# Evaluation of Usability Problems of Labor Portal in Saudi Arabia

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## Abstract

*The purpose of this research was to evaluate the quality of Labor portal. Ministry of Labor focused on over the past years to establish a database of the labor market in the Kingdom of Saudi Arabia. The data includes workers in Saudi private sector, whether Saudis or expatriates where mechanization included all labor of 39-office work in various regions. The governorates of the Kingdom operates IT management to develop this rule to get the information and data related to the labor market quickly and accurately. 7 experts evaluated the quality portal of Saudi Arabia Ministry of Labor using self-developed instrument containing eight factors from the literature review on 5-likert scale. The result of the study shows that, the Labor portal quality is fairly good by 78.2% and it needs further improvement and development by 21.8%. Suggestions were made to the Saudi government, particularly, the Saudi Ministry of labor that, there is a need to further test the portal empirically based on the experts' evaluation.*

## Key Words

*Evaluation, Usability, Labor Portal Quality, Experts' Evaluation*

## I. INTRODUCTION

The Ministry of labor has effectively used information technology to deliver services to many Ministry segments in Saudi Arabia. The use of IT efficiently is in consonance with the Saudi

government orientation towards delivering the services electronically to all government sectors is as issued by the Council of Ministers according to Resolution no. 40 which deals with e-government implementation rules in the country [1].

There are different definitions of E-government, one of which is the intention of the government to use the technology, predominantly, internet, to making the access to, and delivery of, government information and service to citizens, traders, employees, organizations and many other government bodies [3]. Knowledge explosion and information technology era brought by the internet arouse the government interest globally to look at an easy way in providing services and information for the citizens [26]. E-government has been classified into four major categories. The first category is the Government-to-Business (G2B), this is done by the collection of data through leveraging e-business technologies for communication. The second category is Government-to-Government (G2G), which results in enhanced collaboration between government of one country to another or in a wider scope which exists among governments. The third category is Internal Efficiency and Effectiveness (IEE), whereby modern technology is used by agencies in order to improve their internal financial management, employee satisfaction, and employee retention. The fourth category is Government-to-Citizen (G2C), whereby government officials can follow up the involvement and interaction between government and its citizens by improving public participation in the government process [25].

The importance of internet brings about each ministry in Saudi Arabia to look for new approaches for changing their websites into "portals". Portal is unique for delivering an array of information and services [4]. Some organizations preferred using web interface to make services and information available to the potential customers [2].

The fast growth of the internet triggers the Ministry of Labor to focus on establishing a database of the labor market in the Kingdom of Saudi Arabia. This database includes employees in Saudi private sector; either they are Saudis or expatriates in various regions in the country. The governorates of the Kingdom of Saudi Arabia utilizes IT management information to get the information and data related to the labor market quickly and accurately. Recently, the largest number of achievements has been recorded in the history of information technology implementation in the Kingdom of Saudi Arabia namely, the labor environment has been converted between work and ministry offices to the central environment, the IT system run by the ministry has been changed to the MS system, the e-connection has been provided within the National Information Center of the Ministry of Interior to avoid duplication and inaccuracies in the information, the Project Management Office PMO in the ministry had been activated, and the service site created job for the seekers [1].

The quality of E-services determines the success or failure of portal. The quality is interpreted as the customer's view of the services delivery and services recovery via mail. In the literature review, authors suggested some qualities of e-service for the delivery and recovery of data as

follows: website interface design, its overall appearance, visual design, reliability, effectiveness, privacy, safety, ease of access, performance, and usability [6, 7, 8, 9, 10, 11, 12].

