

Review Paper

**Comparison and ranking between the factors of effect on customers using of electronic banking services in governmental and private banks of Kermanshah with using Pikkarainen Model  
(Case study: Sepah, Maskan, Ansar and Saman)**

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**Abstract**

According to the trend of using electronic banking service due to its unique features and presence of Bank for funds transfers, electronic banking as an integral part of electronic commerce has a major role in its implementation, on the other hand, studies show that customer satisfaction on customer retention consequently are effective on profitability and success of organizations in the arena of competition. This study is comparative and ranking factor affecting the adoption of electronic banking services by customers in the public and private banks in Kermanshah province by using Pikkarainen model. This research has used a questionnaire simply randomly distributed to 900 customers of Sepah, Maskan, Ansar and Saman Banks. Validity of the questionnaire was confirmed by a number of university professors. Their reliability was obtained with Cronbach's alpha coefficient questionnaire; 0.865 & 0.759 for governmental and private banks. The method of this study is descriptive-survey research. Study period is the second half of 2011. T-test, Regression and Friedman test were employed to test hypotheses and to rate factors influencing adoption of E-banking in customers viewpoints. Results support hypotheses (1-6) relating the level of six factors effects (including usefulness, easy to use, enjoyment, providing information, security and confidentiality, and quality of internet communication) on customer's use of E-banking services provided by Sepah, Maskan, Ansar and Saman Banks. The seventh hypothesis that indicates ranking of providing information Factors, has the highest rank From the perspective of customers in Public Banks, Also enjoyment has the highest rank From the perspective of customers in Private Banks.

**Keywords:** sextuple factors (Pikkarainen model); customer satisfaction; E-banking

**1. Introduction**

With the development of the international economy and competitive markets, banks have also been affected industry is rapidly changing conditions nowadays. Main force in this environment is technology, thereby breaking down legal, geography and industry barriers have created new products and services. A lot of people around the world access to Internet Universal Network and the expansion of electronic communications between individuals and various organizations through the virtual world have provided a suitable ground for the establishment of trade and economic exchanges. Ecommerce is the major achievement of using ICT in the economic field. Using this technology leads to the development of trade, economic factors facilitating communication, providing activities for small and medium-sized enterprises, improving productivity, reducing costs and saving time. Information and communication technology is providing the possibility of increasing the capacity and competitiveness of enterprises and also lead to the creation of new jobs. Due to expansion of this technology e-commerce volume in the world is increasing day by day. According to published research, it is

anticipated by Foster Institute during 2009-2013 that the average annual volume of e-commerce will increase more than 58 percent and from 2293 billion in 2009 will reach to more than 12,873 billion in 2013. According to above, one of the realization and development electronic commerce tools is electronic banking system consistent with the global financial and monetary system operation and it facilitates activities related to e-commerce. In fact, the implementation of e-commerce needs to fulfill the electronic banks. Therefore, using electronic systems in financial and credit institutions in the world was expanded rapidly and number of users of electronic banking services is growing rapidly (Farzi Khaladi, 2010). E-banking includes all the electronic channels that customers are using that to access their accounts and transfer funds between accounts and pay their bills. These channels are including the Internet, mobile phone, digital TV and ATM (Logie et al, 2003, 57).[This study also emphasis on electronic banking through the Internet. Growing attention in large banks in developed countries and developing countries (including Iran) provides banking services through electronic channels and the development of virtual banks and financial institutions. Also there has been an increase of competition in the banking industry that made other banks try to develop different approaches to electronic banking. Since Iran's membership has been highlighted in the World Trade we are

