

# The effect of cultural factors, activities characteristics and technology features on the appropriateness and usage of technology regarding customer personality

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## Abstract

This study investigated the relationship between Task-Technology Fit (TTF), usage, and performance with the moderating role of culture on adoption and retention of mobile banking technology; and the case study was Melli Bank of Iran. To test the hypotheses, first, the data was collected by questionnaires containing 24 questions (Likert scale) from 200 customers of the National Bank of Iran. Then data reliability (Korbach's alpha test) and construct validity (confirmatory factor analysis) were checked. Finally, the conceptual model was estimated using the Structural Equation Model (SEM) and Amos statistical software. The findings showed that, firstly, the TTF theory is well explained by the two dimensions of task characteristics and technology characteristics. Secondly, there is a significant positive relationship between TTF, use, and individual performance. Thirdly, individualism as a cultural dimension weakens the relationship between TTF and Use, while it strengthens the relationship between use and individual performance. Fourth, avoiding uncertainty as another cultural dimension weakens the relationship between TTF and Use; while it strengthens moderates the relationship between TTF and individual performance, as well as between use and individual performance. The results indicate that providing services that match the needs increases their use, and it can also improve performance. In addition, more use improves people's performance, which emphasizes the theory of learning by doing. Individualism as a cultural factor can hurt TTF theory, which can be reduced through advertising and branding. Also, customer psychology and providing special services increase their use. Avoiding uncertainty makes customers use it more cautiously, so the bank should improve their confidence in using mobile banking.

Keywords: individualism, Uncertainty avoidance, Task-Technology Fit, individual performance  
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## 1 Introduction

Mobile banking was proposed in Europe in 1992 and was used in 1999 with the introduction of wireless application protocol (WAP). Today, one of the most widely accepted modes of performing banking activities by customers is by using a mobile device. M-banking is a service or product offered by financial institutions that makes use of portable

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technologies [31]. Accessing account information, paying bills, transferring funds, and other services by mobile devices are not exclusive to progressive financial institutions [25]. Accessing and interacting with banking accounts at any time, from anywhere, have become the most common actions in m-banking. Mobile applications become more and more user-friendly, and the number of available m-banking functions is expanded further (e.g., recently, interactions with smart watches). In Iran, Informatics Services Company started this service in 2008 according to the request of the Melli Bank of Iran. Today, with the growth and development of mobile banking in the country's banking system, customers can do many banking things through their mobile phones. However, after two decades of providing mobile banking services, some customers do not use it and prefer to do their banking in traditional ways.

Today banks provide services such as banking payment, real-time two-way transfer, and easy access to financial information through mobile banking [31]. In other words, providing banking services to customers through mobile banking increases comfort, accelerates banking affairs, and reduces related costs. That is why, today, banks tend to expand their market by providing banking services through mobile banking. Customers in traditional banking services systems used to go to bank branches to do the related tasks, but today wireless technology is rapidly changing the banking services provision systems [34]. In other words, the amazing development of information technology and its expansion to the financial and banking markets of the world has facilitated the bank's customer affairs and revolutionized the current banking procedures [2]. The use of mobile banking is rapidly expanding in Iran. Therefore, we need investigations to identify and rank factors affecting the use of mobile banking in Iran because it helps bank managers to provide better services and banking operations, improve the space for mobile banking services, be responsive to customers' needs, decrease costs to acquire more resources and improve the mobile banking services using their marketing strategies.

In this study, one of the technology acceptance models called The Task-Technology Fit Model (TTF) is used to investigate the acceptance of m-bank by customers. The Task-Technology Fit Model was developed by Goodhue & Thompson to explain the use of technology by examining the fit of technology to users' tasks/requirements. The purpose of the theory was to add to the body of knowledge on technology use in the private and public contexts, which had limited explanation as to how the acceptance of technology contributes to individuals' performance. TTF was the first theory that aimed to explore the post-adoption aspect of technology use, unlike other prior research, which had mainly focused on the antecedents of use and intention [10]. Specifically, by 1995, the literature on the IS management domain was characterized by two streams of research, namely focusing on technology use and task-technology fit. In addition to this, m-banking's individual performance drivers create advantages for the customer that can encourage people to use it. One of the important factors that can influence the growing popularity of m-banking is convenience and service delivery [34]. Understanding the convenience and availability of the customer can be the source of improving the performance of the bank's mobile services. Performance is related to the combination of effectiveness and efficiency. Effectiveness is "doing things right" while efficiency is "doing things right". Therefore, poor success and failure to achieve the possibility of accessing the source of dissatisfaction [32]

