

The Role of Behavioral Adoption Theories in Online Banking Services

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Abstract: This paper provides a model based on different service quality models and theories such as Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB). As a result, the quality of electronic banking services (e-banking) has become a major area of attention among researchers and bank managers due to its strong impact on business performance, lower costs, customer satisfaction, customer loyalty, and profitability. This paper presents a conceptual model that attempts to show the relationships that exist between salient variables. It is a simplified description of the actual situations. Conceptual models in service quality enable management to identify quality problems and help them plan the launch of a quality improvement program, thereby improving the efficiency, profitability, and overall performance.

Key words: Behavioral adoption theories-banking services • Service quality

INTRODUCTION

Virtual banks or “branchless banks” are a relatively new concept used to define banks that do not have a physical location such as a branch, but offer services only through the Internet and ATMs to deposit or withdraw funds [1].

Online banking differs in many ways from traditional branch banking. One of the most notable differences concerns the connection to the bank’s information processing system. Previously, customers have had a relationship with a bank’s front-desk employee, who has had access to the bank’s information system.

In online banking, customers have direct access to a bank’s information system from home, work, school, or any other place where a network connection is available. In this new situation, the customer is defined as an end-user of the bank’s data processing system. In end-user computing, the user’s personal computer plays a pivotal role [2].

An online banking user performs at least one of the following transactions online:

- Check account balance and transaction history.
- Pay bills.
- Transferring funds between accounts.
- Request credit card advances.
- Order checks.
- Manage investments and trade stocks.

From a bank’s perspective, using the Internet is more efficient than using other distribution mediums because banks are looking for an increased customer base [3].

People are becoming more comfortable with banking online and they believe that it will become necessary for all community banks to offer online-banking services. Esser (1999) and Simpson (2002) noted that the benefits of e-banking include: (1) competitive advantage, (2) customer retention and attraction, (3) increased revenues, and (4) reduced costs [2].

Behavioral Adoption Theories: The following sections provide an overview of behavioral adoption models, note similarities and differences between them and discuss

each theory. The theories discussed are Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), and Technology Acceptance Model (TAM).

These models follow the Attitude-Behavior paradigm that suggests that actual behavior is declared through intention toward the behavior. Intention is influenced by attitude and subsequently salient beliefs influence attitude. Ozdemir and Trott (2009) introduced TAM as an extension of the TRA, but with more focus on the context of computer use [3].

The Theory of Planned Behavior (TPB) is a further extension of the Theory of Reasoned Action (TRA) that further explains computer use behavior [4].

Theory of Reasoned Action (TRA): Many technology adoption research studies have used theory. According to this theory, an individual's intent to adopt an innovation is influenced by his attitude toward the behavior and subjective norm. Subsequently, a person's behavior is determined by his intention to perform the behavior. The attitude toward performing the behavior is an individual's positive or negative belief about the performing the specific behavior. In fact, attitudes are comprised of the beliefs a person accumulates over his lifetime.

These beliefs are created from experiences, outside information, or from within the self. Only a few of these beliefs, however, actually influence attitude.

Subjective norm is beliefs about what others will think about the behavior; in other words, the perceived influences of social pressure on an individual to perform or not perform the behavior. "The person's belief that specific individual or groups think he should or should not perform the behavior and his motivation to comply with the specific referents [5].

Fishbein (1980) proposed that variables not included in the model can affect intention and then behavior.

The Theory of Planned Behavior (TPB): The Theory of Planned Behavior (TPB) is one of the most widely used models in explaining and predicting individual Behavioral Intention (BI) and acceptance of IT.

TPB is an attitude-intention-behavior model, which posits that an individual's behavior is determined by perceived behavioral control and intention. A attitude, subjective norm, and perceived behavioral control, in turn, determine intention.

The TPB proposed that an individual's intention to perform an act is affected by his attitude toward the act, subjective norms, and perceived behavioral control [6].

