



Management Arts

Elixir Mgmt. Arts 41 (2011) 5648-5656

Elixir
ISSN: 2229-712X

Determining and prioritizing the criteria and scales for evaluating the cohesive training information system at the University of Tehran, by AHP method

Seyed Mohammad Mahmoudi, Gholamreza Jandaghi, Zolfa Haghooyan and Zahra Karimi Asl
Public Management, University of Tehran.

ARTICLE INFO

Article history:

Received: 29 August 2011;

Received in revised form:

16 November 2011;

Accepted: 27 November 2011;

Keywords

Evaluation aspects,
Evaluation scales,
Cohesive training system,
Website,
Internet.

ABSTRACT

The aim of present research is to determine and prioritize criteria and scales of evaluating cohesive training systems. Present paper attempts to provide a paradigm for better devising of universities' cohesive training systems by identifying such scales. In terms of its aim, this research is an applied one and in terms of data collection method, it is descriptive and survey one. Its population includes elite training experts in the colleges and institutes affiliated to University of Tehran. It attempts to study domestic and foreign papers and to identify criteria and scales for evaluating cohesive training systems. Library method is used to gather information on theoretical basics, literature and to identify aspects and scales. Identified aspects include: content, flexibility, organizational structure, usage convenience, usage services and apparent form. To prioritize identified aspects and scales, the opinions of elite training experts in University of Tehran are used. Data gathering tool was questionnaire. Data were analyzed by AHP method and Expert Choice software. According to research findings, the relative supremacy of content was 0.362; flexibility, 0.225; organizational structure, 0.155; usage convenience, 0.115, usage service, 0.087; and apparent form, 0.056. So, one can say that the importance of identified aspects to evaluate cohesive training systems in terms of priority is content, flexibility, organizational structure, usage convenience, usage services and apparent form.

© 2011 Elixir All rights reserved.

Introduction

Over a decade, web converted from a theory into a reality so that one can claim that web is now obvious in all areas of our social life. Hence, public and nonpublic companies and organizations, schools and universities have websites. The aim of designing web pages in such institutes particularly in high education and research centers is an important added-value role in public awareness and to achieve existing information in such centers more effectively, rapidly and with the lowest cost (Khanlarkhani et al, 2008, p. 67). Naturally, an organization whose users are facing with problems in using and networking its web pages exposes a poor image and weakens organizational status. Therefore, it is necessary that any organization evaluates its web pages by considering its users' perceptions and benchmarks (Khanlarkhani et al, 2008, p. 67).

The services provided by university have extended well beyond those offered at an on-site facility. The design, usability {"defined as the capacity of a system to allow users to carry out their tasks safely, effectively, efficiently, and enjoyably"} (Li, 2005, p. 253), and functionality of the website university are critical if the to continue providing essential services to their patrons in a timely and efficient manner (Carole, 2005, p. 167). According to ISNA, in terms of web measuring indicators, Iranian universities do not enjoy high ranks so that the ranks of top universities in terms of such indicators include University of Tehran (873), Tehran Medical University (1266), Sharif Industrial University (1560) and Mashhad Ferdousi University (1671) (<http://www.modir.ir/News/2602.aspx>).

The plan to evaluate the websites of domestic universities and research institutes can compare their performance. Thus,

their manager can be aware of their organization's situation compared to their counterparts or superior ones in web environment in terms of training and research (Ghane, 2010).

Since there has not been yet provided any model to evaluate cohesive training system, in present study the main question is that: "which are the main aspects and scales to evaluate cohesive training system and how can we prioritize them?"

In below, the paper introduces Iranian Universities Training System (Golestan System), mentions the aspects and scales of evaluating websites and information systems, prioritizes them by using the opinions of elites, experts and AHP model and determine the importance ratio of scales.

Defining websites and information systems

Websites are a set of current pages in world web network which may be backed by people or different trading, scientific, thematic, national and international organizations (Heydari, 2005, p. 18).

Website components include:

Home Page: it is an entering point to website and other pages are shaping around it. In a hierarchical structure, home page is the top component of the structure and all internal pages have a direct link to home page.

Menu and submenu: right, rational and frequent classification of menus, using graphics and icons, rational attractiveness and using cursors and java scripts to open/close menus can help the fascination of a site as well as access convenience.

Site internal pages: these pages involve aims and contents of the site. Numbers and subjects of internal pages are directly related to site theme and usage.

Tele:

E-mail addresses: jandaghi@ut.ac.ir

© 2011 Elixir All rights reserved

Since websites are considered as information systems in organizations, the advantages of information system are represented below.

There are paramount definitions on information systems in disciplines such as management, computer sciences, software engineering, librarian sciences and public awareness. A definition in US Librarian Association encyclopedia is a comprehensive definition of information system (a complete devised system to produce, gather, process, store, recover and disseminate information in an institute, organization or any other defined area of community" (Omidvar, 2006).

