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STUDY OF THE AMOUNT OF ELECTRONIC READINESS TO ADOPT ELECTRONIC BANKING SYSTEM

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ABSTRACT

The objective of present research project is to study the amount of electronic readiness Bank-e-Mellat of Guilan to adopt electronic banking system. Method is descriptive-correlational and is based on applied goal. The research population consists of 570 total working official employees of Banke-Mellat of Guilan. Due to limitation of population Cochran formula was used in order to estimate the number of sample volume, that the number of statistical sample volume is estimated at least 126. At first stage cluster sampling was used, at second stage it was simple random sampling, and finally distribution of questionnaires was available non-probabilistically. In descriptive statistics by using descriptive statistics techniques and in inferential statistics by using statistical tests the research hypotheses have been investigated. Inferential analysis by using some tests such as the correlation coefficient, confirmatory factor analysis, the fitted model test, and path analysis by the help of "smart Pls 2" was performed. The results indicated that the hypothesis one and three, perceived benefits and perceived standards and structure, each with the path coefficient of 0.25, and hypothesis four, perceived supporting services with the path coefficient of 0.20 had the most effect on adoption of technology.

Keywords: *Electronic Readiness, Organizational Readiness, Industry Readiness, National Readiness, Environment.*

INTRODUCTION

Development of information technology in 21th century has radically changed all aspects of human life. In present time, information technology is considered to be a new strategy affecting all aspects of organizations; to the extent that the image of an organization without information technology and keeping pace with new technologies seems to be impossible (Mohammadi & Amiri, 2013, 195). In a research project conducted in 2009 titled "Assessment of E-readiness of Tehran Commercial Organization" by using Bridges model, technology and social factors were moderate and education, human resource and governmental factors were not in a desirable level (Vaezi & Imani 2009, 70). Iran is a young country in e-commercials and it has a long way to reach an acceptable level, in this regard development of e-commerce and providing desirable electronic services by other organizations is contingent upon existence of a strong and acceptable e-banking system (Hanifi 2013, 5, 1). Nowadays ICT is identified as a key weapon in the battle against global poverty. In case of proper application of this technology, a huge potential would be created for developing countries. These countries can overcome obstacles of development and identify their most important social issues by proper using of this technology

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(P. Hanafizadeh, M. Hanafizadeh, & Khadobakhsh, 2008, 97). In present research project the amount of electronic readiness of Bank-e-Mellat of Guilan would be investigated.

3) Theoretical framework:

The model used in this study is the same as the model that Kurnia et al. used in their study on small and medium-sized enterprises (SMEs) in grocery retail sector in Malaysia (Kurnia et al., 2015).

