Customers' Trust of Electronic Payment System Use in Northern Cyprus

Amir Abbas Jarollahi

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Approval of the Institute of Graduate Studies and Research

———————————————
Prof. Dr. Elvan Yılmaz
Director

I certify that this thesis satisfies the requirements as a thesis for the degree of Master of Science in Banking and Finance.

———————————————————
Assoc. Prof. Dr. Salih Katırcıoğlu
Chair, Department of Banking and Finance

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Master of Science in Banking and Finance.

———————————————————
Assoc. Prof. Dr. Salih Katırcıoğlu
Supervisor

Examining Committee

1. Assoc. Prof. Dr. Eralp Bektaş   ————————————————

2. Assoc. Prof. Dr. Salih Katırcıoğlu   ————————————————

3. Assoc. Prof. Dr. Nesrin Özataç   ————————————————

ABSTRACT

Customers' trust of Electronic Payment System (EPS) use in Northern Cyprus is the subject of this thesis. In order to understand the level of trust on this island, a survey was implemented among various nationalities with different academic levels in regard to 6 distinguished aspects of this subject. It is hoped that this research not only aids top managers of this industry to make better decisions for their next efforts in this field but also so researchers may use the information acquired for conducting further studies about it and identify better results which would be helpful for improving EPS in Northern Cyprus.

The findings of this thesis demonstrate that among more than 18 nationalities of both men and women with all levels of academic degrees that reside in Northern Cyprus, the EPS is an accepted method of payment for daily life of these people.

 In accordance to the results of the mean score analysis, it proved that the majority of people agree with all considered aspects of EPS in Northern Cyprus. Specifically if perceived trust and security increases among customers, it will lead to higher EPS adoption. Our respondents, who were from 18 different countries, think EPSs are efficient enough systems for them to fulfil their payments and it provides an appropriate channel to follow up the payment process.

Keywords: Electronic Payment System (EPS), Perceived trust, Perceived security

ÖZ

Bu tez konusunun amacı, Kuzey Kıbrıs'ta müşterilerin elektronik ödeme sistemleri ile ilgili görüşlerini ve güven derecelerini ortaya koymaktır. Bu sebeble, ankete dayalı bir araştırma yapılmıştır. Anket araştırması içerisinde çeşitli ülkelerden ve akademik seviyelerden kullanıcılar yer almaktadır. Çalışma sonuçlarının sadece ilgili ödeme sistemleri birimlerinin yöneticilerini değil, genelde Kuzey Kıbrıs'ta ödeme sistemlerinin iyileştirilmesine yönelik çalışmaları etkileyeceği düşünülmektedir.

Anket çalışmasında yer alan katılımcılar ödemelerini sürekli olarak elektronik ortamda yapan ve 18 farklı ülkeden kullanıcıları kapsamaktadır. Çalışmanın sonuçlarına göre, kullanıcılar, çok büyük oranda, Kuzey Kıbrıs'ta kullanılmakta olan elektronik ödeme sistemi kolaylıklarından ve teknolojilerinden tatminkardırlar. Güven derecesi arttıkça, kullanıcılar arasında, bu teknolojiye adapte olma oranı da artmaktadır. Son olarak, katılımcıların genel görüşlerine göre, ödemelerini elektronik ortamda yapabilmek sadece kendileri açısından değil genel olarak ülkede de verimliliği arttırıcı bir teknolojik yenilik ve araç olarak ortaya çıkmaktadır.

Anahtar Kelimeler: Elektronik Ödeme Sistemi, Güven, Güvenlik.

To my dear parents, who always persuade me to continue my studies

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EFT   Electronic Fund Transfer

EPS   Electronic Payment System

NC   Northern Cyprus

TRNC   Turkish Republic of Northern Cyprus

Chapter 1

INTRODUCTION

1.1 Overview

Electronic Payments Systems (EPS) tries to improve customer's accessibility for various goals electronically. The history of electric money shows us that it was born when Federal Reserve Banks first moved currency via telegraph, in 1918 as Graham (2003) said. Additionally he added that 50 years later, in 1968, three engineers conceptualized what is now known as the modern ATM. Evaluation of paperless banking has continued considerably as Marshal (2002) pointed out, only between 1990-2002, paper-based transactions have decreased from 81% to 61%.

Growth and acceptability of electric money, lead to various forms of systems, which improved the use of these systems through different devices one of the most significant ones, was EPS. EPS due to its unique capabilities not only has impact on the customers' attitudes to utilize this system in their usual living, but also has an effective proportion in growth of e-commerce as well. Papameletiou (1999) points out about the direct relation of the development of electronic payment systems and the growth of e-commerce. In addition, Dani and Krishna (2001, p. 91) claim: "one of the main bottlenecks in the growth of e-commerce is lack of suitable payment instrument and corresponding Electronic Payment System."

Accordingly, some characteristics of EPS are more influential for the development of these systems; one of them being trust. Abrazhevich (2004) points out about limitation of using EPS because of 8 main reasons and that one of them is due to lack of trust. He added: "users tend not to trust existing systems with a long history of fraud, misuse or low reliability, as well as novel systems without established positive reputation."

Trust characteristic of EPS with security are the main ones that always concern people of all countries about using EPS for online banking. These frauds are categorized in various ways. For instance, online fraud was as much as 40 times higher than real world fraud (Graham 2003) and on-line credit card fraud cost businesses an estimated 9 billion US dollars in 2001 (Alexander 2003). Additionally, identity and account theft is one of the fastest growing epidemics in electronic fraud throughout the world. Lee (2003) noted that The Federal Trade Commission of US reported only in a 5-year period of 1999-2003, 27.3 million Americans have fallen victim to these crimes and that these cases have collectively cost businesses 32.9 billion US dollar and consumers 3.8 billion US dollar. As figure 1 shows, the majority of identity fraud was above 1000 US dollar while this amount is comprised the minority of account theft.

