

Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Behavioural Intension to Use (BIU): Mediating effect of Attitude toward Use (AU) with reference to Mobile wallet Acceptance and Adoption in Rural India

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Abstract:

Mobile Wallet(M-Wallet) is a type of payment service by which individuals can send and receive money through mobile devices. It is a type of e-commerce created for the mobile devices for the ease accessibility. M-wallet is also identified as Digital wallet or e-Wallet. This study seeks to find out the relationship among Perceived usefulness (PU), Perceived Ease of Use (PEOU), Attitude Towards Use (ATU) and Behavioural Intension to Use (BINT) among the M-Wallet users and to study the mediating role of Attitude towards use have been used to evaluate mobile wallet adoption and acceptance in rural areas of India. The research was empirically tested by data collected from 450 prospective mobile wallet users, through online and offline survey. Data were analysed using SPSS and structural equation modelling (SEM) technique. The results found that there is strong relationship and impact on Behavioural Intension to Use by the independent variables. Finally, the researchers have provided the suggestions and recommendations for the future research.

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I. Introduction

A mobile wallet is a kind of payment service that allows businesses and individuals to send and receive money via mobile devices. It is a type of e-commerce model designed to be used on convenient and easily accessible mobile devices. The mobile wallet is also called mobile money or mobile money transfer digital wallet or E wallet. The mobile wallet is a digital version of a physical wallet.

Every time a buying of a product or service is made, the user simply takes money from the wallet and pays. Similarly, for mobile wallets, you can preload a

specific amount via a credit card, debit card, or Internet banking that can be utilized for offline and online payments. Mobile wallet can be used to trade through multiple channels, such as consumer to business, consumer to consumer, consumer to machine, and consumer to online. [1] Corresponding to a report published by eMarketer on the total number of smartphone users in India in 2018, India had 73.9 million mobile wallet users.

As everyone knows, the use of smartphones is growing rapidly in India, and this growth directly contributes to the large presence of mobile wallet

systems. India had 337 million active smartphone users in November 2018. According to CISCO, in 2022, India will have 829 million smartphone users, or 60% of the total population. [4] The Indian mobile wallet market is projected to grow from 190% to 1.5 trillion by 2022 from its current level of 1.5 billion, with the cooperation of ASSOCHAM.

PROBLEM STATEMENT

The rural population of India with compared to total population percentage, would represent 65.97% in 2018, according to a set of development indicators collected from officially recognized sources of the World Bank [2]. More than 93% of people in rural area of India have not used digital transactions. So, the actual potential remains there.” Praveen Dhabhai, COO, Payworld [3].

The study focuses on Mobile wallet Adoption and Acceptance in rural areas of India with the intension to analyse the Perceived usefulness (PU), Perceived Ease of Use (PEOU), and Behavioural Intension to Use (BIU): Mediating effect of Attitude toward Use (AU).

II. Review of Literature

Chawla & Joshi (2019) recognized the positive influence of attitudes on behavioural intentions. Sendhil Kumar & Adalarasu (2019) Emphasis the use of mobile wallet and highlight the factors influencing use of mobile wallet and security and Ease of use stimulates the Intension to use mobile wallet. Bakhsh et al, (2017) Attitude affected behavioural intention in m-learning. Oliveira et al, (2016)

The impact of perceived security, performance expectancy, effort expectancy and social influence are important in supporting the behavioural intention of the consumer to suggest m- payment technology to others. Hem Shweta Rathore (2016) buyers will adopt digital wallets primarily for convenience and ease of use. Poonam Painuly and Shalu Rathi (2016) analyse the simplicity of transactions, safe profiles and the perceived ease of handling requests in mobile wallet Denis Dennehy DS, (2015) This includes quicker payment times. Anticipated

reduction in perceived ease of use will improve shopper loyalty. Anjani kumar and Sai Prasad Seri (2014) emphasis the behavioural intension to use of mobile wallets and their significance for banks. George & Kumar (2013) perceived risk influences in use of TAM concepts to forecast customer satisfaction.

