Int. J. Nonlinear Anal. Appl. 13 (2022) 2, 1999–2013
ISSN: 2008-6822 (electronic)
http://dx.doi.org/10.22075/ijnaa.2022.6273

Provision of a model for adoption E-banking technologies with emphasis on behavior of users

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(Communicated by Majid Eshaghi Gordji)

Abstract

This research was conducted with the objective of developing a model for the adoption of electronic banking technologies based on the behavior of users in Shahr (City) Bank. The research method is qualitative and performed utilizing the Delphi Method. First, data from research papers/literature and interviews were analyzed and coded using MAXQDA software and 76 components were obtained. The extracted components were grouped into four dimensions: sociological, psychological, demographic and technical services plus 10 indicators of culture and norms, social class, social pressure, demographics, quality of technical services, ease/simplicity of technical services, behavioral, emotional, perceptual and personality. In two stages, the Delphi group reached a consensus on 74 dimensions, indicators and components. The findings of the DEMATEL technique demonstrated that the sociological dimension has the greatest impact on other dimensions as far as the acceptance/adoption of the technology. Indicators such as personality, perception, emotions, behaviors, service quality and culture and norms all have the largest impact. Compliant with the findings, the research model was devised/designed.

Keywords: technology adoption, Shahr (city) Bank, behavior of users, electronic banking
2020 MSC: 93Cxx

1 Introduction

Observations in the field of technology adoption in e-banking reveal that a large group of people have resisted the use of technology, especially in the field of banking and liquidity, and still tend to use traditional and non-electronic methods. It appears that planning in providing electronic services in banks is grounded on limited information about the behavior of users/consumers in accepting to utilize technology [11] And it has more technical and hardware basis and social and psychological factors that affect the tendency to use and accept technology in people is the missing link in the planning and design of service delivery. Examining the behavior of actors to the correct planning in the provision of services in this area that facilitates the achievement of new solutions and strategies to increase the acceptance and dissemination of the use of this technology [7].

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Received: November 2021 *Accepted:* February 2022

The financial and economic crisis, which began in 2008, permeating throughout the production and service sectors, influencing business performances [10], pushed companies to develop new and innovative customer-oriented services in order to maintain competitiveness against competitors.

With reference to different countries in Europe, efficiency augments the overall capacity of users to adapt to new technologies or ways of doing business by improving personal ability to draw new results from traditional channels [17]. Even though e-banking is a predominantly goal-directed service, the computer-mediated channel provides wider possibilities for hedonic perceptions and behaviours [28].

The interactive nature of online channels opens new possibilities for exploratory behaviour, traditionally linked to intrinsic motivation [1]. The literature refers to the Internet as a channel that simultaneously provides recreational and utilitarian features [8]. However, despite the evidence that online banking provides many advantages, such as faster transaction speed and lower handling fees [13], there are still a large group of customers who are reluctant to adopt such services [9]. Understanding the reasons for this resistance would be useful for bank managers in formulating strategies aimed at increasing online banking usage.

2 Theoretical framework

There are two basic theories for accepting/adopting any technology. In the first theory, a person's behavioral intention to use that technology is discussed (when an individual intends to utilize a new technology). In the second theory, the individual's attitude/view, mental norms and behavior control for the use of new technology are discussed; These two theories form the basis of the Technology Acceptance Model widely utilized for many years. Using this model, it can be determined to what extent a technology can be accepted by society. There are two basic points in this model, first, that the user understands that the new technology is beneficial to him/her, which can change someone's attitude vis a vis using it and eventually lead to a change of behavior [4].

The theory of technology acceptance was first proposed by Davis in 1989 while researching social psychology. Technology acceptance theory was developed to explain computer use behavior. Policymakers have discovered that many technological investments in research and academic institutions have been left unused for reasons such as technological obsolescence, technical problems, lack of complementary technological tools, etc. Challenges of this kind led Davis in 1989 to develop the theory of technology acceptance, one of the most practical theories in the field of information technology acceptance. In his 2001 study, Davis stated the reason for accepting or rejecting an information technology is often overshadowed by two determinants. First, the willingness of individuals to use or not use a system depends on their views on the impact of the system on the better performance of their professional duties (understanding of usefulness). Second, even if potential users acknowledge the usefulness of a system and find it difficult to use, the usefulness of the system loses its value due to the complexity use. This theoretical model is still widely used by researchers. Davis (1989) designed the model of user information technology acceptance. In this model, 1) Perceived usefulness (feeling of usefulness) 2-) Perceived Ease Of Use (PEOU) are two effective factors on attitude towards technology acceptance, based on behavioral attitudes vis a vis use technology. Perceived usefulness refers to the degree to which people believe that their performance will improve if they use a particular system. It is also related to a person's level of belief in the applicability of the system and the impact of its performance on the individual. Perceived simplicity of use, pertinent to a person's confidence in the simplicity of use of special systems. Attitude in this model shows the desirability and desirability of evaluating a person in a person's search behaviors and tendency is a measure that shows the strength of a person's desire to use something. This model can also be subject to other external variables such as culture [21]. Perceived simplicity of use is defined as the degree to which people believe that no effort is required when using a particular system (ie, how easy it is for a person to work with a system. Perceived usefulness and ease/simplicity of use Perceived There are two basic theories of social psychology where a person's performance in a particular behavior is determined by that person's behavioral decision to engage in that activity. The TPB theory implies that a person's behavioral intention to perform various actions can be predicted via that individual's attitude toward that behavior, mental norms as well as his/her perceived behavioral control. The Technology Acceptance Model (TAM) has been created as a compact, predictive, and powerful model for explaining and predicting behavior in the decision-making and acceptance/use of a singular/unique technology.

