Extended Acceptance Models for Recommender System Adaption, Case of Retail and Banking Service in Iran

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Abstract: Rise of ecommerce, which followed by Internet, has created some complexities in most industries. To overcome the information overload for Internet users, several Recommender Systems (RS) have been developed. RS is a kind of automated and sophisticated decision support system by monitoring the past actions of a group of customers to make a recommendation to individual members of the group to mitigate the problem of vast product and service information. The main issue is adoption and implementation of RS to make it suitable for society and avoid wasting time, energy and cost. Therefore, we compare several models of acceptance and introduce the critical and main parameters of a proper acceptance model for the product and service, which guarantee the result of RS employment. Two independent acceptance models with questionnaire will be derived for the retail and banking service industry, localized for Iran's product and service context as a tool to measure customer's intention to adopt an RS. To verify the validity of the parameters and selected models, two questioners are run. The statistical information and numerical result from LISREL presents the validity of the proposed extended TPB and TAM model for the retail and banking service context, respectively.

Key-Words: Ecommerce, Recommender System, Adoption, Retail, Service, TPB, TAM

1 Introduction

The high-speed growth of internet especially in the field of customer relation and social participation has introduced e-commerce as a powerful tool for purchasing and selling goods and service over internet. The need to transfer data, sell and buy things via encoding information has strengthened the power of ecommerce in most areas [1].

The increase of the burden of information processing, have made many complexities for customers and companies in the context of ecommerce. Companies find it harder to survive due to more and more competition. Also, as information technology is growing in an exponential rate, banking industry like many other industries in many parts of the world are trying to change their traditional methods and adapt in to these new technologies. One of the most fundamental changes of banking industry is the movement from traditional banking to more electronic banking.

In addition, in retail industry the opportunity for customers to choose among more and more products that help to meet their needs is an obstacle. As a result, the need for new marketing strategies such as one-to-one marketing and customer relationship

management (CRM) has been stressed both by researches as well as by practitioners. One solution to realize these strategies is Recommender System (RS) that helps customers to purchase their favorite products by a recommended list of products for each given customer and with a selective service and financial facility that are more appropriate to the customer's situation [2, 3].

The loss of energy and elapsed time are main obstacle points for searching, selecting and purchasing the right product and service. Many people spend over hours on the internet or even in many stores to find the right item or service for their special purpose. They lose energy and even money to find their own favorites.

In a world where competitors are only a click or two away, gaining customers loyalty and informing them best services and products, based on their needs and preferences could be an essential business strategy [4]. Also, by the fast movement of electronic banking, banks become able to offer more services to their customers. But, beside the new facilities, this brings the problem of information overload.

To make the decision process easier and the problem simpler, RS, the recent researchers' focus, is needed. It helps customers find the right products and service in the least time and best price. It has changed many things in ecommerce and solved most problems. Many scientists agree that RS is one answer to one to one marketing and customer relationship management as well [5].This system helps users determine which item or items are more suitable according to their tastes or their needs [6]. Many companies that invest in learning about their customers use RS to operationalize their learning and present custom interfaces that match consumer needs.

Availability of wide range of information in most aspects of retail and financial industries, have made hard situation for companies and financial providers to survive. Most companies wish to meet their customer adequacies by tailoring the right information for the right customer. For this purpose, RS can be used for both online process like in web site and offline process like in many stores. It could pose time saving and loyalty for customers.

After acquiring user preferences, RS provides a personalized solution for each customer in a brief form, and each recommendation will be unique for every customer. It may adopt one of the five following filtering approaches to build right suggestions: collaborative, demographic, utility based, knowledge based and content based [7].

So, a good RS helps the improvement of loyalty by creating a value-added relationship between the company or bank and the customer.

Adoption of RS in different industries guides to identify key factors, which lead customers to engage in using RS beyond the ecommerce sector. A variety of theoretical frameworks has been used to explain consumer behavior in new situation. In addition, each industry needs different models and according to that model and the usage, it requires different contributions.

Adoption of new technology also requires time, energy and cost. Most people invest large amount of money for technologies to be adopted, but make huge loss in result. For this purpose, some models are introduced that are basis for the adoption of technologies. However, for RS adoption in retail and banking industry, two appropriate models is required that may present different situations.

