



A STUDY TO IDENTIFY PARAMETERS THAT AFFECT CUSTOMER SATISFACTION FOR E-WALLET SERVICES IN INDIA

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ABSTRACT

The purpose of the study is to identify the parameters that help to understand satisfaction of customers with e-wallet services in India and to analyse which customer demographics influence the frequency of use of e-wallets. The study also intends to find out clusters of similar minded respondents and whether male and female customers differ in their criteria for satisfaction. An empirical survey of adopters of e-wallet services was conducted. After conducting reliability measures, Chi-Square analysis revealed that customer demographics play a significant role in frequency of use of digital wallets for payment. The Regression Model explained almost 30 % of the variance in Overall Satisfaction with three significant predictors. Cluster Analysis revealed 3 clusters. Results from ANOVA disclosed that people belonging to different income groups, showed difference in perception of overall satisfaction. Discriminant Analysis explained that male and female customers significantly differed on 3 parameters.

KEYWORDS : e-wallet, survey, customer demographics

INTRODUCTION

In today's world, Smartphones have become an integral part of our daily life. According to a report, published in The Hindu on Feb 3, 2016, India has become the second-biggest smartphone market in terms of active unique smartphone users, crossing 220 million users, surpassing the US market. Smartphones are now not being used as mere communication devices but have become an appliance that can be used as a device for socialization, entertainment, information and even payment. The recent demonetisation movement by the Government of India prompted millions of Indians to switch over to digital wallets from existing cash-based services. However, digital wallets are a relatively new concept in the country and research into service quality of digital wallets is still scarce in the Indian context. People are gradually becoming aware about the huge economic benefits that mobile payments provide to the society, since; it has significant lower costs compared to cash-based services and existing card payments. Globally, mobile wallets are encouraging economies to develop into a cashless society. The top digital wallet companies in India are Paytm, Freecharge, Mobikwik and Ola Money followed by Airtel Money, Vodafone m-Pesa, Oxigen Wallet etc. Research into Digital Wallets is still very few and most of it deals with the adoption intention for digital wallets. However, no study has yet been conducted to identify factors that deal with customer satisfaction and service quality of digital wallets in India.

LITERATURE REVIEW

Measurement of electronic service quality (E-SQ) is an emerging area of research. Zeithaml was supposed to be the first one who came up with the definition of e-service quality. Over the years, many scales have been developed by researchers wanting to measure service quality for different online services. The most notable ones include- ESERVQUAL (Zeithaml et al.,2001), WebQual (Loiacono ET AL., 2002), SITEQUAL (Yoo & Donthu,2001), and eTailQ (Wolfinbarger & Gilly,2003). In 2005, Parasuraman, Zeithaml & Malhotra conducted a study to explore the measures of e-service quality based on earlier researches on traditional service quality and different scales relating to e service quality and developed an E-S-QUAL Scale with 4 dimensions relating to : efficiency, fulfilment, system availability, and privacy and the E-RecS-QUAL Scale with 3 dimensions relating to responsiveness, compensation, and contact. The scale demonstrated good validity and reliability in their research. Santouridis (2012) applied the E-S-QUAL Scale for measuring the e-commerce service quality in Greece. The research confirmed the four factor result in E-S-QUAL Scale with Efficiency being ranked to have the highest contribution on overall satisfaction, perceived value and loyalty. Mohd. Shoki et. al (2012)

examined the use of E-SERVQUAL and other scales for studying the service quality of internet banking services in Malaysia. Based on their review of different scales, they formed a conceptual model of eight dimensions - efficiency, fulfilment, system availability, privacy, responsiveness, contact, assurance, and website aesthetic to measure e-SQ for internet banking. The scale was found to be valid and reliable. Suh and Han (2003) investigated the impact of customer perceptions of security control on e-commerce acceptance. Rathore in her 2005 article on adoption of Digital wallet by Indian Consumers tried to find out the extent to which consumers are accepting digital wallet as a mode of payment as well as the level of satisfaction with this mode of payment. The major findings of the research indicated that users of digital wallet were satisfied with the services provided to them. However, there were concerns over security and safety of the funds.