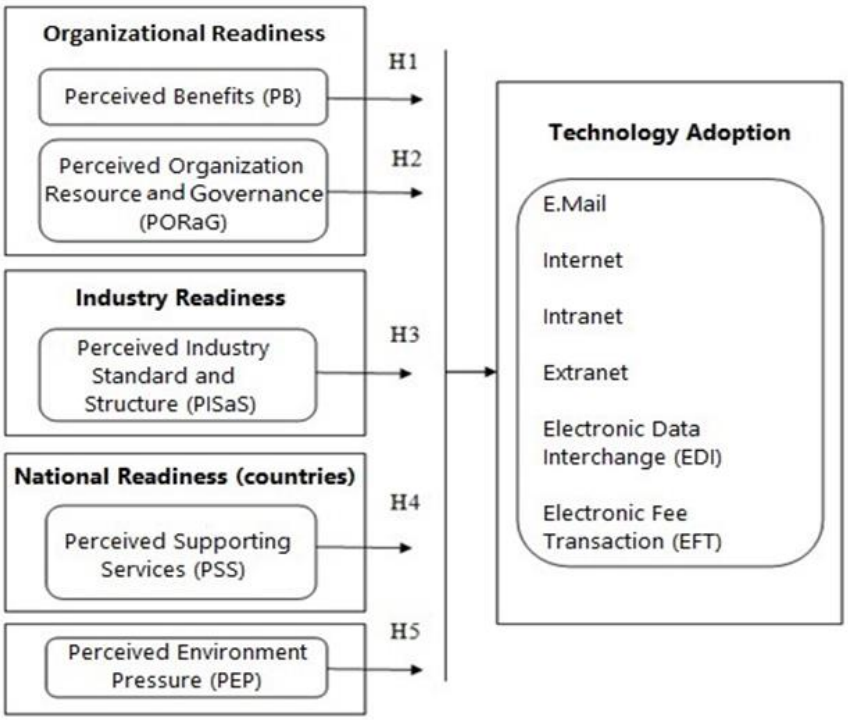

Figure 1. Analytical framework of research (Kurnia et al., 2015)

Theories of Diffusion of Innovation (DOI), and National Institutional Perspective (NIP), are considered to be key theories that have been suggested in developing framework of the model, that a consolidation of both has been used in present study.

Theory of Diffusion of Innovation (DOI): it is a process in which innovation is transferred to members of a social system through specific communication channels over a period of time. The theory of diffusion of innovation was suggested by Rogers in 1995 on adoption and diffusion organizational and technological innovations and prediction of organizational outcomes (Kurnia et al. 2015, 1908). As result variables of technology adoption and organizational readiness has been inferred from DOI theory. Theory of National Institutional Perspective (NIP): It shows the prevalence of entrepreneurial activity with specific dimensions in relation to the country's institutional environment, NIP has two aspects: 1) supervision perspective including laws, regulations, governance policies that promote certain and limited behaviors and, 2) cognitive institution that reflects the knowledge and skills possessed by the people in a country, which is used as a framework to classify and assess information (Spencer and Gomez 2004, 1100). As a result the variables of perceived industry readiness, national readiness and environmental pressure are inferred from NIP. The theoretical framework of present research project is based

on a study from Kurnia in 2015, so that this framework consists of a combination of three levels of readiness (organizational, industry and national) and environmental pressure. To ensure the range of management research only five factors have been documented, these factors are the most significant factors related to the adoption of e-commerce technology in the context of developing countries. Technology can be defined as knowledge, products, processes, tools, methods and defined systems to create product or service (Dolinsek and Strukelj 2012, 32). Key technologies in e-commerce that has been considered in present study include e-mail, internet, extranet. The first factor is organizational readiness; some connect the factor of organizational readiness to the factors of organizational culture and management support (Seyal et al. 2004), here organizational readiness includes Perceived Benefits (PB) and Perceived Organizational Resources and Governance (PORaG), perceived benefits refers to a level of cognition of comparative advantage that technology can provide to the organization (Kuan and Chau 2001, 509). Here perceived benefits means a series of anticipated advantages that innovation can help the adoption of organization (Seyal et al. 2004, 378).

Hypothesis 1. Perceived benefits affects adoption of technology in Bank-e-Mellat of Guilan.

Perceived organizational resources refer to perception of an enterprise of access to some resources such as, technology, finance, business and human resources (Hayat and Amal 2014, 222). Supervision or governance of perceived organization includes a strategic, tactical and operational model, a way that organizations define their structures in order to create resource allocations (Kurnia et al. 2015, 1910).

Hypothesis 2. Perceived organizational resources and governance has an impact on adoption of technology in Bank-e-Mellat of Guilan.

Second factor is industry readiness; little research has been done on the structure of the industry. Industry readiness implies growing of adoption of e-commerce technologies, at this level, transactions deal with the interactions between adoptions of foreign organizations and institutions, mutual dependence and relations which are generally noteworthy in the structure of industry (Damsgaard and Lyytinen 1998, 281). Here industry readiness means Perceived Industrial Structure and Standards (PISaS). At first stage perception of the structure of industry goes back to perception of management that to what extent can support the adoption of e-commerce. At second stage, perception of standards of industry implies the perception or observation of management of how to access the standards and coordinate with institutions (groups) would facilitate the adoption of technology in e-commerce (Kurnia et al. 2015, 1910). Laws, institutions and culture have a major impact on application of a technology in a certain industry (Crowston and Myers 2004, 6).

