

Quality Evaluation of “Safer” Portal For Saudi Students Studying Abroad

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Abstract- The purpose of this research was to evaluate the quality of Safer portal. “Safer” is a portal through which a student can apply for any of the 86 available academic, administrative and financial services. It was launched on Sunday 29th of January 2009; to link the Saudi ministry of higher education to Saudi cultural missions around the world. The quality was evaluated by seven experts and eight factors. Every dimension was evaluated by different number of items on 5 Likert scales. The evaluation instrument was the survey developed by the researchers upon the reviewed literature. It was found that, the Safer portal quality is fairly good by 75% and it needs further improvement and development by 25%. The researchers recommend further investigation on empirical surveys, in order to develop more acceptable and authentic instrument. Also, it needs further understanding of evaluators. The evaluators’ uncertainty is an ambiguity issue raised in the difference between internal consistency of the survey and the lack of their concordance.

Keywords: e-Government,portal, portal quality, experts’ evaluation.

I. INTRODUCTION

Saudi ministry of higher education has sought to utilize information technology at services provided to ministry sectors, building on the Saudi government orientation toward electronic transformation of the services of all government sectors, and applying Council of Ministers Resolution no. 40 dealing with e-government implementation rules [1]. Saudi Arabia has a rapid growth of Internet users. The number of Internet users grew from around 1 million in 2001 to an estimated 14.2 million by the end of the first quarter of 2009. Internet penetration increased to 49.1% of the population by the end of the first quarter of 2012 [1].The rapid increase in the use of the Internet as a medium of transaction, government websites soon evolved into a channel for supporting a front-office and back-office activities of the government and for providing online services [2].

Knowledge explosion and information technology age brought by the internet arouse the interest of government worldwide to look at an easy way in providing services and information for the citizens[3].

E-government emerged in the early 1990s [2]. E-government is the use of technology, particularly web-based internet applications, to enhance the access to, and delivery of, government information and service to citizens, business partners, employees,

other agencies and government entities [4]. Later, upon realizing the potential of the Internet, individual ministries began to develop innovative ways to transform their websites into “portals”. Portal is a special type of website that offers a gateway to a vast range of content and services [5]. Portals have become the preferred web interface used by organizations to provide services and up-to-date information to their users [2], also they are replacing first-generation intranet websites as a more effective, efficient and flexible means of managing and delivering applications and information to diverse sets of users, and they are potential tools for increasing productivity by enhancing access to an enterprise's information assets [6].

“Safer” is a portal through which a student can apply for any of the 86 available academic, administrative and financial services. It was launched on Sunday 29th of January 2009, to link the Saudi ministry of higher education to Saudi cultural missions around the world. It comprised of four key integrated systems that are Safer Students, Safer Workflow, Safer Financial system and Safer Academics. Safer Workflow aims at raising work efficiency and facilitation of the management of student requests. The Safer financial system aims at minimizing effort and providing better speed and accuracy at managing financial transactions of such large students and staff base count. The fourth system, Safer Academics, maintains tracking of scholarship students' basic details, academic progression and academic information. All these items are important at follow up and service of students and their requests. The Safer is capable of performing and hosting integrated services in record time and with high precision. Also, it proved effective for all users whether they are ministry workers or mission staff in 32 countries or more than 130,000 scholarship students.

E-services quality is a key determinant to the success or failure of portal. E-services quality is the user’s perceptions of the outcome of the service delivery along with service recovery perceptions. The factors of e-service quality are: website designs, appears, aesthetic design or visualization, reliability, efficiency, privacy, security, accessibility, performance, usability [7, 8, 9, 10,11, 12,13].

Heuristic evaluation is the most effective way for identifying usability problems [14]. It involves an expert evaluating the interface against a set of recognized usability principles known as the 'heuristics' [15]. The advantages of heuristic evaluation are that it is not only cheap but also fast, easy to learn, flexible, and most importantly effective [16]. Although, heuristic evaluation is categorized under 'expert's review', it can be used effectively by both novices and experts [17]. The other advantage of heuristic evaluation is that it can be used to examine issues related to interface design, for instance when considering a particular aspect of interface design in detail or considering the entire interface without enough depth [18]. Thus, the use of heuristics allows for an in-depth evaluation of the interface and identification of specific and overarching problems [19].