RESEARCH OBJECTIVE

The purpose of this research study is

- To analyse, whether customer demographics influence the frequency of use of digital wallets for payment.
- To identify factors that help to understand satisfaction of consumers with digital wallet services in India.
- To find out groups of similar minded respondents so that the market can be segmented and parameters of differentiation could be found out.
- To analyse. whether demographic variables affect the overall satisfaction from using e-wallet services.
- To find out, if any, parameters of differentiation exist between male and female consumers of e-wallet services.

RESEARCH METHODOLOGY

The research follows an Exploratory Research approach since the subject is relatively new in India. E-S-QUAL, which was developed by Parasuraman et al. (2005) forms the basis of the present study, since this scale, in comparison to other scales, accounts for both pre & post service delivery quality aspects (Santouris et.al, 2012). E-S-QUAL includes the following four dimensions: Efficiency, Fulfillment, System availability and Privacy. Parasuraman et al. (2005) also developed a complementary scale, called E-RecS-QUAL, which focuses on evaluating customers' perception of service quality in case of problems encountered during an online transaction. The dimensions of E-RecS-QUAL are responsiveness, compensation and contact. In this paper, only two dimensions have been included- Responsiveness and Contact. Since very few persons have encountered problems relating to failed transactions, hence the aspect of Compensation is left out. Based on the research

by Suh and Hans (2003), it has been observed that security dimensions play a pivotal role in customers' perception of service quality of any online service. So along with the above seven dimensions, this one new dimension has been added to measure perception of security risk among consumers of Digital Wallet service.

A structured questionnaire based on the E-S-QUAL Scale was administered by personal and telephonic interview and in some cases questions were mailed to respondents. Most of the sample respondents belong to Kolkata and some are from Mumbai and Bangalore. As per Basu *et al.* (2013), the urban population residing in the metro cities of India show uniformity in their attitudes and temperaments, hence the choice of 3 cities can be taken as an appropriate representation of the Indian urban population. The respondents were selected by a random procedure from educational institutions, shops, offices and households. In total 300 questionnaires were distributed, of which only 101 valid questionnaires could be retained for analysis purpose.

The questionnaire was designed to provide data on two wide range of variables:-

- 1) *Customer Demographic variables:* Age, Gender, Educational Background, Income range, Duration of e-wallet usage and Frequency of e-wallet usage.
- 2) *Customer Psychographics:* - Here 3 scales were adopted for the purpose. The E-S-Qual and the E-RecS-Qual scale and a 5 item scale on Perception of Security Risk in an online environment by Suh and Hans (2003).

The questions were measured on a 5 point Likert scale with ratings ranging from Strongly Disagree to Strongly Agree.

To find out meaningful relationships among the various parameters, data were analysed using relevant Cross tabulations, Correlation & Regression Analysis, Cluster Analysis, Anova and Two-Way Discriminant Analysis.

DATA ANALYSIS

To assess internal consistency of the scale, validity and reliability measures were conducted. Since the Questionnaire was adapted from E-S-QUAL, which is a leading scale for measurement of e-service quality across various industries, therefore the scale possesses appropriate construct validity. Reliability measures were conducted using the Cronbach's α measure. The tests show satisfactory reliability results with $\alpha > 0.7$ for six constructs namely Efficiency, System Availability, Fulfilment, Privacy, Security and Contact while for the Responsiveness dimension Cronbach's α value was more than 0.6.

Chi-Square tests were conducted to analyse the impact of demographic variables on frequency of use. Table I depicts the relationship of the demographic factors with frequency of use of e-wallets.

Results from Table I indicate that the urban population belonging to the age group of 25-40 are heavy users of digital wallet followed by the age group of 40-55 which has a 50% mix of heavy and medium users, whereas people aged 55 and above are medium users and people aged less than 25 are light users. It was also evident that people with education level of high school or less are light users while most of the college educated people are medium users and graduates as well as post graduates are heavy users of digital wallet. Again, from the monthly income columns it could be observed that people with monthly household income less than 25k/month are light users followed by people earning 25-50k who are medium users while people earning more than 50k are heavy users of e-wallet services. Results also indicate that people using e-wallets for less than 3 months are light to medium users while people using digital wallets for more than 3 months to 1 year are medium users and people using e-wallets for more than one year are heavy users.