Culture plays an important role in information technology (IT) adoption and use. Many authors have sought to explain the cultural influence of IT use [4, 30]). Which may affect the use and successful implementation of IT [22]. Therefore, m-banking system features appropriate for one culture may not be suitable for others of a different culture. Meanwhile Identifying influential cultural factors helps designers of mobile data services to develop strategies for new services [5]. There are three reasons why this research examines the effect of cultural factors on the appropriateness and the use of technology (i.e., mobile banking) regarding the intervening role of customer personality. First, electronic banking services can reduce costs and facilitate transactions and exchanges. In addition, the ever-increasing expansion of communications in terms of software and hardware helps further the expansion of electronic banking services. Mobile banking is an accessible and easy-to-use tool for banking services, and bank customers greatly welcome it. However, some customers still do not use this technology in their banking affairs [11]. Second, mobile banking penetration rates in developing countries such as India, Indonesia, South Africa, and Brazil are higher, which have not developed their banking systems or fixed telecommunications infrastructure sufficiently and encourage mobile banking [5]. Since Iran has an emerging economic market, this research investigates the effects of cultural factors on using cell phones mediated by customer satisfaction. Studying cross-country differences helps better understand the factors affecting this technology's use. Third, reviewing the literature indicated that previous research is mainly on risk culture factors and management control systems, the effect of cultural factors on electronic banking and factors affecting the adoption of electronic banking [12].

The main objectives of this research are (a) retaining and increasing mobile banking users and extracting the relationship between usage and individual performance and (b) providing some suggestions for service providers to retain and increase users. In this article, the relationship between different dimensions of TTF theory is tested considering the moderating role of culture on individual use and performance. The theoretical support for this study

is based on TTF theory [10] and Hofstede's [13] cultural dimensions of uncertainty avoidance and individualism [13]. In other words, no research has investigated the effect of cultural factors on the acceptance of mobile banking, so this research is innovative. In the following, theoretical foundations, methodology and data analysis are presented, and then discussion and conclusions are presented.

## 2 Theoretical foundations

In the past two decades, various theories and models have been proposed, tested and modified in the field of technology acceptance; Most of them were based on information systems and psychological and sociological approaches. These models help to understand the factors influencing technology acceptance and the relationships between them. Applied models are indicated in Table 1.

Table 1: Technology acceptance models

| model  | published                    | factors   |
|--|------------------------------|---|
| Expectancy-confirmation theory (ECT)                       | Oliver [27]                  | Confirmation level, mental perception (usefulness, ease of use and enjoyment) and user satisfaction lead to continuous use of technology.   |
| Innovation Diffusion Theory (IDT)                          | Ragers et al. [29]           | People's perception (comparative advantage, adaptability, complexity and testability) is effective on technology acceptance.  |
| Technology Acceptance Model (TAM)                          | Davis [6]                    | People's mental perception of technology (usefulness and ease of use) affects their attitude towards technology.  |
| Technology Organization Environment (TOE)                  | Tornatzky and Fleischer [35] | Technological contexts (internal and external), organizational contexts (goals, size, bureaucracy, centralization, etc.) and environmental contexts (type of industry, level of competition, regulations, etc.) affect the process of adoption and use of technology. |
| Theory of Planned Behavior (TPB)                           | Ajzen [1]                    | Motivational factors (attitude, normative beliefs and subjective perception) are effective in controlling behavior in using technology.   |
| Task-Technology Fit (TTF) model                            | Goodhue and Thompson [10]    | The fit between individual abilities, technology features and organizational tasks affects user evaluation and performance.   |
| Unified Theory of Acceptance and Use of Technology (UTAUT) | Venkatesh et al. [36]        | Performance expectancy, effort expectancy, social influences and facilitating conditions are effective on the desire and use of technology.   |