Internet and technological development have changed how financial services are offered and used [22]. Banks and many financial institutions suggest alternative innovative electronic channels for maintaining a competitive advantage and satisfying customer expectations. Mobile devices and destock have increasingly become tools that customers implement through e-banking to pay for products and services [36]. Therefore, e-banking can adapt to clients' needs, such as performing banking activities, without physically visit an office or an ATM [22]. For this reason, e-banking has considerable value for many financial organizations and customers [5].

The introduction and growth of Internet services, which offer better possibilities of interaction with companies, allow consumers to participate in the development and/or improvement of products/services, resulting in value. Consequently, organizations are concerned about attracting customers who want to contribute their ideas to the collaborative process [12]. The banking context is particularly interesting in analyzing the transition toward a value co-creation strategy [23]. The fierce competition in the banking arena has facilitated e-banking as the most cutting-edge electronic-based and self-service distribution channel [22]. e-Banking is conceptualized as a distribution and communication channel which allows customers to interact with a bank to conduct transactions economically and efficiently, mainly through electronic tools, e.g., tablets or smartphones [30]. The use of e-banking offers a wide variety of services for customers, which provide them with value and create a competitive advantage over competitors, such as account checking, bill payment, transferences, or mobile phone text message notifications [23]. As an example of this incremental service innovations, Bankia is modernizing their communication channels to increase the value offered to customers. Bankia has been recognized as the first Spanish bank with an official verified WhatsApp account to communicate with either current customers or prospects. This action is part of its business strategy "Digital Humanism" as a new way of relating to customers based on a closer, agile, and direct actions [6].

The massive usage of the Internet and electronic gadgets have captured the attention of researchers to e-banking. Previous studies [18, 30] show that previous works have studied the factors that encourage the adoption of e-banking [23]. However, the adoption rate of e-banking is below the expectation and still in the adoption phase, even though e-banking services offer several outstanding services to users (Shankar et al., 2020).

2.1 Adoption of technology and e-services banking

In recent years, the development of Information Technology and the Internet has brought about changes in the performance of traditional services. Thus, e-banking has changed the conventional practices of banks and financial institutions and has captured the attention of both academics and practitioners [32]. The adoption of e-banking is considered an innovative distribution channel for financial services due to rapid advances in e-banking applications and intense competence [29, 33]. Thus, understanding the adoption and use of e-banking has become a central research field. The literature indicates that the most relevant strength of the TAM, developed by Davis et al. (1989), is its generalizability and applicability in different contexts [33]. This model is specifically indicated to study the intention to adopt specific technologies. Thus, the TAM applies models to study the acceptance and intention to use information system tools such as mobile commerce [24], m-banking and e-banking [2, 26, 33, 34], among others. The original TAM considers perceived usefulness and perceived ease of use has a significant role in the technology acceptance process [14]. On one side, perceived ease of use is defined as the degree to which a person believes that using a particular system is effortless, both physically and mentally. On the other side, perceived utility is described as the degree to which consumers believe that using a system will increase their performance [14, 23]. Some previous studies in technology acceptance demonstrate that perceived ease of use has a positive effect, mediated by perceived usefulness on the intention to use technology [24].

In the context of e-banking, it is observed that perceived usefulness represents one of the critical aspects that explain behavior intention to use e-banking [22]. For example, e-banking provides some unique services that are not available in offline banking, such as access to banking services at any time and from anywhere [34] (Shankar and Jebarajakirthy, 2019). Similarly, previous studies show the influence of perceived ease of using e-banking on perceived usefulness and attitude [16]. Internet and mobile technology should improve convenience for customers, and its ease of use is critical in customer usage. Some authors [25] claim that adopting mobile banking is influenced by consumer's perceived ease of use due to a complex system when it performs financial transactions. In this sense, the authors highlight that if consumers perceive the performance of a financial transaction as easy through mobile devices, they will have a more favorable attitude toward adopting mobile banking [36]. Ahmad et al. (2019) argue that a client's beliefs about the usability of the website or application affect his or her attitude toward the website or application. These authors state that the ease of use of e-banking systems is a critical factor in their adoption and evaluation by clients. Thus, the relationship between consumers' attitudes toward the use of technology, an excellent example of this is e-banking, and perceived ease of use is studied [36]. Moreover, Mostafa (2020) argues that customers may negatively evaluate using e-banking if they believe e-banking technology is challenging to use and learn.