Additionally, spam scams and skimming are other types of online fraud that recently has improved considerably as well. However, despite these threats of using EPS, utilizing them has many opportunities and strengths as well.
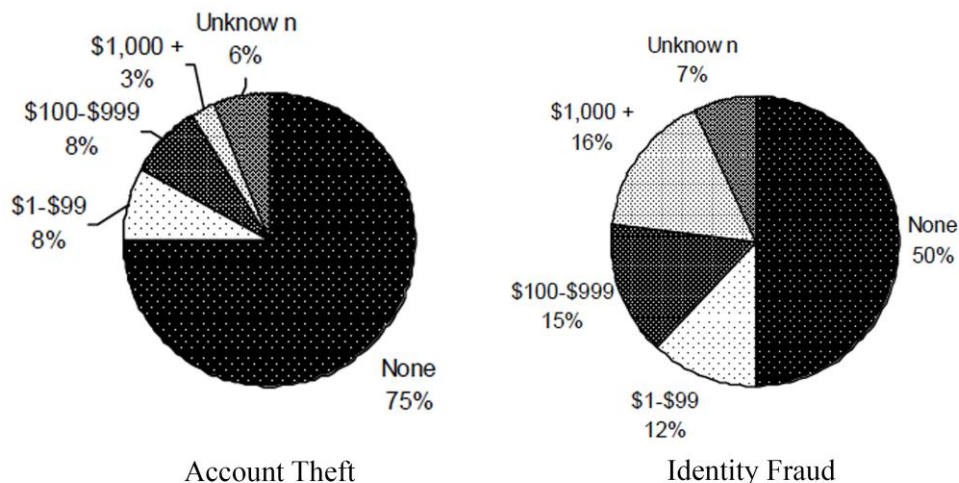
Figure 1: Victim's Liability: Account Theft and Identity Fraud (Graham 2003, p.21)

Johnson (1998) and World Bank (1990) pointed out that payment systems play a major role in the conduct of a country's monetary policy, financial sector and economic development. Additionally, Khiaonarong (2000) noted payment systems improve macroeconomic management, release funds from the clearing and settlement functions for more productive use, and reduce coat levels, improving the control of monetary aggregates.

This issue is most probably more commonly observed in developing and under-developing countries. Turkish Republic of Northern Cyprus (TRNC) as a developing country, which is the current home of many temporary immigrants of both mentioned kinds of countries, is one of those territories that the rate of trust of electronic payment systems from people is almost indistinctive. However, different Turkish and British banks on this island due to current high-competitive conditions, have tried to improve their banking services for their customers. Thus, it is necessary to determine the trust

rate of customers about these banks in TRNC based on a specific hypothesis to identify various aspects of these issues from customers' points of views adequately. Therefore, related organizations later based on these results, can plan in order to improve trust rate for the customers.

1.2 Research Gap

There are abundant papers and books about the role and capabilities of EPS throughout the world. These usually consider EPS as a part of e-commerce and study on various mutual relations of it with e-commerce as well as its functions across this process. Moreover, some of them have comprised some specific characteristics of EPS such as eligibility, efficiency, security, usability, applicability or trust of them. On the other hand, there are articles about the various dimensions of banking in TRNC, which study various aspects of it in-depth. Thus, it seems determining that the trust rate of EPS in TRNC is one of those significant gaps that could be filled through conducting an adequate and comprehensive research about it. Its results not only can guide the bankers of this island to develop their services through overcoming some of customers' resistances of utilizing EPS, but also can aid those countries that have a similar condition with TRNC to consider these issues in advance for their development trust of EPS.

1.3 Research Objective

The main objective herein is: Determining the trust rate for people utilizing EPS in TRNC. Accordingly, it is necessary to illustrate some other objectives to gain the results of the main one:

1. Determining recognition of people about capabilities of EPS.

2. Identifying previous information of temporary immigrants about using EPS in their countries and their current attitude to use them in TRNC.

3. Recognizing the electronic capabilities of banks, which work in TRNC.

Thus, the main question to determine the answer of these objectives is: Do people in TRNC trust enough to utilize EPS?

It is a prerequisite in order to find its answer; consider EPS, role of trust in it and trust rate of people to adopt these systems.

1.4 Summary

This dissertation in order to determine its considered results needs to follow some steps respectively. In the next stage, chapter 2, all relevant information about the literature of EPS and trust in EPS will be collected. Chapter 3 will be specified to introduce research methodology of fulfillment in this thesis. In Chapter 4 there is the Data collection and its results will be discussed in chapter 5, along with the discussion and analysis. Finally, in chapter 6, the conclusion, with a summary of all mentioned information in all the last chapters and its limitations and recommendations for further researches.

Chapter 2

LITERATURE REVIEW

2.1 Overview

There are many papers about the literature of EPS and its different characteristics, elements, limitations, benefits etc. Therefore, it is necessary, in order to find the most appropriate articles in the context of this chosen subject; definitions about EPS and its purposes, advantages and various aspects will be studied in the next section. Additionally, the role of trust characteristic and its benefits and constraints will be considered subsequently as well.

2.2 EPS

Bidgoli (2002, p.194) defined EPS in a simple way that: "EPS utilizes integrated hardware and software systems that enable a customer to pay for the goods and services online." Additionally he recognized the main objectives of EPS as: increasing efficiency, improving security, and enhancing customer convenience and easing of use. He considered many methods and instruments that can be used to enable EPS implementation.

Bushry (2005, p.161) considered a more general role for EPS anywhere that money needs to change hands and considered mutual relations of EPS between organizations and customers.

> "Electronic payment systems are proliferating in banking, retail, health care, on-line markets and even government, in fact, anywhere money needs to change hands. Organisations are motivated to use electronic payment systems in order to deliver products and services more cost effectively and to provide higher quality of service to the customers. Customers are encouraged to use the electronic payment systems because of the ease of making payments through them."

John (2003, p. 299) argued more details about EPS and its functions and defined it as a neo-payment mode that can be defined as any transfer of funds initiated through an electronic terminal, telephonic instrument or computer or magnetic tape so as to order, instruction or authorize a financial institution to debit or credit an account. Additionally, he knew it was the same as Electronic Fund Transfer (EFT).

Asokan and Janson (1997) pointed out different types of electronic payment systems including integrity, authorization, confidentiality, availability, and reliability for security requirements.

