

**Project Dissertation Report on**

**A STUDY ON DETERMINANTS OF CONSUMER**

**ADOPTION OF MOBILE WALLETS**

Submitted by:

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**January - May 2019**

## **CERTIFICATE FROM THE INSTITUTE**

This is to certify that the Project Report titled **A Study on Determinants of Consumer Adoption of Mobile Wallets**, is an original and bonafide work carried out by **Ms. Hiral Jain** of MBA 2017-19 batch and was submitted to Delhi School of Management, Delhi Technological University, Bawana Road, Delhi-110042 in partial fulfilment of the requirement for the award of the degree of Masters of Business Administration.

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Signature of Guide

Dr. Abhinav Chaudhary

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Signature of Department Head

Prof. Rajan Yadav

## **DECLARATION**

I, **Hiral Jain**, student of MBA Batch 2017-19 of Delhi School of Management, Delhi Technological University, Bawana Road, Delhi-110042 declare that Project Report on **A Study on Determinants of Consumer Adoption of Mobile Wallets** submitted in partial fulfilment of Degree of Masters of Business Administration is the original work conducted by me.

The information and data given in the report is authentic to the best of my knowledge.

This report has not been submitted to any other university for the award of any other degree, diploma and fellowship.

Hiral Jain

Place: New Delhi

Date:

## ACKNOWLEDGEMENT

I gratefully acknowledge my profound gratefulness towards my esteemed guide, Dr. Abhinav Chaudhary, Assistant Professor, Delhi School of Management, DTU, for his invaluable guidance, excellent supervision and constant encouragement during the entire duration of the project work. I am thankful to him to provide me with useful references and information, which were of significant importance for the completion of this study. His valuable insights and attention to detail made this exercise a great learning experience. I perceive this achievement a milestone in my career development. I strive to use the skills and knowledge gained here in the best possible way and will continue to work on further improvement, in order to attain my desired career objectives. The project would never have been possible without his guidance and supervision.

I also express my sincere thanks to Prof. Rajan Yadav, Head of Department and all the faculty members of Delhi School of Management, DTU, Delhi. I extend my sincere gratitude and thanks to my friends and family for their help and assistance during my training, without whom it would not have been possible for the project to take its final shape. Apart from above, I would like to extend my sincere thanks to all those who filled my questionnaire and helped me in my research.

Sincerely,

Hiral Jain

## **EXECUTIVE SUMMARY**

Acceptance and adoption of innovation by Indians is setting an example for others. Considering the penetration of cell phones and their extensive usage, it is evident that adoption of technology has been everywhere throughout the world. A large number of organizations are investing in finding new employment opportunities for utilizing the latest innovative technologies. Numerous organizations have thought of utilization of versatile innovation, mobile wallets. The Unified Theory of Acceptance and Use of Technology (UTAUT) Model has been taken as a base for understanding the factors that influence the adoption of mobile wallets by Indian buyers.

The global financial industry and banking system is transforming with the help of mobile technology by providing more convenience and accessibility to their customers. Over the years, the necessity of phone has evolved and it is estimated to have more cell phone users than the number of bank account holders worldwide. The cost of using traditional methods to connect to customer and the focus on innovative business that are customer centric led to the inevitable design of mobile based technologies. The most common among this is mobile commerce, mobile banking, mobile payment, and mobile wallet.

Mobile payments or mobile wallets bring together payment system, mobile devices and services to enable users to initiate, authorize, and complete financial transaction over mobile network or wireless communication technology (Chandra, 2010; Lu,2011). Prior to the demonetization exercise, the number of users for this mobile wallet service were low even after having innumerable benefits for mobile wallet technology. The basic problem lies in the attitudes and intentions of the customers at the bottom of the pyramid whose adoption of mobile wallets would be capable of providing the required level of scale and profitability to this new technology (Shen, 2015). Since demonetization exercise the number of users is increasing and there is a change in customer behaviour. It is to be seen whether this change in attitude towards the usage of mobile wallet is temporary or permanent. In a nation such as India where larger part of consumers still favours Cash-on-Delivery, it is difficult to fasten the pace of process of innovation diffusion such as mobile wallets. So in the present time, there is a need to re-examine the effectiveness of the factors which drives customer intention to adopt/use mobile wallet.

In this study, we intend to understand the factors that affect the consumer adoption of mobile wallet so that a strategic framework can be implemented to improve their adoption with the help of mobile wallet, mobile service, mobile device manufacturers and regulatory bodies.

All respondents were volunteers while sharing their experience, personal interpretation and knowledge about the usefulness and intention of using the mobile wallet were truthful. The respondents were from pan India while most of them were either college going students or working professionals. It was prerequisite before obtaining the data that Internet enabled smartphone and bank accounts were imperative for the respondents.

The data was collected using all the new social media methods like forwarding the response link via Whatsapp, Facebook, and also by sharing on LinkedIn. Apart from this traditional method of forwarding the link to questionnaire through e-mail was also used. Among the people across the country the most technologically savvy and which constitute the largest segment of modern technology users are youngsters (Davis 1989; Hanafizadeh et al., 2014; Yadav et al., 2016). Therefore the sample data collected were considered to be appropriate for the research study.

There are around 5 construct variables considered for the research study of which one have been developed considering various factors from different studies and reports. Multi scale is used for the research study which consists of around 32 questions which were identified to measure the dependent variables. For knowing the customer demographics nominal scale was used. All items were measured using five point likert scale ranging from strongly agree to strongly disagree. The research instrument consisted of two parts. In the first part information related to General demographic details like gender, age, education, income and the usage of mobile wallet were recorded. The respondent's agreement or disagreements towards the selected items were recorded on the second part. the help of convenience sampling, data responses for the main survey were obtained which were later analysed so as to accept or reject the hypothesis.

Around 124 respondents participated in the survey giving their valuable time and responses of which 81 were males and 43 were females. That is male respondents consisted of 65.3% of the total respondents and female respondents were around 34.7%. With the help of these responses from the respondents, the factors that affect the consumer adoption of mobile wallet were analysed. Also we would be able to find out the most preferred and least preferred wallet service. The final analysis is done with the help of Bar-graphs, Pie charts, Use of SPSS (Frequency analysis, Cross tabulation, Anova, Principal component analysis and Regression analysis) to understand what leads to a consumer's adoption of mobile wallet.

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# **1. INTRODUCTION**

## **1.1 Problem statement and Study**

The global banking system and financial industry is transforming with the help of mobile technology by providing more convenience and accessibility to their customers. Over the years, the necessity of phone has evolved and it is estimated to have more cell phone users than the number of bank account holders worldwide. The cost of using traditional methods to connect to customer and the focus on innovative business that are customer centric led to the inevitable design of mobile based technologies. The most common among this is mobile commerce, mobile banking, mobile payment and mobile wallet.

Mobile payments or mobile wallet bring together payment system, mobile devices and services to enable users to initiate, authorize, and complete financial transaction over mobile network or wireless communication technology (Chandra, 2010; Lu, 2011). India is considered to be the fastest growing smartphone market in Asia pacific (Livemint, 2014). With that introduction of Digital India project to transform the people of India to use the government services by integrating economy using internet and mobile phones as the backbone along with the demonetization exercise carried out by the government has increased the use of mobile devices and transactions through. The major banks in India expect customers to be accessing their accounts through mobile devices as their dominant channel. For this they have already developed mobile apps and websites for the mobile. This will help the bank in a way as the transaction cost involved for the same is very less as compared to banking transaction which cost around 43 times while ATM center cost them around 13 times. Recently major public and private banks have started concentrating on mobile wallet as a major platform for transaction of money along with few telecommunication companies and independent players whom got approval from the RBI to start payment banks. This will bring right bend of user experience along with convenience and functionality to the customers.

The smartphone market in India grew 14.5 per cent in 2018 with shipment of 142.3 million units, as per research firm IDC. In the previous year, shipment stood at 124.3 million units. Chinese mobile manufacturer had a contribution of around 66 percent of total smartphone market. It is stated in a report by IAMAI-IMRB that the internet user's number will increase to 450 million by June. It states that Urban India has close to 60% of penetration whereas Rural India has only a penetration of 17%.

India's internet users expected to register double digit growth to reach 627 million in 2019, driven by rapid internet growth in rural areas, according to market research agency Kantar IMRB. Internet usage in the country has exceeded half a billion people for first time, pegged at 566 million, driven by rural internet growth and usage.

In its ICUBE 2018 report that tracks digital adoption and usage trends in India, it noted that the number of internet users in India has registered an annual growth of 18 percent and is estimated at 566 million as of December 2018, a 40 percent overall internet penetration, it observed.

Unique challenges and opportunities along with incredible growth of Indian market makes it the most dynamic and competitive environment worldwide. This has created a plethora of opportunities for mobile technologies companies and one among that is mobile wallet which is being started by independent companies like Paytm and already existing banks and telecom operators after getting approval from RBI. The confluence of such technologies has had a huge impact on the overall development and for the inclusive growth of the country.

Prior to the demonetization exercise, the number of users for this mobile wallet service were low even after having innumerable benefits for mobile wallet technology. The basic problem lies in the attitudes and intentions of the customers at the bottom of the pyramid whose adoption of mobile wallets would be capable of providing the required level of scale and profitability to this new technology (Shen, 2015). Since demonetization exercise the number of users is increasing and there is a change in customer behaviour. Whether this change in attitude of consumers towards the usage of mobile wallet is temporary or permanent needs to be seen. In this research paper, we intend to understand the factors that affect the consumer adoption of mobile wallet so that a strategic framework can be implemented to improve its adoption with the help of mobile wallet, mobile device manufacturers and regulatory bodies.

The research work is divided into four parts. The research problem is formulated as the first part. Hypothesis of the study and the proposed framework is detailed in the second part. Research methodology, a discussion based on analysis and the implications of the study is covered in the third part. In the end, a conclusive answer is drawn; the limitations and future suggestions have been stated.

## **1.2 Objectives**

The primary objective of this research is to understand the consumer adoption status of mobile wallet.

- To examine the effectiveness of the factors (extracted from the previous research works) that influences the customer intention to adopt/use mobile wallet.
- To study the intensity of the influence made by the active factors that affects the intention of customers to adopt/use mobile wallet.