Adoption models have dominated m-banking research in recent years. Several literature reviews of m-banking studies report motivations, attitudes, behavioural intentions, social systems, and associations that have influenced potential m-banking adopters [3, 7, 12, 31]. Based on that and to the best of our knowledge, there are no m-banking studies that focus on the adoption stage. Motivated by this research gap, we provide further insights into individual performance at the adoption phase. Furthermore, the growing body of research on m-banking shows that there is no sign of research saturation [19]. Based on that, instead of presenting another investigation analyzing other drivers of m-banking adoption, we believe that it may be more valuable to focus on retaining users instead of thinking about potential adopters.

Many studies have used and supported the validity of the TTF model, such as knowledge management systems use [23], location-based services [17], use of IT [9], use of mobile commerce in the insurance industry [20], mobile work support [38], and performance impact using learning management systems [26]. The TTF model can be combined with other models such as the technology acceptance model (TAM) to explain users' intentions to use wireless technology in organizations [37], the unified theory of acceptance and use of technology (UTAUT) to explain user adoption of m-banking [39], and UTAUT combined with the initial trust model (ITM) to explain m-banking adoption [28].

The two dependent variables in this research are the use and individual performance as a source of efficiency and effectiveness in performing banking tasks. Completing banking tasks faster and avoiding mistakes can be a source of individual performance [24]. To better understand mobile banking usage and individual performance, TTF theory is applied, which is defined as "the degree to which a technology assists an individual in performing a portfolio of tasks" [10]. Goodhue and Thompson suggest that individual performance is the result of better use and fit between the technology and the task it supports, which is an essential issue in mobile banking services [10]. The following list summarizes the meaning of TTF model dimensions:

- Task characteristics are broadly defined as the actions carried out by individuals in turning inputs into outputs. These characteristics can vary in several dimensions, such as task no routineness, task interdependence, and time criticality. Furthermore, it seems reasonable to assume that the better the match between m-banking and the portfolio of banking tasks, the greater will be the use of the service.

- Technology characteristics are viewed as tools used by individuals in carrying out their tasks. M-banking technology characteristics make the technology attractive to users and allow performing tasks such as accessing account balances, paying bills, transferring funds, and other financial services.
- Task technology fit is the degree to which a technology assists an individual in performing his or her tasks. A high degree of TTF will promote the use of m-banking, while a low degree of fit will decrease user intention to adopt m-banking. When the users feel that technology can support the task at hand, they show good individual performance.
- Use is the behaviour of employing technology in completing tasks. There are several applications, solutions, and products available for mobile devices that make this a valuable platform for users who expect the benefits of anywhere-at-anytime connectivity.
- Performance impact relates to the accomplishment of a portfolio of tasks by an individual. In the m-banking context, it is the ability to carry out banking transactions with the least expenditure of time and effort, thereby enhancing the well-being of users.

Several studies applying TTF models are related to technology adoption, technology evaluation, impact on learning, and task performance and not to individual performance as initially suggested by Goodhue and Thompson [10], in the adoption phase. Considering this background, it is suggested to test the following main hypotheses:

- H1. Task characteristics of m-banking positively affect TTF.
- H2. Technology characteristics of m-banking positively affect TTF.
- H3. TTF positively affects the use of m-banking.
- H4. TTF positively improves individual performance.
- H5. Use of m-banking positively affects individual performance.

In addition to the main hypotheses presented, the effect of cultural characteristics on the acceptance of mobile banking is investigated in the form of sub-hypotheses. For this purpose, the moderating effect of culture on the use and performance of the individual is considered. In this regard, one of the strongest theories in the field of information technology acceptance has been developed by Hofstede. According to this theory, five dimensions are considered for culture: Uncertainty Avoidance; the degree to which novel phenomena or ambiguities are perceived as threats. Power Distance; the degree to which differences in power, status, and privileges are accepted in society and considered a "natural order." Masculinity-Femininity; the distinction could be related to what motivates people, wanting to be the best (Masculine) or liking what one does (Feminine). It is related to gender roles. Individualism/Collectivism; this is the degree to which people derive their identity primarily from being an individual ("I") versus being a member of social groups ("We"). Time orientation: the degree how which society prioritizes and deals with its own past with the challenges of the present and the future. In this study, the effects of two dimensions of uncertainty avoidance and individualism are investigated among the five Hofstede's dimensions [13, 14]. The main reason for choosing two dimensions is to deal with the issues of system design and user behaviour for specific applications of mobile devices such as m-banking, and the relationship with the adoption stage such as individual performance. In addition, many studies have successfully tested these two dimensions [2, 21, 22].

