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An analysis of the factors influencing success of Bank-issued micropayment systems in Iran

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Abstract

The object of this study is to analyze the factors influencing success of Bank-issued micropayment systems in Iran. Based on an existing IS post acceptance model which considers well known factors, we focus on studying the influence of a new factor related to compulsion (direct and indirect). Our model consists of seven main factors along with 'Direct compulsion' defined as a mediator variable between "Satisfaction", "Perceived Usefulness", "Network Externalities" and "Continuance Intension". 409 filled questionnaires were gathered and analyzed to check thirteen hypotheses related to our model. The collected data have been analyzed at three levels. First, some descriptive statistics are derived in order to obtain an overview of the characteristics of the sample. Second, bivariate correlations between variables are analyzed with respect to the correlation between scales of variables and mediator variables. The final stage of the analysis adopts a regression analysis in order to identify the eventual existence of association and relationship between the dependent and independent variables.

Keywords:

Bank-issued E-Micropayment program, Electronic Bill Payment

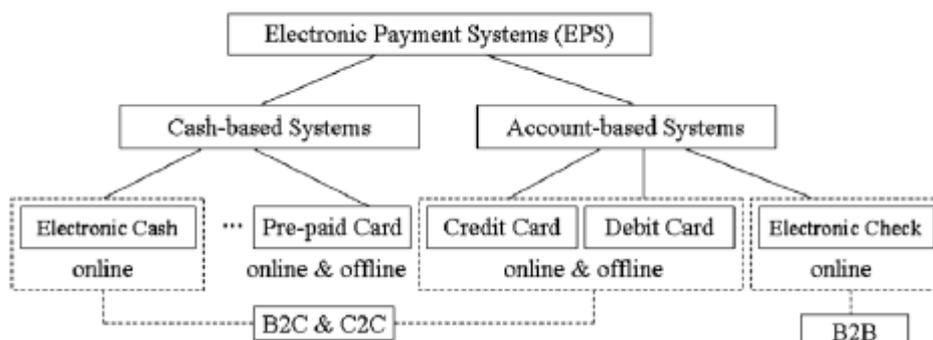
I. Introduction

"Lacking payment systems becomes a bottleneck for the vision of the Information Economy. In many cases, the payments of a fraction of a cent, the so-called micropayments, are of particular interest". (Schmidt et al., 1999)

Points of sale (POS) transactions involving micropayment are common in our daily affairs. (Tan et al., 2008)

According to the Central Bank of Iran, the payment value less than 50 Million Rials is considered as a micropayment's transaction. Because of the amount of this value (50 Million Rials), all instruments of Cash-based systems and Account-based systems in EPS (Electronic Payment Systems) except electronic check are engaged in Iran's micropayment system definition. It means Micropayment systems are equivalent to E-Payment. Common payment method, i.e. credit card is uneconomical because its processing charge may exceed the value of the micropayment. Hence, in this study we will define a value margin for Micropayments in Iran (See figure 1-1) and we will focus on transactions which we will consider as Bank-issued micropayment system definition in Iran.

Figure 1-1: Classification of Electronic Payment System, (Kim, 2009)



Operators have introduced a number of e-micropayment programs around the world to replace cash and coins for such low-value payment. As mentioned by Clark (2005), "some payment analysts predicted that smart cards could lead to a cashless society". However, with the exception of a few, e.g. Smart card, many such programs are not so successful especially in Iran and the vision of a "cashless society" is still a dream and "the very smallest payments have stubbornly remained the domain of cash and coin". (McGrath, 2006)

Success of POS e-micropayment program depends to a large extent on the presence of network externality. POS e-micropayment program is a networked good (Baddeley, 2004) with micropayment market being a two-sided market with both consumers (demand side) and merchants (supply side). He mentioned, when the value of a product depends on the number of users, the product exhibits network effects. When the value increases with the number of users, there are positive network effects.

The other success of E-micropayment system depends on Government Direct Compulsion and Indirect Compulsion related to Lock-in customer. First, one report (tabnak.ir, 2010) says: now in Iran/Tehran, some branches of Government banks refuse the receiving invoice bills

(telecommunication bill, electrical bill, water bill ...). Those bank's tellers enforce customers to use ATM machines and the other e-payment media which are the only ways to pay these bills. Another report (*ravy.ir, 2010*) says: according to Central Bank Circular in Tehran for Mobile phone bills in case of face to face payment in a physical branch, customers must pay 2000 Rials extra charge. *Second*, in case of Lock-in customer related to indirect compulsion, gifts, bonus and zero e-payment transaction charges for customers are noticeable things to IS continuance intention program.

There is recent growing activities showing that e-micropayment program in IRAN is now going through a revival. Iran local banks and financial institutes have started to pay attention to the potential offers of the micropayment market. They are co-operating with organizations which have existing captive markets, i.e. convenience stores (e.g. loyalty cards), to issue e-micropayment programs so as to extract commercial benefits for themselves and their partners. This study examines the opinion of consumers on such programs and uses an extended "Post-acceptance Model of IS Continuance" to study the factors influencing consumers' intention to continue using such e-micropayment system.

The micropayment systems in IRAN have considerably changed into electronic payment, especially in the big cities. This thesis looks into issues related to e-micropayment systems offered by Banking and financial institutions. We also analyze the factors which influence success of these financial institutes' micropayment systems in Iran.

Payment Systems in Iran

"Electronic payment is widely used all over the world, but it is not common yet in Iran". (*Keramati et al., 2008*)

About the history of Payment systems in Iran, a report of the Central bank of Iran (*CBI, 2009*) says: "Considering the double digit inflation rate and relative stability in the currency denomination, the recent trend of the payment instrument has gradually moved from notes to various kinds of cheques, particularly traveler'scheques. The introduction of modern payment instruments can be traced back to early 1990s where commercial bank of Sepah launched its Aber Bank Debit Card and ATM services. Since then, almost all Iranian banks have provided their customers with the card payment services focusing on cards with debit function and ATM services to tackle the problem of heavy branch traffics. The interbank card switch (SHETAB) was introduced in 2002 and now all card issuing banks in Iran are connected to the center; building up a uniform card payment network where all issued cards are accepted in all acquiring terminals".

The history of the payment system in Iran offers a backdrop for better understanding data on the most common payment instruments in use today.

Figures 1-2, 1-3, 1-4 and 1-5 illustrate the growth of the number of Cards, and figures 6 and 7 and 8 shows the growth of instruments of electronic payment in Iran (POS, ATM and physical Pin-Pad in three years from 2008 till 2010). Data were gathered form www.CBI.ir and structured for this study.

Figure 1-2: Total Cards issued by the banking system in IRAN till May 2010 (CBI)

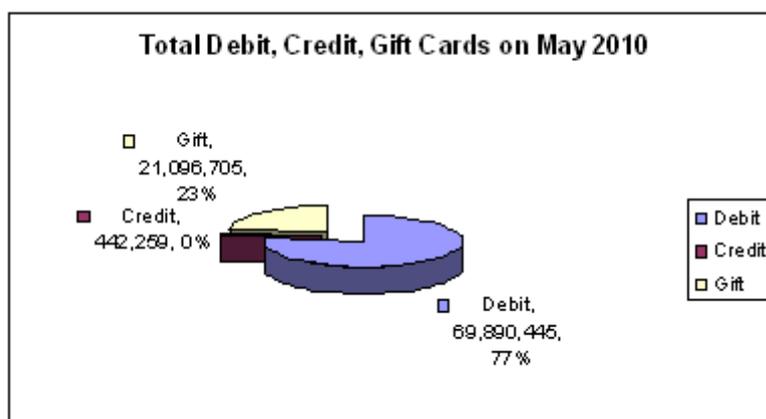


Figure 1-3: Growth of the number of Debit Cards 2008-2010 (CBI)

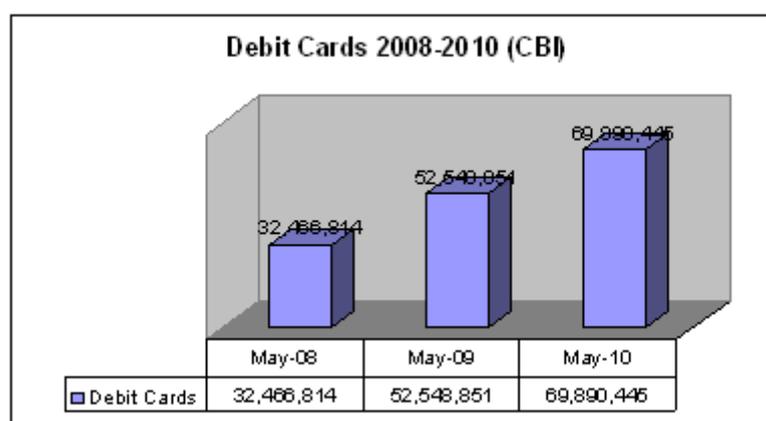


Figure 1-4: Growth of the number of Credit Cards 2008-2010 (CBI)

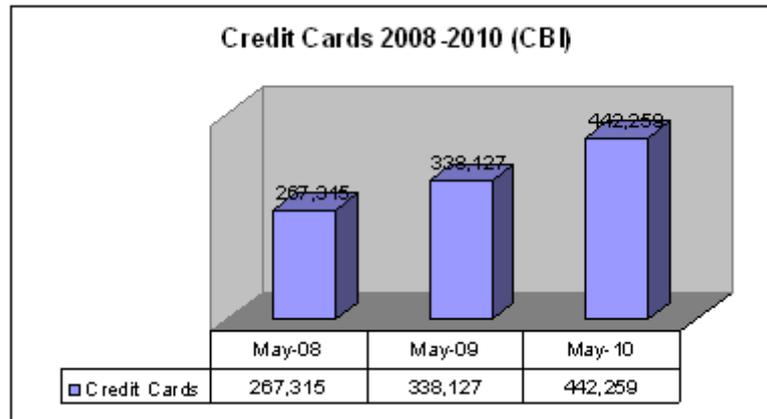


Figure 1-5: Growth of the number of Gift Cards 2008-2010 (CBI)

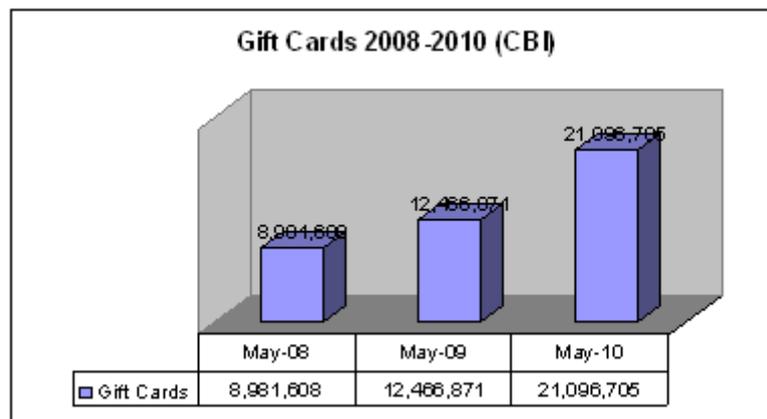


Figure 1-6: Growth of the number of ATM 2005-2010 (CBI)

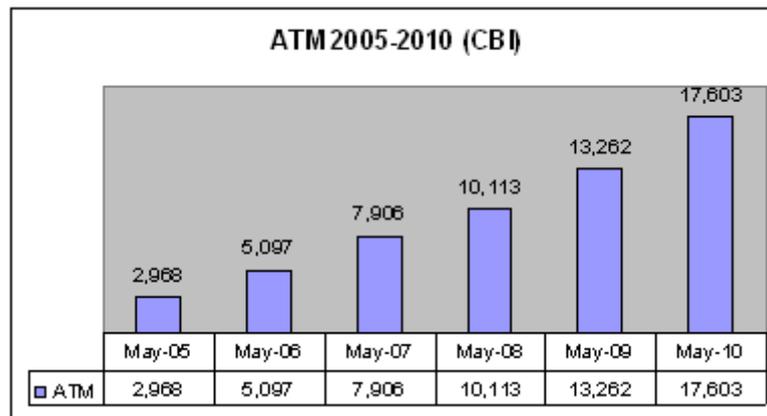


Figure 1-7: Growth of the number of POS 2005-2010 (CBI)

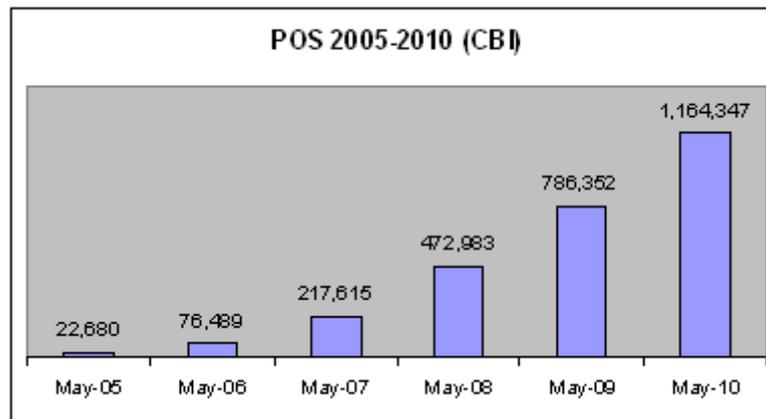


Figure 1-8: Growth of the number of PIN-PAD 2005-2010 (CBI)

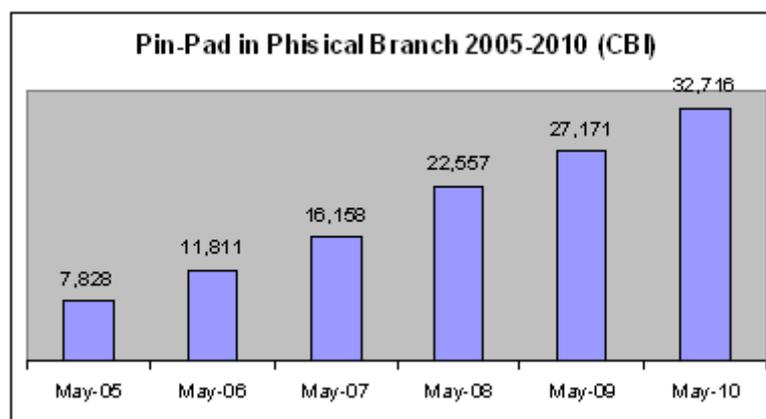


Figure 1-9 shows the growth of the number of transactions and figure 1-10 shows the total amount of transactions in noncash retail payment through Cards, ATM, and POS. Figure 1-11 illustrates the average number of cards per ATM, POS and physical Branch. Data was gathered from www.CBI.ir and structured for this study.

Figure 1-9: Growth of Number of transactions 2007-2010 (CBI)

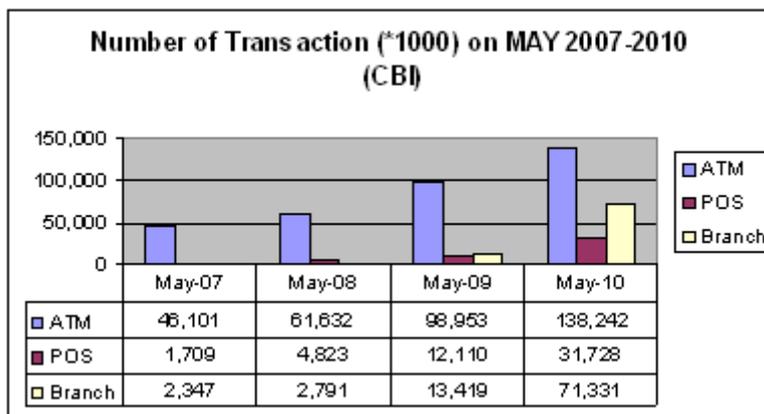


Figure 1-10: Growth of Value of transactions 2007-2010 (CBI)

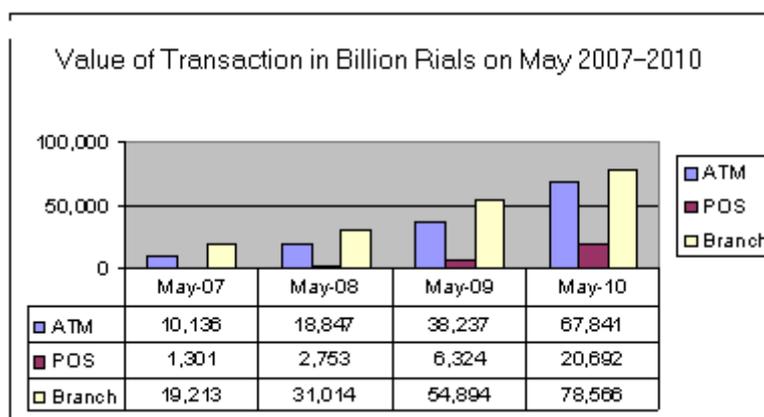
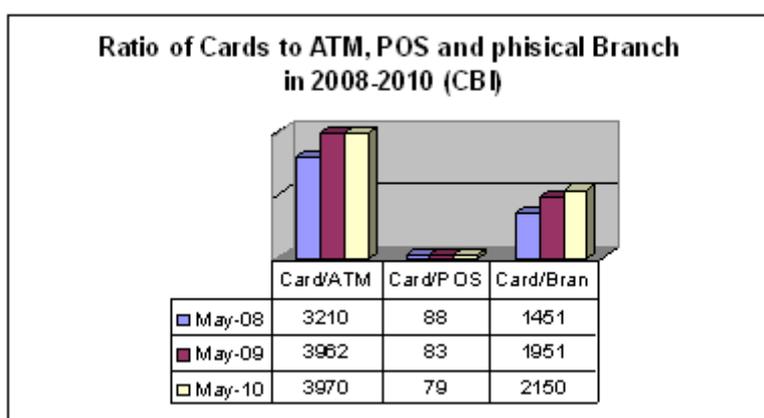


Figure 1-11: Ratio of Cards to ATM, POS, and Physical Branch 2008-2010 (CBI)



The Research Problem

The POS, ATM, Mobile, and Telephone as well as E-micropayment programs are undergoing a revival in IRAN. The growth of E-Payment services instruments in the last decade in Iran is considerable. Local banks and financial Institutes are co-operating with organizations which have existing captive markets to issue a variety of cards (Debit, Credit, Gift, and prepaid). This thesis aims at helping researchers and the programs' operators to understand the dynamics influencing such a revival. In order to reach our goal, we intend to:

- Analyze the current situation of micropayment instruments in IRAN in Bank-issued sector.
- Define a value margin for Micropayment system in IRAN
- Analyze the success factors in bank-issued micropayment systems in IRAN.
- Compare the Iranian bank issued micropayment system with the other countries like Taiwan for example
- Survey the characteristics which lead to successful adoption and diffusion of such programs.