Product and service as the major cores have been studied in this paper. Thus retail as the presentation of product case and banking industry as the example of the service have been studied in this article. This study has been motivated for the fundamental problem, which models and why they are better to explain the RS adoption in retail industry and banking sector and joins the dialog by developing a theory based on the important factors. Therefore, two different theories are indicated for each in this study. It will be extended by illustrating statistical evidence on important factors and show the relations in the theory.

The rest of this paper is organized as follows: RS theoretical frame works, its techniques and the classical adoption models will be mentioned in second part. Two different approach of model selection for both cases of product and service will be discussed in third part. The fourth part discusses about the data gathering and the numerical analysis. It presents some information about questionnaire and the statistical information obtained from analyzing of data. The paper will be concluded in the fifth part.

2 Theoretical frame works

The discussion about RS includes three main sections. The first one is allocated to the definition of RS, its filtering for the second and the third one is the models that can be used for RS adoption.

2.1 Recommender system

Recommender systems have recently gained more attention as a new business intelligence tool for e-commerce business [8]. These systems provide users with appropriate information that meet their preferences or interests from enormous amount of information [9].

Recommender systems are being used by an ever-increasing number of ecommerce sites and retailers to help consumers find products to purchase, or service to use. What started as a novelty has turned into a serious business tool. RS is one of these technologies by identifying particular items that are likely to match each user's tastes or preferences [6]. This system uses product knowledge or either hand-coded knowledge provided by experts or mined knowledge learned from the behavior of consumers to guide consumers through the often-overwhelming task of purchasing products or services they will like [4].

Recommender systems differ from web-search engines by taking advantage of the users' profile. The recommendation can be proposed based on the top overall sellers on a site, on the demographics of

the consumer, or on an analysis of the past behavior of the consumer as a prediction for future behavior. Also these systems are similar to, but also different from, marketing systems and supply-chain decision-support systems. Marketing systems support the marketers in making decisions about how to market products to consumers. By contrast, recommender systems directly interact with consumers, helping them find products or services they will like, or is appropriate for them [10, 11].

2.2 Recommender System techniques

Recommendation techniques have number of possible classification. In the current discussion, the filtering method is considered. The first, which is the most mature, familiar and widely implemented, is collaborative filtering, which considers users as the main factor. Its assumption is based on the users with similar items and generate recommendations based on the inter user comparisons. Thus, recommendation is based on the opinion of customers.

Demographic filtering categorizes users based on their personal attributes and demographic classes. For instance, the recommendation to customer around one area is different from other areas. Utility based is another way of filtering which make suggestions based on the computation of the utility of each object. Knowledge based recommender works base on inferences about a user's needs and preferences [7].

Content based filtering is the one, which is most popular after collaborative filtering. As it can extract from its name, it attempts to suggest base on the similarity between items. As our case focuses on the customers as the main factor, we have chosen collaborative filtering method.

2.3 Classical adoption models

Adoption of the technology by using intention and usage of independent variables is one of the most important focuses of researchers. The attractiveness and power of ecommerce lies in its impact on reshaping traditional value chains in different industries. Consumers have realized the benefits of shopping online, but at the same time have been impeded by factors such as security and privacy concerns, download time and unfamiliarity with the medium. For these purposes, researchers have implemented many models and schemes to overcome some difficulties facing ecommerce

environment. These models are used to describe and find the factors that make customers use the ecommerce innovations. The well known acceptance models are briefly reviewed as follows:

Technology Acceptance Model (TAM) is the most frequently used models in applying the adoption of information system. This model was proposed by Davis in 1989 [12]. It explains the potential user's behavioral intention to accept technology innovation. TAM has two indicators. One is Perceived usefulness which is defined as "the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context", and Perceived ease of use which is explained as "the degree to which the prospective user expects the target system to be free of effort" [12].

Theory of Reasoned Action (TRA) [13] is used in technology adoption researches. According to it, a person's attitude to a behavior and subjective norm affect on one's intention to that behavior and consequently, it affects on one's behavior about an activity. Subjective norm is defined as other people's thought about performing a behavior. As a behavioral model to explain the usage of a new technology, the technology acceptance model (TAM), which explains the user's acceptance for a new technology, has been applied most frequently, especially for the information technology (IT) based technologies in banking sector such as Internet banking, mobile banking and etc.