Today, managers recognize the strategic and competitive value of information system well. Cross an organization's capitals such as HR, financial, machineries, and equipment, the most valuable one is information since all physical and environmental facilities are justified by information. An organization should be able to establish an information system capable to meet most information needs inside the organization. Such a shared system enjoys following advantages: mitigating repetitive works in maintaining databases, representing data more carefully (since data are stored in one place and they only need to be updated), better communications inside the organization so that everyone can access his/her needed information, and harmonic treatment with inter-organizational information needs (Zavareghi, 2006).

General criteria on evaluating websites and information system

By comparing used models and methods throughout the world, we extracted some common aspects and scales some of which are evaluated here. Achieved aspects and scales can be used in our final paradigm. Some models are important for general usages and others for special ones. For example, it may be important to determine the validity of current information in the site in evaluating a website while access to information is more important for someone who uses FTP achieves (Heydari, 2005, p. 18).

Pointed criteria in evaluating e-resources in most websites and Internet networks include:

1. Correctness (e.g. broadness, carefulness and correctness of information)
2. Competency (author's credit in his/her specialized area)
3. Thematic coverage (broadness and coverage of observed, analyzed and reported themes)
4. density and intensiveness (relevant information provided in each page of the site)
5. newness (mutual impact and updated information in the site)
6. interaction (mutual impact or performance of mutual relations between authors and users)
7. goal (author's objectiveness vs. his/her mindset)
8. velocity (needed time to call for the site and displaying its pages) (Dragolanesco, 2002)
9. usage convenience and users' satisfaction (resources availability, information representation and sorting, the possibility of navigating through all resources, searching possibility and resource navigation, clear and simple links between pages, the possibility of returning to home page by a click (Heydari, 2005, p. 24).
10. Content (including carefulness, author's credit, newness, uniqueness of resources and real information)
11. Website structure (harmony between site apparent form and aim, audiences and site theme) (Heydari, 2005, p. 27).
12. Objectiveness (clarified evidences and limits) (Heydari, 2005, p. 28).

As a proper tool to evaluate web page quality, WebQual model attempts to provide an integrated and systematic structure in evaluating the quality of websites and webbed resources and to assess the quality from users' perspective and viewpoint in order to devise a user-oriented approach to evaluate the quality of web pages (Khanlarkhani et al, 2008, p. 68). In reviewing WebQual model, since it involves paramount versions and its elements are changing in adopting with each version, one can provide paramount elements in a qualitative evaluation by considering varied edits. In initial WebQual versions, these elements include 4 aspects, 12 structures and 35 factors while these factors and structures are changed in new versions. These aspects include:

1. Profitability: information proportionate to needs, proper relations, confidence, responding time

2. Usage convenience: conceiving convenience, internal performances

3. Amazements: including apparent attractiveness, innovation and affective attractiveness.

4. Mutual communications: including homogenous pictures, no deficiency in terms of continuance, relative advantage (Khanlarkhani et al, 2008, p. 68).

In the most recent researches, a new version of WebQual titled A qual is introduced. This model attempts to evaluate the quality of websites from users' perspective in 4 aspects and 34 factors at two status qua and expected status. The aspects include content quality, application, service interaction quality, interactions quality and security (Khanlarkhani et al, 2008, p. 68). An interesting point on this model is an applicable aspect in evaluating the quality of pages along with its factors and e-commerce factors in web quality services concept (Khanlarkhani et al, 2008, p. 68).

Leo's measures to evaluate the site include: content, structure (in terms of visual designing), structure (in technical terms), author's right and applied scales (Baradar and Najafzadeh, 2008, p. 23).

"Software engineering: an approach to a technician" book also provides following software quality measures:

1. Rightness: the extent software executes its needed performance.

2. Maintenance ability: it is the facility of modifying a program when it faces an error.

3. Comprehensiveness: it measures the ability of software to resists against steals. It includes two traits: threat and security. Threat is the possibility of a special attack in a certain interval. Security is the possibility that a special attack to be defeated.

4. Usability: the capability of physical or intellectual skills to learn needed system and the needed time to gain skills for using the system (Prisman, 2008, pp. 134 – 135).

In paper on identifying portal social health training sites, following items were identified as effective parameters to evaluate training portals:

1. System required requirements such as programming, database management system, code access permission and management access

2. Security

3. Management

4. Efficiency including:

(a) Caching: storing the pages when meet them and the possibility of meeting them again when communication is cut.

(b) Database replication: the possibility of supporting data bank to alternate it if a problem happens.

(c) Load balancing: traffic control, data distribution in different paths to load web pages.

(d) **Static Content Export:** converting web pages to other file formats in order to store or send them.

(e) **Cost:** the ratio of designing costs, executing or selection costs, buying a portal proportionate to its return and its expected efficiency.