Individualism is defined as "ties between individuals are loose: everyone is expected to look after himself or herself and his or her immediate family" [13]. This means that individuals do things in their own best interests. People with a greater propensity for individualism may tend to use mobile Internet services that will showcase their personality and are more likely to focus on personalized objectives [18]. Collectivism is a cultural value that indicates a preference for a tightly-knit social framework in which people view the group as the primary entity. It sees the group as the important element and individuals as just members of the group. From this, we believe that m-banking users with high individualistic propensity will negatively influence the use of m-banking and that this will consequently impact individual performance. Therefore, we propose the following:

- H6. Individualism moderates the effects of TTF on use.
- H7. Individualism moderates the effects of TTF on individual performance.
- H8. Individualism moderates the effects of use on individual performance.

Uncertainty avoidance is defined as "the extent to which the members of a culture feel threatened by uncertain or unknown situations" [13]. People with high uncertainty avoidance perceive novel or ambiguous phenomena as threats. According to Hofstede [24], a high uncertainty avoidance culture is characterized by treating unstructured situations

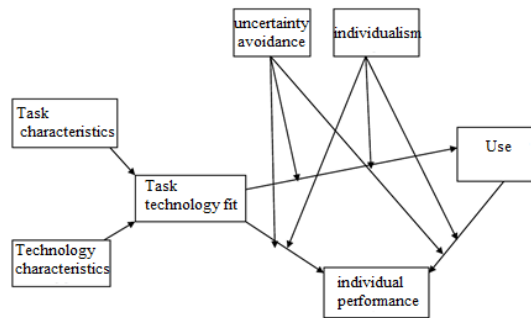


Figure 1: Technology acceptance models

as novel, and in which people dislike the unknown situations and seek security. Uncertainty avoidance affects the usage of mobile Internet services [18]. New technologies and IT innovations bring with them some level of risk (uncertainty) that may be less acceptable to these types of cultures. They try to avoid ambiguous situations by feeling that a new technology is more difficult to use, because of the uncertainty related to making mistakes, etc. In contrast, people who exhibit low uncertainty avoidance and deal well with uncertainty are more likely to consider taking some risks. Based on that, users with high uncertainty avoidance play an important role in m-banking use and individual performance. Thus, we hypothesize the following:

H9. Uncertainty avoidance moderates the effects of TTF on use.

H10. Uncertainty avoidance moderates the effects of TTF on individual performance.

H11. Uncertainty avoidance moderates the effects of use on individual performance.

### 3 Methodology

In this study to collect data for qualitative variables, 200 questionnaires were distributed among the customers who used m-banking services at Melli Bank of Iran in 2022; that the number of 146 completed questionnaires was verifiable. The questionnaire contained 24 items that people can choose from (1-5). Task characteristics include 4 items: the ability to manage and control accounts and transfer amounts at any time and any place and in the minimum time. Technology characteristics include 4 items: extensiveness, availability, speed, and safety. Task technology fit includes 4 items: Suitability of the services provided by m-bank with the needs of customers diversely and adequately. Use includes 4 items: using the services provided by the bank in managing and controlling accounts, transferring amounts, and special services. Individual performance includes 2 items: the bank has done banking affairs easily and quickly. Individualism includes 3 items: favourite, appropriate, and distinctive for the person. Uncertainty avoidance includes 3 items: stress, insecurity, and uncertainty in using services, especially new ones. To test the hypotheses, the conceptual model used to explain the relationships between variables (shown in Figure 1) is based on theoretical foundations.

