Designing a New Model for Organizational Websites Evaluation

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Abstract

The current web evaluation models are mainly based on the technical evaluation of the site and its appearance and usability from user's perspective. In other words, the site is evaluated as an independent entity from the underlying organization that it represents. The focus of this study is on evaluation of organizations' websites based on the quality management concepts. In this way, the measured performance indicators will be used to find the deficiencies of the websites and recommend corrections. For evaluating the organization's success in its website function, the concept of quality management is used and since evaluation and improvement are the center of attention in this model, the model is called Ev-Imp, which Ev stands for evaluation and Imp stands for improvement. Model includes four main components consist of objectives, processes, criteria and feedback. With the use of feedback tools such as quantitative and qualitative questionnaire for groups of stakeholders and service providers ,the website's weaknesses and strengths would be identified and with analyzing the website's weaknesses required improvement would be determined and corrective action would be done.

Keywords: Website Processes, Website Criteria, Website Performance

Introduction

The current web evaluation models are mainly based on the technical evaluation of the site and its appearance and usability from user's perspective. In other words, the site is evaluated as an independent entity from the underlying organization that it represents. Website with regard to the needs of visitors face a wide range of stimulus. In fact, website is not only dealing with the needs of visitors, but also supervising and managing them with different levels of expectations and experiences. A main part of a successful e-commerce performance depends on a website which is responsible for the needs of potential customers. After a while website needs to be correct itself effectively and efficiently with regard to the change of situations and also needs and demands of stakeholders particularly customers and users, and accordingly the organizational plans and strategies.

According to what was said before, the success of a website has a general interpretation and in order to evaluate the organization's success about its website performance, this success must be regarded in a measurable format, so that it will be possible to recognize the current problems and obstacles and to take step toward improvement and upgrade. Evaluation and measurement of performance is a systematic attempt to see how much the services could be

respondent to the needs, this evaluation needs a controlling framework so that the evaluation is done in a systematic way; this framework should consider the followings:

Description of the performance's objectives and its relationship with the organization's business;

Periodic evaluation toward the achievement of the objectives; Evaluation feedback; Developing individual and group abilities that affect the system & fixing low performances.

The study is going to provide a mechanism for measuring the success of an organization website's achievements. Studies which have already done to evaluate the websites has less systematic views With regard to the main goals and mainly discuss qualitative evaluation from the technical point and with the expert's technical point of view. But in this study, with examining all scientific studies concerning about website assessment, with the organizational success stand point, a mechanism has been designed which in addition to the concept of efficiency, considers effectiveness which means how the website has been successful in achieving its goals.

One of the most important features of this model is that with examining and evaluating the designed criteria, main processes that the website has weaknesses in them can be identified and with the feedback mechanism which has designed in it, corrective action for solving the problems and weaknesses will be done. One of the other features of this model which differs it from all the other evaluation mechanisms is considering quantitative criteria or metrics and their involvement in the process of evaluating the website.

Overview

Organizations start establishing and developing websites with different goals. These goals can include: Expand market reach,

Visibility,

Enhance responsiveness,

New services and

Cost reduction.

After a while website needs to re-correct itself effectively and efficiently with regard to the change of situations and also needs and demand of stakeholders particularly customers and users, and accordingly the organizational plans and strategies. On the other hand following the objectives and strategies is the only success key in using website as a tool in e-commerce, considering website characters and criteria that are directly dealing with the website performance has an undeniable and important role in the success of the website and the related organization. For example, if the website is completely moving toward the organization's objectives but its loading speed is low due to high volume of the images, the website's success will be overshadowed.

In a study by Chiou, Lin and Perng a strategic framework for website evaluation is described. They have attempted to understand and improve website evaluation through the analysis of 83 articles by classifying them into IS, marketing, and combined-approaches. (Chiou, Lin& Perng,2010)

In other study by Mich, Franch, and Nicolini, an original model for evaluating and designing the quality of web sites is described. The model, called "2QCV3Q", has been developed using classic rhetorical principles and can be used to single out elements which, when suitably combined, permit evaluation of the quality of a website and provide

suggestions for Improvements.

This model takes account of the following fundamental aspects: The quality of a site depends both on the process and on the final products. The "2QCV3Q" model allows identification and classification of these elements (dimensions and attributes). These dimensions and attributes are: Identity, Content, Services Location, Management, Usability, and Feasibility. (Mich, Franch & Cilione,2003).

The quality constructs are well founded as critical success factors in website evaluation together with system use (Law & Leung, 2002; Liu & Arnett, 2000). DeLone and McLean(2003) argue that the three quality dimensions affect use and user satisfaction.