II. literature review

What is Payment?

All Commerce is about Payment; Commerce is making payment and receiving payment. If there is no payment, there is no commerce. (*A first data whitepaper, 2008*)

A payment is the transfer of wealth from one party (such as a person or company) to another. A payment is usually made in exchange for the provision of goods, services or both, or to fulfill a legal obligation.

Definitions of E-Payment systems (EPS)

Several authors have proposed different definitions and classifications for e-payment. Here are some of the main definitions found in the literature.

"E-Payment is defined as the transfer of an electronic value of payment from a payer to a payee through an e-payment mechanism. E-Payment services exist as web-based user-interfaces that allow customers to remotely access and manage their bank accounts and transactions" (*Weir, 2006*) (*Lim, 2008*)

"When EC created the need for e-payment services, traditional cash-based and account-based payment instruments were used as a model. Simultaneously, new intermediaries such as

PayPal succeeded in fulfilling some of the new needs of online merchants and consumers".
(Dahlberg, T. et al, 2008)

International banking statistics from the Bank of International Settlements and the European Central Bank show that the popular payment instruments used for the payment of day-to-day purchases include cash, cheques, debit cards, and credit cards. In general, EPS can be classified into five categories which are listed below (Lawrence, 2002), (Guan, 2003) (Abrazhevich, 2004), (Dai, 2007) and (Schneider, 2007)

1. Electronic-cash: transactions are settled via the exchange of electronic currency.
2. Pre-paid card: customers use a pre-paid card for a specified amount by making an entry of the unique card number on merchant sites. The value of the card is decreased by the amount paid to the merchant.
3. Credit cards: a server authenticates consumers and verifies with the bank whether adequate funds are available prior to purchase; charges are posted against a customer's account; and the customer is billed later for the charges and pays the balance of the account to the bank.
4. Debit cards: a customer maintains a positive balance in the account, and money is deducted from the account when a debit transaction is performed.
5. Electronic checks: an institution electronically settles transactions between the buyer's bank and the seller's bank in the form of an electronic cheque.

Electronic-cash, pre-paid cards, credit cards, and debit cards are widely used in B2C and C2C EC. (Theodosios. et al, 2005)

Overviews on micropayment

From a formal point of view, Castiglione et al, (2009) defined a *micropayment scheme* as a distributed protocol where a party, the *Client User*, is interested in paying a *Vendor*.

The Bank for International Settlements (Bank for International Settlements, 2001) defines micropayment as a small payment (sometimes taken as under US\$10, sometimes meaning not more than a few cents, but in Iran it is under 50 Million Rials according to the CBI) which would be uneconomical to process through traditional payment. Generally, micropayment involves coins and cash. (Kou, 2003)

In CBI micropayment's definition in IRAN, Bill payments is one good choice for e-micropayment program in bank-issued. Except for few bill payments (industrial sectors and big companies), most of bill payments are under 50 Million Rials, and they can be studied in micropayment category in the context of our research.

Consider a market with three parties: a micro-payment system provider (Bank and financial institutes as Bank-issued in this study), a number of merchants e.g. telecommunication sectors, and a number of consumers. Consumers and merchant's trade with each other and the trades are settled with transactions of their bill amounts i.e. micro-payments.

Consumers and merchants must also be convinced of the benefits brought by the program. Standardization is often critical to its success and is achieved either through strategic alliance between key players or through government's control or co-ordination. Such strategic alliance should also move beyond standardization to develop functionalities that will increase the value proposition of the program.

Size of Electronic Payment

Electronic payment system is conducted in different e-commerce categories such as Business-to-Business (B2B), Business-to-Consumer (B2C), Consumer-to-Business (C2B) and Consumer-to-Consumer (C2C). Each of which has special characteristics that depend on the value of order. Danial in 2002 classified electronic payment systems as follows:

- Micro Payment (less than \$ 10) that is mainly conducted in C2C and B2C e-commerce.
- Consumer Payment that has a value between \$ 10 and \$ 500. It is conducted mainly in B2C transactions.
- Business Payment that has a value greater than \$ 500. is conducted mainly in B2B e-commerce .

B2B transactions account about 95% of e-commerce transactions, while others account about 5% (Turban et al, 2004). P2P, which is related to the C2C category transactions, is relatively small due to its stiff usability. Further, Cavarretta and de Silva (1995), identify three classes of typical electronic transactions:

- Tiny value transactions: below \$1.
- Medium value transactions: between \$ 1 and \$ 1,000
- Large value transactions: above \$ 1,000.

Systems that can support tiny value transactions have to trade-off between conveniences of transactions (the major part of a cost in an extremely cheap transaction) vs. the security or durability of transactions. On the other side of the amount range, large value transactions will require highly secure protocols whose implementations are costly: be on-line and/or carry traceability information. Finally, nearly all the system can perform medium value transactions. (*sumanjeet, 2009*)

Size of Electronic Payment in IRAN

According to the Central Bank of Iran, a payment value less than 50 Million Rials is considered as a micropayment's transaction. Because of the amount of this value (50 Million Rials), all instruments of Cash-based systems and Account-based systems in EPS (Electronic Payment Systems) except electronic check are engaged in Iran's micropayment system definition. It means Micropayment systems are equivalent to E-Payment in Iran according to CBI definition.

- Micro Payment or Retail Payment (less than 50,000,000 Rilas or \$ 5,000) that is mainly conducted in C2C and B2C e-commerce.
- Business Payment that has a value of more than 50,000,000 Rials or \$ 5000. It is conducted mainly in B2B e-commerce.

Figure 2-1 illustrates EPS in both bank-issued and non bank-issued in Iran. In bank-issued category two banks in governmental sector (Melli and Mellat) and two banks in private sector (En Bank and Persian Bank) are showed. In Non Bank-issued category, Electronic Tickets as

micropayment program in Tehran municipality (Tehran Metro Company and Tehran Public Bus service Company) and the same project in Mashhad and Isfahan Municipality are showed.

Figure 2-1: E-Payment Instruments in IRAN (Bank & Non Bank issued)

| Account Type | TYPE CARD | Bank issued | | | | Non Bank Issued | | |
|--------------------|-----------|-------------------|------------|----------------|--------------|---------------------|--------|--------------------------------|
| | | Government Sector | | Private Sector | | Tehran Municipality | | Mashhad & Isfahan Municipality |
| | | Melli Bank | Mellt Bank | EN Bank | Persian Bank | Metro Co | Bus Co | |
| Account Base | Debit | Yes | Yes | Yes | Yes | No | No | No |
| Account Base | Credit | Yes | Yes | Yes | Yes | No | No | No |
| Cashed Base | Gift Card | Yes | Yes | Yes | Yes | No | No | No |
| Group Account Base | Prepaid | Yes | Yes | Yes | Yes | No | No | No |
| Cashed Base | E-ticket | No | No | No | No | Yes | Yes | Yes |

Evaluation of the Micropayment system

To evaluate a micropayment system, *Schmidt et al.* (2009) considered three dimensions: technological dimension (Security, reliability, scalability, and latency), economic dimension (low transaction-cost, atomic exchange, and customer base) and social dimension (anonymity, and peer to peer payment).

Kniberg (2003) identifies the key characteristics determining the success of a micropayment scheme as trust, ease of use, pervasiveness and transaction speed (see table 2-1).

Parhonyi et al. (2005) distinguish technical and non-technical characteristics for micropayment systems. They mention the following characteristics for these two categories: ease of use or convenience, anonymity, scalability, validation, security, and interoperability for technical and trust, coverage and privacy for non-technical factors. They discuss and compare two studies. In the first one, interviews were conducted with merchants and MPSOs (micropayment system operators) in Sweden, Japan and the US (Kniberg 2002). In the other one, interviews were conducted and workshops organized for banks, payment system operators, IT and telecom companies, and desk research focused on Dutch and international payment initiatives (DMEA) (*Dutch Ministry of Economic Affairs, 2003*). Table 1 presents these key characteristics and factors, which are then compared for the two generations in the following sub-sections. Several related characteristics and factors are discussed together.

Table 2-1: Key characteristics and factors according to Kinberg and DMEA

| <i>Kinberg 2002</i> | <i>DMEA 2003</i> |
|--|---|
| <i>Trust</i> <i>Ease of Use (Convenience)</i> <i>Coverage</i> <i>Fixed Transaction Cost</i> <i>Processing Speed</i> | <i>Who are the system developers and MPSOs?</i> <i>Laws and legislation</i> <i>Influence of standardization bodies</i> <i>Demand for micropayments</i> <i>Ease of use</i> <i>Guaranteed delivery of paid products and received paid money</i> <i>Trust</i> <i>Security</i> <i>Coverage</i> <i>Processing speed</i> <i>Transparent transaction cost, no extra or hidden cost</i> |

Sumanjeet (2009) classified EPS in four categories, Online Credit Card Payment System, Online Electronic Cash System, Electronic Cheque System and Smart Cards based Electronic Payment System. He believes that each payment system has its advantages and disadvantages for the customers and merchants. These payment systems have numbers of requirements: e.g. ***security, acceptability, convenience, cost, anonymity, control, and traceability***. Therefore, instead of focusing on the technological specifications of various electronic payment systems, the researcher have distinguished electronic payment systems based on what is being transmitted over the network; and analyzed the differences between each electronic payment system by evaluating their requirements, characteristics and he finally assessed the applicability of each system.

The latest related research and their findings

1) *Tan et al, (2008)* showed that, the success factors in bank-issued micropayment in Taiwan have good potential to succeed. An extended Post-acceptance Model of IS Continuance is used. Confirmation of security, convenience and transaction cost of e-micropayment program do to some extent influence perceived usefulness. Furthermore, it can also be inferred that network externality has influencing roles and cannot be ignored.

2) An empirical study of customers' perceptions of security and trust in e-payment systems has been done by *Changsu Kim et al. in 2009 in South Korea*. Customers' perceptions of the security of e-payment systems have become a major factor in the evolution of electronic commerce in markets. In this paper, the authors examine issues related to e-payment security from the viewpoint of customers. This study proposes a conceptual model that delineates the determinants of consumers' perceived security and perceived trust, as well as the effects of perceived security and perceived trust on the use of e-payment systems. To test the model, structural equation modeling is employed to analyze data collected from 219 respondents in Korea. This research provides a theoretical foundation for academics and also practical guidelines for service providers in dealing with the security aspects of e-payment systems.

3) Finding the Critical Factors Influencing the Successful Development of e-Micropayment Program by *Wee-Kheng TANb et al., in 2009 in Taiwan* is another related research. This

study found out that factors such as reliability, acceptance by merchants and users not only increase the popularity of the system, they also affect and re-enforce other factors through a positive feedback loop. This study shows that network effect plays a very important role in the success of e-micropayment system. This research used the Decision Making Trial and Evaluation Laboratory (DEMATEL) method (Developed by the Battelle Memorial Institute of Geneva) to study which factors are more important than the others and also to examine their interrelationship.

4) Another research *Sevgi Ozkan et al., in 2009* work investigated, through theoretical constructs (technology acceptance model, theory of reasoned action) and an empirical analysis, the critical factors that may ensure consumer adoption of these facilities. This study proved that the perceived importance of the critical factors was correlated with security, trust, perceived advantage, assurance seals, perceived risk and usability. The results demonstrate that three of the critical factors were necessary (security, advantage, web assurance seals) and three were relatively sufficient (perceived risk, trust and usability) through customer intentions to adopt an e-payment system. Table 2-2 shows the summary of the four related studies presented above.

Table 2-2: Summary of four related studies

| Findings | Methodology | Success Factors | Reference |
|--|---|--|--|
| Programs have good potential to succeed even though consumers' choice on whether transport-related or convenience store-related card has highest potential to succeed differs in different parts of Taiwan. Network externality cannot be ignored and contributes to Taiwan consumers' choice on the program which has the highest potential to succeed. | An extended Post-acceptance Model of IS Continuance incorporating network externality is used and the roles of factors such as perceived usefulness and network externality are determined through hypothesis testing. A total of 591 questionnaires were received and 526 of them were found to be valid. Data analysis methods employed include cross-tabulation analysis, factor analysis, Pearson correlation analysis, reliability analysis and multiple regression analysis. | Confirmation of security, convenience and transaction cost of e-micropayment program do to some extent influence perceived usefulness. Furthermore, it can also be inferred that network externality has roles in influencing consumer's satisfaction and consumer's intention to continue using the E-micropayment program. | <i>Wee Kheng Tan and Shih-Kuo Chen, An analysis and factors influencing success of banked-issued Micropayment system in Taiwan, Journal of systems and Information, Technology, Vol. 10 No.1, 2008</i> |
| This study finds no evidence of a statistically significant relationship between the quality of transaction procedures and consumers' | This study proposes a conceptual model that delineates the determinants of consumers' perceived security and perceived trust, as well as the | For micro-payment systems, efficiency and speed are the most important factors. Security issues are also of concern for small-value e-payment | <i>Changsu Kim , Wang Tao , Namchul Shin , Ki-Soo Kim, 2009 , An empirical study of customers' perceptions of security and trust in e-payment systems,</i> |

| | | | |
|---|---|---|--|
| <p>perceived security or perceived trust in EPS use, and e-payment service providers may have to provide consumers with not only secure procedure but also convenient procedures for e-payment systems.</p> | <p>effects of perceived security and perceived trust on the use of e-payment systems. To test the model, structural equation modeling is employed to analyze data collected from 219 respondents in Korea. This research provides a theoretical foundation for academics and also practical guidelines for service providers in dealing with the security aspects of e-payment systems.</p> | <p>transactions. For large-value transactions, security is the most critical issue, and the use of encryption and other security mechanisms should be accordingly considered in order to reduce e-payment transaction risks</p> | <p><i>School of Business, Yeungnam University, 241-1, Dae-dong, Gyeongsan-si, Gyeongsangbuk-do, 712-749, South Korea.</i></p> |
| <p>Through the DEMATEL method, this study shows that the factors influencing the development of e-micropayment programs are highly inter-related and in fact, re-enforce one another, leading to network effect. Through using Easy Card, an electronic wallet widely used in northern Taiwan as an example, we observe that factors such as reliability, more value-add locations, acceptance by merchants and users not only increases the popularity of the system, it also affects and re-enforce other factors through a positive feedback loop.</p> | <p>Decision Making Trial and Evaluation Laboratory (DEMATEL) is an analytic tool to analyze the management problems of complex and inter-related relationship was used. Survey method was used to solicit the opinion of users of Easy Card.</p> | <p>Low transaction cost Discount Ease of use Reliable</p> | <p><i>Wee-Kheng TAN and Yu-Jie TAN, 2009 , Critical Factors Influencing the Successful Development of e-Micropayment Program, Department of Information & Electronic Commerce, Kainan University, No. 1, Kainan Road, Luchu, Taoyuan County, Taiwan</i></p> |
| <p>The research proved that the perceived importance of the critical factors was correlated through security, trust, perceived advantage, assurance seals, perceived risk and usability. The results</p> | <p>This research study mainly uses a deductive approach. A survey mainly consists of three components: (1) structured interviews; (2) observations; and (3) Questionnaires. A total of 155</p> | <p>the critical factors in this study were most important security, trust, perceived advantage, assurance seals, perceived risk and usability</p> | <p><i>Sevgi Özyürek, 2009, Facilitating the adoption of e-payment systems: theoretical constructs and empirical analysis, Journal of Enterprise Information Management</i></p> |

| | | | |
|--|---|--|---------------------|
| demonstrate that three of the critical factors were necessary (security, advantage, web assurance seals) and three were relatively sufficient (perceived risk, trust and usability) through customer intentions to adopt an e-payment system | questionnaires were coded and analyzed. | | Vol. 23 No. 3, 2010 |
|--|---|--|---------------------|

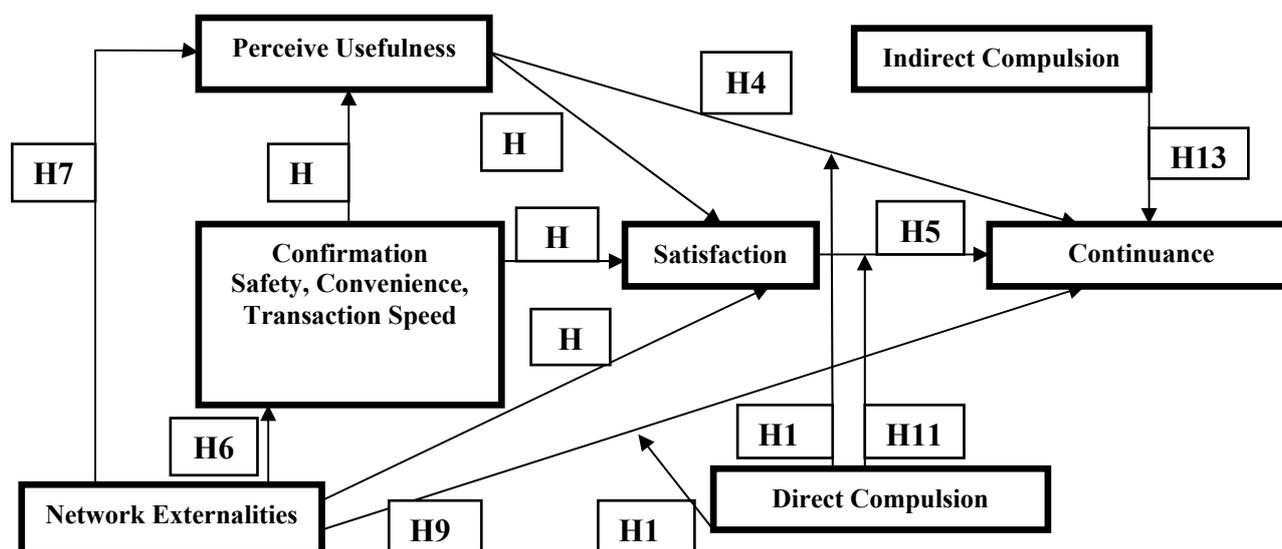
Theoretical Model

This research will use the “Post-acceptance Model of IS (Information System) Continuance” as the theoretical foundation to analyze the factors influencing continuance usage of e-micropayment programs in IRAN.