TAM is an adaptation of the TRA model specifically tailored for modeling user acceptance of information systems (IS). The goal of TAM is to provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified.
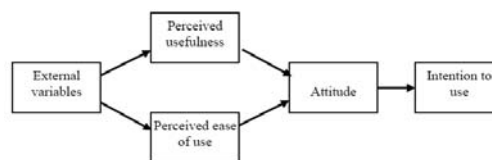

Fig.1, Technology Acceptance Model

TAM was found to be a much simpler, easier to use, and more powerful model of the determinants of user acceptance of IT, especially in banking industry, and several studies were conducted in the field of technology adoption by TAM in banking context. This model was found to satisfactorily

predict an individual's attitude (satisfaction) and behavioral intention as well.

Theory of Planned Behavior (TPB) is the extension of TRA. This model is used in some situations which a person do not have complete control over his behavior. Therefore, TRA has been extended by Perceived behavioral control, which affects on behavioral intention. Perceived behavioral control is directed to two conditions. One is facilitating condition which refers to resources require to use specific activity like time and financial resources, and self-confidence which backs to individual confidence to perform a behavior. Intention is defined as the person's readiness to perform a behavior.

As shown in Fig.2, it is performed by attitude toward behavior, subjective norm and perceived behavioral control. Attitude are made from people's belief and idea about certain thing, norms are made up from normative beliefs and motives to comply and perceived behavioral control is made up from individual beliefs about resources needed to engage in a behavior.

TPB also has a direct link from perceived behavioral control to behavioral construct (Fig.2). It means that two people with the same level of intention, the one with higher confidence in his ability, is more successful in performing that behavior. TPB as said in many articles is the basis of many internet purchasing behaviors [14, 15].
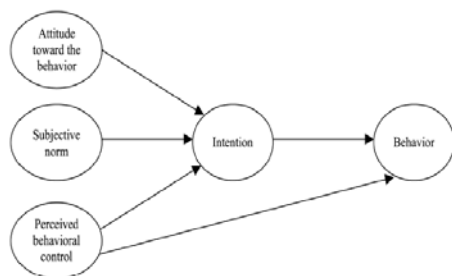

Fig.2, Theory of Planned Behavior

United Theory of Acceptance and Use of Technology (UTAUT) is used to explain user intention to use information system and afterward user behavior toward that. It is explained by its four factors, performance expectancy, effort expectancy, social influence, and facilitating conditions, which have direct connection to use intention. In addition, gender, age, experience, and voluntaries of use are deployed to mediate the impact of these main factors [16].

3 Appropriate Models

Technology has made many changes in retail from early days to recent time. Also, Retailing has always taken advantage of technology. Many articles agree on that the history of retail is the history of technology. Thus, the adoption of technology is the beginning of change [17].

More empirical adoption requires investing a large amount of money and human efforts. The profit over the adoption of new technology especially in retail depends on number of people who use the new technology and the amount of their usage from technology. Therefore, it is logical and advantageous to use the models that are specially designed for adopting technology in retail and measure the acceptance of technology by people. It could help to invest on the adoption correctly.

However, we have been motivated to find the best acceptance model by introducing the parametric comparison method to specify the best adoption model in two known cases. For this purpose, we expand the discussion on retail area by looking on Shahrvand super store and focus on banking industry by providing Tejarat bank. The factors which are important in selecting the models and extending them are described respectively.

3.1 The case study Introduction

Retail is an industry that most people use it every day. The act of buying and selling is analyzed as one of the most effective activities in our society that fulfill the need of people. Store is the last place of item distribution toward consumers. With the tremendous growth in world population, the need of each product in every place, guides societies through establishing chain stores. Chain stores are two or more retail stores run by the same company, bearing the same name, and selling the same kinds of merchandise.

Shahrvand is the well known chain store in Iran. It is pioneer in grocery and home appliances and has been found on 1993 in Tehran (Capital of Iran). Also, e- shopping has been started in 2001 through www.shahrvand online.com.

In addition, Tejarat bank is one of the most important governmental banks in Iran, working specially in the field of trace and commerce. It was established as per the legal bill of the Department of Banks' Affairs approved in September 1979 upon amalgamation of eleven private banks.

Later, on 1979, the Iran-Russia Bank also joined the merger, totaling the paid up capital to 39.1

billion Rials (about 400 million dollar). It contains 2010 branches throughout the country.

3.2 Parametric comparison method

This part contains two parametric comparison methods, and the reasons for the model selection in both Shharvand and Tejarat bank.

3.2.1 The acceptance model for Products

To justify a technology acceptance model for a special case, firstly the model factors and criteria have to be appropriate to deploy in that case. For this purpose, five criteria, which are important for a model to explain RS case in retail, are identified.