To achieve this, the market situation of mobile consumers in reference to mobile wallet has been studied. Since Demonetization, the usage of electronic money has increased. However, the high penetration rate of mobile phones and the existence of a majority of mobile payment systems cannot alone explain the success of mobile payments.

Based upon literature review done by researchers key consumer-related variables affecting the adoption of mobile payment systems are proposed and research is done using this.

## **1.3 Sub Objectives**

- To understand user's willingness to adopt a new innovative system or service.
- To study the degree to which a person believes that using mobile wallet would ease the task performance.
- To understand the perceived sense of risk and trust concerning disclosure of personal and financial information.
- The degree to which an individual user's perception is affected by the belief of most people who are important to him/her ie social influence toward the use of an innovation.
- To examine how variety of services and offers and discount affects the customer perception in using mobile wallet.
- To understand the intention of customers about whether they want to continue using the service.
- To find out most preferred mobile wallet services.
- To determine the frequency of mobile wallet usage.

## **2. LITERATURE REVIEW**

A well-structured literature review is characterized by a logical flow of ideas, current and relevant references with consistent, an unbiased and comprehensive view of the previous research on the topic. This part introduces some of the foundation concepts of consumer adoption towards technological products or any innovation in general.

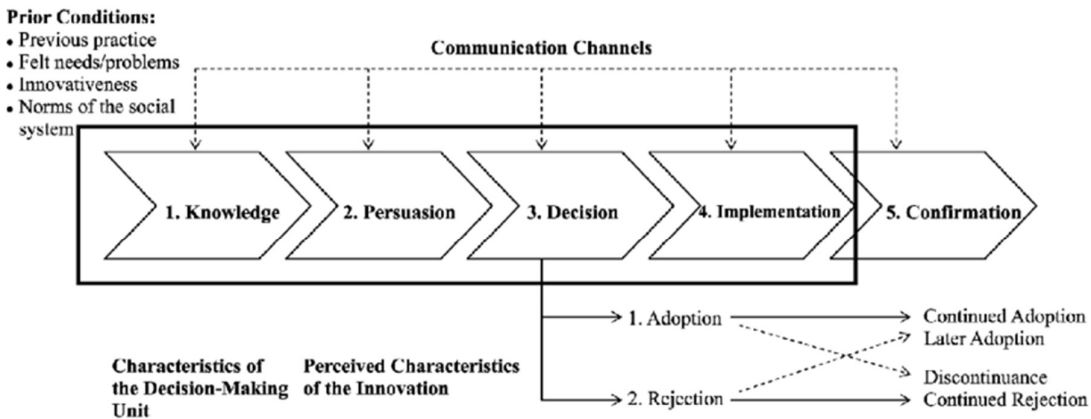
### **2.1 Adoption concept**

In diffusion of innovation literature, “adoption” is one of the oldest and most important concepts (Eveland, 1979). “Adoption can refer to a process, an event, or a state of being - sometimes all at once. Adopters are those who adopt, as opposed to rejecters who decide not to adopt, or non-adopters who have yet to begin the process of becoming adopters” (Zenobia, 2008). Zenobia (2008) summarized the 3 types of adoption decisions suggested by Rogers (2003, 5th edition) in his Diffusion of Innovations book: Optional adoption decision is made by single individual such as the consumers’ decision. However, “optional” does not imply that the adoption is made without the influence of such factors as opinions of others (family, friends...etc.) or the impact of the image imposed by advertising agency (Katz, 1962). Hence adoption is intrinsically a social process (Zenobia, 2008). Collective adoption decision is taken place by group consensus. Authority adoption decision is established by more or less a few individuals who hold positions of power, status or technical professionals in a group.

### **2.2 Innovation-decision process**

The Innovation-Decision Process of Rogers (2003) is “a process through which an individual (or other-decision making unit) passes from first knowledge of an innovation, to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision”. The process was called as the Technology Adoption Decision Process (TADP) by Zenobia (2008). According to Rogers (2003), there are 5 stages included in this conceptualization (Rogers, 2003)- Knowledge: the existence of innovation is exposed to an individual to gain some basic understanding of the innovation’s functionalities. Persuasion: favourable or unfavourable attitudes toward the innovation are formed in an individual. Decision: when an individual performs activities or actions leading to the choice of adoption or rejection toward innovation. Implementation: when the innovation is put into used by an individual. Confirmation: when an individual requires the reinforcement of an innovation-decision already made. However, he/she can also reverse the previous decision in case the innovation’s messages are conflicting.

**Figure 2.2 Stages of innovation-decision process**



**Source:** Rogers (2003, p. 170)

### 2.2.1 Knowledge stage

Knowledge stage occurs when an individual is introduced about the existence of innovation and that individual can gain some knowledge of the innovation’s functionalities (Rogers). As stated by Rogers, the individual receives the existence signal of innovation accidentally. Thus, he/she cannot actively seek for information of innovation until they know its presence. In order to inform about mobile wallet, the business stakeholders have a job to give out the information by advertising, blogging, or creating seminars. In addition, Rogers (2003) raised a paradox of need versus awareness in this stage. When a person has knowledge of an innovation, a need might be created and vice versa; when he is in need, he will seek for the information. Thus, knowledge of innovation existence can lead to the motivation of consumer adoption. Types of knowledge and how they influence the awareness of consumers were also discussed by Rogers.

### 2.2.2 Persuasion stage

Knowing about the innovation does not mean that an individual will adopt and use it. The characteristics of decision making unit such as the social status, belief such as individual might not find the new innovation is useful for him or it does not fit into his current situation will have effects on the adoption. To make the information become relevant, the knowledge will continue going through the innovation-decision process. This is where the persuasion stage takes place. In this stage, the individual forms a favourable or non-favourable attitude toward innovation (Rogers, 2003). Hence, it is important that where he finds the knowledge, what messages he receives, and how he interprets those messages in favour of his own understanding.

Innovation can be viewed as highly uncertain (Feldman, 1994). For that reason, it generates certain uncertainty level in individual leading to the feeling of need for social-reinforcement of his attitudes toward new idea (Rogers). He would like to compare his opinions to others to make sure he is “walking” on the right track. Partly, mass media also plays some role in this reinforcement. The consumers tend to ask these questions in this stage: “What are the innovation’s consequences?”, “What will its advantages and disadvantages be in my situation?” (Rogers, 2003). Mobile wallet creators should be able to answer those queries. The favorable or non-favorable attitude toward mobile wallet depends heavily on this stage. The formation of these attitudes does not result directly in adoption or rejection. Nevertheless, it does form a tendency. It is undoubtedly true that when someone tells us about the positive image of a new idea, we are often motivated to adopt it (Rogers). Yet in case the innovation is undesirable, support for rejection will be sought [instead of adoption] (Seligman, 2006).

### **2.2.3 Decision stage**

Decision stage occurs when an individual (or other decision-making unit) involved in activities that lead to adoption or rejection an innovation. Adoption is understood as the decision to use an innovation. And rejection is a decision not to adopt an innovation (Rogers, 2003). In reality, the innovation will not be adopted by consumers if they have not yet tried to use it. Checking the innovation to see whether it is useful for one’s situation is necessary. In some cases, the innovation cannot be put for trial. Therefore, innovations that can be divided for testing will have a better chance to be adopted in a more rapid speed of adoption (Rogers, 2003).

A similar view is held by Seligman (2006) that “partial adoption and vicarious trial adoption allow the individual to encounter new stimuli for further adjustment of perceptions of the technology and for understanding how the innovation can be incorporated into the individual’s environment”. One of the suggestions to facilitate the trial of innovation is distribution of free samples to consumers/clients (Rogers, 2003). With mobile wallet, it is not an easy task to implement the trial due to the fact that it relates to a number of stakeholders for the operation, which can lead to high cost. It perhaps needs marketing departments to create brilliant and innovative solutions to put mobile wallet on trial. It is hard to forget that in this stage, an individual can reject the innovation for various reasons. There are 2 different types of rejections developed by Eveland (1979): - Active rejection: when an individual consider the adoption of innovation (with or without trial) but then he decides not to adopt it. - Passive rejection (or non-adoption): when an individual never considers to adopting the innovation.

#### **2.2.4 Implementation stage**

Implementation occurs when an individual (or other decision-making unit) puts an innovation to use (Rogers) and seeks technical information for the implementation (Seligman, 2006). Rogers pointed out that consumers in this stage will likely have these questions “Where do I obtain the innovation?”, “How do I use it?”, “What operational problems am I likely to encounter and how can I solve them?”.

Relating it to mobile wallet case, the companies should have responsibilities to make these answers available in the market, as well as offer technical assistance when needed to users. There is a term called “reinvention” of technology which was discussed by Rogers (2003) in this implementation stage. It described “a degree to which an innovation is changed or modified by the user in the process of its adoption and implementation” (Rogers). Reinvention is simply adaptive, and possibly evolutionary (Swanson, 1994). When the new innovation becomes institutionalized and regularized as part of the adopter’s ongoing activities, the implementation stage might end at this point. In addition, it might present for the termination of the whole innovation decision process for most users. Yet for some, it can continue to the last official stage “the confirmation stage” (Rogers, 2003).

#### **2.2.5 Confirmation stage**

This is the last stage in the innovation-decision process model. The individual (or other decision-making unit) seeks the reinforcement for the innovation decision which he already made, but he may reverse this decision if he encounters conflicting messages from the innovation (Rogers). The individual may be encouraged by dissonance and he may reverse his decision depending on the information he receives (Seligman, 2006). To prevent the “conflicting message” from happening, Rogers suggested that the agents should have additional duty of providing supporting messages to consumers. He expressed that one of the possibilities of high rate of discontinuance in innovations is that the agents think that adoption will continue automatically once it is secured. But without having continued effort toward consumers, the discontinuance will take place; because negative messages about innovation of course exist in most consumers’ system (Rogers, 2003).

