The effect of quality dimensions of web design and UTAUT model on the behavior of online banking

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Abstract

Technology advances have fundamentally changed the world and the way people behave in business and individual affairs. This study aims to investigate the effect of quality dimensions of web design and the unified theory of acceptance and use of technology (UTAUT) model on the behavior of online banking. The statistical population included online banking users. The statistical sample included 325 people using Cochran formula. This study is an applied research in terms of the purpose and based on the descriptive survey method. Data were collected through a questionnaire. Hypotheses were tested using Amos Graphics software. The results indicated that the effort expectancy and social influence have a significant impact on the performance expectancy. The performance expectancy (mediator variable) has a significant impact on the relationship between the effort expectancy and social influence. The elements of quality web design have a significant impact on users. Web design has a significant indirect impact on users through the performance expectancy. The experience of the perception of quality web design has a significant impact on the effort expectancy and does not have a significant impact on the performance expectancy.

Keywords: UTAUT model, online banking, quality web design.
Introduction
The service sector is one of the most basic functions of information technology. Service industries such as banking, insurance, marketing, trade, education, tourism and so forth have taken advantage of information technology (Vazifehdust et al., 2006). Information technology, especially the Internet in the banking industry, has changed the competitive environment of this industry. Experience of interacting with customers at the global and online level is considered as a differentiation strategy due to the extensive changes in global markets and the increasing strong competition. In fact, e-banking is a way to reduce costs and remain competitive compared to traditional banking (Gikandi & Chris, 2010). In particular, the banking industry has invested considerable resources in the use of information technologies over the past two decades. In response to privatization, the growth of global networks, and increasing the level of income, banking industry has used new technologies based on providing services called as electronic banking. Electronic banking aims to achieve and maintain strategic advantages. The Web site is one way of generating income and includes information on product/service. Users can acquire awareness about the product/service through the website (Tullis, 2004).

Literature Review
Online banking is a new distribution channel for the delivery of banking services (Cheng et.al. 2006). Banks interact with their customers and provide services for them by introducing a Web site. In fact, online banking means financial banking transactions through the Internet. By this technology, customers can have access to their bank accounts anywhere during the day (Gharaie, 2001). Online banking services include services such as viewing balances, cash management, checking accounts and bill payments and so forth. According to Iranian membership in the WTO and the entry of foreign competitors into the financial markets of Iran, Iranian banks also need to develop their services in line with technological changes. However, the transition from traditional banking to online banking services requires investment and the adoption of numerous changes in banks. The benefits of online banking can be considered from two aspects: customers and financial institutions. From the perspective of customers, the benefits of online banking include cost saving, time saving and access to multiple channels for banking operations. From the perspective of the financial institutions, the benefits include features such as creating and enhancing the reputation of banks for providing innovation, retaining customers in spite of changes in the bank location, creating the opportunity to search for new customers in target markets, expanding the geographic scope of activity (Karimi, 2015). Online banking also requires a few employees and physical branches. Therefore, banks can use this technology to lower costs and provide the best service (Cheng et al, 2006). Of course, the benefits of online banking can be investigated from the perspective of short term, medium term and long term. Keeping and attracting customers are online banking benefits in the short term (less than one year). In the medium term (less than 18 months) benefits of online banking include different channel integration, information management, extensive range of customers, leading customers to the right channels with desirable features and reducing costs.
The benefits of online banking is the long-term include reducing the cost of processing transactions, providing services for customers in the target market, and creating revenue (Karimi, 2015). Given that online banking has a particular importance, we should investigate the impact of various factors on the adoption and use of online banking (Farokhian and Saleh, 2010). Until now, many models have been proposed to investigate the factors influencing technology adoption. These models are trying to introduce the factors that affect the adoption of a new technology and make possible the use of technology at a wider level (Alzahrani and Goodwin, 2012).

The unified theory of acceptance and use of technology (UTAUT) model was proposed by Venkatesh and others in 2003. This model includes eight theories: Theory of reasoned action (TRA), The motivational model, Theory of planned behavior (TPB), The PC utilization model, Innovation diffusion theory (IDT), Social cognitive theory (SCT), Integrated model of technology acceptance and planned behavior.