5. User friendliness

6. Built-in applications

7. Flexibility

8. Trading such as credit cards in portal sites and Internet sale/buy

9. Interoperability: such as archiving,

10. Support: including online guidance book, user training, management, expansion.

Other parameters of website evaluation include:

Menu management and content; web form-making management; capability-maker management; managing web site outputs; site optimizing management; Internet radio management; powerful context editor; site members management; managing site additional languages; distribution management; users inter-groups management; users' management; site-weblog users' performance registration management; advertisements management; virtual shop management; goods and services management; news and newsletters management; RSS management; forum management; photo gallery management; links management; virtual library management; encyclopedia management; polling management; motion messages management; calendar management; CSS management; organizational chart management; personnel introduction management; site characteristics management; database management; site computer management; visitors monitoring management; site section visit statistics management; journal management; standards and certifications management; affiliated companies management; colleagues management (Hejazi and Movahedi, 2007, pp. 82 – 84).

Huizingh (2000) distinguishes design from the information content, and identifies three dimensions: quality of navigation structure, multimedia capabilities and the presentation style. Paynter et al. (2001) take four categories into consideration: information, transaction services, trust, and non-functional requirements. Jenamani et al. (2002) present a thorough classification of the web site features, relating to marketing features, functional features, innovative features and accessibility features. However, important factors such as privacy, credibility, security and trust are missing from their classification, some of which are taken into account by Zhang and von Dran (2002). All these studies admit that the success of a web site design relies on the provision of a user-friendly environment for visitors. Sowards (1997) evaluates the effectiveness of the web sites from the user's perspective and suggests that layouts, design, content and speed of a web site are important success factors. (Li & Holeckova, 2005, p.78)

Two studies created a priori dimensions based on literature review, but did not test them. Zhang and von Dran's study was motivated by Herzberg's hygiene and motivator factors and suggested that certain website features are necessary but not sufficient to elicit positive perceptions or prevent negative perceptions of website quality, while other features are not necessary, but do increase positive perceptions of website quality. They compiled an extensive list of 42- scale items grouped a priori into eleven dimensions: (1) information content, (2) cognitive outcomes, (3) enjoyment, (4) privacy, (5) user empowerment, (6) visual appearance, (7) technical support, (8) navigation, (9) organization of information, (10) credibility, and

(11) impartiality. Student respondents ranked the importance of website features for an online news service to validate the measures. A second group of students assessed six types of sites (selling and non- selling) and analysis showed that different dimensions were important for different types of sites. For example, the navigation dimension was important for all sites, whereas privacy was critical only for e-commerce. Lin and Lu tested the effect of website quality on student perceptions of usability and usefulness of an electronic newspaper. They operationalized web-site quality as a three-dimensional construct composed of (1) information quality, (2) response time, and (3) system accessibility. Path analysis supported the effect of the three website quality dimensions on usability and usefulness as antecedents of intention to reuse the site in the future (Kim & Stoe, 2004, p.620).

The quality of a website must be evaluated with a number of different criteria according to Thewall:

1- Site visibility in search engines; the issue of visibility is one that is easy for the inexperienced to ignore. An otherwise excellent website may be completely ignored because few potential customers ever find it.

2- Ease of use; Ease of use or usability is an important issue for a website, as it is for any piece of software: how easy is it for the user to use the website for the purpose that the owner would like them to? This comprises four main categories: accessibility; navigation (Web designers use the term "breadcrumbs" to describe navigational clues that show users where they are on a website. They trace the path the user has taken from the home page to their present location. (Leanne, 2005, p.183)); readability; download speed.

3- Design quality; Website design shares many features in common with print media, and many of its techniques transfer, but all too often even the basic rules of graphic design are forgotten. The design should be appropriate to the goal of the site, avoid 'bad practice' and be memorable.

4- Ease of site maintenance and updating; a company opting for a website containing at least some product information needs to resolve the issue of how to keep it up to date. If an external contractor created the site, then it could be costly and inconvenient to ask for frequent updates. A better solution is to have the site created in such a way that company employees can update it themselves. There are various ways in which this can be done. (Thewall, 2000, pp.151- 154)

Cox & Dale (2002) suggested that Key quality factors (KQFs) include:

A. Clarity of purpose: This refers to what the Web site is offering to the customer

B. Design: The role of Web designer is occupied by professionals and amateurs alike. The Web site should reflect the image that the company is trying to project and which the customer will remember and return to. The key issues in design are: Links, Consistency, menus, site maps, Pages, text, clicks, Communication, feedback, Fill-in forms and Search.

C. Accessibility and speed: Vassilopoulou and Keeling (2000) rate accessibility as the speed with which the home page and following pages download

D. Content: Content refers to what a Web site actually offers in terms of information and is as important as the design aspect.

E. Customer service: In order to avoid customers using of telephone number, call-u-back service & e-mail, it is sensible to create a list of Frequently asked questions (FAQ) which can be diagnosed from the amount and type of queries being asked by customers (Cox & Dale, 2002, pp.863-870).

Huang et al provided a cohesive framework based on sites' traits and functions to evaluate trading websites shown in table 1 (Huang & et al, 2006, p.525).