R. And Borovicka, M. And Innsbrck, A, argue that consideration of the quality must precede any measurement of use. Three quality dimensions involves are consist of System Quality, Information Quality and Service Quality. This model uses questionnaires to evaluate websites.

Albuquerque and Belchoir the fuzzy model is used for the evaluation of e-commerce websites. This model involves 3 main criteria with their sub-criteria as followed:

USABILITY: Efficiency, User friendliness, Navigability, Maintainability, Technology suitability, Reusability, Implementation feasibility, Profitability, Involvement Capacity

CONCEPTUAL RELIABILITY: Functionality, Security, Reliability, Integrity, Trustworthiness, Content adequacy. REPRESENTATION RELIABILITY: Readability, Standards conformance, Easy of manipulation. (Albuquerque & Belchoir,2002).

In another study by Van der Merwe and Bekker attempts to address the need of a complete and accurate method to evaluate the performance of websites by focusing on two objectives: 1-To develop a framework and criteria for the comprehensive evaluation of e-commerce websites. 2-To use this framework and sound statistical reasoning to develop a method that can be used to evaluate websites quantitatively.(Van der Merwe & Bekker,2003)According to a study by Guo and Shao A web assessment tool must have five main components: categories, factors, weights, ratings and total score. Its website assessment model consist of 3 dimensions: Site Content, Functional Service, Constructs quality (System attributes & Interface design).(Guo& Shao,2005) Software quality was first defined in the 1970's by researches like McCall et al. [7] and Boëhm. Their research was later complemented by standards like IEEE and ISO. (McCall, Richards & Walters, 1977; Boëhm,1978)

More recently, Fitzpatrick and Higgins conducted a methodical analysis and synthesis of three strands - quality (as explained by McCall et al. and by Boëhm), statutory obligations, and human-computer interaction, which influence software quality. (Fitzpatrick & Higgins,1998)

Fitzpatrick, R, [10] identifies five new quality factors for the Web (visibility, credibility, intelligibility, engagbility and differentiation), together with their characteristics and a checklist of enablers, which can be used by specifies, designers, developers and evaluators to create quality Web sites. The evaluation methodologies used by evaluation and certification organizations in several European countries (such as AccessiWeb in France, Technosite in Spain and AnySurfer in Belgium) are different in subtle but meaningful ways, even though they are usually based on the Web Content Accessibility Guidelines 1.0 (WCAG 1.0). (Fitzpatrick , 2002).The Unified Web Evaluation Methodology (UWEM) developed by the Web Accessibility Benchmarking (WAB) Cluster aims to provide suitable methods and

advice for detailed evaluation of single web pages, entire sites, and sets of web sites. UWEM does not only provide a collection of test procedures with unambiguous applicability criteria, but also recommendations for the size of evaluation samples, sampling methods and various reporting options. (Nietzio, Strobbe& Velleman,2008) A study presents a framework for evaluating the usability and content usefulness of websites by using the benchmarking approach. There are 5 phases of this study (1) the identification of the metrics for benchmarking web usability and content usefulness from the literature. (2) The verification of the metrics from the usability experts (3) the classification of the objective and subjective criteria (4) the development of the benchmarking framework and (5) the application of the framework on selected websites. (Hassan & Li,2005)

webQual presents the development and validation process of a Web site quality measure with 14 core dimensions consist of information quality, functional fit-to-task; tailored communications ;trust; response time; ease of understanding; intuitive operations; visual appeal ;innovativeness; emotional appeal; consistent image; on-line completeness; relative advantage and customer service. (Loiacono, Watson& Goodhue,2007; Loiacono, Watson & Goodhue,2002; Barnes & Vidgen,2001).

Neilsen's usability heuristics [17] recommends 10 criteria for usability evaluation consist of: Visibility of system status, Match between system and the real world, User control and freedom, Consistency and standards, Error prevention, Recognition rather than recall, Flexibility and efficiency of use, Aesthetic and minimalist design, Help users recognize, diagnose, and recover from errors and Help and documentation. (Nielsen,1994).

Web Content Accessibility Guidelines Version 2.0 (WAI, 2008) presents four principles consist of Perceivable, Operable and Robust. (Web Accessibility Initiative,2008)

Shneiderman presents 8 golden principles of good interface design consist of: Strive for consistency, Enable frequent users to use shortcuts, Offer informative feedback, Design dialogue to yield closure, Offer simple error handling, Permit easy reversal of actions, Support internal locus of control, Reduce short-term memory load. (Shneiderman & Plaisant, 2005)

U.S. Department of Health and Human Science presents Research-Based Web Design and Usability Guidelines. (U.S. Department of Health and Human Sciences,2006).