Authors pose that Heuristic approach is the discovery of a portal service or recovery usability problems either by the users, experts or the service providers [13]. Experts' discovery of a portal problem is to assess the website interface against an array of recognized usability rules and regulations laid down [14]. It was suggested that, the merits of using heuristic evaluation for a portal are that, this kind of evaluation is inexpensive, swift, straightforward, efficient, flexible and easy to use [15]. Other scholars identify heuristic approach as being only tested by the experts' recommendations and evaluations'; It is said to be effective, if used by the experts and novices for the full assessments from varied perspectives to have a holistic evaluation [16]. Additionally, heuristic evaluation can be used to investigate issues related to portal and website such as investigating a specific aspect of interface design in depth or investigating the entire interface superficially [17]. Consequently, heuristics evaluation can be done to assess the interface design specifically and generally to identify setbacks found in the portal interface [18].

Studies have shown ways that can be taken by the evaluators to assessing the portal heuristically [19]. These ways are preparation, selection, evaluation, analysis and report. In the first step, task(s) will be identified in which the evaluator will be asked to give a response to a portal dilemma. Secondly, after the experts have identified the tasks, they will visually examine the portal interface to recognize the difficulties it encounters. The third step involves the evaluators' inspection of the difficulties individually to identify all violations of the guidelines (heuristics) and lastly, the evaluators will analyze the usability problems, give the results and suggest possible remedies for the portal usability difficulties.

In this study, an attempt is made to investigate the portal quality of the Saudi Arabia Ministry of Labor. The researchers addressed critical factors leading to the success of the portal, its usability problems, measure the quality of services and made recommendations for the improvement of the portal from the perspectives of the users.

## A. Problem Statement

Many studies revealed that, the implementation of e-government in various ministries in the Kingdom of Saudi Arabia is still at the infancy stage. Title is still known about the quality evaluation of the portals, particularly, the Saudi ministry of labor. Most of the portal users are not satisfied by the inadequate and low quality of services provided by the portal [20, 21, 26].

## B. Research Objectives

The goal of this research is to evaluate the Saudi ministry of labor portal quality. This goal will be achieved through the following objectives:

1. To identify the critical success factors for a portal.

2. To identify the usability problems of the portal.
3. To measure the quality of services provided by the portal.

## C. Research Questions

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

1. What are the critical factors for a portal successful?
2. What are the usability problems facing the use of the portal?
3. To what extent does the quality of services provided by the portal be measured?

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

## II. METHODOLOGY AND DATA ANALYSIS

### A. Methodology

Heuristic evaluation model was adopted in this study to assess the quality of the labor portal in Saudi Ministry. The researchers collected the data by a survey questionnaire which was developed from the review of published existing literature. The instrument developed was reviewed, proofread and later the instrument was given to the 30 experts to determine the Saudi ministry of portal quality [27]. In terms of heuristic approach, the researchers set the criteria to be followed by the evaluators namely, visualization of the portal, identify its users' difficulties based on the administered survey.

The developed instrument contained (8) sections namely, 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 measured by expert's satisfaction and perception of quality of the portal and how much he/she satisfied with the portal performance, effectiveness and its usability.

### B. Validity and Reliability of the instrument

The instrument validity is the extent to which the questions provide a true measure of what they are designed to measure. It had been argued that, instrument validity is the question clarity and its likelihood to produce accurate and precise information which covers all the aspects designed in the tool. Thus, after the survey was completely formulated, then, it was emailed to the three experts to ensure about its validity, i.e., the questionnaire paragraphs are exactly or

almost precisely answering the research objectives. The experts gave the feedback on the email after three weeks consecutively with a soft reminder from the researchers. After pilot testing the questionnaire, the final version of the instrument was given to the 30 experts who know about the portal and the problem it encounter for their endorsement and agreement on the worded items in the instrument.

Upon the response on the instrument based on the heuristics (guidelines) given, the reliability of the instrument was calculated using Cronbach alpha. Reliability is the internal consistency of a scale that assesses the degree to which the items constructed are reliable [22].

The internal consistency of the survey items on factors namely; accessibility, design and visualizations, effectiveness, reliability, privacy and security, and usability reveals Cronbach's alpha above (0.7), indicating that, the three factors are reliable and consistent. The survey items on factors namely; effectiveness and performance shows Cronbach's alpha less than (0.7), indicating that, those items are less consistent needed further revisions and improvements.