1. Encouraging customer which is defined as factors to encourage customers to employ the new device in their shopping behavior.
2. Retail facilities as factors which create comfort in shopping.
3. Ease of system usage is referred to the system and the direction to work.
4. Customer environment, which allocates to items that is in the area where customer lives and affects his choice.
5. Customers' attitude that describe the customer's idea about the system. These are the criteria that the model must have to be useful in research for RS in retail industry.

| Factors	TAM	TRA	TPB	UTAUT
Encouraging customers	*	*	*	
Retail facilities	*		*	*
Ease of system usage			*	*
Customer environment		*	*	*
Attitude of customer		*	*	

Table 1, Comparing factors of the model

As it has indicated in previous sections, TPB has three factors that cause intention toward a behavior. The first one is attitude toward behavior. Idea plays an important role in one's performance toward a job. It is mentioned as one's feeling about using that system. This feeling is some how a basis for using RS. Therefore, this factor fulfills the need of one

factor of comparing table. In addition, TRA is the other model that has attitude.

The second one is subjective norm. Many customers' decision will be affected by other people's opinion. As long as RS is a recent technology, which helps people in their shopping, one factor that has huge effect on people's intention in using RS is regarded to other people's idea and their recommendation for using this recent system. Therefore, subjective norm is an important factor in one's behavior in using RS in shopping. Thus, encouraging customers is related to subjective norms, which TRA also has this item. TAM's factor, Perceived usefulness, is the next factor that fulfills this need.

Perceived behavioral control is the third factor that affects people's choice in shopping. This concept is defined as one's perception of the difficulty of performing a behavior. In addition, it contains how a system works. The factors like time, price and traffic are important in performing a shopping behavior. Perception of these resources makes purchasing easier or harder, and plays an important role in choosing a technology. Therefore, facilities in retail and ease of system usage refer to this factor.

TAM's Perceived ease of use and UTAUT's facility condition fulfill this requirement. Also, perceived behavioral control explains environmental conditions and TPB has the last criteria (table 1). UTAUT has also the social influence factor which affect environmental factors.
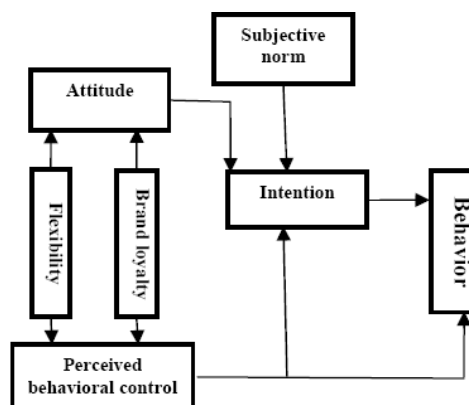
Fig.3, Extended TPB Model

The TPB model which has been selected to explain the RS case in retail industry is not the final and completed one. For this reason, a focus group has been conducted including Shahrvand loyal customers and gathered their ideas about RS. As long as this case is related to people's culture and

their habit in shopping, their opinions help us to extend TPB model.

The first additional factor is flexibility. One's flexibility in choosing new method of purchasing is important in RS deployment. The rate of acceptance among flexible people is more than nonflexible ones.

The second one is loyalty to brand. In the focus group, which has been conducted, most customers mentioned that the name of "Shahrvand" is the reason that they accept trying new methods. They are Shahrvand loyal customers and their confidence about Shahrvand is one of the main reasons for new technology employment. Therefore, "Flexibility" and "Brand loyalty" have been added (Fig.3) as the factors that may affect attitude toward behavior and Perceived behavioral control.

3.2.2 The acceptance model for Services

As a behavioral model to explain the usage of a new technology, the technology acceptance model (TAM), which explains the user's acceptance for a new technology, has been applied most frequently, especially for the bank based technologies. Thus we try to use TAM and its related models as the model that explain the user's behavior in a banking RS.

However, the prior studies on TAM, its antecedents and its extended model is reviewed. TAM, introduced by Davis, is an adaptation of the TRA (theory of reasoned action) model specifically tailored for modeling user acceptance of IS [12]. It adapted the TRA model to the particular domain of user acceptance of IT, replacing the TRA model's attitudinal determinants with two beliefs: perceived usefulness and perceived ease of use.