![Figure 1: The Unified Theory of Acceptance and Use of Technology; Source: Venkatesh et al. (2003)](image)

The UTAUT aims to explain user intentions to use an information system and subsequent usage behavior. According to this model, users have expectations about new technologies and use them to realize the expectations. Thus, this issue is a basis for the evaluation of technology adoption such as UTAUT model (Lee et al., 2012).

Alqisi (2009) argued that UTAUT model anticipates and assesses the level of acceptance of technology according to factors contributing to the formation of user satisfaction with the new technologies. According to Alzahrani and Goodwin (2012), new technologies are usually formed in response to the current needs of the users. If users are aware of the need for new technology, technology adoption will be very easy, in particular, when the technology can easily fulfill the
needs of the users. If users are not aware of the need for new technology, technology adoption will be difficult because the users are not aware of the benefits of the new technology. These tools form the expectations and demands of users. Therefore, technology providers should consider how to decrease the gap between reality and expectations of users. In addition, they should consider how to reduce the risk for the use of new technologies. Technology providers try to do it in different ways such as advertising, providing information, facilities and sample programs. In addition, the performance of each technology is an important factor for the technology adoption.

Venkatesh and others investigated various aspects of a technology from the emergence to the use by the users and stated the level of the acceptance of the technology by the users. They used data related to employees of four organizations during the six months and three points of time. Venkatesh and others investigated the actual usage behavior after six months of the instruction. The eight models explained between 17 and 35 percent of the variance of the behavioral intention. Then, the theory of adoption and application of technology was tested using the collected data. The results showed that the performance of the theory is better than eight models and explains 69 percent of the variance of the behavioral intention (Venkatesh et al. 2003). They found that the selection and use of an information technology is influenced by four main factors: performance expectancy, effort expectancy, social influence, facilitating conditions (Venkatesh et al. 2003). Performance expectancy is considered as the perceived usefulness of the technology acceptance model (Venkatesh et al. 2003). Effort expectancy considers the person’s belief about the usefulness of technology (Yaghobi and Shakeri, 1999). Effort expectancy reflects the user's perception of improving the situation. In other words, it shows the the advantages of using online shopping. These improvements include an increase in speed, efficiency, effectiveness and users’ convenience (Zhou Lu & Wang, 2010). The performance expectancy is similar to the index of usefulness in TAM model and the index of relative advantage in the IDT model (Venkatesh et al. 2003). In fact, the performance expectancy shows that using the technology leads to the practical achievements for the user compared to traditional methods. The important point is that the advantages must be tangible for the users. In other words, the use of the technology has many advantages but if this is not tangible for users, it cannot be regarded as a progressive factor (Zhou Lu & Wang, 2010). Effort expectancy is similar to the perceived ease of using the technology acceptance model and the complexity of the innovation diffusion theory (Venkatesh et al. 2003). Effort expectancy is defined as the degree of the ease of using technology (Yaghobi and Shakeri, 1999). Effort expectancy depends on the subjectivity of the users. In fact, the effort expectancy is the user’s perception of how to use technology. If users feel that the use of the technology is easy, it will be more likely that they use the technology (Zhou Lu & Wang, 2010). The effort expectancy is similar to the index of ease of use in the TAM model and the index of complexity in the IDT model. According to the Integrated Theory of Acceptance and Use of Technology, effort expectancy affects the performance expectancy. When users feel that the use of new technology is simple and requires little effort, they will have high expectations in terms of gaining the expected performance. Otherwise, they will have a low level of performance expectancy (Venkatesh et al. 2003). Social influence refers to one's social environment in the
decision making process and the use of technology. This means that how much a person is affected by the thoughts and opinions of the friends and acquaintances about the technology. In general, it is also possible that the use of this technology is affected by encouraging friends and colleagues (Zhou Lu & Wang, 2010). The social influence is similar to the behavioral norms in theory of reasoned action and indicates the effect of the environmental factors such as the opinions of friends and acquaintances of the users on their behavior (Venkatesh et al. 2003). In fact, the social influence is the extent to which users believe that they should use the new technology (Yaghobi and Shakeri, 1999). The main parameters of the social influence include: compliance with lifestyle and improving one's social status among friends and acquaintances (Zhou Lu & Wang, 2010). Facilitating conditions are similar to the perceived behavioral control in the theory of planned behavior and shows the impact of the knowledge, ability and resources (Venkatesh et al. 2003). The facilitating conditions are considered as the degree to which an individual believes that there is an organizational and technical infrastructure to support the use of technology (Yaghobi and Shakeri, 1999). The facilitating conditions are defined as facilities and conditions that provide the user with this technology (Zhou Lu & Wang, 2010). The index of the facilitating conditions is similar to the index of the perceived behavioral control in the theory of planned behavior reflecting a combination of knowledge, skills and tools needed to use the technology (Venkatesh et al. 2003). This study indicates that the quality website design reflects the facilitating conditions. Aladwani (2006) proposed one model investigating the impact of the four dimensions of a website on consumers’ attitudes and the intention of purchasing through the website. The first one is a technical dimension, which refers to website features such as security, ease of guidance, the searching facilities, the availability of websites, valid links, personalization or customization, page loading speed, interoperability and ease of access. The second dimension is the total content that includes features such as usefulness of the content, completeness, clarity, vogue, brevity and accuracy. The second dimension is the specific content that includes features such as contact information, general information of company, details of product / service, consumer’s policy, and support of customers. The last dimension is the appearance of the website that includes features such as attractiveness, organization, appropriate use of fonts, colors and multimedia. Experience refers to users’ knowledge and skill for the use of technology. A research on social psychology showed that the direct experience in relation to a subject increased the attitude assessment and access to the memory that indirectly affects behavior (Fazio, Chen, McDonel, & Sherman, 1982). In line with this theoretical approach, researchers reported that expertise and skills affect the use of technology (Lassar, Manolis, & Lassar, 2005; Toufaily et al, 2013).
Figure 2: Conceptual Model of Research