## C. Experts' Agreement

In this study, Kendall's coefficient of concordance (W) was used to gauge the experts' agreement on the instrument regarding the heuristic method. Kendall's concordance is said to be a measure of the evaluators' agreement concurrently on among several (K) with a given set of (n) objects [22, p. 229]. The assessment is known when 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. Evaluators' disagreement of the values of the ranking variable reflects itself in a reduction in the variation of rank totals. This is known when the total maximum disagreement becomes equal or skews towards negative point.

TABLE 1: THE FACTORS, CRONBACH'S ALPHA (A), KENDALL'S COEFFICIENT OF CONCORDANCE (W), AND SIGNIFICANT LEVEL (P) OF THE SAUDI MINISTRY OF LABOR PORTAL.

| Factors | Cronbach's alpha ($\alpha$) | Coefficient of Concordance (w) | Significant (P) |
|---|---|---|---|
| Accessibility | 0.871 | 0.187 | 0.047* |
| Design | 0.889 | 0.127 | 0.321 |
| Effectiveness | 0.558 | 0.424 | 0.000* |
| E-services | 0.941 | 0.418 | 0.000* |
| Performance | 0.371 | 0.287 | 0.020* |
| Reliability | 0.87 | 0.232 | 0.041* |
| Security | 0.845 | 0.144 | 0.179 |
| Usability | 0.773 | 0.201 | 0.021* |
| Survey | 0.962 | 0.214 | 0.000* |

*Significant (P) at $\alpha \leq 0.05$.

Coefficient of Concordance (w) between key participants about the survey factors and item was statically significant (P) at $\alpha \leq 0.000$, which indicated that they shared the same vision of releasing the portal quality. However, despite that their overall concordance between key participants, they were not shared the same vision on design and security factors. Actually, these factors were not statistically significant at $\alpha \leq 0.05$.

A point here has to be shown is the relation between the internal consistency of the survey and\or one or more of its factors and concordance between key expert participants, a case where the factor had a significant internal consistency but they had not the same concordance between experts, i.e., coefficient of concordance (w) was not statistically significant for that factor, and vice-versa. In this study, design factor had been found to have a significant internal consistency ($\alpha = 0.889$) but it had not statistical significant (P) at $\alpha \leq 0.05$ on one hand. At the same time, the performance factor had not been found to have a significant internal consistency ($\alpha = 0.371$), but it had a statistical significant of concordance at $\alpha \leq 0.05$.

Although, this case is surprisingly where there is a significant internal consistency but there is not significant concordance between key participants and vice-versa. Since both statistical indicators are using to estimate the reliability of data gathered for definite idea shared between key participants.

In fact, the results of this study is not an odd, the same were revolved in previously published studies, e.g., [23].

## D. Data Analyses

Data gathered from the evaluators' feedback was gauged as follows:

1. All the evaluators' frequent strongly positive responses were gauged with (strongly agree) for each item.
2. All the evaluators' frequent less strongly positive responses were gauged with (agree) for each item.
3. All the evaluators' frequent neutral responses were gauged with (I do not know) for each item.
4. All the evaluators frequent less negative responses were gauged with (disagree) for each item.
5. All the evaluators' frequent strongly negative responses were gauged with (strongly disagree) for each item.
6. All the evaluators' positive responses were added up and gauged with (strongly agree and agree) for each item.
7. All the evaluators' negative responses were added up and gauged with (disagree and strongly disagree) for each 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 considered the factors approval if the proportion of evaluators' responses by agreement is more than (50%) and the factors disapproval if the evaluators' responses less than (50%) other issues mentioned above are being equal [24].