Finally, the primary topic of the article is stated as follows: What is the most appropriate model for determining the level of acceptance of electronic banking technology with emphasis on the behavior of users?

3 Research methodology

The research method is qualitative and was conducted via the Delphi Method. The primary goal of the Delphi Method is to reach the consensus among a group of experts. This technique is utilized to validate decision indicators to screen indexes and arrive at an agreement on the importance of decision indicators. In this study, the Delphi Method was deployed to extract the views and reach s consensus among a group of experts in the field of banking technology. Data Collection Tools: The research data collection tool was an interview involving a researcher-made questionnaire.

3.1 Sample size

The sample size in this study is 20 experts/specialists in the field of electronic banking selected for the Delphi Method questionnaire. The precondition for selecting Delphi specialists was their familiarity with the electronic banking system, Shahr (City) Bank services, especially Shahr (City) Bank electronic services.

3.2 Research implementation stages

The first step of the research was examining and identifying the existing variables related to e-banking and the behavior of users in welcoming and accepting e-banking. After removing the duplicate (wth similar meaning) indicators, 30 indicators were obtained for the variable. The next phase was to conduct interviews with a group of specialists and experts well-informed about banking and e-banking as well as active in this field. After conducting the interviews, the interviews and documents were prepared for inputting into the MAXQDA software. The output at this stage was 46 codes categorized and defined by the researcher. Thereafter, the first stage Delphi questions were designed by the researcher (with guidance and approval by the supervisor/consultant) in 76 categories. These questions were founded on the theories stipulated in the research literature. Pursuant to extracting the variables and interviews conducted by the researcher, they were finalized in the form of dimensions, indicators and components. After obtaining their permission, the questions were next sent to a group of selected experts and specialists (via Delphi Method). Upon collecting the submitted answers, the first stage of the viewpoints of experts was collected/collated and their average calculated. Then, in the questions asked in the second stage, the average answers of the first stage and suggestions/recommendations for removing and adding dimensions, indicators and components were adjusted and again submitted to the group. After collecting the answers of experts to the second stage questions, the responses were assessed/analyzed. In light of the agreement/consensus of over 90% of experts in two stages, Delphi was completed in two stages and consistent with the findings, dimensions, indicators and components were selected.

3.3 The classical DEMATEL

As stated earlier, the DEMATEL technique can convert the interrelations between factors into an intelligible structural model of the system and divide them into a cause group and an effect group [8]. Hence, it is an applicable and useful tool to analyze the interdependent relationships among factors in a complex system and rank them for long-term strategic decision making and indicating improvement scopes. The formulating steps of the classical DEMATEL can be summarized as follows [8, 9, 10].

Step 1 *(generatee the group direct-influence matrix Z).* To assess the relationships between n factors $F = \{F_1, F_2, \ldots, F_n\}$ in a system, suppose that l experts in a decision group $E = \{E_1, E_2, \ldots, E_l\}$ are asked to indicate the direct influence that factor F_i has on factor F_j, using an integer scale of "no influence (0)," "low influence (1)," "medium influence (2)," "high influence (3)," and "very high influence (4).". Then, the individual direct-influence matrix $Z_k = [z^k_{ij}]_{n\times n}$ provided by the kth expert can be formed, where all principal diagonal elements are equal to zero and z^k_{ij} represents the judgment of decision maker E_k on the degree to which factor F_i effects factor F_j. By aggregating the k experts' opinions, the group direct-influence matrix $Z = [z_{ij}]_{n\times n}$ can be obtained by

$$z_{ij} = \frac{1}{l}\sum_{k=1}^{l} z^k_{ij}, \quad i, j = 1, 2, \cdots, n. \tag{3.1}$$

Step 2 (establish the normalized direct-influence matrix X). When the group direct-influence matrix Z is acquired, the normalized direct-influence matrix $X = [x_{ij}]_{n\times n}$ can be achieved by using

$$X = \frac{Z}{s}, \tag{3.2}$$

$$s = \max\Big(\max_{1\le i\le n}\sum_{j=1}^{n} z_{ij},\ \max_{1\le i\le n}\sum_{i=1}^{n} z_{ij}\Big). \tag{3.3}$$