Quah (2006, p. 908) pointed out main requirements of EPS as:

1. Sufficient security;

2. Similar running scenario as the traditional business; and

3. Minimum changes on the current financial.

On the other hand, Ferreira and Dahab (1998, p.137-138) presented the scheme to analyze payment systems characteristics with its four subparts (figure 1), each serving a single purpose.
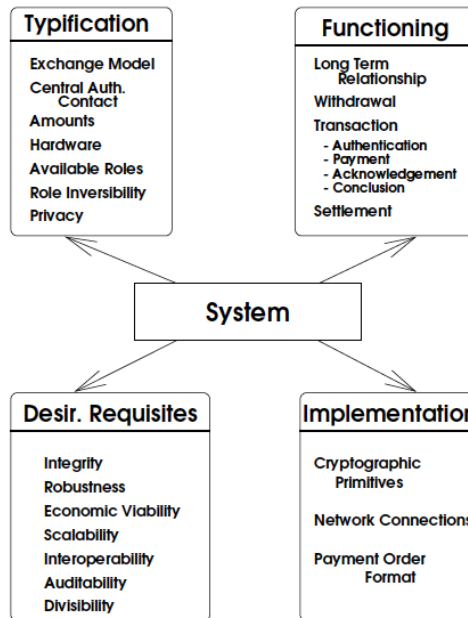

Figure 2: Four Aspects that Characterize Electronic Payment Systems (Ferreira and Dahab 1998, p.138)

Despite the various definitions about the nature of EPS, there are different segmentations for these systems.

2.1.1 EPS Segmentations

Medvinsky and Neuman (1993) divided EPS into two groups: electronic currency systems (or electronic cash) and credit-debit systems.

Accordingly, Wayner (1997) categorized them based on the type of information that is exchanged. From his points of view these are two "account-based" and "token-based" systems, which respectively correspond to electronic currency and credit-debit systems. Abrazhevich (2001, p. 83) recognized 2 systems for token-based and three systems for account-based systems as figure 1 illustrates.
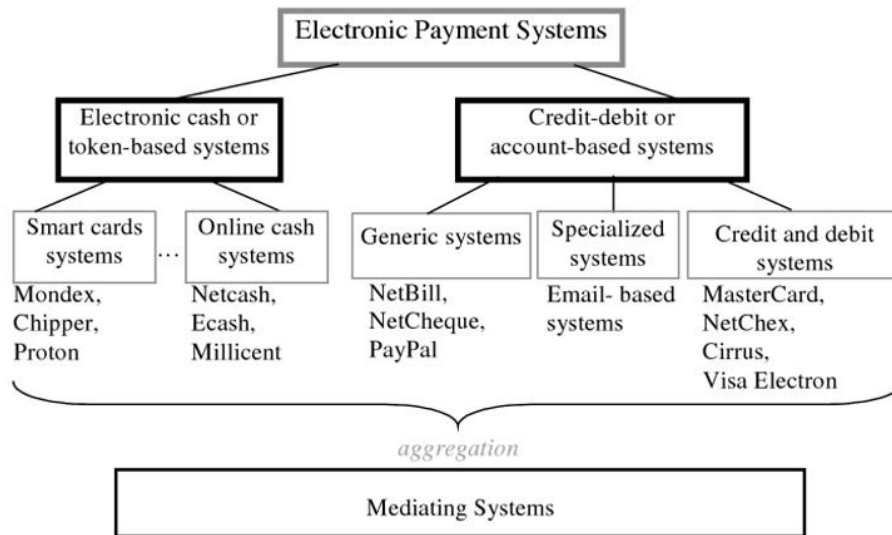
Figure 3: Classifications of Electronic Payment Systems (Abrazhevich 2001, p. 83)

2.1.1.1 Token-based Systems

Havaldar (2010, p. 388) considered the aforementioned categories of figure 1, and in addition to these two subsystems of token-based systems, introduced electronic checks as well. Additionally, Umar (2003, p. 2-21) recognized these three parts for token-based systems and defined them as:

- Electronic Cash (E-Cash): Digital signatures to enforce public/private keys to identify buyers/sellers.

- Electronic Check: Opening a checking account and sending checks through email to the seller; then seller sends this check to the bank through an accounting server.

- Smart Card: These are basically credit cards with microprocessor chips that can hold much more information as compared to traditional credit cards.

Unlike Abrazhevich (2001) and Umar (2003) who recognized e-check as the subcategories of token-based systems; Mansell and Steinmueller (2000, p.359) claimed: "two main types of e-cash, "pre-paid" and "true". The former is float-based and the latter token-based." In float-based systems, the issuer of e-cash receives payment from the consumer (debtor) and deposits it into a float account while token-based systems are closer to physical cash than their float-based counterparts through transferring of possession of the e-cash transfers its ownership. Thus, in above point of view, e-check is not a part of token-based systems; rather token-based systems are the part of e-check systems.

2.1.1.2 Account-based Systems

Abrazhevich (2004, p. 40) noted that EPSs built on the basis of this model have therefore a potential for good scalability, which allows more users to join the system without great loss of performance. Additionally, he pointed out the potential benefits which will be gained from the usage of payment systems; while traceability and high overhead cost for transaction processing are main limitation of these systems.

Thus, this system, particularly its master or debit systems as Wayner (1997) pointed out, have played the fundamental role for providing EPSs with its pros and cons.

Account-based systems are divided into three categories:

1. **Generic Systems:** Online money transfer service like Western Union for business, online auctions and person-to-person payments or NetBill that has a central server as a mediator of purchases (Prins 2002, p. 67)

2. **Specialized Systems (E-mail systems):** These account-based systems utilize e-mail for money transfer like PayPal that is a user-to-user account-based payment system.

3. **Credit and Debit Systems:** The credit-debit approach means that records in bank accounts represent money, and this information is electronically transferred between parties over computer networks (Abrazhevich 2004, p. 24).

2.3 Trust in EPS

Kim et al. (2010) argued that to attract and retain e-payment users, it is vital to enhance consumers' perceptions of security and maintain customers' trust during e-payment transactions.

There are lots of definitions regarding trust in EPS. Mayer et al. (1995) defined it as the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustee, irrespective of the ability to monitor or control that other party. They did not consider the role of knowledge for trust while Jean Camp (2002) explained trust as a party to make a rational decision based on knowledge of possible rewards for trusting and not

trusting. Additionally, he added that trust enables higher gains while distrust avoids potential loss.