Denis Dennehy, F. L. (2012) hypothesized that perceived easy to use could contribute to the development of mobile payments. Kim et al, (2010) perceived usefulness has revealed that mobile clients are increasingly encouraging mobile payments systems. He, Q et al, (2006) Its reputation is largely due to its Perceived Ease of Use i.e., flexibility and accessibility.

III. Research Methodology

A Descriptive study conducted among the users of Mobile wallet across rural areas Bangalore city, South India, with the sample size 450 through convenience sampling technique.

For this, the authors constructed a questionnaire consist of 25 items Scale (adapted from Davis et al., 1989, Venkatesh et al., 2003,) which includes Perceived Usefulness (PU) (adapted from Davis et al., 1989 and Venkatesh et al., 2003) I think using a mobile wallet would enable me to accomplish transactions more quickly (PU1); I believe mobile wallet would be useful for doing online transactions (PU2); I believe using a mobile wallet would improve my efficiency in online transactions (PU3); I think using a mobile wallet would make it easier for me to make online payments (PU4); I believe the mobile wallet enhances the quality of online transactions (PU5).

Perceived Ease of Use (PEOU) (adapted from Davis et al., 1989 and Venkatesh et al., 2003) I believe step by step navigation of mobile wallet apps is easy to understand (PEOU1); I believe learning to use a mobile wallet is easy (PEOU2); I like the fact that payments done through mobile wallets require minimum effort (PEOU3); I believe it is easy to transfer money through mobile wallets as minimum

steps are required (PEOU4) and Overall, I think the mobile wallet is very easy to use (PEOU5).

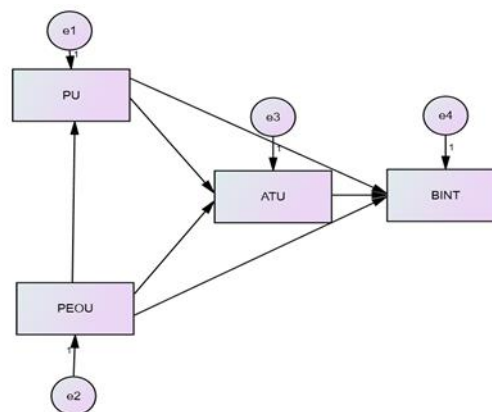
Attitude (ATU) (adapted from Davis,1989 and Venkatesh et al., 2003) I don't think I need others to help in using the mobile wallet (ATU1); Using mobile wallets is a good idea (ATU2); Using mobile wallets is beneficial (ATU3); Using mobile wallets is favourable (ATU4); and Using mobile wallets is a wise thing to do (ATU5). Behavioural Intention (BINT) (adapted from Venkatesh et al., 2003) I would like to do transactions using a mobile wallet soon (BINT1); I always try to use the mobile wallet in my daily life (BINT2); I frequently use the Mobile Wallet in the future (BINT3); I intend to use my mobile wallet in the next 6 months (BINT4); and I intend to use mobile payment services when the opportunity arises (BINT5). Responses for these scale were in to 7 point scale is 1= strongly disagree to 7 = strongly agree. Reliability of the factors PU (0.932), ATU (0.898), PEOU (0.934), & BINT(0.917) are closer to 1, which indicates the instrument is reliable.

KMO Sampling adequacy value is 0.964 is closer to 1 and Bartlett's test of sphericity's p value is $0.000 < 0.05$ revealed that the data is appropriate to test variables. Data were analysed using SPSS and AMOS through Percent Analysis. Descriptive Statistics, Analysis of Variance – One Way and Structural Equation Model.