All elements in the matrix X are complying with $0 \leq x_{ij} < 1$, $0 \leq \sum_{j=1}^{n} x_{ij} \leq 1$, and at least one i such that $\sum_{j=1}^{n} z_{ij} \leq s$.
Step 3 (construct the total-influence matrix T). Using the normalized direct-influence matrix X, the total-influence matrix $T = [t_{ij}]_{n\times n}$ is then computed by summing the direct effects and all of the indirect effects by

$$T = X + X^2 + X^3 + \cdots + X^h = X(I - X)^{-1}, \quad \text{when } h \to \infty, \tag{3.4}$$

in which I is dented as an identity matrix.
Step 4 (produce the influential relation map (IRM)). At this step, the vectors R and C, representing the sum of the rows and the sum of the columns from the total-influence matrix T, are defined by the following formulas:

$$\begin{aligned} R &= [r_i]_{n\times 1} = \Big[\sum_{j=1}^{n} t_{ij}\Big]_{n\times 1}, \\ C &= [c_j]_{1\times n} = \Big[\sum_{i=1}^{n} t_{ij}\Big]_{1\times n}^{T}, \end{aligned} \tag{3.5}$$

where r_i is the ith row sum in the matrix T and displays the sum of the direct and indirect effects dispatching from factor F_i to the other factors. Similarly, c_j is the jth column sum in the matrix T and depicts the sum of direct and indirect effects that factor F_j is receiving from the other factors.
Let $i = i$ and $i \cdot i \in \{1, 2, \ldots, n\}$: the horizontal axis vector $(R + C)$ named "Prominence" illustrates the strength of influences that are given and received of the factor. That is, $(R + C)$ stands for the degree of central role that the factor plays in the system. Alike, the vertical axis vector $(R - C)$ caleed "Relation" shows the net effect that the factor contributes to the system. If $(r_j - c_j)$ is positive, then the factor F_j has a net influence on the other factors and can be grouped into cause group; if $(r_i - c_i)$ is negative, then the factor F_j is being influenced by the other factors on the whole and should be grouped into effect group. Finally, an IRM can be created by mapping the dataset of $R + C, R - C)$, which provides valuable insights for decision making.

4 Research findings

4.1 Demographic characteristics of Delphi specialist/expert group

Education: 17 of the panel's interviewees have PhDs and 3 have MSc.
7 of the interviewees had studied banking/finance, 3 were sociologists, 6 were IT managers, 2 were psychologists, 2 were marketing managers. 2 of the experts had between 5-10 years of work experience, 14 people between 10-20 years and 4 with of 20 years and more. Regarding their occupations, 13 were employed in banking, 5 were academics in universities and 2 were engaged in branding and marketing consulting in private-sector institutions.

4.2 Final result of two Delphi stages

The Delphi Method was performed in two stages and the dimensions, indicators and components raised in the questions were identified and approved after two back & forth stages of 4 dimensions, 10 indicators and 74 components.

Table 1: Proportion between proposed dimensions with the concept of technology acceptance factors

Dimensions	Proportion Of Fit Between Dimension & Concept
Psychological	0.80
Sociological	0.100
Demographic	0.85
Technical Services	0.100

100% of Delphi experts agree with the proposal to classify the variables determined in the sociological and demographic dimensions of technology acceptance, 85% agree with the demographic dimension and 80% with the psychological dimension.

Table 2: Survey of Delphi group by assigning specified variables with the proposed dimensions

Dimensions	Definition Of Dimensions Operations	Degree Of Fit (Operational Definition With The Proposed Dimension) Fit	Degree Of Fit (Operational Definition With The Proposed Dimension) Unfit/Lack Of Fit
Psychological	Variables & Components Related To Internal Factors, Person's Personality & Mood. In Internal Factors Category & Depending On Interests, Perception, Knowledge, Desire To Learn, Risk-Taking & Flexibility Are Prominent.	0.100	0
Sociological	Variables & Components That Depend On External Factors, Social Structure Group, Education & Appropriateness/Fitness Of Social External Space & Sociological Culture.	0.100	0
Demographic	Components Affected By Nominal Factors & The Distance It Creates Causing Social Groupings	0.90	0.10
Technical Services Quality	Variables & Components Pertinent To The Technical/Technological Services Provided	0.90	0.10

The findings demonstrated that 100% of the Delphi group agree with the affiliation of the components to the psychological and sociological dimensions based on the operational definitions and 90% agree with the attribution of the variables to the demographic and technical services dimensions.
Opinions/Viewpoints Provided By Experts Regrading The Variables In The First Stage Of Delphi

1- Changing the operational definition of risk variable to fear of risk in banking transactions (psychological dimension variables)
2- Integrating the two variables of desire for new experience and people's inner belief in innovation (psychological dimension variables)
3- Integration of internal control and self-affirmation (psychological dimension variables)
4- Operational definition of non-adherence and focus on previous traditions/methods to the variable of non-adherence to traditions (sociological dimension)
5- Transfer/convey the influence of society from the psychological dimension to the sociological dimension
6- Transfer/convey the variables of observing the success of others (& encouragement from others) from the sociological dimension to the psychological dimension

Second stage of Delphi

As alluded to earlier, the aim of utilizing the Delphi Method is to make decisions, consensus or group agreement on determining the variables effective in embracing technology. The most important condition for the use of Delphi, the need for expert judgment and the views of a large group, is consensus in accomplishing the results. In terms of number of stages, previous research recommend between 2-10 stages. However, classical Delphi consists of four stages, which researchers usually shorten it to two to three stages to achieve their research goals. Deciding on the number of steps/stages is largely practical or empirical and depends on the consistency of the respondents' answers in replying to the first stage questions. (Even though accuracy increases with additional stages, it often causes fatigue after three stages and often new and useful results are not acquired (Kalantari, 2013).

