربية قصر بن غشير

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Received: April 04, 2026

Accepted: June 16, 2026

Published: June 28, 2026

Abstract:

Nowadays, for educational organizations such as universities and higher institutions, the significance of a website for promoting their online services and communicating with their numerous clients (lecturers, researchers, students, staff, and guests) cannot be overemphasized. Website usability is the most significant factor in developing a high-quality website. This study aims to evaluate the usability and user experience of the Faculty of Education at Qaser Bin Ghashier (FOEQBG). Data was collected by utilizing the Website Analysis and Measurement Inventory (WAMMI) questionnaire, that measured website usability across five categories: Attractiveness, Controllability, Efficiency, Helpfulness, and Learnability. The responses were processed using SPSS. The study found that the FOEQBG performed well in terms of the Helpfulness sub-scale. However, users showed a fair or moderate satisfaction in terms of Attractiveness, Controllability, Efficiency, and Learnability. Thus, the overall usability fairly impacts the students' academic experience and that of other users. As a result, the study's recommendations were specified to identify areas for improvement to enhance user experience and satisfaction.

Keywords: Usability, User experience, educational websites, Libya, WAMMI criteria.

المخلص

في الوقت الحاضر، لا يمكن المبالغة في مدى أهمية الموقع الإلكتروني للمؤسسات التعليمية، كالجوامع والمعاهد العليا، في الترويج لخدماتها الرقمية والتواصل مع عملائها المتعددين (من محاضرين، وباحثين، وطلاب، وموظفين، وزوار). وتُعد سهولة استخدام الموقع العامل الأكثر أهمية لتطوير موقع إلكتروني عالي الجودة. تهدف هذه الدراسة إلى تقييم سهولة الاستخدام وتجربة المستخدم لكلية التربية بقصر بن غشير. وقد جُمعت البيانات باستخدام استبيان "مخزون تحليل وقياس المواقع الإلكترونية (WAMMI)"، والذي يقيس سهولة استخدام الموقع عبر خمس فئات وهي: الجاذبية، وقابلية التحكم، والكفاءة، وتقديم المساعدة، وقابلية التعلم. غُولجت الإجابات باستخدام برنامج الحزم الإحصائية للعلوم الاجتماعية (SPSS). وأظهرت نتائج الدراسة أن أداء الكلية كان جيداً في المقياس الفرعي المتعلق بـ "تقديم المساعدة". ومع ذلك، أبدى المستخدمون رضا مقنعاً أو متوسطاً فيما يتعلق بالجاذبية، وقابلية التحكم، والكفاءة، وقابلية التعلم. وبالتالي، فإن سهولة الاستخدام العام تؤثر بشكل متوسط على التجربة الأكاديمية للطلاب والمستخدمين الآخرين. ونتيجة لذلك، حُدثت توصيات الدراسة لتحديد مجالات التحسين اللازمة لتعزيز تجربة المستخدم ورضاه.

Introduction

Nowadays, websites are considered as the most success factor for various organizations with several fields in digital environment. This is because, websites represent organization's perspectives, missions, services and ways that they providing information and communications to their respective client [1]. As a result, the educational organizations such as universities and higher institutions cannot be overemphasized the significance of a website for promoting their online services and the communication with its numerous clients (lecturers, researchers, students, guests, alumni, and staff) [2]. Furthermore, the website improves the educational organizations world's ranking [3]. The critical quality factors that determining the success and effectiveness of educational websites is usability of these websites and user experience and satisfaction. Moreover, the concept of the Usability was elaborated by the International Standard Organization (ISO) as "the extent to which a product can be used by specified users to achieve specific goals with effectiveness, efficiency and satisfaction in a specified context of use" [5]. Usability of website refers to the ease with which users can navigate, understand, and interact with a website to achieve their goals efficiently and satisfactorily [4]. User experience can be referred to "all aspects that drown out the perceptions of user who interacting with product, environment or services "[6][7]. Whereas, user Satisfaction is about the degree of which the user of website is able to give its response and reaction about using the service, system, or product that meets its mental, emotional, and physical desires. [11].