Tan's research in 2008 describes this model as the following: "This model, introduced by Bhattacharjee (2001) combines the expectation–confirmation theory (Oliver, 1980), a theory used to study consumer satisfaction and post-purchase behavior, and the Technology Acceptance Model (TAM). This theory explains a user's intention to continue using an information system. It suggests that such users' intention is determined by their satisfaction with IS use and perceived usefulness of continued IS use. Users satisfaction, in turn, is influenced by their confirmation of expectation from prior IS use and perceived usefulness". Chuttur in 2009 confirmed again that TAM is indeed a very popular model for explaining and predicting system use. He mentioned also that although many models have been proposed to explain and predict the use of a system, the TAM has been the only one which has the most attention of the IS community.

The theoretical model we are proposing is as shown in Figure 14. Considering our literature review and the findings of Tan's study in a similar research in Taiwan, we will include *safety, convenience and transaction processing speed* as the three elements under “confirmation” and we intend to explore whether they are influential in IRAN consumers' continuance intention to use the program. In addition, as network externality is important, we will extend Bhattacharjee's model to incorporate “supply side” and “demand side” of network externality. Tan believes initial acceptance of IS is an important first step toward realizing IS success. Long-term viability of an IS and its eventual success depend on its *continued* use rather than *first-time* use. For our study, we will analyze the impact of Direct Compulsion in success of the e-micropayment in Iran. Direct compulsion refers to "Must use E-payment system and do not have any other option". There is also Indirect Compulsion which refers to Lock-in customer to continuance intention of the program that we have to investigate in our study. Thus, we have defined thirteen hypotheses concerning the program as shown in figure 3-2 below:

Figure 3-2: Theoretical Model including "Compulsion"



The concrete security requirements of electronic payment systems vary, depending both on their features and the trust assumptions placed on their operation (Asokan ,1997). Micropayments are low-value payments that are made very quickly, like paying for each tick of a phone call. Given these constraints, micropayment techniques must be fast. The first hypothesis for this study considers the three elements of user's confirmation with respect to satisfaction including security, convenience and processing speed of transaction.

H1. Users' confirmation (with safety, convenience and processing Speed transaction) is positively associated with their satisfaction with the program.

The second hypothesis for this study will show the relation and effect of user's confirmation with respect to perceived usefulness to the micropayment program as follows:

H2. Users' confirmation (with safety, convenience and processing Speed transaction) is positively associated with their perceived usefulness of the program.

Perceived usefulness is an important primarily belief construct of TAM and is the degree to which a person believes that use of a system will improve his or her performance (Davis, 1989). Hence, our suggestion is that the relation between perceived usefulness and user's satisfaction derives the third hypothesis of this study as follows:

H3. Users' perceived usefulness is positively associated with their satisfaction with the program.

According to the TAM model and post-purchase user's behavior, there is a relation between perceived usefulness and continuance intension of using a micropayment program. This is expressed below by the 4th hypothesis for this study.

H4. Users' perceived usefulness is positively associated with their continuance intention to use the program.

Finally, through the fifth hypothesis below, we will investigate the relation between users' satisfaction and their continuance intension using the micropayment program:

H5. User's level of satisfaction is positively associated with their continuance intention to use the program.

(Saloner et al., 1995) mentioned that the networks literature suggests that a network's value increases in the number of locations it serves (the "network effect") and the number of its users (the "production scale effect"). They said that a good sample is telephone systems, which are perhaps the best-known example of a technology with important network effects; there are two types of effects. **First**, the benefit of the technology to an individual user increases in the number of telephones, i.e., in the number of locations from which the system can be accessed. This accessibility effect also exists, for example, in retail distribution networks where consumer benefit increases in the number of outlets at which the good is available. **Second**, the benefit increases in the number of people on the system: as the number of people who make and receive calls increases, each individual can communicate with more people. This second effect is the source of network externalities because each new user confers a benefit on all other users.

On the other hand, (Tan, 2008) noted the following: "the economic value of an e-micropayment program is an increasing function of its ubiquity, that is the more users (demand side) use it and the more merchants (supply side) accept it, the more valuable the system is to users, merchants and system operators."

In the case of our study, we are going to investigate the benefit of the technology as the Number of Location (NOL) from merchants (supply Side) from which the system can be accessed and served. We will also investigate the benefit of Number of Users (NOU) who engaged (Demand side) to the micropayment program. Hence, we will define four hypotheses as follows.

H6. Network externality of the program is positively associated with users' extent of confirmation.**H7. Network externality of the program is positively associated with users' perceived usefulness.****H8. Network externality of the program is positively associated with user's level of satisfaction with the program.**

H9. Network externality of the program is positively associated with user's continuance intention to use the program.

As we have mentioned before, we intend in this study to consider the specificity related to the compulsion of the Iranian government in the banking sector to make some bill payment by electronic media. Hence, we will define three hypotheses related to the government (direct) compulsion using E-Payment facilities offered by Banking system and financial institutes. We use Government Compulsion as a Moderate variable to define hypotheses. The mediator variable, then, serves to clarify the nature of the relationship between the independent and dependent variables (MacKinnon, 2008).

H10. Government Compulsion of the program has a positive effect on the relation between users' perceived usefulness and their continuance intention using the program.

H11. Government Compulsion of the program has a positive effect on the relation between users' level of satisfaction and their continuance intention using the program.

H12. Government Compulsion of the program has a positive effect on the relation between Network externality of the program and users' continuance intention using the program.

And the last hypothesis for this study is related to Indirect Compulsion (Lock-in customers) as the 13th one.

H13. User Lock-in is positively associated with their continuance intention to use the program.

As a result of the restriction imposed by the Iran's Banking Act, we include convenience store in our analysis because IRAN has high convenience store density and the operators of convenience stores are active in introducing such programs. All kinds of cards that are issued by banking systems are used in convenience stores.

Delimitation

In IRAN, according to the CBI micropayment definition, most of electronic payments are in the range of micropayment system (payment less than 50 million Rilas, **but in this study in Bank-issued category we focused just on Bill payment** in all sectors e.g. telecommunication's bill, municipality's bill, electricity's bill,), **and on using Cards** in convenience stores and shopping malls by consumers.

III. Methodology

In this section, we will concentrate on the method we adopted throughout this study and research. First of all, the choice of method for the study will be used for. We will then discuss the research method, research strategy, research process and the quality of the research.

This study used primary sources in a form of "**consumer survey**" questionnaire in obtaining the perceptions of bank customers (mostly individual customers) and Iranian citizens who are customers of convenience stores in case of Bank-issued Micropayment program. An extensive review of the available literature provided the foundations for the writing of the thesis. The study collected data from secondary sources such as the Internet, articles, databases, and books, and were analyzed and interpreted. In the rare situations when official statistics are available, the recentness of the data determined its usefulness.

Choice of the research method

Two different approaches can be used in writing a thesis of this nature – inductive or deductive.

Deductive approach generates hypotheses from a particular theoretical framework and then tests these by observing reality. It is concerned with developing propositions from existing theory and making them testable in the real world. (Dubois & Gadde, 2002)

An inductive approach identifies a real phenomenon from which patterns are identified and described, and appropriate theories selected to explain and interpret the phenomenon. It starts with empirical observations, translated into generalizations that are in turn serving as a foundation for developing theories or models. (Carneiro & Merzoug, 2001)

Mark Saunders et al., 2009 summarize some of the major differences between the Deduction approach and the Induction approaches as shown in table 4-1.

Table 4-1: major differences between deductive and inductive approaches to research (M Saunders, et al., 2009)

| <i>Deduction emphasizes</i> | <i>Induction emphasizes</i> |
|--|--|
| <ul style="list-style-type: none"> • Scientific principles • Moving from theory to data • The need to explain causal relationships between variables • The collection of quantitative data • The operationalisation of concepts to ensure clarity of definition • A highly structured approach • Researcher independence of what is being researched • The necessity to select samples of sufficient size in order to generalize conclusion | <ul style="list-style-type: none"> • Gaining an understanding of the meaning human attach to events • A close understanding of the research context • The collection of qualitative data • A more flexible structure to permit changes of research emphasis as the research progresses • A realization that the researcher is part of the research process • Less concern with the need to generalize |

According to what was explained above, a deductive approach was adopted in the present study. The literature reviewed was used to develop a theoretical framework and the test factors which came from the selected model in this study. A sample of sufficient size was selected from the whole population.

Research Strategies

The choice of a research strategy depends on a number of factors. Yin (1994) and he says each strategy can be used for Exploratory, descriptive and explanatory research. *Mark Saunders et al., 2009* identify seven main research strategies – experiment, surveys, archival research, action research, grounded theory, ethnography and case studies. The most appropriate strategy for a given situation depends on such factors as the type of research question. And Yin states, the control an investigator has over actual behavioral events, the focus on contemporary as opposed to historical phenomena.

Saunders believes that Survey strategy is popular and common in business and management research and is most used to answer WHO, Where, How much, and How many questions, and this kind of strategy is usually associated with the deductive approach. And he states the survey strategy allows you to collect quantitative data which you can analyze quantitatively using descriptive and inferential statistics. So we decided to use Survey as our research strategy.

Survey Study Design

In this study it was necessary to first examine the area of electronic retail payment and its influence in retail payments and so expand to Micropayment. Through in-depth case study of IRAN, how electronic payment has influenced the retail payment and Micropayment market in IRAN were investigated and analyzed. This study is based on both primary and secondary data and it provides a framework for considering how Micropayment system can help solve retail payments problems.

This research work involves the use of survey. Questionnaires were sent to bank customers and Convenience stores' customers also to ascertain how the various Micropayment products have proved to be a solution to their payment problems.

Factors and Items

Factors (Variables) and Items (Sub Variables) for this study are defined as follows:

A: Confirmation (A1: Safety, A2: Convenience, A3: Transaction Speed)

B: Perceived Usefulness

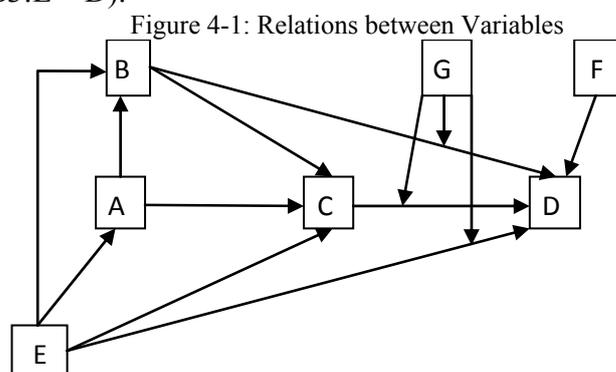
C: Satisfaction

D: Continuous Intension

E: Network Externality (E1: Number of users (NOU), E2: Number of Locations (NOL))

F: Indirect Compulsion

G: Direct Compulsion as Mediator Variable with sub variables G1, G2, G3 as follows: (G1: C→D, G2: B→D, G3:E→D).



Using the above mentioned variables and according to figure 4-1, we define 25 tests as follows. T1-T3 will cover the first hypothesis (H1), T4-T6 will cover the 2nd hypothesis (H2), T7 will cover the 3rd hypothesis (H3), T8 will cover the 4th hypothesis (H4), T19 will cover the 5th hypothesis (H5), T10-15 will cover the 6th hypothesis (H6), T16-T17 will cover the 7th hypothesis (H7), T18-19 will cover the 8th hypothesis (H8), T20-21 will cover the 9th hypothesis (H9), T22 will cover the 10th hypothesis (H10), T23 will cover the 11th hypothesis (H11), T24-25 will cover the 12th hypothesis (H12) and finally T26 will cover the 13th hypothesis (H13).

- T1: Relation between Safety and Satisfaction
T2: Relation between Convenience and Satisfaction
T3: Relation between Transaction Speed and Satisfaction
T4: Relation between Safety and perceive Usefulness
T5: Relation between Convenience and Perceive Usefulness
T6: Relation between Transaction Speed and Perceive Usefulness
T7: Relation between Perceived Usefulness and Satisfaction
T8: Relation between Perceived Usefulness and Satisfaction
T9: Relation between Satisfaction and IS Continuance Intension.
T10: Relation between Number of Users and Safety.
T11: Relation between Number of Users and Convenience.
T12: Relation between Number of Users and Transaction Speed.
T13: Relation between Number of Locations and Safety.
T14: Relation between Number of Locations and Convenience.
T15: Relation between Number of Locations and Transaction Speed.
T16: Relation between Number of users and Perceived Usefulness.
T17: Relation between Number of Locations and Perceived Usefulness.
T18: Relation between Number of User and Satisfaction.
T19: Relation between Number of Location and Satisfaction.
T20: Relation between Number of Users and IS Continuance Intension.
T21: Relation between Number of Locations and IS Continuance Intension.
T22: Effect of Direct Compulsion on Relation between Perceived Usefulness and IS continuance Intention.
T23: Effect of Direct Compulsion on Relation between Satisfaction and IS continuance Intention.
T24: Effect of Direct Compulsion on Relation between Number of Users and IS continuance Intention.
T25: Effect of Direct Compulsion on Relation between Number of Location and IS continuance Intention.
T26: Relation between Indirect Compulsion and IS continuance Intention.

Questionnaire Design

Many authors (for example, Bell 2005, Oppenheim 2000) argue that it is far harder to produce a good questionnaire than you might think. You need to ensure that it will collect the precise data that you require to answer your research question(s) and achieve your objectives. (Mark Saunders et al., 2009)

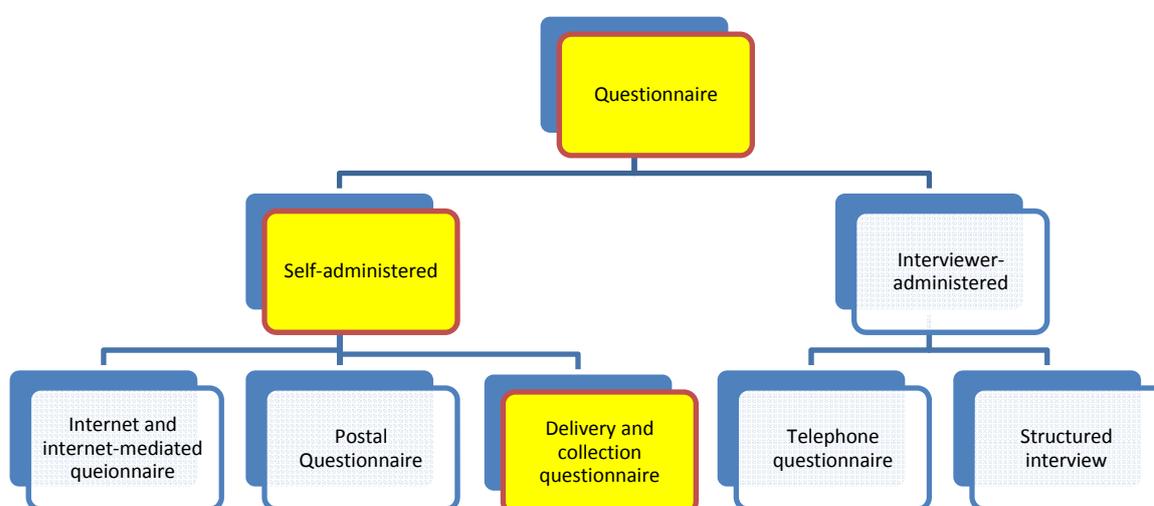
Saunders mentioned that designing the questionnaire affects the response rate and the reliability and validity of the data to be collected. Response rate, validity and reliability can be maximized by:

- Careful design of individual questions;
- Clear and pleasing layout of the questionnaire;
- Lucid explanation of the purpose of the questionnaire;

- Pilot testing;
- Carefully planned and executed administration.

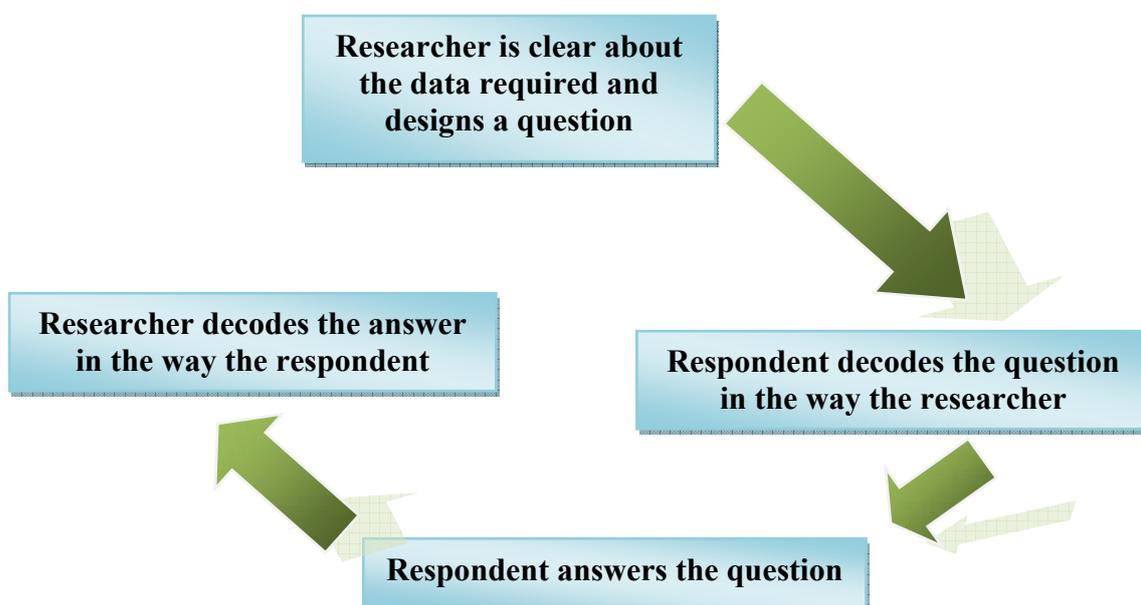
Based on our literature review, our discussions with colleagues and some experts, we designed our questionnaire (see Appendix I). As shown in figure 4-2, we have made the choice to self-administer the questionnaire, and to perform delivery and collection by hand and by Internet (via Email) and by telephone also.