Research hypotheses
H1: effort expectancy has a direct impact on performance expectancy.
H2: Social influence has a direct impact on performance expectancy.
H3: The performance expectancy (mediator variable) is the mediator for the relationship between the effort expectancy and social influence.
H4: Elements of quality web design have a positive impact on the use.
H5: quality web design has an indirect impact on the use through the performance expectancy.
H6: experience has a positive impact on effort expectancy.
H7: experience has a positive impact on performance expectancy.
H8: experience has a positive impact on the perception of quality web design.

Methodology
This study is an applied research in terms of the nature and cross sectional in terms of time. In addition, the present study is based on the survey method. The statistical population included 650 online banking users. The statistical sample included 325 people using Cochran formula. Data were collected using a questionnaire. The assessment items of the main variables were designed based on the Likert scale and scored from “strongly agree” to “strongly disagree”. Then, the experts and university professors were asked to give their opinions about the items. The questionnaire was completed by 10% of the population to measure the reliability of the
questionnaire. Cronbach's alpha was used to estimate the reliability of the questionnaire and Spss19 software was used.

### Table 1: Reliability Test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cronbach's alpha</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research questionnaire</td>
<td>93.8</td>
<td>confirmed</td>
</tr>
</tbody>
</table>

### Data Analysis

#### Descriptive Statistics

44 percent of respondents were 20 to 30 years. 20.5% of them were between 31 and 40 years old and 36% of them were more than 41 years old. Moreover, 51% of respondents had a bachelor's degree and 49 percent of them had a master’s degree or Ph.D. 47% of respondents were female and 53% of them were male.