## E. Results

72.86% of the key participants supported the quality of the portal, while 9.94% claimed not to, and 17.20% were neutral.  In addition, the mean of their responses was 3.91. A mean with such that estimation indicates the portal quality is 78.2%. In other words, 72.86% of key participants supported the portal quality is 78.2%.   Also, this conclusion was supported by middle variance between responses (SD = 0.93). On the other hand, the results could be read as following, 72.86% of key participants recommended the portal needed improvement by 21.8%.

80.56% of key participants supported the accessibility item quality is about 81.8% (percentage mean), and then it needs further improvements by 18.2%.  Accessibility items:   A3 (3.78, 66.7%), A7 (3.67, 66.7%), A8 (3.56, 55.6%), A11 (3.89, 66.7%), A12 (3.67, 66.7%), and A15 (3.78, 55.6%) - mean and relative percentage of agreement respectively, they need improvements, since less than 70% of the key participants supported their qualities.

72.65% of the key participants supported the design item quality by 76.4% (percentage mean), thus it needs improvements by 23.6 %. Design items; D1 (3.67, 55.6%), D9 (3.33, 66.7%), D12 (3.00, 55.6%), D13 (3.67, 55.6%) - mean and relative percentage of agreement respectively, these items need improvements, since less than 70% of key participants support their qualities.

71.72% of the key participants supported the effectiveness item quality by 76.2% (percentage mean), i.e., 28.28% stated it needed improvements by 23.8%.  Effectiveness item; E1 (3.4,44.4%), E2 (2.1,0.0%), E4 (3.7,55.6%), E6 (4.3,77.8%), E10 (3.5, 55.6%), and E11 (3.7, 55.6%) needs improvements, since less than 70% of the key participants supported their quality.

67.59% of the key participants supported the quality of e-services items by 77.4% (percentage mean), thus 32.41% of the key participants supported that, the e-services needs improvements by 22.6%.

E-services items; ES3 (3.89,66.7%), ES5 (3.67, 55.6%), ES6 (3.78, 66.7%), ES9(3.22, 44.4%), ES10(3.67, 66.7%), ES11 (3.11, 22.2%), and ES12(3.67,   66.7%) need further improvements, since less than 70% of key participants supported their qualities.

58.73% of the key participants supported performance item quality by 72.6%, thus 41.27% of the key participants stated it needs improvements by 27.4%.

Performance Items; P2(3.67, 55.6%), P4(3.11, 44.4%), P5(3.67, 44.4%), P6 (3.89, 66.7%), and P7 (2.89, 33.3%), need further improvements, since less than 70% of the key participants supported their qualities. 80.56% of the key participants supported the quality of the reliability item by 83.8% (percentage mean), and consequently 19.44% of the key participants stated the reliability item needs 16.2% further improvements. Reliability items; R1 (3.78, 66.7%) and R2 (3.67, 55.6%) need further deep improvement, since less than 70% of key participants supported their qualities.

74.85% of the key participants support the quality of security item by 78.8% (percentage mean), and consequently that mean 25.15% of the key participants not supported its quality, therefore it needs further improvements by at least 21.2%. Security items; S1 (3.78, 55.6%), S2 (3.89, 66.7%), S3 (3.78, 55.6%), S4 (3.44, 44.4%), S5 (3.44, 44.4%), S6 (3.78, 66.7%), S9 (3.67, 66.7%), and S10 (3.67, 66.7%) need further improvements, since less than 70% of key participants supported its qualities.

70.37% of the key participants supported the quality of usability item by 77.2% (percentage mean), and consequently 29.63% of the key participants did not support the item quality by 22.8%. Usability items; U6 (3.67, 44.4%), U11 (3.78, 66.7%), U13 (3.78, 66.7%), U14 (3.78, 66.7%), U15 (3.78, 66.7%), U16 (3.78, 55.6%), U17 (3.22, 22.2%), and U18 (3.11, 22.2%) need further improvements by more than 30%, since less than 70% of key participants supported its qualities.