Figure 4-2: Type of questionnaire (Saunders et al. 2009)



As suggested by Saunders, in order to ensure that essential data are collected, we divided each research question to more specific questions about which we need to gather the data, and identified the variables about which we need to collect data to answer each question. Saunders state that there are at least four stages as shown in figure 4-3, that must occur if the question is to be valid and reliable.

Figure4-3: Stages that must occur if a question is to be valid and reliable (Saunders et al., 2009)
Source: developed from Foddy (1994)



Designing individual questions

We used open questions and closed questions, sometimes referred to open-ended questions and closed-ended questions (Dillman, 2007). We use the Linkert-style rating scale (5) according to which, for the closed-ended questions, the respondent is asked how strongly he/she *Agree* or *Tend to agree* or *Not sure* or *Tend to disagree* or *Disagree*.

Pre testing

To improve the validity and reliability of research data; pre-testing was conducted before sending questionnaires to respondents. In order to control elements such as understanding, number, order, sensitiveness, and required time of questions, initial personal interviews with eight experts (including academic and industrial experts) were held. First, we asked two experts for any modifications. After applying their views, the test was administered for the second time. When the last two experts did not have any significant points to add, we stopped the modification process.

Pilot Testing

After pre-testing, the questionnaire was sent to a group of 13 respondents in positions similar to those of final respondents. They were asked to answer the questions and suggest any modifying views concerning our questions. We then applied slight modifications and prepared the final draft.

Sampling

Why sampling? In many statistics books, the answer is related to the three following arguments:

- 1) Lack of Money
- 2) Lack of Time
- 3) Lack of Human resources.

Hair.et al, 2009 states that to determine a sample size from a large population, three decisions must be made: (1) the degree of confidence (often 95%); (2) the specified level of precision (amount of acceptable error); and (3) the amount of variability (population homogeneity). Thus, as a result he formulated the amount of sample size as the following statement:

$$\text{Sample size} = [(\text{degree of confidence required} * \text{variability}) / (\text{desired precision})]^2$$

In the pilot study as we calculated the value of variability or standard variation and found it equal to 1 (because of the used Likert question). The degree of confidence level (95%) for a Normal distribution is 1.96, and for the last item which is 'desired precision', we assumed that 0.1 (e.g. the difference between two means: population means and sample means should be lower than 0.1).

The minimum sample size has been calculated according to the above information.

$$\text{Sample size} = [(1 * 1.96) / 0.1]^2 \approx 384$$

Hence the **minimum** sample size should be equal to 384.

Sample selection Area

Considering the minimum sample size calculated in the last section, 520 questionnaires were sent and delivered by hand and by Email and telephone to the different areas shown in figure 4-4. Three weeks later, 409 filled questionnaires were available to us.

state office in Tehran) chosen for our pilot study. On the first attempt of gathering the data, the Cronbach's alpha's calculated (for all Likert questions n=20) was 0.814. Then, we changed some questions of the questionnaire, and submitted it again to the respondents. The calculated Cronbach's alpha's (for all Likert question n=20) became 0.888.

first Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| 0.814 | 20 |

The 2nd Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| 0.888 | 20 |

Table 4-2 illustrates the Cronbach's alpha scale value which is calculated for reliability analysis of each of the seven main factors in our questionnaire, for 13 gathered questionnaires.

Table 4-2: Reliability statistics of each main factor

| Main Factors | Cronbach's Alpha | Number of Items | Mean | Variance |
|-----------------------|------------------|-----------------|-------|----------|
| Confirmation | 0.754 | 5 | 3.492 | .577 |
| Satisfaction | 0.876 | 3 | 3.538 | .867 |
| Perceive Usefulness | 0.674 | 3 | 4.077 | 0.769 |
| Continuance Intension | 0.840 | 2 | 3.920 | .954 |
| Network Externalities | 0.702 | 6 | 3.200 | .641 |
| Direct Compulsion | No Likert | 2 | - | - |
| Indirect Compulsion | No Likert | 4 | - | - |

Method of data analysis

The method of the collected data analysis has been applied at three levels of the study. First, data are examined and some descriptive statistics obtained in order to obtain an overview of the characteristics of the sample and to assess issues such as mean and standard deviation. Second, bivariate correlations between variables are analyzed with respect to the correlation between scales of variables and mediator variables. In particular, it examines the research hypothesizes.

The final stage of the analysis adopts a regression analysis in order to identify the eventual existence of association and relationship between the dependent and independent variables. SPSS and Mplus[®] software have been used for the tests.

IV. Data and Data Transformations

Factors analysis

Recall that we have chosen seven main factors (MF) to describe our Model.

- MF1) **confirmation**
- MF2) **Satisfaction**
- MF3) **Perceived Usefulness**
- MF4) **Continuance Intension**
- MF5) **Network Externalities**
- MF6) **Direct Compulsion**
- MF7) **Indirect Compulsion**

Relation between factors and the corresponding questions in the questionnaire are showed in table 5-1-1. For the first factor "Confirmation", we have 11 questions. For the 2nd factor, we assign five questions. For the 3rd factor "Perceived usefulness" three questions assigned. The 4th factor "Continuance intension" includes two questions, for the 5th factor "Network Externalities" six questions assigned and two questions for the 6th factor "Direct Compulsion" and for the 7th factor "Indirect Compulsion", we assigned 4 questions.

Table 5-1-1: relation between factors and questionnaire

| | Factors | Related questions |
|---|------------------------------|---|
| 1 | Confirmation | 5, 6-2, 9-2, 9-3, 9-4, 9-5, 9-6, 15, 16, 17, 18 |
| 2 | Satisfaction | 20, 30, 31, 33, 40 |
| 3 | Perceive Usefulness | 19,30,39 |
| 4 | Continuance Intension | 21, 41 |
| 5 | Network Externalities | 22, 23, 24, 26, 27, 28 |
| 6 | Direct Compulsion | 35-3, 35-4, 44 |
| 7 | Indirect Compulsion | 38-1, 38-2, 38-3, 38-4 |

Descriptive statistics have been done for the seven factors as shown in the table 5-1-2. Column 'N' indicates the number of valid answers received by respondents. Minimum and maximum validity for each factor are indicated in the 3rd and 4th columns, and arithmetic average or "Mean" and Standard Deviation are shown in the 5th and 6th columns.

Table 5-1-2: Descriptive statistics related to the main Factors

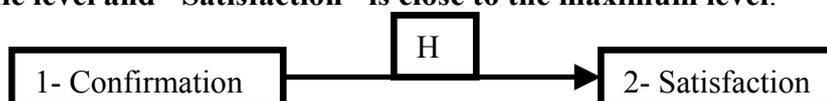
| 7 Main Factors | N | Minimum | Maximum | Mean | Std. Deviation |
|-----------------------|-----|---------|---------|--------|----------------|
| Confirmation | 396 | 1.91 | 4.27 | 3.0996 | 0.42271 |
| Satisfaction | 381 | 2 | 5 | 4.3879 | 0.45556 |
| Perceived Usefulness | 404 | 2.33 | 5 | 4.4266 | 0.52911 |
| Continuance Intension | 401 | 2.5 | 5 | 4.3529 | 0.57515 |
| Network Externalities | 384 | 1.83 | 5 | 3.5907 | 0.51516 |
| Direct Compulsion | 401 | 1 | 5 | 2.882 | 1.2324 |
| Indirect Compulsion | 408 | 1 | 5 | 2.8064 | 1.06969 |

Now, let's investigate hypotheses related to the different factors.

Solving Hypothesis 1

In order to investigate the situation "Confirmation" as a first factor with regard to eleven questions (5, 6-2, 9-2, 9-3, 9-4, 9-5, 9-6, 15, 16, 17, 18), calculated the arithmetic mean of them. In all cases to calculate the components of the seven factors in our research, for Likert questions, numbers from 1 to 5 were assigned. As for two types choice questions, the numbers 1 or 2 were assigned.

According to table 5-1-2, the calculated Mean for "Confirmation" is 3.0996 out of 5 and the Mean for "Satisfaction" is equal to 4.3879 out of 5. This shows that **"Confirmation" is in the middle level and "Satisfaction" is close to the maximum level.**



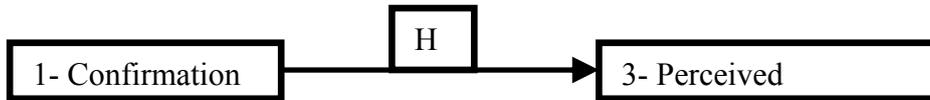
According to the first hypothesis, **"H1. Users' confirmation (with safety, convenience and processing Speed transaction) is positively associated with their satisfaction with the program"**, we have to test the relation between Confirmation and satisfaction. Spearman nonparametric correlation (table 5-1-3) showed 0.345, positive and strong (Sig = 0.000 < 0.01) (Pearson Correlation showed 0.409, see table 5-1-4). Hence, the result for this test is as follows:

User's confirmation (Increase or Decrease) is positively associated with their Satisfaction with the program.

Solving Hypothesis 2

In order to investigate the situation "Confirmation" as a first factor and with regard to eleven questions (5, 6-2, 9-2, 9-3, 9-4, 9-5, 9-6, 15, 16, 17, and 18), we calculated the arithmetic mean of them. Three questions (19, 30, and 39) being assigned for the 3rd factor "Perceived Usefulness". According to the table 5-1-2, mean for "Confirmation" is equal to 3.0996 out of

5 and Mean for "Perceived Usefulness" is found equal to 4.4266 out of 5, this shows that "Confirmation" in the middle level and "Perceived Usefulness" near the maximum level.

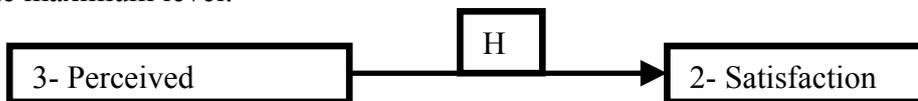


According to the second hypothesis, "**H2. Users' confirmation (with safety, convenience and processing Speed transaction) is positively associated with their perceived Usefulness of the program**", we have to test the relation between Confirmation and Perceived Usefulness, and Spearman nonparametric correlation (table 5-1-3) showed 0.291, positive and strong (Sig = 0.000 < 0.01) (Pearson Correlation showed 0.348, see table 5-1-4). Hence, the result for this test showed that:

User's confirmation (Increase or Decrease) is positively associated with their Perceived Usefulness with the program.

Solving Hypothesis 3

In order to investigate the situation "Perceived Usefulness" as a third factor and with regard to three questions (19, 30, 39), calculated the arithmetic mean of them. Five questions (20, 30, 31, 33, and 40) are assigned for the 2nd factor "Satisfaction". According to table 5-1-2, mean for "Perceive Usefulness" is equal to 4.6266 out of 5 and Mean for "Satisfaction" is found equal to 4.3879 out of 5, this shows both "Satisfaction" and "Perceived Usefulness" near the maximum level.

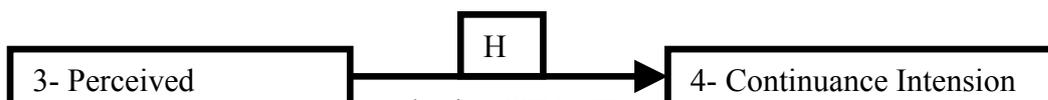


According to the third hypothesis, "**H3: Users' perceived usefulness is positively associated with their satisfaction with the program.**" we have to test the relation between Perceived Usefulness and Satisfaction. Spearman nonparametric correlation (table 5-1-3) showed 0.762, positive and strong (Sig = 0.000 < 0.01) (Pearson Correlation showed 0.828, see table 5-1-4). Hence, the result for this test showed that:

User's Perceive Usefulness (Increase or Decrease) is positively associated with their Satisfaction with the program

Solving Hypothesis 4

In order to investigate the situation "Perceived Usefulness" as a third factor and with regard to three questions (19, 30, and 39), we calculated the arithmetic mean of them. Two questions (21, and 41) are assigned for the forth factor "Continuance Intension". According to table 5-1-2, mean for "Perceived Usefulness" is equal to 4.6266 out of 5 and Mean for "Continuance Intension" is equal to 4.3529 out of 5. This shows that both "Satisfaction" and "Perceived Usefulness" are near the maximum level.



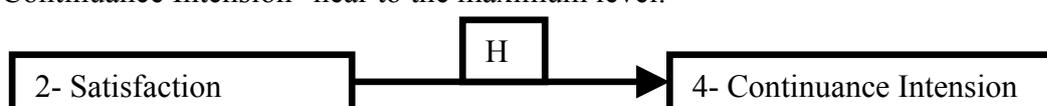
According to the fourth hypothesis, "**H4. Users' perceived usefulness is positively associated with their continuance intention to use the program.**" we have to test the

relation between Perceived Usefulness and Continuance Intension. Spearman nonparametric correlation (table 5-1-3) showed 0.650, positive and strong (Sig = 0.000 < 0.01) (Pearson Correlation showed 0.703, see table 5-1-4). Hence, the result for this test showed that:

User's Perceive Usefulness (Increase or Decrease) is positively associated with their Continuance Intensions with the program

Solving Hypothesis 5

In order to investigate the situation "Satisfaction" as a second factor and with regard to five questions (20, 30, 31, 33, and 40), calculated the arithmetic mean of them. Two questions (21, and 41) are assigned for the forth factor "Continuance Intension". According to table 5-1-2, mean for "Satisfaction" is equal to 4.3879 out of 5 and the mean for "Continuance Intension" is found equal to 4.3529 out of 5. These shows that both "Satisfaction" and "Continuance Intension" near to the maximum level.



According to the fifth hypothesis, "**H5. Users' level of satisfaction is positively associated with their continuance intention to use the program**", we have to test the relation between Satisfaction and Continuance Intension. Spearman nonparametric correlation (table 5-1-3) showed 0.641, positive and strong (Sig = 0.000 < 0.01) (Pearson Correlation showed 0.705, see table 5-1-4). Hence, the result for this test showed that:

User's level of Satisfaction (Increase or Decrease) is positively associated with their Continuance Intension with the program

Table 5-1-3: Spearman Nonparametric Correlation result

| | | | Confirmation | Satisfaction | Perceive Usefulness | Continuance Intension | |
|---|-----------------------|-------------------------|--------------|--------------|---------------------|-----------------------|----------|
| Spearman's rho | Confirmation | Correlation Coefficient | | .345(**) | .291(**) | | |
| | | Sig. (2-tailed) | | 0.000 | 0.000 | | |
| | | N | | 372 | 394 | | |
| | Satisfaction | Correlation Coefficient | | | | .641(**) | |
| | | Sig. (2-tailed) | | | | 0.000 | |
| | | N | | | | 379 | |
| | Perceive Usefulness | Correlation Coefficient | | | .762(**) | | .650(**) |
| | | Sig. (2-tailed) | | | 0.000 | | 0.000 |
| | | N | | | 381 | | 399 |
| | Network Externalities | Correlation Coefficient | .280(**) | .442(**) | .328(**) | .338(**) | |
| | | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | |
| | | N | 375 | 362 | 381 | 378 | |
| | Indirect Compulsion | Correlation Coefficient | | | | | .127(*) |
| | | Sig. (2-tailed) | | | | | 0.011 |
| | | N | | | | | 400 |
| ** Correlation is significant at the 0.01 level (2-tailed). | | | | | | | |
| * Correlation is significant at the 0.05 level (2-tailed). | | | | | | | |

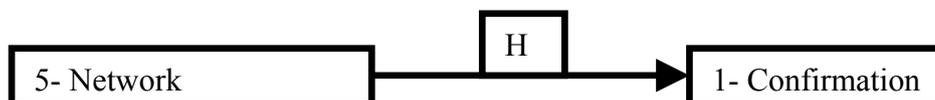
Table 5-1-4: Pearson Correlation result

| | | Confirmation | Satisfaction | Perceive Usefulness | Continuance Intesion |
|-----------------------|---------------------|--------------|--------------|---------------------|----------------------|
| Confirmation | Pearson Correlation | | .409(**) | .348(**) | |
| | Sig. (2-tailed) | | 0.000 | 0.000 | |
| | N | | 372 | 394 | |
| Satisfaction | Pearson Correlation | | | | .705(**) |
| | Sig. (2-tailed) | | | | 0.000 |
| | N | | | | 379 |
| Perceive Usefulness | Pearson Correlation | | .828(**) | | .703(**) |
| | Sig. (2-tailed) | | | | 0.000 |
| | N | | | | 399 |
| Network Externalities | Pearson Correlation | .267(**) | .449(**) | .377(**) | .346(**) |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 375 | 362 | 381 | 378 |
| Indirect Compulsion | Pearson Correlation | | | | .170(**) |
| | Sig. (2-tailed) | | | | 0.001 |
| | N | | | | 400 |

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Solving Hypothesis 6

In order to investigate the situation "Network Externalities" as a fifth factor and with regard to six questions (22, 23, 24, 26, 27, and 28), calculated the arithmetic mean of them. Two questions (21, and 41) are assigned for the forth factor "Confirmation". According to table 5-1-2, mean for "Network Externalities" is equal 3.5907 out of 5 and Mean for "Confirmation" is found equal to 3.0996 out of 5, this shows that both "Network Externalities" and "Confirmation" more than middle level.