Heuristic Evaluation is usually conducted in a series of four steps [20]. The first step is preparation. In this step, a researcher identifies the task(s) that an evaluator has to inspect, selection of evaluators and finally; determines his inspection instruments where evaluators have to respond to problems. The second step; is selection of heuristic evaluation approach. There are three main heuristic evaluation approaches. These are; first one: a researcher develops a set of tasks and asks his/her evaluators to carry them out. Therefore, expert evaluators visually inspect an interface to determine problems related to a set of guidelines (heuristics). These experts identify problems based on whether or not the interface fails to adhere to a given heuristic. When there is a failure, there is typically a usability problem. Studies of heuristics have shown them to be effective (in terms of numbers of problems found) and efficient (in terms of cost to perform). In the second approach; a researcher provides evaluators with the goals of the system, and allows them to develop their own tasks. While in the third one; a researcher asks evaluators to assess his/her dialogue elements. The third step is the evaluation process. Herein, the evaluators inspect interface individually to identify all violations of heuristics (the usability problems); record the problem (feature and location), severity (based on frequency, impact, and criticality/cost) and heuristics violated. And finally, a researcher aggregates and analyzes results: group similar problems; reassesses severity; and determines possible fixes.

The researchers aimed to find out the quality of Safer portal. Therefore; they try to find: the critical factors for a portal successful, problems and gaps are found in the Safer portal, and recommendations could be made to improve it in order to serve the Saudi students in the most effective ways.

II. PROBLEM STATEMENT

The implementation of e-government in several ministries in the Kingdom of Saudi Arabia through the use of portals is not adequate and fully effective.

In fact, portal users are disgruntled by the inadequate and low quality of services provided by portals [21, 22]. Therefore, the problem of the research is to evaluate the quality of "Safer" portal.

III. RESEARCH OBJECTIVES

The goal of this research is to evaluate the "Safer" portal quality. This goal will be achieved through the following specific objectives:

- To identify the critical success factors for a portal.
- To identify the problems and gaps found in the Portal.
- To use the findings of the research to make recommendations on the improvement of the "Safer" portal.

IV. RESEARCH QUESTIONS

Based on the principal objective of the research, the main research question guiding the research is: "What is the quality of Safer portal?". From this main research question, the following questions are set:

- What are the critical factors for a portal successful?
- What problems and gaps are found in the Safer portal?
- What recommendations could be made to improve the Safer portal in order to serve the Saudi students in the most effective ways?

The scope of the research is an empirical investigation of the quality of Safer portal developed by the ministry of higher education. Thus, the research may be of benefit to the various administrative departments in-charge of planning and discharging e-services to its clients.

V. METHODOLOGY AND DATA ANALYSIS

Methodology

The research conducted herein adopted the heuristic evaluation model to assess the quality of the Safer portal. The researchers collected the data by a survey; upon developing the survey, the researcher had taken into account; its objectives, purposes, i.e., why they are intending to have a survey in their research, and what data, would be collected by this survey, determined the theoretical background around the research variables, and the characteristics of research population, also they have to find previously published surveys that are relating to their research. Finally, the researchers set the survey sections and paragraphs, determined the response form, proofread, and evaluated its validity and reliability.

The researchers determined (8) factors, these are: accessibility (16 items), design and visualization (13 items), effectiveness (11 items), e-services (12 items), performance (7 items), reliability (8 items), security and privacy (19 items), and usability (18 items). The measurement method of experts' response and evaluation is a method of response

measurement which relies on satisfaction and perception of an expert on a given service; also it is a measure of how much experts are satisfied by its performance and effectiveness.

