Determining the quality factors of the web portal of an agriculture educational institute in Iran

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Abstract

Most of the agriculture educational institutions in Iran are in public sector. ITVHE was the first institute in Iran, which took the responsibility for commencing technical and vocational higher education in agriculture sector. Until recently due to the subsidies paid by the government for higher education, student recruitment was not a major problem for the universities. After the initiation of privatization plan by the government, based on 44th article of the constitution, a competitive environment has been emerged. Thus, having a quality web portal became necessary for some reasons like decreasing the expenditure, recruiting more students, better services to students and a good reputation in the society. In the present ITVHE have 25 active sub-portals among its branches which are scattered all over Iran. For the sake of evaluating the quality of the web portal a research project has been proposed for determining the factors which are effective on the quality of the so called web portal. The researchers used a qualitative approach in their methodology. For the purpose of designing an analytical model many quality frameworks and models have been studied thoroughly. At last and based on the tri-lateral aspects of the institute, i.e. being educational, public sector and Iranian, four models and frameworks selected. Based on the initial study a set of quality factors were selected. Some focus groups according to the population of the research, which is consisted of students, lecturers and managers, were developed. The quality factors, then, examined in the focus groups and at last the final set of quality factors has been determined.

Introduction

In a broad sense, this paper is the outcome of an investigation in the field of HCI (Human-Computer Interaction). Today web portals are common media for interaction between human and computer and even one can say that they are among the most used too. From quality point of the view the human element in HCI is the same as customer in business. Just as the pioneers of quality movement, like Deming, Ishikava, Kano etc. have emphasized, the customer plays the central role in any model related to quality. From another view, the web portal is considered to be an artifact in design science known better as web information architecture. In this view which is rather new and is being progressed mainly by library and information scientists, development of a web portal is considered to be an iterative project consisting of repetitive cycles of evaluation-information architecture-design.

The medium in which the research has been proposed and done The Institute of Technical and Vocational Higher Education of Agriculture is (ITVHE). ITVHE was the first institution in Iran that took responsibility for commencing technical and vocational higher education in agriculture sector.

During the past decade and due to an incline to privatization in the government the battleground for competitors in higher education of Iran has changed dramatically. While in the past the higher education was limited to a few government-based (state) universities, now there emerged so many private institutions. Obviously the competition for recruiting prospective students among the so called institutions is very tight. According to the ministry of Science, Research and Technology for the first

time in the history of higher education in Iran the free seats in universities outnumbers the prospect students by 250000.
In agriculture sector, which ITVHE is a part of it, the competition is more intense due to the matter that the tendency to recruitment in agriculture disciplines despite the increasing variety is decreasing.
On the other hand the use of Iranians from internet is increasing sharply. According to Internet World Stats(miniwatts 2010), the rate of increase in the internet users of Iran between 2000 and 2009 was more than 12000 percent, which was the first in the Middle East. It is obvious that in this competitive environment and with such an ample growth in internet penetration rate (48.5%), having a quality web portal can be an advantage for the institution.

Methodology

Research population

ITVHE has about 27000 students now and about 45000 students have been graduated from 1997, acting as headquarter for about 62 higher education centers and campuses. One of the limitations of the research is the centers being vastly scattered in all over Iran. Thus the researchers decided to concentrate their efforts on ITVHE, headquarter, and IHEC, the nearest branch, that the researchers are members of them. Another reason for selecting ITVHE and IHEC is that while ITVHE has a unique and different organization and personnel from all other centers, IHEC has roughly the same organization and population model. The population of the research is grouped into three homogenous categories: faculty members, students and officials. For selecting the participants of the students' focus group we asked head of the departments of IHEC to refer the students who have familiarity with computer and internet and use the web portal frequently to the researchers. After nomination of the students they have been invited to the focus group formally. As a result while the resulted group dept homogenous the participants had the least friendship with each other. As there are a limited number of lecturers in the research population, the second group were selected based on the knowledge of research team. At last the third group selection was done by one to one talk by the researchers