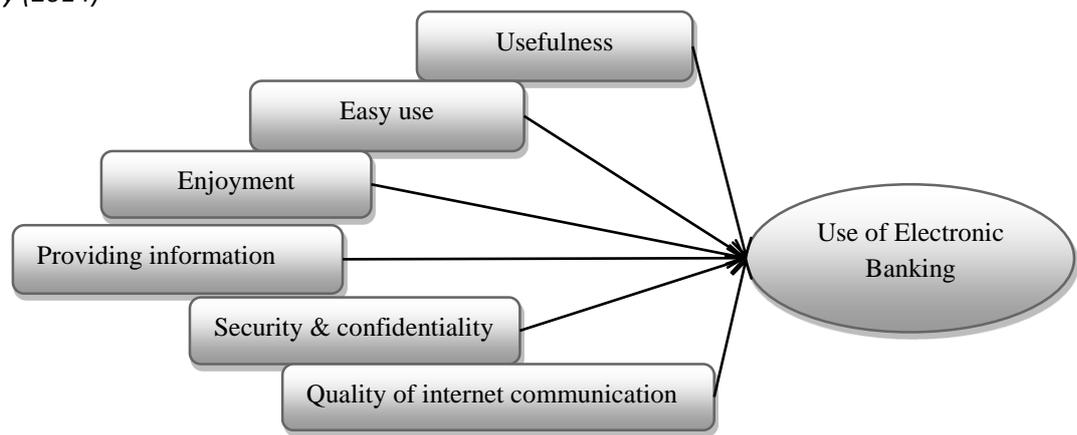
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witnessing the entry of foreign competitors into the financial market of Iran; Iranian banks are also required to develop their services in line with technological changes. But before offering any new service, economic researches on the aforementioned services should be done so the services provided by them lead to customers satisfaction. We should consider that Iran is a young country in field of electronic banking and to achieve an acceptable level in the field of electronic banking there is a long road ahead. Because of traditional banking and insufficient methods in the country banks, to provide a new service, preparation of infrastructure for the banks is one of necessities that fortunately, is concerned by the authorities. Wide activities are done in the banking system and services, which will be offered to this system. The reality is that in order to remain in competitive market and having part of the market in long-term, loyal customers are required. This important issue prerequisites can not be achieved except by earning their trust. Iranian banks today have recognized that a high level of customer satisfaction will be essential for their sustainability and this could be achieved when the customer satisfaction by new upgraded services is measured and also the type of banking service that is able to attract customer more than the other competes is recognized.]. Unfortunately, despite the importance of this issue no research has been done yet. Identifying factors that may cause the customer use a new technology such as electronic banking services is important because Recognition of these factors helps bankers to apply their marketing strategies to promote new forms of electronic banking systems (SeyedJavadin and Yazdani, 2005). Therefore with purpose of identifying the factors affecting on customers using the internet banking services, the lack of adequate studies and research in this area is considered. This study investigates the application of Pikkarainen model in the field of electronic banking in the public and private banks (Sepah, Maskan and Ansar, Saman) of Kermanshah Province. According to this model the effective factors for acceptance of e-banking are included usefulness, ease of use, Enjoying information in the field of e-banking, security and confidentiality, quality of internet connection are presented within seven hypotheses.

### **1.1. Pikkarainen Model**

Pikkarainen model examines the factors that influence the Internet use of services or goods. This model was introduced in 2004 by Pikkarainen and colleagues. The researchers

announced six effective factors on Internet transactions of goods and services (usefulness, ease of use, Enjoyment, Providing information, security and confidentiality, Internet connection quality.) so this model is designed and tested for acceptance of electronic banking for this reason we can say that this model is derived from the Technology Acceptance Model Davis. According to the model acceptance, behavioral technology toward using an information is determined by intention using the particular system and intends to use, this is determined by the amount of usefulness the desired technology from user perspective and ease of using the system by him/her. Information systems researchers are consensus on the validity of this model in predicting the adoption of information technologies by individuals. Individual perceptions about ease of using refers to the degree that how a person learn to use and work with a particular system which requires little mental effort. A large amount of researches have been done in the field of information systems that the perceived easiness has an effect on the using intention and this effect that it may directly or indirectly arise the impact of perceived usefulness perception of individual about the usefulness of information technology, it will make a person imagine that using a particular technology would enhance his/her job performance in the organization, or helps him/her to do better in work, it can help by reducing the time to perform the task or providing information would be on time. Research conducted show that perceived usefulness has a very important impact on using intention. Actually the main reason people use the Internet banking systems is that they know usefulness of these systems to do their banking transactions. These two factors affect a person's attitude toward using a particular system and the attitudes effect on the individual behavioral intention to use the system and willingness to use the system. Attitudes toward the individual evaluation system are the benefits of using an information system and the behavioral intention or intent of users is the rate of probability of using system by person. It should be noted that the dependent variable in this study is the use of internet banking by customers. Factors that influence on adoption of various technologies and information technology are different depending on the desired technology of studied users and the existing situation. As mentioned before in this study, six factors and influence on the adoption of e-banking are shown in model 1 (Merati Fashi et al, 2012).