Hypothesis 3. Perceived standards and structure of industry effect adoption of technology in Bank-e-Mellat of Guilan.

Third factor, national readiness, is one of preventive factors in adoption of e-commerce (Kshetri and Dholakia 2002; Tigre 2003). Intended indicator in this readiness is Perceived Support Services (PSS), including the availability of appropriate technological infrastructure, skilled human resources to develop and maintain e-commerce applications, software and hardware vendors, supervision environment and support for IT and logistics infrastructures which are of important factors for the adoption of e-commerce of SMEs (Kurnia et al. 2015, 1911; Srinivasan, Lilien, and Rangaswamy 2002).

Hypothesis 4. Perceived support services effect adoption of technology in Bank-e-Mellat of Guilan.

Fourth factor is perceived environmental pressure that takes place through a customer, government demand, market pressure or changes in foreign environment (Kurnia et al. 2015, 1911), competition (industry pressure), external support of technology vendors (Al-Qirim 2007, 464).

Hypothesis 5. Perceived environmental pressure affects adoption of technology in Bank-e-Mellat of Guilan.

METHOD

Present study is applied based on objective, and based on how to control is non-experimental descriptive and correlational, based on the location of data collection is fieldwork. The population according to the results acquired from Administration of Bank-e-Mellat of Guilan is 570 working official employees of Banke-Mellat of Guilan, sampling method was cluster sampling at first stage, that is, Guilan was divided into three clusters (center, east and west), and then tow cities from each cluster had been selected randomly (by lottery), Astaneh and Lahijan from east, Fouman and Someesara from west and Rasht from center were selected, five cities in total. Distribution of questionnaires among staff and managers of Bank-e-Mellat branches was performed and was available non-probabilistically. The reason of choosing non- probabilistically availability is that at first probability sampling (random) was chosen to select cities in order to distribute the questionnaires. Because of lack of cooperation of some staff, the number of questionnaires did not reach quorum, therefore non-probability method was used compulsorily, due to limitation of population Cochran formula was used in order to estimate the number of sample volume. To estimate the studied variance of studied variable final questionnaires were distributed among 30 members of population as a pre-test, and the results were analyzed using SPSS software. Acquired variance for studied variable which is compassion at work in this research project, was 0.325, that by placing it in the relationship and taking into account the level of error of 5%, the number of sample was calculated approximately 126, so that 145 questionnaires were distributed among the staff and managers of Bank-eMellat of Guilan, 130 questionnaires were collected and the return rate was 90%. In present study the tool of data collection was questionnaire, and the scale of measuring questions was 5-Likert scale, ranging from very low to very high. Validity of content of present study has been confirmed through the research and questionnaire that Kurnia et al. drafted in 2015, as well as to ensure more with the help of a supervisor about the issue. Since the questionnaire was a translation from overseas research, therefore to assess its validity 30 questionnaires were distributed and completed randomly among the population as a pre-test. In order to determine the reliability of the test Cronbach's alpha was used that all were above 0.7 (Ebrahimi et al., 2016), and as a result its reliability was confirmed.

DATA ANALYSIS

The tests of descriptive statistics are included of indicators, percentages of abundances, tables and charts that the descriptive statistics comes briefly as follows:

Table 1. description of variables

Variable	No	Mean	Standard deviation	Variance
Perceived Benefits	130	4.192	0.781	0.610
Organizational resources	130	4.153	0.526	0.277
Standards and Structure of Industry	130	3.794	0.649	0.422
Support Services	130	3.923	0.650	0.423
Environmental Pressure	130	3.66	0.666	0.444
Adoption of Technology	130	3.51	0.848	0.719