Research methods and instrument

The nature of the research is qualitative. In many cases researchers deducted the quality factors through personal experience and literature review. In the present paper with respect to the definition of quality that centers on customer needs in addition to using literature review of previous models, focus groups are used too. At first with a thorough study of the literature and based on the mission of ITVHE, four models have been selected. The quality factors from the so called literature were extracted. Then researcher composed ten open-ended questions for focus groups (table 2). For facilitating the data gathering during focus group sessions a three-level matrix has been developed using Kano's quality model for evaluation of web sites(*Zhang* and *Dran* 2002) and Yang's conceptual model for measuring user perceived service quality of information(Yang, Cai et al. 2005). During the three focus group sessions, quality factors drawn from the literature discussed and after the adding and omissions, a new set of factors has been formed.

Quality defined

As quality is a central concept in this paper, defining it is of a great importance. The main point in any definition for quality is doubtlessly "customer". It means that the quality and its major criteria should be measured by the customer. (*Zhang* and *Dran* 2002) further describe the quality concept by using Kano's model. According to Kano's model there are three levels of quality for products and services that businesses should meet in order to succeed: (1) basic, (2) performance, (3) exciting. In the first category the customer doesn't think about the quality parameter. The presence of a basic quality factor like content in a web site doesn't generate satisfaction but its absence makes dissatisfaction. In the performance level, quality factors are stated and noticed deliberately. For instance, in a web site the technical aspects of it are usually in the domain of performance level. The two levels are prerequisites

for staying in competition for the businesses but for going up the ladder, the business needs to satisfy extra and unstated needs of customers. The exciting quality factors are those features of a web site that the customers are not aware themselves but are necessary for absorbing new customers and keeping current ones. the researchers conclude that the nature of the quality levels for websites are not static but dynamic meaning that customers get used to the quality features after some time. For instance an exciting feature like a free and unexpected gift becomes an ordinary or basic factor after some time and repetition.

"Information and system quality are two major determinants of user perceived usefulness and ease of use". Web portal quality factors from an ICT perspective can be divided into two categories IQ and SQ. In "Information quality", information as a general concept covers technical jargons like content, data, information or knowledge. IQ itself has two dimensions called usefulness of content and adequacy of information. Service quality has three dimensions: usability, accessibility and interaction(Yang, Cai et al. 2005).

"The ISO 9126 definition of quality for software products is *the totality of features and characteristics of a software product that bear on its ability to satisfy stated or implied needs"*(Brajnik 2001).

All in all, the quality of the web site is a weighting average of features of its information and system that leads to satisfaction of the users as customers of the web site.

Quality factors distinguished

There are many researches done in the field of quality evaluation of web sites most of them in the field of private companies especially e-commerce. Literature review showed that there are a plenty of papers in all fields of web site evaluation based on the types of the web sites. The researchers noticed that no organization is a one dimensional system that could be evaluated by one set of factors,but none of the papers (to the extent that we have searched) take into account the multidimensional aspects of the organizations. Thus we decided to collect and analyze the quality factors from the researches that are related to the different dimensions of the institute. ITVHE is an academic, government-based, Iranian organization. Each of the three attributes of the institute needs unique quality factors as the audience for each of the dimensions may differ substantially. For instance while there are more than 20000 students who are the audience of the web portal of ITVHE as an academic institution, managers of Ministry of Agriculture and other government organizations look at the web site as a part of the government. Meanwhile, both of the groups are Iranian who expect the Farsi language to be included, and based on Ameli (2000), like to see Iranian design too.

The first column of table 1 summarizes the quality factors for an academic web site. There are six quality characteristics in standards as follows: usability, functionality, reliability, efficiency, portability and maintainability. As maintainability and portability are not the concerns of audiences, they have been omitted. Each quality factor will further decompose to characteristics and attributes. With regard to the selected quality characteristics and attributes for assessment purposes up to eighty direct metrics were found in the process (Olsina, Gody et al. 2008).