TABLE 2: THE ESTIMATION OF THE STATISTICAL INDICATORS FOR THE SURVEY AND ITS FACTORS, THE INDICATORS WERE: MEAN, ST. DEVIATION, MEDIAN, MODE, % AGREE, % NEUTRAL, AND % DISAGREE.

| Factor | Mean | St. dev.[a] | median | Mode | % agree | % neutral | % disagree |
|---|---|---|---|---|---|---|---|
| Accessibility | 4.09 | 0.94 | 4 | 4 | 80.56 | 9.03 | 10.42 |
| Design | 3.82 | 1.16 | 4 | 4 | 72.65 | 5.13 | 22.22 |
| Effectiveness | 3.81 | 1.03 | 4 | 4 | 71.72 | 12.12 | 16.16 |
| E-services | 3.87 | 0.92 | 4 | 4 | 67.59 | 24.07 | 8.33 |
| Performance | 3.63 | 0.92 | 4 | 4 | 58.73 | 28.57 | 12.70 |
| Reliability | 4.19 | 0.82 | 4 | 5 | 80.56 | 16.67 | 2.78 |
| Security | 3.94 | 0.84 | 4 | 4 | 74.85 | 18.71 | 6.43 |
| Usability | 3.86 | 0.76 | 4 | 4 | 70.37 | 25.93 | 3.70 |
| Survey | 3.91 | 0.93 | 4 | 4 | 72.86 | 17.20 | 9.94 |

## F. Discussions

Experts agreed positively in the survey factors. The percentage agreement ranged from (58.73%) up to (80.56 %). In details, accessibility (80.56%), design and visualizations (72.65 %), effectiveness (71.72 %), e-services (67.59 %), performance (58.73 %), reliability (80.56 %), privacy and security (74.85 %), and usability (70.37 %). Which indicates that the portal is fair succeeding,

(within 21.8 % above the intermediate judgment cut off level); the average is (78.2%). The experts' uncertainty about its success criteria by a percentage ranged from (5.13 % minimum) up to (28.57 % maximum), in details; accessibility (9.03 %), design and visualizations (5.13 %), effectiveness (12.12 %), e-services (24.07 %), performance (28.57 %), reliability (16.67 %), privacy and security (18.71 %), and usability (25.93 %). 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 the items carefully. The average of experts' uncertainty was (17.20 %). 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 (3.70 %, minimum) up to (22.22 %, maximum) and average (9.94 %). In details, this is in terms of accessibility (10.42 %), design and visualizations (22.22 %), effectiveness (16.16%), e-services (8.33 %), performance (12.70 %), reliability (2.78 %), privacy and security (6.43%), and usability (3.7. %).

From the above results and discussion, we can point out some of the weaknesses and gabs found in the portal through the four factors that got the lowest percentage ( Performance, E-services ,Usability, Effectiveness)such as, The portal doesn't support different aids (textual, audio, visual, and animations) and suggestions to failure and negative searching results, internal search engine with spelling corrections, FAQs page, content in many languages, minimum number of scripting errors during the e-service delivery process, various secured communication channels among users; chat, dissection board, etc. The portal Bloggers is clearly identified and accessible via mobiles.

Also to point out the strengths of the portal through four factors that received the highest percentage (Accessibility, Reliability Security and Privacy, Design) such as: The portal supports easy navigable, pages are totally addressed, has an efficient internal search engine, design is appropriate in its services for users, pages are downloadable in efficient time, works well in default browser, clear stepwise guidelines to activate registration, clear stepwise to reset passwords and supports secure entrance channels to user's account.


### III. CONCLUSIONS AND FUTURE WORK


Based on these results, the researchers concluded that the Labor portal is fairly good to about 78.2 %, 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 21.8% 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 on the sample of ordinary users to cover all aspect to find out the strengths and weaknesses 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 second evaluated portal [24], we have other portals to be evaluated in the future.

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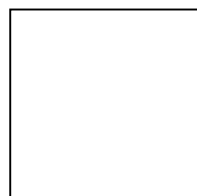
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