



IRAQI Academic Admission System: A Performance Analysis Evaluation

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Abstract:

The service quality of any information-based system could be evaluated by the high-end user in such a way that the system developer or responsible intently might use these user experiences to improve, develop and benchmark their system. In this paper, questionnaire implemented to rate to what extent the academic admission system as a web site achieves performance. Data were collected from 21 users of the system; all of them are highly educated and have the experience of using the site. Quadrant and gap analysis were implemented to evaluate the weakness and strength of the data. The major data analyses were performed on the data collected in terms of its importance and satisfaction to the users. A number of statistical tools have been utilized such as average value and standard deviation to accomplish the objective of this paper.

Keywords: Keywords: Criteria, Likert scale, Quadrant analysis, User importance, User satisfaction,

Introduction:

A number of criteria related to the performance estimation of the web site have been used such as usability in “I find it easy to create an account”, “I find the site easy to navigate or use”, “How often does confusion within the system cause user Error?” , “is the system has a good reputation?” “[1,2,3]. Proper design and system desirability such as “The design is appropriate to the type of site\system”, “From an expert point of view, is the system constructed in what is usually thought a good manner?” respectively. Safety and security in “It feels safe to complete transactions”, “My personal information feels secure”. Easy communicate in “Makes it easy to communicate with the organizations\ universities\institutes”. Social interaction such as “Does the site\system provide support for users who needs for interacting with administrator?”. Information access (format) in “Is the information within the system can be extracted in an appropriate Format?”. System Stability such as “How stable is the system in the sense of in what rate it breaks down and becomes inaccessible or loses data Validity?” [4]. and more were used in the questionnaire list.

The contributions of this paper may be short listed as:

- IRAQI perceptions of service quality are analyzed
- Quadrature analysis attributes are easy navigation, good reputation, feel safe to complete the transaction, easy communication, social interaction.

There are a noticeable shortage and even a complete absence of publications concerning Iraqi graduate interest and performance analysis toward any field investigation. While, there are no scarcity in research concerning other citizenship graduate opinion [5], e.g, UK, USA Indian and Iranian. Thus, this paper emerged to fill this research gap.

Research Methodology:

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A. The Sample size

The web site (<http://adm.rdd.edu.iq/>) belongs to the ministry of higher education \ research and development department has been chosen to implement performance evaluation of web information system. The first step was to choose 14 questions related to a variety of criteria such as usability, desirability, safety, security, social interaction, stability and error proneness to build a questionnaire list that submitted to 21 of website users. The users were highly educated students that used the website for submissions to postgraduate studies in Iraq. “Users were asked to rate to what extent they were pleased with the service quality delivered by the web site for each performance attribute (e.g. their satisfaction level) and how much importance they give to each attribute”. The users were guided to respond to the survey in 5-points Likert scale fashion [6].

A. Criteria for measuring information system

“One way to evaluate and compare information systems would be done by using a set of criteria encompassing factors thought important. The set of criteria must be operational and measurable” [4]. A number of criteria related to the performance estimation of the web site have been used such as usability in “I find it easy to create an account”, “I find the site easy to navigate or use”, “How often does confusion within the system cause user Error?” , “is the system has a good reputation?” “[3]. Proper design and system desirability such as “The design is appropriate to the type of site\system”, “From an expert point of view, is the system constructed in what is usually thought a good manner?” respectively. Safety and security are in “It feels safe to complete transactions” and “My personal information feels secure” respectively. Easy communicate is in “Makes it easy to communicate with the organizations\ universities\institutes”. Social interaction is such as “Does the site\system provide support for users who needs for interacting with administrator?”. Information access (format) is in “Is the information within the system may be extracted in an appropriate Format?” System Stability is such as “How stable is the system in the sense of in what rate it breaks down and becomes inaccessible or loses data Validity?” [4]. and more were used in the questionnaire list.

B. Statistical Tools and Major Survey Results

“In order to get final grade on information system functionality performances in organization, gathered results must be processed statistically. For the analysis of gathered data, the following statistical procedures are commonly used: arithmetic mean (average value), Used to measure the average value” of the total collected ratings for each question. Where arithmetic mean is defined by the formula A:

$$A = \frac{1}{n} \sum_{i=1}^n a_i \tag{1}$$

The equation of standard deviation for *N* total number of samples, *x* sample value and \bar{x} mean value of the samples [7]:

$$s = \sqrt{\frac{1}{N-1} \sum_{i=1}^N (x_i - \bar{x})^2} \tag{2}$$

“Mean importance and satisfaction for each performance attribute” are given in Table-1.