The second column of table 1 consists of factors for measuring the public sector organizations in Greece. Each of the factors furthers decomposes to indicators for measurement purposes. The mentioned factors are organized into four axes: general characteristics, e-content, e-services and e-participation. The first two axes are for measuring the general characteristics and content of the web sites and the last two are for measuring the governmental characters(Panopoulou, Tambouris et al. 2008)

The third column of table 1 lists the constructs for measuring the performance of web sites in the field of e-commerce. Results of this research suggest that web site success is significantly associated with "web site download delay (speed of access and display rate within the web site), navigation (organization, arrangement , layout and sequencing), content (amount and variety of product information) , interactivity (customization and interactivity), and responsiveness(feedback options and FAQs)"(Palmer 2002).

The last column in table 1 indicates the scales for measuring the quality of government web sites in Iran. In this research the web sites of government organization of Iran were compared based on the six scales

in table 1. Each of the scales has some indicators which are measured by a jury. Just like panopaoulou, Ameli used e-government theories as the basis of his research(Ameli 2000).

Table 1. Factors affecting the quality of web sites extracted from the four researches in brief. (For the sake of briefness, each set of factors titled just by the first author)

Author	**Olsina**	**Panopoulou**	**Palmer**	**Ameli**
Dimension	**Academic**	**Government**	**E-Commerce**	**Iranian-government**
Quality Factors	Usability Functionality Site Reliablility Efficiency	Accessibility Navigation Multilingualism Privacy Public outreach General content Specific content News and updating Services number and level Consultation Active participation	Download Delay Navigation/Organization Interactivity Responsiveness Information/Content	User Friendliness Technology Interactivity Services Content Design

Focus Group planning

For the purpose of preparing a guide book for planning the focus group sessions, one of the researchers used two sources, i.e. (Grudens-Schuck, Allen et al. 2004; Campbell 2008), extensively. The outcomes were used for planning the focus group sessions.

For a relatively thorough covering of the population of the research, three focus group sessions planned. The first group belongs to the student as the main audience of ITVHE. The second group selected among the lecturers and the third group was the officials. For selecting the sample from the population of the three groups, in accordance with qualitative methodologies, a homogenous set of persons were invited. One of the researchers talked to the head of the departments and asked them to introduce students and lecturers who are familiar with the web portal of the institute and IHEC. The students were referred to the secretary of the research project for nomination. A formal invitation with the letter head of the research project sent to each of the volunteers telling them the basic principles of the research like:

- The aim of the focus group is not to measure the knowledge of the participants;
- The information of the participants is regarded as private;
- There are stipends and refreshments during and in the end of the session;
- The insights and ideas of the participants are regarded important.

During the sessions one of the researchers was the chair and another was the recorder. Ten questions, as mentioned in table 2, were read by the chair in a loose running manner. The focus group questions were composed by the research committee consisting of six faculty members from ITVHE including the main researcher of the project. Another researcher recorded any important comments or gestures, despite the matter that all of the discussions were recorded by a professional mp3 recorder.

After the three focus group sessions all audio files were transcribed verbatim by a professional transcriptionist. Then the researchers coded and analyzed the content. At last the quality factors and their indicators were extracted from analyzed texts as mentioned in table 2.

Table 2. Focus group discussion questions

1. If someone asks you about the quality of the web portal of ITVHE, what would you tell her?
2. How did you learn about the web portal of ITVHE for the first time?
3. Do you have any idea about other centers' web sites? How are their qualities?
4. What other web sites do you use? What qualities from those web sites would you like to see included on the portal of ITVHE?
5. What are some strengths of the ITVHE web portal?
6. What are some weaknesses of the ITVHE web portal?
7. what is missing from the web portal?
8. What are the qualities that would you be excited about, if they were included in the web portal?
9. Is there any international audience for the web portal? Who are they? What are the attributes from them that should be included in the web portal?
10. What other thoughts or comments do you have?

Results

In addition to the resulted quality factors as mentioned in table 1, some interesting points and comments were added, especially by students that were not expected by the research team.