Tsiakis and Sthephanides (2005) noted the role of trust in long-lasting business relationships and lack of trust creates a circumstance for a security threat. In fact, they emphasized on the mutual role of trust and security within an EPS and trust and risk as important determinants of adoption behavior in the phase of EPS. They additionally pointed out the role of trust framework in e-commerce that must address scalability and cost and accordingly they considered "trust path" as the second step of the three-step e-commerce process with "search and negotiation" and "commitment and post-monitoring".

Moreover, they argued that a fundamental prerequisite must be that all participants ought to have absolute trust in the system in which they participate and three considerations for it in an EPS are necessary: data, identities and role behaviour. Three items characterize a trusted environment from their point of view:

1. All entities are identifiable;
2. A minimum number of a priori trusted entities; and
3. These entities have unquestionable trust to other participating entities.

Moreover, Al-Somali et al. (2009) argued that researchers agree that trust is more significant in online banking because transactions of this nature contain sensitive information and parties involved in the financial transaction are concerned about access to critical files and information transferred via the Internet. Accordingly, Heidarzadeh

and Alinejad (2012) noted that the Internet is an open network with no direct human control over individual transactions; the technical infrastructure that supports EPS must be resistant to security attacks. Technical protections devised to reduce such risk need to be considered before the problem of consumer trust is addressed. In addition, they pointed out that trust in EPS must incorporate two components:

1. Integrity, which encompasses authentication, fraud prevention, and privacy.
2. Divisibility: transferability duplicates spending prevention, payment confidentiality, payment anonymity, and payer traceability.

Furthermore, Kim et al. (2010) categorized influence consumers' perceptions of security and trust in the use of EPS into three areas:

1. Security statements: refer to the information provided to consumers in association with EPS operation and security solutions.
2. Technical protections: refers to specific and technical mechanisms to protect consumers' transaction security.
3. Transaction procedures: refers to the steps designed to facilitate consumers' actions and eliminate their security fears.

Accordingly, Heidarzadeh and Alinejad (2012) suggested a model based on these areas for EPS use that considered roles of trust with security for EPS. These statements are crucial segments that lead to security and trust in EPS and finally recognize influences of EPS use.

2.4 Banking in Northern Cyprus

Most of the researchers know the major role of banking in TRNC is owed to the economic circumstances of Turkey. Sonan (2007) noted in a twenty-year period from 1974 to 2004, Turkey provided 3.07 billion USD of financial assistance to TRNC. Accordingly Isachenko (2012) pointed out: "As a result of the substantial financial assistance of Turkey to the economy of Northern Cyprus, the procedure of formulating the budget is strongly influenced by the Turkish government."

Moreover, Safakli (2003, p. 224) suggested that in early 1999 a law was proposed to reform the banking sector in the TRNC that aimed to increase the minimum capital requirement for the banks as well as to connect the lending limit to bank reserves rather than to the amount of deposits. Additionally many new laws and policies were proposed which finally lead to in differentiation between the policies of Turkish and Cypriot policies in some ways. Additionally from that year (1999) many public banks were transformed into private banks.

Generally, there are different types of banks in TRNC and each one of them according to its capabilities has their own customers. NCO (2012) categorized 6 types of banks in TRNC as:

1. Public banks: (These provide state guarantee, however, currently only Cyprus Vakiflar Bank is a public bank.)

2. Private bank

3. Foreign Bank and Branch

4. Development and Investment Bank

5. Banks under Savings Deposit Insurance Fund (SDIF)

6. Off-shore Banks

These banks according to their various capabilities have attracted their related customers.

Chapter 3

RESEARCH MODEL AND HYPOTHESES

3.1 Research Model

This chapter presents the models of the study, in addition the hypotheses is generated from the model. This chapter includes the methods used to collect data and related statistical analyses.

The model is defined first and then later the hypotheses are introduced, and finally in this chapter research methodology is brought into the discussion.

3.1.1 Conceptual Model

The present study is developed and tests are made on this model which examine the affects of each variable on other variables. This model is going to determine the EPS to may be lead to increase in excellence performance, the reasons to produce and test such a research model is shown in Figure 1.

In order for direct impact of one variable on other variables, some questions are designed. Affects of transaction procedure in EPS is emerged as first characteristic into the model.

Technical protection in EPS takes place as the second dimension in the model. In Case of EPS the security statement is one of the crucial issues, that builds the third dimensions of the model.

The fourth dimension is perceived as security in EPS which influences EPS excellence level. Another fact that shows the reliability of an EPS is perceived through trust in EPS. Finally, extent of EPS is the last dimension of the model in order to recognize whether people want to continue using EPS or not.
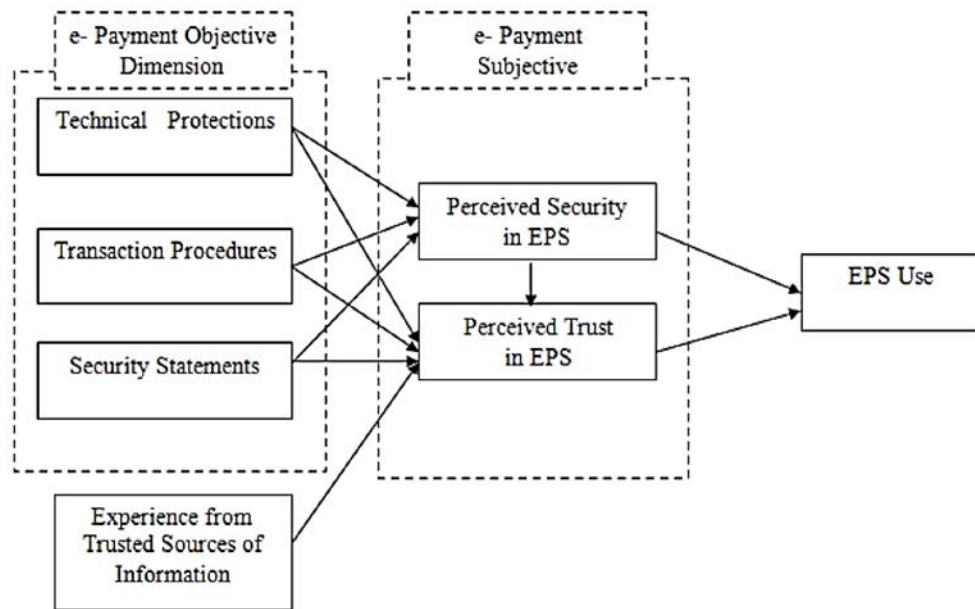

Figure 4: Conceptual Model of the Research

3.2 Research Hypotheses

As it is illustrated in the model, all the variables (transaction procedure, technical protection, security statement, perceived security, perceived trust, and extent of EPS use)

are suggested to positively influence each other; therefore the following hypotheses are developed from the model:

H_1: There is a significant positive relation between the Transaction procedure in EPS and Perceived security in EPS.