Examining former studies, followings are the outlines which are not fully discussed in previous studies:

1-The purpose of evaluation; Is the website's purpose to compare website's position to the other websites or is it to improve? it is necessary that the purpose of evaluation be determined since it affect other factors such as the evaluation mechanism ,criteria, etc.

2-Evaluation scope and use of evaluation results;

Is the purpose of evaluation to promote the technical quality of the web or is it to achieve organizational result or is there interaction between them.

3-evaluation criteria;

This is not separated from number 2, whether evaluation's criteria are qualitative and conceptual or are statistical and quantitative, or are the mixture of these two are used for the evaluation of the website's success.

4-Evaluation mechanism;

It is an important item which is not comprehensively discussed so far. Designing the mechanism is largely dependent on the evaluation objective, like which tools should be used

for evaluation? (Questionnaire, etc.) how does the evaluation criteria affect the processes and mechanisms? And where is the improvement position in this mechanism?

5-evaluator;

This case can be considered as a part of evaluation mechanism but since it has been less discussed in previous studies, it's required to consider it separately, what is important in the evaluation is the characteristics the evaluator must have. Is it sufficient to use a specialist or we should also take advantage of the stake holder's point of view, or we should use the mixture of these two factors.

6-small and large websites; It is effective for large and small organization's websites.

7- Management support; Because of linking between website process and organizational objectives this method has management support.

8-focussing;

This method lead project's team toward what is important and need focusing.

Methodology

The present study is a mixed -research methodology in which a qualitative approach (the meta-synthesis method) and a quantitative approach are used .In the first stage of the research meta-synthesis method is used to collect data, analyze the findings, discover the main points and combine them and convert them into a general alternative in studies that were conducted in two dimensions consist of "organizational evaluation models" and "website assessment models ".

The Metha-synthesis of the qualitative research is uniting a group of qualitative studies to explore key issues and translating them into a final and unit product. This final product asserts the initial result of the studies as a new concept. The new concept and interpretation of the studied subject of the final product of the Meta-Synthesis is provided in a way which makes it possible to search the initial research results at the same time.

Meta-synthesis is a sense of meta-analysis of the qualitative research. Although the general concept of both techniques seems to be the same, but the objective of meta-analysis in the quantitative research is putting together and combining the existing information of the similar studies in order to enhance the certainty of the causal relationship. For this purpose the statistical studies are used and a single result is obtained. While the objective of the qualitative research Meta –synthesis is explaining and understanding the phenomenon.

It should be noted that Meta synthesis is not simply summarizing and integrating the results of the qualitative researches .In this method the results of the qualitative research and not the initial data are put together then compared and translated and finally a comprehensive interpretation of the studied subject is provided. (Creswell, 2012).

In 1988 a method was presented for qualitative research synthesis and since the ethnography method was used in qualitative research, the method was named as meta-ethnography .although the presented model was named as meta-ethnography and was used for the ethnography synthesis, today it is considered as the most common method for qualitative research meta-synthesis.

7 steps have been proposed for doing the meta-synthesis. (Creswell, 2013).

1-The first phase of the research focus on finding the research title.
2-The next stage is selecting the eligible studies for entering in Meta-synthesis

3-In the next stage the selected studies are read repeatedly and the key concepts and themes are determined.

4-In the fourth stage, the researcher investigate and analysis the relationships between the studies.

5-In the fifth stage the concepts are translated into each other and by translation we mean converting the concepts into each other.

6-In the sixth stage, researcher creates a whole out of the primary studies. This whole which is the final product of meta-synthesis provides an interpretation beyond any of the included studies for the studied phenomenon.

7-The final stage is the publication of the research results. (Creswell, 2013).

In this study, Based on the Meta-synthesis steps, after finding the research title and selecting the qualified studies.The studies are then read repeatedly , the concepts and key issues of each of the models and mechanism of organization's evaluation and also the website evaluation are studied separately .and finally by analyzing the existing models, the concepts and key themes which must be considered in the model are proposed .

After using meta-synthesis four main components of model and relations between them determined. These components includes Objectives, Processes, Indicators/criteria and Feedback.

Next, a team conducted the evaluation of the website according to the EV-IMP model. After assessing the website, scores, strengths and weaknesses were identified and improvement projects for improving the website performance were prioritized. The defined projects were implemented in a one year period and the website was reevaluated after that. The results show considerable improvements in website performance.