The collected data could be further presented in the below figures. So as to explain the attribute contribution in another way. In Figure-1, the most important attributes to the web site users which are safety, security, stability and error proneness.

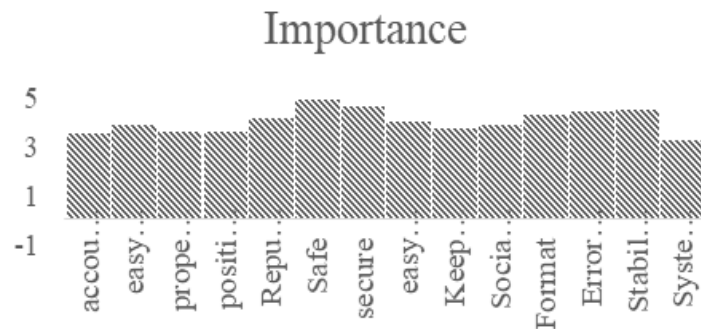


Figure 1-Performance Importance

Table 1- Mean importance and satisfaction scores

| n | Criteria | Attribute | Mean Satisfaction | Mean Importance |
|----|---------------------|---|-------------------|-----------------|
| 1 | Usability | I find it easy to create an account | 4.6 | 3.5 |
| 2 | Usability | I find the site easy to navigate or use | 4.0 | 3.9 |
| 3 | Proper design | The design is appropriate to the type of site\system | 3.9 | 3.6 |
| 4 | Positive experience | The system creates a positive experience for me | 4.2 | 3.6 |
| 5 | reputation | Is the system has a good reputation? | 3.7 | 4.2 |
| 6 | Safety | It feels safe to complete transactions | 3.7 | 4.9 |
| 7 | security | My personal information feels secure | 3.5 | 4.6 |
| 8 | Easy communication | Makes it easy to communicate with the organizations\ universities\ institutes | 4.0 | 4.0 |
| 9 | Keep promise | I feel confident that services will be delivered as promised | 4.2 | 3.7 |
| 10 | Social interaction | Does the site\system provide support for users who needs for interacting with administrator? | 3.7 | 3.9 |
| 11 | Format | Is the information within the system can be extracted in an appropriate format | 4.1 | 4.3 |
| 12 | Error proneness | How often does confusion within the system cause user Error? | 3.2 | 4.4 |
| 13 | Stability | How stable is the system in the sense of in what rate it breaks down and becomes inaccessible or loses data Validity? | 3.6 | 4.5 |
| 14 | System desirability | From an expert point of view, is the system constructed in what is usually thought a good manner? | 3.9 | 3.3 |
| | | \bar{x} : | 3.87 | 4.04 |

Figure-2 present the degree of satisfaction the users have throughout using the web site. The users were most satisfied with the account creation, positive experience, keeps promise and format. The users were less satisfied with the web site’s being safe, secure, stable, and error proneness. In general, if we make a comparison between booth Figures, we found that four criteria rated with high importance and less satisfaction which reflect a problem that site designer should take care of. The criteria that need attention and enhancement are safe, secure, stable, and error proneness.



Figure 2-Performance satisfaction.

Data Analysis Tools

Two data analysis tools have been used to evaluate the performance of web site information system, Quadrant analysis and Gap analysis. “Based on the outcome of quadrant analysis and gap analysis, it’s possible to identify performance attributes that should be retained, improved, revisited or ignored”.

a. Quadrant Analysis

Quadrant analysis “plots data about service attributes into four quadrants defined by two dimensions. The first dimension is plotted along the horizontal axis as importance. The second dimension is plotted along the vertical axis as satisfaction” [8, 9]. In this paper, quadrant graph used to plot 14 performance attribute for the (<http://adm.rdd.edu.iq/>) web site. Fig. 3 depicted using the graph tool used is MS Excel scatter chart tool with the mean importance as X-axis and mean satisfaction as Y-axis.