TABLE I: RESULTS FROM CHI-SQUARE ANALYSIS

CUSTOMER DEMOGRAPHICS		USAGE (%)			d,f	CHI-SQ VALUE	sig
		LIGHT	MEDIU M	HEAVY			
GENDER	MALE	8.6	32.9	58.6	2	2.736	0.255
	FEMALE	16.1	41.9	41.9			
AGE*	<25	71.4	14.3	14.3	6	41.958	.000*
	26-40	8.1	29.7	62.2			
	41-55		50	50			
	>55		100				
EDU LEVEL*	HIGH SCHOOL OR LESS	83.3		16.7	8	46.755	.000*
	SOME COLLEGE	12.5	87.5				
	GRADUATE	4.9	34.1	61			
	POST-GRADUATE	6.7	33.3	60			
HOUSEHOLD INCOME RANGE/MONTH*	< 25K	77.8	11.1	11.1	6	58.74	.000*
	25-50K	15	60	25			
	50-75K		43.5	56.5			
	>75K	2	26.5	71.4			
DURATION OF DW USAGE*	<3 MONTHS	50	50		6	58.690	.000*
	3-6 MONTHS	6.3	68.8	25			
	6-12 MONTHS	15	50	35			
	>12 MONTHS		15.7	84.3			

The second objective of the study was to identify factors that help to explain perception of service quality of Indian consumers of digital wallet services. To analyse the propositions, Correlation analysis was conducted as an initial measure of the hypotheses to examine the relationship of the constructs with the Dependent variable. It was observed that apart from the Fulfilment dimension, all other dimensions showed high significant correlations with Overall Satisfaction. Next, Regression analysis was conducted to find out the contribution of each factor on the dependent variable. The results are presented below:-

Table II: Regression Model Table

Model	Coefficients ^a					Collinearity Statistics	
	Unstandardized Coefficients	Standardized Coefficients	t	Sig.		Tolerance	VIF
1 (Constant)	2.101	.621		3.384	.001		
EFFICIENCY	-.103	.127	-.095	-.811	.419	.547	1.827
SYS AVAILABILITY	.378	.137	.438	2.756	.007	.300	3.335
FULFILMENT	-.185	.125	-.165	-1.476	.143	.604	1.656
PRIVACY	-.031	.132	-.027	-.237	.814	.574	1.743
SECURITY	.297	.141	.256	2.100	.038	.510	1.960
RESPONSIVENESS	.016	.113	.014	.137	.891	.686	1.459
CONTACT	.197	.085	.245	2.328	.022	.685	1.460
Notes: R Square : 0.294; Adjusted R Square:0.241, Sig. F=0.000, F-Value=5.544, Dependent variable, p<0.01							
a. Dependent Variable: OVERALL SATISFACTION							

The variance explained is 29.4% which is significant (F=5.54, p<0.00). The coefficients table explains that only three coefficients-System Availability, Security and Contact are significant; with

System Availability having the highest β value ($\beta=0.378, P=.007$), followed by Security($\beta=.297, p<0.05$) and Contact ($\beta=.197, p<0.05$). From the collinearity Statistics , it can be observed that all the dimensions are having VIF scores less than 10. Therefore, serious multicollinearity is not there in the data set.

Therefore, the regression equation can be formed as:-
 Overall Satisfaction= 2.101+.378*Sys Availability+.297* Security+.197*Contact

The third objective of the paper was to find out groups of similar minded respondents so that the market can be segmented and parameters of differentiation could be found out. For that, Cluster analysis technique was applied to the data. A two-stage clustering process was followed. From the Dendrogram (Fig.1) obtained from the Hierarchical Clustering technique, it could be observed that 3 clusters are there; one big, followed by two small clusters. To find out the individual profile of the cluster members, a K- means clustering was done with 3 clusters (Table III).

The results are to be interpreted by looking at the final cluster center scores (Table III). Standardised values of the variables are taken for better interpretation of the results.

