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Abstract—This study proposes a framework to investigate website success factors, and their relative importance in selecting the most preferred e-banking website. For one thing, Updated Delone and McLean IS success model is chosen to extract significant website success factors in the context of e-banking in Iran. Secondly, Updated Delone and McLean IS success model is extended through applying an analytic network process (ANP) approach in order to investigate the relative importance of each factor and to rank alternative websites. Since this study is an ongoing research the proposed research framework will be tested and measured in further researches in future. Besides the academic contribution to the field of e-commerce, the research output arising from the proposed website success model via subsequent empirical studies will be able to provide practical and applicable suggestions on the e-commerce website to banks in Iran and across the globe.

Index Terms—Analytic Network Process approach, e-banking, e-commerce website success, IS success model

I. INTRODUCTION

As the development of internet technology continues, coupled with the intensity of online competition and a simple mouse click to select a new provider, investigating website success is of crucial prominence for e-businesses to develop a website that decreases customer churn rate [1]. Reicheld and Schefter [2] remark that acquiring online customers is so expensive that startup companies may remain unprofitable for at least two or three years, meanwhile by retaining just 5 percent more customers, online companies can boost their profits by 25 percent to 95 percent.

Service quality is a key determinant in differentiating service offers and building competitive advantages, since the costs of comparing alternatives are relatively low in online environments [3]. Retailers that sell only services (telephone companies, airlines, banks) have little to offer if their service is poor [4]. In the context of e-banking, profitable website requires a strong focus not only on the acquisition of new customers but also on the retention of existing customers, since the acquisition costs in online banking exceed that of traditional off-line business by 20–40 per cent [5]. In addition, the introduction of e-commerce has brought a dramatic change in the way relationships with customers are built and maintained. In banking, which has traditionally been a high contact service, the lack of direct human interaction in online channels entails the use of each service element as an opportunity to reinforce or establish quality perceptions for customers [6].

Some preliminary studies indicate a wide gap between anticipated and actual achievements from e-commerce systems [7]. This has motivated researchers to update information system Success model according to advent and explosive growth of e-commerce [8]. Therefore, e-commerce success is one of the important electronic commerce research issues [9].

Lertwongsatien and Wongpinunwatana [10] remark that majority of e-commerce success models have been developed and tested in western context and developed countries, however implementing technology in few developing countries has been accelerated within last decade. According to http://www.internetworldstats.com/stats5.htm, Iran internet usage has the utmost growth of 54.8% in Middle East within recent 8 years period. Given the fact that dramatic growth in internet usage in Iran provides technological infrastructure for e-commerce to be flourished, there is a silence on the e-commerce website success investigation in Iranian firms.

II. RESEARCH PROBLEM

At first, the aim of this research is to find a framework to investigate the factors that are influencing e-banking website success in Iran. Another objective of this research is to define an approach to find out relative importance of website success factors in selecting the most preferred e-banking website by identifying different relative importance of each website success factors and priority of alternative websites across e-banking domains.

Discussion the problem area has formed as: “What is the most appropriate framework for investigating website success in the context of e-banking?”

III. RESEARCH METHODOLOGY

This research is a review paper that is going to provide a proposed framework based on literature review. For doing this
research, we conducted a review of more than 30 information system and website success journal articles from 1985 to 2008 which some of them are reference here. The journal search included Information and Management, Decision Support System, International Journal of Consumer Studies, Journal of Management Information Systems, Human Systems Management, and International Journal of Applied Decision Sciences. These journals were selected because they are regarded to management of information system and e-commerce websites, since according to Davis [11]; a website is in essence an information technology. We could not review other journals because of time and resource limitations. Articles were selected if their title, abstract, or key words emphasized on verification of quality or success of an e-commerce website, information system, e-marketing, or e-services, also because the scope of this review is to describe the relative importance of each website success variables and priority of alternative websites, following key word were eventually added: judgment, preference priority, and decision.

Classification of the researched articles was a two-stage process. At first stage, the articles related to information system and e-commerce website success models, by reviewing abstracts and titles, selected. At next stage, we extended our research and found researches which have been done on decision making and preference priority area. In this process the success model was extended so that the importance of each website success variables and priority of alternative websites could be measured with quantitative data.

This article survey has being done from August to October 2008. By reviewing literature and previous studied information system and e-commerce website success models, we proposed a framework for investigating e-commerce website success in the context of e-banking in Iran. To continue this study, qualitative and quantitative approaches will be applied. Qualitative method to extract more significant factors which contribute to Iranian e-banking users’ satisfaction and users’ intention to use and quantitative approach to test and measure extracted factors. The strategy which suits for this study will be survey.