Changes to questions during second stage

Consistent with the first phase findings, in consultation with supervisors and consultants, it was decided to re-evaluate the variables that scored less than 90% in terms of importance. Accordingly, if they again were deemed inappropriate or scored less than 90% in this survey, they were to be removed from the final model. For this purpose, the variables that had an average of less than 90% during the first stage output of Delphi were included in 2^{nd} set of questions and were reassessed by Delphi group experts. In the following, the answers extracted from the second stage are described and presented.

Changes in the dimensions section (2nd phase of Delphi's findings)

Since 90% was achieved in the first stage on the demographic and technical services dimension, the group was again asked to express their views (agree or disagree) on the proposal.

Table 3: Poll concerning the removal of the demographic dimension

Cumulative Frequency	%	Frequency	
75.0	75.0	15	Agree
95.0	20.0	4	Disagree
100.0	5.0	1	No Response
	100.0	20	Grand Total

Compliant to the findings, 15 respondents with a frequency of 75% disagree with the removal of the demographic dimension and 4 respondents with a frequency of 20% agree. One respondents did not answer the question with a frequency of 5%.

Table 4: Views on elimination of the technical services dimension

Cumulative Frequency	%	Frequency	
80.0	80.0	16	Agree
100.0	20.0	4	Disagree
	100.0	20	Grand Total

According to the results, 16 people with a frequency of 80% disagree with the elimination of the technical services dimension and 4 people with a frequency of 20% agree.
Conclusion: During the second phase of Delphi, due to the opposition by the group of experts on eliminating the dimensions of demographics and technical services by, these two dimensions shall remain in the model.
In the next part of the questionnaire, the variables that obtained less than 4 (on average) in the first stage are reanalyzed. The Delphi experts group were asked about deleting or maintaining these variables.

Table 5: Polling regarding the removal of variables

Variable	Agree	Disagree	No Response	Total
Complexity	0.85	0.15	0	100.0
Visibility	0.25	0.60	0	100.0
Task Features	0.70	0.20	0.10	100.0
Computer Automation	0.15	0.85	0	100.0
Number Of Children	0.35	0.75	0	100.0
Social Persuasion	0.30	0.65	0.5	100.0
Hope For Performance	0.65	0.25	0.10	100.0
Hope For Effort	0.55	0.45	0	100.0
Feasibility Of Turning Motivation Into Value	0.65	0.25	0.10	100.0

In light of the expert opinion polling findings in the second stage of Delphi and the group acceding to removing the complexity variables; these components: (task characteristics, hope for endeavor, hope for performance, possibility of turning motivation into value) were removed.

Inquiring for comments from the Delphi group about viewpoints expressed during the first stage

As stipulated in the first Delphi phase findings, the views of some experts about the variables were raised in the submitted questionnaire. In the second stage questionnaire, questions were asked about the group's views, the results of which are proffered in Table 5.

Table 6: Dimensions & indicators approved by the Delphi expert group; source: researcher's findings

Dimensions	Indicators	Agree (On Inclusion)	Disagree (On Inclusion)
Psychological	Personality	100.0	0
Psychological	Perceptual	100.0	0
Psychological	Emotional	100.0	0
Psychological	Behavioral	100.0	0
Sociological	Social Class	100.0	0
Sociological	Social Pressure	100.0	0
Sociological	Culture & Norms	100.0	0
Demographic	Demographic	100.0	0
Level Of Technical Services	Quality Of Technical Services	100.0	0
Level Of Technical Services	Simplicity Of Technical Services	100.0	0

DEMATEL analysis findings (identifying pattern of causal relationships between variables)

In this section, the DEMATEL technique was utilized to determine the relationship between the variables and indicators and to reflect the internal relationships among the primary indicators. The aim was for experts to be able

to express their views on the impact (direction & intensity of effects) of factors with more accuracy/mastery. It should be noted that the matrix obtained from the DEMATEL technique (internal communication matrix) indicated both a causal relationship between factors as well as the effectiveness of the variables. To collect the views of experts, the DEMATEL questionnaire was deployed. The spectrum of evaluating the views of experts via the DEMATEL method toward determining the relationships of elements is presented in the table here below.
1-Calculation Of Direct Communication Matrix (X)
When utilizing the perspective of several experts, the simple arithmetic mean of the views was used, hence forming X (or direct correlation matrix).