IV. Objectives of the Study:

1. To Study the Perceived Usefulness, Perceived Ease of Use, Attitude and Behavioural Intention among mobile wallet users
2. To study the perception on Behavioural Intention across Variables
3. To study the relationship between Perceived Usefulness, Perceived Ease of Use, Attitude and Behavioural Intention
4. To study the factors that influence user's acceptance and adoption of Mobile wallet

Conceptual Framework of the study



V. Hypothesis of the Study:

Hypothesis 1: Perception on Perceived Usefulness, Perceived Ease of Use, Attitude and Behavioural Intention varies across Variables

Hypothesis 2: Perceived Ease of Use positively correlates with Perceived Usefulness

Hypothesis 3: Perceived Usefulness positively correlates with Attitude

Hypothesis 4: Perceived Ease of Use positively correlates with Attitude

Hypothesis 5: Perceived Usefulness positively correlates with Behavioural Intention

Hypothesis 6: Perceived Ease of Use positively correlates with Behavioural Intention

Hypothesis 7: Attitude positively correlates with Behavioural Intention

Data Analysis and Interpretation:

Percentage Analysis:

Profile		Frequency	%
Gender	Female	306	68
	Male	144	32
Qualification	Postgraduate	91	20
	Degree	125	28
	Diploma / ITI	111	25
	Schooling	103	23
	Others	20	4
Ethnicity	Kannadiga	227	50
	Tamilian	55	12
	Keralites	77	17

	Teluguvaru	39	9
	North Indians	38	8
	Others	14	3
Duration of smartphone usage	Less than 1 year	8	2
	1-3 years	68	15
	3-5 years	142	32
	Above 5 years	232	52
Major purpose in using of mobile wallet	Money Transfers	228	51
	Recharges	39	9
	Bill payments	93	21
	Online Bookings	23	5
	Online Purchases	38	8
	Other	29	6

From this research it is confined that 68% of the respondents are female which reflects usage of mobile wallet higher than that of male. From the finding it is revealed that 28% of respondents were degree holders compared to that of total respondents. 50% of respondents belong to kannadigas and its obvious since the data is collected from rural areas of Bengaluru were remaining shared by rest of the ethnicity. 52% of mobile wallet users using there smart phone above five years which make them to use easily the mobile wallet. 51% of mobile wallet users use it mainly for money transfer from which it is understood that they feel easy in transferring money which is so comfortable for them to use.

Descriptive Statistics:

Variables	1	2	3	4	5	6	7	Mean	SD
PU1	2	3	3	13	19	31	29	5.54	1.42
PU2	2	2	3	11	17	29	36	5.70	1.38
PU3	4	2	6	14	16	29	29	5.40	1.56
PU4	2	6	14	18	31	29		5.69	1.37

PU5	2	1	4	14	15	29	36	5.53	1.39
PEOU1	1	2	4	15	24	30	24	5.44	1.32
PEOU2	2	1	3	14	16	37	27	5.58	1.36
PEOU3	2	2	4	15	16	34	27	5.52	1.38
PEOU4	1	0	5	14	18	34	27	5.57	1.30
PEOU5	1	1	6	9	18	30	35	5.72	1.34
ATU1	5	3	4	18	18	23	29	5.25	1.67
ATU2	1	2	3	16	16	33	28	5.57	1.34
ATU3	2	1	4	12	18	30	34	5.67	1.35
ATU4	2	1	5	13	17	31	31	5.56	1.42
ATU5	2	4	17	16	34	28	28	5.56	1.35
BINT1	2	3	5	17	15	26	32	5.46	1.52
BINT2	4	4	5	15	18	21	32	5.32	1.66
BINT3	4	4	3	20	17	20	32	5.27	1.68
BINT4	3	2	5	18	15	26	31	5.42	1.54
BINT5	1	1	4	17	15	30	31	5.59	1.35

Strongly Disagree = 1, Disagree = 2, Some what Disagree = 3, Neither Agree nor Disagree = 4, Some what Agree = 5
Agree = 6, Strongly Agree = 7

Perceived Usefulness (PU)

Out of the total respondents in using of mobile wallets in the rural area of Bengaluru, 79% believe that using a mobile wallet would make it easier for them to carry out more online transactions more quickly which is considered to be one of the best and easy way of booking and buying products from online because of that 82 % of mobile wallet users feels that using mobile wallet would be useful for online commercialization. 74% of mobile wallet users using a mobile wallet feels that it would improve their efficiency in online transactions which is positivity of attracting more new consumers. whereas 60% of mobile wallet consumers acknowledges that using a mobile wallet would make it easier for them to make online payments and finally 80% believe that mobile wallet improves the quality of online transactions which is a good sign of accepting of mobile wallets even in rural areas in near future.