TAM was found to be a much simpler, easier to use, and more powerful model of the determinants of user acceptance of IT, while both models were found to satisfactorily predict an individual's attitude and behavioral intention.

Perceived usefulness is defined as the prospective user's subjective probability that using a specific IS will increase his/her job performance within an organizational context. Perceived ease of use refers to the degree to which the prospective user expects the target IS to be free of effort [18].

Moon and Kim [19], proposed an intrinsic factor 'perceived playfulness' which can be generally defined as a situational characteristic of the interaction between an individual and the situation as a new factor to affect a user's attitude.

Although there are a variety of factors which have been proposed as the antecedents of TAM, personal innovativeness, more important for the usage of IT, has been used. It represents the degree to which an individual is willing to try out any new IT. These two factors are known to affect perceived ease of use and perceived usefulness in TAM [20]. Academic and Tejarat Bank experts' have accepted the proposed model.

Based on the literature and detail study of prior banking adoption researches in developed countries, and with the help of Tejarat Bank experts, the suitable final research model based on original TAM, its extended model and antecedents, was built to guide our survey's. The highlighted reasons for selecting this model are as follow:

1- It has been found that TAM's ability to explain attitude toward using an information system in banking context is better than other model's.

2- TAM has received considerable empirical support [12].

3- Two original factors of the TAM model (perceived ease of use and perceived usefulness) are easy to understand and can be manipulated in IS design and implementation.

4- From Tejarat Bank experts' opinion, Personality, Personal innovativeness and Perceived playfulness as the external variables added to the original TAM (Fig.4), which can describe better Iranian bank customer's behavior in a banking RS adoption.
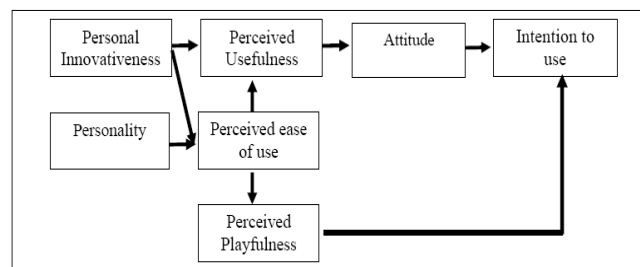

Fig.4, Extended TAM Model

4 Data gathering and simulation

In this part, the empirical data is provided from questionnaire. Also the analyzed data which have been done by LISREL 8.50 for Shahrvand and 8.53 for Tejarat [21] is presented.

4.1. Questionnaire

Two questionnaires have been designed for the retail and bank industry which is described in the following order.

4.1.1 The questionnaire for shahrvand

According to the factors related to the TPB model and the questionnaires that have used TPB in their research [22, 23, and 24], a questionnaire has been designed. For each factor of proposed TPB model, some questions (20 for all) have been considered [Appendix A]. Four Shahrvand branches in different areas of Tehran have been allocated for distributing the questionnaires. 392 questionnaires have been gathered through these four branches in eight days. For the accuracy of the results, 100% of respondents were women. It is known that women are more involved in the shopping matters in Iran.

4.1.2 The questionnaire for Tejarat

Based on TAM model a separate questionnaire was designed for Tejarat bank. The questionnaire was originally based on research questions and emerged of the main research model [Appendix B].One question was assigned for each indicator of a construct. Besides, we adjusted the subsequence based on the kind of questions. Finally we had 37 questions in our questionnaire for Tejarat bank. For the field work, we had chosen 16 branches of Tejarat bank, and they were distributed among branches. The total number of collected questionnaire was 381.

4.2 Statistical information

In this part the statistical information from the data gathered is presented   .

4.2.1 Retail statistical information

The statistical data which have been extracted from the raw data is presented in the following order.

Flexibility: More than 90 % of respondents would like to have diversity in shopping and try new items. Approximately 60% of respondents are interested to try different brands and 19% of them are interested to keep their shopping records on the same brand, but most customers like the diversity in shopping store. Theses results are related to the portion of flexibility in terms of its influence on the other factors in TPB model.

Subjective norm: Advice from friends affects 50% respondents' choice in shopping, but about 30% of respondents have average idea in the influence of advertisement and sales people's advice on their choice in purchasing. Theses characters present the

subjective norm's effect on the other variables of TPB.

Behavior: More than half of the respondents believe that RS affects their choice in shopping; they also highly agree with the effect of artificial knowledge on their choice in shopping. These results indicate the behavior of the respondents toward using RS.