VI. VALIDITY AND RELIABILITY

Validity is the extent to which the questions provide a true measure of what they are designed to measure. The purists would argue that there are many different types of validity in such studies but the key things that need to be considered are that the questions are clear and likely to produce accurate information, and that the full scope of the area that intend to measure is covered. Thus, after the survey was completely formulated, then it was emailed to the seven experts to ensure about its validity, i.e., the questionnaire paragraphs are exactly (or almost) answering its objectives and there is not any chuck questions. After, the seven experts report on survey paragraphs, it was adopted, in spite there were minors. After that, the survey was piloted. A questionnaire needs to be tested how long it takes to complete and to check that all questions and instructions are clear and to expose any items that will not generate usable data. Respondents in the pilot are from the study experts and they were asked to look and write their notes regard the following points: (How long did it take to complete it?), (Where are the instructions clear?), (Where is any question ambiguous?), (Where is any question objectionable?), (Was the layout clear and easy to follow?), and (Where is any topic omitted?). After that, modifications were done to emit the recommendations of experts.

Reliability is defined as the internal consistency of a scale that assesses the degree to which the items are consisted and homogeneous [23]. Cronbach's alpha had been used to test the internal consistency of the survey.

The survey factors; accessibility, design and visualizations, effectiveness, reliability, privacy and security, and usability have Cronbach's alpha above (0.7), i.e.; they have fair internal consistency. While the survey factors; e-services and performance have Cronbach's alpha less (0.7), i.e.; that is, they have no fair internal consistency, thus their items need further revisions.

VII. EVALUATORS' CONCORDANCE

Kendall's coefficient of concordance (W) is a measure of the agreement among several (K) evaluators who are assessing a given set of (n) objects [24, p. 229]. The degree of agreement between the values of the ranking variable reflects itself in the variation in the rank totals. When all the values of the ranking variable are in agreement, this variation is at a maximum. Disagreement between the values of the ranking variable reflects itself in a reduction in the variation of rank totals. For

maximum disagreement the rank totals tend to be equal.

Table 1: Kendall's Coefficient of Concordance (w), Cronbach's alpha (α) for factors and survey.

Factors	Cronbach's alpha (α)	Coefficient of Concordance (w)
Accessibility	0.782	0.348
Design	0.773	0.425
Effectiveness	0.81	0.596
E-services	0.292	0.381
Performance	0.425	0.383
Reliability	0.823	0.247
Security	0.807	0.154
Usability	0.634	0.256
Survey	0.899	0.601

The survey has a good agreement among experts ($w > 0.6$), while its items individually have poor agreement among experts since ($w < 0.6$). Unfortunately; even the survey, and its factors have a good response, reflected from its internal consistency, but it has not the same good agreement among experts' evaluations.

Data Analyses

The researchers analyzed the data gathered by the survey employed as follows:

1. The researchers calculated the frequency of experts' responses by (strongly agree) for each item.
2. The researchers calculated the frequency of experts' responses by (agree) for each item.
3. The researchers calculated the frequency of experts' responses by (I do not know) for each item.
4. The researchers calculated the frequency of experts' responses by (disagree) for each item.
5. The researchers calculated the experts' responses by (strongly disagree) for each item.
6. The researchers summed up the experts' responses by (strongly agree and agree) for each item and considered the sum an indication of positive agreement on that item.
7. The researchers summed the experts' responses by (disagree and strongly disagree) for each item and considered the sum an indication of negative agreement on that item.
8. The researchers concluded that the experts' responses by (I do not know) is an indication of negative agreement on that item, since if the experts could not find it is there or not, then an ordinary user will not explore it in the portal.
9. The researchers calculated the number of experts' responses by positive agreement (the sum of point 6) on an item to the total number of experts' responses on that item and concluded that the experts positively agreed on that item – the item is approved, if the percentage of experts' responses by agreement is more than the half, i.e., more than (50%). On the other hand, it was concluded that, the experts were negatively agreed on that item, if the percentage of

experts' responses by positively agreement less than the half, i.e., less than (50 %).

VIII. RESULTS

Accessibility: Seven (7) experts responded to the accessibility items, except items numbers (9, 10, and 11) which an expert did not response to. However, the positive agreement of this dimension is (79.82 %), i.e., the accessibility dimension succeeds in its objectives. While (9.17 %) among the respondents could not find enough indicators to judge fairly and (11.01 %) negatively agreed, i.e.; the dimension did succeed in its objectives, see fig. 1, histogram 1.

