



Customers Trust on the Security of Online Payment System Using Credit/ Debit Cards with Reference to Banking Customers in Chennai

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ABSTRACT: The study aims to identify the various factors considered to be very important in creating trust among customers towards online electronic payment system. The paper also suggests measures to enhance the trust of customers towards online payment system.

METHODS/ANALYSIS: A structured questionnaire was developed which covered the different variables in the research model such as Authorisation, Authentication, Transaction Procedure and Technical Protection. The questionnaire was distributed among customers of selected banks who use credit and debit cards. The population of the study are customers of selected banks in Chennai. The sample size for the study is 290 comprising of customers who use electronic payments through transactions in either their debit card or credit card. A purposive sampling procedure has been adopted for the study. ANOVA is used to find the opinion of customers towards the different online security related variables and their perceived trust. The ANOVA and T-test is used to find the relationship between the demographic profile of the customers and their opinion on online security related variables.

FINDINGS: The study found that the factors like Trust, Security, and Authentication are considered to be very important by customers in increasing their perceived trust towards online payments done through their debit and credit cards.

NOVELTY/IMPROVEMENT: The outcome of the study will be helpful to enhance the security of online payment of the customers. The study will be useful for the purpose of knowing the various problems that a customer faces while doing online payments so that the problem can be combated.

KEYWORDS: E-commerce, Transaction Procedures, Technical Protection, Authentication and Authorization.

I. Introduction

The electronic payment system or online payment system is increasingly being used by to make payments. The present day a payment system with the advancement in technology has made things easier for the people in all walks of life. The days were payments used to be done in person is diminished and now it has become easier to make all kinds of payments like telephone bill, EB bill, booking train tickets, purchasing goods etc online. The more advancement in technology has enabled the consumers to buy products as well as make payments at their own convenience. The technologies have come up with security and encryption a feature that enables all payments on the internet to be highly confidential. Security in online payment is one of the factors that create the trust and confidence among the customers. The online payment system first authorises the use of credit/debit card over the internet, it is a secure method wherein the transaction is verified and the cardholders pin is encrypted to ensure security. The online payment system has a series of steps involved in the authentication process of a customer using his/her credit/debit card for payments.

Though transactions are done online, customers do have a sense of worry about the online-transaction and about the privacy of their personal information hence authentication becomes a crucial part in the online transactions. All major banks have now started implementing the Online Authentication Service (OAS) to meet the needs of customers using the online payment system. The OAS enables customers to protect themselves from fraudulent transactions using the 3-D secure services. The 3D-secure services make it even safer for the customers since there is an online connection between the customers and their banks. Hence, the customers would be providing their passwords and online identification before making a payment or purchasing any goods online.

Online payments are done through different modes such as credit cards, debit cards, smart card, internet banking etc. When the customer is about to pay the bill or buy a product there are a series of questions generated from the system like Cardholder name, card number, expiry date etc. and then it has a secure code or one time password

that needs to be entered to process the transaction. The system goes through various steps when a credit card or debit card is used. In order for the payment to be successful, the merchants should have a network connection with the various banks so that the customer can be routed to their banks in a more secure way. This study focuses on the trust level of customers using credit and debit cards towards security of online payment systems.

II. Review of Literature

This section gives an overview of research related to E-commerce, Online payment systems and the various factors which determine the trust of banking customers.

Electronic payment system

Hossein Bidgoli (2002, p.194) states that Electronic Payment Systems incorporate hardware and software systems that empower a client to pay for the products and administrations through on the web. He promote opines that the principle target of Electronic Payment System is to build the effectiveness, enhance security and pull in client comfort and usability. The researcher has considered numerous techniques and instruments that can be utilized to permit EPS usage.

John (2003) gives more insights about Electronic Payment System and its capacities and characterizes as it a neo-installment mode that can be distinguished as any exchange of assets started through an electronic workstation, telephonic instrument or PC or attractive tape to arrange, teach or approve a monetary association to charge or credit a record. In addition, he sees it as same as Electronic Fund Transfer (EFT).