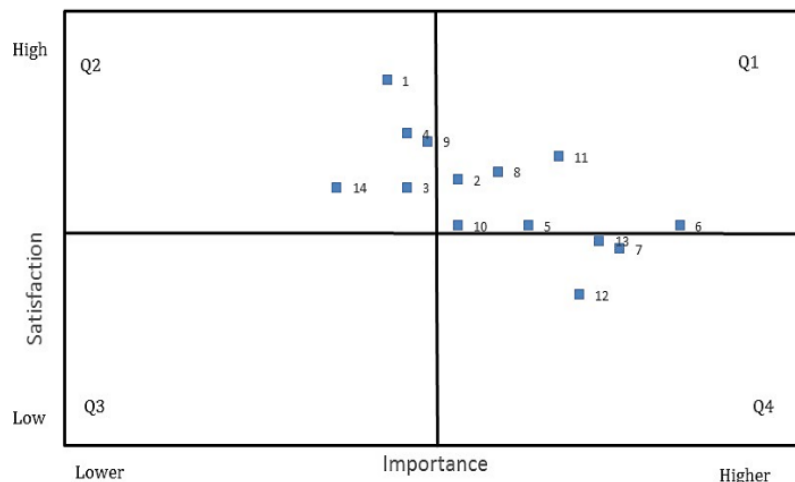


Figure 3-Quadrant graph of performance evaluation of (<http://adm.rdd.edu.iq/>) website.

The upper right quadrant (Q1) contains performance attributes which web site users rated highly important and that they were highly satisfied with (so called “Winners”). These attributes need to be retained by system designers. These attributes were as follows (from Table-1).

“2-I find the site easy to navigate or use”

“5-The system has a good reputation”

“6-It feels safe to complete transactions”

“8-Makes it easy to communicate with the organizations\ universities\ institutes”

“10-Does the site\system provide support for users who needs for interacting with administrator?”

“11-Is the information within the system can be extracted in an appropriate format

The upper left quadrant (Q2) represents the “low importance-high satisfaction” performance attributes, so called “undervalued” ones (3). System designers should rethink the resources allocated to these services or they should figure out how they can improve the images of these performance attributes. These attributes are:

“1-I find it easy to create an account”

“3-The design is appropriate to the type of site\system”

“4-The system creates a positive experience for me”

“9- I feel confident that services will be delivered as promised”

“14-From an expert point of view, is the system constructed in what is usually thought a good manner?”

It seems that efforts expanded by the web site designers exceeded users expectations (i.e. “overkill”) [3].

The lower left quadrant (Q3) denotes the “low importance-low satisfaction” performance attributes. These are relatively less important performance attributes in the eyes of users with relatively lower

satisfaction levels attained (i.e., “unimportant weaknesses” that can be ignored)[3]. It seems that there are no attributes related to Q3 in this result.

“Performance attributes with “high importance-low satisfaction” levels are located in the lower right quadrant (Quadrant 4). The attributes falling into Quadrant 4 are also very important for users but they do not think the system has an outstanding performance in terms of these attributes. Performance attributes in Quadrant 4 (“Opportunity quadrant”) are candidates for immediate attention of web site designers to improve service quality so that users’ expectations can be met more successfully” [3]. The web site has the following performance attributes related to Q4:

“7-My personal information feels secure”

“12-How often does confusion within the system cause user Error?”

“13-How stable is the system in the sense of in what rate it breaks down and becomes inaccessible or loses data Validity?”

b. Gap Analysis

“Gaps that exist between importance and satisfaction were identified by gap analysis”. “Large gaps between importance and satisfaction rating usually draw attention to problems that must be corrected. Small gaps signify strengths.” [3] “Quadrant analysis does not explicitly identify gaps that may exist between importance and satisfaction”. “Even though a performance attribute appeared in the high importance and high satisfaction quadrant, a large gap could exist between importance and satisfaction ratings.”

The standard deviation statistical tool used to find the gaps between importance and satisfaction as illustrated in Figure-4. This Figure shows high gap between importance and satisfaction for the attributes (questions 6, 1, 2, 4, 14, 3, 7, 9, and 13) arranged ascending, have higher difference between their SD values which indicate a problematic attributes with the largest gap in Q6 “It feels safe to complete transactions”. While attributes (questions 8, 5, 11, 12, 10) indicate smaller gaps and represent the strength in terms of the service provided by the website.