### **2.3 Factors impacting consumer adoption of mobile wallets**

The theoretical foundation of adoption of technology along with banking and payment were examined, with focus given on adoption of mobile technology, mobile commerce, mobile payments and wallet adoption. There is a fair amount of study carried out in developed countries to understand the factors that affect the consumer adoption of mobile wallet. Several theoretical frameworks to understand the adoption intentions for various information technologies and information systems have been developed. Few notable among them are the theory of reasoned action (Fishbein and Ajzen, 1975), the technology acceptance model (TAM) (Davis, 1989), the technology-organization and environment framework (Tornatzky and Fleischer, 1990) the theory of planned behaviour (Ajzen, 1991), the diffusion of innovation theory (Rogers, 1995) and the unified theory of acceptance and use of technology (UTAUT) (Venkatsh et al., 2003). These theories have been based on behavioral science and individual psychology. Researches have been conducted in the area of mobile wallet and the theoretical framework foundation that is used is either TAM (Slade et al., 2015). A classical TAM consists of perceived usefulness, perceived ease of use, attitude to understand the adoption behaviour.

The adoption and widespread of innovation in ICT has been researched using holistic model (Lin, 2003), structural models which use quantitative techniques such as the theory of reasoned action (TRA), TAM, the extended TAM, as well as using UTAUT (Venkatesh et al., 2003). A holistic insights of the process of adoption in technological context where given by TRA which was developed in the 1970s (Fishbein and Ajzen, 1974), such as the internet (Hoffman and Novak, 1996; Pedersen and Nysveen, 2002; Taylor and Todd, 1995). Davis (1986) included an extension to TRA into the TAM, in which the acceptance of technology and behavior is explained. Davis theorized that the attitude towards personal computer adoption is dependent on perceived usefulness and perceived ease of use (PEOU). TAM key purpose was to analyze how internal beliefs, attitudes and intentions were affected by external factors (Davis et al., 1989).

TAM model is still used as a reference for analyzing the adoption and behavioral models which is centered on internet or other mobile contexts (Childers et al., 2001; Gefen and Straub, 2000; Gefen et al., 2003); well as perceived characteristics of innovating (Moore and Benbasat, 1991; gave a different relevant perspective to the adoption research (Meuter et al., 2005).

The approaches used and the conceptualization used in the field of research is far from unanimous (Tornatzky and Klien, 1982; Moore and Benbasat, 1991).



On the basis of diffusion of innovation (DOI) which is based on Rogers (2003), only a few studies accurately explain the perceived innovation characteristic. A model was developed to explain the consumer readiness to use self-service technologies (SST) by Meuter et al. (2005) perceived risk was also a relevant determinant. An approach which focused on the factors that affect the resistance to innovation adoption and dissemination analyzed on prior researches has a 'pro-innovation bias'. This is based on the fact that innovations are all good and all consumers should automatically be adopted (Rogers, 2003). On contrast, it was argued by Ram (1987) that 'resistance to change is a normal consumer response', which is expected to co-exist with adoption behavior. He states that it is normal that resistance to innovation is a common response from the customer and he states that understanding this process is the professional responsibility of marketers. It was found that a high level of innovation and rate of failure is recorded for many products simultaneously Ram and Sheth (1989).

Functional barriers are divided in to three according to these authors. The first is the usage barrier which is related to the conflict people have with their work, habits and routines and the perception of it. One of the most common reason of resistance to innovation is this reason. Another functional barrier is the value barrier which is the perception of the customers on the practical benefits associated with product. The secure use of innovation and the uncertainty around it is the risk barrier. It was revealed that there is significant difference between users and non-users perspective of adoption of mobile wallet on the basis of internet surveys conducted by Laukkanen et al. (2007) and Cruz et al. (2009) with the help of using Ram and Sheth (1989). According to Carlsson et al. (2005), there is an asynchronous difference between the development of mobile wallet technology and the adoption of the technology. In the case of mobile wallet also, this is no difference.

We should be signalling out the most significant factors that have good influence in mobile wallet adoption since the research focuses on the analysis of the same. For a richer understanding of the factors that motivates consumers to adopt mobile wallet. Nyseen et al. (2005b) stated that for understanding the factors influencing mobile service usages that are several unexplored dimensions. Due to these three constraints mentioned below the conceptualization of measurement was simplified, the constraints being the mobile wallet contexts, the country context and the operative context. The understanding of the questions will be maximized and more results which are objective for finding out the resistance motive could be incorporative into the marketing decisions that are made by the bank to increase consumer adoption of the mobile wallet.

The direct insight similar to the one obtained from the critical incident approach (Meuter et al., 2000) can be found using such instruments. For any innovation diffusion process information is so crucial. The dissemination through various channels of communication for social system members is done gives the information on innovation (Rogers, 2003). In the success or failure of innovation diffusion process can be due to the fact of bad or good communication which is very much valid for the mobile wallet services (Jun and Cai, 2001; Cruz et al., 2010).

Venkatesh et al., 2000 excluded attitude and added two essential variables like social influence and cognitive instrumental processes which was an essential factor to understand the adoption intention while extending the original TAM model (Wu et al., 2008). Later TAM model was criticized for not considering the characteristics of individual and thus accepting or rejecting technology on the basis of that (Aggarwal and Prasad, 1999; McMaster and Wastell, 2005; Stade et al., 2015). Venkatesh et al., 2003 later researched on factors affecting the integration of new technology innovations to consumers. This helped him in forming a new model called the Unified Theory of Acceptance and Use of Technology (UTAUT) and suggested that the actual use of information technology comes from the intention to use information technology which comes from the individual reaction to use the information technology.

Individual psychology and behavioral sciences play very significant role in determining mobile wallet adoption was suggested by Lu, Yao and Yu (2005). They suggested the variables like perceived innovation and social influence should be taken into the consideration even if perceived usefulness and perceived ease of use are strong variables when determining consumer acceptance.

Lee (2005) investigated on the impact of customer trust and transactions done in mobile commerce. He stated that in determining customer transaction intentions trust plays an important role. Lin and Wang (2006) investigated on the factors that affected customer satisfaction and loyalty in mobile commerce. He concluded his research study by finding out perceived value and trust were related directly with customer satisfaction and loyalty of customer. For the acceptance of mobile commerce loyalty of customer was found out to be a very strong determining factor.

Amoroso and Hunsinger (2009) expanded the original TAM model by including variables like perceived risk, trust, privacy, website quality, e-satisfaction, e-loyalty and expectation of internet information to better understand the consumer behaviour over the intention to purchase through internet.

Kuo, Wu and Deng (2009) found out the relation between perceived value, customer satisfaction and post purchase intention and found out how these variables are positively influenced by service quality. He found out that both customer satisfaction and post purchase intentions are positively influenced by perceived value and also found that customer satisfaction influenced post purchase intentions positively.

He along with Mykytyn (2007) investigated on the factors that affect the online payment services adoption for customers. They found out that the consumer had a consideration towards risk involved and apart from that everyone favoured the concept of online payment. Consumer's actual use of online payment was associated with perceived usefulness, perceived ease of use and intention to use as suggested by a model developed by Rigopoulos and Askounis (2007).

Deng, Chen (2010) suggested that perceived use, perceived ease of use, perceived risk and compatibility as four factors which influenced the customer intention to use mobile payments. He suggested that the compatibility was among the strongest factor among these. The extent to which M-payment is compatible with the prospective customer's lifestyle is referred to as compatibility.

Mbogo (2010) research work on factors that determine the use of mobile payments with microbusinesses in Kenya concluded that the customer intention to use mobile wallet services and mobile payments actual usage were related to convenience that comes along with technology of money transfer along with accessibility, cost support and security factors. He stated that perceived convenience, perceived ease of accessibility and perceived support had positive and direct impact on mobile payment services usage intentions.

Social influence, self-efficiency, security and trust were four factors proposed by Shin (2009) after he examined adoption of mobile wallet by consumers. He stated that factors which are very familiar like perceived usefulness and ease of use are key determinants in adoption and acceptance of mobile wallet. Also he stated that perceived security and risk also positively influenced mobile wallet adoption. The research stated that social influence plays a key role in enhancing the security and trust among the consumers.

### **2.3.1 Personal Innovativeness**

It is being believed by some researchers that the most proximate influence on an individual's cognitive interpretations of a target object comes from individual related factor. Drawing upon Roger's theory of diffusion of innovations, Agarwal and Prasad (1998), individuals with higher personal innovativeness have better chance of adapting to a new innovation earlier. It is necessary to be re-conceptualized domain specific when it comes to this construct as opposed globally. To predict the individual behavior towards an innovation, they believed this was necessary. PI is known as an individual's willingness to try out a new technological innovation. The risk tasking propensity is some quality which is available in few individuals not others. Individuals with higher level of PI are expected to have a positive perception about innovation and a more positive intention towards using a new IT/IS.

### **2.3.2 Perceived Ease of Use**

This was another important construct when it comes when it comes to the TAM model (Davis, 1989). Davis defined PE as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320, line 70-72). PE is being used by many researchers as important factor in determining the consumer adoption of information technology related services (Lee et al., 2004; Shin, 2009; Kim et al., 2010; Pham and Ho, 2014; Yan and Yang, 2015). The UTAUT research model (Venkatesh et al., 2003) also suggested this construct variable as an important factor. It is similar to effort expectancy which is defines as "the degree of ease associated with consumers' use of technology" (Venkatesh et al., 2012, p. 159, line 62-63). That is, it is the expectation of customers about wallet services that it will be easy to learn and free from effort. It is suggested that the higher the PE the higher will be the chance of consumer adopting mobile wallet.

### **2.3.3 Performance Usefulness**

(Davis, 1989). PU is defined "as the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320, line 57-60). The significance of this factor is also validated in research models like TAM2 (Venkatesh and Davis, 2000), and also in TAM3 (Venkatesh and Bala, 2008). In the UTAUT research model suggested by venkatesh (Venkatesh et al., 2003), PE was among the important construct. For finding out the customer's perspective of mobile wallet adoption intentions, this factor was considered by other research scholars (Lee et al., 2004; Shin, 2009; Schierz et al., 2010; Wang and Yi, 2012; Amoroso and Magnier-Watanabe, 2012; Pham and Ho, 2014; Slade et al., 2015; Yan and Yang, 2015).

It is similar to Performance expectancy, which is “The degree to which using a technology will provide benefits to consumers in performing certain activities” is defined as Performance Expectancy from customer’s point of view (Venkatesh et al., 2012, p. 159, line 60-62). In mobile wallet context it is explained as the degree to which a customer believes that using mobile wallet as an alternative technology for transaction purposes will improve the overall performance of transactions related to purchase and daily activities. It is assumed that higher the Performance Expectancy, the higher is the chance for customers to adopt a mobile wallet technology.