Correlation analysis is used to estimate the model. This method is an analysis of the covariance matrix or correlation matrix. According to the purpose of the research and analyses that are done on this matrix, it is divided into two main categories: factor analysis and structural equation model. Both of these analyses are done using AMOS software. In the factor analysis and structural model, three basic points should be considered: the strength of the relationship between the factor (hidden variable) and the observable variable is shown by the factor load. A factor load is a value between zero and one. If the factor loading is less than 0.3, the relationship is considered weak and is ignored. A factor between 0.3 and 0.6 is acceptable, and if it is greater than 0.6, it is very desirable. If the absolute value of the test statistic (t-value) is greater than the critical value of 0.05, i.e. greater than 1.96, then the observed factor loading is significant. Finally, Fitting indexes should be tested.

Table 2: goodness of fit tests

| Fitting indexes  | $\frac{\chi^2}{df}$ | RMSEA  | GFI   | NFI   | CFI   | IFI   |
|------------------|---------------------|--------|-------|-------|-------|-------|
| acceptance range | 2-3                 | < 0.08 | > 0.7 | > 0.7 | > 0.7 | > 0.7 |

The validity and reliability of questionnaires should be tested before estimating the model. Validity shows the reliability of measuring variables by questions. The data are not reliable without knowing the validity of the mea-

surement tool. If the questions explain the characteristics of the variable well, they have content validity. This test is usually reviewed by experts in each field. Reliability is another characteristic of the measurement tool, which determines that if we give the measurement tool several times in a short period and to a single group of people, the results will be the same. The reliability coefficient indicates how much the measurement tool measures the subject's stable characteristics or his variable and temporary characteristics, and its range is from zero (no correlation) to +1 (complete correlation). Considering that Cronbach's alpha values listed in Table 3 are more than 0.7, therefore, the reliability of the questionnaire is confirmed (Table 3).

Table 3: Questionnaire reliability test

| Variable         | Task characteristics | Technology characteristics | TTF   | Use   | Individual performance | Individualism | Uncertainty avoidance |
|------------------|----------------------|----------------------------|-------|-------|------------------------|---------------|-----------------------|
| Number of items  | 1-4                  | 5-8                        | 9-12  | 13-16 | 17-18                  | 19-21         | 22-24                 |
| Cronbach's alpha | 0.857                | 0.826                      | 0.752 | 0.866 | 0.798                  | 0.727         | 0.791                 |

### 4 Results and Discussion:

The validity of the questionnaire can be tested using confirmatory factor analysis, which is known as construct validity. Confirmatory factor analysis evaluates the relationship between items and constructs. Factor analysis is shown in Figure 2, which in all coefficients is greater than 0.6, which means there is an acceptable correlation between hidden variables and visible variables. Also, the statistical findings for testing the hypotheses using the structural equation model are given in Table 8.

