

**SYNOPSIS OF THE THESIS**

**Usage of Plastic Money and Virtual Wallet as  
Modes of Payments in and around Bengaluru  
City**

Synopsis of Doctoral Thesis submitted  
In partial fulfillment of the requirements for the award of the degree of

**DOCTOR OF PHILOSOPHY  
In  
MANAGEMENT**

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## **Introduction:**

The use of cards and wallets is linked with the benefits they offer. While plastic money offers easy access to money and credit in the form of credit card, debit card and pre-paid cards, virtual wallet technology offers convenience, electronic records facility and automatic management of accounts or taxes for the users. Perception and benefits of this technology associated with Plastic money and virtual wallets drive the usage and benefits for the users.

Evolution of technology is the key enabler for the proliferation of financial instruments and also changes the usage and transaction patterns of users which in turn are based on user perception. The study provides insight which can help in framing of actions to augment the use of Plastic Money (credit and debit cards) and Virtual Wallet Services in India.

The study aims to analyze the perception and preference of banking customers on transactions through bank branches vis-à-vis through Plastic Money and Virtual Wallet Services and suggest various measures on a variety of parameters for a unique country like India.

Demographic statistics on card usage is supplemented with additional information from different payment options like debit cards and virtual wallets to get an overview of the primary change drivers in payment industry.

The purpose of this research is to Study Usage of Plastic Money and Virtual Wallet in India. In order to comprehend this objective, the set of secondary objectives are framed to assess the level of awareness among the banking customers pertaining to the use of Plastic Money and its use and benefits along with the use of Virtual Wallet Services which includes the gadget; its use and benefits.

The review includes the assessment of the perception and preference of banking customers (both users and non-users of plastic money or virtual wallet services) on transactions through bank branches vis-à-vis through Plastic Money and Virtual Wallet Services.

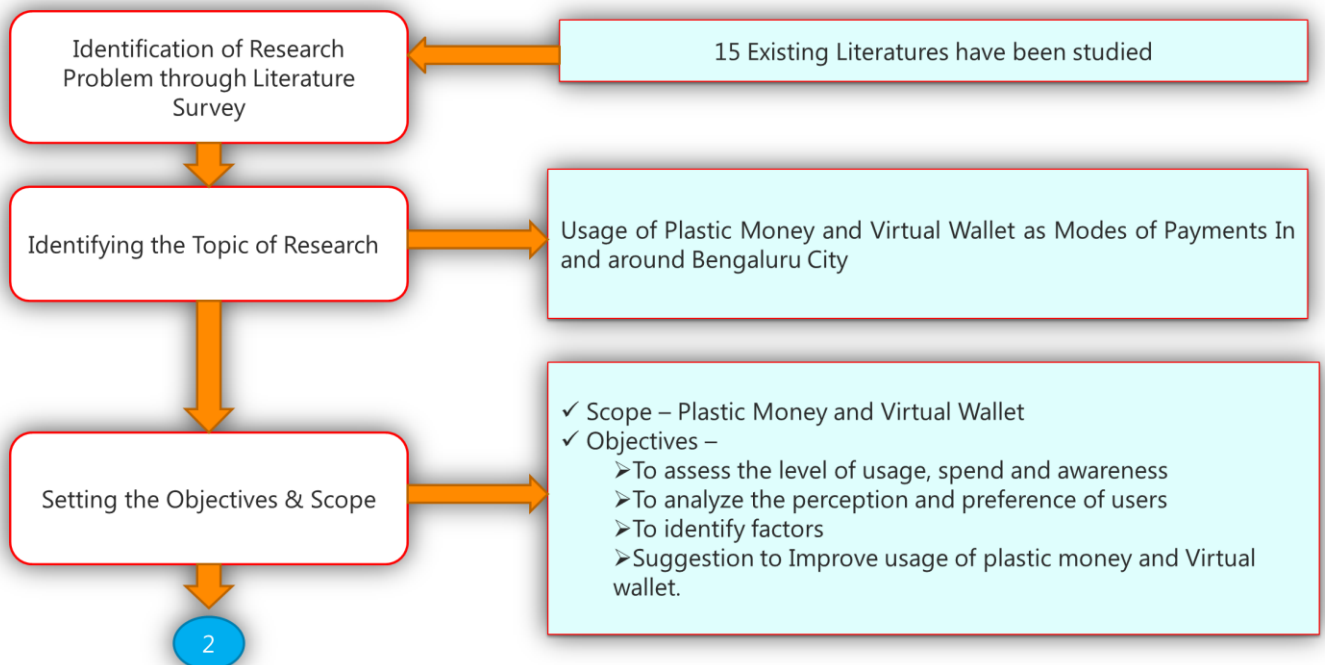
Efforts are also done to devise action to create awareness among the customers about all these modern banking gadgets and their usefulness. The actions also include ways to educate the customers in order to wipe out the wrong perception, if any, on plastic money and virtual wallet services. Finally, these