In this study because we want to have the effects of several independent variables on dependent variable simultaneously, the method of structural equation modeling was used, hence, before studying the hypotheses, variables normality or non-normality must be investigated in order to select the type of the software (Ebrahimi and Mirbargkar, 2017), and as a result the test of "Kolmogorov Smirnov" was used. Given the results of this test, since the significance level for all components is less than error value 0.05, hypothesis of zero (normal data) is rejected and hypothesis one (non-normal data) is confirmed for all, it means that these variables follow a non-normal distribution in the population. Since the result of "Kolmogorov" test was non-normal, in order to implement the technique of structural equations as well as limitation of statistical samples partial least squares method was used, requiring the application of "Smart Pls". Before reject or confirm the hypotheses, correlation test was used among the variables to show us if there is a significant relationship or not. As a result, correlation coefficient was used in "Smart Pls", the result indicated that in the confidence level of 0.95 the variables enjoy an acceptable coefficient. The coefficient of zero indicates no correlation and the coefficient of one indicates a perfect correlation between two variables (Table 2).

Table 2. Correlation coefficients among variables

	Perceived Benefits	Organizational Resources	Standards & Structures	Support Services	Environmental Pressure	Adoption of Technology
Perceived Benefits	1					
Organizational Resources	0.615	1				
Standards & Structures	0.687	0.597	1			
Support Services	0.469	0.534	0.578	1		
Environmental Pressure	-0.244	-0.342	-0.276	-0.162	1	
Adoption of Technology	0.223	0.204	0.271	0.224	-0.245	1

SEM or Structural Equation Methods is a two steps approach; therefore, at first the measuring model is examined separately in order to ensure the validity and fitness of appropriate model of indicators of measurement, then acquired results of structural model is presented, and at last by using path analysis the accuracy of the hypotheses is examined. The measuring model of present study has 24 observed variables (questions of questionnaire or indicators) and 6 latent variables (acquired factors or structures). Factor loading is representative of correlation of the factor with

the relevant indicator; as a result, its interpretation is the same as the interpretation of the test of correlation. To test the measuring model, standardized factor loadings relevant to each measuring variable must be significant and in addition to be greater than 0.4 (Davari & Rezazedeh, 2013, 132; Ebrahimi et al., 2018b). These conditions are met for all indicators (figures 2&3).

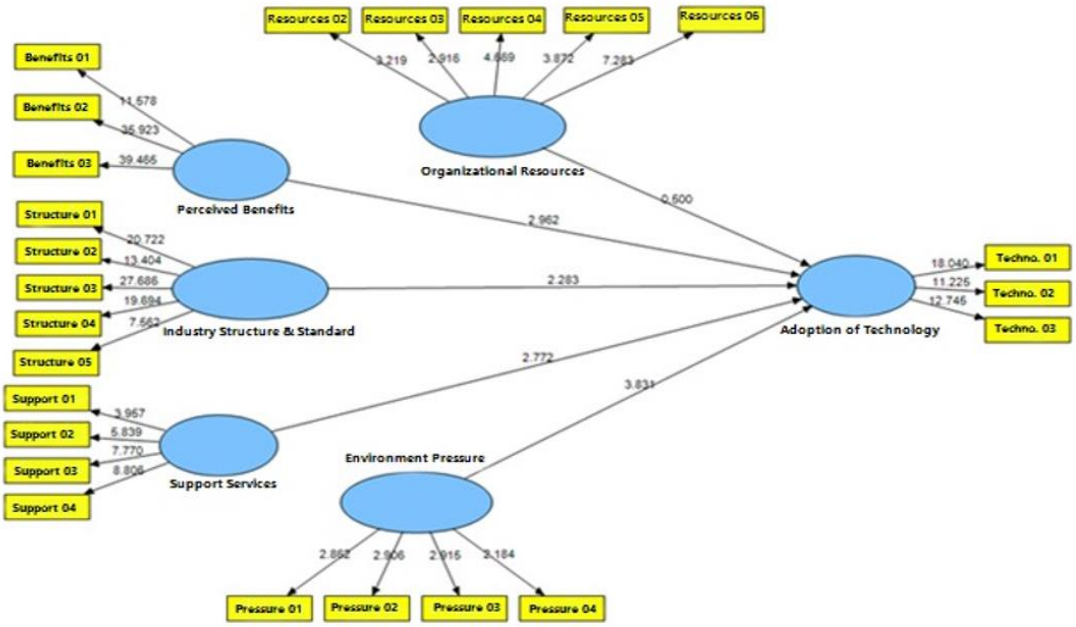

Figure 2. T value and significance coefficients of relationships between variables