Details of the designed model (EV-IMP Model)

Details of the designed model will be described here. Different aspects are examined for the model's description. Topics which will be presented to clarify the model and its function include:

Objectives,

Main component and their interaction,

Criteria,

Tools,

Mechanism & Characteristics.

Model's objectives

The main objectives of designing the model are to evaluate the organization's success in its website's appropriate function. And to modify the websites function for achieving the organization's goals through website and the evaluation of its function's results. So that by using the results and the output of the evaluation, corrective action can be identified and it will led to continued success and improvement in the quality and the function of the website. Totally the main objective of this model is to evaluate the organization's success in its website appropriate function.

Model's main component and their interaction

for evaluating the organization's success in its website function, the concept of quality management is used and since evaluation and improvement are the center of attention in this model, the model is called Ev-Imp, which Ev stands for evaluation and Imp stands for improvement.

Fig. 1 model's overview
Model includes four main components, these components include: Objectives,
 Processes,
 Indicators/criteria &
Feedback.

 With the use of feedback tools such as quantitative and qualitative questionnaire for groups of stakeholders and service providers, the website's weaknesses and strengths would be identified and with analyzing the website's weaknesses required improvement would be determined and corrective action would be done. Each component of the model will be described in the followings.

Processes

The center part of this model is processes, based on the studies, there are three main processes in the center of each website, which other components and other activities are included in it. These three main components include: 1. Interface, It deals with the website's appearance in the interaction with the users and includes:

Graphic design principles,
Graphics and multimedia,
Text and style &
Flexibility and adaptability

2. Systems and services, It deals with the website's technical support and services given to the customers through the website. The process includes:

Accessibility: the website should be easily accessible,
Usability: website is easy to use, Functionality: website provide a good mechanism to achieve the objectives,
Responsiveness: website responses well,
Reliability: website is reliable,
Flexibility: website support different customers,
Security: system is safe for trading,
Communication: it is easy to make contact with the organization,
Perception of service: website should provide services that the organization cares about the quality of services,
Trust building: website should provide some signs that the organization use some services to build trust in users,
Empathy: website create a sense of empathy and the users are recognized by the organization,
After sales service: providing tracking services &
Customization: website meets the customers' needs and desires

Content and its allocation

At deals with the website's content and structure and its layout in the website, the related subjects include: Relevance,

Accuracy (authenticity) and precision of the website's content,

Understandable content: information are easy to understand,

Complete: the content covers all the require information,

Current: site's content is updated,

Dynamic content: the site's content is diverse and variable &

PERSONALIZED: THROUGH PERSONALIZED SERVICE. WEBSITE OR IN THE OTHER WORDS ITS CONSTITUENT PROCESSES ARE DESIGNED AND ESTABLISHED BASED ON THE OBJECTIVES WHICH THE ORGANIZATION EXPECT TO ACHIEVE BY ESTABLISHING THE WEBSITE. (STOCKDALE, BOROVICKA & INNSBRCK2006; VAN DER MERWE& BEKKER,2003; GUO & SHAO, 2005)

Objectives

The website developing objectives are referred in the left part of the model. These objectives can ultimately lead to expand market reach, visibility, enhance responsiveness and cost reduction.

Results

Website's activities lead to results that are referred in the right part of the model. These results can be in the form of quantitative or qualitative indicators. Qualitative indicators are those indicators which are the result of stakeholders' inference about the quality of the website.

These stakeholders and the organizations objectives toward them must be specified in the objectives part of the model.

Quantitative indicators are those which are gained from statistical data and organizational information and organization's website service providers.

Another category which is referred in this model and is the basic category in this model includes direct and indirect indicators.

Direct indicators are those which affect the website's activities and processes and indirect indicators are those which affect the objectives indirectly and help the related organization to review and modify the website's establishing and developing objectives based on the macro strategies and indirect results.

FEEDBACK (REVIEW)

Feedback is another main component of the model and it includes the models tools for improvement through measuring the results and evaluating them.

There are two tools in this model for the evaluation:

A-stakeholders questionnaire

This tool is designed to evaluate the website from stake holder's point of view.

Each stake holder's representative must evaluate the website's success from its own point of view and determine the examples and observations which will be possible from the questionnaire analysis.

B-quantitative information

Website's statistics and information are gained from the organization and web service providers through the questionnaire which contains quantitative indicators. As it was said this information might have direct effect on the website quality or they might have indirect effect on the objectives. Of course some of the indicators that are included in the tools have double features and they can effects on both the website's processes and the objectives.