The extent to which variety of services along with offers and discount effects the customer perception in adoption of mobile wallet. The adoption of a new technology is dependent on the variety and amount of services provided. In case of mobile wallet the selection of a particular wallet service depends on the services provided along with the offers and discounts. The perception of the benefits it has to offer to its customer determines the adoption of mobile wallet.

Variety of services includes all the places where the wallet services can be used and usage of mobile wallet for other transaction purposes. Offers and discounts include various kinds of benefits such as coupon codes, app download cash rewards, referral points, cash discount, and loyalty points. The promotional codes help in enhancing the customer experience and thus will help in retaining the already existing customers as well as help in gaining new customers (Bigcommerce, 2015). A report in UK states that on the basis of offers and promotional codes around 50% of customers online change their purchasing decisions (Rapid Campaign Report, 2015; Brooks, 2015). A similar inclination towards the promotion and offers were showed by US customers when a survey was conducted (Brooks, 2015). With the competition growing day by day direct and indirect competitors, variety of service and offers will play an important role in consumer’s adoption of mobile wallet. A customer who is rational makes a decision based on balancing the others factors as well as considering all these benefits being provided. Usually offers are communicated using mass media and it is been found to influence the consumer behavior to a very good extent.

#### **2.3.4 Perceived Risk**

Any product related, or any social or any financial risk that is perceived by the consumers while doing an online transaction is known as PR (Wu and Wang, 2005). There will be an increase in the issue related to security or risk related to privacy while making a mobile wallet transaction since mobile phones stores personal information. A large number of researchers have this factor included for their research studies and has agreed to its significance and negative impact it has on consumer's intentionll to adopt mobile wallet (Amoroso and Magnier-Watanabe, 2012; Pham and Ho, 2014; Liebana-Cabanillas et al., 2014; Slade et al., 2015).

In this study, security dimension along with privacy dimension is considered to be the main risk while doing a mobile wallet transaction. So it is considered as a factor decomposed from perceived value which is considered to be the price paid to get extra values offered by the wallet services. Considering security and privacy risk as separate factor from perceived value is consistent when previous researches in the area of technology adoption is studied (Amoroso and Magnier-Watanabe, 2012; Pham and Ho, 2014; Slade et al., 2015). It is proposed that the lower the perceived risk, higher will be the chance of people accepting a mobile wallet technology.

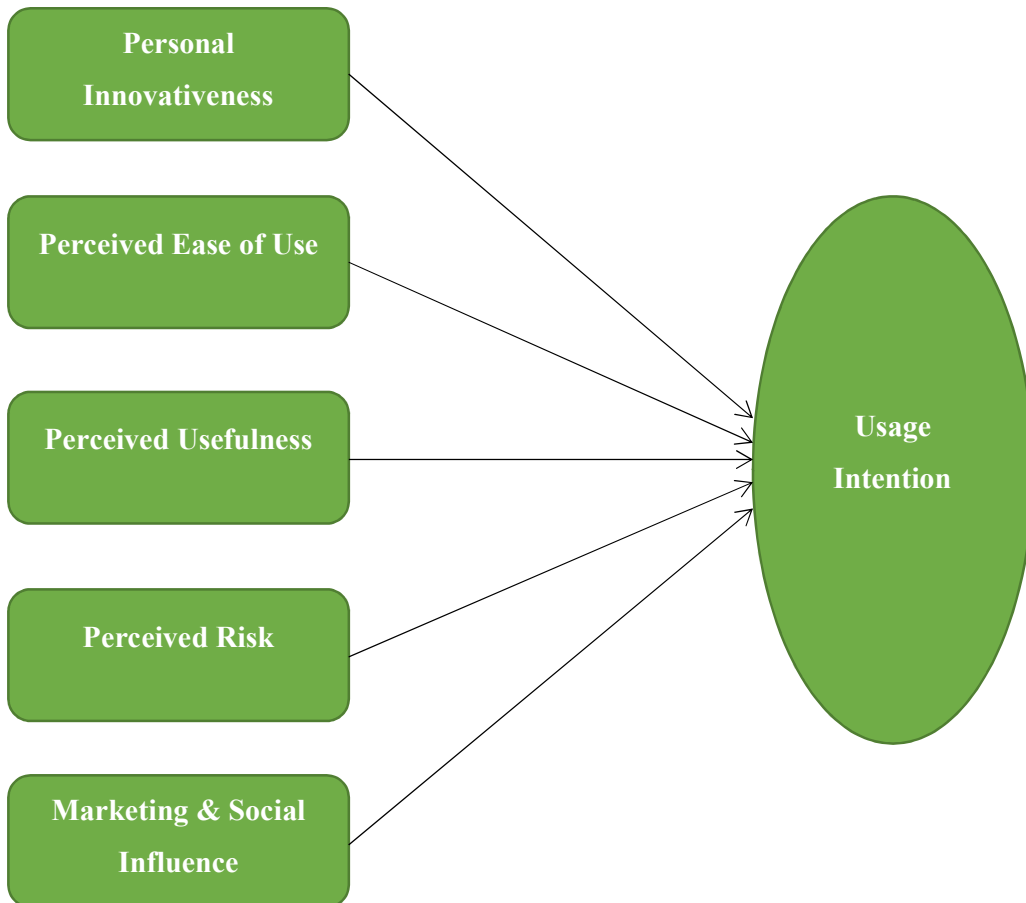
#### **2.3.5 Marketing & Social Influence**

The consumer's decision to use a product or service usually depends on the opinions of family, friends or relatives. The extent to which consumer's decision of adoption depends is referred to as SI (Riquelme and Rios, 2010). It is defined as "the extent to which consumers perceive that important others (e.g. family and friends) believe they should use a particular technology" (Venkatesh et al., 2012, p. 159, line 64-66). This is a widely used and accepted construct variable by most of the previous researchers as a factor which is important in determining the consumers intention of adoption of technologies like mobile wallet (Lee et al., 2004; Schierz et al., 2010; Amoroso and Magnier-Watanabe, 2012; Yang et al., 2012). TAM2 research model (Venkatesh and Davis, 2000), UTAUT (Venkatesh et al., 2003) and UTAUT2 (Venkatesh et al., 2012), all included SI as a construct variable which is important while finding out the usage intention of similar technologies. The higher the value of SI, the higher will be the chance of consumer's adoption intentional of mobile wallet.

### 2.3.6 Usage Intention

UI is defined as ones intention to continue using a service in the post acceptance stage. It is in a way similar to the repurchase decision as in both cases decisions are influenced by the usage in the initial stage (Bhattacharjee, 2001). Analysis on both organizational level as well as individual level this research has been conducted (Limayem, hirt & cheung, 2007). The initial stage acceptance decision is the reason by the adopters to continue using the services and thus result in continued usage intention behaviour (Kim, Chen & chan, 2007). Also the initial acceptance depends on various factors that affect the individual decision to continue using a particular service (Limayem, Hirt & Chin, 2001). Most of these factors are the construct which we have been taken for the research study.

**Figure 2.3 Model of factors affecting usage intention of Mobile Wallet**



### **3. RESEARCH METHODOLOGY**

The research design is the conceptual structure within which the research is conducted; it constitutes the blueprint for the collection, measurement and analyses of data (C.R. Kothari, 2004). The proposed research model is based on extensive literature review which has been explained in the previous section. The model advocates that the adoption of mobile wallet technology by consumer depends on personal innovativeness, perceived ease of use, perceived usefulness, perceived risk, marketing and social influence.

Scientific and systematic search for relevant information on specific topics is what is meant by research. Research is a careful analysis for search for new facts in any branch of knowledge. In a research paper problems are defined and redefined, hypothesis are formulated, and solutions are suggested, collection, organization and evaluation of data is done; deductions are made and conclusions are reached and careful testing of conclusion is done to determine whether it is fit with the formulated hypothesis.

The study of methods through which we gain knowledge is known as methodology. The problems arising from the nature of its subject matter is studied and the methodology deals with the cognitive processes applied on the research work.

#### **3.1 Need for the Study**

The growing importance of services using mobile and digital platform has led to the study of the consumer behavior while adopting mobile wallet technology. The introduction of mobile payment was done during the year 2007. Post demonetization the usage of mobile wallet technology increased and bottom of the pyramid people also started using the technology. This research will help in studying the behavior of customers towards mobile wallet technology which will in turn help in making the mobile wallet service more popular and attractive by making the necessary changes according to the customer. This research study concentrates on few factors which are assumed to impact the customer adoption of mobile wallet. So it will be helpful in analyzing those factors. This will help the government, telecommunication network providers and the wallet service providers to plan accordingly to provide a better service. Further the need has also been felt to study the intensity of impact made by the determined active factors on the intention of people to adopt/use the method of digital payment.



### **3.2 Key Assumptions**

It has been assumed due to the anonymity and confidentiality of the data collected and also due to the fact that all respondents were volunteers while sharing their experience, personal interpretation and knowledge about the usefulness and intention of using the mobile wallet were truthful.

### **3.3 Data Collection**

The respondents were from pan India while most of them were either college going or working professionals. It was prerequisite before obtaining the data that internet enabled smartphone and bank accounts were imperative for the respondents. India is a country with different cultures and since the data was collected firm pan India, it will give a better and diverse data about different customer's attitude towards adoption of mobile wallet. The data was collected using all the new social media methods like forwarding the response link via Whatsapp, Facebook and also by sharing on LinkedIn. Apart from this, traditional method of forwarding the link to questionnaire through e-mail was also used. Among the people across the country the most technologically savvy and which constitutes the largest segment of modern technology users are youngsters. (Davis, 1989; Hanafizadeh et al., 2014; Yadav et al., 2016). Therefore the sample data collected was considered to be appropriate for the research study.

### **3.4 Construct Measurement**

There are around 5 dependent variables considered for the research study. Multi scale is used for the research study which consists of around 32 questions which were identified to measure the dependent variables. For knowing the customer demographics nominal scale was used and for knowing the customers perspective ordinal scale was used. All items were measured using five point likert scale ranging from strongly agree to strongly disagree.

### **3.5 Research Instrument**

The research instrument consisted of two parts. In the first part information related to general demographic details like gender, age, education, income and the frequency of usage of mobile wallet were recorded.