Perceived Ease of Use (PEOU)

Among the total respondents 78% of mobile wallet users accept step by step navigation of portable wallet apps is as simple as to use it. Eventually from the data it is cleared that 80% accept that learning to utilize a versatile wallet is uncomplicated which shows the user friendliness of wallets. With that of the mobile wallet users 77% like the fact that payment made through mobile wallet require minimal effort which is one of the main reasons for more customers to use mobile wallets. Likewise, 79% of M-wallet users accept that it is simple to exchange cash through versatile wallets because of least steps are required for transactions. In general, 83% of M-wallet users believes that the portable wallet is exceptionally simple to operate.

Attitude (ATU)

70% of M-wallet users don't think they need others to assistance in utilizing the mobile wallet which shows that users of capability of using M-wallet. 78% of users shows positive attitude towards using mobile wallets and they recommend it as a good idea to others. 81% of Digital wallet users feels that using mobile wallets is beneficial where they get easy in operations and other transactions. 79% of mobile wallet users believe that using mobile wallets is encouraging to do easy and more transactions in a short time. 89% of M-wallet users feels using mobile wallets is a wise thing to do. From the above statics, Mobile wallet users shows positive attitude towards using of mobile wallet which reflects the users accepts and like to adopt the change happening in the business transactions in rural areas also.

Behavioural Intention (BINT)

Among the total respondents, 73% of M-wallet users would like to do business transactions using a mobile wallet which so the good sign of the intension of using M-wallet. 72% of Versatile wallet clients always attempt to use the mobile wallet in their day today life which reflects M-wallet becomes

part and parcel of their life. 69% of digital payment users like to use Mobile Wallet routinely in the future. 72% of respondents intend to use my mobile wallet in the next 6 months and finally, 77% shows positive intension to use mobile payment services when the opportunity arise from near future. Overall statistical report confined that the behavioural intension of users shows positive behavioural intension in adoption of mobile wallet and like to use in their daily business transactions is as good sign for Mobile wallet operators and government. Digitalization of country not only focus on metro and developed part of county but also focusing rural part is a positive sign for a digital change.

ANOVA – One Way

	PU			PEOU		
	F	p	HS	F	p	HS
Ethnicity	2.798	.017	S	3.940	.002	S
Gender	12.358	.000	S	8.162	.004	S
Qualification	2.383	.051	S	3.999	.003	S
How long you are using Smart Phone	5.347	.001	S	4.165	.006	S
MW Usage	6.589	.000	S	2.929	.021	S
Major Purpose of using MW	4.033	.001	S	2.374	.038	S
p - Significant Value						
HS - Hypothesis Status; S- Supported; NS - Not Supported						

	ATU			BINT		
	F	p	HS	F	p	HS
Ethnicity	4.055	.001	S	1.712	.130	NS
Gender	7.404	.007	S	9.183	.003	S
Qualification	3.571	.007	S	1.990	.095	NS
How long you are using Smart Phone	3.087	.027	S	.796	.497	NS

MW Usage	4.555	.001	S	4.758	.001	S
Major Purpose of using MW	3.234	.007	S	5.263	.000	S
p - Significant Value						
HS - Hypothesis Status; S- Supported; NS - Not Supported						

Perceived Usefulness ($F = 2.798 > 2.56$; $p = 0.017 < 0.05$), Perceived Ease of Use ($F = 3.940 > 2.56$; $p = 0.002 < 0.05$), and Attitude towards Use ($F = 4.055 > 2.56$; $p = 0.001 < 0.05$) are significantly differs across the ethnicity of the respondents. But, Behavioural Intention to Use ($F = 1.712 < 2.56$; $p = 0.130 > 0.05$) does not significantly differs across the ethnicity of the respondents. Perceived Usefulness ($F = 12.358 > 2.56$; $p = 0.000 < 0.05$), Perceived Ease of Use ($F = 8.162 > 2.56$; $p = 0.004 < 0.05$), Attitude towards Use ($F = 7.404 > 2.56$; $p = 0.007 < 0.05$) and Behavioural Intention to Use ($F = 9.183 > 2.56$; $p = 0.03 < 0.05$) are significantly differs across the gender of the respondents.