Consequently, approving these factors is required validating the performance of website by way of evaluation it, in order to identify factors that have considered to improve ways that structured website's information presented, organized, navigated and accessed [8][9]. Website's usability assessment referred to simplicity on using website's provided functions and performed user's tasks efficiently [9]. According to [8] the most critical website design criteria that effect usability and the first impression of website's users are: efficiency, attractiveness, controllability, helpfulness, and learnability. These principles have been stated in Website Analysis and Measurement Inventory (WAMMI).

Unfortunately, most of studies that were evaluating the usability of designed educational websites either from organizations' perceptions or software developer's standpoints rather than its real user's viewpoint .in addition, there are few Arabic studies that have been conducted to assess the usability of educational websites [13]. Furthermore, such as these studies are uncommon in Libya and there is a lack of research which has evaluated the usability of (FOEQBG). However, to fill this gap, and get full understanding of (FOEQBG) website's users needing, this study seeks to assess the website's usability of (FOEQBG) through the five influences of usability presented in WAMMI (Website Analysis and Measurement Inventory): efficiency, attractiveness, controllability, helpfulness, and learnability in order to ensure its relevance and user- friendliness, as well as seeking to regular user feedback to identify areas for usability improvement and enhance satisfaction and user experience of (FOEQBG). The study will be contributed in enhancing the Libya's higher education sector goals towards digital transformation.

Study questions:

What are the current levels of usability of (FOEQBG) website?

To answer the main question, the followed sub-questions will have answered:

1. To what extent does the (FOEQBG)'s design attractive?
2. Can (FOEQBG) website user's complete common tasks such as logging in, navigating pages submitting forms on the (FOEQBG) website efficiently?
3. To what extent the (FOEQBG)'s website users have control on the website?
4. 4-To what extent does the (FOEQBG)'s website is useful to its users?
5. 5-To what extent can users learn from various context and instruction that are provided on (FOEQBG) website?
6. 6- How satisfied are users with the (FOEQBG)'s website performance and responsiveness under different levels of usage?

Study objectives:

To explore the usability of (FOEQBG) website from its user's perceptions.

To achieve the main objective, the followed sub-objectives will have investigated:

1. 1-To evaluate the attractiveness of (FOEQBG)'s website.
2. 2- To evaluate the efficiency of (FOEQBG)'s website.
3. 3- To evaluate the controllability of (FOEQBG)'s website.
4. 4- To evaluate the helpfulness of (FOEQBG)'s website.
5. 5- To evaluate the learnability of (FOEQBG)'s website.
6. 6- To evaluate level of satisfaction of (FOEQBG)'s website users.

Related work:

This subsection reviews earlier studies that investigated the usability of educational websites using different types of usability methods. Almost of these studies that evaluated the usability of educational websites employed either evaluator-based (i.e. heuristic testing) or user-based evaluation (i.e. user evaluation) usability evaluation methods [19]. Here are some of the most prominent usability evaluation methods used for educational websites, categorized by their general approach.

The study that has conducted by [13] employed the heuristic evaluation method to evaluate the usability of the all pages of the website of University of Basra, the usability assessment was conducted by two evaluators. The heuristics used set of principles derived from an extensive investigation of the studies related to heuristic evaluation method which are specially designed to assess the usability level of academic websites. The adopted heuristics were categorized into four main categories contain set of subcategories that had a total of 28 criteria. The results showed that identified usability issues were categorized based on their location (university, collage or department) and type of discovered issues (25 specific type of problems). The result revealed that the heuristic evaluation method was an effective and useful technique which identified several usability problems most of which were not previously detected. However, this method is in somewhat fast and inexpensive. It can uncover many usability issues that real users might not notice but that still effect their experience. Furthermore, the quality of the evaluation depending on the proficiency of the evaluators. It also doesn't involve real users, so it may miss context-specific issues.