H_2: There is a significant positive relation between the Transaction procedure in EPS and Perceived trust in EPS.

As it is mentioned in the literature review, some characteristics of EPS are more influential for development of these systems; that one of them is about its trust. Abrazhevich (2004) points out about limitation of using EPS because of 8 main reasons and that one of them is lack of trust. He added: "users tend not to trust existing systems with a long history of fraud, misuse or low reliability, as well as novel systems without established positive reputation." Accordingly this study is going to examine whether there is positive significant relationship between this factor (Perceived trust in EPS) and other factors of the study (transaction procedure, technical protection, security statement, perceived security, and extent of EPS use).

H_3: There is a significant positive relation between the Technical protection in EPS and Perceived security in EPS.

H_4: There is a significant positive relation between the Technical protection in EPS and Perceived trust in EPS.

H_5: There is a significant positive relation between the Security statement in EPS and Perceived security in EPS.

H_6: There is a significant positive relation between the Security statement in EPS and Perceived trust in EPS.

H_7: There is a significant positive relation between the Perceived security in EPS and Perceived trust in EPS.

H_8: There is a significant positive relation between the Perceived security in EPS and Extent of EPS use.

H_9: There is a significant positive relation between the Perceived trust in EPS and Extent of EPS use.

In this chapter, firstly we proposed the conceptual model and immediately by proposing fifteen hypotheses related to the model we demonstrated the suggested positive relation between those variables (transaction procedure, technical protection, security statement, perceived security, perceived trust, and extent of EPS use). Result of tests that have been done in the next chapter will show the degree of correlation between those factors and results of tests, specifically correlation test. Results will clear whether the correlation coefficients between the factors of the study are statistically significant or if they are not.

3.3 Control Variables

In this study control variables consist of: respondents' gender, age, education and nationality which are all measured to examine the hypotheses in a reliable way. As De Menezes (2012) said use of these control variables would help to understand the background of respondents which is supposed to have a significant impact on the results of the conducted study.

According to Robbert et al (2000) culture can moderate relationships between the events experienced and effective outcomes of the employees experiencing those events. For this reason Robbert et, al, (2000) in their cross cultural study did not find a positive relationship between two specific variables while the relationship confirmed between those same variables in USA, Poland and Mexico.

Therefore in the questionnaire that we used in our study there are for control variables which consist of: respondents' gender, age, education and nationality, these control variables are measured to examine the hypotheses in a reliable way to realize how respondent's background affects their response and consequently affects on the results of study. Positive relationship between control variables (respondents' gender, age, education and nationality) and the factors of study (transaction procedure, technical protection, security statement, perceived security, perceived trust, and extent of EPS use) is brought in table 4 in chapter 5.

Chapter 4

RESEARCH METHODOLOGY

4.1 Sample

This study considers the frequency in which customers use EPS and their satisfactory level. Therefore an online related questionnaire has been used to collect data from all around the world, in total 345 questionnaires were responded to from18 countries, out of those collected responses, a significant response rate of 88.4 percent, 305 were completed fully and were appropriate to conduct the analysis because the usable response rate exceeded the recommended threshold of model estimation.

4.2 Measures

The present research used an online questionnaire that consisted three parts, first part mainly considered factors that were going to be analyzed in this study. The second part considered personal profile of the respondents including gender, age, level of education and nationality. Finally the last part contained some technical questions regarding respondent's experiences in using EPS.

said The questionnaire was arranged accordingly into separate sections including independent and dependent variables to reduce the probability of single-source method bias (Podsakoff et all 2003).

The questionnaire which is used in this study contained 29 items, this research divided those items in 6 sections including Transaction procedure, Technical protection, Security statement, Perceived security, Perceived trust and Extent of EPS use. All of 29 items included in online questionnaire were measured on a five point Likert scale which has been ranged from "Strongly Disagree = 1" to "Strongly Agree = 5". Original file of this questionnaire is attached in the Appendix of the study.

4.3 Initial tests for Instrument

In this study we started working with confirmatory factor analysis (CFA) for each 29 questions to define support for dimensionality, discriminant validity concern and convergent (Table 1). Aim of this test is to eliminate any measures with either insignificant loading or cross-loadings. It is known that factor loading equal or greater than 0.5 will be retained (Catell 1966). 3 questions were omitted from further analysis because of having a factor loading lower than 0.5, and one question had a factor loading of 0.497 which we did not omit t because it had a very close value to 0.5. Then all the items' loadings were significant at one percent and according to Anderson and Gerbing (1988) therefore convergence validity of each item to its main construct was fulfilled.

Table 1: Convergent and Discriminant Validity of the Model Instruments

Variable	Factor Loading
Transaction procedure in EPS α = 0.768	
EPS always call for username and password when you log-in.	.688
Various measures are provided by EPS to authenticate.	.570
The site provides a step to verify a payment before the finalization of the actual payment.	.584
The site typically displays a summary of the payment information (cost, payee etc.) and the final payment amount.	.589
A confirmation is sent to you through one of several available methods (online, email etc.) to assure you that payment has in fact been	.604
Technical protection in EPS α = 0.711	
Your personal information, such as contact details or payment details, has never been stolen because of using EPS.	.454
Your personal information has not been released to other third parties by EPS service providers for any other purposes.	.532
The payment amount or transaction data displayed on EPS is always accurate.	.568
You think that EPS transaction data transferred over the Internet is securely protected.	.562
The site offers you an opportunity to change any of payment information before completing the final stage of the payment process.	.476
Payment services are always available at any time in a day.	.597
Temporary or sudden errors frequently occur during EPS transaction.	.570
Security statement in EPS α = 0.791	
The site offers detailed explanations at to how to review, cancel modify or record a payment.	.551
The site provides security statements on security-policy, contact information under emergency, technical descriptions and functionalities of	.517