#### Testing Hypotheses

### Table 2: Results of testing hypotheses

<table>
<thead>
<tr>
<th>Relationship between concepts and indexes in model</th>
<th>Normalized value</th>
<th>P-value</th>
<th>Sig.</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: effort expectancy has a direct impact on performance expectancy.</td>
<td>0.31</td>
<td>0.011</td>
<td>P&lt;0.05</td>
<td>Confirmed</td>
</tr>
<tr>
<td>H2: Social influence has a direct impact on performance expectancy.</td>
<td>0.18</td>
<td>0.017</td>
<td>P&lt;0.05</td>
<td>Confirmed</td>
</tr>
<tr>
<td>H3: The performance expectancy (mediator variable) is the mediator for the relationship between the effort expectancy and social influence.</td>
<td>0.0496</td>
<td>0.0001</td>
<td>P&lt;0.01</td>
<td>Confirmed</td>
</tr>
<tr>
<td>H4: Elements of quality web design have a positive impact on the use.</td>
<td>0.4</td>
<td>0.016</td>
<td>P&lt;0.05</td>
<td>Confirmed</td>
</tr>
<tr>
<td>H5: quality web design has an indirect impact on the use through the performance expectancy.</td>
<td>0.0592</td>
<td>0.0001</td>
<td>P&lt;0.01</td>
<td>Confirmed</td>
</tr>
<tr>
<td>H6: experience has a positive impact on effort expectancy.</td>
<td>0.28</td>
<td>0.012</td>
<td>P&lt;0.05</td>
<td>Confirmed</td>
</tr>
<tr>
<td>H7: experience has a positive impact on performance expectancy.</td>
<td>-0.05</td>
<td>0.532</td>
<td>P&gt;0.05</td>
<td>Rejected</td>
</tr>
<tr>
<td>H8: experience has a positive impact on the perception of quality web design.</td>
<td>0.37</td>
<td>0.007</td>
<td>P&lt;0.01</td>
<td>Confirmed</td>
</tr>
</tbody>
</table>
According to significance and error levels in Table 1, it can be concluded that all hypotheses other than the H7 hypothesis were confirmed.

### Model Fitting of Research

**Table 3: Indexes of Model Fitting**

<table>
<thead>
<tr>
<th>Index</th>
<th>Accepted Range</th>
<th>Value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>X²/DF</td>
<td>X²/DF ≤ 3</td>
<td>2.879</td>
<td>Confirmed</td>
</tr>
<tr>
<td>RMSEA</td>
<td>RMSEA &lt; 0.09</td>
<td>0.086</td>
<td>Confirmed</td>
</tr>
<tr>
<td>GFI</td>
<td>GFI &gt; 0.9</td>
<td>0.917</td>
<td>Confirmed</td>
</tr>
<tr>
<td>AGFI</td>
<td>AGFI &gt; 0.85</td>
<td>0.851</td>
<td>Confirmed</td>
</tr>
<tr>
<td>CFI</td>
<td>CFI &gt; 0.90</td>
<td>0.906</td>
<td>Confirmed</td>
</tr>
<tr>
<td>IFI</td>
<td>IFI &gt; 0.90</td>
<td>0.913</td>
<td>Confirmed</td>
</tr>
</tbody>
</table>

According to Table 3, the fitting indexes show that a model has a good fit. Therefore, it can be concluded that the model has a high ability to measure the main variables.

The final research model

![Figure 3: Standard Values in the Final Research Model](http://www.ijhcs.com/index.php/ijhcs/index)
Conclusion

This study aimed to investigate the effect of quality dimensions of web design and the unified theory of acceptance and use of technology (UTAUT) model on the behavior of online banking. In this study, it was shown that the model can affect behavior, especially in the field of online use. The research also provides a theoretical understanding about the users' perceptions of quality website design (Such as ease of guidance, access and loading times, the usefulness of the content, completeness, transparency, and attractiveness of the appearance, organization and readability). Organizations can use this model on an ongoing basis to track customer perceptions of quality web design and quality comparison with their competitors.

From the perspective of implementation of the analysis, this study confirmed the scale of the UTAUT model. The results of this study showed that the effort expectancy has a positive impact on the performance expectancy. When consumers understand the ease of use of technology (higher effort expectancy), they conclude that this technology is more useful (higher performance expectancy). Higher performance expectancy leads to stronger intentions to use the technology (Davis, Bagozzi, & Warshaw, 1989).