The System Usability Scale (SUS) is a widely used questionnaire that provides a reliable score for perceived usability. It is a popular method in studies of educational technology, including university websites and Learning Management Systems (LMS) [14]. For example, the study conducted by [15] investigated the usability of online based learning (e-learning) of Telkom Institute of Technology Purwokerto (ITTP) from the viewpoint of 100 web users distributed between student and lectures. The purpose was to optimizing the usability of e-learning system at ITTP by using System Usability Scale (SUS) questionnaire. The result showed that the system is still in the acceptance range and Adjective rating "OK". The study conducted by [16] was similar to the study conducted by [15] in the sense that both of them employed System Usability Scale (SUS) questionnaire. Where, [16] used (SUS) to assess the usability of Moodle-based online learning system by collecting individual response from 120 students about user satisfaction, system's efficiency, and effectiveness. The statically analysis of (SUS) showed that Moodle-based online learning system needs improvement even though its usability in acceptance level. However, (SUS) is simple to administer, easy to score, and provides a consistent, comparable metric, but it doesn't identify specific problems. A low score tells you something is wrong, but not what or where.

Evaluation of the Quality of Educational Websites (EQEWS) model was used by [17]. This questionnaire evaluated four high school educational websites based on ten quality criteria (update, authority, accessibility, communication, usability, graphic design multimedia quality, content, navigation, interaction and speed of access) from view point of 200 users. The analysis of questionnaire generated and captured the effects of different criteria to the ranking of the

best and the worst websites. quality ranking of evaluated website was with the averages of two best and two worst sites. The questionnaire applied through of Likert scale: (agree, disagree and undefined scale). the finding showed that most of users were not satisfied with the criteria of communication and update of evaluated websites while they were satisfied with the navigation and usability of evaluated websites.

However, the study conducted by [18] indicated that using tools or software in the development process to identify website usability problems that are difficult for users and developers to perceive is the third most common method of assessing website usability, as these problems affect users' experience and satisfaction with websites. The study conducted by [20] was used GTmetrix automated tool to investigate performance dimensions which are: user interface and its compatibility and functionality, page's load/stress, and security of six Eastern Libyan university. After measures the page size, composition, structure and download time of each university's website, the highest record for the majority of metrics which indicated the highest website's usability were scored from the university's website of Ajdabia.

Material and methods:

This study employs quantitative approach to collect data in order to get a comprehensive understanding of user experience and satisfaction with website of (FOEQBG). Likewise, to evaluate and to provide a well-rounded analysis of usability issues with the (FOEQBG)'s website and user perceptions among student and faculty member of (FOEQBG).

- Study Area:

The Study was carried on Faculty of Education Qaser Bin Ghashier (FOEQBG)'s website <https://uot.edu.ly/edg/>, which is e-government website related to one of the big public sector's University named university of Tripoli. (FOEQBG) located in Qaser bin Ghasir Municipality.

- Technique and Sample Size:

Website Analysis and Measurement Inventory (WAMMI) questionnaire was used to collect data about website user's responses. According to [10] (WAMMI) questionnaire is a standardized tool was developed in 1999 by University College Cork, specifically by its the Human Factors Research Group (HFRG). (WAMMI) questionnaire is widely used to explore and assesses the usability of website and user satisfaction via 20 statements distributed into five major sub-characteristics enlisted bellow [10]:-

- Attractiveness: The extent to which the site is able to attract its users.
- Helpfulness: The ability to understand the website while performing their tasks.
- Controllability: The extent of the user's ability to operate and get control over the website.
- Learnability: The extent to which the users of website are able to learn its applications.
- Efficiency: Speed at which website's users complete their tasks.

(WAMMI) Questionnaire was used, because it was easier and low-cost, comparing to other usability evaluation survey's approaches [12]. Besides, it is free and the most recommended in evaluating users experience for e-government websites and able to expand to involve more sub-characteristics [10]. Questionnaires were distributed to the total of 348 users (students and faculty staff) of the website of (FOEQBG) whom selected randomly to get their feedback and reactions from each participant. The survey's questionnaire was administered to faculty members manually to gather empirical evidence and informed consent, get demographic data forms for participants. The assessment scale was used using the Likert scale from numbers 1 to 5 to each of (WAMMI) statement items and the data was analyzed by using SPSS software. Based on [10] The (WAMMI) questionnaire consists of 20 indicator statement as shown in Table 1.