The distinguishable feature observed in Cluster 1 was substantial negative scores on Efficiency and Responsiveness Dimensions, but a positive substantial score on Fulfilment and Privacy Dimension. So these people are not satisfied with the Efficiency and Responsiveness dimensions of Digital wallet but feel that the Wallet fulfils its promises of the services it claims to provide and takes care of the customers' privacy concerns like sharing of sensitive personal information. Looking at the Demographic Profile, it can be seen that in this segment most are Males in the age group of 25-40 with income less than Rs.25000/ month, education level is high school, Duration of Usage is 3-6 months and frequency of usage is 5-8 times/month.

Cluster 2 comprises of people having substantial negative scores on System Availability & Privacy Dimensions. The scores on other dimensions are also negative though not substantial. Therefore, it can be concluded that people belonging to this cluster are not overly satisfied with digital wallets. Again, males are more in number in this cluster. Most of the respondents are in the age group 25-40. These people are highly educated with most of them being post graduates with monthly income ranging from Rs.50000-75000/month. Duration of usage is 6-12 months and frequency of usage is 8-12 times/month.

People belonging to cluster 3 scored substantially high on three dimensions- Fulfilment, Contact and Overall Satisfaction. Considerable high scores were also observed on Efficiency, Privacy, Security and Responsiveness Dimensions. So this segment is a satisfied segment. Here also males are predominant in number in the age group of 25-40, most of them are Graduates with income more than Rs.75000/ month. Duration of DW usage is 6-12 months and Frequency of visits is 8-12 times/ month.

Figure 1. Dendrogram

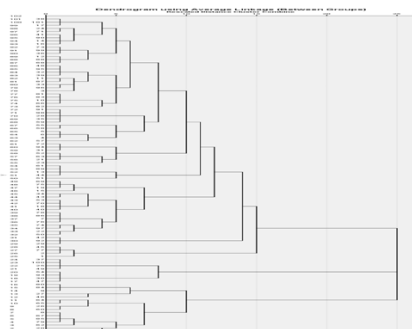


Table III: Final Cluster Center scores

Final Cluster Centers			
	Cluster		
	1	2	3
Zscore(EFFICIENCY)	-.70041	-.26809	1.17232
Zscore(SYSAVAILABILITY)	.27470	-.50087	1.22652
Zscore(FULFILMENT)	.68318	-.44745	.82921
Zscore(PRIVACY)	.46788	-.49599	1.09534
Zscore(SEcurity)	-.30975	-.35322	1.17141
Zscore(RESPONSIVENESS)	-.48493	-.30126	1.13347
Zscore(CONTACT)	-.18867	-.17807	.61033
Zscore: OVERALL SATISFACTION	.13457	-.31651	.79880
GENDER	1	1	1
AGE	2	2	2
LEVEL OF EDUCATION	2	4	3
ANNUAL HOUSEHOLD INCOME	1	3	4
DURATION OF DW USAGE	2	3	3
FREQUENCY OF VISITS/MONTH	2	3	3
No. of members:	14	64	23

The fourth objective of the paper was to analyse whether demographic variables affect the overall satisfaction from using e-wallet services. A One-way Anova was conducted for the purpose. The results are presented in table IV.

Table IV: Anova on Overall Satisfaction

Difference of mean (Between)	F-Value	Sig.
Male & Female customers	1.163	.283
Customers from Different Age groups	1.534	.660
Customers from Different Educational Backgrounds	1.041	.390
Customers from Different Income groups	8.264	.000

The only significant difference in mean could be observed between customers of different income groups. A post-hoc analysis conducted with the Least Square Differences method revealed that that the group earning less than 25K is significantly differing from the group earning 25-50k, while the group earning 25-50k is significantly differing from all the three other income groups, the group earning 50-75k only differs with the group earning 25-50k and the group that earns more than 75k per month differs significantly with the group that earns 25-50k/ month. A multiple discriminant analysis, which is beyond the scope of this paper, will reveal on which parameters these groups are differing.

The final objective of the study was to find out if any parameters of differentiation exist between male and female consumers of e-wallet services. Even though no significant differences were observed between male and female customers on overall satisfaction, yet some parameters (System Availability, Fulfilment and Contact) were found to differ significantly when Anova was conducted on the different parameters of satisfaction. To corroborate the result, a Two-Way Discriminant Analysis was conducted with the following Null hypothesis:-

H0. The means of the two groups (Male and Female Consumers) are equal.