Model1. The technology acceptance model Pikkarainen et al (2004)

## 2. Research literature

Merati Fashi (2012) considered the comparative and ranking factors influencing the adoption of electronic banking services by customers, in both private and public banks of Kermanshah Province by using Pikkarainen model (Study banks: Meli, Mellat and Pasargad Persian). Results confirmed amount of influence of six factors (usefulness, ease of use, Enjoyment, providing information, security and confidentiality, quality of Internet connection) in the use of customers from electronic banking services in public and private banks. The researcher also found that the most important factor in the adoption of e-banking services from the customer's perspective is providing information. Taqavifard et al (2012) examined the factors affecting on using of internet banking services by customers (Case Study: Mellat Bank). Results showed that the variables of trust, ease of use, and earned benefit has high impact on attitudes of persons in performing desired behavior (use of internet banking) and on the other hand, these factors have an important role on the individual behavioral intention to use internet banking services directly attitude and subjective norms have a direct and positive impact in the individual's intention to use Internet banking services. Trust factor, as one of the primary factors influenced strengthening the individual's intention to perform a particular behavior. Saeidnia and Abdullahi (2011) studied the factors affecting on customer trust to pay online banking. Results showed there is a significant and positive correlation between the variables of security and privacy, usability and reputation (independent variables) with the variable of trust in providers banking services websites. In addition, there was a direct relationship between trust and commitment of recipients of this type of service, finally it is shown that trust can be considered as mediator variable for increased emotional commitment of service recipients in the field of online banking. Farzi Khaledi (2010) investigated the factors affecting on intention of using of consumers from electronic banking services among Parsian Bank customers (Case Study, West Country branches). Results showed a significant relationship between usefulness, ease of use, perceived enjoyment, providing information security and confidentiality and quality of the Internet connection. Also, the above variables have important influence on acceptance of

customers, and use of internet banking technology by them. The researchers also found that the most important factor among the six factors the factor, providing information, and the factor of security and confidentiality. Seifi Sarbanqoly (2008) investigated the effects of using electronic banking on the level of customer satisfaction banking services in Mellat bank. The results showed that the growth of e-banking programs could affect the quality improvement of banking services at a branch of Mellat bank in Tehran, Thus, except for accuracy factor, the other factors such as speed, communication and information delivery, trusted, flexibility, ease of use, safety, cost, reliability, ease of access have a significant effect on the quality of banking services which leads to customer satisfaction. Also, there is a positive relationship between growth electronic banking programs and customer satisfaction meanwhile factors of cost, safety, reliability and trust are the most important factors on the level of customer satisfaction. In addition, the relationship between electronic banking programs growth and creation of using electronic banking culture in the consumer of Tehran branches of Bank Mellat was confirmed. Akbari et al (2012) investigated the factors affecting on use of consumer from electronic banking services in Iran (Case Study: Kermanshah Eghtesad Novin Bank). The results of the six hypotheses (usefulness, ease of use, Enjoyment, providing information security and confidentiality, quality of Internet connection) indicate a positive relationship between the amounts of customers using of electronic banking services of Eghtesad Novin Bank. The results showed that the most important factor in the adoption of e-banking services from the customer's perspective is the providing information factor. Alam and Sony (2012) investigated the customer satisfaction of online banking, and the theory of big efforts: analytical study with special reference to selected customers of the city. The results showed that there were significant differences in level of satisfaction of internet banking users. Internet Banking User Satisfaction is related to reliability, accountability, security, ease of use, and ... accessibility. Also researchers found that in which sector of banks should make much effort to increase overall customer satisfaction. Ma (2012) investigated the affecting factors on customer satisfaction in the online banking sector in China. The results indicate that website quality has direct and significant effect on customer satisfaction in