Models criteria (introduction of qualitative and quantitative criteria and sub-criteria)

This part is allocated to the qualitative and quantitative criteria introduction.

Qualitative criteria

This group of criteria includes main criteria:
User friendliness,
 Navigability,
Maintenance,
Technology suitability,
Reusability,
Involvement capacity,
Functionality,
Security and integrity & Content.
(Mich &Franch,2002; Mich & Franch, 2000; Mich, Franch, Cilione & Marzani, 2003; Mich, Franch, Novi Inverardi & Marzani, 2003; Kececi & Abran, 2006;Bevan ,1998; Dreyfus, 1998; Keeker, 1997; Trower, 1999; Nielsen, 1999; Gehrke & Turban, 1999; Ivory & et al, 2001; Shedroff, 2005; Dragulanescu, 2002;Grannas, 2007).

Quantitative criteria

This group of criterion includes the following main criteria: Basics, Marketing and profitability & Support & services.
(Hatry& Harry ,1999; Hatry, 2003; Stowers, 2004; Creese & Burby, 2005; Einsburg, Novo & Shreeve, 2001).

Indicators grouping

For a better future analysis, there are other groupings for the indicators. as it was mentioned, direct indicators are those which affect the website's processes and website's main activities directly and indirect indicators are those which affect the website indirectly through the objectives. If the indicator is direct it is specified by which of the three indicators it has effects on. Indicators are divided in to internal and external indicators from another point of view. External indicators are those which their information is gained from outside the organization, for example the stake holders' deduction about website's component, and internal indicators are those which their information is accessible inside the organization. It should be noted that the indicators grouping is done through questionnaire, expert's survey and related articles.

Model's mechanism

What is important is the relationship between the three main processes of the website, the

website's objectives and the indicators that are evaluated by the tools. To describe the model's operation mechanism we need to describe the model's tools first. Model's tools are used in the feedback part. These tools include two questionnaires.1.Qualitative questionnaire, which inquire stakeholders about the website's quality in the form of five choices of excellent, good, average, bad, very bad, which is designed in the questionnaire. It deals not only with the stake holder's rating but also with the reason they choose that choice.

2. Quantitative questionnaire, gathers statistics and required information about the website functionality and website's output, this questionnaire is given to the organization to gather and represent information from its related sectors or its service providers. As it was mentioned, two kinds of questionnaire (qualitative and quantitative) are designed in the model. Qualitative questionnaire enquires the stakeholders deduction about the quality of the website with four choices of excellent, good, average, bad and very bad. for calculating they consider excellent as 100 score, 75 for good, 50 for average, 25 for bad and they consider 0 for very bad.

The situation is different for quantitative questionnaire and the European foundation quality management (EFQM)'S rating mechanism is used here. Processes, objectives, reasons and indicators scope are examined for the rating and they rate them from 0 to 100.

The model's functionality is so that the information about the performance status and organization's success level in each criteria are measured through filling the qualitative questionnaire by the stakeholders and quantitative questionnaire by the organization and its service providers .with examining and analyzing the questionnaire, weaknesses points (improvable) are extracted and corrective actions are defined. These actions are related to the three main processes and objectives by the designed mechanism which was described in the model previously and in addition to rating the indicators the scores of each of the three main processes of the website's function are specified. Thus it will be determined that how the website performs in different processes of interface, services and systems, and content and its allocation.

In the next stage it is required that corrective actions for the successful function of the organization are prioritized and implemented. The evaluation activity can be repeated periodically and the effect of corrective actions on the website's success will be measured.

Table N.1 reefers the relationship between the indicators and the three main processes in the website which is evaluated by this model. The last row of the table contains the percentage of processes scores in the evaluation. For example in the website which has been studied here the interface process has the first rank of weakness with 31%score.