IV. LITERATURE REVIEW

“Information technology in general and the Internet in particular, is having a dramatic impact on business operations. Companies are making large investments in e-commerce applications but are hard-pressed to evaluate the success of their e-commerce systems.” [8]. Sinnapan and Carlson [12] affirm that developing the mechanics of website is based on the literature around both the information system and marketing fields. Therefore, both information system and e-marketing quality factors contribute to the website success. Many theoretical models have been proposed for measuring IS and e-marketing success to assess the quality of the website. Out of them Delone and McLean IS success model (1992) [13] is the most highly cited. Based on this model, six information system success factors including information quality, system quality, use, user satisfaction, individual impact, and organizational impact, influence each other. Delone and McLean [13] state that “Systems quality” measures technical success and defined as the customers’ perception of a website’s performance in product information retrieval and delivery; “information quality” measures semantic success and defined as the customers’ perception of the quality of product information presented on website; and “use, user satisfaction, individual impacts,” and “organizational impacts” measure effectiveness success. Nearly 300 articles in refereed journals have cited Delone and McLean IS success model [8]. However, for utilizing the model to measure the success of an e-commerce system success, the original model needs the service quality measures to be a part of IS success [14].

Sinnapan and Carlson [12] state that one of the dominant theoretical models that have begun to emerge from e-marketing literature to assess the quality of the website is SERVQUAL model [15]. According to Parasuraman [15], in order to improve service quality, it must be reliably assessed and measured. According to the SERVQUAL model, service quality can be measured by identifying the gaps between customers’ expectation of the service to be rendered and their perceptions of the actual performance of the service. The SERVQUAL model contains five dimensions of service quality namely, tangibles, reliability, responsiveness, assurance and empathy [15]. SERVQUAL model as the most often used approach for measuring service quality has been to compare customers’ expectations before a service encounter and their perceptions of the actual service delivered [16]. Parasuraman et al. [17] suggest that research is needed on whether the definitions and relative importance of the five service quality dimensions change when customers interact with technology rather than with service personnel.

The emergence of end user computing in the mid-1980s placed IS organizations in the dual role of information provider (producing an information product) and service provider (providing support for end user developers) [8]. Pitt et al. [18] observed that “commonly used measures of IS effectiveness focus on the products rather than the services of the IS function. Thus, there is a danger that IS researchers will mismeasure IS effectiveness if they do not include in their assessment package a measure of IS service quality”. Whereas DeLone and McLean [8] argue that SERVQUAL metric needs continued development and validation, they nevertheless believe that “service quality,” properly measured, deserves to be added to “system quality” and “information quality” as components of IS success. The updated model of DeLone and McLean IS success (2003) has the service quality measure as a part of IS success which comprises Assurance, Empathy, and responsiveness variables.

Full functional use of an e-commerce system should include informational use, transactional use, and customer service [19]. Since the DeLone & McLean updated Information Systems Success Model (2003) considers the combination of information system, and customer service field, it can be adapted to the measurement challenges of the new e-commerce world.
In addition, DeLone and McLean [8] imply that the updated model is utilized to measure e-commerce system. They proceeded to apply these e-Commerce success measures to two case examples, Barnes & Noble and ‘ME Electronics’. While DeLone and McLean [8] argued that the two case examples provide logically compelling support for these e-Commerce success measures, they did admit that there is a need to test these measures empirically.

V. FRAME OF REFERENCE

The purpose of this section is to build an appropriate frame of reference for investigating the success of e-commerce websites in Iranian banks.

The importance of the quality of online services is inevitable for service providers. Delone and McLean realized this issue and updated the original model by adding the service quality based on changes in the management and role of information system in last decade. [8]. Therefore, the updated Delone and McLean IS success model (2003) is the most appropriate model for measuring the success of an e-banking website.

The updated Delone and McLean IS success model (2003) is formulated so that e-commerce processes fits nicely into this model and its six dimensions.

One of the variables in updated Delone and McLean IS success model (2003) is “system quality” that defines the desired characteristics of an e-commerce system. Another variable is “information quality” that captures e-commerce content issues. Variable that was added to the updated model is “service quality” that describes the overall support delivered by service provider. “Intention to use” measures each activity of website’s visitors. Another variable which measures customers’ opinions of e-commerce system is “user satisfaction”. The most important success measures are “net benefits” that capture the balance of positive and negative impacts on customers, suppliers, employees, organizations, markets, industries, economies and even societies. In order to identify significant success metrics of six dimensions of updated Delone and McLean IS success model in Iranian e-banking context, interviews with online Iranian banks’ customers will be conducted in future.