online banking sector. In addition, the authors found that some factors have a positive relationship with customer satisfaction. In the end it was observed that the efficiency, interaction ability, information security, ease of use and the context and content of the main factors influence on customer satisfaction in the online banking sector. Gilani et al (2011) studied and identified the various factors influencing consumer behavior in using e-banking services (SABA) Meli Bank system of Ardebil in Iran. The results showed that the factors (Perceived ease, Perceived usefulness, Safety Perceptions) have different effects on behavioral consumer position toward using Internet banking services. Sadeghi and Hadi Zadeh (2010) investigated the factors affecting on customer satisfaction (CSFS) of online banking services in Iran. The results indicate that there is a significant difference between men and women in the seven factors of model (ease, availability, accuracy, security, utility, bank image, and website design). In general, the researchers found Originality / value determinants of customer perception of quality in e-banking services. Sadeghi and Farokhian (2010) investigated the adoption model of electronic banking (EBAM) in Iran. This study investigated the most important factors in electronic banking service in an Islamic country and customer evaluation in relation to the electronic banking service. Authors took a validation measurement model to evaluate customer satisfaction, from quality of electronic banking services which vary on different models and theories about quality of service such as Technology Acceptance Model (TAM), Theory of reasoned action (TRA) and Theory of Planned Behavior (TPB). These studies introduce a model of seven factors with the following dimensions: ease, accessibility, accuracy, security, utility, bank image and website design. Statistics show that some of these factors are significantly different between men and women. These dimensions are the determinants of customer service quality perception of electronic banking. Samer Ali and Bharovij (2010) investigated the approach of deciding factor in e-banking in India: perspectives of extra value for the customer. The results showed that significant factors in this regard include: Ease of use of e-banking and customer reluctance to change the relationship and trust banking, computer costs, availability of Internet and security concerns. Yoon (2010) investigated the customer satisfaction of online banking in China, experienced and less experienced customers groups. The results show that design, speed, security, content of information, and customer support services have a significant effect on customer satisfaction in the experienced or inexperienced group, but ease of use has no significant influence on customer satisfaction in these groups. Also the results of the customer experience, indicate that the project impact, speed, security and information content on customer

#### Results of testing hypothesize

satisfaction were significantly higher in experienced group whereas the effect of customer support service on customer satisfaction was significantly higher in the inexperienced group.

**Hypothesis1:** usefulness as one of the factors affecting the adoption of e-banking is significantly different among customers of public and private banks of Kermanshah province.

**Hypothesis2:** ease of use as one of the factors affecting the adoption of electronic banking is significantly different among customers of public and private banks of Kermanshah province.

**Hypothesis3:** Enjoyment as one of the factors affecting the adoption of e-banking is significantly different among customers of public and private banks of Kermanshah province.

**Hypothesis4:** Providing information as one of the factors affecting the adoption of e-banking is significantly different among customers of public and private banks of Kermanshah province.

**Hypothesis5:** security (confidentiality) as one of the factors affecting the adoption of e-banking is significantly different among customers of public and private banks of Kermanshah province.

**Hypothesis6:** The quality of the Internet connection as one of the factors affecting the adoption of e-banking is significantly different among customers of public and private banks of Kermanshah province.

**Hypothesis7:** The effect of each of the six elements on e-banking is significantly different among customers of public and private banks of Kermanshah province.

### 3. Research Method

Present study was descriptive - survey which has applied research types. For literature section library method and for testing the hypothesis a questionnaire, which was designed with Likert scale was used. To determine the validity and reliability of the questionnaire Cronbach's alpha test and comments from teachers and experts were used. For public banks and private banks (0.865 and 0.759) is obtained respectively. For measuring the existence amount of difference and amount of effects of factors, and the ranking, according to level of measured variables (Independent Samples Test) T-Test and regression test and Friedman test with a confidence level of 0.95 respectively were used, and  $P - value < 0.05$ . Hypothesis ( $H_1$ ) is confirmed and ( $H_0$ ) is rejected. The statistical population of the study all of bank customers were included, for public banks (Sepah and Maskan) Private Bank (Ansar and Saman) in Kermanshah. The statistical population includes 900 customers of public and private banks, which were selected by simple random sampling

Hypothesis	Independent-Sample T-Test Statistics					Test Value = 3							Hypothesis Verification
	Bank of	N	Mean	Std. Deviation	Std. Error Mean	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
											Lower	Upper	
1	Public	450	17.12	3.239	0.153	22.289	898	0.000	4.500	0.202	4.104	4.896	H <sub>1</sub>
	Private	450	12.62	2.802	0.132	22.289	879.830	0.000	4.500	0.202	4.104	4.896	
2	Public	450	25.20	5.206	0.245	17.395	898	0.000	5.540	0.318	4.915	6.165	H <sub>1</sub>
	Private	450	19.33	4.306	0.203	17.395	867.529	0.000	5.540	0.318	4.915	6.165	
3	Public	450	17.18	2.892	0.136	26.923	898	0.000	4.960	0.184	4.598	5.322	H <sub>1</sub>
	Private	450	12.22	2.628	0.124	26.923	889.877	0.000	4.960	0.184	4.598	5.322	
4	Public	450	11.14	2.997	0.141	-4.599	898	0.000	-0.840	0.183	-1.189	-0.482	H <sub>1</sub>
	Private	450	11.98	2.456	0.116	-4.599	864.676	0.000	-0.840	0.183	-1.189	-0.482	
5	Public	450	12.04	3.708	0.175	-22.978	898	0.000	-5.120	0.223	-5.557	-4.683	H <sub>1</sub>
	Private	450	17.16	2.931	0.138	-22.978	852.604	0.000	-5.120	0.223	-5.557	-4.683	
6	Public	450	26.52	2.596	0.264	-9.899	898	0.000	-3.260	0.329	-3.906	-2.614	H <sub>1</sub>
	Private	450	29.78	4.182	0.197	-9.899	831.274	0.000	-3.260	0.329	-3.906	-2.614	