According to TPB, an individual's behavior is determined by BI and perceived behavioral control, and BI is determined by attitude toward behavior (A), subjective norm (SN), and perceived behavioral control (PBC). Attitudes toward behavior reflect one's favorable or unfavorable feelings of performing a behavior. SN reflects one's perception of others' relevant opinions on whether or not he or she should perform a particular behavior. PBC reflects one's perceptions of the availability of resources or opportunities necessary to perform a behavior [7].

The Technology Acceptance Model (TAM): Researchers and practitioners have widely used the Technology Acceptance Model (TAM) to help to predict and make sense of user acceptance of information technologies [7].

TAM, introduced by Davis (DATE), adapts the TRA model, specifically to model user acceptance of information technology (IT). The goal of TAM is to explain what determines computer acceptance capable of explaining user behavior across a broad range of end-user

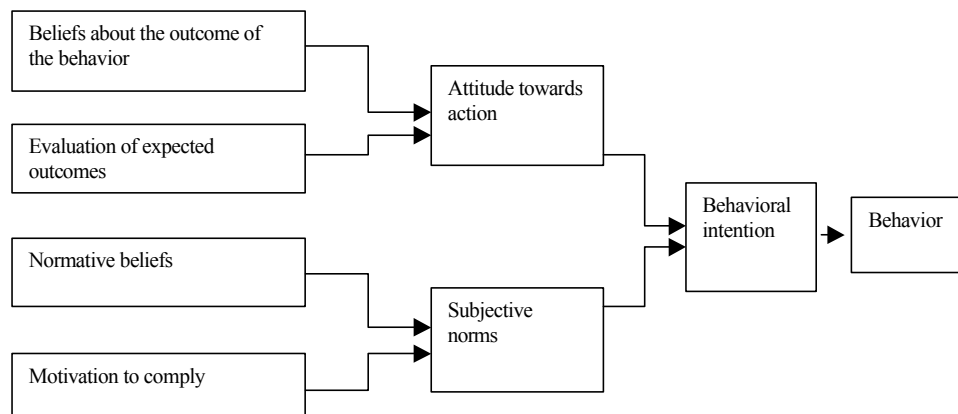


Fig. 1: A Theory of Reasoned Action (TRA) model

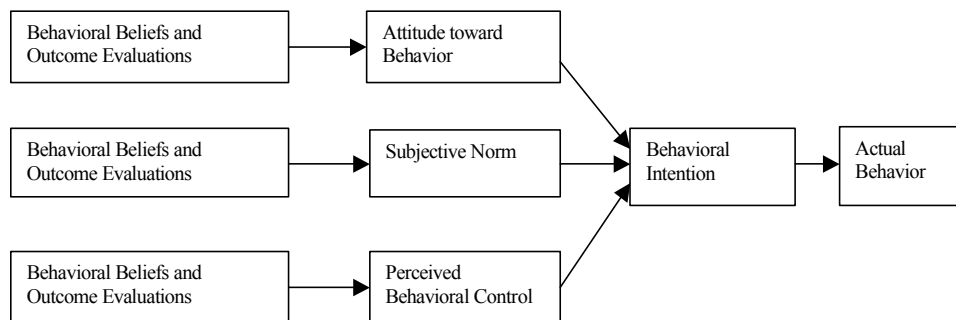


Fig. 2: The Theory of planned behavior (TPB) Model

computing technologies and user populations, while being both cost-conscious and theoretically justified. TAM adapted the TRA model to the domain of user acceptance of information technology, replacing the TRA model's attitudinal determinants with two beliefs: perceived usefulness and perceived ease of use. TAM was found to be a simpler, easier to use, and more powerful model to uncover what determines user acceptance of IT, while both models were found to satisfactorily predict an individual's attitude (satisfaction) and behavioral intention. In addition, TAM's attitudinal determinants outperformed the TRA model's much larger set of measures [8].

The Two Important Variables in Tam Are:

- Perceived ease of use (PEOU) is defined as the degree to which a person believes that using a particular system would be free of effort.
- Perceived usefulness (PU) is defined as the degree to which a person believes that using a particular system would enhance his or her performance [9].