The respondent's agreement or disagreement towards the selected items was recorded on the second part. The analysis tools used for the research purpose were excel and SPSS. The data cleaning part was done using excel and later the analysis test was conducted using SPSS.

During the analysis there were a number of tests conducted to find out the customer perspective as well as customer preference. In the early stage mean of each parts was found out to know how customers have answered the questionnaire.

After that independent t-test and Anova was conducted on the responses to find out the relation between demographics and construct variables. Later paired t-test was used to find out the relation between constructs. During the course of this research paper personal innovativeness will be represented as PI, perceived ease of use as PE, perceived usefulness as PU, perceived risk as PR, marketing & social influence as SI and usage intention as UI.

### **3.6 Sampling**

This research study made use of convenience sampling to get the respondents answer the questionnaire. There were studies undertaken to understand the IT/IS adoption that were conducted in the past and this was in line with that (Pham and Ho, 2014; Amoroso and Magnier-Watanabe, 2012; Chong et al., 2012). So with the help of convenience sampling data responses for the main survey were obtained which was later analyzed to find out the consumer adoption behaviour of mobile wallet.

## 4. DATA ANALYSIS AND INTERPRETATIONS

After finalizing the questionnaire and then conducting the survey, the resulting data is gathered. Respondents were asked to indicate the extent of their agreement with a series of statements on a five-point Likert scale (1 = “strongly disagree” and 5= “strongly agree”). It is necessary that the gathered data is subjected to data analysis techniques which are appropriate and later the information is analyzed properly so as to accept or reject the hypothesis. It is the researcher's responsibility to select the appropriate method for doing the data analysis even though it can be done in several ways.

### 4.1 Demographics Frequency Analysis

Around 124 respondents participated in the survey giving their valuable time and responses of which 81 were males and 43 were females. That is male respondents consisted of 65.3% of the total respondents and female respondents were around 34.7% from the demographics table (Table 4.1).

**Table 4.1: Demographics Frequency Analysis**

<b>Gender</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
Male	81	65.3	65.3
Female	43	34.7	100.0
Total	124	100.0	

<b>Age</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
18-24	68	54.8	54.8
25-34	52	41.9	96.8
35-59	3	2.4	99.2
>=60	1	.8	100.0
Total	124	100.0	

<b>Education level</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
High School	2	1.6	1.6
Graduation	59	47.6	49.2
Post-Graduation	63	50.8	100.0
Total	124	100.0	

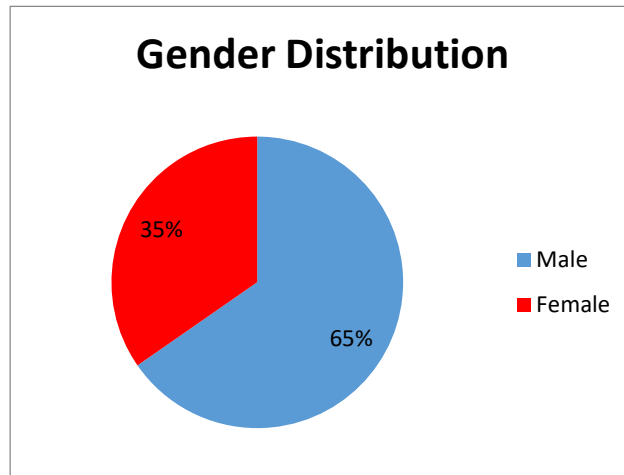
<b>Occupation</b>	Frequency	Percent	Cumulative Percent
Student	50	40.3	40.3
Working Professional	66	53.2	93.5
Entrepreneur	2	1.6	95.2
Homemaker	2	1.6	96.8
Self-employed	4	3.2	100.0
Total	124	100.0	

<b>Monthly Income</b>	Frequency	Percent	Cumulative Percent
<5k	50	40.3	40.3
5k-15k	21	16.9	57.3
15k-30k	10	8.1	65.3
>30k	43	34.7	100.0
Total	124	100.0	

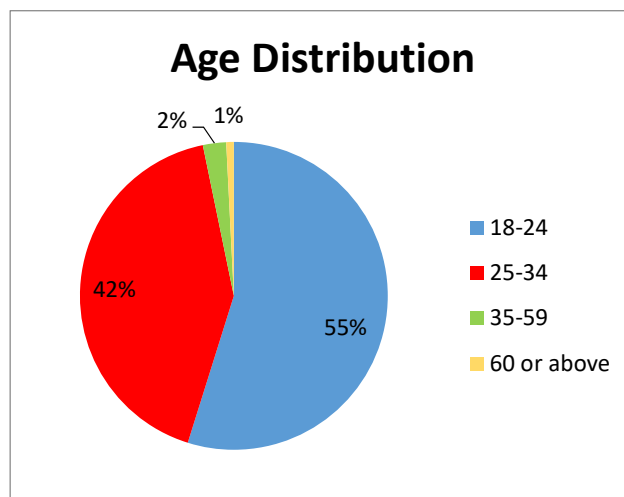
<b>Frequency of usage of Mobile Wallet Services</b>	Frequency	Percent	Cumulative Percent
Everyday	10	8.1	8.1
3-4 times/week	36	29.0	37.1
Once a week	31	25.0	62.1
1-2 times/month	26	21.0	83.1
Less than once/month	21	16.9	100.0
Total	124	100.0	

When categorizing the respondent on the basis of age, it was found that the maximum amount of respondents were college going students within the age of 18-24. Respondents in this category comprised of 54.8% which was around 68 respondents out of the total 124. From the age category of 25-34 there were around 52 respondents which was around 42%. Rest comprised of around two percent due to the fact that smartphone are more used among youth and working people who are generally young.

**Chart 4.1.1: Pie chart showing respondents' gender distribution**



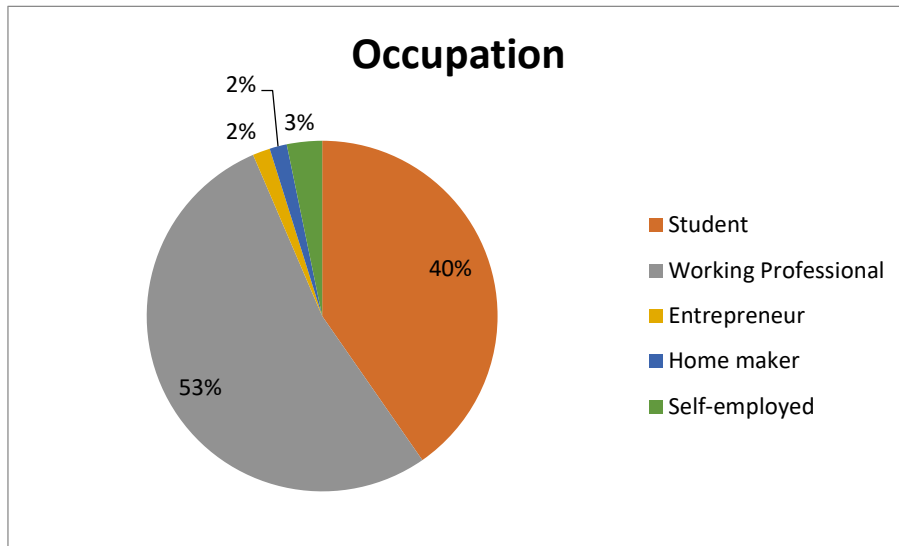
**Chart 4.1.2: Pie chart showing respondents' age distribution**



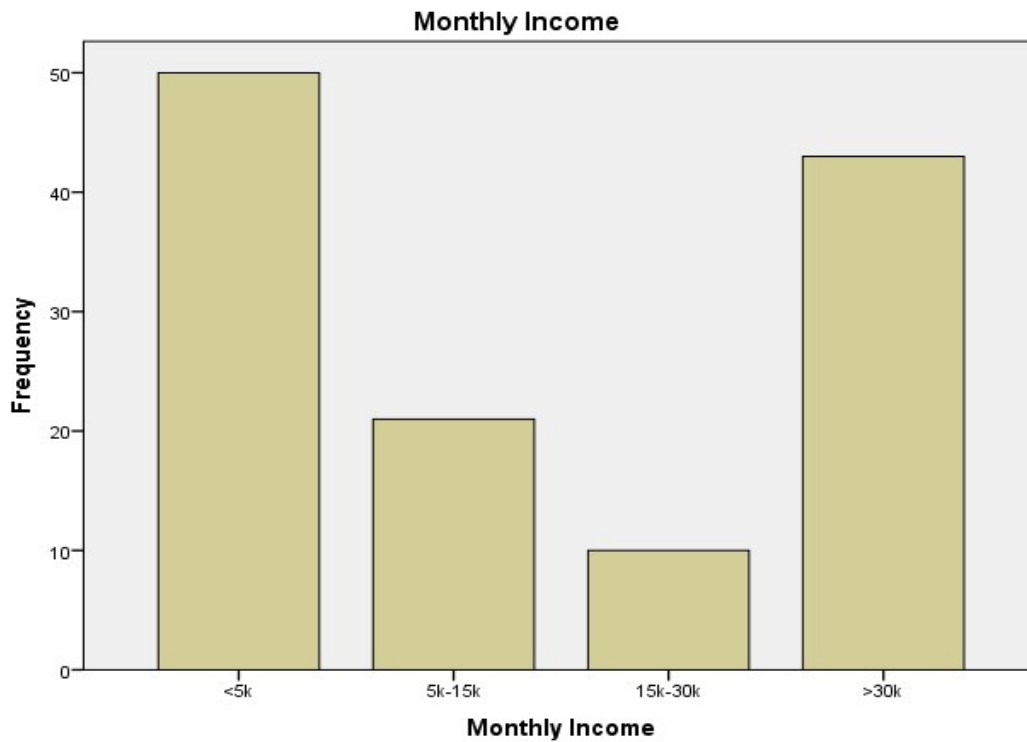
The demographic characteristics of education was studied and out of the 124 respondents around 50 were students which are around 40.3% of total respondents. 66 were working professional which is around 53.2%.

When the income level of respondents was studied, people from all categories were using mobile wallet. Around 34.7% had a monthly salary of 30k or more and 40.3% of the respondents were having an income of below 5k which comprised mainly of school and college going students.