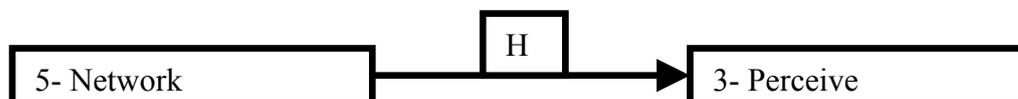


According to the sixth hypothesis, "**H6: Network externality of the program is positively associated with users' extent of confirmation.**", we have to test the relation between Network Externalities and user's Confirmation, and Spearman nonparametric correlation (table 5-1-3) showed 0.280, positive and strong (Sig = 0.000 < 0.01) (Pearson Correlation showed 0.267, see table 5-1-4). Hence, the result for this test showed that:

Network Externalities (Increase or Decrease) is positively associated with user's extent of Confirmation

Solving Hypothesis 7

In order to investigate the situation "Network Externalities" as a fifth factor and with regard to six questions (22, 23, 24, 26, 27, and 28), calculated the arithmetic mean of them. Two questions (19, 30, and 39) are assigned for the third factor "Perceive Usefulness". According to table 5-1-2, mean for "Network Externalities" is equal 3.5907 out of 5 and Mean for "Perceive Usefulness" is found equal to 4.4266 out of 5, this shows that "Network Externalities" in the middle level and "Perceive Usefulness" near the Maximum level.

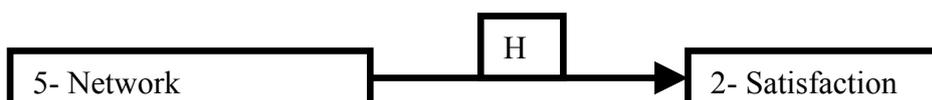


According to the seventh hypothesis, "**H7: Network externality of the program is positively associated with users' perceived usefulness.**", we have to test the relation between Network Externalities and user's Perceived Usefulness, and Spearman nonparametric correlation (table 5-1-3) showed 0.328, positive and strong (Sig = 0.000 < 0.01) (Pearson Correlation showed 0.377, see table 5-1-4). Hence, the result for this test showed that:

Network Externalities (Increase or Decrease) is positively associated with user's Perceive Usefulness

Solving Hypothesis 8

In order to investigate the situation "Network Externalities" as a fifth factor and with regard to six questions (22, 23, 24, 26, 27, and 28), calculated the arithmetic mean of them. Five questions (20, 30, 31, 33, and 40) are assigned for the second factor "Satisfaction". According to table 5-1-2, mean for "Network Externalities" is equal to 3.5907 out of 5 and Mean for "Satisfaction" is found equal to 4.3879 out of 5, this shows that "Network Externalities" in the middle level and "Satisfaction" near the Maximum level.

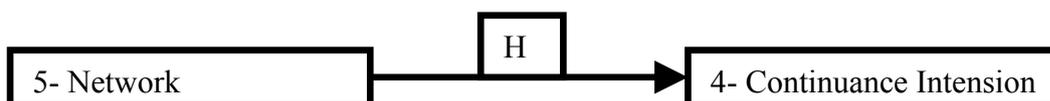


According to the eighth hypothesis, "**H8: Network externality of the program is positively associated with user's level of satisfaction with the program.**", we have to test the relation between Network Externalities and user's level of Satisfaction, and Spearman nonparametric correlation (table 5-1-3) showed 0.442, positive and strong (Sig = 0.000 < 0.01) (Pearson Correlation showed 0.449, see table 5-1-4). Hence, the result for this test showed that:

Network Externalities (Increase or Decrease) is positively associated with user's level of Satisfaction

Solving Hypothesis 9

In order to investigate the situation "Network Externalities" as a fifth factor and with regard to six questions (22, 23, 24, 26, 27, and 28), calculated the arithmetic mean of them. Two questions (21 and 41) are assigned for the fourth factor "Continuance Intension". According to table 5-1-2 mean for "Network Externalities" is equal to 3.5907 out of 5 and Mean for "Satisfaction" is found equal to 4.3529 out of 5, this shows that "Network Externalities" in the middle level and "Continuance Intension" near the Maximum level.



According to the ninth hypothesis, "**H9: Network externality of the program is positively associated with user's continuance intention to use the program.** ", we have to test the relation between Network Externalities and user's Continuance Intension, and Spearman nonparametric correlation (table 5-1-3) showed 0.338, positive and strong (Sig = 0.000 <

0.01) (Pearson Correlation showed 0.346, see table 5-1-4). Hence, the result for this test showed that:

Network Externalities (Increase or Decrease) is positively associated with user's Continuance Intension

Solving Hypothesis 10

In order to investigate the situation "Direct Compulsion" as a sixth factor and with regard to three questions (35-3, 35-4, 44), calculated the arithmetic mean of them. Three questions (19, 30, 39) are assigned for the third factor "Perceive Usefulness" and two questions (21, 41) are assigned for the fourth factor "Continuance Intension". According to table 5-1-2, mean for "Direct Compulsion" is equal to 2.2882 out of 5 and Mean for "Perceive Usefulness" is found equal to 4.4266 out of 5, and Mean for "Continuance Intension" is equal to 4.3529 out of 5, this shows that "Direct Compulsion" near the middle level and both "Perceived Usefulness" and "Continuance Intension" near the Maximum level.

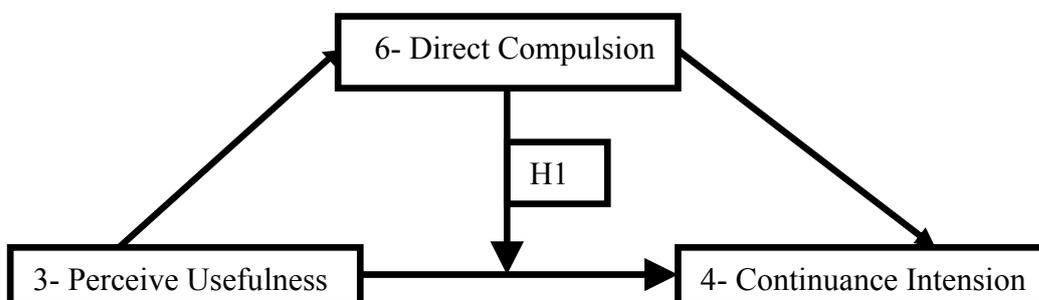


Table 5-1-5: Partial Correlation for the tenth Hypothesis

| Control Variables | | | Continuance Intension |
|-------------------|---------------------|-------------------------|-----------------------|
| Direct Compulsion | Perceive Usefulness | Correlation | 0.702 |
| | | Significance (2-tailed) | 0.000 |
| | | df | 392 |

According to the tenth hypothesis, "**H10: Government Compulsion (direct Compulsion) of the program has a positive effect on the relation between user's perceive Usefulness and their continuance intension using the program.**", we have to test the relation between Direct Compulsion and the relation between User's Perceived Usefulness and their Continuance Intension, a partial Correlation (see table 5-1-5) showed 0.702, positive and strong (Sig = 0.000 < 0.01). Hence, the result for this test showed that:

Direct Compulsion (Increase or Decrease) has a positive effect on the relation between user's perceive Usefulness and their continuance intension

Solving Hypothesis 11

In order to investigate the situation "Direct Compulsion" as a sixth factor and with regard to three questions (35-3, 35-4, 44), calculated the arithmetic mean of them. Five questions (20,

30, 31, 33, 40) are assigned for the second factor "Satisfaction" and two questions (21, 41) are assigned for the fourth factor "Continuance Intension". According to table 5-1-2, mean for "Direct Compulsion" is equal to 2.2882 out of 5 and Mean for "Satisfaction" is found equal to 4.3879 out of 5, and Mean for "Continuance Intension" is equal to 4.3529 out of 5, that shows that "Direct Compulsion" near the middle level and both "Satisfaction" and "Continuance Intension" near the Maximum level.

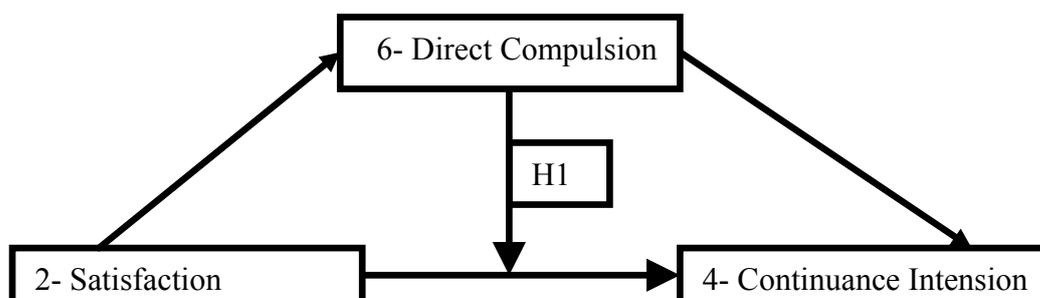


Table 5-1-6: Partial Correlation for the eleventh Hypothesis

| Control Variables | | | Continuance Intension |
|-------------------|--------------|-------------------------|-----------------------|
| Direct Compulsion | Satisfaction | Correlation | 0.692 |
| | | Significance (2-tailed) | 0.000 |
| | | df | 372 |

According to the eleventh hypothesis, "H11: Government Compulsion of the program has a positive effect on the relation between users' level of satisfaction and their continuance intention using the program.", we have to test the relation between Direct Compulsion and the relation between User's level of satisfaction and their Continuance Intension. A partial Correlation (see table 5-1-6) showed 0.692, positive and strong (Sig = 0.000 < 0.01). Hence, the result for this test showed that:

Direct Compulsion (Increase or Decrease) has a positive effect on the relation between user's level of satisfaction and their continuance intention

Solving Hypothesis 12

In order to investigate the situation "Direct Compulsion" as a sixth factor and with regard to three questions (35-3, 35-4, 44), calculated the arithmetic mean of them. Five questions (20, 30, 31, 33, 40) are assigned for the fifth factor "Network Externalities" and six questions (22, 23, 24, 26, 27, 28) are assigned for the fourth factor "Continuance Intension". According to table 5-1-2, mean for "Direct Compulsion" is equal to 2.2882 out of 5 and Mean for "Network Externalities" is found equal to 3.5907 out of 5, and Mean for "Continuance Intension" is equal to 4.3529 out of 5, this shows that "Direct Compulsion" near the middle level and "Network Externalities" the middle level and "Continuance Intension" near the Maximum level.

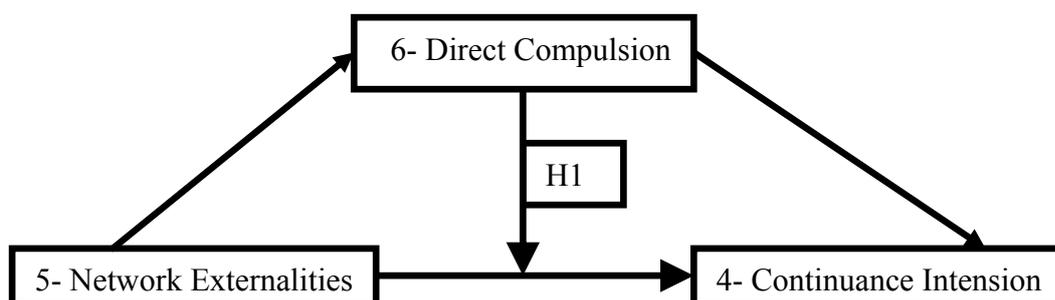


Table 5-1-7: Partial Correlation for the twelfth Hypothesis

| Control Variables | | | Continuance Intension |
|-------------------|-----------------------|-------------------------|-----------------------|
| Direct Compulsion | Network Externalities | Correlation | 0.318 |
| | | Significance (2-tailed) | 0.000 |
| | | df | 370 |

According to the twelfth hypothesis, “**H12: Government Compulsion of the program has a positive effect on the relation between Network externality of the program and users’ continuance intension using the program.**”, we have to test the relation between Direct Compulsion and the relation between Network Externalities and their Continuance Intension. A partial Correlation (see table 5-1-7) showed 0.318, positive and strong (Sig = 0.000 < 0.01). Hence, the result for this test showed that:

Direct Compulsion (Increase or Decrease) has a positive effect on the relation between Network Externalities of the program and their Continuance Intention

Solving Hypothesis 13

In order to investigate the situation "Indirect Compulsion" as a seventh factor and with regard to four questions (38-1, 38-2, 38-3, 38-4), calculated the arithmetic mean of them. Two questions (21, 41) are assigned for the forth factor "Continuance Intension". According to table 5-1-2, mean for “Indirect Compulsion” is equal to 2.8064 out of 5 and Mean for “Continuance Intension” is found equal to 4.3529 out of 5, that shows " Indirect Compulsion” in the middle level and " Continuance Intension” near the Maximum level.



According to the thirteenth hypothesis, “**H13: User Lock-in is positively associated with their continuance intension to use the program.**”, we have to test the relation between Indirect Compulsion (Lock-in customers) and user's Continuance Intension, and Spearman nonparametric correlation (table 5-1-3) showed 0.127, positive and strong (Sig = 0.000 < 0.01) (Pearson Correlation showed 0.170, see table 5-1-4). Hence, the result for this test showed that:

Indirect Compulsion or Lock-in Customers (Increase or Decrease) is positively associated with user's Continuance Intension

V. Results

Regression analysis

For regression analysis, we define dependent and independent variables as follows:

Dependent variables (DV) or factors for this study are:

- DV1) Confirmation
- DV2) Continuance Intension

Independent Variables (IDV) or Factors for this study are:

- IDV1) Satisfaction
- IDV2) Perceived usefulness
- IDV3) Network Externalities
- IDV4) Direct Compulsion
- IDV5) Indirect Compulsion

We used a multiple regression analysis to assess the effectiveness and priority of the five components (“satisfaction”, “Perceived Usefulness”, Network Externalities”, “Direct Compulsion”, and “Indirect Compulsion”), relatively to the **first** dependent variable (“Confirmation”). (See appendix III for the details of the ANOVA tables).

The method used for this analysis was stepwise forward (Stepwise (Criteria: Probability-of-F-to-enter \leq .050, Probability-of-F-to-remove \geq .100).

Multiple ANOVA (analysis of variance) showed in order “Satisfaction”, “Network Externalities”, and “Indirect Compulsion” effect on ‘Confirmation’. (See table 5-2-1-1)

- Linear Regression: “satisfaction” determines 15.2% of “Confirmation” alone.
- Binary regression: “Satisfaction” and “Network Externalities” determine 16.7% of “Confirmation”.
- Regression of triplet (Plane): “satisfaction”, “Network Externalities”, and “Indirect Compulsion” determine 17.7% of Confirmation”.

And “perceived Usefulness” and “Direct Compulsion” with predicted level of confidence 95% are not present in regression and do not have any effect on “Confirmation”. (Perceived usefulness, Sig = 0.409 > .05 and Direct compulsion, Sig = 0.139 > .05)

Table 5-2-1-1: Regression (“Confirmation”)

| Variables Entered | R | R Square | Adjusted R Square | Std. Error of the Estimate | Sum of Squares | Sig. | F |
|-----------------------|---------|----------|-------------------|----------------------------|----------------|---------|--------|
| Satisfaction | .390(a) | 0.152 | 0.15 | 0.37611 | 8.854 | .000(a) | 62.588 |
| Network Externalities | .409(b) | 0.167 | 0.163 | 0.37333 | 9.718 | .000(b) | 34.863 |
| Indirect Compulsion | .421(c) | 0.177 | 0.17 | 0.37169 | 10.282 | .000(c) | 24.808 |

The same approach has been adopted to assess the effectiveness and priority of the five components relatively to the **second** dependent variable (“Continuance Intension”). (See appendix IV for the details of the ANOVA tables)

Multiple ANOVA showed in order “Perceived Usefulness”, and “Satisfaction” effect on “Continuance Intension”. (See table 5-2-1-2)

- Linear Regression: “Perceive Usefulness” determines 51% of “Continuance Intension” alone.
- Binary regression: “Perceive Usefulness” and “Satisfaction” determine 54% of “Continuance Intension”.

And “Network Externalities” and “Indirect Compulsion” with predicted level of confidence 95% are not present in regression and do not affect “Continuance Intension”. (Network Externalities, Sig = 0.236 > .05 and Indirect compulsion, Sig = 0.208 > .05)

Table 5-2-1-2: Regression (“Continuance Intension”)

| Variables Entered | R | R Square | Adjusted R Square | Std. Error of the Estimate | Sum of Squares | Sig. | F |
|---------------------|---------|----------|-------------------|----------------------------|----------------|---------|---------|
| Perceive Usefulness | .714(a) | 0.51 | 0.508 | 0.40992 | 61.669 | .000(a) | 367.001 |
| Satisfaction | .739(b) | 0.545 | 0.543 | 0.39528 | 65.986 | .000(b) | 211.154 |

Independent Samples T-test

In this section, we compare the view of men and women about the seven components or factors of this study. For this purpose we use the independent samples T-test.