Perceived Usefulness ($F = 2.383 > 2.37$; $p = 0.051 < 0.01$), Perceived Ease of Use ($F = 3.999 > 2.56$; $p = 0.003 < 0.05$), and Attitude towards Use ($F = 3.571 > 2.56$; $p = 0.007 < 0.05$) are significantly differs across the qualification of the respondents. But, Behavioural Intention to Use ($F = 1.990 < 2.56$; $p = 0.095 > 0.05$) does not significantly differs across the qualification of the respondents.

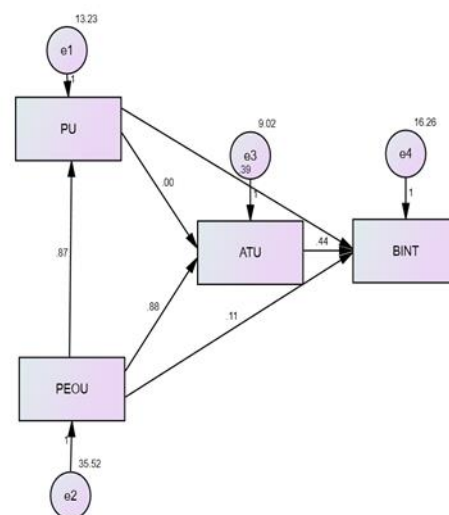
Perceived Usefulness ($F = 5.347 > 2.56$; $p = 0.001 < 0.05$), Perceived Ease of Use ($F = 4.165 > 2.56$; $p = 0.006 < 0.05$), and Attitude towards Use ($F = 3.087 > 2.56$; $p = 0.027 < 0.05$) are significantly differs across the ethnicity of the respondents. However, Behavioural Intention to Use ($F = 0.796 < 2.56$; $p = 0.497 > 0.05$) does not significantly differs across the duration of smart phone usage.

Perceived Usefulness ($F = 6.589 > 2.56$; $p = 0.000 < 0.05$), Perceived Ease of Use ($F = 2.929 > 2.56$; $p = 0.021 < 0.05$), Attitude towards Use ($F = 4.555 > 2.56$; $p = 0.001 < 0.05$) and Behavioural Intention to Use ($F = 4.758 > 2.56$; $p = 0.01 < 0.05$) are significantly differs across mobile wallet usage.

Perceived Usefulness ($F = 4.033 > 2.56$; $p = 0.001 < 0.05$), Perceived Ease of Use ($F = 2.374 > 2.56$; $p = 0.038 < 0.05$), Attitude towards Use ($F = 3.234 > 2.56$; $p = 0.007 < 0.05$) and Behavioural Intention to Use ($F = 5.263 > 2.56$; $p = 0.000 < 0.05$) are significantly differs across purpose of mobile wallet usage.

Hence, the researcher may accept the hypothesis (H1), i.e. respondents' perception on PU, PEOU, ATU and BINT across Ethnicity, Gender, Qualification, how long you are using Smart Phone, mobile wallet Usage, and Major Purpose of using mobile wallet.

Structural Equation Model:



Fit Indices

Model		
Fit Scale	Value	Criteria
Normed χ^2	4.905	< 5
GFI	0.912	0.9
AGFI	0.862	0.8
NFI	0.939	0.9
CFI	0.941	0.9
TLI	0.922	0.9
RMR	0.039	0.05
RMSEA	0.046	0.05

Goodness of Fit index (GFI) obtained is 0.912 as against the recommended value of above 0.90, The Adjusted Goodness of Fit Index (AGFI) is 0.862 as against the recommended value of above 0.80 as well. The Normed fit Index (NFI), Comparative Fit index (CFI), Tucker Lewis Index (TLI) are 0.939, 0.941, 0.922 respectively as against the recommended level of above 0.90. RMSEA is 0.03 and is well below the recommended limit of 0.05, and Root Mean Square Residual (RMR) is also well below the recommended limit of 0.046 at 0.05. It has been found that the model, which the researcher arrived shows an overall acceptable fit.