Table 1: Convergent and Discriminant Validity of the Model Instruments (Continued)

Variable	Factor Loading
You do not need to make any special or extraordinary efforts to find security-related statements.	.548
Your concerns on security issues can be easily found from frequently asked questions (FAQ) or a help section.	.497
Security-related statements are drafted in an easily understandable way and largely free from technical words.	.470
The security-related statements are drafted in a wording that attracts your attention.	.504
Perceived security in EPS α = 0.799 I perceive EPS as secure.	.610
I perceive the information relating to user and EPS transactions as secure.	.531
The information I provided in previous EPS is helpful for secure payment transactions.	.569
I do not fear hacker invasions into EPS.	.607
Perceived Trust in EPS α = 0.775 I trust each participant, such as seller and buyer, involved in EPS.	.577
I trust the security mechanisms of EPS.	.635
I trust EPS services.	.568
I trust the information provided during the EPS process.	.538
Extent of EPS use α = 0.712 I use EPS more often than others.	.746
I am using currently and will continue to use EPS.	.733
I believe EPS use will increase.	.643

In addition, coefficient cronbachs' alpha for all the variables are greater than minimum value of 0.7 (Nunnally 1978), which says their reliability is sufficient (Table 1). Internal consistency was also fulfilled. As it is shown in table 4, correlation coefficient ranged from 0.367 (Perceived security in EPS and Transaction procedure in EPS) to 0.695 (Perceived security in EPS and Perceived trust in EPS). It demonstrated that the correlation scores supports the discriminant validity for none of the scores are greater than 0.90 (Tabachnick and Fidell 1996).

As it is suggested in previous researches, the average variance extracted (AVE) scores needed to be at least 0.5 in order to have convergent validity, the current research also carried out convergent and discriminant validity tests to find out the level of validity (Anderson and Gerbing 1988). According to Chin (1998) and Fornell and Larcker (1981) the variance of construct and its measure is greater than error.

4.4 Test for Significant Differences

In SPSS software one more test will be carried out, which tests significant differences, this test is called Analysis of Variance (ANOVA) for the factors that at least have three categories and by independent samples' t-test for those that have only two categories. This test is carried out in addition to mean score analysis which was provided in table 1.

4.5 Correlation Analysis and Proposed Regression Model

In order to analyze the validity of the proposed conceptual model, correlation and path analysis will be done after mean score analysis, hypothesis tests and factor analysis are carried out. As it is known correlation gives the degree and the direction of a linear

association between two independent variables in terms of percentage. A direct association is implied by positive correlation and an indirect association is implied by negative correlation. According to Lind et al. (2005) It is expected to have a correlation coefficient higher than 0.5.

The following linear equation which is called path analysis is carried out to investigate parameters in conceptual model.

$$Y = \beta_0 + \beta_1 (X) + \varepsilon_t$$

In the above equation, Y denotes dependent variables, X represents independent variables and ε_t denotes white noise error disturbance. In order to analyze impact of X on Y by β coefficient, X variable needs to be regressed on Y variable. β_0 is called drift or intercept of the model. According to statistical evidences, β_0 and β_1 must be significant in both individual test (t-test) and joint test (F-test).

It needs to be mentioned about Heteroscedasticity which is a problem that emerges when the probability distribution of error terms in equation (1) are not homogeneous for the given value of Xs. This problem happens most frequently when the type of data is cross-sectional data. According to classical linear regression models (CLRMs) distribution of error terms should be Homoscedastic. As Lind et al (2005) said if distribution of error terms is not Homoscedastic, it causes deviation from the estimation of CLRMs. Thus this test ıs also carried out for the current research.

Chapter 5

ANALYSIS OF FINDINGS

5.1 Descriptive Analysis

In this chapter tests of the findings are presented. The tests are provided to justify the hypothesized model. All the 29 items are divided into 6 major factors, in the next step we applied some appropriate tests to show the strong correlation among those factors and introduce those factors as main indicators of EPS by providing some empirical justification.

5.1.1 Frequencies

As it has been mentioned before, the data has been collected from an online survey, from all around the world. Our sample shows 36.7% of the respondents are from Iran, 17.3% are from Turkey, North Cyprus is in third place with 17% and Nigeria takes fourth place with 9.2% of respondents out of 18 countries. Out of 305 completed responses, 58% were filled by males and the rest (42%) were filled by females 64% of the respondents were aged between 24 to 34 which is above 50% of all the respondents. More than half of the respondents had master degrees (58%) and 28% of them had bachelor degrees, in addition 13% of the respondents had a PhD degree, we may conclude that 71% of respondents were graduate and knowledgeable people whom share their ideas and experiences about EPS.

Table 2: Frequency Table for Control Variables

Factor	Description	Frequency	%
Age	Under 18	1	.3
	18 to 24	74	24.3
	25 to 34	196	64.3
	35 to 44	33	10.8
	45 or older	1	.3
Gender	Male	177	58.0
	Female	128	42.0
Level of Education	High school diploma	16	5.3
	Bachelor	85	28.0
	Master	162	53.3
	PhD	42	13.5
Nationality	Iran	108	36.7
	Turkey	51	17.3
	Cyprus	50	17.0
	Nigeria	27	9.2
	Iraq	18	6.1
	Palestine	12	4.1
	Russia	4	1.4
	Sudan	2	.7
	Bosnia	1	.3
	Hungary	6	2.0
	Kenya	1	.3
	Azerbaijan	5	1.7
	Ahiska	1	.3
	Kyrgyz	1	.3
	Israel	3	1.0
	USA	1	.3
	Tajik	1	.3
	Libya	2	.7

5.1.2 Mean Score Analysis

The following table provides minimum, maximum, mean, and standard deviation of each section. As results of table 3 shows standard deviation of respondents were very low (lower than one) which means respondents have almost similar ideas regarding our questionnaire instrument. Additionally the degree of mean is higher than 3.70 (about 4) in all 6 sections. It shows, respondents are almost in agreement with the questionnaire's instrument.