PEOU and PU are influenced by external variables. External variables vary according to the context. Different variables have been used as external variables in TAM research, including computer anxiety, computer self-efficacy, playfulness, information richness, task characteristics, and experience [10].

TAM helps senior managers responsible for offering and developing banking products on-line and information systems developers predicate users' behavioral intentions. This can lead to actual changes and modifications in people's behavior when thinking about and using Internet banking technologies. This knowledge, or at least additional insight, allows information systems developers to devise ways to make a system appear

easier to use and allows banking and technology experts to develop new ways to support the needs and expectations of Internet banking customers [11].

Electronic Banking in Some Countries: Through a review of the literature, this section describes the degree to which Internet banking has been adopted in countries of the world.

Electronic Banking in Estonia: The first Internet bank in Estonia was introduced in 1996. Estonia has a relatively high penetration of personal computers and Internet access, with 45 percent of the Estonian population (ages 15-74) being Internet users.

In one of the most thorough comparisons of Internet penetration and Internet banking penetration conducted, Estonia and Scandinavian countries show similar patterns: 50% or more of internet users have adopted electronic banking.

Estonia, however, clearly stands out as an extreme case among Central Eastern European (CEE) countries. While one in four active Internet users in Europe also uses an Internet bank, 57% of the active Internet users in Estonia are also Internet bank users. This indicates that, in the case of Estonia, background features other than Internet penetration also play an important role in adopting Internet banking [12].

Electronic Banking in Taiwan: For several years, commercial banks in Taiwan have tried to introduce Internet-based e-banking systems to improve their operations and to reduce costs. Despite their efforts aimed at developing better and easier Internet banking systems, these systems have remained largely unnoticed by the customers, and certainly were underused in spite of their availability.

In 2002, only about 33% of banking transactions in Taiwan were conducted via the Internet. A total of 1.25 million Taiwanese people reported having ever visited Internet banking sites in May 2002.

A need exists, therefore, to understand users' acceptance of Internet banking, and to identify the factors that can affect a consumer's intention to use Internet banking. This issue is important because the answer holds the clue that will help the banking industry formulate marketing strategies to promote new forms of Internet banking systems in the future [13].

Electronic Banking in Turkey: Based on research of Turkish internet banking users, the selection of an Internet banking service provider is effected by security, reliability, and privacy. The researchers identify three segments underlying the selection of the bank: (1) "speed seekers" (who view download speed, transaction speed, user-friendliness of the site, and privacy); (2) second, "cautious users" (who value the reliability of the bank, security of the Internet branch, variety of services offered, and loyalty), and (3) "exposure users" (who are more open to the influence of external factors such as advertising and suggestions from others).

Turkish customers have been found to be satisfied with the Internet banking services they use, with those who have more experience with Internet banking and use more of its services as being more satisfied and more likely to make recommendations to others [14].

Electronic Banking in China: In 1997, China Merchants Bank was first to launch the Internet payment system in China. Thereafter, Internet banking and telephone banking systems spread rapidly within mainland China. Chinese domestic banks are confident that electronic banking benefits will outweigh traditional banking services in the future. They are therefore eager to implement new technologies and services to penetrate the market and gain competitive advantage. Most retail banks in China now provide online banking as add-on services to the existing branch activities, while mobile banking is just starting to be implemented.

One barrier that prevents active online trading in mainland of China is the lack of regulation. Chinese consumers might be more concerned, therefore, about the risks of new and unfamiliar technology-based financial services, such as online and mobile banking [15].

Electronic Banking in Malaysia: The banking industry underwent a consolidation exercise in 1999 in which 54 domestic banks merged to form ten domestic anchor banks to meet the challenges of globalization and liberalization [16].

Like most Muslim countries, Malaysia has a dual banking system; that is, it has a conventional banking system and an Islamic banking system. There are two Islamic banks in Malaysia: the Bank Islam Malaysia and Bank Muamalat.