Table 1
Scores separated by the triple dimensions of content, service and system, interface(percent)

Indicator's name	content	Service & system	interface
User friendliness	43.75	38.33	50
Navigability	43.75	23.68	25
Maintenance	——	68.75	——
Technology suitability	——	66.66	50
Reusability	——	75	——
Involvement capacity	——	12.5	25
Functionality	——	25	25
Security and integrity	37.5	55.55	50

Indicator's name	content	Service & system	interface
Content	58.33	——	25
Total	50	41.9	31

Model's characteristics

The designed model has some characters which some of its most important characters are referred here. Quality management: the model is designed based on the stake holder's needs and the organization's objectives for the website development;

The indicator's comprehensiveness and completeness: none of the models which were analyzed previously had all the characters of this model. In particular, beside qualitative criteria, metrics criteria is also considered;

Usability: the simple structure of this model makes people with different abilities, capable of using it;

General use: the designed model is usable for a wide range of websites, such as organizational websites, personal websites, educational websites and e-commerce websites;

Considering the improvement: the main objective of this model is website's improvement and promotion based on the organization's objectives. The model's mechanism with the use of leading organization's model's mechanism concerns about improvement in the website's processes and objective's revision; Simultaneous attention to effectiveness and efficiency: the model's attention is beyond the technical aspects. Model in addition to dealing with the technical aspects which are effective in the website's success, it also focuses on the organizational aspects; Quick troubleshooting and leading to the weaknesses in the performance and website's effectiveness with the use of model's processes and indicators; Considering metrics and involving them in the process of the website's evaluation and One of the most important features of this model is that with examining and evaluating the designed criteria ,main processes which the website has weaknesses in them can be identified and with the use of the feedback mechanism which is designed, required action can be done to solve the weaknesses and problems.

Case study

Yazd regional electric company was established in 1986 and is working in the field of Generation, processing, transmission and distribution of Yazd electricity needs and establishing and developing Transmission networks. To achieve its mission, Yazd regional electric company is composed of five major departments including deputies for operation, design and development, financial, planning and research and human resources. Yazd regional electric company website (www.yrec.co.ir) is designed in several major parts and each major page is consist of some menu and internal pages like:

Main menu,

Sub-sites,

News,

Researches and standards,

Statistic and information,

Tenders and employment and

The subscriber's guidance. Survey part, site features (such as downloads, video albums…), site statistics, contact us is all reachable through the site's related menus. Search possibility is also embedded in the site. A team conducted the evaluation of the website

according to the EV-IMP model. After evaluation and assessing website scores, strengths and weaknesses, improvement projects for improving the website performance were identified and prioritized. The defined projects were implemented in a one year period and the website was reevaluated after that. In the projects definition the priority was given to the criteria which gained low scores in spite of their importance. The results of evaluation performed on the qualitative criteria are shown below.

Table 2
The qualitative scores of the studied company divided by main criteria

Criteria	Before Improvement (%)	After Improvement (%)
User friendliness	45	47
Navigability	2105	50
Maintenance	68.8	70
Technology Suitability	62.5	60
Reusability	75	70
Involvement Capacity	18.8	35
Functionality	25	37
Security and Integrity	62.5	60
Content	58.3	62

In order to evaluate quantitative criteria ,after the questionnaire was modified and customized the quantitative criteria questionnaire was given to the planning and research deputy and IT department of Yazd regional electric company so that the related indicators could be completed. Then with result evaluation mechanism according to EFQM model, scores were allocated to indicators and sub-indicators.

Like the qualitative indicators, the strengths and weaknesses were identified and improvement projects were defined and implemented and after one year the site was reevaluated. The results are shown below.

Table 3
The quantitative scores of the studied company divided by main criteria

Criteria	Before Improvement (%)	After Improvement (%)
Basics	8	35
Marketing and profitability	2	15
Support & services	3	30

Conclusion

The method of continuous improvement is realized for website success evaluation through multiple stages based on the alignment of the site with the organizational goals. This obviously includes many efforts to find the deficiencies and adjust them at the proper level. This iterative method continuously gets the feedback and uses them to improve the web site in a systematic model.

The characteristics of this study which differs it from other studies will be discussed.

1) Model designing methodology

In the model designing methodology, quality management model and related theories are used; the model has reached the following aspects in order to design a model to measure the

website's success: The website's quality depends on three factors of objectives, process and final results. The model is designed based on the quality management model. Various factors are involved in the success of the website. The importance of each factor is determined by the website creation objectives and customer's need.

The organization's objectives are manifested in the series of the website's key processes and the website's users will receive the outputs and results by implementing the processes.The customer's satisfaction or dissatisfaction will represent the website's success or failure.

2) Purpose of evaluation

In this model the objective is to improve the website's performances in order to reach the organizational objectives and improve the website's function. other objectives of designing this model include the followings:

Comparison (competitive analyses);

Awareness of the users' needs and expectations;

Redesigning the model.

3) Evaluation scope and use of evaluation results

As it is evident in the model's overview, the evaluation feedback is not only used in quality improvement and website's technical improvement upgrade but is also used in modifying the objectives. In most of the previous studies the revision scope was focused on the quality and technical factors of the website and the evaluation objectives were just website quality and technical improvement.