Table 5-2-2-1: Comparing men & woman looking to study in case of “Confirmation”

| | Gender | N | Mean | Std. Deviation | t | df | Sig |
|---------------------|---------------|-----|------|----------------|------|-----|-------|
| Confirmation | Male | 198 | 3.16 | 0.45 | 3.08 | 394 | 0.002 |
| | Female | 198 | 3.03 | 0.39 | | | |

According to table 5-2-2-1 for the first main Factor "Confirmation", the mean for Male is 3.16 and for Female are 3.03 (out of 5). T-test with confidence level .95 showed that these differences are significant (Sig = 0.002 < 0.05). **It shows the level of "Confirmation" in E-Payment for Male is higher than for female.**

Table 5-2-2-2: Comparing men & woman looking to study in case of "Satisfaction"

| | Gender | N | Mean | Std. Deviation | t | df | Sig |
|---------------------|---------------|-----|------|----------------|-------|-----|-------|
| Satisfaction | Male | 188 | 4.39 | 0.46 | 0.285 | 379 | 0.776 |
| | Female | 193 | 4.38 | 0.45 | | | |

According to table 5-2-2-2, for the Second main Factor "Satisfaction" Mean for Male is 4.39 and for Female are 4.38 (out of 5). T-test with confidence level .95 showed that these differences are not significant (Sig = 0.776 > 0.05). **It shows the level of "Satisfaction" in E-Payment for Male is the same as for female.**

Table 5-2-2-3: Comparing men & woman looking to study in case of "Perceive Usefulness"

| | Gender | N | Mean | Std. Deviation | t | df | Sig |
|----------------------------|---------------|-----|------|----------------|-------|-----|-------|
| Perceive Usefulness | Male | 201 | 4.43 | 0.51 | 0.299 | 402 | 0.765 |
| | Female | 203 | 4.42 | 0.55 | | | |

According to table 5-2-2-3, for the third of main Factor "Perceived Usefulness" Mean for Male is 4.43 and for Female is 4.42 (out of 5). T-test with confidence level .95 showed that these differences are not significant (Sig = 0.765 > 0.05). **It shows the level of "Perceive Usefulness" in E-Payment for Male is the same as for female.**

Table 5-2-2-4: Comparing men & woman looking to study in case of "Continuance Intension"

| | Gender | N | Mean | Std. Deviation | t | df | Sig |
|------------------------------|---------------|-----|------|----------------|-------|-----|-------|
| Continuance Intension | Male | 200 | 4.40 | 0.55 | 1.465 | 399 | 0.144 |
| | Female | 201 | 4.31 | 0.60 | | | |

According to table 5-2-2-4, for the forth main Factor "Continuance Intension" Mean for Male is 4.40 and for Female is 4.31 (out of 5). T-test with confidence level .95 showed that these differences are not significant valid (Sig = 0.144 > 0.05). **It shows the level of Continuance Intension in E-Payment for Male is the same as female.**

Table 5-2-2-5: Comparing men & woman looking to study in case of “Network Externalities”

| | جنسیت | N | Mean | Std. Deviation | t | df | Sig |
|-----------------------|--------|-----|------|----------------|--------|-----|-------|
| Network Externalities | Male | 191 | 3.55 | 0.52 | -1.587 | 382 | 0.113 |
| | Female | 193 | 3.63 | 0.51 | | | |

According to table 5-2-2-5, for the fifth main Factor "Network Externalities" Mean for Male is 3.55 and for Female is 3.63 (out of 5). T-test with confidence level .95 showed that these differences are not significant (Sig = 0.113 > 0.05). **It shows the level of “Network Externalities” in E-Payment for Male is the same as female.**

Table 5-2-2-6: Comparing men & woman looking to study in case of “Direct Compulsion”

| | جنسیت | N | Mean | Std. Deviation | t | df | Sig |
|-------------------|--------|-----|------|----------------|-------|-----|-------|
| Direct Compulsion | Male | 196 | 3.05 | 1.31 | 2.735 | 399 | 0.007 |
| | Female | 205 | 2.72 | 1.13 | | | |

According to table 5-2-2-6, for the sixth main Factor "Direct Compulsion" Mean for Male is 3.05 and for Female is 2.72 (out of 5). T-test with confidence level .95 showed that these differences are significant (Sig = 0.007 < 0.05). **It shows the level of “Direct Compulsion” in E-Payment for Male is higher than female.**

Table 5-2-2-7: Comparing men & woman looking to study in case of “Indirect Compulsion”

| | جنسیت | N | Mean | Std. Deviation | t | df | Sig |
|---------------------|--------|-----|------|----------------|--------|-----|-------|
| Indirect Compulsion | Male | 203 | 2.80 | 1.05 | -0.064 | 406 | 0.949 |
| | Female | 205 | 2.81 | 1.09 | | | |

According to table 5-2-2-7, For the seventh main Factor "Indirect Compulsion" Mean for Male are 2.80 and for Female are 2.81 (out of 5). T-test with confidence level .95 showed that these differences is not significant (Sig = 0.949 > 0.05). **It shows that the level of “Indirect Compulsion” in E-Payment for Male is the same as female.**

Relation of the main factors with Education and with Age

As a last investigation, we have been looking for a relation of the seven main factors with education and then with age.

Relation between the main factors and Education

Questionnaire respondents in state education is measured by a question (see appendix I, question 2) "Secondary School", "high school", "diploma", "university Degree", and Mullah.

Table 5-2-3-1-1: Nonparametric Spearman correlation, Factors / Education

| Main Factors | Education | |
|-----------------------|-------------------------|--------|
| Confirmation | Correlation Coefficient | -0.02 |
| | Sig. (2-tailed) | 0.688 |
| | N | 388 |
| Satisfaction | Correlation Coefficient | -0.073 |
| | Sig. (2-tailed) | 0.163 |
| | N | 372 |
| Perceive Usefulness | Correlation Coefficient | -0.05 |
| | Sig. (2-tailed) | 0.325 |
| | N | 395 |
| Continuance Intension | Correlation Coefficient | 0.014 |
| | Sig. (2-tailed) | 0.783 |
| | N | 392 |
| Network Externalities | Correlation Coefficient | -0.083 |
| | Sig. (2-tailed) | 0.108 |
| | N | 375 |
| Direct Compulsion | Correlation Coefficient | -0.011 |
| | Sig. (2-tailed) | 0.833 |
| | N | 392 |
| Indirect Compulsion | Correlation Coefficient | 0.013 |
| | Sig. (2-tailed) | 0.799 |
| | N | 399 |

Considering the type of this question which is ordinal, and because of the number of respondents (just 8) who are "Mullah", we omitted "Mullah" in this analysis. In table 5-2-3-1-1, it can be seen that the relationship between education levels and significant bits of the seven variables are not observed (Sig. = =0.688, 0.163, 0.325, 0.783, 0.108, and 0.833 > 0.05). This is probably due to lack of linear relationship between education levels and seven main factors are. In table 5-3-3-1-2 also, seven main factors studied in level of education, in case of Mean, Number, and standard variation of sample.

Table 5-2-3-1-2: seven main factors / education

| Education | | Confirmation | Satisfaction | Perceive Usefulness | Continuance Intension | Network Externalities | Direct Compulsion | Indirect Compulsion |
|-------------------|----------------|--------------|--------------|---------------------|-----------------------|-----------------------|-------------------|---------------------|
| Secondary School | Mean | 2.8333 | 3.92 | 3.8889 | 3.6667 | 4.0278 | 2.4286 | 2.1429 |
| | N | 6 | 5 | 6 | 6 | 6 | 7 | 7 |
| | Std. Deviation | 0.62302 | 0.72938 | 0.86066 | 0.8756 | 0.66179 | 1.1661 | 1.34519 |
| High School | Mean | 3.3561 | 4.8667 | 4.8056 | 4.75 | 4.2857 | 4.25 | 2.9167 |
| | N | 12 | 9 | 12 | 12 | 7 | 12 | 12 |
| | Std. Deviation | 0.512 | 0.1 | 0.17164 | 0.26112 | 0.38145 | 1.07426 | 0.51493 |
| Diploma | Mean | 3.0909 | 4.4027 | 4.4515 | 4.3117 | 3.5968 | 2.6751 | 2.8375 |
| | N | 78 | 74 | 79 | 77 | 74 | 79 | 80 |
| | Std. Deviation | 0.43562 | 0.42587 | 0.4805 | 0.54434 | 0.42738 | 1.16938 | 1.03659 |
| University Degree | Mean | 3.1024 | 4.3739 | 4.4139 | 4.3552 | 3.5602 | 2.8628 | 2.81 |
| | N | 292 | 284 | 298 | 297 | 288 | 294 | 300 |
| | Std. Deviation | 0.41046 | 0.45492 | 0.53623 | 0.57473 | 0.52855 | 1.22036 | 1.08835 |
| Mullah | Mean | 2.8977 | 4.425 | 4.4167 | 4.5 | 3.6667 | 3.7083 | 2.75 |
| | N | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Std. Deviation | 0.28516 | 0.42003 | 0.46291 | 0.53452 | 0.1543 | 0.95015 | 1.16496 |
| Total | Mean | 3.0996 | 4.3863 | 4.4251 | 4.3513 | 3.5901 | 2.8767 | 2.8059 |
| | N | 396 | 380 | 403 | 400 | 383 | 400 | 407 |
| | Std. Deviation | 0.42271 | 0.45508 | 0.52899 | 0.57496 | 0.51569 | 1.22937 | 1.07096 |

In table 5-2-3-1-2, it can be seen that the total average of "Confirmation" is 3.10 e.g. more than moderate. Respondents in level of "secondary school" is 2.83 (slightly less than moderate level), "high school" respondents is 3.36 (more than moderate level), "diploma" respondents is 3.09 (moderate) and "university degree" respondents is 3.10 (Moderate level), have evaluated "Confirmation" of E-Payment.

In case of "Satisfaction", totally the average or Mean is 4.39 out of 5, and have evaluated near to high. Respondents in level of "Secondary School" is 3.92 and evaluated "Satisfaction" of E-Payment more than moderate level. "High School" respondents with Mean 4.87, and "diploma" respondents with Mean 4.40, and "University Degree" with Mean 4.37, have confirmed "satisfaction" in high level.

In case of "Perceive Usefulness", totally the average or Mean is 4.43 out of 5, and have evaluated strongly near to high. Respondents in level of "Secondary School" is 3.89 and evaluated "Perceive Usefulness" of E-Payment more than the moderate level. "High School" respondents with Mean 4.29, and "diploma" respondents with Mean 3.60, and "University Degree" with Mean 4.41, have confirmed "Perceive Usefulness" in high level.

In case of "Continuance Intension", totally the average or Mean is 4.35 out of 5, and have evaluated strongly near to high. Respondents in level of "Secondary School" have an average or Mean 3.67 and evaluated "Continuance Intension" of E-Payment more than the moderate level. "High School" respondents with Mean 4.75, and "diploma" respondents with Mean 4.31, and "University Degree" with Mean 4.36, have confirmed "Continuance Intension" in high level.

In case of "Network Externalities", totally the average or Mean is 3.59 out of 5, and have evaluated strongly more than moderate. Respondents in level of "Secondary School" have an average or Mean 4.03 and evaluated "Continuance Intension" of E-Payment more than the moderate level. "High School" respondents with Mean 4.29 evaluated near to high, and

"diploma" respondents with Mean 3.60 and "University Degree" with Mean 3.56 have confirmed "Continuance Intension" in more than Moderate level.

In case of "Direct Compulsion", totally the average or Mean is 2.88 out of 5, and have evaluated near to moderate level. Respondents in level of "Secondary School" have an average or Mean 2.43 and evaluated "Direct Compulsion" of E-Payment near the moderate level. "High School" respondents with Mean 4.25 evaluated near to high, and "diploma" respondents with Mean 2.68 and "University Degree" with Mean 2.86 have confirmed "Direct Compulsion" near the Moderate level.

In case of "Indirect Compulsion", totally the average or Mean is 2.81 out of 5, and have evaluated near to moderate level. Respondents in level of "Secondary School" have an average or Mean 2.14 and evaluated "indirect Compulsion" of E-Payment near the moderate level. "High School" respondents with Mean 2.92 evaluated near to Moderate level also, and "diploma" respondents with Mean 2.84 and "University Degree" with Mean 2.81 have confirmed "Direct Compulsion" near the Moderate level.

Table 6.3 in the next chapter, shows the summery of relation between Factors and Education as discussed above.

Relation between Main factors / Age

Spearman Correlation coefficient of the relationship "age" and the seven factors with 95% confidence level showed that these differences are not significant (Sig. = 0.61, 0.75, 0.96, 0.46, 0.87, 0.63, and .49 > .05) (see table 5-2-3-2-1). Therefore we use descriptive statistics (mean, number, standard deviation) of seven main factors are shown in table 5-2-3-2-2.

Table 5-2-3-2-1: Nonparametric Spearman correlation, Factors / Age

| Main Factors | | Age |
|-----------------------|-------------------------|--------|
| Confirmation | Correlation Coefficient | 0.025 |
| | Sig. (2-tailed) | 0.613 |
| | N | 396 |
| Satisfaction | Correlation Coefficient | 0.017 |
| | Sig. (2-tailed) | 0.746 |
| | N | 381 |
| Perceive Usefulness | Correlation Coefficient | 0.002 |
| | Sig. (2-tailed) | 0.964 |
| | N | 404 |
| Continuance Intension | Correlation Coefficient | 0.037 |
| | Sig. (2-tailed) | 0.463 |
| | N | 401 |
| Network Externalities | Correlation Coefficient | -0.009 |
| | Sig. (2-tailed) | 0.867 |
| | N | 384 |
| Direct Compulsion | Correlation Coefficient | 0.024 |
| | Sig. (2-tailed) | 0.626 |
| | N | 401 |
| Indirect Compulsion | Correlation Coefficient | 0.034 |
| | Sig. (2-tailed) | 0.489 |
| | N | 408 |

Evaluation of “Confirmation”: As shown in table 5-2-3-2-2, the first age group (15-19) is evaluated by Mean, e.g. 3.33 out of 5 (slightly more than moderate level). The 2nd age group (20-29) is evaluated by Mean in moderate level (3.05 out of 5). In the 3rd age group (30-39) is evaluated in moderate level (3.08 out of 5), and for the 4th age group of respondents (40-49) is evaluated in moderate level also (3.11 out of 5). And finally the last age group (50 and more) of respondents is evaluated in moderate level (3.15 out of 5). As a conclusion of evaluation of E-Payment “Confirmation”, age group of (15-19) is confirmed the E-Payment more than the other groups of age. (See also table 6-2 in chapter 6)

Table 5-2-3-2-2: Seven main factors / Age

| Age | | Confirmation | Satisfaction | Perceive Usefulness | Continuance Intension | Network Externalities | Direct Compulsion | Indirect Compulsion |
|-------------|----------------|--------------|--------------|---------------------|-----------------------|-----------------------|-------------------|---------------------|
| 15-19 | Mean | 3.3333 | 4.6909 | 4.6667 | 4.5 | 4.2273 | 3.6875 | 2.75 |
| | N | 15 | 11 | 15 | 15 | 11 | 16 | 16 |
| | Std. Deviation | 0.49516 | 0.45925 | 0.45426 | 0.65465 | 0.50151 | 1.3688 | 0.93095 |
| 20-29 | Mean | 3.0545 | 4.3912 | 4.3614 | 4.3105 | 3.5417 | 2.8014 | 2.734 |
| | N | 95 | 91 | 95 | 95 | 92 | 94 | 94 |
| | Std. Deviation | 0.40987 | 0.47973 | 0.60468 | 0.61962 | 0.45535 | 1.28619 | 1.02837 |
| 30-39 | Mean | 3.0797 | 4.3063 | 4.4296 | 4.3045 | 3.5801 | 2.7318 | 2.763 |
| | N | 130 | 128 | 135 | 133 | 129 | 133 | 135 |
| | Std. Deviation | 0.43074 | 0.4244 | 0.49352 | 0.57681 | 0.5112 | 1.08048 | 0.98653 |
| 40-49 | Mean | 3.1113 | 4.4378 | 4.4181 | 4.3846 | 3.5641 | 2.9715 | 2.877 |
| | N | 116 | 111 | 118 | 117 | 117 | 117 | 122 |
| | Std. Deviation | 0.39273 | 0.46045 | 0.54291 | 0.5508 | 0.55917 | 1.2966 | 1.18933 |
| 50 and more | Mean | 3.15 | 4.42 | 4.5041 | 4.4634 | 3.6476 | 2.9837 | 2.9268 |
| | N | 40 | 40 | 41 | 41 | 35 | 41 | 41 |
| | Std. Deviation | 0.46699 | 0.4433 | 0.41581 | 0.49232 | 0.40779 | 1.23592 | 1.12673 |
| Total | Mean | 3.0996 | 4.3879 | 4.4266 | 4.3529 | 3.5907 | 2.882 | 2.8064 |
| | N | 396 | 381 | 404 | 401 | 384 | 401 | 408 |
| | Std. Deviation | 0.42271 | 0.45556 | 0.52911 | 0.57515 | 0.51516 | 1.2324 | 1.06969 |

Evaluation of “Satisfaction”: As shown in table 5-2-3-2-2 the first age group (15-19) is evaluated to 4.69 (Mean) out of 5 (slightly less than high level). In the 2nd age group (20-29) is evaluated in near the high level also (4.39 out of 5). In the 3rd age group (30-39) is evaluated in near the high level also (4.31 out of 5), and for the 4th age group of respondents (40-49) is evaluated in near high level (4.43 out of 5). And finally the last age group (50 and more) of respondents is evaluated in near high level also (4.42 out of 5). As a conclusion of evaluation of E-Payment “Satisfaction”, age group of (15-19) is satisfied the E-Payment more than the other groups of age.

Evaluation of “Perceived Usefulness”: The first age group (15-19) is evaluated by Mean to 4.67 out of 5 (less than high level). In the 2nd age group (20-29) is evaluated by Mean in near the high level also (4.36 out of 5). In the 3rd age group (30-39) is evaluated by Mean in near the high level also (4.43 out of 5), and for the 4th age group of respondents (40-49) is evaluated in near high level also (4.42 out of 5). And finally the last age group (50 and more) of respondents is evaluated in near high level (4.50 out of 5). As a conclusion of evaluation of E-Payment “Perceive Usefulness”, age group of (15-19) is perceiving usefulness of the E-Payment more than the other groups of age.

Evaluation of “Continuance Intension”: The first age group (15-19) is evaluated by Mean to 4.5 out of 5 (less than high level). In the 2nd age group (20-29) is evaluated by Mean in near the high level also (4.31 out of 5). In the 3rd age group (30-39) is evaluated in near the high level also (4.30 out of 5), and for the 4th age group of respondents (40-49) is evaluated in near high level also (4.38 out of 5). And finally the last age group (50 and more) of respondents is evaluated in near high level also (4.46 out of 5). As a conclusion of evaluation of E-Payment “Continuance Intension”, age group of (15-19) reused of the E-Payment services more than the other groups of age.