Asokan and Janson (1997) noticed that there are diverse sorts of components which impact the trust level electronic installment frameworks including honesty, approval, secrecy, accessibility, and dependability for security necessities

Security

Shristi Pant (2011) infers that the online payment arrangement of a client is to make an installment to an online payment service supplier. There are different channels between the client and installment processor, and they utilize different security apparatuses to ensure the client's installment data like charge or Visa data amid the exchange procedure. The study expresses that misuse of exchange procedure happens even by the programmers.

Trust

Amir Abbas Jarollahi (2013) states about trust level of the customers in electronic payment system and has tried to find the level of trust among men and women using the online payment system. The factors that are analysed to increase the security and trust among customers are Perceived Trust and Security which leads to high adaptation of Electronic payment system.

Egger (2001) feel that the aim of building consumer trusts in e-commerce is to support prospective buyers to purchase for the first time and to encourage who those have previously bought once to continue to do so. Subsequently, trust can be distinct, initial trust, which will allow a consumer to shop for the first time at a given merchant site and maintained trust, which affects the long-term relationship allowing the consumer to continue shopping.

Pichler (2000) has identified reliance as a factor related with the concept of trust and can be defined as a consumer's belief that things will go all right, reliance is a consumer's belief that although things might go wrong, they can be fixed. The need of trust in electronic commerce is regularly explained by time unevenness, lack of power, or lack of ability to conclude perfect contracts. The time irregularity argument draws on the fact that usually transactions are performed over a period of time.

Authentication

Kingpi & Mudge (2001) implies that due to small sizes of handheld devices and the risk that they may be stolen, lost, or missing, thus can have an open access for an unauthorized individual security is vital. If user authentication is not enabled the devices fall under the control of whoever holds it. Even if user authentication is enabled, the authentication mechanism can be weak or easily guessed.

Technical Protection

Al-Somali *et al.* (2009) the author established that trust is more significant in online banking because transactions of this type contains awareness of information parties involved in the financial transaction are concerned about contact to critical files and information transferred via the Internet.

Heidarzadeh and Alinejad (2012) states that the online is an open network access with no direct human management over individual transactions the technical transportation that supports EPS must be resistant to security attacks. Technical protections devised to decrease such risk need to be considered before the problem of consumer trust is addressed.

Authorization

Siti Hafizah Ab. Hamid, *et al* (2008) indicates that the present issues on credit card authorization process. He states that multi-threaded authorization system with shared remembrance is needed in order to develop the reaction of the credit card authorization process and to defeat the delay in authorization processing problem of a single-way model for current credit card authorization system. The multilevel authorization system was introduced using .NET framework, then, the presentation of the multi-threading implementation measured.

III. Research Gap

There are only very few studies concentrating on consumer trust towards online payment system. This study has been undertaken to identify the factors that influence the trust of customers. Thereby it will try to throw light on measures to be adopted by the service providers to enhance the trust towards online payment system.

Hypothesis framed for the study

- H1: Male & Female users have the same level of trust towards online payment.
- H2: There is no significant difference on the trust level of online payment among the different age groups.
- H3: There is no significant difference in opinion on enhancement of trust levels among different age groups.
- H4: There is no significant difference in opinion on enhancement of trust levels and frequency of usage.

IV. Sample and Research Methodology

The data for the study was taken from the customers of banks who are using Online Payment system in Chennai city. Questionnaire method was used to collect data. Pilot study was conducted with 50 respondents and found that the reliability of the questionnaire was 0.808. The researcher has formulated seven questions to measure the enhancement of online payment system. The questions are reliable and it can be used for further studies. The questionnaires were distributed to around 290 customers out of whom 250 were found to be appropriate. The researcher has used the convenient sampling method to collect the data as the population of customers who use online payment system is very large. Data was collected from different age groups and both genders were covered. The data was collected from customers with experience of using Online Payment for quite some time. Statistical tests such as T-test and ANOVA have been used to analyse the data.