In web-measuring (web-metric) evaluations which are a branch of measurement science, global universities and high education institutes are categorized in terms of evaluation top trainings in web, volume, size, observations and impact of web pages published by universities and information resources.

Other scales by which university and research centers can increase their ranks in global well-established categorizations systems are as follow: web pages and contents – affected by potential author numbers such as instructors, students and employees, resource access rate and the flexibility of institute's internal/external policies on facilitating free access; resource quality – evaluated by scales such as authors' credits, resource manufacturing universities, scientific judgment process for online resources, various resources formats and resource languages; and observation – evaluated by cross-contextual networks, resource extent and free access. Other scales include public acceptance – which relates to users' satisfaction and measured by indicators such as user numbers, flexibility on various users' information finding behaviors, attempts to update and evolve website, judges' ideas and web impact ration; internationalization (communication with international scientists and researchers and cooperating to international faculty), training quality (the quantity of scientific staff able to create content in web, virtual training disciplines and the ratio of students to faculty and staff); research outcome (evaluated by research output access of institute in systems such as Google, Scholar, SSCI & SCI; scientific fame and web impact ration (the credit of university its faculty, observations through links to institutes' sites, the quantity of researchers according to institute and its famous staff throughout the world).

Research background

In this section, we address to conducted researches on websites and information systems evaluation. One can divide conducted researches into three categories:

(a) External researches whose aims are to identify the aspects and scales of website and information systems evaluation as follow:

The total of 31 of evaluation criteria that used by Li & Holeckova in Evaluation of UK car insurance brokers' web sites are organized into five categories:

- (1) Search: search (SEA);
 - (2) Site characteristics: information (INF), system quality (SYQ), design (DES), navigation (NAV), credibility (CRE), privacy (PRI) and security (SEC);
 - (3) Quality of access: quality of access (QUA);
 - (4) Price: quote (QUO); and
 - (5) Purchase: purchase (PUR).
- (Li & Holeckova, 2005, p.79)

Liu and Arnett surveyed webmasters of Fortune 1000 companies about factors that contributed to website success. They originally proposed six dimensions of website quality, but exploratory factor analysis revealed four: (1) quality of information and service, (2) system use, (3) playfulness, and (4) system design quality (Kim & Stoe, 2004, p.621).

Aladwani and Palvia also examined website quality from a user perspective, but used student samples in a two-phase study. **They proposed three dimensions of website quality:** (1) technical adequacy, (2) web content, and (3) web appearance. In the first phase of the study, respondents evaluated websites in general to generate valid scale items. In the second, respondents evaluated two selling and two non-selling sites to confirm the

scale items. Exploratory factor analysis in the first phase found four dimensions: (1) technical adequacy, (2) content quality, (3) specific content, and (4) appearance. These dimensions accounted for 67% of the variance in perceived website quality. Their second phase confirmed the reliability and convergent and discriminate validities of the four dimensions. In addition, the four factors were correlated with a rating of overall quality of the website (Kim & Stoe, 2004, p.621).

Barnes and Vigden have conducted extensive work on an instrument to measure web site quality of both non-selling and selling websites. Early efforts focused on technology and information as indicators of quality for university websites. Five dimensions were proposed a priori and reliability analysis showed four dimensions to emerge: (1) ease-of-use, (2) experience with site, (3) information, and (4) communication and integration. However, as work continued to apply the scale to selling sites, the authors recognized a need for more items capturing the service provided by the site, or the interaction between the customer and the site (Kim & Stoe, 2004, p.621).

To address this need, development incorporated elements of the ServQual instrument at the expense of information items. Reliability analysis confirmed that the five dimensions were acceptable: (1) tangibles (of aesthetics and navigation), (2) reliability (reliable and competent), (3) responsiveness (responsive and accessible), (4) assurance (credible and secure), and (5) empathy (communication and individualization) (Kim & Stoe, 2004, p.621).

Loiacono explicitly measured website quality of sites selling goods and services (books, music CDs, airline tickets, and hotel reservations) and suggested that website quality is represented by 12 unique dimensions. In her study, 14 dimensions of website quality were originally proposed as a result of an extensive review of the marketing and IS literature and interviews with shoppers and website designers (Kim & Stoe, 2004, p.621).

Confirmatory factor analysis, however, provided evidence that the 36 items assessing website quality converged into 12 dimensions and these showed predictive validity for purchase intention. The dimensions included: (1) informational fit-to-task, (2) tailored communication, (3) ease of understanding, (4) intuitive operations, (5) response time, (6) visual appeal, (7) innovativeness, (8) emotional appeal, (9) trust, (10) online completeness, (11) relative advantage, and (12) consistent image (Kim & Stoe, 2004, pp.621 & 622).