Design: experts responded to the design items, except item number (3), an expert did not response to. However, (87.78 %) was the positive agreement indicating that the dimension had succeeded in its objectives, (4.44 %) of the experts had not found enough indicators to fairly judge on it, and (7.78%) decided the design dimension had not succeeded in its objectives; see fig. 1, histogram 2.

Effectiveness: The seven (7) experts responded to (5) items of (11), while six experts responded to items numbered (1, 2, 8, and 9), and five experts only responded to item (4). However, (71.83 %) of experts had agreed positively on dimension success in its objectives, (14.08 %) did not find enough indicators to judge fairly and (14.08 %) had agreed negatively on it, i.e., this means that, the dimension did not succeed in its objectives, see fig. 1, histogram 3.

E-services: seven (7) experts' responded to (11) items of (12) and six only responded to the item number (10). However, (71.08 %) of experts supported that this dimension is succeeding in its objectives, (19.28 %) did find enough indicators to judge fairly, and (9.64 %) did not support its success, fig. 1, histogram 4.

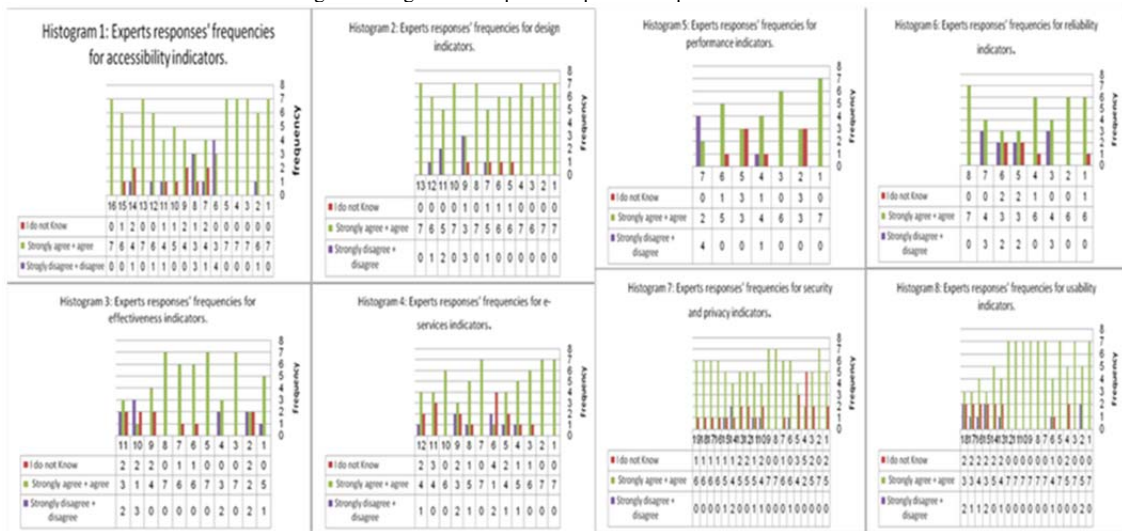
Performance: One expert only responded to all performance seven (7) items, while six of them responded to others items, i.e., items numbered (2-7). However, (69.77 %) of experts agreed positively on them, i.e., the dimension succeeds in its objectives, (18.6 %) did not find enough indicators to judge fairly, and (11.63%) of them saw that it did not succeed in its objectives, see fig. 1, histogram 5.

Reliability: The seven (7) experts responded to reliability (7) items of (8) and only six of them responded to the item number (2). However, experts agreed positively that reliability succeeded in its objectives by (70.91 %), while (10.91 %) did not find enough indicators to judge fairly and (18.18 %) of them support that; it did not succeed in its objectives, see fig. 1, histogram 6.

Privacy and security: The seven (7) experts responded to privacy and security (19) items. Experts agreed by (75.94 %) that the security and privacy succeed in its objectives, while (19.55 %) agreed that there were not enough indicators to judge fairly, and others agreed by (4.52 %) that the portal security and privacy did succeed in its objectives, see fig. 1, histogram 7.