Table 3: Mean Score Analysis

	N	Min	Max	Mean	Std. Deviation
Transaction procedure in EPS	305	1.00	5.00	3.8774	.53944
Technical protection in EPS	305	1.00	5.00	3.7312	.44818
Security statement in EPS	305	1.00	5.00	3.7557	.52763
Perceived security in EPS	305	1.00	5.00	3.7210	.54409
Perceived Trust in EPS	305	1.00	5.00	3.8161	.58242
Extent of EPS use	305	1.00	5.00	3.9549	.63572

Those findings show empirical evidences that instruments which are applied in current study are strongly appropriate for further investigation. Average score of our variables (transaction procedure, technical protection, security statement, perceived security, perceived trust, and extent of EPS use) are very close to four with standard deviations of lower than one. This means that respondents have similar ideas regarding our questionnaire's instrument.

5.1.3 Significant Differences Tests

In this section we tested the effects of control variables (respondents' gender, age, education and nationality) on factors of study (transaction procedure, technical protection, security statement, perceived security, perceived trust, and extent of EPS use) by using one way ANOVA. In fact significance of control variables show that whether respondents with different categories of age, have different response on the same questions or not.

In addition, control variables are measured to realize that how respondent's background (age, education, and nationality) affects their response. Positive relationship between control variables (respondents' gender, age, education and nationality) and the factors of study (transaction procedure, technical protection, security statement, perceived security, perceived trust, and extent of EPS use) is shown below.

Table 4: ANOVA Tests for Significance of Control Variables

	Age	Education	nationality
Transaction procedure in EPS	1.021	1.653	.820
Technical protection in EPS	1.314	1.579	1.514
Security statement in EPS	1.112	.853	2.052^{**}
Perceived security in EPS	1.720	.457	1.396
Perceived Trust in EPS	2.281^{*}	1.786	3.304^{***}
Extent of EPS use	2.134^{*}	1.072	1.355

As it is given in the above table, regarding age of respondents, people have different responses to perceived trust in EPS because we found significant value in F statistics, which means (for example) middle age customers do not trust EPS as much as young people trust EPS (significant value in F statistics). Age of respondents also lead to different responses regarding the extent of EPS use. The other four factors of study (transaction procedure, technical protection, security statement, perceived security) were not affected by the age of the respondents. Results of table 4 showed that there were not any significant differences found between education level of respondents and the factors of study (transaction procedure, technical protection, security statement, perceived security, perceived trust, and extent of EPS use). But in terms of nationality of respondents, result of table 4 showed that people from different nationality have different responses to security statement in EPS, and Perceived trust in EPS too because we found significant value in F statistics, this means that security statement in EPS and perceived trust in EPS differ significantly across different nationalities of respondents.

5.2 Correlation and Regression Analysis

5.2.1 Correlation Analysis

This section focus on investigating the relationship between factors of study (transaction procedure, technical protection, security statement, perceived security, perceived trust, and extent of EPS use) as is has been hypothesized in previous chapter. In table 5 it has been proved that there are statistically significant correlations among our factors of study.

As it has been reviewed in chapter 2, Kim et al. (2010) people's perceptions of security and trust in the use of EPS can be categorized into three areas security statements, technical protections and transaction procedures; in another study, Heidarzadeh and Alinejad (2012) argued that security statements, technical protections and transaction procedures have influence on perceived security and perceived trust in EPS and these two factors effect extent EPS use (figure 4 chapter 2).

Accordingly, the following test showed that there are positive and statistically significant correlation among factors of our study which supports the model that we determined in chapter 3.

Table 5: Correlation Analysis

		Transaction procedure in EPS	Technical protection in EPS	Security statement in EPS	Perceived security in EPS	Perceived Trust in EPS	Extent of EPS use
Transaction procedure in EPS	Pearson Correlation	1	.476**	.436**	.367**	.479**	.409**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	305	305	305	305	300	303
Technical protection in EPS	Pearson Correlation	.476**	1	.537**	.589**	.563**	.452**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	305	305	305	305	300	303
Security statement in EPS	Pearson Correlation	.436**	.537**	1	.597**	.631**	.407**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	305	305	305	305	300	303
Perceived security in EPS	Pearson Correlation	.367**	.589**	.597**	1	.695**	.475**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	305	305	305	305	300	303
Perceived Trust in EPS	Pearson Correlation	.479**	.563**	.631**	.695**	1	.573**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	300	300	300	300	300	299
Extent of EPS use	Pearson Correlation	.409**	.452**	.407**	.475**	.573**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	303	303	303	303	299	303

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

Results of correlation analysis in the above table showed that perceived security in EPS and perceived trust in EPS obtained highest correlation (0.695) and perceived security in EPS and transaction procedure in EPS obtained the lowest correlation (0.367). There was one more important result found regarding the above table which says that as we claimed and plotted in our model, all the of the variables (dimensions) are strongly and positively correlated.

5.2.1.1 Transaction Procedure and Other Factors of EPS

This part of correlation analysis is done to investigate the relationship between the transaction procedure with other factors of our study. The results showed that the transaction procedure is positively and significantly related to other factors. We found the highest level of correlation with perceived trust (0.479) which means that, the transaction procedure is highly related with perceived trust. In addition, transaction procedure has the lowest level of correlation with perceived security (0.367).

5.2.1.2 Technical Protection and Other Factors of EPS

Results of correlation table showed that technical protection has a positive and significant relationship with other factors of EPS. The highest correlation is found with perceived security and lowest correlation is reported with extent of EPS use.

5.2.1.3 Security Statement and Other Factors of EPS

Security statement also has a positive and significant relationship with all the other factors of EPS, as it is given a correlation table, security statement has highest correlation with perceived trust and lowest correlation with extent of EPS use.

5.2.1.4 Perceived Security and Other Factors of EPS

Correlation analysis showed that perceived security has positive and significant relationship with other factors of EPS. Moreover highest correlation of perceived security is reported with perceived trust although its lowest correlation is reported with transaction procedure.

5.2.1.5 Perceived Trust and Other Factors of EPS

According to the table of correlation analysis and as we have already claimed in our model, perceived trust has positive and significant relationship with other factors of EPS. Furthermore, the highest correlation of perceived trust is available with perceived security and its lowest correlation is reported with transaction procedure.