V. Analysis

Descriptive

Gender: The study covered 139 (55.6%) Female respondents and 111 (44.4%) Male respondents.
 Age of Respondents: The respondents were classified into three categories based on age. Young users who are below 21 years of age formed 17.2% of the sample, Middle age users who are in 21-40 years age constituted 32.4% of the sample and Elder user who are above 50 years of age formed constituted 50.4% of the sample.
 Marital Status: Respondents were also classified as Married (69.6%) and Unmarried (30.4%). Education: 1.6% of the respondents were diploma holders, (31.6%) were Undergraduates, (48.4%) of them were Postgraduate and others constituted (18.4%). Occupation: The respondents were classified on the basis of their occupation, wherein 43.6% of them were professionals (28.8%) were salaried employees, (14.4%) were self-employed and the rest were students. Monthly Income: The classification of respondents on the basis of their monthly income revealed that (16%) of them earn 10,000-20000 per month, (30.4%) of them earn 20000-30000, (17.6%) of them earn 30000-40000, (22.8%) of the earn 40000-50000 and rest were students.
 Duration: (13.2%) of the respondents have been using online payment system for less than year, (27.2%) have been using it for 1 to 2 years, (24.4%) have been using it for 2-3 years and (35.2%) have been using it for more than 3 years. Frequency: the frequency of usage of online payment system varies among the respondents. It has been observed that (52.4%) of them use it for once in a month, while (14.8%) of them use it once in 15 days, (14%) of them use it for once in a week, (12.4%) of them use it for twice in a week and (6.4%) of them use it occasionally. Payment Mode: It has been found that majority of the customers use both debit and credit cards (44%), (41.6%) of them use debits cards and (14.4%) of them use credit cards.
 Use of online payment: Most of the customers use online payment system for making EMI payments (40%), while (14.4%) of them use it for Booking tickets Train/Air/Bus/Entertainment purpose, (21.6%) of them use it for shopping, (12%) of them use it for Telephone Bills/Mobile recharge, (8.8%) of them use it for Fund transfer and (3.2%) of them use it for Paying EB bill.
 H1: Male & Female users have the same level of trust towards online payment

Table 1: Trust level among the Male & Female users Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Trust level	Male	111	16.8919	5.78140	.54875
	Female	139	20.7842	8.54380	.72468

Table 2: T-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Trust level	Equal variances assumed	4.653	.032	4.107	248	.000	-3.89228	.94783	-5.75910	-2.02546
	Equal variances not assumed			4.282	241.866	.000	-3.89228	.90900	-5.68284	-2.10172

The output of t-test shows that there is a significant difference between the two groups mean the

$p < 0.005$, that is 0.000. So, it can be concluded that the trust level among the Male & Female users vary significantly.

H2: There is no significant difference on the trust level of online payment among the different age groups

Table 3: Age has impact on trust level Descriptives

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Young Users	43	20.7442	5.09011	.77623	19.1777	22.3107	13.00	28.00
Middle Age Users	81	17.0494	4.34425	.48269	16.0888	18.0100	11.00	38.00
Elder Users	126	19.7698	9.62261	.85725	18.0732	21.4664	8.00	51.00
Total	250	19.0560	7.67963	.48570	18.0994	20.0126	8.00	51.00

Table 4: ANOVA

Trust level					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	512.902	2	256.451	4.470	.012
Within Groups	14172.314	247	57.378		
Total	14685.216	249			

From Table 4 we see the mean and standard deviation for all the groups showing the difference between the 3 groups. These figures are useful to explain the data. The p value is 0.012 which is < 0.05 showing that there is a significant difference between groups.

So it can be concluded that trust level towards online payment system varies with the age of the customers.

H3: Opinion on enhancement of trust level is the same irrespective of usage.