Attitude toward behavior: Shopping is an entertainment for 44% of customers and they highly agree that using RS is logical in shopping. About 44% of respondents think that shopping by internet is interesting. These characters present the influence of respondents' attitude toward shopping by RS in terms of other TPB variables.

Brand loyalty: Advertisements from Shahrvand do have influence on 40% of respondents and most of respondents are confident about Shahrvand. These factors represent the influence of brand loyalty on the other factors of TPB model in shopping situations.

Perceived behavioral control: Unity in Shahrvand (every thing in one place) is important for respondents. The ease of RS usage may encourage respondents to employ it. About 80% of the respondents would like to have facility in shopping. Time is important in shopping for 90% of respondents. About 95% of the respondents highly agree on the concept that price is important in the shopping. Traffic jam is important for the most of the respondents. Economical situation affects most of the respondents' shopping. These characters present the influence of perceived behavioral control on the factors of TPB in term of retail [Appendix A].

Fig.5 presents the standardized value of the extended TPB which is used to make comparison among the strength of factors. For instance, the influence of flexibility on perceived behavioral control (0.37) is more than the influence of flexibility on subjective norm (0.11).So the flexibility (-0.03) has the least influence on attitude toward behavior.

Fig.6 illustrates the t-value between variables. The red values indicate that they is not meaningful, while the t-value is less than two. It can be concluded (Fig.6) that customer's flexibility in shopping does not affect her attitude toward their behavior in using RS in their purchasing. Many consumers would like to have diversity in shopping or even try new brand of the same product, but these characteristics do not have influence on their attitude in using RS in shopping.
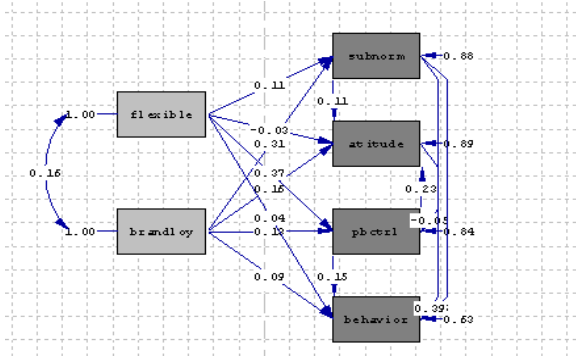
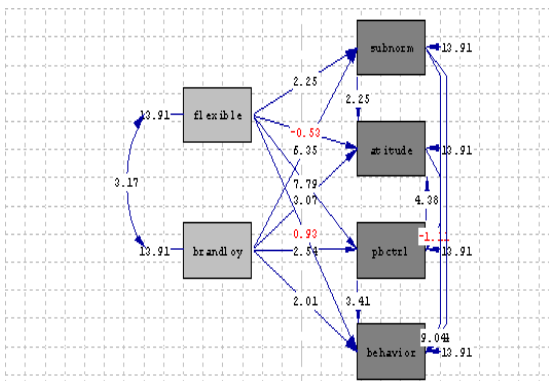**Fig. 5, Standardized Value of the extended TPB**

Fig.6, T value of extended TPB

Empirical study also illustrates that flexibility does not affect behavior in retail case. Although the flexible customer may not tend to use RS in shopping, but flexibility affects indirectly behavior through other factors like subjective norm and perceived behavioral control.

Subjective norm does not have influence on perceived behavioral control directly. It means that advertisements and friends' advice does not affect perceived behavioral control in shopping.

As the strength of attitude on behavior is heavier than others', RS as the recent technology should be designed in the manner that fulfills the desire of the customer in relation to his attitude toward using RS. In addition, flexible customers and the one's who are loyal to some brands, tend to accept RS more than other ones.

4.2.2 Banking statistical information
In this section we discuss on data gathered from the questionnaires, for Tejarat bank. As well as the Shahrvand case, the structural equation modeling for this case was performed by LISREL software (version 8.53). Fig.7 talks about the standardized value of the constructs and figure 7 illustrates the model constructs with their t-values.