Table 1 Website Analysis and Measurement Inventory (WAMMI) questionnaire items.

Code	Statements Items	Scale
S1	(FOEQBG) website has much that is of interest to me.	1 to 5
S2	It is difficult to move around (FOEQBG) website.	1 to 5
S3	I can quickly find what I want on (FOEQBG) website.	1 to 5
S4	(FOEQBG) website seems logical to me.	1 to 5
S5	(FOEQBG) website needs more introductory explanations.	1 to 5
S6	The pages on (FOEQBG) website are very attractive.	1 to 5
S7	I feel in control when I'm using (FOEQBG) website.	1 to 5
S8	(FOEQBG) website is too slow.	1 to 5
S9	(FOEQBG) website helps me find what I am looking for.	1 to 5
S10	Learning to find my way around (FOEQBG) website is a problem.	1 to 5
S11	I don't like using (FOEQBG) website.	1 to 5
S12	I can easily contact the people I want to on (FOEQBG) website.	1 to 5
S13	I feel efficient when I'm using (FOEQBG) website.	1 to 5
S14	It is difficult to tell if (FOEQBG) website has what I want.	1 to 5
S15	Using (FOEQBG) website for the first time is easy.	1 to 5
S16	(FOEQBG) website has some annoying features.	1 to 5
S17	Remembering where I am on (FOEQBG) website is difficult.	1 to 5
S18	Using (FOEQBG) website is a waste of time.	1 to 5
S19	I get what I expect when I click on things on (FOEQBG) website.	1 to 5
S20	Everything on (FOEQBG) website is easy to understand.	1 to 5

Results and discussion

We found that the highest percent of the total sample were female by 59%, while male were 41% of the total sample.

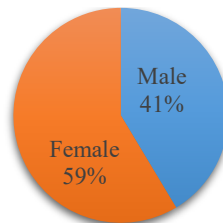


Figure 1: Gender Distribution of study participants.

About age, they were (between 18-24 years old) by 79% of the total sample. whereas about 3% of the sample were (between 55-64 years old).

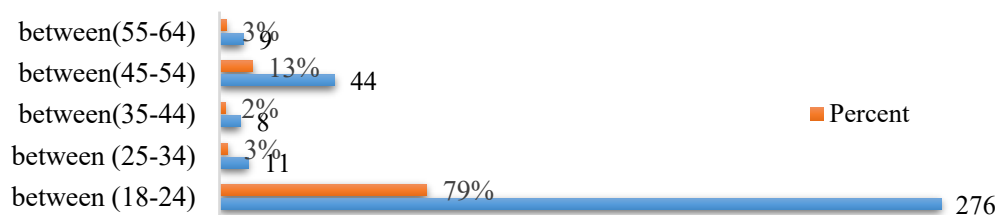


Figure 2: Age distribution of study.

Regarding to the type of users of the website, the participants categorized into two main groups (student and faculty staff). Figure (3) below illustrates that the number of internet users from the student category reached 260 of the total number of the study sample, with a rate of 75%, while the number of website users from the employees reached 88 faculty staff (academic staff and administrative staff), at a rate of 25% of the total study sample.

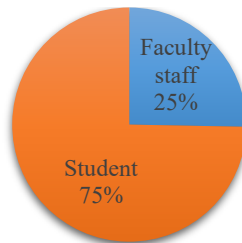


Figure 3: Occupation (Website's user type) Distribution of study participants.