Table 5: Effect on Online Payment with respect to Usage

Enhancement						
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Once in a week	35	18.1143	5.77404	.97599	16.1308	20.0977
Twice in a week	31	13.2903	4.39844	.78998	11.6770	14.9037
Once in 15days	37	17.6216	3.96759	.65227	16.2988	18.9445
Once in a month	131	16.9695	5.94971	.51983	15.9410	17.9979
others(specify)	16	14.1875	1.90504	.47626	13.1724	15.2026
Total	250	16.5920	5.49055	.34725	15.9081	17.2759

Table 6: ANOVA Enhancement

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	569.436	4	142.359	5.028	.001
Within Groups	6936.948	245	28.314		
Total	7506.384	249			

From Table 5 we see the mean and standard deviation for all the groups showing the difference between the 5 groups. These figures are useful to explain the data. Here we see that the p value is 0.001 which is < 0.05 showing that there is a significant difference between the groups. Hence it can be concluded that the opinion towards enhancement of trust varies with the frequency of usage towards online payment system.

H4: There is no significant difference in opinion on enhancement of trust and mode of payment.

Table 7: Online Payment with respect to Mode of payment Descriptive

Enhancement						
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Credit card	36	19.5833	4.69878	.78313	17.9935	21.1732
Debit card	104	15.9038	6.85427	.67212	14.5709	17.2368
Both	110	16.2636	3.72366	.35504	15.5600	16.9673
Total	250	16.5920	5.49055	.34725	15.9081	17.2759

Table 8: ANOVA

Enhancement					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	383.241	2	191.620	6.645	.002
Within Groups	7123.143	247	28.839		
Total	7506.384	249			

From Table 7 we see the mean and standard deviation for all the groups showing the difference between the 3 groups. These figures are useful to explain the data. In table 8 the output of ANOVA shows whether there is a significant difference between the different group means. Here we see that the p value is 0.002 which is <0.05 showing that there is a significant difference between the groups. So it can be concluded that there is mode of payment and opinion on enhancement of trust varies significantly.

**Table 9: Factor Analysis
KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.658
Approx. Chi-Square	641.046
Bartlett's Test of Sphericity	Df
	21
	Sig.
	.000

**Table 10: Variance
Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.176	45.365	45.365	3.176	45.365	45.365
2	1.112	15.891	61.256	1.112	15.891	61.256
3	.936	13.375	74.631			
4	.733	10.467	85.098			
5	.556	7.943	93.041			
6	.311	4.450	97.491			
7	.176	2.509	100.000			

Factor Analysis was done to clarify the opinion of customers towards enhancement of trust. Initially the validity of data has been tested with the help of Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphere city. Both these tests satisfy the validity of data for factor analysis since the KMO measures is greater than 0.6.

The factor analysis revealed that Information provided on the security system and in order privacy need to be improved to enhance the trust towards the online payment system.

VI. CONCLUSIONS & RECOMMENDATION

The paper highlighted the importance of trust among the customers as it is one of the crucial factors that increase the usage of online payment and it provides the customers a sense of security while doing their payment. The usage of online payment varies according to the age and it has been identified that elder users are more susceptible to the usage of online payment since there is a feeling that there would be insecurity while doing the payment. Though there is sufficient security involved in online payment the customers are prone to have a feeling of insecurity as they are controlled by the online payment rules and regulations. If trust is created among the customers through methods such as improving the authentication process and privacy, they would feel that the online payment system to be more reliable.

Through T-test it was found that the level of trust varies with gender and also ANOVA revealed that there is no significant difference in the level of trust between different age groups. The opinion on enhancement of trust varies with frequency of usage and also with the Mode of payment used by the customers. These factors are considered to be very important for increasing the level of trust among the customers.

This study gives an insight into the opinions of the customers according to their age to understand the different levels of perception on trust and confidence on the online payment. Future study can do a more detailed wok to understand whether or not online payment is influential in the lives of the customers or it is being done so that they are forced because of their personal commitments. The study would be useful to online payment retailers or vendors so that they create a more secured path enhancing the trust of the customers

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