In overall, the respondents agree on using RS in banking industry, and they believe RS will be useful to guide them through suitable banking activities. Fig.7 presents the standardized value of the extended TAM which is used to make comparison among the strength of factors. For instance, the influence of personal innovativeness on perceived ease of use (0.65) is more than the influence of personality on perceived ease of use (0.27). Also, personal innovativeness (-0.07) has the least influence on perceived usefulness.
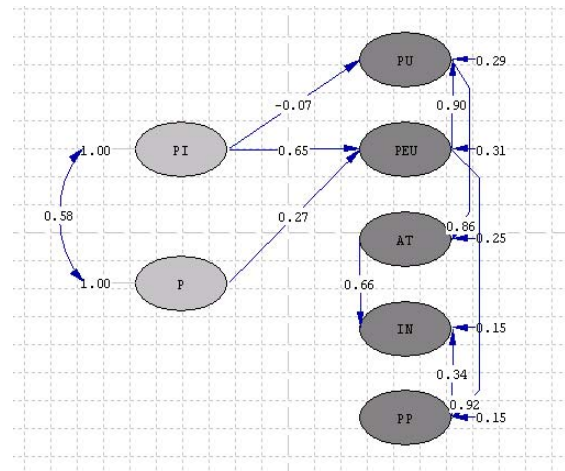

Fig. 7, Standardized value of the model

Perceived usefulness: A proof for the above claim is the belief of 94% of the whole respondents on the recommender system's usage. These people believe that a banking RS employment may affect on increasing the overall performance of their banking activities.

Perceived ease of use: 93% believe that, using such a system will be free of effort.

Personal innovativeness: According to the answer of almost 90%, of the whole respondents, they are very eager to try out new IT services offered. This result explains also the personality character of the customers toward trying out new innovations.

As it can be seen in Fig.8, the constructs of the model and their relations have been supported, except one, which was the impact of personal innovativeness on perceived usefulness. The t-value for this relation was less than two. Therefore, being hesitant for trying new things does not affect on perceived usefulness.

Finally, the empirical data indicate that, Tejarat bank customers are very eager to try a new RS system that could inform them some recommendations due to their financial tasks.
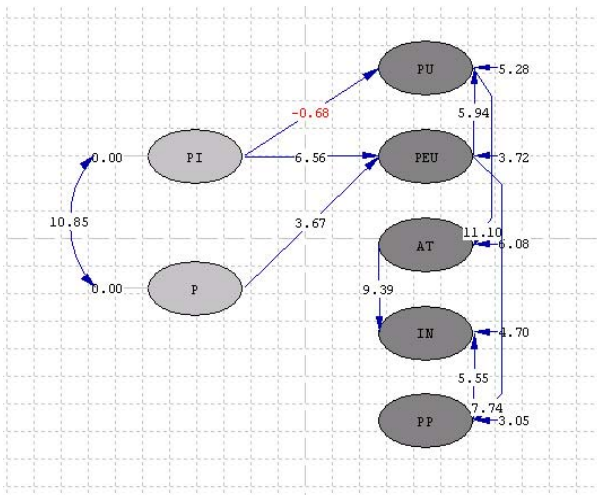
Fig.8, T value of the model

5 Conclusions

In this research the models for RS acceptance in retail and banking industry have been described. Concerning the retail important factors and models' variables, TPB has been nominated as the most appropriate model. The TPB extended model presented with two added factors as flexibility and brand loyalty by conducting focus group among loyal customers of Shahrvand, the retail case study in this research. After designing questionnaire and gathering data from shahrvand customers, some characteristics of the customers have been discovered as the source of conclusion. Analyzing of data by LISREL and SPSS has been concluded that flexibility does not affect attitude directly and it has influence on subjective norm and perceived behavioral control, but brand loyalty is related to all three factors of TPB.

The main purpose of our study in Tejarat bank, the service case study in this research, was to refine and propose a model, based on technology acceptance model (TAM), in order to determine and investigate on factors that influence a banking recommender system adoption. According to the statistics and results obtained from the empirical data (questioner running) all hypotheses were supported and only the first hypothesis was rejected. So, the proposed extended TAM model could be defined as a reference for future researches in the field of adopting a recommender system for banking sector in Iran.

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Appendix. A, Questionnaire for Shahrvand

Part 1: Personal information:

1. Gender:　　　　Male\ Female
2. Age

3. Marital statue:　　Married\ Single
4. Education: Diploma and below\BS\MS\ PHD
5. Income (in Tomans): 300 below\ 300-600\ 600-900\ Over 900
6. Years of shopping from Shahrvand: Less than a year\ 1-2 Year\ 2-5 Year\ Over than 5 Years
7. Times purchasing from Shahrvand: 1-2 times in months\ 3-4 times in month\ Over 4 times in month
8. More Purchase products:Grocery\ Home\ Clothes\ Beef

Part 2:

Please make a point base on your opinion:
1. Highly agree　2.Agree 3. Average 4.Disagree
　　5. Highly disagree

Subjective norm:

1. My friends' recommendation affects my choice in shopping.
2. Advertisements affect my choice in shopping.
3. Recommendation from salespeople affects my choice in shopping.