5.2.1.6 Extent of EPS use and Other Factors of EPS

As it was expected and mentioned in our model, the extent of EPS use has positive and significant relationship with other factors of EPS. The analysis showed that the highest correlation is available with perceived security and the lowest correlation is reported with security statement.

5.2.2 Regression Analysis

This is important to test the impact of independent variable(s) on dependent variable of each of the nine hypotheses. For this purpose, path analysis has been used. In this section estimates of regression model will be presented with both unstandardized and standardized coefficient.

Table 6: Unstandardized Regression Weight

Dependent Variable	Independent Variables	Coefficient	SE	Prob.
Model 1:				
Extent of EPS use	Perceived security	0.406	0.043	0.000
Extent of EPS use	Perceived trust	0.526	0.044	0.000
Model 2:				
Perceived security	Technical protection	0.485	0.038	0.000
Perceived security	Security statement	0.578	0.045	0.000
Perceived security	Transaction procedure	0.364	0.053	0.000
Model 3:				
Perceived trust	Transaction procedure	0.447	0.047	0.000
Perceived trust	Security statement	0.573	0.041	0.000
Perceived trust	Technical protection	0.431	0.037	0.000

As we already expected and mentioned in chapter 3, results of table 6 showed the significant and positive impact of independent variables on dependent variables in all nine hypotheses (all P-values are lower than 0.01).

It is necessary to mention that impact of perceived trust on perceived security has highest coefficient (0.578) and impact of Perceived security on   security   statement has the lowest (0.364) coefficient among all nine linear regression.

Immediately after finding unstandardized estimation of coefficient, it has been tried to find standardized estimation of coefficient for all the hypotheses which are shown in below table (table 7).

Table 7: Standardized Regression Weight

Dependent Variable	Independent Variables	Coefficient
Model 1:		
Extent of EPS use	Perceived security	0.475
Extent of EPS use	Perceived trust	0.573
Model 2:		
Perceived security	Technical protection	0.589
Perceived security	Security statement	0.597
Perceived security	Transaction procedure	0.367
Model 3:		
Perceived trust	Transaction procedure	0.479
Perceived trust	Security statement	0.631
Perceived trust	Technical protection	0.563

In addition results of table 7 showed the significant and positive impact of defined independent variables on dependent variables in all nine hypotheses, as it is demonstrated in both unstandardized coefficient and standardized coefficients there is no difference, therefore changes between estimation are negligible. Similar to table 6 in table 7 also impact of perceived trust on security statement has the highest coefficient (0.631) and lowest impact is reported in impact of perceived security on transaction procedure (0.367).

Therefore it could be said that there is statistically a significant and positive relationship among the factors of EPS (transaction procedure, technical protection, security statement, perceived security, perceived trust, and extent of EPS use) in hypotheses, in other words, all variables affected each other in terms of EPS.

Accordingly regression analysis showed that there are positive and statistically significant correlations among factors of our study, which support the model that we

plotted in chapter 3. As mentioned in chapter 2, Kim et al. (2010) categorized people's perceptions of security and trust in the use of EPS into three areas, security statements, technical protections and transaction procedures; in another similar study, Heidarzadeh and Alinejad (2012) argued that security statements, technical protections and transaction procedures influence perceived security and perceived trust in EPS and these two factors effect the extent of EPS use (figure 4).

At the end of this chapter it must be mentioned that throughout the conceptual model there are meaningful, positive and statistically significant interactions between all 6 dimensions of EPS (transaction procedure, technical protection, security statement, perceived security, perceived trust, and extent of EPS use).

Chapter 6

CONCLUSION AND POLICY IMPLICATION

6.1 Conclusion

As discussed in the first chapter, the main object of this study was to investigate whether people trust the EPS in Northern Cyprus. In addition we demonstrated that there is a significant relationship between the defined dimensions of this study, those dimensions individually are related to each other which means the tested relationships through the dimensions showed the variables are correctly defined and located in the model.

As Marshal (2002) pointed out, between 1990-2002, paper-based transactions decreased from 81% to 61%; therefore it is expected that the use of EPS will increase with a high speed in forthcoming years as paper-based transaction will decrease. So the system providers are expected to make a very user friendly and simple EPS with high ability.

In order to find proper results, among various research methods, quantitative and accordingly survey was considered. This survey is comprised of 33 questions in a questionnaire that was distributed online and 4 general question as well as 29 technical questions in 6 categories were prepared where 305 people answered them.

Afterwards, fifteen hypotheses were defined in basis of the possible relationships between the dimensions of the study. Then, we applied correlation analysis to test the hypotheses.

The most important conclusion of the current research would be that among more than 18 nationalities of both men and women with all levels of academic degrees who live in Northern Cyprus, it demonstrated to us that EPS is an accepted method of payment for daily life of these people.

Accordingly the result of mean score analysis has proved that a majority of people agree with all considered aspects of EPS in Northern Cyprus. Specifically, if perceived trust and security increases among customers, it will lead to higher EPS adoption. Our respondents, who were from 18 different countries, think EPSs are efficient enough systems for them to fulfill their payments and it provides an appropriate channel to follow up the payment process.

6.2 Policy Implication

It is expected that buyers, sellers, banks and insurance companies and other possible users of EPS are interested in considering outcomes of this study. As it is concluded in the previous part, the dimensions of EPS are strongly related to each other. Therefore if related users of EPS pay attention to importance of the system and keep using the EPS, the system provider would be motivated to improve and increase ability of system to facilitate it more and more and provide a better version of this for next generations.

There may still be some setbacks that EPS users face while they are using the system, the users are expected to inform the failure to system providers in order to help them improve.

System providers in Northern Cyprus can help users gaib better knowledge of using EPS by providing some online training sessions, as it is clear technology is progressing very fast nowadays and payment systems are affected also by this trend. Based on this study, by making the online payment systems and procedures easy to use for current and target customers will directly affect the use of EPS.

However this research no doubt cannot cover all aspects of EPS in Northern Cyprus, it is hoped to aid all decision-makers of this industry to improve the strengths of this system and reduce its weaknesses to have a better, secure and most efficient kinds of EPS for attracting more people to use this system for their every-day payments.

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