The early decade of the 1990s saw the emergence of Automated Voice Response (AVR) technology. Using the AVR technology, banks offered telebanking facilities for financial services. With further advancements in technology, banks were able to offer services through personal computers owned and operated by customers at their convenience by using proprietary Intranet software. The users of these services were, however, mainly corporate customers rather than retail customers. Since June 2000, with the Malaysian Central Bank giving the approval for commercial banks to offer e-banking services, all the anchor banks have created a web presence in various ways [17].

Methodology: Among the research studies in which the coordinate matrix or covariance is analyzed, authors can point to factor analysis or Structural Equation Modeling (SEM), which has been used in this research.

In factor analysis, the goal is to summarize data or reach the latent variables. In structural equation modeling, the goal is to test the structural relationships in compliance with existing research theories and findings.

In this research, the independent variables are electronic service quality factors including convenience, accessibility, accuracy, security (privacy), usefulness, bank management and image, and Web site design (design/content/speed). The customers' satisfaction with electronic banking services in Iran has been taken into consideration as a dependent variable.

The main objective of this research is to identifying the factors effective in helping consumers feel satisfied with the electronic banking services in Iran.

Structural equations have been compared using ANOVA statistical testing of the average of the mark given to each factor among males and females.

Structural Equations Model: To test this research study's model, we have used data analysis with the help of structural equation modeling (SEM).