Attitude toward behavior:

4. Shopping is an entertainment for me.
5. I think using RS in shopping is logical.
6. Shopping from internet is interesting for me.

Perceived behavioral control:

7. The uniting of the place of shopping is important for me.
8. Easiness of system usage is important for me.
9. Having facility in shopping is important for me.
10. Time is important in my purchases.
11. Price is important in my shopping.
12. Traffic is important in my shopping.
13. Economical situations are important in my shopping.

Behavior:

14. RS affects my choice in shopping.
15. I like to use RS in my shopping.

Flexibility:

16. I like to have variety in shopping.
17. I always go for the special brand in purchasing.
18. Variety in shopping choices makes me complex.

Brand loyalty:

19. Advertisements from Sharvand affect my choice in shopping.

20. I am confident about Shahrvand.

Appendix B. Questionnaire for Tejarat bank

Part 1.

Sex: Male/Female

Age Group: 18-25 / 26-40 / 41-60 / over 61

Occupation: Working at home/ Manufacturing / Retailing / Private Company / Student / Bank /Financial institution Retired / Student / Other

Education: High school no degree / High school degree / University Degree / Master degree / Doctorate degree

Access to Internet: No / from home / from work

Hours of using Internet per week: less than 5 / Between 5 and 15 / more than 15

Part 2.

1. I use more than one bank to accomplish my banking tasks? Yes / No
2. Which one / ones do you use in use banking activities? ATM / Telephone Bank / Internet

Perceived usefulness

3. Using a banking recommender system would improve my performance in conducting banking tasks.
4. Using a banking recommender system would help me to have a better selection among different available choices.
5. Using the banking recommender system would enable me to accomplish my banking tasks more quickly.
6. Using this recommender system will have critical role in supporting my banking activities.
7. By Using a banking recommender system, I would not lose opportunities.
8. Using a banking recommender system would help me to have access to updated information regard banking activities and services.
9. Using a banking recommender system would help me to have access to more valuable information, in time.
10. Overall, I find the use banking recommender system useful.

Perceived ease of use

11. I find my interaction with the use of the banking recommender system clear and understandable.
12. Using a banking recommender system would make it easier for me to choose an appropriate banking service.
13. I think email is the easiest and most convenient way of having recommendations from this system.
14. I think SMS is the easiest and most convenient way of having recommendations from this system.
15. I think Fax message is the easiest and most convenient way of having recommendations from this system.
16. I think direct phone call from the bank is the easiest and most convenient way of having recommendations from this system.
17. I prefer to receive recommendations from this system, when I enter my credit card to and ATM machine and during transaction process.
18. I prefer to receive recommendations from this system, when I entered my account at the bank website.
19. Overall, I found using this system free of effort.

Attitude

20. I would feel that using banking recommender system would be pleasant.
21. Using banking recommender system is a good idea.
22. In my opinion, all banks must use a banking recommender system.

23. In my view, using banking recommender system is a wise idea.

Intention to use

24. I would see myself using the banking recommender system for handling my banking transactions.
25. I will frequently use this banking recommender system in the future.
26. I will strongly recommend others to use systems recommendations.

Perceived playfulness

27. As soon as I receive a suggestion from the system in any situation, I will be satisfied and try using it as soon as possible.
28. I believe the system recommendations are the best, and there is no need to investigate on them.
29. I only prefer to have recommendations from this system, and I will ignore other recommendations from other parties.

Personal innovativeness

30. If I heard about a new IT, I would like to experiment with it.
31. Among my peers, I am usually the first to try out new IT.
32. In general, I am hesitant try out new IT.
33. I like to experiment with new IT.

Personality

34. According to my personality, The opinions of my family members regard this system has a great impact on me.
35. According to my personality, the experts opinion regard this system is very important for me.
36. According to my personality, I will not be the first users of this system. And I will stay until it, becomes very popular.

37. Finally I am eager to receive recommendations from the system, in the following fields?

Loans / investment / saving accounts / current accounts / e- banking / credit cards / debit cards / insurance / retirement facilities / internet banking / all the fields