Table 7: Direct communication matrix (X) primary criteria

C01	0.00	2.80	3.20	3.50	3.00	2.40	2.60	3.00	2.20	2.30
C02	2.80	0.00	2.70	2.70	2.50	2.60	2.30	2.70	2.70	2.50
C03	3.10	2.90	0.00	2.90	2.80	2.80	2.50	2.50	2.70	2.60
C04	3.20	2.90	2.60	0.00	3.30	3.20	2.70	2.40	2.40	2.70
C05	3.30	3.10	2.90	2.60	0.00	3.30	3.00	2.40	2.50	2.50
C06	2.90	2.70	3.10	3.10	2.90	0.00	3.20	3.00	3.10	3.00
C07	2.90	2.10	2.80	3.40	3.30	2.90	0.00	2.50	3.20	2.90
C08	3.00	2.50	2.20	2.50	2.40	2.60	2.60	0.00	2.70	2.70
C09	2.30	2.90	2.80	2.60	2.60	2.70	2.60	2.44	0.00	3.00
C10	2.50	3.00	2.60	3.30	2.80	2.60	2.80	2.90	3.40	0.00

In line with the obtained results, the causal diagram can be drawn accordingly:

Table 8: Pattern of causal relationships of the model's primary criteria

Criteria	D	Rank	R	Rank	D+R	Rank	D-R
Personality (C01)	12.76	6	13.25	2	26.00	4	−0.49
Perceptual (C02)	12.06	9	12.74	6	24.80	9	−0.68
Emotional (C03)	12.68	7	12.74	5	25.42	7	−0.06
Behavioral (C04)	12.98	5	13.51	1	26.50	2	−0.53
Cultures & Norms (C05)	13.07	4	13.07	3	26.13	3	0.00
Social Class (C06)	13.70	1	12.83	4	26.53	1	0.87
Social Pressure (C07)	13.26	2	12.45	8	25.71	5	0.82
Demographics (C08)	11.93	10	12.23	10	24.16	10	−0.30
Technical Services Quality (C09)	12.28	8	12.69	7	24.97	8	−0.41
Simplicity Of Technical Services (C10)	13.17	3	12.39	9	25.55	6	0.78

In Table 8, the sum of each row of (D) elements indicates the extent to which that factor affects other system factors. Accordingly, social class (C06) is the most influential. Social pressure index (C07) is in second place. The third degree of effectiveness belongs to technical service ease criterion (C10). Also, the demographic index (C08) has the least impact.

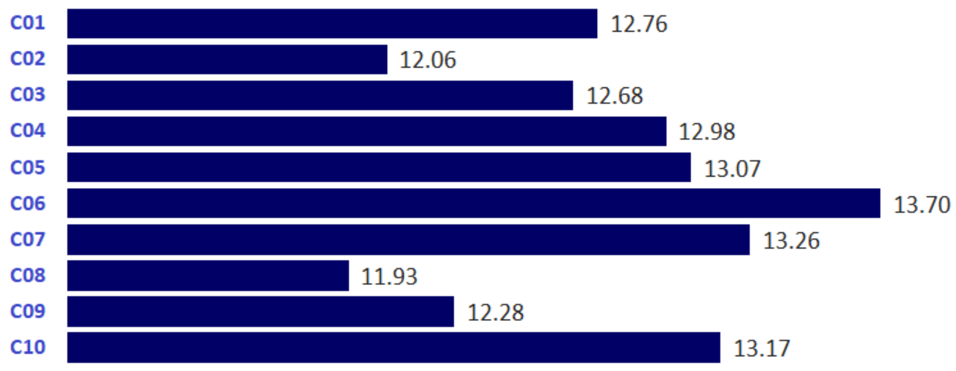

Figure 1: Ranking of research variables based on effectiveness

The sum of column (R) elements for each factor indicates the extent to which that factor is affected by other factors within the system. Accordingly, the behavioral criterion (C04) has a very high degree of effectiveness. Furthermore, the demographic index (C08) has the least impact of all indexes.

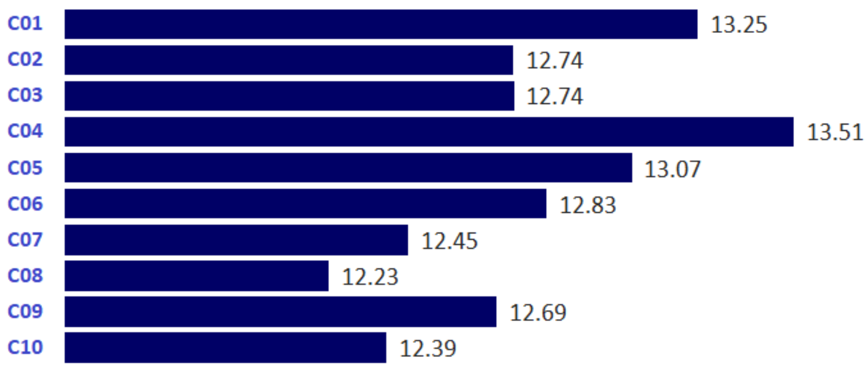

Figure 2: Ranking of research variables based on effectiveness

- Horizontal Vector (D+R) is the effect level of the desired factor in the system. In other words, the higher the D+R factor, the more it interacts with other system factors. Accordingly, the social class criterion (C06) has the most interaction with the other studied criteria. The social pressure index also has a high interaction with other criteria. Meanwhile, the demographic index has the least interaction with other variables.
- Vertical Vector (D-R), indicates the influence power of each factor. In general, if D-R is positive, the variable is a causal, and if negative, it is defective.