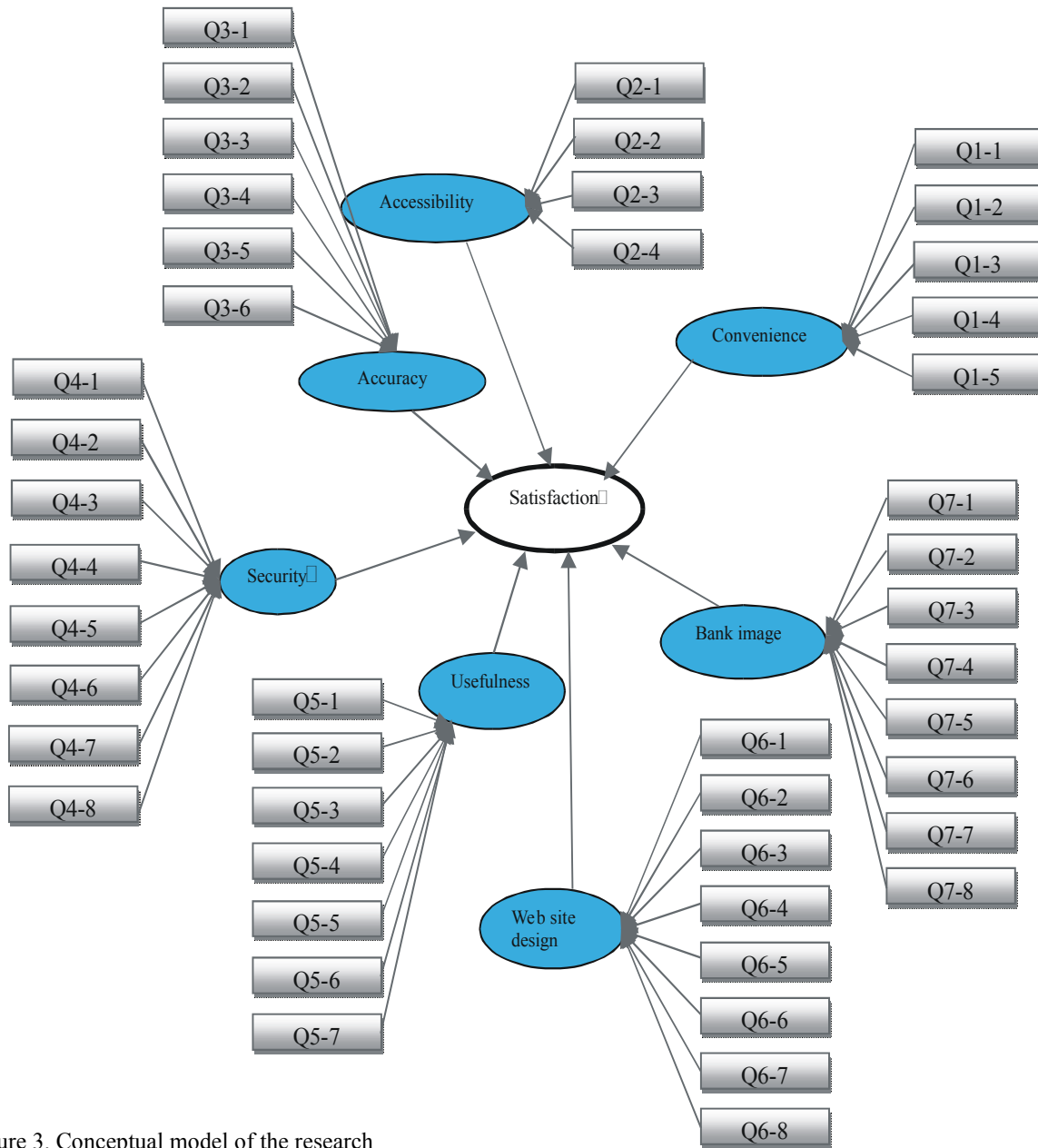


Figure 3. Conceptual model of the research

Table 1: The Coefficient of Cronbach's Alpha separated for each of the factors

Factors	AVE	Composite Reliability	Cronbach's Alpha
F ₁ : Convenience	0.489825	0.760396	0.586442
F ₂ : Accessibility	0.504489	0.800467	0.671166
F ₃ : Accuracy	0.577323	0.872179	0.821306
F ₄ : Security	0.431697	0.866889	0.827697
F ₅ : Usefulness	0.451801	0.827976	0.749741
F ₆ : Image	0.412257	0.826504	0.75919
F ₇ : Website Design	0.421609	0.84942	0.796964
Satisfaction	0.348535	0.7684	0.646035

Modeling of structural equations means creating a statistical model for the study of linear relations between latent (unviewed) variables and evident (viewed or observed) variables. In other words, structural equation modeling is a powerful statistical tool that combines a measurement model (affirmative factor analysis) and the structural model (regression of path analysis) into one statistical synchronic test.

Fitness and Appropriateness of the Model: Several criteria are used in the Smart-PLS for this work. One of the indices is reliability, a scale that measures the degree of

confidence in the results. Reliability is measured by Cronbach 's alpha, which is an outstanding method for assessing the reliability of a coefficient.

Cronbach 's alpha is a coefficient of reliability and adjustment and measures the internal adjustment of the model. In other words, Cronbach's alpha measures how well a set of viewed variables describe a latent structure.

As you see in (Table 1) Cronbach's alpha is high for all the factors (higher than 0.7). This indicates that the questions raised in each part of the questionnaire satisfactorily meet the required reliability and are suitable for measuring the factors. This enhances the degree of confidence in the results.

On the other hand, the composite reliability index, which is also higher than 0.7 for all factors, indicates that each factor has been appropriately described based on the evaluation and measurement questions. Composite reliability indicates how well each structure has been described by the viewed and observed variables. Quantities higher than 0.7 express how well the concerned structure has been described by the observed and viewed variables. In view of these results, the reliability of the data is confirmed.

Conceptual Model: The conceptual model of this research shows the relationship between the factors defined in this study. The conceptual model shows the relationships between the variables. The authenticity of each variable is tested with experimental data.

Figure (3) illustrates the conceptual model of the present research, which shows the relationships between the research variables.

In fact, the coefficients are the same as the coefficients of the equations. Of course, two types of coefficients are calculated in the software: standard coefficients and non-standard coefficients.

Conclusion and Suggestions: After calculating the variance average between factors (AVE), we found that the factors of accuracy, reliability, image, impression of the bank and management. and Web site design are most correlated with satisfaction. The factors of security and privacy had the least correlation with satisfaction. This might also be due to the confidence customers have in electronic banking services, especially in governmental banks.

According to the results, some of the factors such as convenience, security. and usefulness in conducting financial affairs did not show a great difference between males and females.

Regarding the factor of availability, however, the results did exhibit a difference between males and females. Availability appears to be easier for females.

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