**Chart 4.1.3: Pie chart showing occupation of survey respondents**



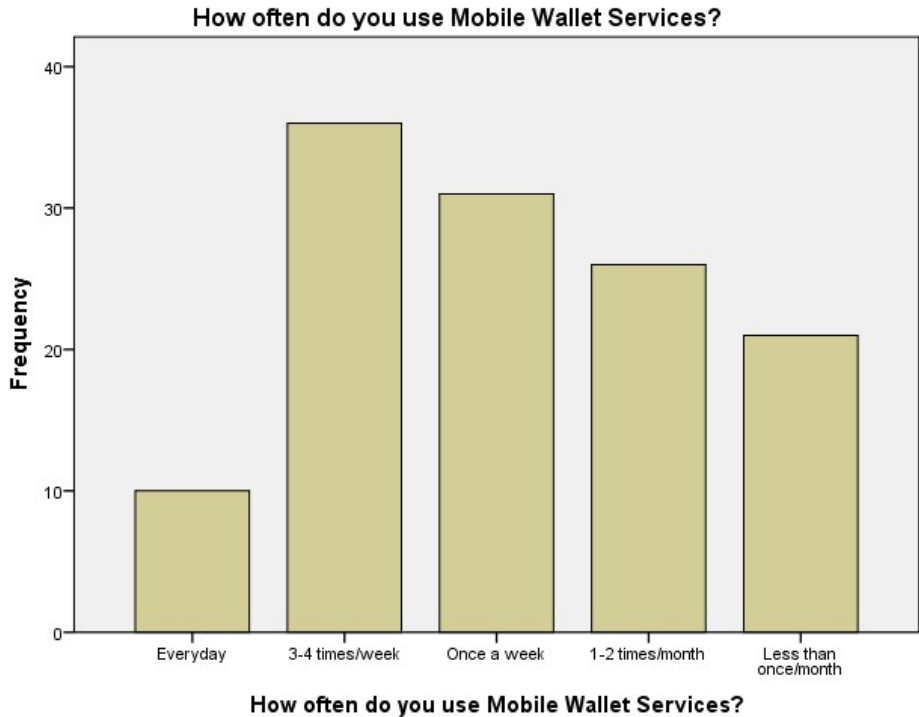
**Chart 4.1.4: Bar graph showing income of survey respondents**



While analysing the usage frequency of mobile wallet by our respondents from the table (Table no. 4.1), it was found that the percentage of people using mobile wallet everyday was less than ten percent which means people rely on other means of payment methods to do day to day transactions. This market can be tapped to increase the profitability of mobile wallet service.

Rest of the respondents are frequent users with around 36 respondents using 3-4 times a week, 31 respondents using once every week and around 26 people using around 1-2 times a month. While studying the usage frequency of respondents, the amount of users using mobile wallet multiple times a week was high compared to the users using it every day, 3-4 times/week once a week, 1-2 times/month or less than once/month. The details of this are given below in table along with the chart which shows the percentage of each category of frequency of usage.

**Chart 4.1.5: Bar graph showing frequency of usage of mobile wallet by survey respondents**



## 4.2 Descriptive Analysis

Descriptive Statistics is used to summarize numeric data with a variety of statistics such as the sample size, mean, median, and standard deviation.

**Table 4.2: Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	124	1	2	1.35	.478
Age	124	1	4	1.49	.591
Education level	124	1	3	2.49	.533
Occupation	124	1	5	1.74	.845
Monthly Income	124	1	4	2.37	1.322
How often do you use Mobile Wallet Services?	124	1	5	3.10	1.226

**N** – This is the number of valid observations for the variable. The total number of observations is the sum of N and the number of missing values.

**Minimum** – This is the minimum, or smallest, value of the variable.

**Maximum** – This is the maximum, or largest, value of the variable.

**Mean** – This is the arithmetic mean across the observations. It is the most widely used measure of central tendency. It is commonly called the average. The mean is sensitive to extremely large or small values.

**Std.** – Standard deviation is the square root of the variance. It measures the spread of a set of observations. The larger the standard deviation is, the more spread out the observations are.

As per the descriptive statistics of the collected data, for instance, for occupation, the N value is 124; this implies that the total number of respondents for the occupation variable is 124. The variable occupation could take values from 1(minimum) to 5 (maximum) where;

1- Student, 2- Working Professional, 3- Entrepreneur, 4- Homemaker, 5- Self-employed

The mean for occupation variable is 1.74, this implies that most of the observations ie average lie between values 1 and 2. This means that most of the respondents are either students or working professionals.



### 4.3 Hypothesis Formulation

H<sub>1</sub>: There is significant difference in Male's and Female's observation in mobile wallet usage intention.

H<sub>2</sub>: There is significant difference in usage intention based on occupations.

H<sub>3</sub>: Personal Innovativeness has a positive impact on usage intention for mobile wallet

H<sub>4</sub>: Perceived ease of use has a positive impact on intention of people to use mobile wallet

H<sub>5</sub>: Perceived usefulness has a positive influence on consumer's mind to adopt/ use mobile wallet

H<sub>6</sub>: Perceived risk has a negative influence on usage intention for mobile wallet

H<sub>7</sub>: Marketing and social influence has a positive impact on usage intention for mobile wallet

Following notation has been used in further analysis:

PI- Personal innovativeness

PE- Perceived ease of use

PU- Perceived usefulness

PR- Perceived risk

SI- Marketing & social influence

UI- Usage intention

After the hypotheses were assumed, various tests were conducted on these constructs. Independent variables impact on dependent variables on the basis of gender, age groups, occupation were analyzed with the help of data available using various tests. Null hypothesis have been rejected if  $p < 0.05$ . Alternatively, if  $p > 0.05$ , null hypothesis have been accepted.

### 4.3 Cross-table Analysis

To describe the relationship between two categorical variables, a special type of table called a cross-tabulation has been used. In a crosstab, the categories of one variable determine the rows of the table, and the categories of the other variable determine the columns. The cells of the table contain the number of times that a particular combination of categories occurred. The dimensions of the crosstab refer to the number of rows and columns in the table. (The "total" row/column is not included.) The table dimensions are reported as as RxC, where R is the number of categories for the row variable, and C is the number of categories for the column variable.

**Table 4.3.1 Cross-table analysis: Gender vs mobile wallet usage**

**Gender \* How often do you use Mobile Wallet Services? Crosstabulation**

		How often do you use Mobile Wallet Services?					Total
		Everyday	3-4 times/week	Once a week	1-2 times/month	Less than once/month	
Gender	Male	9	26	17	15	14	81
	Female	1	10	14	11	7	43
Total		10	36	31	26	21	124

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.634 <sup>a</sup>	4	.228
N of Valid Cases	124		

We can see here that pearson chi-square value is 5.634 and p value is .228 (ie  $p > 0.05$ ). This tells us that there is no statistically significant association between Gender and frequency of usage of mobile wallet; that is, both Males and Females equally prefer using mobile wallets for transaction needs.

This implies that we accept the null hypothesis  $H_{01}$  ie hypothesis of no difference. We can say that there is no significant difference in usage intention of mobile wallet based on gender.

**Table 4.3.2 Cross-table analysis: Occupation vs mobile wallet usage**

**Occupation \* How often do you use Mobile Wallet Services? Crosstabulation**

Occupation	How often do you use Mobile Wallet Services?					Total
	Everyday	3-4 times/week	Once a week	1-2 times/month	Less than once/month	
Student	7	10	12	9	12	50
Working Professional	2	26	14	16	8	66
Entrepreneur	0	0	2	0	0	2
Homemaker	0	0	1	0	1	2
Self-employed	1	0	2	1	0	4
Total	10	36	31	26	21	124

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.672 <sup>a</sup>	16	.076
N of Valid Cases	124		

We can see here that pearson chi-square value is 24.672 and p value is .076 (ie  $p > 0.05$ ). This tells us that there is no statistically significant association between occupation and frequency of usage of mobile wallet; that is, irrespective of occupation, whether student, working professional, entrepreneur, home maker or self-employed, all equally prefer using mobile wallets for transaction needs.

This implies that we accept the null hypothesis  $H_0$  ie hypothesis of no difference. We can say that there is no significant difference in usage intention of mobile wallet based on occupation.

#### 4.4 Principal Component Analysis

Principal components analysis is a method of data reduction. Suppose that there are a dozen variables that are correlated. Principal components analysis can be used to reduce the 12 measures to a few principal components.

**Table 4.4 Principal Component Analysis**

Component	Total Variance Explained					
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.336	33.388	33.388	1.336	33.388	33.388
2	.919	22.971	56.359			
3	.898	22.441	78.800			
4	.848	21.200	100.000			

Extraction Method: Principal Component Analysis.

a. **Component** – There are as many components extracted during a principal components analysis as there are variables that are put into it. In this case, 4 variables are used (wrt **personal innovativeness**), so there are 4 components.

b. **Initial Eigenvalues** – Eigenvalues are the variances of the principal components. Because principal components analysis has been conducted on the correlation matrix, the variables are standardized, which means that the each variable has a variance of 1, and the total variance is equal to the number of variables used in the analysis, in this case, 4.

c. **Total** – This column contains the eigenvalues. The first component will always account for the most variance, here it is 1.336 (and hence have the highest eigenvalue), and the next component will account for as much of the left over variance as it can, and so on. Hence, each successive component will account for less and less variance.

d. **% of Variance** – This column contains the percent of variance accounted for by each principal component.