(b) Researches which address to foreign universities' websites such below two instances:

The results of the redesigning Carnegie Mellon University Libraries website indicated several key weaknesses with respect to navigation, screen design and labeling, leading to more revisions and the final release. Testing indicated that color and graphics attract attention; font, labels, and placement increase visibility; chunking and leading with keywords increase readability; and consistency increases usability (Carole, 2005, p.167).

Shelstad (2005) examined the work of the University of Wyoming's American Heritage Center (AHC) to revamp its website during 2003-2004. The task force analyzed the structure and content of the site to improve navigation, prioritized the presentation of content, and also researched the costs and benefits of outsourcing the design and maintenance of the site. The AHC also identified opportunities for expanding useful content with a relatively small investment of staff time and budgetary resources.(Shelstad,2005,p.210) Some of the less successful areas of the redesign included user feedback

indicating that some portions of the site were not entirely up to date: this has been a great frustration, for the areas referred to ought to be in the forefront of providing archival services via the web. AHC's user testing did not include more of the general public, but the AHC's efforts to include them went unanswered (Shelstad, 2005, p.223).

(c) Researches which address to evaluate Iranian universities' websites and categorize them based on their web quality.

In web-measuring (web-metric) evaluations which are a branch of measurement science, global universities and high education institutes are categorized in terms of evaluation top trainings in web, volume, size, observations and impact of web pages published by universities and information resources. The results are indicated below.

1. University of Tehran
2. Hawza and University Research Center
3. Iranian Sciences and IT Research Center
4. Scientific database, Academic Jihad
5. Hawza website
6. Tehran Medical University
7. Payam Noor University (main portal)
8. Shahid Beheshti University
9. Mashhad Medical University
10. Firdausi Mashhad University
11. Iran Science and Industry University
12. Shahid Beheshti Medical University
13. Iran Medical University
14. Shiraz Medical University
15. Shiraz University
16. Amir Kabir Industrial University
17. Tarbiat Modares University
18. Applied Scientific University
19. Stem Sciences University
20. Sharif Industrial University

Based on this categorization of designing, observation, scientific docs (PDS), size and traffic, the ten top institutes in terms of acquired scores in above five scales include University of Tehran, Hawza and University Research Center, Iranian Sciences and IT Research Center, Scientific database, Academic Jihad, Hawza website, Tehran Medical University, Payam Noor University (main portal), Shahid Beheshti University, and Mashhad Medical University.

Research goal

The goal is to identify website scales evaluation on the cohesive system at University of Tehran.

Methodology, sample, population and data gathering method

In terms of its aim, this research is an applied one and in terms of data collection method, it is descriptive and survey one. Its population includes elite training experts at University of Tehran who are able to recognize the weaknesses and deficiencies of the system since they are able to work a training cohesive system. The number of elite experts in University of Tehran is 27. Elite experts were selected from Qom Campus, Sciences Campus, Art Campus, agricultural and natural resource Campus as well as social sciences, technical, law, political sciences, environment, liberal arts, literature, management, foreign languages, entrepreneurship, psychology, economy, physical education, theology, Islamic sciences and geography. Library method is used to gather information on theoretical basics, literature and to identify aspects and scales. Field study method was used to gather information and the tool to gather information was questionnaire. The questionnaires were distributed among elite training experts in University of Tehran.

Scales and aspects of analysis and evaluating training cohesive system

After broad study of literate and research background, aspects and scales were extracted as the aspects and scales of evaluating training cohesive system indicated in table 3. All used aspects in this research are documented and each one is used in paramount researches as the measures to assess websites. As mentioned in previous section, the apparent form is used in studied by Lin and Arnt, Zhang & Von Dran and Loiacono and flexibility is used in a study by Hejazi and Movahedi. They are also seen in Leo's measures (in visual terms at structural aspect). Organizational structure is also seen in Leo's model (in technical terms at structural aspect) and Heydari's research. Application convenience is used in studies by Hang et al, Barns & Wigden, Hejazi & Movahedi. An aspect of WebQual is application convenience. Content is both seen in both WebQual and Leo's model. Heydari, Lin and Arnt, Cox and Dal and Swades have used content in their studies. Finally, usage services are used in studies by Hejazi & Movahedi and Cox & Dal.

Data analysis

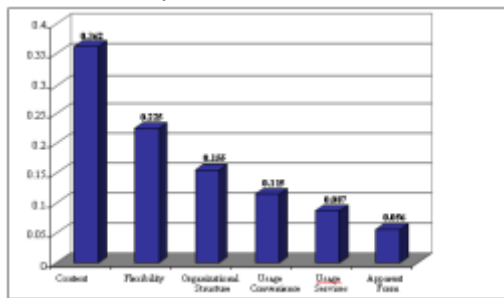
After identifying aspects and scales, this question arises: "How much is the Importance of each aspect? Which aspect has the highest and which has the lowest importance?" to determine ratings and weights of scales, one can point such methods as Likert's model, unreal group, Borda's method and Expert Choice. An important usable method which is highly applied in management is AHP (Analytic Hierarchy Process). AHP is a way by which a complicated situation is divided into smaller ones and then they are put into a hierarchical structure (Azar and Rajabzadeh, 2008). This method includes below steps:

• **Paired comparison between components and decision-making options:** draw paired comparison matrix for each hierarchy matrix inputs show the importance of one component to another one by considering higher level components and by using priority scale. Use these values to prioritize components in each level of hierarchy. In this technique, used scales for paired comparisons enable decision-maker to merge knowledge and experience and show the advantages of one component to others. Decision-maker can explain his/her priorities among per pair of components verbally such as similar importance, no priority, relatively important, more important, very important and infinitely important. Then, these priorities will be converted into numerical values namely 1, 3, 5, 7, 9 and 2, 4, 6, 8 are mediator values between priorities.