**Table1.** Test Result of Independent-Sample T-Test

**Hypothesis 1:** The results of the study indicate that: usefulness as one of the factors affecting the adoption of e-banking is significantly different among customers of public and private banks of Kermanshah province, due to the significant level (0.000 and 0.000) and the acceptable error level (0.05) and with 0.95. Also the mean of usefulness in public banks is equal to 17.12 which is more than usefulness mean of private banks with amount of 12.62 and this indicates that the hypotheses H<sub>1</sub> that indicates a difference is confirmed.

**Hypothesis 2:** The results of the study indicate that: ease of use as one of the factors affecting the adoption of e-banking is significantly different among customers of public and private banks of Kermanshah province. due to the significant level (0.000 and 0.000) and the acceptable error level (0.05) and with 0.95. Also the mean of ease of use in public banks is equal to 25.20 which is more than ease of use mean of private banks with amount of 19.33 and this indicates that the hypotheses H<sub>1</sub> that indicates a difference is confirmed.

**Hypothesis 3:** The results of the study indicate that: Enjoyment as one of the factors affecting the adoption of e-banking is significantly different among customers of public and private banks of Kermanshah province, due to the

level (0.05) and with 0.95. Also the mean of Enjoyment in public banks is equal to 17.18 which is more than Enjoyment mean of private banks with amount of 12.22 and this indicates that the hypotheses H<sub>1</sub> that that indicates a difference is confirmed.

**Hypothesis 4:** The results of the study indicate that: Providing information as one of the factors affecting the adoption of e-banking is significantly different among customers of public and private banks of Kermanshah province, due to the significant level (0.000 and 0.000) and the acceptable error level (0.05) and with 0.95. Also the mean of Providing information in public banks is equal to 11.14 which is Less than Providing information mean of private banks with amount of 11.98 and this indicates that the hypotheses H<sub>1</sub> that indicates a difference is confirmed.

**Hypothesis 5:** The results of the study indicate that: Security & confidentiality as one of the factors affecting the adoption of e-banking is significantly different among customers of public and private banks of Kermanshah province, due to the significant level (0.000 and 0.000) and the acceptable error level (0.05) and with 0.95. Also the mean of Security & confidentiality in public banks is equal to 12.04 which is Less than Security & confidentiality mean of private banks with

amount of 17.16 and this indicates that the hypotheses H<sub>1</sub> that indicates a difference is confirmed.

**Hypothesis 6:** The results of the study indicate that: Quality of internet communication as one of the factors affecting the adoption of e-banking is significantly different among customers of public and private banks of Kermanshah province, due to the significant level (0.000 and 0.000) and the acceptable

error level (0.05) and with 0.95. Also the mean of Quality of internet communication in public banks is equal to 26.52 which is Less than Quality of internet communication mean of private banks with amount of 29.78 and this indicates that the hypotheses H<sub>1</sub> that indicates a difference is confirmed.

**Table 3:** Test Result of Regression

Model	R	R Square	Adjusted R Square	Model Summary						Descriptive Statistics			
				Std. Error of the Estimate	Change Statistics				Sextuple Factors	Mean	Std. Deviation	N	
					R Square Change	F Change	df1	df2					Sig.
1	0.761	0.579	0.578	1.80	0.579	1234.47	1	898	0.000	Usefulness	14.87	3.772	900
2	0.934	0.872	0.872	1.00	0.293	2052.23	1	897	0.000	ease of use	22.43	5.521	900
3	0.966	0.932	0.932	0.72	0.060	799.79	1	896	0.000	Enjoyment	14.70	3.713	900
4	0.982	0.965	0.965	0.52	0.033	838.09	1	895	0.000	Providing information	11.56	2.770	900
5	0.999	0.985	0.985	0.34	0.020	1195.92	1	894	0.000	Security & confidentiality	14.60	4.209	900
6	1.000	1.000	1.000	0.000	0.015	-	1	893	-	Quality of internet communication	28.15	5.200	900