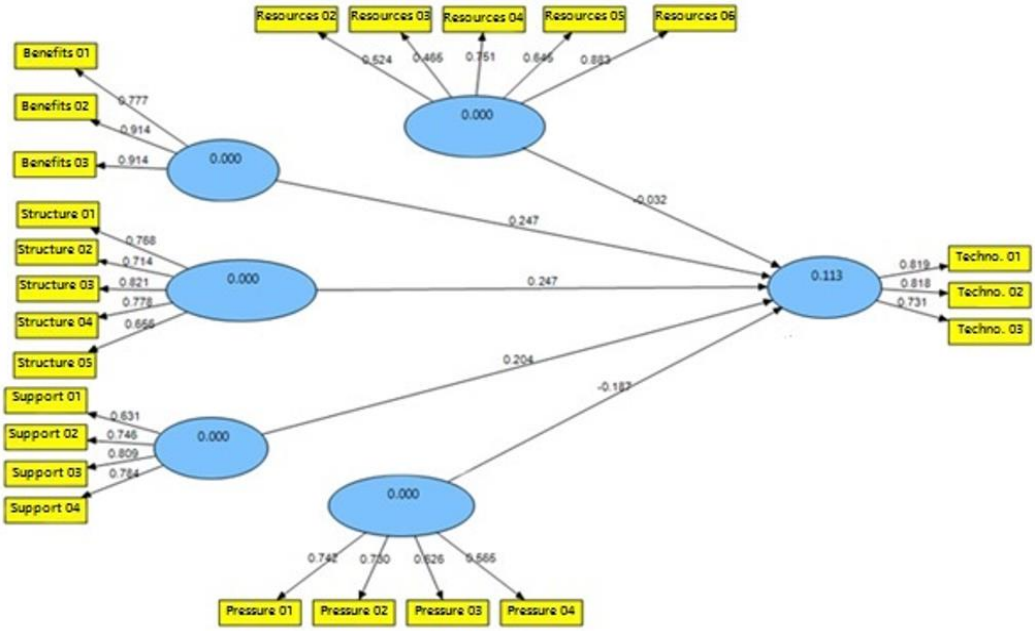

Figure 3. Path coefficients between variables and indicators

For more certainty of fitness of the model" GOF" was used, that the value obtained was 0.25, indicating a proper fitness of the general model. To assess the validity of internal structure of the

questionnaire convergent validity was used. Convergent validity indicates the degree of correlation of a structure with its indicators which is measured by AVE (Average Variance Extracted). It must be greater than 0.4. (Ebrahimi et al., 2018a) In order to assess the measuring tools two methods have been applied 1. Composite Reliability (CR), 2. Cronbach's alpha coefficients. The result is that in both the CR and Cronbach's alpha 0.7 (Ebrahimi et al., 2018a) was the most frequent outcome (Table 3).

Table 3. Reliability, validity and fitness of the model

Variables	Number of Questions	Cronbach's alpha coefficient	CR	AVE	communality	R^2
Perceived Benefits	3	0.843	0.903	0.758	0.758	-
Organizational Resources	5	0.757	0.795	0.450	0.450	-
Standards & Structures	5	0.807	0.864	0.562	0.562	-
Support Services	4	0.743	0.832	0.556	0.556	-
Environmental Pressure	4	0.776	0.716	0.448	0.448	-
Adoption of Technology	3	0.714	0.832	0.625	0.625	0.113

In order to reject or confirm the hypotheses the significant difference of the coefficients must be calculated from the zero path. To do this T significance coefficient in the error level of 5 percent by using Bootstrap method is calculated. If the obtained significance coefficient is out of|1.96|, the hypothesis would be confirmed, and otherwise it would be rejected. Table 4 shows a brief of the results of tests of the hypotheses.