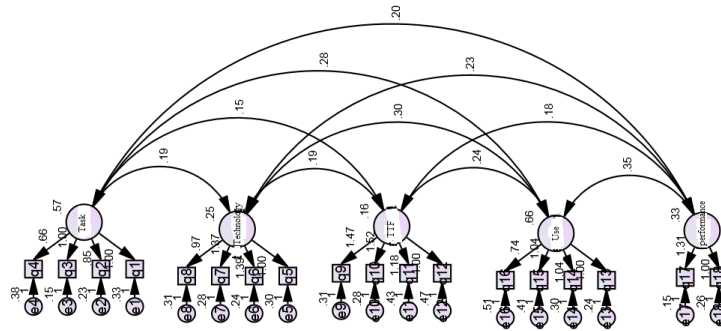


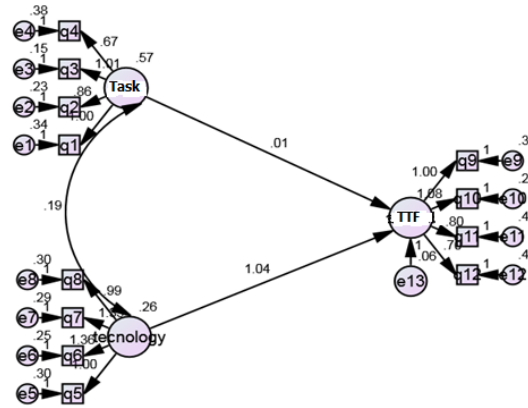
Figure 2: construct validity test

The factor loading between the two variables of Task characteristics and Task technology fit was 0.01 (a factor loading value less than 0.3 indicates a weak relationship, an acceptable value is between 0.3 and 0.6, and a value greater than 0.6 is very favourable). The value of the t statistic is also 0.868, which is smaller than the absolute value of 1.96, and it shows that the observed correlation is not significant and the H1 hypothesis is rejected. Therefore, it can be said with 95% confidence that there is no significant relationship between customer characteristics and satisfaction. Also, the factor loading between the variables of technology characteristics and Task technology fit was 1.04 and the value of the t statistic was 6.46, so there is a significant correlation between the variables, and the H2 hypothesis is confirmed. Therefore, it can be said with 95% confidence that there is a positive and significant relationship between technology characteristics and Task technology fit (Table 4).

Table 4: Test of hypotheses H1 and H2

| Relationships                    | factor loading | T- statistics |
|----------------------------------|----------------|---------------|
| Task characteristics → TTF       | 0.01           | 0.868         |
| Technology characteristics → TTF | 1.04           | 6.46          |

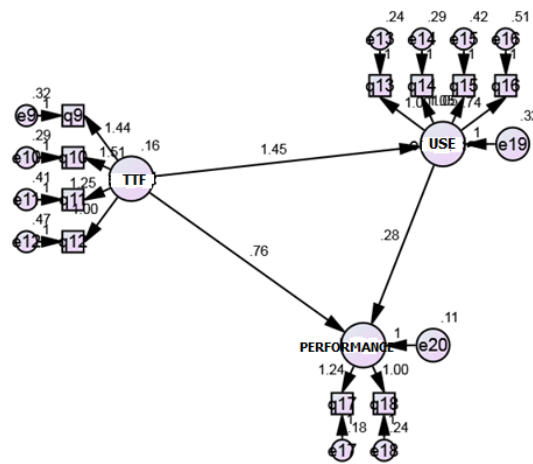
The factor loading between the two variables of Task technology fit and use is 1.45. The value of the t statistic is also 4.99, which is greater than the absolute value of 1.96, and it shows that the observed correlation is significant and the H3 hypothesis is confirmed. Therefore, with 95% confidence, there is a positive and significant relationship



between TTF and Use. The factor loading between the two variables of Task technology fit and Individual performance has been obtained as 0.76. The t-statistic was also obtained as 3.27, which is greater than 1.96 and shows that the correlation is significant, so the H4 hypothesis is confirmed. Therefore, with 95% certainty, there is a positive and significant relationship between TTF and Individual performance. The factor loading between the two variables of Use and Individual performance has been obtained as 0.28. Since this value is less than 0.3, it shows a weak relationship between the two variables. The t statistic is 2.96, but considering the factor loading, the H5 hypothesis is not confirmed. Therefore, with 95% confidence, there is no significant relationship between the amount of use and Individual performance (Table 5).

Table 5: Test of hypotheses H3, H4 and H5

| Relationships                | factor loading | T- statistics |
|------------------------------|----------------|---------------|
| TTF → Use                    | 1.45           | 4.99          |
| TTF → Individual performance | 0.76           | 3.27          |
| Use → Individual performance | 0.28           | 2.96          |



The factor loading between TTF and Use with the moderating role of Individualism is 1.07. The t statistic is 3.82, which means that the correlation between the variables is significant and the H6 hypothesis is confirmed. In addition, the moderating variable reduces the factor loading, so individualism weakens the relationship between TTF and Use. The coefficient of the relationship between TTF and Individual performance with the moderating role of Individualism is 0.7. The t-statistic was also obtained as 3.07, which is greater than 1.96 and the correlation is significant, but considering that the factor loading between two variables with and without a moderator has no significant difference, therefore the H7 hypothesis is rejected. With a confidence level of 95%, Individualism does not moderate the relationship between the TTF and Individual performance. The coefficient of the relationship between Use and Individual performance is 0.37. The t statistic is 3.87, so the correlation between the variables is significant. In addition, the moderator variable has increased the factor loading between Use and Individual performance from 0.28 to 0.37, which confirms the H8 hypothesis. Therefore, with 95% confidence, Individualism incrementally moderates

the relationship between Use and Individual performance (Table 6).