Ha and stoel (2009) and Smith et al. (2013) used this model for online shopping. McKechnie, Winklhofer, and Ennew (2006) used this model for Online Financial Services. The findings showed that social influence has a direct impact on performance expectancy. Consumers quickly accept a new technology through a stronger social influence (kim & park, 2011). Thus, the stronger social influence causes consumers to imagine a more useful technology (higher performance expectancy) and therefore their intention becomes stronger. Furthermore, the results indicated that the performance expectancy (mediator variable) is the mediator for the relationship between the effort expectancy and social influence. In short, higher effort expectancy and social influence have a positive impact on performance expectancy. Consequently, these impacts lead to stronger intentions to use the technology because the consumer satisfaction depends on the expectations of the performance of a service (Choi, kim, & kim, 2011). In addition, elements of quality web design have a positive impact on the use. Quality web design means the facilitating conditions. Many studies have investigated the relationship between elements of the website and its effects on intention to use, online behavior and overall satisfaction with the system (Bauer, Falk, & Hammerschmidt, 2006; Bauer, Hammerschmidt, & Falk, 2005; Blake, Neuendorf, & Valdiserri, 2005; Dickinger & Stangl, 2013; Floh & Treiblmaier, 2006; Gan, Clemes, Limsohmunchai, & Weng, 2006; Torkzadeh & Dhillon, 2002).

Dennis, Merrilees, Jayawardhena, Wright (2009) introduced the term "web space" to describe web design elements that form the primary drivers of online behavior. Jayawardhena and Wright (2009) showed that web-based features affect the online behavior. According to the present study, quality web design has an indirect impact on the use through the performance expectancy. Quality web design (facilitating conditions) affects the use (behavior) and the performance expectancy because if people believe that they benefit from a quality website of the online banking, they will use the website (Davis, 1989; Igbaria, Guimaraes, & Davis, 1995; Lee & Lin,
2005; Schaupp, Fan, & Belanger, 2006). This relationship was reported in system design, (Lee et al., 2012), mobile Banking, and Internet Banking (Alsajjan & Dennis, 2010). The studies have shown the mediating role of the performance expectancy in quality web design and the use of online banking. The findings also showed that the experience has a positive impact on effort expectancy. Experienced users of the website may have a more positive perception of effort expectancy and quality of the website. Andrews and Biachi (2013) reported that there is a positive relationship between the experience and effort expectancy, resulting in the acceptance of a service and the continuous use of it. Moreover, the experience has a positive impact on the perceived quality web design. Increasing the attitude assessment of the experience also affects users' perceptions of the facilitating conditions and the less experienced users have more control over their perceived behavior (King & Dennis, 2003). The results of the studies on computer - human behavior showed that experience of the computer significantly affects people's perception of computer and web technology (Liaw, 2002).

Practical Suggestions
The following strategies are suggested to encourage customers to use online banking based on the model:
1- Promotional activities to promote the bank's website by linking with search engines, exchange links with the website of other banks and financial institutions, creating online shopping terminals for online shopping websites, sending promotional messages to target customers and advertising in mass media lead to the awareness of the advantages of online banking.
2- Improving the technical quality of the bank's website by increasing the speed of loading pages, using compact images on the site and the web-based advanced technical equipment.
3- Enhancing the visual quality of the bank's website through carrying out marketing research to identify the tastes of customers, using a survey on the appearance of the website, the use of colors and appropriate fonts on the website, the simple design and avoid putting animated images to keep the customers.
4- Enhancing interaction with customers through the website by creating a section for Frequently Asked Questions, providing members with chat rooms, sending newsletters to the users’ email.
5- Increasing the ease of using the website by notifying customers of how to use the services of the website and creating multimedia files related to learning how to use the services of the website, online, in-person and telephone consultations.
6- Promotion of information resources of the website through the use of reliable and updated information on the website, providing the last update and ongoing monitoring of information and links on the website, and changing or deleting them if needed.
7- Upgrading the website security to prevent theft of users’ information through SSL (Secure Sockets Layer), tracking users’ transactions through users’ e-mail, providing digital certificates which is a standard technology for encrypted safe communication between the web server and browser.
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