Results mixture: to determine the overall priority of each option, ms them and select the top one (Manuel, 2009). Usually, hierarchical process model is executed by EXPERT CHOICE software. This software is used in planning the projects in over 20 countries. The results of aspects prioritization are outlined in table 4 and graph 1.

As seen in table 4, relative advantage is as follow: content 0.362; flexibility, 0.225; organizational structure, 0.155; usage convenience, 115; usage services, 0.087; and apparent form, 0.056. The importance of each aspect is outlined in graph 1. It shows that in evaluating training cohesive systems, content is more important than other aspects followed by flexibility, organizational structure, usage convenience, usage services and apparent form.

Graph 1: aspects prioritization of evaluating training cohesive systems to use AHP method



To determine the importance ratio of each scale, following formula is used. To facilitate the calculations, SPSS software is utilized. A, b, c and d columns show the percentage of relative frequency for each option.

Scales importance ratio = $(a)*4 + (b)*3 + (c)*2 + (d)*1$

The importance ratios of aspects and scales for evaluating training cohesive system in University of Tehran are indicated in table 5.

Conclusion

The aim of present paper was to identify and prioritize the aspects and scales of evaluating training cohesive systems. In this line, we identified the aspects and scales by studying those internal/external papers which had addressed to identify the aspects and scales of evaluating websites and information systems. Identified aspects include: content, flexibility, organizational structure, usage convenience, usage services and apparent form. We used the opinions of elite experts in the colleges and institutes affiliated to University of Tehran in order to prioritize aspects and scales. To analyze data on prioritizing the aspects, AHP model and Expert Choice software were used. To determine the importance of scales, importance ratio was used whose results are shown in table 5. The results of analysis showed that content has the highest and apparent form has the lowest importance in evaluating training cohesive systems. As a result, content aspect merit more ratio in evaluating training systems.

References:

1. Axar, Ali & Rajabzadeh, Ali (2008), "applied decision-making (M.A.D.M approach), Negah Danesh Publications.
2. Baradar, Roya & Najafinia, Sheida (2008), "Website assessment in e-journals", IT sciences, vol. 3, pp. 1- 34.
3. Carole A.G, (2005), "Usability testing and design of a library website: an iterative approach", OCLC Systems & Services, vol. 21, No.3, p.167-180.
4. Cox.J & Dale.B.G (2002), "Key quality factors in Website Design and use: An examination", International Journal of Quality & Reliability Management, vol. 19, No. 7, 2002, pp. 862 – 888.
5. Dragolansco, Nichola George (2002), "websites qualitative evaluation: tools and scales", translated by Gholam Heydari, Iranian Information and Scientific Docs online Journal, vol. 2.
6. Ghane, Mohhamad Reza (2010), "Establishing website assessment system in national universities and research centers", <http://bpdanesh.ir/detailnews.asp>

7. Hejazi, Seyed Mahdi & Mofahedi, Farid (2007), "valuating training portal sites on community health", Health Information Management, vol. 1, pp. 81 – 88.
8. Heydari, Gholam, (2005), "evaluation scales of online information resources by emphasize on websites", Information Sciences, vol. 3 & 4, pp. 17 – 32.
9. Huang .W & et al (2006), "Categorizing web features and functions to evaluate commercial web sites" 'Industrial Management & Data Systems, vol.106, No.4, pp. 523-539.
10. Khnlarkhani, Elmira, Mohammad, Ismail, Sadigheh & Shokuie, Ali (2008), "quality and application elements in evaluating web pages", Public Awareness Monthly, vol. 11.
11. Kim .S & Stoe .L (2004), "Dimensional hierarchy of retail website quality" 'Information & Management, vol.4, no.1, pp. 619–633
12. LaRue E.M (2008), "Development and evaluation of SPAT: a web page assessment tool" 'Library Hi Tech 'Vol. 26 'No.2, pp. 274- 286
13. Leanne M.V (2005), "Usability analysis of Northern Illinois University Libraries' website: a case study" 'OCLC Systems & Services, Vol. 21, No.3, pp.181-192
14. Li .P,(2005), "Cognitive task analysis: A cognitive approach to evaluate evidence-based nursing websites" ,OCLC Systems & Services ,Vol.21, No.3, pp. 252-256
15. Li .S & Holeckova .K (2005), "Evaluation of UK car insurance brokers' web sites: some preliminary findings" 'Marketing Intelligence e & Planning 'Vol.23, No.1, pp. 77 – 88.
16. Manuel, (2009), "analyzing hierarchies in flexible production", <http://inen.blogfa.com>.
17. Omidvar, Majid, (2006), "Management Guideline", <http://www.tafda.org/management>.
18. Prisman, Roger (2008), "software engineering: an approach to a technician", translated by Hashemi Taba, pp. 134 – 135.
19. Rahimi, Ghafur, (2006), "performance assessment and organizational continuous improvement", Tadbir Monthly, vol. 173, <http://www.modiiran.ir>.
20. Shelstad. M (2005), "Content matters: analysis of a website redesign" ,OCLC Systems & Services, vol. 21, No.3, pp.209- 225
21. Thelwall .M (2000), "Effective websites for small and medium-sized enterprises" , Journal of Small Business and Enterprise Development, Volume 7, Number 2, pp.149-159
22. Zavareghi, Rasool, (2006), MIS, Iranian Information and Scientific Docs online Journal, <http://www.modiiran.ir>.
23. <http://www.modir.ir/News/2602.aspx>, 2010
24. PayaWeb.com, 2010