Regression Weights: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Hypothesis
PU <--- PEOU (H2)	0.867	0.029	30.09	***	Supported
ATU <--- PU (H3)	-0.005	0.039	-0.121	0.903	Not Supported
ATU <--- PEOU (H4)	0.882	0.041	21.35	***	Supported
BINT <--- PU (H5)	0.393	0.052	7.518	***	Supported
BINT <--- PEOU (H6)	0.111	0.079	1.407	0.159	Not Supported
BINT <--- ATU (H7)	0.444	0.063	7.009	***	Supported

Regression Estimates:

The hypothesized research model exhibited good fit with observed data as mentioned above. Of greater interest for nomological validity is the path estimates in the structural model and variance explained (R² value) in each dependent variable. Each hypothesized path is significant (p value <0.001),

and hence supported. The standardized regression weights of the output and result of the hypotheses testing providing support for hypothesis is presented in table 5.11.

PU is influenced by PEOU ($p = 0.000 < 0.01$; $CR = 30.986 > 2.58$) at 99 percent significant level (Byrne, 2001; Biswas, Giri & Srivastava, 2006). Hence Hypothesis (H2) is accepted.

ATU is influenced by PEOU ($p = 0.000 < 0.01$; $CR = 21.346 > 2.58$) and not positively correlated with PU ($p = 0.903 > 0.01$; $CR = -0.122 < 2.58$) at 99 percent significant level (Byrne, 2001; Biswas, Giri & Srivastava, 2006). Hence, Hypothesis H4 is accepted BINT is positively correlated and influenced by PU ($p = 0.000 < 0.01$; $CR = 7.518 > 2.58$) and ATU ($p = 0.000 < 0.01$; $CR = 7.009 > 2.58$) at 99 percent significant level (Byrne, 2001; Biswas, Giri & Srivastava, 2006); whereas, BINT is not positively correlated by PEOU ($p = 0.000 < 0.01$; $CR = 1.407 > 2.58$).

VI. Conclusion:

The current study encounters the objectives by showing not only the positive and important consequence of variables on attitude intention towards mobile wallet, but also providing understandings into the difference of distinctive responses between four variables among users like Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Behavioural Intention to Use (BINT), Attitude (ATU). Mobile payment will be trending that vendors must put more determination in terms of promoting or attracting young generations. The introduction of mobile payment will play a significant role in shaping the innovations of tomorrow. Mobile users are beginning to accept Mobile wallet system as a suitable and easy option to perform mobile payment transaction even in rural areas. Hence, business and government organizations can further use mobile payment to complement current payment methods and enhance consumers' payment behaviour.

Limitations and scope for future research

India had 73.9 million mobile wallet users the sample size of 450 may not be enough. The sample primarily comprises of professionals and college students from rural areas of Bangalore. This study restricted only to Bangalore rural area hence, opinion from the other rural areas of India could not be captured. Thus, the conclusion may not reflect the actual image of user experience with mobile wallet through different user classes in India. This research was restricted to study only four major factors like Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Behavioural Intention to Use (BINT), Attitude (ATU) that were derived from user perceptions. There are several other important user related factors like relative advantage, personal innovativeness, Service provider availability, perceived cost, Motivational factors, perceived enjoyment and social influence in using of mobile payment, Internet connectivity, network coverage issues, these elements could be examined to understand the user acceptance and adoption of mobile wallets these variables can be used as the scope for further study. It is also noticed that consumers often use for mobile wallet for payment options because of the added benefits like discounts, cashback payments and time consuming. Hence, moving forward, perceived benefit may possibly be an important factor of analysis for mobile wallet adoption.

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