1- The technological factor especially in internet connection, though not critical in many cited researches, is critical for IHEC web portal;

2- The IHEC web portal is not accessible in many cases due to power failure in server room;

3. Weighing the quality factors is very important and should be considered for further investigation;

4. While the researchers distinguished three dimensions in ITVHE, i.e. government, academic and Iranian, participants believed that a fourth dimension, agriculture, should be added to them;

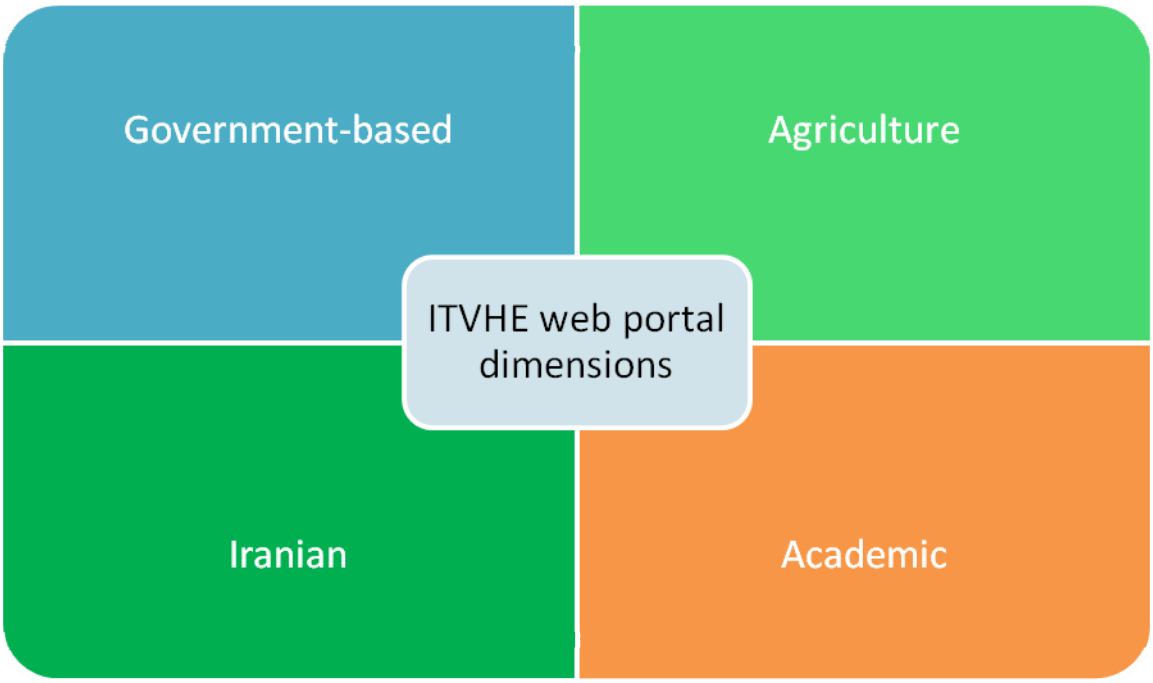

Figure 1. the dimensions of ITVHE's missions according to its documents

5. The participants in second and third focus groups that belonged to lecturers and officials thought more the missions of the institute as a government based organization. They suggested to highlight the organizational chart, advertisements and reports.

Table 3. A matrix showing the relationship between quality areas in the web portal and dimensions of ITVHE. Quality factors are located in the intersections. The quality level of this table according to Kano model is basic.

Quality level: basic		Academic	Government-based	Iranian	Agriculture
IQ	Usefulness	Course resources	Rules and regulations	Language	Simplified resources for study by farmers
	Adequacy				
SQ	Usability		Logos	Traditional and national design	Colors and shades
	Accessibility				
	Interaction	Site map Table of content	Organizational chart	Geographical distribution of centers	

Two other tables produced as a result of the focus group sessions that are performance level and exciting level consequently. IQ: information quality, SQ: system quality

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