Questionnaires were distributed to the participants to find out users' perception and views on the developed website based on the above mentioned parameters. The responses' mean score on a five-point scale Likert scale, where by (5=Strongly Agree, 4=Agree, 3= Neutral or Moderate, 2=Disagree and 1=Strongly Disagree), was computed with level of satisfaction score on five levels, where by (5= Extremely satisfied, 4= Satisfied, 3=Neutral or Moderate, 2=low satisfied and 1= Unsatisfied). Data were processed using descriptive statistical analysis. Regression analysis was performed on the usability features to determine the relationship between the dependent variable which is the overall usability and independent variables representing Attractiveness, Controllability, Efficiency, Helpfulness and Learnability. The mean score for all validated usability features was above of 3, where the majority of the sampled respondents satisfied with Helpfulness feature that scored the highest mean = 3.86 with standard division = 0.505100, whereas other usability features (controllability, efficiency helpfulness and learnability) especially efficiency feature that scored least mean's score=3.29 with standard division = 0.580410 showed Neutral or Moderate level of user satisfaction with the (FOEQBG)'s website witch indicated and expressed their willingness to use it to conduct their activities of learning as shown in Table 2 and 3.

Table 1 Mean Score On a Five-Point Likert Scale,

variation	Satisfaction level	Level	Weighted Mean
0.80	Unsatisfied	Strongly Disagree	From 1 to 1.80
0.80	low satisfied	Disagree	From 1.81 to 2.60
0.80	Neutral or Moderate	Neutral or Moderate	From 2.61 to 3.40
0.80	Satisfied	Agree	From 3.41 to 4.20
0.79	Extremely satisfied	Strongly Agree	From 4.21 to 5

Table 2 Results of User's satisfaction Levels.

Usability feature			
Usability Feature	Mean	Standard Division	Satisfaction 's Level
Attractiveness	3.4353	0.964310	Neutral or Moderate
Controllability	3.3125	0.66310	Neutral or Moderate
Efficiency	3.2917	0.580410	Neutral or Moderate
Helpfulness	3.8649	0.505100	Satisfied
Learnability	3.3398	0.663220	Neutral or Moderate

The Pearson correlation coefficient was measured between the usability of the website, which is the dependent variable, and the five independent variables (attractiveness, controllability, efficiency, assistance, and learnability). The following table shows the results according to the viewpoint of the (FOEQBG)'s website users.

After calculating the correlation coefficients between the independent and dependent variables, the model's quality was tested using the F-test. The proportion of the change in the ease of use of the (FOEQBG)'s website explained by each independent variable was calculated using the R-squared test. Finally, the significance of the effect of these independent variables on the usability of the (FOEQBG)'s website was confirmed using the t-test.

Table (4) shows the correlation coefficients between the independent and dependent variables, the model's quality test, the effect test, and the simple correlation model.

Table 4 Results of the correlation coefficients between the independent and dependent variables, the model's quality test, the effect test, and the simple correlation model.

dependent variables	Measure	Independent variables (factors affecting the usability of the college website)				
		Learnability	helpfulness	Efficiency	Controllability	Attractiveness
Usability	Pearson Correlation	0.310**	0.489**	0.441**	0.367**	0.972**
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	R- Square	0.096	0.239	0.194	0.135	0.945
	F-test	36.829	108.767	83.412	53.899	5891.202
	T-test	6.069	10.429	9.133	7.342	76.754
	N	348	348	348	348	348

** . Correlation is significant at the 0.01 level (2-tailed)

*: Statistically significant at the 0.05 significance level

** : Statistically significant at the 0.01 significance level

The usability of the website using a ranking scale (high-medium-low) was evaluated. The website's usability Mean's score was calculated and the score 3.47, indicating that the website's usability, user-friendliness or satisfaction level is at medium level.

Conclusion

This study aimed to provide assessment of the usability of the (FOEQBG)'s website from the perspective of its users. This evaluation has been done using a questionnaire based evaluating method according to 5 scales: attractiveness, controllability, effectiveness, learnability, and helpfulness. The results showed neutral or midrate responses regarding the attractiveness, controllability, learnability, and efficiency of the website. Despite the strong correlation between these factors and website usability, as demonstrated by Spearman's test, this finding highlights the need for continuous evaluation and development by website developers to enhance the user experience. However, respondents generally agreed that the website's helpfulness was acceptable. Regression and model quality tests indicated some degree of user satisfaction with the website's usability. The overall rating of the website's usability was average from the users' perspective. Future studies should focus on identifying methods and technologies to improve the user experience on websites and continuously evaluating to the website to track progress in enhancing the (FOEQBG)'s website user experience.

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