4) The evaluation criteria

In this model the evaluation criteria is come in the last part of model (on the left) including both quantitative and qualitative criteria. amount of qualitative criteria needs to be determined through questionnaire and interview and amount of quantitative criteria are accessible from website statistic and mostly from website service providers. Thus the criteria include both quantitative and qualitative criteria, whereas in the previous studies less attention was given to these two indicators and they focused on qualitative criteria.

5) Evaluation mechanism

There are different divisions in evaluation mechanism. After gathering information it is required that the results be measure based on the model's objectives and it will led to improvement in the website quality or modification of the website's objectives.

Thus the indicators are divided in to two types in this model, direct and indirect. direct indicators, affect the website processes directly and indirect indicators has effects on objectives. However there are some indicators which have the characters of both direct and indirect indicators and they can have both direct effects on the website performance and indirect effect through the objectives. Evaluation mechanism works so that after evaluating the website, propitious areas for improvement and upgrade will be identified and the organization can improve its website by focusing on these factors.

For example in the model's process part ,website's weaknesses in different aspects such as system, services, concept and its allocation in comparison to the organization's rivals and

required actions be done for improvement in the critical areas.

Another point which should be considered in the evaluation mechanism is the tool which the values of criteria are gathered from questionnaire is the main tool in this model.

Since the source of information for qualitative and quantitative indicators are different, different questionnaire are required. The questionnaire which is designed for qualitative indicators should not only rate indicators based on the model's objectives but should also insert the observations which the rating is done based on it. For qualitative indicators the situation is different and it needs the information to be gained from the service providers or organization and be compared so that the reason for growth or fall would be analyzed.

6) Evaluator

As it was mentioned previously, the evaluator is not isolated from the model's mechanism but regarding its importance in this model we discuss it separately.

The amount of qualitative criteria needs to be gained from the questionnaire discussed previously. model's point of view is that the evaluator should be chosen from different interest group and not just from special interest group or specialists.

For example if the website's objective is to have an interaction between customers and organizations and there are different groups of customers and they can be categorized ,the evaluator must be chosen from different groups of customers so that the evaluation is done appropriately and based on different standpoints.

In the second stage of study, A team conducted the evaluation of the website according to the EV-IMP model. After evaluation and assessing website scores, strengths and weaknesses, improvement projects for improving the website performance were identified and prioritized. The defined projects were implemented in a one year period and the website was reevaluated after that. The test results of organization website indicates significant efficiency and improvements.

In this study four main components consist of objectives, processes, results & feedback and relations between them were determined. For more accuracy and higher performance of the model, investigating the relations between sub-components and how they influence each other is recommended.

Endnote

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Appendix N.1-the indicators and sub indicator's grouping Qualitative indicators

	direct	indirect	internal	external	interface	System& services	content
User friendliness(Q.U)							
Understandability	❋			❋	❋	❋	
Undo facilities	❋			❋		❋	
Business rules availability	❋			❋			❋
Products information availability	❋			❋			❋
Accessibility	❋			❋		❋	
Learn ability	❋			❋		❋	❋
Information localizability	❋			❋			❋
Response time uniformity	❋			❋		❋	
Communication facilities	❋			❋		❋	
Forms of payment availability	❋			❋		❋	
Products comparison	❋			❋		❋	
Multilingual communication	❋			❋		❋	
" Shopping cart " metaphor	❋			❋		❋	
Printing facilities	❋			❋		❋	
Download facilities	❋			❋		❋	
Compatibility with real store	❋			❋		❋	
Help Availability	❋			❋		❋	
Customization						❋	
(Q.N) Navigability							
Absence of navigation errors	❋			❋		❋	
Browsers independence	❋			❋		❋	
Browsers version independence	❋			❋		❋	
Products taxonomy suitability	❋			❋		❋	❋
Security information availability	❋			❋		❋	
Hardware independence	❋			❋		❋	
Minimal path	❋			❋		❋	
Drawback	❋			❋		❋	
Navigation structure taxonomy	❋			❋		❋	
Links visibility	❋			❋	❋		
Links visualization consistence	❋			❋	❋		
Shortcuts availability	❋			❋		❋	
Alternative paths	❋			❋		❋	
Contextualization	❋			❋	❋	❋	
Disabilities users interface	❋			❋	❋	❋	
Navigational prediction	❋			❋		❋	
User class adaptability	❋			❋	❋	❋	
User level adaptability	❋			❋		❋	