Table I: A proposed web site assessment framework

Web features and functions	References
Features speeding up online tasks	Kalakota and Whinston (1997), Kennedy (2000), Bacheldor (2000) and Cheung and Huang (2002)
Features establishing multiple communication channels	Coopee et al. (2000) and Robbins and Stylianou (2003)
Features providing suitable access to contacts	Kennedy (2000) and Fairley (2000)
Features making web site personal	Kalakota and Whinston (1997), Huizingh (2000)
Features providing company information and advertising online	Cell (2000) and Slater (2000)
Features facilitating customer feedback	Bickers (2000)
Features allowing users to control information detail	Bacheldor (2000) and Scharl (2000)
Features aiding online shopping decisions	Kennedy (2000)
Features using multimedia tools	Sweeney (2000), Huizingh (2000) and Yasin (2000)

Source: Huang .W & et al ,(2006), "Categorizing web features and functions to evaluate commercial web sites" Industrial Management & Data Systems ,Vol.106 ,No.4, p.525

Table 3: aspects and scales of evaluating training cohesive systems

Aspect	Row	Scales
Apparent forms	1	Picture and text coordination
	2	Proper fonts
	3	Proper colors
	4	Attractive logos and pictures
	5	Attractive designing
	6	Attractive environment
	7	Welcoming
	8	Animation
	9	Using multimedia tools
Aspect	Row	Scales
Flexibility	1	The possibility to change fonts and color
	2	The possibility to change language
	3	The possibility to convert into home page
	4	The possibility to ass sound
	5	The possibility to change background color
	6	The possibility to transfer and store information with different formats (word, PDF, excel, etc)
	7	The possibility to change page size
	8	The possibility to return desired page from any point or navigating the pages
	9	The possibility to link with other dates
	10	The possibility to attach and send via email
	11	The possibility to look at content without image or color
Aspect	Row	Scales
Organizational structure	1	Components integration
	2	Section interdependency
	3	Totality principle: full menu and needed lists in any section
	4	Proper structure of menus, hierarchies, ...
	5	Menu title relevance to considered usage
	6	Proper layout
	7	Proper input/output
	8	Proper information structure
	9	Logic volume and relevance of menus and information
Aspect	Row	Scales
Usage convenience	1	Information access velocity
	2	Menus accessibility from any section
	3	Search and survey convenience
	4	Proper (low) interactions
	5	Different access (direct search)
	6	Effective search in site
	7	The convenience to modify programs when facing with errors
	8	System loading velocity
	9	Certain loading period of each page
	10	Download time
Aspect	Row	Scales

Content	1	Information relevance to needs
	2	Menus cohesiveness
	3	Information clarity
	4	Menus clarity
Aspect	Row	Scales
Usage services	1	The possibility to print information from any section
	2	The possibility to copy and share data
	3	The possibility to import and export data by everyone
	4	The possibility to edit information in any page
	5	The possibility to share information in official automation environment
	6	The possibility to share information in e-government
	7	Complete public awareness in each section
	8	The possibility to register and enter the system outside the university
	9	The possibility to issue forms like certification and so on by user
	10	The possibility to change information by user in any time
	11	The possibility to prepare structured reports
	12	Poll (feedback) system
	13	Search engine in the system
	14	Site efficient map

Table 4: aspects prioritization of evaluating training cohesive systems to use AHP method

The aspects of evaluating training cohesive systems	Relative advantage
Content	0.362
Flexibility	0.225
Organizational structure	0.155
Usage convenience	0.115
Usage services	0.087
Apparent form	0.056