Table 6: Test of hypotheses H6, H7 and H8

| Relationships                | without moderator (Individualism) |               | with moderator (Individualism) |               |
|------------------------------|-----------------------------------|---------------|--------------------------------|---------------|
|                              | factor loading                    | T- statistics | factor loading                 | T- statistics |
| TTF → Use                    | 1.45                              | 4.99          | 1.07                           | 3.82          |
| TTF → Individual performance | 0.76                              | 3.27          | 0.7                            | 3.07          |
| Use → Individual performance | 0.28                              | 2.96          | 0.37                           | 3.87          |

The factor loading of the relationship between TTF and Use with the moderating role of Uncertainty avoidance is 1.31 and the t-statistic is 4.32 showing a significant correlation between the variables. However the factor load with the moderator variable has decreased, so the H9 hypothesis is not confirmed. It can be said with 95% confidence that Uncertainty avoidance moderates the decreasing relationship between TTF and Use. The factor loading between TTF and Individual performance with the moderating role of Uncertainty avoidance is 1.00 and the t-statistic is 4.31, which is a significant correlation. However, the relationship between the variables with and without the moderator variable has a significant difference, so that without the moderator, the factor load is 0.76, and with the moderator variable is 1.00, which confirms the H10 hypothesis. Therefore, with 95% confidence, Uncertainty avoidance increasingly moderates the relationship between TTF and Individual performance. The factor loading between the Use and Individual performance with the moderating role of Uncertainty avoidance is 0.50 (a factor loading value less than 0.3 indicates a weak relationship, an acceptable value is between 0.3 and 0.6 and greater than 6.0 is very desirable). The t statistic is 6.24, which is greater than 1.96 and shows that the correlation between the variables is significant. Also, there is a significant difference in factor loading with and without the moderating variable, so hypothesis H11 is confirmed. It can be said at the 95% confidence level that Uncertainty avoidance increasingly moderates the relationship between Use and Individual performance (Table 7).

Table 7: Test of hypotheses H9, H10 and H11

| Relationships                | without moderator (Individualism) |               | with moderator (Individualism) |               |
|------------------------------|-----------------------------------|---------------|--------------------------------|---------------|
|                              | factor loading                    | T- statistics | factor loading                 | T- statistics |
| TTF → Use                    | 1.45                              | 4.99          | 1.31                           | 4.32          |
| TTF → Individual performance | 0.76                              | 3.27          | 1.00                           | 4.31          |
| Use → Individual performance | 0.28                              | 2.96          | 0.50                           | 6.24          |

In the following, the interpretation of the statistical findings for each hypothesis is presented separately: Hypothesis H1 was not confirmed, in other words, there is no significant relationship between Task characteristics and Task technology fit. This statistical finding means that the technology provides the services expected by the customer, such as ease of access and various features. In other words, customers believe that m- bank of Melli Bank of Iran has not provided their expectations sufficiently. The H2 hypothesis was confirmed. Therefore, there is a positive and significant relationship between technology characteristics and Task technology fit. In other words, customers believe that mobile banks as a new technology can provide various facilities for doing banking affairs of people in less time and security. According to hypothesis H3, there is a significant positive relationship between Task technology fit and Use. In other words, the suitability of the bank's mobile services with the needs of customers and new technology will have a positive effect on its use. In hypothesis H4, there is a significant positive relationship between TTF and Individual performance. In other words, the appropriateness of mobile banks with the needs of people and new technology has a positive effect on the performance of people to perform the services provided. Hypothesis H5 shows that there is a positive and significant relationship between the amount of use and the performance of individuals. In other words, more use of various services offered by m-Bank has a positive effect on the efficiency of use (speed and ease of use). Which emphasizes the theory of learning by doing. The summary of the hypothesis test results is shown in Table 8.