Table 4. Hypotheses results

Hypotheses	Significance	Path Coefficient	Results
Hypothesis1. Perceived benefits affect adoption of technology in Bank-e-Mellat of Guilan.	2.96	0.25	Confirmed
Hypothesis2. Perceived organizational resources and governance has an impact on adoption of technology in Bank-e-Mellat of Guilan	0.5	-0.03	Rejected
Hypothesis3. Perceived standards and structure of industry effect adoption of technology in Bank-e-Mellat of Guilan.	2.28	0.25	Confirmed
Hypothesis4. Perceived support services effect adoption of technology in Bank-e-Mellat of Guilan.	2.77	0.20	Confirmed
Hypothesis5. Perceived environmental pressure affects adoption of technology in Bank-e-Mellat of Guilan.	3.83	-0.19	Confirmed

CONCLUSION

The objective of present study was to review the amount of electronic readiness of Bank-e-Mellat of Guilan to adopt electronic banking system. Here since we intended to have the effects of several independent variables on the dependent variable at the same time, the technique of structural equations was applied, as well as due to limitation of statistical samples partial least squares method and "Smart Pls" software was used. The results indicated that hypotheses one and three, perceived benefits and perceived standards and structure, each with the path coefficient of 0.25, and also hypothesis four, perceived support services, with the path coefficient

of 0.20 had the most impact on the adoption of technology, also hypothesis five, perceived environmental pressure, with the path coefficient of -0.19 had a significant and negative impact on adoption of technology. Given the lack of significance of effect of perceived organizational resources with path coefficient of -0.03 on adoption of technology, this relationship was not confirmed and as a result hypothesis two was rejected. In addition, the coefficient of determination of R2 (simultaneous effect of independent variables on the dependent) was calculated 0.113. To have a comparison with the relevant former research (literature review), the result of hypothesis one, the effect of benefits on adoption of technology is consistent with the studies of (Olatokun and Bankole 2015) with path coefficient of 0.57, and (Seyal et al. 2004, 383) with path coefficient of 0.48. For hypothesis two a research project conducted by (Kuan and Chau 2001, 517) the effect of organizational benefits on adoption of technology was reported to be positive, while our hypothesis two was rejected. About the hypothesis three, the study performed by Kaynak in 2005 that structure and standard of industry do not affect the adoption of technology (Alzougool and Kurnia 2008, 46), but in present study, it was confirmed with the path coefficient of 0.25. About hypothesis four, the effect of support services on adoption of technology in present study, it is consistent with the results of the studies of Doolin et al., 2003, and Srinivasan et al., 2002, (Alzougool and Kurnia 2008, 50). About hypothesis five, the studies performed by Kurnia et al., 2015, and Grandon & Pearson, 2004, the effect of environmental pressure on adoption of technology was reported positive, in present study a significant and negative relationship was calculated for this hypothesis as well.

According to the results, to increase perceived benefits, it is recommended that organization or government-affiliated institutions hold programs and training courses in the fields of information technology in order to inform them of the benefits, threats and opportunities of electronic banking and paying attention to the interests of the users of the system. It is recommended that in order to increase perceived standards and structure custodians of informatics services in the banks design some checklists to evaluate information systems, and continuously evaluate the information systems by using these checklists. Regarding the negative and significant relationship of the variable of environmental pressure with adoption of technology it is recommended that in order to keep pace with the changes in the latest technology, an environment with the sufficient facilities and appliances must the same as for the managers must be provided for the employees. Lack of some aspects in desired model such as state policies from the model (USAID) from Independent State Institute, the effect of culture from the model (CIDCM) from Maryland University, E-Learning and Development Strategies (ICT) from UNESCO, or the model of (KAM) from Research Institute, that can be taken into account of electronic readiness, it is recommended to use these models in future researches. Also the data of present research is collected from and opinion poll was among the staff and managers of Bank-e-Mellat of Guilan, hence it is recommended to test the model in other provinces or other private and state banks and to compare acquired results in order to increase the generalizability of the results.

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