Table 5: the importance ratio of scales of each aspect, %

Aspect	Row	Scales	Very important (a)	Important (b)	Relatively important (c)	Unimportant	Importance ratio
Apparent form	1	Picture and text coordination	18.2	63.6	13.6	4.5	73.825
	2	Proper fonts	36.4	54.5	9.1	0	81.825
	3	Proper colors	18.2	68.2	9.1	4.5	75.025
	4	Attractive logos and pictures	22.7	40.9	13.6	22.7	65.85
	5	Attractive designing	22.7	59.1	4.5	13.6	72.675
	6	Attractive environment	27.3	50	9.1	13.6	72.75
	7	Welcoming	4.5	50	22.7	22.7	59.025
	8	Animation	9.1	36.4	18.2	36.4	54.6
	9	Using multimedia tools	27.3	45.5	4.5	22.7	69.35
Aspect	Row	Scales					
Flexibility	1	The possibility to change fonts and color	18.2	68.2	9.1	4.5	75.025
	2	The possibility to change language	40.9	45.5	4.5	9.1	79.55
	3	The possibility to convert into home page	9.5	42.9	33.3	14.3	61.9
	4	The possibility to ass sound	1.6	45.5	13.6	27.3	61.35
	5	The possibility to change background color	9.1	50	22.7	18.2	62.5
	6	The possibility to transfer and store information with different formats (word, PDF, excel, etc)	90.9	9.1	0	0	97.725

	7	The possibility to change page size	40.9	40.9	18.2	0	80.675
	8	The possibility to return desired page from any point or navigating the pages	72.7	27.3	0	0	93.175
	9	The possibility to link with other dates	31.8	59.1	9.1	0	80.675
	10	The possibility to attach and send via email	40.9	40.9	9.1	9.1	78.4
	11	The possibility to look at content without image or color	28.6	47.6	9.5	14.3	72.625
Aspect	Row	Scales					
Organizational structure	1	Components integration	54.5	40.5	0	0	84.875
	2	Section interdependency	59.1	31.8	9.1	0	87.5
	3	Totality principle: full menu and needed lists in any section	50	36.4	13.6	0	84.1
	4	Proper structure of menus, hierarchies, ...	54.5	31.8	13.6	0	85.15
	5	Menu title relevance to considered usage	63.6	31.8	4.5	0	89.7
	6	Convenient communications	63.6	36.4	0	0	90.9
	7	Proper layout	36.4	54.5	4.5	4.5	80.65
	8	Proper input/output	59.1	40.9	0	0	89.775
	9	Proper information structure	59.1	31.8	0	4.5	86.325
	10	Logic volume and relevance of menus and information	54.5	45.5	4.5	0	88.625
Aspect	Row	Scales					
Usage convenience	1	Information access velocity	81.8	13.6	0	4.5	93.125
	2	Menus accessibility from any section	77.3	136	0	9.1	89.775
	3	Search and survey convenience	72.7	22.7	0	4.5	90.85
	4	Proper (low) interactions	30	65	5	0	81.25
	5	Different access (direct search)	59.1	27.3	4.5	9.1	84.1
	6	Effective search in site	59.1	40.9	0	0	89.775
	7	The convenience to modify programs when facing with errors	59.1	31.8	0	9.1	85.255
	8	System loading velocity	86.4	4.5	4.5	4.5	93.15
	9	Certain loading period of each page	36.4	36.4	18.2	9.1	75.075
	10	Download time	50	36.4	4.5	9.1	81.825
Aspect	Row	Scales					
Content	1	Information relevance to needs	72.7	27.3	0	0	93.175
	2	Menus cohesiveness	59.1	40.9	0	0	89.775
	3	Information clarity	72.7	27.3	0	0	93.175
	4	Menus clarity	68.2	31.8	0	0	92.05
Aspect	Row	Scales					
Usage services	1	The possibility to print information from any section	54.5	36.4	4.5	4.5	85.175
	2	The possibility to copy and share data	68.2	22.7	4.5	4.5	88.6
	3	The possibility to import and export data by everyone	50	36.4	13.6	0	84.1
	4	The possibility to edit information in any page	45.5	40.9	0	13.6	79.575
	5	The possibility to share information in official automation environment	68.2	27.3	0	4.5	89.8
	6	The possibility to share information in e-government	50	31.8	9.1	9.1	80.675
	7	Complete public awareness in each section	36.4	63.6	0	0	84.1
	8	The possibility to register and enter the system outside the university	68.2	22.7	0	9.1	87.5
	9	The possibility to issue forms like certification and so on by user	40.9	54.5	0	4.5	82.9
	10	The possibility to change information by user in any time	45.5	31.8	9.1	13.6	77.3
	11	The possibility to prepare structured reports	61.9	28.6	4.8	4.8	86.95
	12	Poll (feedback) system	40.9	50	0	9.1	8.675
	13	Search engine in the system	59.1	36.4	0	4.5	87.525
	14	Site efficient map	33.3	38.1	14.3	14.3	72.6