Evaluation of “Network Externalities”: The first age group of respondents (15-19) is evaluated by Mean to 4.23 out of 5 (less than high level). In the 2nd age group (20-29) is evaluated in more than the moderate level (3.54 out of 5). In the 3rd age group of respondents (30-39) is evaluated in more than the moderate level also (3.58 out of 5), and for the 4th age group of respondents (40-49) is evaluated by Mean in more than the moderate level also (3.56 out of 5). And finally the last age group (50 and more) of respondents is evaluated in more than the moderate level also (3.65 out of 5). As a conclusion of evaluation of E-Payment “Network Externalities”, age group of (15-19) in Network Externalities acceptance of the E-Payment services more than the other groups of age.

Evaluation of “Direct Compulsion”: The first age group of respondents (15-19) is evaluated by Mean to 3.69 out of 5 (slightly more than moderate level). In the 2nd age group (20-29) is evaluated by Mean in less than the moderate level (2.80 out of 5). In the 3rd age group (30-39) of respondents is evaluated by Mean in near the moderate level also (2.73 out of 5), and in case of the 4th age group of respondents (40-49) is evaluated by Mean in near the moderate level (2.97 out of 5). And finally the last age group (50 and more) of respondents is evaluated in near high level also (2.98 out of 5). As a conclusion of evaluation of E-Payment “Direct Compulsion”, age group of (15-19) respondents is confirmed direct compulsion of the E-Payment more than the other groups of age.

Evaluation of “Indirect Compulsion”: The first age group of respondents (15-19) is evaluated by Mean to 2.75 out of 5 (less than moderate level). In the 2nd age group (20-29) is evaluated in less than the moderate level (2.73 out of 5). In the 3rd age group (30-39) is evaluated by Mean in near the moderate level also (2.76 out of 5), and for the 4th age group of respondents (40-49) is evaluated by Mean in near the moderate level (2.88 out of 5). And finally the last age group (50 and more) of respondents is evaluated in near high level also (2.93 out of 5). As a conclusion of evaluation of E-Payment “Direct indirect Compulsion”, age group of (50 and more) is confirmed indirect compulsion of the E-Payment more than the other groups of age.

Graphs

Figure 5-2-3-3-1: Men/Women attitude toward seven factors of success of Bank-issued micropayment system in Iran (2010)

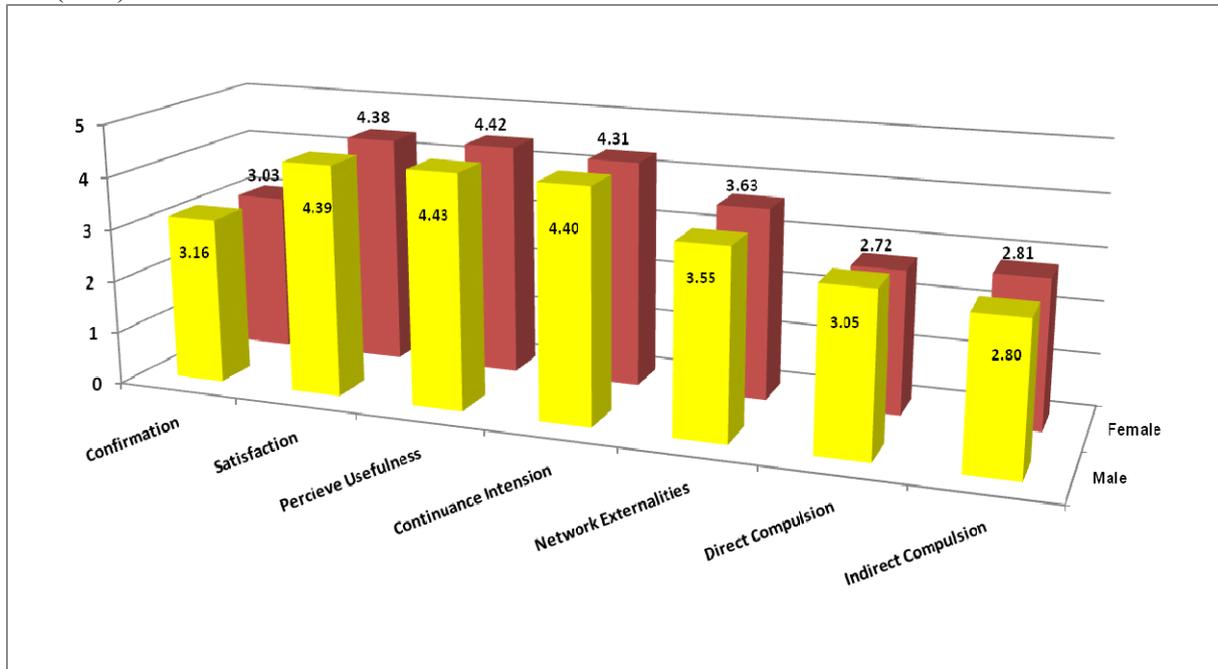
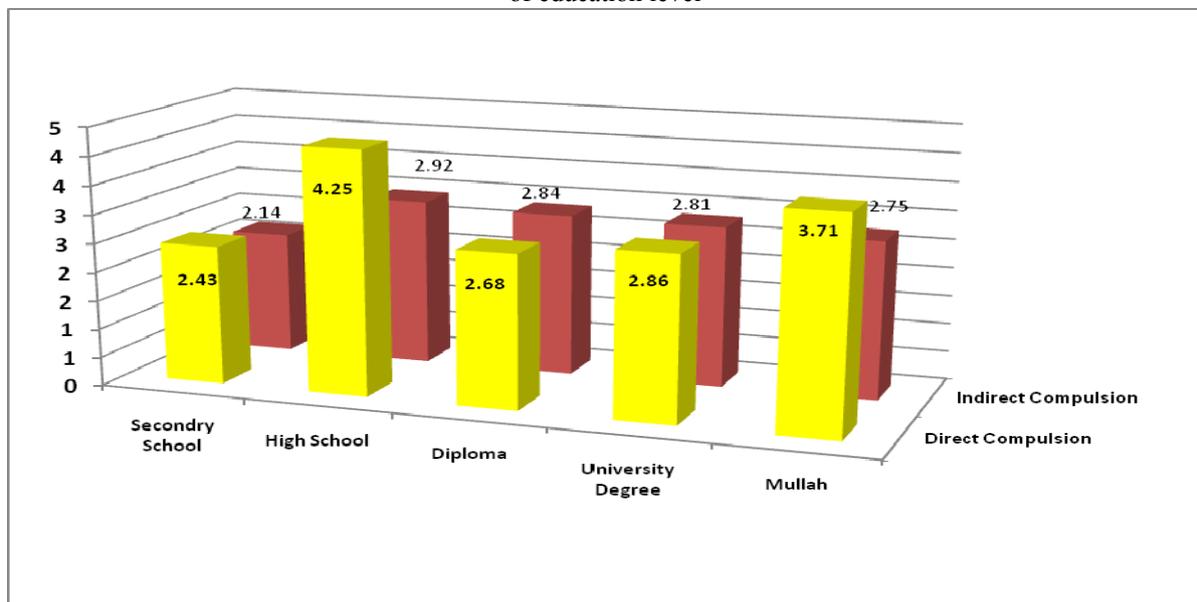


Figure 5-2-3-3-2: Impact of Compulsion in success of Bank-issued micropayment system in Iran (2010) in case of education level



LMS analysis using Mplus software:

We want to know the estimation of each path related to the Factors. To do so, we used LMS (Latent Moderate Structure) with Mplus software. Figure 5-2-4-1 shows the solved structural model with the estimated effect of each path. Direct Compulsion (DCM) variable has three rules (as a Mediator variable) between

1. Perceived Usefulness (PUS) and Continuance Intension (CNT) (have a significant value).
2. Satisfaction (SAT) and Continuance Intension (CNT) (have a significant value).
3. Network Externalities (NET) and Continuance Intension (CNT) (have a significant value).

Figure 5-2-4-1: (Solved Interaction Model) relations between seven main factors according to the Mplus

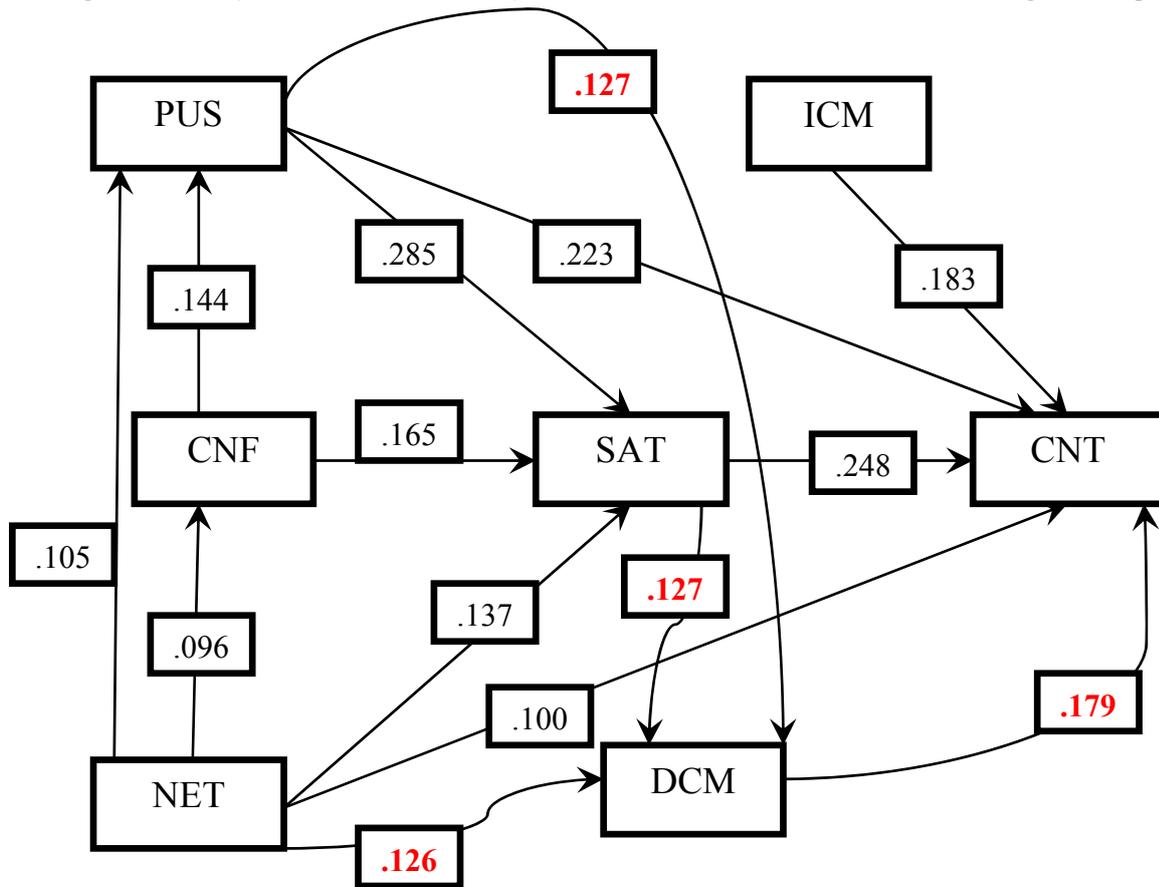
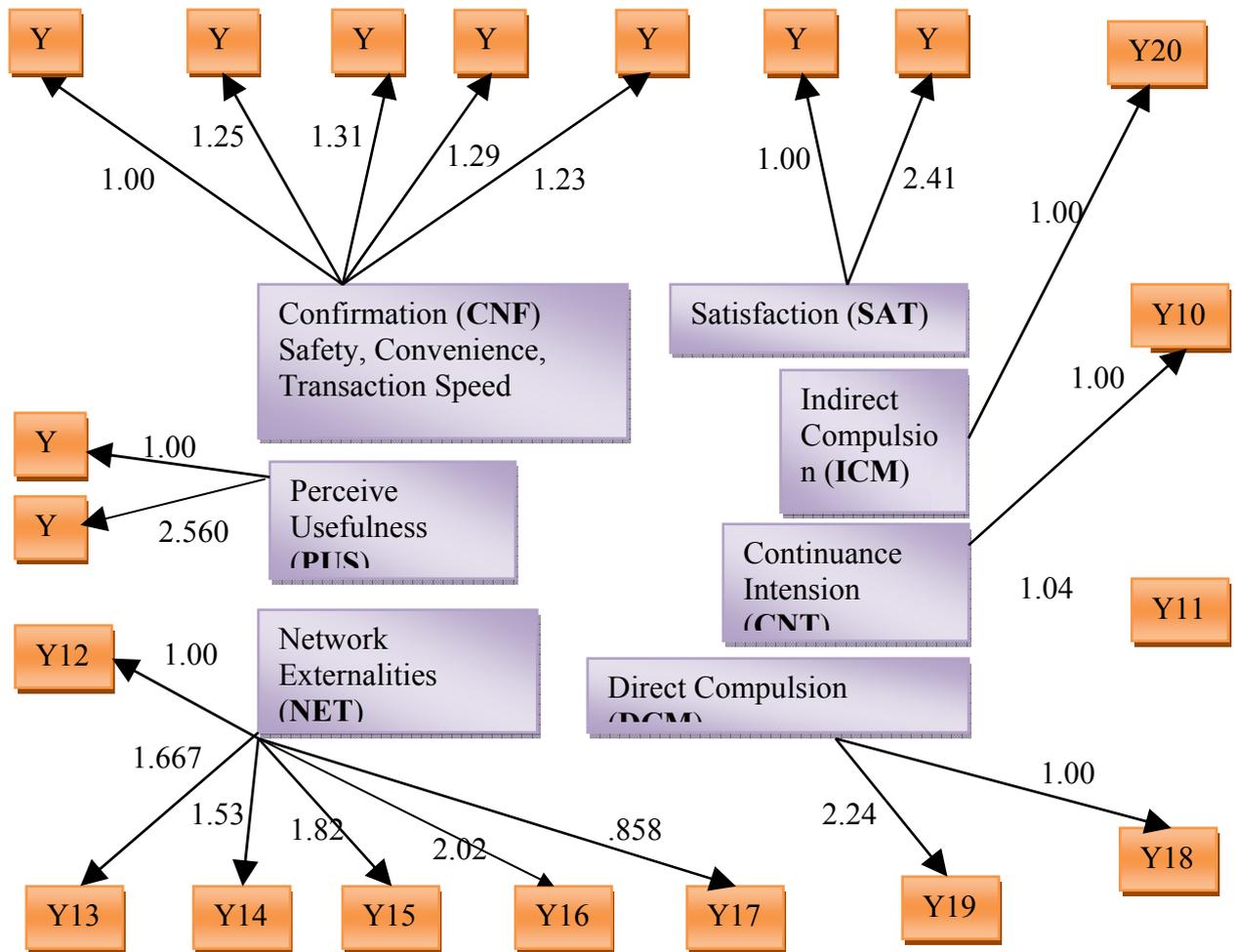


Figure 5-2-4-2 shows the relation between seven main factors colored in blue and questions of questionnaire (Yi) colored in pink. According to this figure, relations and estimation calculated about the questions that have been assigned to a Factor are reasonable.

Figure 5-2-4-2: Relations between seven main factors and twenty likert questions of questionnaire, according to the Mplus analysis.



Other results of this study

We dealt with the defined success factors from different perspectives related to: gender, age, dependency and education.

Gender attitude toward success factors

In a further analysis we compare the level of acceptance of the seven main factors in case of Male or Female respondents.

Table 5-3-1-1 illustrate that the scale of level of acceptance “Confirmation” and “Indirect Compulsion” in E-Payment for Male is more than female, and for the other five main factors (Satisfaction, Continuance Intension, Network Externalities, Perceive Usefulness , and Direct Compulsion) the scale of level of acceptance for Male and Female are the Same.

Table 5-3-1-1: scale of level of acceptance of respondents in case of Genders

| | Scale of Level of Acceptance |
|------------------------------|-------------------------------------|
| Confirmation | Male more than Female |
| Satisfaction | Male/Female |
| Perceive Usefulness | Male/Female |
| Network Externalities | Male/Female |
| Continuance Intension | Male/Female |
| Direct Compulsion | Male more than Female |
| Indirect Compulsion | Male/Female |

Age attitude toward success Factor

As a conclusion (see table 5-3-2-1) of evaluation of E-Payment “Confirmation”, “Perceived Usefulness”, “Satisfaction”, “Network Externalities”, and “Direct Compulsion” age group of (15-19) has confirmed the E-Payment more than the other groups of age. The age group of (50 and more) or the oldest group has confirmed the E-Payment “Indirect Compulsion” more than the other groups of ages.

Table 5-3-2-1: scale of level of acceptance of respondents in case of Genders

| | 15-19 | 20-29 | 30-39 | 40-49 | >50 |
|------------------------------|--------------|--------------|--------------|--------------|---------------|
| Confirmation | 1 | 5 | 4 | 2 | 3 |
| Satisfaction | 1 | 4 | 5 | 2 | 3 |
| Perceived Usefulness | 1 | 5 | 3 | 4 | 2 |
| Continuance Intension | 1 | 4 | 5 | 3 | 2 |
| Network Externalities | 1 | 5 | 3 | 4 | 2 |
| Direct Compulsion | 1 | 4 | 5 | 3 | 2 |
| Indirect Compulsion | 4 | 5 | 3 | 2 | 1 |

Dependency of factor

As a conclusion of last chapter (regression analysis) there is a mathematical relationship between “confirmation” as a dependent variable and the other factors as independent variables as follows:

1. Model 1 could be: “Confirmation” = f(“Satisfaction”)
2. Model 2 could be: “Confirmation” = f(“Satisfaction”, “Network Externalities”)

3. Model 3 could be “Confirmation” = f (“Satisfaction”, “Network Externalities”, “Indirect Compulsion”)

There is a mathematical relation between “Continuance Intension” as a dependent variable and the others factors as independent variables as follows:

1. Model 1 could be: “Continuance Intension” = F (“Perceived Usefulness”)
2. Model 2 could be: “Continuance Intension” = F (“Perceived Usefulness”, “Satisfaction”).