## 5 Conclusion

For any business that provides services or products to customers, attracting customers and retaining them are among the top priorities. M-banking has been one of the most strategic channel launches in retail banking in the last decade. Understanding the customer needs would help to retain and attract more m-banking users; for example, by mitigating the risk and offering more functionalities such as personalized services. In this study, to better understand the application and performance of individual maintenance, a research model was proposed that combines the TTF model with Hofstede's cultural dimensions. Therefore, the impact of culture on the use of m-bank was tested using the data collected by questionnaire and structural equation method. The culture was explained based on the dimensions



Table 8: Summary of hypothesis test results

| hypothesis | Relationships  | factor loading | T- statistics |
|------------|--|----------------|---------------|
| H1         | Task characteristics → TTF                             | 0.01           | 0.868         |
| H2         | Technology characteristics → TTF                       | 1.04           | 6.46          |
| H3         | TTF → Use  | 1.45           | 4.99          |
| H4         | TTF → Individual performance                           | 0.76           | 3.27          |
| H5         | Use → Individual performance                           | 0.28           | 2.96          |
| H6         | TTF → Use (moderator Individualism)                    | 1.07           | 3.82          |
| H7         | TTF → Individual performance (moderator Individualism) | 0.7            | 3.07          |
| H8         | Use → Individual performance (moderator Individualism) | 0.37           | 3.87          |
| H9         | TTF → Use (moderator Uncertainty avoidance)            | 1.31           | 4.32          |
| H10        | TTF → Individual performance (moderator Uncertainty)   | 1.00           | 4.31          |
| H11        | Use → Individual performance (moderator Uncertainty)   | 0.50           | 6.24          |

of Hafsad's culture in acceptance and use of information technology. According to previous studies, Hafsad's culture dimensions (two more important dimensions of avoidance of uncertainty and individualism-collectivism) were tested. The reason for choosing these dimensions was that avoiding uncertainty plays an important role in how people use information technology because accepting information technology includes some stress and risk. On the other hand, for people who are keen on individualism, their social behaviour depends on personal interests, while for people who are keen on the culture of collectivism, their social behaviour depends on group or collective interests.

The findings showed that the Individualism weakens the relationship between TTF and Use. Therefore, customers with the morale of individualism to use the m-bank are less concerned TTF. It seems to be attractive to these customers being distinct and overlooked. Therefore, for these people we need to make a difference through advertising and branding. In addition, the findings showed that Individualism does not moderate the relationship between the TTF and Individual performance. In other words, people's performance in using m-bank is more of a function of TTF, and individual attributes do not play an important role in improving their performance in technology use. Therefore, it is suggested that the main attention should be paid to the customer's needs. Also observed that Individualism incrementally moderates the relationship between Use and Individual performance. According to previous statements, the effect of learning is strong, and the findings showed that it is also influenced by individualism, in other words, focusing on the specific dimensions of a technology will accelerate the learning process. Therefore, it seems that the psychological examination of customers and the provision of special dimensions in services can have a positive impact on their use.

On the other hand, the findings showed that uncertainty avoidance moderates a decreasing relationship between TTF and Use. Although there is a strong relationship between TTF and the amount of bank service use, avoiding uncertainty weakens this relationship. In other words, the high degree of uncertainty about new technology makes customers use it more cautious. Therefore, the bank must take the necessary steps to trust the M-bank. But in contrast, Uncertainty avoidance increasingly moderates the relationship between TTF and Individual performance. It seems that more accuracy to reduce error by customers who avoid uncertainty improves learning by doing work and enhances the relationship between technology and performance. Ultimately similar to the previous analysis can be said for this statistical finding that, Uncertainty avoidance increasingly moderates the relationship between Use and Individual performance.

Finally, the results of this study can provide practical solutions to create and maintain strong relationships with users and providers of banking services. These actions can engage customer loyalty and attract potential adopters to use the technology. Also, the significant relationship between TTF, usage and individual performance shows that the benefits of banking tasks using technology help to understand how m-banking enables users to perform financial services more efficiently and effectively. Therefore, it creates many benefits for people; Like saving time and ease of doing banking transactions, it may retain more m-banking users. In addition, understanding cultural characteristics can be important in the development and management of M-banking solutions. For example, for people who tend to be highly individualistic, service providers should provide personalized services such as bookmarks. For those with a high tendency to avoid uncertainty, service providers should offer solutions that reduce the risk of using m-banking, which can positively affect customers' sense of security and their willingness to adopt.

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