	direct	indirect	internal	external	interface	System& services	content
Interaction storage capacity	❊			❊		❊	
Mobile devices accessibility	❊			❊		❊	
Navigation standards	❊		❊			❊	
Maintenance(Q.M)							
Extensibility	❊		❊			❊	
Stability	❊		❊			❊	
Testability	❊		❊			❊	
Analyzability	❊		❊			❊	
Changeability	❊		❊			❊	
Up-to-date	❊		❊			❊	
Ability to trace	❊		❊			❊	
Documentation availability	❊		❊			❊	
Technology Suitability(Q.T)							
Appropriateness environment	❊		❊			❊	
Tech infrastructure suitability	❊		❊			❊	
Interface standards	❊		❊		❊		
Programming standards	❊		❊			❊	
Reusability(Q.R)							
Component based development	❊		❊			❊	
Modularity	❊		❊			❊	
Applicability	❊		❊			❊	
Involvement Capacity(Q.I)							
Attractiveness	❊			❊	❊		
Aesthetic attributes	❊			❊	❊		
Client profile identification	❊			❊		❊	
Additional services availability	❊			❊		❊	
(Q.F) Functionality							
Accuracy	❊			❊		❊	
Client support	❊			❊		❊	
Flexibility	❊			❊	❊	❊	
Security and Integrity(Q.S)							
Payment systems security	❊		❊	❊		❊	
Vulnerability	❊		❊	❊		❊	
Site authentication	❊		❊	❊	❊	❊	❊
Access control	❊		❊			❊	
Confidentiality	❊		❊			❊	
Privacy	❊		❊			❊	❊
Clients authentication	❊		❊			❊	
Data Integrity	❊		❊			❊	

	direct	indirect	internal	external	interface	System& services	content
Data entry signalizing	❊		❊			❊	
Content(Q.C)							
Updated content	❊			❊			❊
Correctness	❊			❊			❊
Intelligibility	❊			❊			❊
User oriented	❊			❊			❊
Respectability	❊			❊			❊
Concise content	❊			❊			❊
Style uniformity	❊			❊	❊		❊
Clarity	❊			❊			❊
Terminology uniformity	❊			❊			❊

Appendix N.1-the indicators and sub indicator's grouping
Quantitative indicators

	direct	indirect	internal	external
Basics(M.B)				
Unique Visitors	❊	❊	❊	
Unique Authenticated Visitors	❊	❊	❊	
Hits	❊	❊	❊	
Visit duration	❊		❊	
Number of New Visitors		❊	❊	
FrontPage stumble	❊		❊	
page dropout	❊		❊	
Page Views per Visit	❊	❊	❊	
Page Exit Ratio	❊	❊	❊	
Average Number of Visits per Visitor	❊		❊	
Average Pages Viewed per Visitor	❊		❊	
Marketing and profitability(M.M)				
Fulfillment	×	×	×	
Customer loyalty		×	×	
Time spent on each order	×		×	
Amount spent on each order		×	×	
Total order	×	×	×	
Number of new customer order		×	×	
Number of repeated customer order	×	×	×	
Net sale ᴸ total sale	×	×	×	
Marketing expenses		×	×	
Ranking or awards	×	×	×	

	direct	indirect	internal	external
Number of subscriber	×	×	×	
Number of referrals from other websites		×	×	
Drivers to Offline Contact Methods	×	×	×	
On Site Advertising click ratio	×	×	×	

Appendix N.1-the indicators and sub indicator's grouping
Quantitative indicators

	direct	indirect	internal	external
Ratio of new to returning visitors		×	×	
Conversion of non-subscribers to subscribers	×	×	×	
Average order size/items (AOS)	×	×	×	
Average order value (AOV)		×	×	
Sales per Visitor		×	×	
Frequency of Visit	×	×	×	
Regency of Visit	×	×	×	
Stickiness	×	×	×	
Support & services(M.S)				
average load time	×		×	
Pages error/pages	×		×	
Application development and hardware set-up time	×	×	×	
Application development and hardware set-up cost	×	×	×	
Maintenance and application improvement time	×		×	
Maintenance and application improvement cost	×		×	
Time required for e-mail response to inquiry		×	×	
e-mail response		×	×	
Percent of time when website is down and not available	×		×	
Cost per transaction		×	×	
Cost savings from web site		×	×	
Staff time savings web site		×	×	
Response times to requests for information		×	×	
Cost per user		×	×	
Searches per search visit	×		×	
Exits from the search return page	×		×	
Average length	×		×	