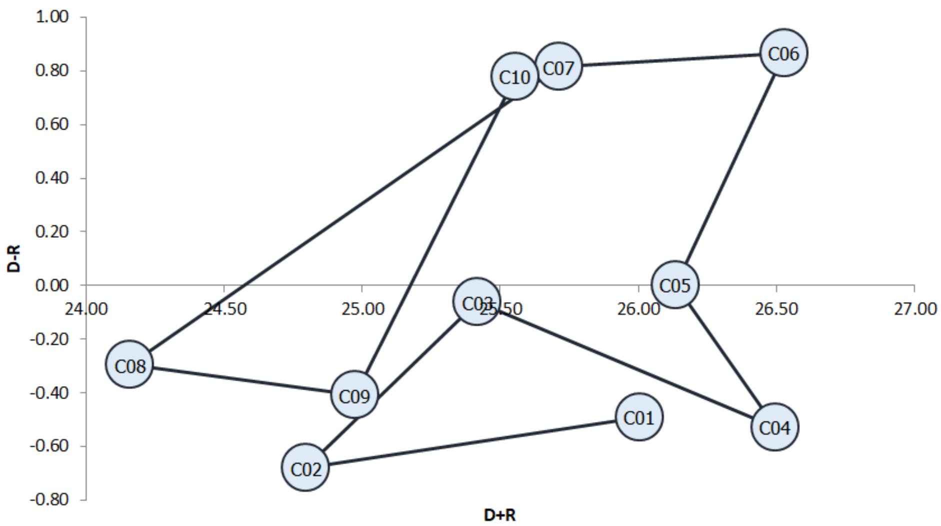

Figure 3: Cartesian coordinates of the DEMATEL output for the primary criteria

The cause-and-effect relationship among acceptance criteria within society is inferred as follows:

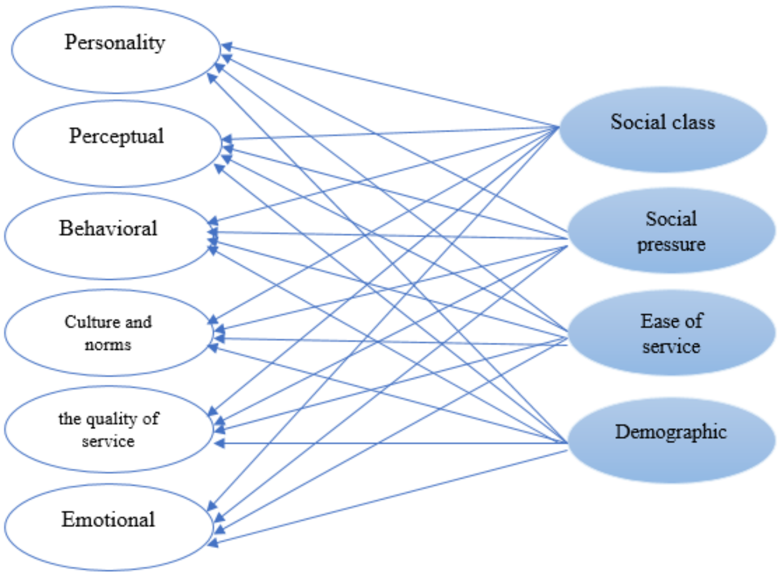

Figure 4: Level of relationships in acceptance criteria

4.3 Final model

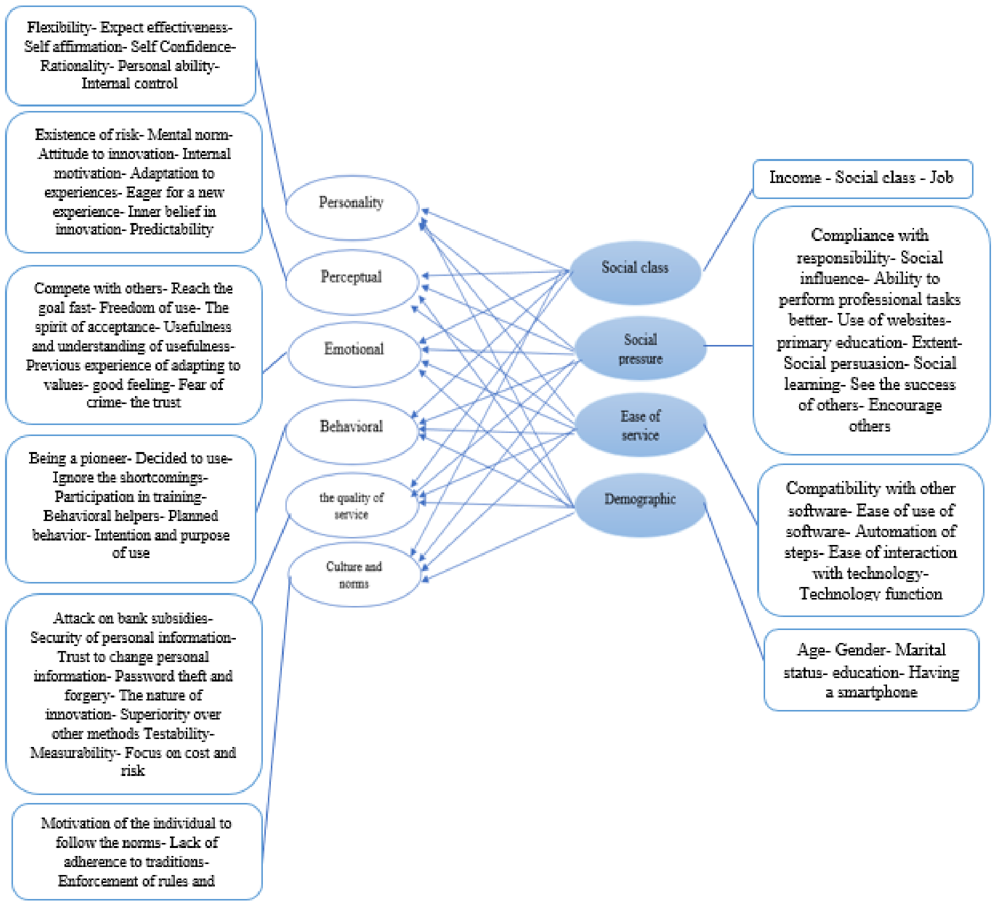

Figure 5: The final model of technology acceptance in society

5 Summary & conclusion

The findings obtained from the impact of emotion on behavior is consistent with cognitive-behavioral theories. In these theories, emotion as a major component has a direct impact on perception and indirectly on behavior. In the study by Rogers (2010), Fishbone & Ozen, the feeling of security and positivity as a consequence of utilizing new technologies was discussed and examined, and compliant with its findings, perceived feeling has a positive correlation with technology acceptance. In the Davis theory, ease/simplicity is understood as the most important theory and model in accepting technology, and the positive feeling of using technology services is moreover among of the primary and desired factors in accepting technology. Another element of impact on indicators of other dimensions in the acceptance of technology is the social class dimension, which includes the components of sociocultural norms, social pressure and social class. In the Baradaraan (2016) and Charfdin (2018) studies, there is a relationship between the variables of prestige (reputation) and the way technology is introduced. It can be concluded that customers are influenced by inner emotions and inner emotions such as false personality that this technology gives them and imitating other users is an effective factor in accepting this technology.
Ease/simplicity of service is ranked higher than quality of service. Moreover, the design of a suitable and user-friendly Internet system with appropriate/adequate speed and operational quality and requiring the least training and minimum Internet literacy and able to meet the needs of customers. Possessing the above features has an impact on the acceptance of this technology among users. In line with the statistical findings of the present study, sociocultural norms are a significant component of technology acceptance in the bank. This is consistent with the findings of Gerald & Cunningham. Social class and social pressure (as among the components of social class and sociological insights) are also identified as components and indicators affecting other indicators of technology acceptance in banking.

5.1 Replying to the research questions

Question 5.1. Dimensions of effective and psychologically related components of the behavior of users in accepting technology in e-banking with emphasis on users behavior? Pursuant to the findings (interviews, Delphi Method, previous research literature, etc.), the psychological components of users behavior in accepting technology in electronic banking are: personality, perception, emotions plus behavioral components.

Question 5.2. Dimensions of effective and related demographic components of the behavior of users in the adoption of technology in electronic banking with emphasis on the behavior of users? According to the findings (interviews, Delphi Method, previous research literature, etc.), the demographic components of the users behavior are age, gender, marital status, education

Question 5.3. Dimensions of effective and related technical components of services in accepting technology in electronic banking with emphasis on the behavior of users? Consistent with the analysis of interviews and research literature and the Delphi Method findings, the technical components of services are the ease/simplicity of technical services and the quality of technical services.

Question 5.4. Dimensions of effective and related components of sociological insights on the behavior of users in accepting technologies in e-banking with emphasis on the behavior of users? In alignment with the results of the analysis (interviews, Delphi Method, previous research literature, etc.), the sociological components are social class, social pressure and cultural/social norms.

Question 5.5. Relationship between dimensions and indicators affecting the behavior of accepting e-banking technology? Cartesian coordinates DEMATEL analysis reveals that indicators of social class, social pressure, ease of service and demographics are the most influential and indicators of personality, perception, behavior, sociocultural norms, quality of service and emotion are most affected. Social class is the most influential. The social pressure index is in second place. The criterion of ease/simplicity of technical services is in third (as far as effectiveness). Also, the demographic criteria has the least impact.

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