Education attitude toward success Factors

The respondents with education level of “high school” and “University degree” and “secondary School” respectively accepted “Near to high” of E-Payments factors. Table 5-3-4-1 shows these relations between acceptance of E-Payment Factors and education of respondents.

Table 5-3-4-1: Seven main factors / education

| | Secondary School | High School | Diploma | University Degree | Total |
|------------------------------|-------------------------|--------------------|----------------|--------------------------|--------------|
| Confirmation | < Moderate | > Moderate | Moderate | Moderate | 3.10 |
| Satisfaction | >Moderate | High | High | High | 4.39 |
| Perceived Usefulness | >Moderate | Near to High | >Moderate | Near to High | 4.43 |
| Continuance Intension | >Moderate | Near to High | Near to High | Near to High | 4.36 |
| Network Externalities | Near to High | Near to High | <Moderate | <Moderate | 3.6 |
| Direct Compulsion | <Moderate | Near to High | <Moderate | <Moderate | 2.88 |
| Indirect Compulsion | <Moderate | <Moderate | <Moderate | <Moderate | 2.81 |

VI. Conclusion:

Main findings of this study

The goal of this research was to understand and find success factors influencing micropayment programs in banking sectors in Iran. In addition to the success factors presented by (Tan, 2008), we have added two factors (Direct Compulsion and Indirect Compulsion).

We have derived some descriptive statistics in order to obtain an overview of the characteristics of the considered sample. Then, bivariate correlations between variables were analyzed with respect to the correlation between scales of variables and mediator variables. Finally, we performed a regression analysis in order to identify the eventual existence of association and relationship between the dependent and independent variables.

All main questions of this study were answered successfully in form of thirteen hypotheses, which we have explored. Direct compulsion is defined as a mediator variable between 1) "satisfaction" and "continuance Intension" 2) "Perceived Usefulness" and "continuance Intension" 3) "Network Externalities" and "Continuance Intension", which has positive effects (H10, H11, and H12). On the other hand, we had a direct question (number 44) in the questionnaire. "Compulsory use of e-payment systems in Tehran" was answered by 401 respondents out of 409 (Mean calculated for this data is 3.91 out of 5). e.g. most of the people in this sample agreed with direct compulsion. Impact of indirect compulsion or lock-in customers on user's continuance intension is positively associated also (H13). In fact, many operators have given millions of Rials worth of prizes, gifts and discounts to their consumers, who use electronic payment services to pay their bills (a win-win business) and pushed their customers to use these services continuously.

Suggestions

General Purpose Card

"Having a general-Purpose card" was one of the ideas submitted in our questionnaire. Out of 406 valid answers, 218 respondents (53.7%) strongly agreed with this idea. Whereas 109 respondents (26.8%) agreed, 30 respondents (7.4%) were "Neutral" and only 33 respondents (8.1%) disagreed.

**GENERAL PURPOSE CARD,
To be used for banking system and micropayment
system.**

Respondents were also questioned about "The amount of money for Password need". 15 of them (3.8%) suggested 1,000,000 Rials, 10 (2.5%) suggested 500,000 Rials, 69 (17.4%) said 100,000 Rials, 115 (29%) said 50,000 Rials, and 32 (8.1%) suggested 10,000 Rials.

This question is a guide to **GENERAL PERPUSED CARD (a combination of banking payment and micropayment card system)**

So a general purposed card could be define and depends on the customers, the amount of money predefined by customers. (No need password and the other security for this amount)

Micropayment margin

According to the Central Bank of Iran, a payment value less than 50 Million Rials is considered as a micropayment's transaction. Because of the amount of this value (50 Million Rials), all instruments of Cash-based systems and Account-based systems in EPS (Electronic Payment Systems) except electronic check are engaged in Iran's micropayment system definition. It means Micropayment systems are equivalent to E-Payment in Iran according to CBI definition.

Now we have to define a new category for E-Micropayment system. EPS size in IRAN could be as follows:

- Tiny value transactions: below 100,000 Rials (\$ 10).
- Medium value transactions: between 100,000 Rials (\$10) and 50,000,000 Rilas (\$5000).
- Large value transactions: above 50,000,000 Rials or \$ 5000.

Contributions

As previously mentioned, a similar research has been done in Taiwan by (Tan et al., 2008).

That research's results stated that "these programs have good potential to succeed even though consumers' choice on whether transport-related or convenience store-related card has highest potential to succeed differs in different parts of Taiwan. Network externality cannot be ignored and contributes to Taiwan consumers' choice on the program which has the highest potential to succeed."

An extended Post-acceptance Model of IS Continuance incorporating network externality is used and the roles of factors such as perceived usefulness and network externality are determined through hypothesis testing.

A total of 591 questionnaires were received and 526 of them were found to be valid. In our research a total of 520 questionnaires were received and 409 of them were found to be valid. Data analysis methods employed include cross-tabulation analysis, factor analysis, Pearson correlation analysis, reliability analysis and multiple regression analysis. Furthermore in our research, spearman rho and LMS using Mplus are analyzed also.

In Tan's study, confirmation of security, convenience and transaction cost of e-micropayment program do to some extent influence perceived usefulness. Furthermore, it can also be inferred that network externality has roles in influencing Consumer's satisfaction and consumer's intention to continue using the E-micropayment program. For our research 2 main success factors were added (Direct Compulsion and Indirect Compulsion (Lock-in customers)).

We summarize in the table below the comparison between our study and the one of (Tan et al., 2008) performed in Taiwan.

| | |
|---|---|
| <p><i>Wee Kheng Tan and Shih-Kuo Chen, An analysis and factors influencing success of banked-issued Micropayment system in Taiwan, Journal of systems and Information, Technology, Vol. 10 No.1, 2008</i></p> | <p><i>An analysis of the factors influencing success of Bank-issued micropayment systems in Iran</i></p> |
| <p>Taiwan (findings)</p> | <p>Iran/Tehran (findings)</p> |
| <p>Programs have good potential to succeed even though consumers' choice on whether transport-related or convenience store-related card has highest potential to succeed differs in different parts of Taiwan. Network externality cannot be ignored and contributes to Taiwan consumers' choice on the program which has the highest potential to succeed.</p> | <p>Compulsion in two categories, direct includes government enforcement and indirect includes lock-in customers were examined as 2 main success factors of e-micropayment program. Direct compulsion defined as a mediator variable between 1) "satisfaction" and "continuance Intension" 2) "Perceived Usefulness" and "continuance Intension" 3) "Network Externalities" and "Continuance Intension", has a positive effects. And impact of indirect compulsion or lock-in customers on user's continuance intension is positively associated also. "Confirmation" is a function of three success factors ("Satisfaction", "Network Externalities", "Indirect Compulsion") and "continuance Intension" is a function of ("Perceived Usefulness", "Satisfaction"). As a conclusion of regression analysis, 1) there is a mathematical relationship between "confirmation" as a dependent variable and the other factors, and 2) a mathematical relation exists between "Continuance Intension" as a dependent variable and the others factors as independent variables</p> |
| <p>Taiwan (Methodology)</p> | <p>Iran (Methodology)</p> |
| <p>An extended Post-acceptance Model of IS Continuance incorporating network externality is used and the roles of factors such as perceived usefulness and network externality are determined through 9 hypothesis testing. A total of 591 questionnaires were received and 526 of them were found to be valid. Data analysis methods employed include cross-tabulation analysis, factor analysis, Pearson correlation analysis, reliability analysis and multiple regression analysis.</p> | <p>An extended Post-acceptance Model of IS Continuance incorporating network externality is used and the roles of factors such as perceived usefulness and network externality are determined through 13 hypothesis testing. A total of 520 questionnaires were received and 409 of them were found to be valid. Data analysis methods employed include factor analysis, Pearson correlation analysis and spearman rho, reliability analysis and multiple regression analysis. LMS using Mplus is analyzed.</p> |
| <p>Taiwan (5 Success Factors)</p> | <p>Iran (7 Success Factors)</p> |
| <p>Confirmation of security, convenience and transaction cost of e-micropayment program do to some extent influence perceived usefulness. Furthermore, it can also be inferred that network externality has roles in influencing consumer's satisfaction and consumer's intention to continue using the E-micropayment program.</p> | <p>Confirmation of security, convenience and <i>transaction Speed</i> of e-micropayment program, Perceived Usefulness, Satisfaction, Network externalities, continuance intension are success factors, furthermore Direct Compulsion and Indirect Compulsion (Lock-in customer) added.</p> |

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APPENDIX I (Regression analysis (1))

Investigate dependency of "Confirmation" on the other factors

Table D1 illustrates that three variables "Satisfaction", "Network Externalities", and "Indirect Compulsion" could predict the variable of "Confirmation". The method used for this analysis was stepwise forward (Stepwise (Criteria: Probability-of-F-to-enter \leq .050, Probability-of-F-to-remove \geq .100)).

Table D1: Variables Entered/Removed(a)

| Model | Variables Entered | Variables Removed | Method |
|---|-----------------------|-------------------|---|
| 1 | Satisfaction | . | Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100). |
| 2 | Network Externalities | . | Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100). |
| 3 | Indirect Compulsion | . | Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100). |
| a Dependent Variable: Confirmation | | | |

Table D2 showed the summary of three models.

Table D2: Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---------|----------|-------------------|----------------------------|
| 1 | .390(a) | 0.152 | 0.15 | 0.37611 |
| 2 | .409(b) | 0.167 | 0.163 | 0.37333 |
| 3 | .421(c) | 0.177 | 0.17 | 0.37169 |
| a Predictors: (Constant), Satisfaction | | | | |
| b Predictors: (Constant), Satisfaction, Network Externalities | | | | |
| c Predictors: (Constant), Satisfaction, Network Externalities, Indirect Compulsion | | | | |

Table D3 states that, with confidence level .95 showed these suggested models are significant ($\text{Sig} = 0.000 < 0.01$).

Table D3: ANOVA(d)

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|------------|----------------|-----|-------------|--------|---------|
| 1 | Regression | 8.854 | 1 | 8.854 | 62.588 | .000(a) |
| | Residual | 49.228 | 348 | 0.141 | | |
| | Total | 58.082 | 349 | | | |
| 2 | Regression | 9.718 | 2 | 4.859 | 34.863 | .000(b) |
| | Residual | 48.363 | 347 | 0.139 | | |
| | Total | 58.082 | 349 | | | |
| 3 | Regression | 10.282 | 3 | 3.427 | 24.808 | .000(c) |
| | Residual | 47.8 | 346 | 0.138 | | |
| | Total | 58.082 | 349 | | | |
| a Predictors: (Constant), Satisfaction | | | | | | |
| b Predictors: (Constant), Satisfaction, Network Externalities | | | | | | |
| c Predictors: (Constant), Satisfaction, Network Externalities, Indirect Compulsion | | | | | | |
| d Dependent Variable: Confirmation | | | | | | |

Table D4 showed the coefficients of those three models of regression analysis. Equations related to models denote as follow:

1. **Model 1: "Confirmation" = 0.325 ("Satisfaction") + 1.552**
2. **Model 2: "Confirmation" = 0.297 ("Satisfaction") + 0.114 ("Network Externalities") + 1.383.**
3. **Model 3: "Confirmation" = 0.278 ("Satisfaction") + 0.116 ("Network Externalities") + 0.038 ("Indirect Compulsion") + 1.351.**

And finally in table D5, the excluded variables for this regression analysis are showed.

Table D4: Coefficients(a)

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|-----------------------|-----------------------------|------------|---------------------------|-------|-------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.552 | 0.197 | | 7.888 | 0 |
| | Satisfaction | 0.352 | 0.045 | 0.39 | 7.911 | 0 |
| 2 | (Constant) | 1.383 | 0.207 | | 6.683 | 0 |
| | Satisfaction | 0.297 | 0.049 | 0.329 | 6.003 | 0 |
| | Network Externalities | 0.114 | 0.046 | 0.137 | 2.491 | 0.013 |
| 3 | (Constant) | 1.351 | 0.207 | | 6.542 | 0 |
| | Satisfaction | 0.278 | 0.05 | 0.309 | 5.557 | 0 |
| | Network Externalities | 0.116 | 0.046 | 0.138 | 2.526 | 0.012 |
| | Indirect Compulsion | 0.038 | 0.019 | 0.101 | 2.02 | 0.044 |
| a Dependent Variable: Confirmation | | | | | | |

Table D5: Excluded Variables(d)

| Model | | Beta In | t | Sig. | Partial Correlation | Collinearity Statistics |
|--|-----------------------|---------|-------|-------|---------------------|-------------------------|
| | | | | | | Tolerance |
| 1 | Perceived Usefulness | .071(a) | 0.808 | 0.42 | 0.043 | 0.312 |
| | Network Externalities | .137(a) | 2.491 | 0.013 | 0.133 | 0.798 |
| | Direct Compulsion | .104(a) | 2.09 | 0.037 | 0.112 | 0.977 |
| | Indirect Compulsion | .099(a) | 1.973 | 0.049 | 0.105 | 0.961 |
| 2 | Perceived Usefulness | .078(b) | 0.89 | 0.374 | 0.048 | 0.312 |
| | Direct Compulsion | .093(b) | 1.884 | 0.06 | 0.101 | 0.969 |
| | Indirect Compulsion | .101(b) | 2.02 | 0.044 | 0.108 | 0.96 |
| 3 | Perceived Usefulness | .072(c) | 0.826 | 0.409 | 0.044 | 0.311 |
| | direct Compulsion | .075(c) | 1.484 | 0.139 | 0.08 | 0.923 |
| a Predictors in the Model: (Constant), Satisfaction | | | | | | |
| b Predictors in the Model: (Constant), Satisfaction, Network Externalities | | | | | | |
| c Predictors in the Model: (Constant), Satisfaction, Network Externalities, Indirect Compulsion | | | | | | |
| d Dependent Variable: Confirmation | | | | | | |

APPENDIX II (Regression analysis (2))

Investigate dependency of “Continuance Intention” on the other factors

Table E1 illustrate that tow variables "Perceived Usefulness", and "Satisfaction", could predict the variable of "Continuance Intension". The method used for this analysis was stepwise forward (Stepwise (Criteria: Probability-of-F-to-enter \leq .050, Probability-of-F-to-remove \geq .100)).

Table E1: Variables Entered/Removed (a)

| Model | Variables Entered | Variables Removed | Method |
|--|----------------------|-------------------|---|
| 1 | Perceived Usefulness | . | Stepwise (Criteria: Probability-of-F-to-enter \leq .050, Probability-of-F-to-remove \geq .100). |
| 2 | Satisfaction | . | Stepwise (Criteria: Probability-of-F-to-enter \leq .050, Probability-of-F-to-remove \geq .100). |
| a Dependent Variable: Continuance Intension | | | |

Table E2 showed the summery of tow models.

Table E2: Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---------|----------|-------------------|----------------------------|
| 1 | .714(a) | 0.51 | 0.508 | 0.40992 |
| 2 | .739(b) | 0.545 | 0.543 | 0.39528 |
| a Predictors: (Constant), Perceived Usefulness | | | | |
| b Predictors: (Constant), Perceived Usefulness, Satisfaction | | | | |

Table E3 states that, with confidence level .95 showed these suggested models are significant (Sig = 0.000 < 0.01).

Table E3: ANOVA(c)

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|------------|----------------|-----|-------------|---------|---------|
| 1 | Regression | 61.669 | 1 | 61.669 | 367.001 | .000(a) |
| | Residual | 59.317 | 353 | 0.168 | | |
| | Total | 120.986 | 354 | | | |
| 2 | Regression | 65.986 | 2 | 32.993 | 211.154 | .000(b) |
| | Residual | 55 | 352 | 0.156 | | |
| | Total | 120.986 | 354 | | | |
| a Predictors: (Constant), Perceived Usefulness | | | | | | |
| b Predictors: (Constant), Perceived Usefulness, Satisfaction | | | | | | |
| c Dependent Variable: Continuance Intension | | | | | | |

Table E4 showed the coefficients of those tow models of regression analysis. Equations related to models denote as follow:

Model 1: "Continuance Intension" = 0.799 ("Perceived Usefulness") + 0.812

Model 2: "Continuance Intension" = 0.488 ("Perceived Usefulness") + 0.437 ("Satisfaction") + 0.269.

And finally in table E5, the excluded variables for this regression analysis are showed.

Table E4: Coefficients(a)

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|--|----------------------|-----------------------------|------------|---------------------------|--------|-------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 0.812 | 0.186 | | 4.365 | 0 |
| | Perceived Usefulness | 0.799 | 0.042 | 0.714 | 19.157 | 0 |
| 2 | (Constant) | 0.269 | 0.207 | | 1.298 | 0.195 |
| | Perceived Usefulness | 0.488 | 0.071 | 0.436 | 6.833 | 0 |
| | Satisfaction | 0.437 | 0.083 | 0.336 | 5.256 | 0 |
| a Dependent Variable: Continuance Intension | | | | | | |

Table E5: Excluded Variables(c)

| Model | | Beta In | t | Sig. | Partial Correlation | Collinearity Statistics |
|--|-----------------------|---------|-------|-------|---------------------|-------------------------|
| | | | | | | Tolerance |
| 1 | Satisfaction | .336(a) | 5.256 | 0 | 0.27 | 0.317 |
| | Network Externalities | .101(a) | 2.564 | 0.011 | 0.135 | 0.876 |
| | Direct Compulsion | .096(a) | 2.594 | 0.01 | 0.137 | 0.995 |
| | Indirect Compulsion | .062(a) | 1.63 | 0.104 | 0.087 | 0.965 |
| 2 | Network Externalities | .048(b) | 1.187 | 0.236 | 0.063 | 0.804 |
| | Direct Compulsion | .062(b) | 1.698 | 0.09 | 0.09 | 0.958 |
| | Indirect Compulsion | .046(b) | 1.261 | 0.208 | 0.067 | 0.959 |
| a Predictors in the Model: (Constant), Perceived Usefulness | | | | | | |
| b Predictors in the Model: (Constant), Perceived Usefulness, Satisfaction | | | | | | |
| c Dependent Variable: Continuance Intension | | | | | | |