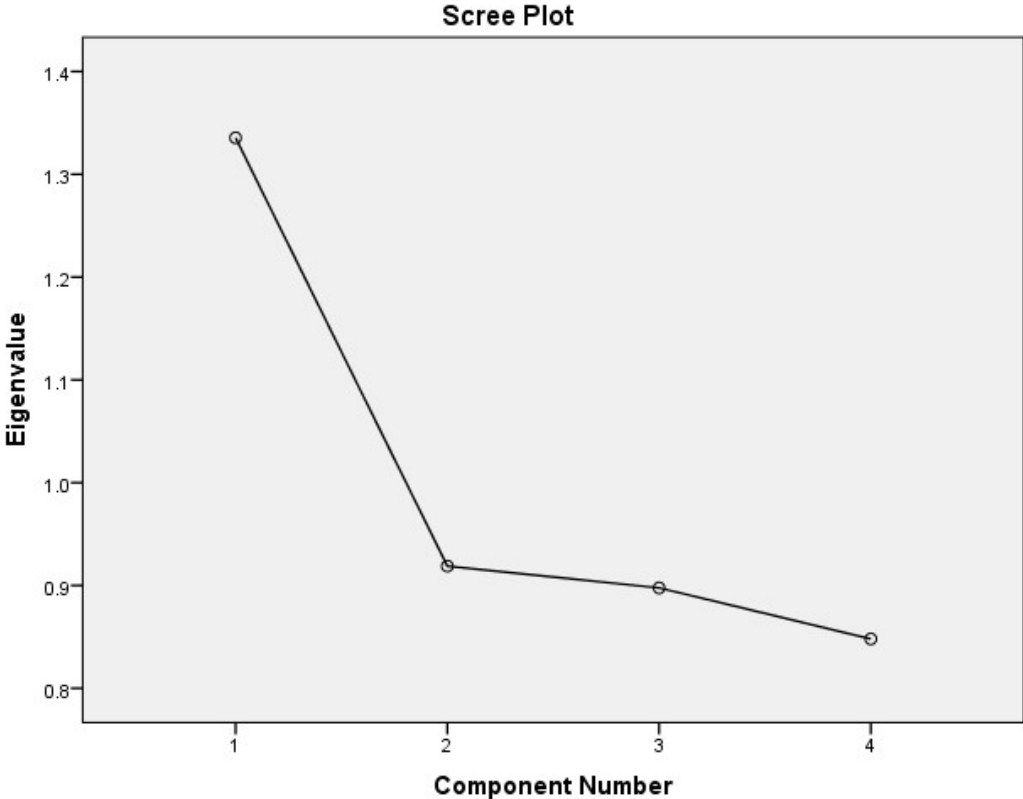
e. **Cumulative %** – This column contains the cumulative percentage of variance accounted for by the current and all preceding principal components. For example, the third row shows a value of 78.800. This means that the first three components together account for 78.800% of the total variance.

f. **Extraction Sums of Squared Loadings** – The three columns of this half of the table exactly reproduce the values given on the same row on the left side of the table. The number of rows reproduced on the right side of the table is determined by the number of principal components whose eigenvalues are 1 or greater.

**Scree Plot**

The scree plot graphs the eigenvalue against the component number. These are the values in the first two columns of the table above. From the second component on, the line is almost flat, meaning the each successive component is accounting for smaller and smaller amounts of the total variance. Only those principal components would be kept whose eigenvalues are greater than 1. Components with an eigenvalue of less than 1 account for less variance than did the original variable (which had a variance of 1), and so are of little use. Hence, the point of principal components analysis is to redistribute the variance in the correlation matrix (using the method of eigenvalue decomposition) to redistribute the variance to first components extracted.

**Chart 4.4.1 Scree Plot**



#### 4.5 Regression Analysis

To find out how usage intention of customers is affected by the construct being taken, a regression analysis was done. For this independent variables like PI, PE, PU, PR, SI were taken against UI to find out the customer perspective is about adoption of mobile wallet. A null hypothesis of each independent variable that it didn't influence the dependent variable was taken and an alternative hypothesis of the independent variable influencing dependent variable was taken.

It was found from the table (Table no 4.5) out that R-Square value was 0.368 ( $>0.25$ ). This meant that around 35.3 percent of the dependent variable was explained by the coefficients of significance (Independent variables). On the basis of P-value, Null Hypothesis was rejected for PI, PE and PU ( $P \text{ value} < 0.05$ ), while it was accepted for PR and SI. This meant that PI, PE and PU have a significant role to contribute towards consumer adoption of mobile wallet. From the value of Beta, it can be seen that PE is the most powerful contributor towards consumer adoption of mobile wallet. After that, PU, PI all play a significant role towards consumer adoption of mobile wallet.

**Anova** table indicates that the regression model predicts the dependent variable significantly well. The "Sig." value indicates the statistical significance of the regression model that was run. Here,  $p < 0.05$ , indicates that, overall, the regression model statistically significantly predicts the outcome variable (i.e., it is a good fit for the data).

**Table 4.5 Regression model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					df1	df2	Sig. F Change
1	.607 <sup>a</sup>	.368	.341	.82422	5	118	.002

a. Predictors: (Constant), SI, PI, PR, PU, PE

b. Dependent Variable: UI

Model	Beta	Sig.
(Constant)		.000
1 PI	.119	.027
PE	.245	.000
PU	.138	.031
PR	.079	.101
SI	.053	.307

a. Dependent Variable: UI

**ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	13.698	5	2.740	4.033	.002 <sup>b</sup>
Residual	80.161	118	.679		
Total	93.859	123			

a. Dependent Variable: UI

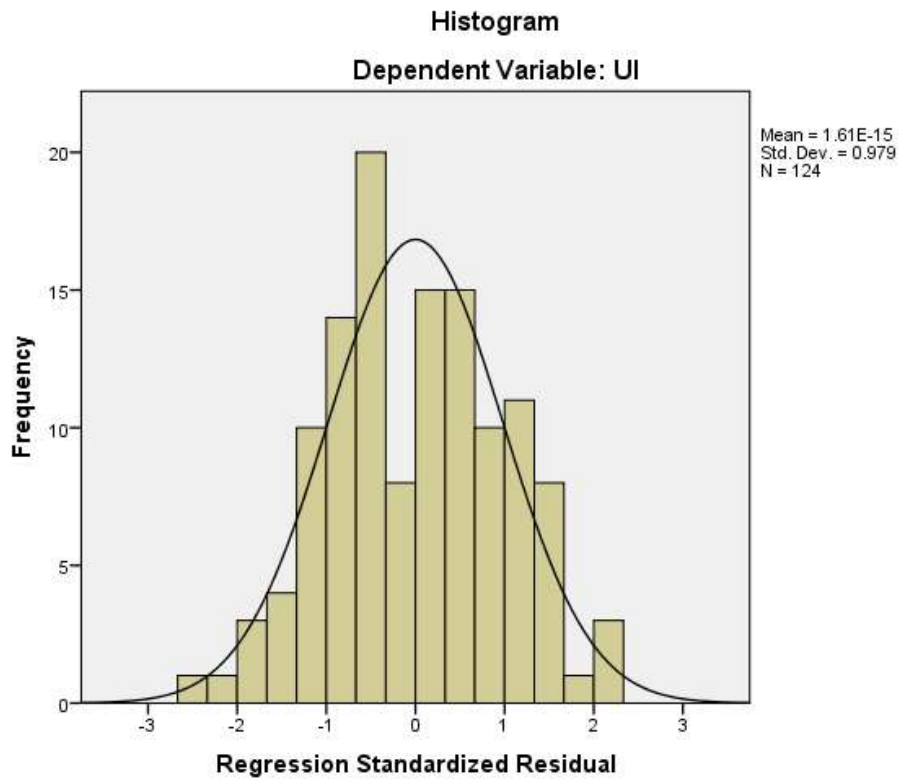
b. Predictors: (Constant), SI, PI, PR, PU, PE

Anova table indicates that the regression model predicts the dependent variable significantly well. The "Sig." value indicates the statistical significance of the regression model that was run. Here,  $p < 0.05$ , indicates that, overall, the regression model statistically significantly predicts the outcome variable (i.e., it is a good fit for the data).

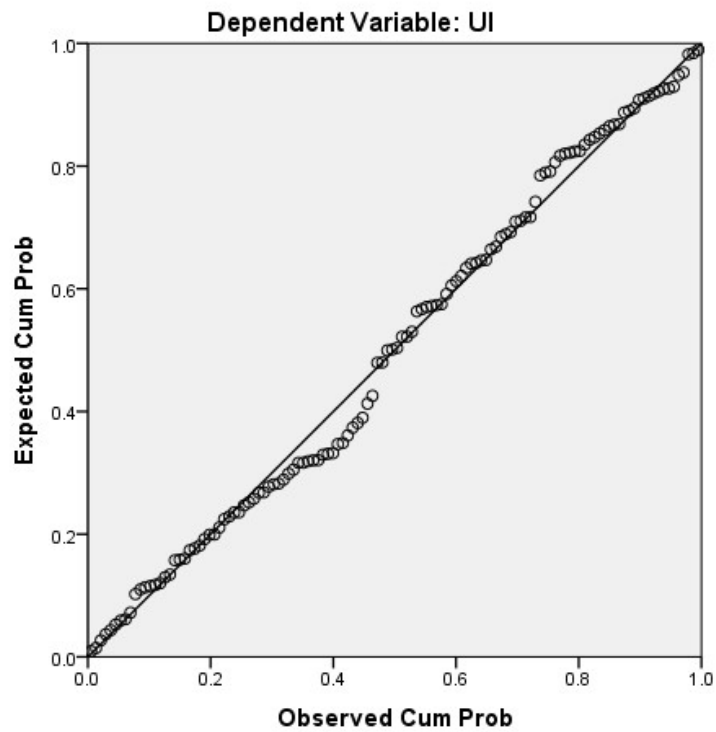
**Descriptive Statistics**

	Mean	Std. Deviation	N
UI	3.1048	.87355	124
PI	3.0766	.78163	124
PE	3.2520	.80616	124
PU	3.3286	.82785	124
PR	2.9839	.60315	124
SI	3.1250	.74524	124

Chart 4.5.1 Regression Plot



Normal P-P Plot of Regression Standardized Residual





Later by analysing the mean after calculating it for all the dependent factors with the help of survey done on respondents who use smartphones along with internet it was understood that PE is one of the main factor customers look on to when using a mobile wallet. Also along with PE, PU is another factor which is important to decision making of customers to use mobile wallet. From the table (Table 4.5) it was inferred that Personal innovativeness was also a very important factor for any mobile wallet service.

The people who have been using mobile wallet have the intention to continue using service as they believe it will reduce their effort and has a lot of variety of service. When we take the dependent variable of perceived ease of use, the respondents believe that it is easier to make payment using mobile wallet and also they believe it saves a lot of time.

When respondents were asked about the mobile wallets they use, it was understood from the response that Paytm is the most popular mobile wallet service among the users. It is understood that it is more popular due to the fact that it is an early mover and provides good discounts and offers along with variety of services. This is followed by Google Pay, PhonePe and Amazon Pay in the order of popularity. If we see the most popular ones in mobile wallet services, then we can understand that these three are the most used due to the good offers and variety of services.