Usability: seven (7) experts' responded to (16) items of usability (18) items, while only six of them responded to items numbered (6 and 17). Experts agreed by (79.84 %) that; this dimension succeeded in its quality items, while they agreed by (12.1 %) there were not enough indicators to judge fairly in its success in its quality items, and they agreed by (8.06 %) that it did not succeed in its quality items, fig. 1, and histogram 8.

Fig. 1: Histograms of experts' responses frequencies at each dimension.



IX. DISCUSSIONS

Experts agreed positively in the survey factors. The percentage agreement ranged from (69.77 %) up to (87.78

%). In details, accessibility (79.82 %), design and visualizations (87.78 %), effectiveness (70.91 %), e-services (71.08 %), performance (69.77 %), reliability

(70.91 %), privacy and security (75.84 %), and usability (75.87 %). Which indicates that the portal is fair succeeding, (within 25 % above the intermediate judgment cutoff level); the average is (75.84%). The experts' uncertainty about its success criteria by a percentage ranged from (4.44 % minimum) up to (19.55 % maximum), in details; accessibility (9.17 %), design and visualizations (4.44 %), effectiveness (14.08 %), e-services (19.28 %), performance (18.6 %), reliability (10.91 %), privacy and security (19.55 %), and usability (12.10 %). A close look in their uncertainty, showed that experts' evaluation unfortunately were affected by their own perceptions of how things down in land, rather than they tried to test items carefully. The average of experts' uncertainty was (13.52 %). Alongside experts' positive agreement, uncertainty; negative agreement shared a percentage of their evaluations. Their negative agreement indicates that the portal did not succeed in its criteria ranged from (4.51 %, minimum) up to (18.18 %, maximum) and average (10.66 %). In details, this is in terms of accessibility (11.01 %), design and visualizations (7.78 %), effectiveness (10.0 %), e-services (14.08 %), performance (11.63 %), reliability (18.18 %), privacy and security (4.51 %), and usability (8.06 %).

From the above results and discussion, we can point out some of the weakness and gabs found in the portal through the four factors that got the lowest percentage (Performance ,E-services ,Reliability ,Effectiveness), such as, The portal doesn't support:

1. Users with special needs visual impairment, audio impairment.
2. Internal search engine.
3. E-services efficiently from the first time and rarely needs to do it twice.
4. Communication channels among users; chat, dissection board.
5. Also the service output is not delivered to the user without requiring a physical visit to the government office
6. And the portal pages' are not download in efficient time.

Also to point out the strengths of the portal through four factors that received the highest percentage (Security and Privacy,Accessibility ,Usability, Design) such as:

The portal supports:

1. Option to change password upon user request.
2. A detail user guide.
3. Obvious title and format of downloadable files.
4. The portal toolbar is clear and usable.
5. Insides' pages are linked to homepage.
6. Login to the portal needs registration with ones' identification data.
7. The colors' and font sizes are legible.
8. The portal sends notification to ensure registration and service request via online channels; SMS, emails

X. CONCLUSIONS AND FUTURE WORK

It concluded that, the used methodology or techniques had been relied on the objectives of the evaluation set. The quality of portal was assigned as the total responses of experts on the survey, i.e., the quality is the positive responses on the eight factors of survey. The sum of positive agreement of experts on the survey paragraphs on its each dimension and of the survey eights' factors as block. Since experts' responses were greater than the cut point (50%) positive agreements, then it considered it a quality by that percent, i.e., (60 % positive agreement by experts, the portal quality is (60 % and it needs further development by (40 %).

Based on these results, the researchers concluded that the Safeer portal is fairly good to about 75 %, also that it did not mean it did not need further improvements and developments. Since, the research looked how good is it, while negative responses indicate where it has to be improved, i.e.; it needs at least 25% improvements in all its quality.

The current research was done on the sample of the experts. The next step will be to do the evaluation the sample of ordinary users to cover all aspect to find out the strengths and weakness of the different points of view to give the research strength and reliability.

This is an ongoing research to measure the effectiveness and performance of e-government portals in Saudi Arabia and it is the first evaluated portal, we have other portals to be evaluated in the future.

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