- a. Predictors: (Constant), ease of use
- b. Predictors: (Constant), ease of use , Quality
- c. Predictors: (Constant), ease of use, Quality, information
- d. Predictors: (Constant), ease of use , Quality, information, Usefulness
- e. Predictors: (Constant), ease of use, Quality, information, Usefulness, Security
- f. Predictors: (Constant), ease of use , Quality, information, Usefulness, Security, Enjoyment

**Table 4:** Friedman

Sig.	df	$\chi^2$	Mean Rank	N	No	Variables	Hypothesis
0.000	5	1864.129	1.56	900	1	Providing information	Sextuple factors of public banks
			1.84	900	2	Security & confidentiality	
			3.35	900	3	Usefulness	
			3.41	900	4	Enjoyment	
			5.34	900	5	ease of use	
			5.50	900	6	Quality of internet communication	
0.000	5	1779.080	1.99	900	1	Enjoyment	Sextuple factors of private banks
			2.06	900	2	Providing information	
			2.31	900	3	Usefulness	
			3.96	900	4	Security & confidentiality	
			4.77	900	5	ease of use	
			5.91	900	6	Quality of internet communication	

Thus, factors of effect on customers using of electronic banking services in governmental and private banks of Kermanshah with using Pikkariainen Model are, in low-to-high influence order as follows:

Public Banks: Providing information, Security & confidentiality, Usefulness, Enjoyment, ease of use and Quality of internet communication.

Private Bank: Enjoyment, Providing information, Usefulness, Security & confidentiality, ease of use and Quality of internet communication.

### **Conclusion**

With the rapid advancement of technology in the present era the bank as a very effective economic institution and powerful arm of the national economy is trying to keep pace with growing changes. Expansion of banking services, and the competitiveness of private and public banks and astounding integration of traditional and electronic banking and feeling need to reach accelerate machine of the World Trade; Desire for change in the executive process of the bank, in order to be accountable to the diversity of customers' needs and of course speed up the provision of banking services and save the information with the style, other than paper tools and most importantly become distinct in the field, the top managers action have increased and they soon have reached the conclusion that survival in the Third Millennium unstable and complex involving differences is in performance and improve service quality and even further customer satisfaction. In this study, we adapted and ranked factors influencing the adoption of electronic banking services by customers to measure customer satisfaction, they were analyzed as the principle of any organization. It should be said that this conclusion is not a simple work in extension and extent of the customers opinions assessment subject, which is performed in a domain and range, although In this research we have tried to be regarded to all the scientific principles of research, accessing reliable results but confident conclusion in this matter requires extensive research in the national and abroad regional research. However, obtained results of this study are very interesting and can be considered as a guide for future studies.

Hypothesis (first to sixth) stated that there is a significant difference among 6 factors (usefulness, ease of use, Enjoyment, providing information security and confidentiality and quality of the Internet connection) on electronic banking adoption among public and private bank customers of Kermanshah province. Based on the research results, the hypothesis was confirmed in other words, the significant differences between the 6 factors on adoption of e-banking is significantly different among customers of public and private banks of Kermanshah province. According to the test of research, it is concluded that there are significant differences. Providing information factor and Enjoyment factor are respectively the most important factors in the adoption of e-banking among public and private

bank customers and quality of the Internet connection in terms of the importance on the adoption of e-banking is end of ranking among customers of public and private banks.

According to the findings of this study the six factors (Pikkariainen Model) (usefulness, ease of use, Enjoyment, technology acceptance, security and confidentiality, quality of Internet connection) on adoption electronic banking services by public and private bank customers in Kermanshah, providing information and Enjoyment factors has the greatest effect. The results of this study are in line with previous researches. TaqaviFard and colleagues (2012) Farzi Khaledi (2010); Saifi Sarbanqoly (2008); Alam and Sony (2012); Ma (2012), Gilani et al (2011) Sadeghi, Hadi Zadeh (2010); Sadeghi and Farokhian (2010) and Samer Ali and Bharovij (2010) ease of use factor is considered as an effective factor in electronic banking. Farzi Khalidi (2010); Merati Fshi and Akbari et al (2012) provide information is considered as one of the effective factors in e-banking. Saeidnia and Abdullahi (2011); Seifi Sarbanqoly (2008); Alam and Sony (2012); Ma (2012); Gilani et al (2011), Sadeghi, Hadi Zadeh (2010); Sadeghi and Farokhian (2010); Samer Ali and Baharovij (2010) and Yoon (2010) considered the safety factor as an effective factors in e-banking.

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