Based on the test analysis done it was found that PI, PE and PU play a very significant role in determining the customer adoption of mobile wallet. Even if consumers find PR and SI as a significant factor as found from the frequency test, these variables don't play a significant role in determining customer intention to continue using mobile wallet adoption.

Where:

PI- Personal innovativeness

PE- Perceived ease of use

PU- Perceived usefulness

PR- Perceived risk

SI- Marketing & social influence

UI- Usage intention

## 4.6 Findings and Recommendations

This research paper was conducted to understand the acceptance of mobile wallet services among users and also to find out about the factors that affect consumer decision of adoption of mobile wallet service. Mobile wallet technology adoption has been widely studied around the world. So drawing from the extensive literature review a model for consumer adoption has been proposed taking in to consideration the factors affecting mobile wallet adoption. These dependent variables are perceived innovativeness, perceived ease of use, perceived usefulness, perceived risk, marketing and social influence and usage intention in the context of mobile payment.

With the demonetization exercise carried out by the government, the popularity of mobile wallet has increased and now it depends on how customers intent to continue to use the service. So it is much necessary to have a favourable condition created by all the stakeholders.

Consumers have been facing the issues related with small screen, low bandwidth while trying to make a payment through mobile wallet in the recent past. Recently however, this has changed drastically with the introduction and increased penetration of smartphones with large display screen and with network providers providing high speed 3G and 4G services at affordable prices, this issue has been sorted out for the favour of mobile wallet.

Previous research study in the field of mobile technology adoption (Venkatesh and Davis, 2000; Venkatesh et al., 2003; Schierz et al., 2010; Venkatesh et al., 2012; Yang et al., 2012; Slade et al., 2015) is being supported by this observation. Few factors like friends, family, social media have good influence indecision making of customers. This is because of the credibility of these social factors. As we all know how important word of mouth is for any kind of products promotion, same is the case here as we all tend to agree to our social surroundings.

## Findings:

- The cooperation of stakeholders who are directly or indirectly associated with the mobile service is needed for electronic wallet transition to mobile wallet and thus the success of a wallet service depends on not just the customers but also the mobile wallet service providers, technology providers, financial institution, and government.
- It was found that the considered factors had a positive influence on consumer perspective of mobile wallet adoption.
- Mobile wallet success depends on the countries perspective towards technology and how government is pushing towards a digital country.
- The study observed that perceived ease of use is a very significant factor when it comes to customer's perspective for adoption of mobile wallet. (Shin, 2009; Chierz et al., 2010; Kim et al., 2010; Wang and Yi, 2012; Thakur and Srivastava, 2014; Yan and Yang, 2015).
- The money transactions have been made much easier compared to the bank transaction which was previously more common before the introduction of mobile wallet service. So due to this the customer perceive that compared to traditional modes of payment, mobile wallet service is an easier and faster alternative.
- Another factor which had significant influence in customer perspective is marketing and social influence.
- It is understood that customers perspective about the usefulness of mobile wallet and the variety of services being provided by mobile wallet service providers have a significant influence on customers intention to adopt mobile wallet (Pagani, 2004; Amoroso and Magnier-Watanabe, 2012; Venkatesh et al., 2012).
- From the study it was understood that the customer still have a degree of uncertainty when it comes to sharing of personal information.
- After analysing the data it is been found that Indian customers tends to love offers and discount. So for this reason they tend to use mobile wallet service rather than going for alternative mode of payment (Rapid Campaign Report, 2015; Brooks, 2015).
- The potential of mobile wallet service is huge and with the demonetization exercise carried out by government, the wallet service providers are getting recognition.

## **Recommendations:**

By studying and analysing the impact of various factors on dependent variables we will be able to understand the variance in these variables such as the customer's intentions to use the service, the frequency of usage and the customer's perspective of mobile wallet services.

Considering the fact that it was not popular payment service method among customers, however after the inception of the service, this is a drastic change in customer perspective. Marketer and the service providers along with the technology providers will gain more knowledge about customer's perspective for adoption of mobile wallet and can bring suitable marketing strategy to increase customers and also to retain the already existing ones.

If the mobile wallet service providers along with the help of government and telecom operators are able to provide a better security and if they are able to maintain that level of trust among the customers, then the perspective of customers towards the service will change. There will be increase in the number of customers and also the frequency of usage among the existing customers.

Investments are being made by organizational players as they see reasonable profit and so the scope of mobile wallet is increasing with entrance of many new players into the ecosystem.

- By highlighting the key factors for the mobile wallet service we will be able to identify the shortcomings in the perspective of potential customers and strategize in such a way as to increase the customer adoption by bringing in new marketing techniques and offers.
- It is also important to emphasize on those construct variables which are important from customers point of view when upgrading the product or while strategizing any marketing strategies.
- The fact that Indian customer's tends to love offers and discount can be utilized by wallet service providers to lure more customer and this is a marketing strategy they have been using to change the customer attitude towards mobile wallet services by providing offers and freebies.
- There are customers who tend to use a technology at the introduction state. Rest is not bothered about a new technology as they are least bothered about that. So if given proper guidance and knowledge about a new technology, it would be helpful in getting more customers.

#### **4.7 Limitations and Future Scope**

The research relied on response data from 124 respondents. So there is chance that the sample may suffer from selection bias. The demographics of the respondents taken for the survey is in disproportionate manner and this might have an influence on the results. This study considers only 5 factors to determine the customer's perspective towards adoption of mobile wallet. There are lot of other constructs too which can be considered and which might give a more focused perspective about customers behaviour towards adoption of mobile wallet. These factors alone won't determine the success of a mobile wallet service as government along with network providers, smart phone manufacturers and technology providers together can only make this a successful technology and the future of payment transactions.

Although the insights of the perspective of a developing nation was provided by the study, the extent of influence these structural, cultural and demographics differences will do to the mobile wallet adoption can be only brought out by comparison with other developing nations. The objectives can also include conducting a comparative study of where India stands among other developing countries when it comes to mobile wallet scenario. Thus research in the future can concentrate on this direction. Most of the data was collected from teir-1 cities and data from only a few teir-2 cities were collected. Therefore the perspective of people in these cities would have been included and rest would have been ignored. Studying the insight of these people would give a better insight.

As mobile wallet is gaining momentum day by day, the mobile wallet service operators can use this as an opportunity to reach out to a larger population to gain competitive advantage. For achieving the broad objective of our government of financial inclusion through "Digital India" this mobile wallet service can be helpful. For future work the limitations of this research paper could be dealt. The possible direction of future study is diverse. A research study to examine and compare the factors affecting customer's satisfaction across different channels can be done. A detailed study will be helpful in making better strategies because of the difference in technology, environment, devices and customer perceptions. So it is important to gauge and understand the varying needs of the customer as it will help the bankers respond better to the expectations of the customers.

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# Determinants of Consumer Adoption of Mobile Wallet

\*Required

## 1. Gender \*

Mark only one oval.

- Male  
 Female

## 2. Age \*

Mark only one oval.

- 18-24  
 25-34  
 35-59  
 60 or above

## 3. Education level \*

Mark only one oval.

- High School  
 Graduation  
 Post Graduation  
 Other: \_\_\_\_\_

## 4. Occupation \*

Mark only one oval.

- Student  
 Working Professional  
 Entrepreneur  
 Home maker  
 Self-Employed  
 Other: \_\_\_\_\_

## 5. Monthly Income \*

Mark only one oval.

- Less than 5k  
 Between 5 and 15k  
 Between 15 and 30k  
 More than 50k



**6. How often do you use Mobile Wallet Services? \***

*Mark only one oval.*

- Everyday
- 3-4 times/week
- Once every week
- 1-2 times/month
- Less than once/month

**7. Where did you learn about Mobile Wallet? \***

*Tick all that apply.*

- TV/ Radio advertisement
- Newspaper/Magazine
- Bank Pamphlet/fliers
- Bank Website
- Internet
- Social media
- Friends/ Family
- Other: \_\_\_\_\_

**8. Which all mobile wallet service have you used? \***

*Tick all that apply.*

- Paytm
- Amazon Pay
- Google Pay
- PhonePe
- Mobikwik
- Yono by SBI
- Citi MasterPass
- ICICI Pockets
- HDFC PayZapp
- BHIM Axis Pay
- Other: \_\_\_\_\_

**9. Personal innovativeness \***

*Mark only one oval per row.*

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am the first person to try new technology when it becomes available in the market	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to understand and navigate the technology and features of mobile wallet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is better to experiment with mobile wallet before adopting it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unique, integrated and customized services are important in the adoption of mobile wallet services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**10. Impact of ease of usage \***

*Mark only one oval per row.*

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Device compatibility and ease of wallet set-up is one reason to use mobile wallet.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easier to make payment using mobile wallet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile wallet can be used to do banking any time/anywhere is one reason to use it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clear, simple and precise information helps me to perform mobile wallet transactions easily	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**11. Performance usefulness \***

*Mark only one oval per row.*

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Mobile wallet can be an alternative choice of payment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Banking through mobile wallet saves a lot of time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Support to variety of services like bill payments, recharges, online shopping etc. is the reason why I use mobile wallet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Support for multiple card types from multiple institutions is the reason why I use mobile wallet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 12. Perceived risk \*

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I believe smart phone is not a secure system to save my credit cards and personal information on it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a concern that phone company and network provider may be able to access the customer's information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a possibility of information theft during wireless communication.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If smartphone is stolen, there would be temporary loss of use of the mobile wallet functionally	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Someone using my phone without permission can access my account	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My trust in mobile wallet services is not as strong as the trust in offline services provided by the bank	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 13. Marketing and social influence \*

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I started using mobile wallet as most of my friends and colleagues were also using it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I started using mobile wallet as my friend suggested me to use it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integrated offers, coupons, discounts, location based alerts is the reason why I use mobile wallet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would use mobile wallet to a greater extent if I get more information about it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 14. Usage Intention

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am willing to use/continue using mobile wallet services in near future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am likely to use/continue using mobile wallet services in the near future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I intend to use / continue using mobile wallet services at least as often within the next month as I have previously used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>