To find out the relative importance of each variable in updated Delone and McLean IS success model and to rank alternative websites, we are encountered a complex decision. Saaty et al. [20], state that making complex decisions need structures to represent demonstration of the flow of influences, the structure in doing this is an influence network of clusters and nodes contained within the clusters of ANP and a hierarchy for the AHP[20]. Many decisions cannot be structured hierarchically because of the interaction and feedbacks between different levels of the structure.

According to the updated Delone and McLean IS success model (2003), that is shown in figure 1, there are feedback loops between IS success variables, so that this model does not have specifying levels. “Use” and “user satisfaction” are interrelated variables in the model. Meanwhile “use” and “user satisfaction” are result in certain “net benefits” in the system.

The ANP is a logical way to deal with dependency within the components of a structure. Updated Delone and McLean IS success model (2003) is a network with source and cycle nodes. According to Saaty et al. [20], source node is an origin of paths and never a destination of such paths, while cycle nodes are the origin and destination of paths. In updated Delone and McLean IS success network, “information quality”, “system quality”, and “service quality” are source nodes, whereas, “intention to use”, “user satisfaction” and “net benefits” are cycle nodes. In this network, each variable can affect other variables that could contribute to the evolution of the outcome.

To find out the relative importance of each variable in updated Delone and McLean IS success model (2003) and then to rank alternative websites, the analytic network process (ANP) is our logical way to deal with. Since, Saaty et al. [20] point out that ANP is the only tool which is capable to simplify and manage a complexity of a decision problem involving feedbacks. As shown in figure 1, Delone and McLean updated IS success model (2003) is extended through analytic network process (ANP) (2008) in this research article.

VI. CONCLUSION

The aim of this phase of the research was to choose the most suitable model for investigating e-commerce website success in the context of e-banking in Iran. Amongst highly cited models which are used to assess the success of an information system and e-commerce website, majority of them
have originated from information system success or e-marketing success. However the mechanics of an e-commerce website is based on both information system and e-marketing arena. Six dimensional Delone and McLean updated IS success model(2003) which includes three major dimensions of information quality, system quality, and service quality is chosen as a framework to understand how can these variable affect the success of an e-banking website in Iran. Moreover, to describe the relative importance of each variable in the updated Delone and McLean IS success model (2003) and to rank alternative e-banking websites, analytic network process (ANP) (2008) is used.

Feedback loops in the structure of updated Delone and McLean IS success model (2003), makes interaction and dependence between higher-level elements and lower-level elements, hence it cannot be structured hierarchically. Delone and Mclean [8] highlight IS success as a complex, multidimensional, and interdependence nature, so ANP (2008) approach is chosen to reduce a multidimensional problem structure into a unidimensional one [20].

The original Delone and McLean IS success model (1993), which does not include any feedbacks, and has a top to bottom for of a hierarchy, has been extended through applying Analytic hierarchic process (AHP) to test the effect of website quality on e-business success [18]. However, Updated Delone and McLean IS success model (2003) has not been tested by applying ANP approach yet. Furthermore, conspicuous growth of internet usage in Iran during last decade period, and lack of research in e-commerce website success in this country, encouraged us to investigate this issue in Iran.

VII. FURTHER RESEARCH

Since this is an ongoing research, to continue this study, qualitative and quantitative approaches are going to be applied based on literature review and proposed research framework. Qualitative approach will be used to identify various success metrics of six dimensions of updated Delone and McLean IS success model (2003) in Iranian e-banking context. Quantitative approach will be used to test and measure extracted factors in Iranian context. The strategy which suits for this study will be survey.

For qualitative approach, interview guide will be conducted according to the frame of reference. The population of interest will define as online banking customers. The samplerespondent will be chosen through bank customers, shoppers, internet users, university students and professors, academicals graduated and non educational customers. The sample size will be performed by statistical methods and sampling would be randomly. For quantitative approach, data collection is a questionnaire based field survey that will be conducted to investigate the relative importance of website quality factors on online banking customers. Then by applying Analytic Network Process (ANP) (2008), the results based on answered questionnaires will be analyzed to find out the relative importance of each factor and to rank alternative websites. The criteria and measurement items will be developed based on literature review. Pre-test on resulting survey instrument will be conducted in order to obtain feedback for improvements before finalizing the questionnaire. Validity and reliability of data will be tested after data gathering process.

REFERENCES

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