The results are presented in Table V.

The upper part of the table presents the results of the Univariate ANOVAs for each quantitative predictor. Group Differences are tested using Wilks' Lambda statistic. Three parameters were found to significantly differentiate between male and female consumers: - System Availability, Fulfilment, & Contact. Since we are discriminating between only two groups, hence only 1 Discriminant function could be estimated. The Canonical Correlation is .617. The square of .617 is 0.78. Therefore, 78% of the variance between male and female consumers can be explained by the model.

Table V: Results from Discriminant Analysis

Tests of Equality of Group Means					
	Wilks' Lambda	F	df1	df2	Sig.
EFFICIENCY	.993	.668	1	99	.416
SYSAVAILABILITY	.911	9.674	1	99	.002
FULFILMENT	.795	25.605	1	99	.000
PRIVACY	.971	2.924	1	99	.090
SECURITY	.981	1.883	1	99	.173
RESPONSIVENESS	.990	.967	1	99	.328
CONTACT	.922	8.335	1	99	.005
Eigenvalue:0.613, Variance Explained: 100.0%, Canonical Correlation:0.617					
Wilks' Lambda:0.620, Chi-Square:45.671, Sig:0.000					
Classification Function Coefficients					
	GENDER				
	MALE	FEMALE			
EFFICIENCY	4.340	6.695			
SYSAVAILABILITY	-7.922	-9.697			
FULFILMENT	14.490	12.574			
PRIVACY	5.740	6.459			
SECURITY	5.299	4.773			
RESPONSIVENESS	6.972	7.513			
CONTACT	1.396	.081			
(Constant)	-60.523	-54.050			
Group Centroids	.516	-1.165			

The overall Wilks' Lambda score is 0.62, which transforms to a Chi-Square of 45.67 and is significant beyond the 0.05 level. Therefore, H0 can be rejected and it can be stated that mean values are different for male and female customers. Coming to the group centroids, it can be observed that the groups are very much differentiated spanning a wide range from .516 to -1.165. The Classification Function coefficients are used to predict the group membership of each case.

Therefore, the discriminant function equations are formed as below:-

For Males-
 $Z_k = -60.523 - 7.922*(SA)_k + 14.490*(FULFILMENT)_k + 1.396*(CONTACT)_k$

For Females -
 $Z_k = -54.050 - 9.697*(SA)_k + 12.574*(FULFILMENT)_k + .081*(CONTACT)_k$

The case would thus be classified into (or predicted to belong to a certain group) whose centroid is closest. Since, the true group membership is known, therefore, the success rate of the discriminant function can be known.

It was observed that among 70 males, 49 could be correctly predicted and among 31 females, 25 could be correctly predicted. Therefore, 73.3 % of the original cases could be correctly classified.

KEY FINDINGS OF THE STUDY

A Chi-Square analysis revealed that customer demographics (like age, education level, Duration of usage of Digital wallet and income) play significant role in frequency of use of digital wallets for payment purposes. Only gender has no influence on frequency of use.

The Regression Model explained almost 30 % of the variance in Overall Satisfaction with three significant predictors: - System Availability, Contact and Security.

Cluster Analysis revealed 3 clusters with significant differences of perception among the three cluster members.

ANOVA revealed that people belonging to different income groups showed difference in perception of overall satisfaction. However, no such differences were observed between male and female customers, customers across age groups and educational backgrounds.

Even though male and female customers showed no difference in their perception of overall satisfaction yet Discriminant Analysis revealed significant differences in the parameters leading to overall satisfaction for male and female consumers. It was observed that male and female customers significantly differed on 3 parameters: - System Availability, Fulfilment and Contact.

SIGNIFICANCE OF THE STUDY

There has been no research till date that focuses on customer satisfaction with using Digital Wallet services in India. The research will help Digital Wallet Companies to have a better and clear understanding of factors that influence the satisfaction levels of Indian Consumers, concentrating particularly on the parameters that influence end-users to continue with using their services.

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