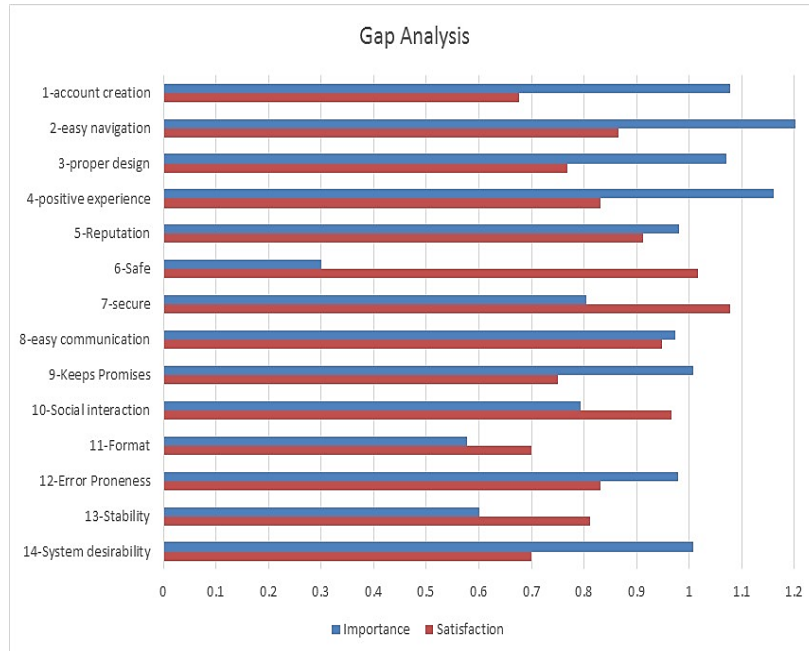


Figure 4-Gap analysis for (<http://adm.rdd.edu.iq/>) web site.

Table-2 represents each mean value with its corresponding standard deviation value. Standard deviation gives the extent to which each question rating is near to the mean value calculated. The overall average standard deviation value \bar{x} gives strength to both satisfaction (SD=0.8) and importance (SD=0.89) since the values of both SDs are relatively small. Regarding (satisfaction parameter) standard deviation values (less than 1), Q(1, 11, 14, 9, 3, 13, 4, 12, 2, 5, 8, 10) arranged

descending, represent the lowest values in SD which give strength to its mean values and represent the points in which users are satisfied. While Q (6, 7) have higher SD values which indicate problems. Q6 'It feels safe to complete transactions' SD= 1.01, and that's mean the user doesn't feel safe. Q7 'My personal information feels secure' SD= 1.07, and that's mean the user doesn't feel secure. Regarding (Importance parameter) standard deviation values (less than 1), Q (6, 11, 13, 10, 7, 8, 12, 5) arranged descending, represent the lowest values in SD which give strength to its mean values. While Q (14, 9, 3, 1, 4, and 2) have higher SD values which indicate points are less important to users.

Table 2- Mean values vs. Standard deviation values

| Q | Mean Satisfaction | SD Satisfaction | Mean importance | SD Importance |
|-----------|-------------------|-----------------|-----------------|---------------|
| 1 | 4.6 | 0.7 | 3.5 | 1.1 |
| 2 | 4.0 | 0.9 | 3.9 | 1.2 |
| 3 | 3.9 | 0.8 | 3.6 | 1.1 |
| 4 | 4.2 | 0.8 | 3.6 | 1.2 |
| 5 | 3.7 | 0.9 | 4.2 | 1.0 |
| 6 | 3.7 | 1.0 | 4.9 | 0.3 |
| 7 | 3.5 | 1.1 | 4.6 | 0.8 |
| 8 | 4.0 | 0.9 | 4.0 | 1.0 |
| 9 | 4.2 | 0.7 | 3.7 | 1.0 |
| 10 | 3.7 | 1.0 | 3.9 | 0.8 |
| 11 | 4.1 | 0.7 | 4.3 | 0.6 |
| 12 | 3.2 | 0.8 | 4.4 | 1.0 |
| 13 | 3.6 | 0.8 | 4.5 | 0.6 |
| 14 | 3.9 | 0.7 | 3.3 | 1.0 |
| \bar{x} | 3.9 | 0.8 | 4.0 | 0.9 |

Conclusion

According to quadrant analysis Users were highly satisfied with high importance attributes such as easy navigation, good reputation, feel safe to complete the transaction, easy communication, social interaction and the information can be extracted in an appropriate format so these performances need to be retained by the web site developers. While users were less satisfied with high importance attributes like user personal information feel secure, the site make users confused and error, and the site service stability then these low performance factors need to be enhanced by the site developers. The future work for this project is to develop an implementable academic admission system [10, 11] into a reconfigurable and programmable hardware [12, 13, 14].

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