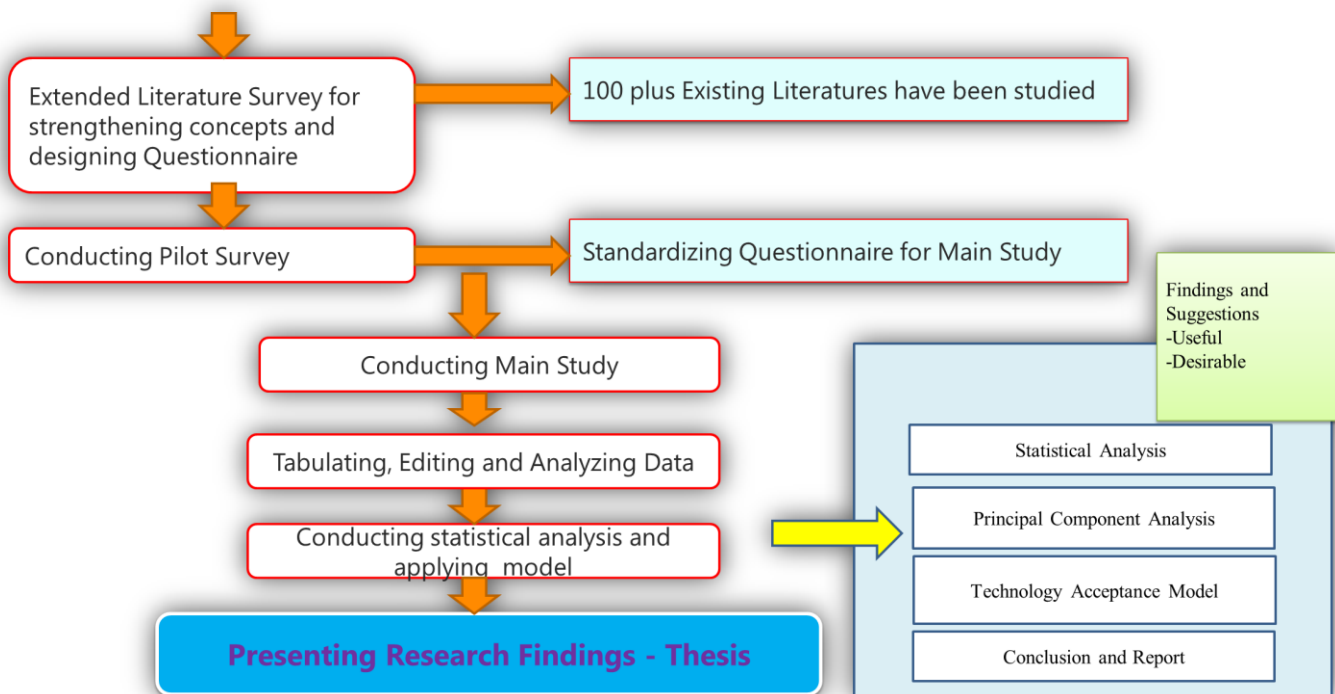
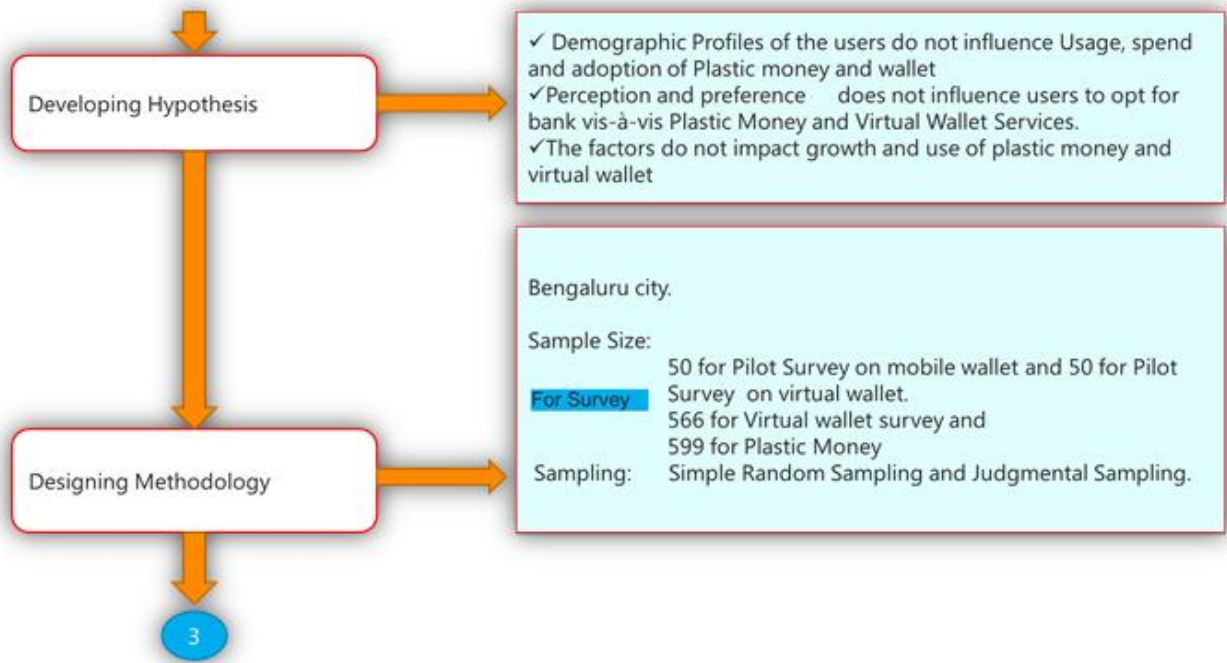
policies and actions should strengthen the security aspect involved in all such gadgets which is the main concern of the customers for using those gadgets.

## Research Design

The initial idea with this research was to bring out the message from the people which needed few iteration and in-depth analysis of the data collected during research. The outcome of the literature review was crystallized into set of queries for the survey. The survey itself was split with one survey questionnaire for mobile and the other for credit cards and debit cards. In this survey a great emphasis was given to a mix of object type and open ended queries to arrive at suitable conclusion.

The diagram below shows the methodology used during the survey to collect information from different sources and through questionnaire which is analyzed using ANOVA, Principal Component Analysis and Technology acceptance model TAM. Valuable ideas which are also confirmed and identified during the research are used to define actions, policies and suggestions.





## Statistical Analysis and Technology Acceptance Model

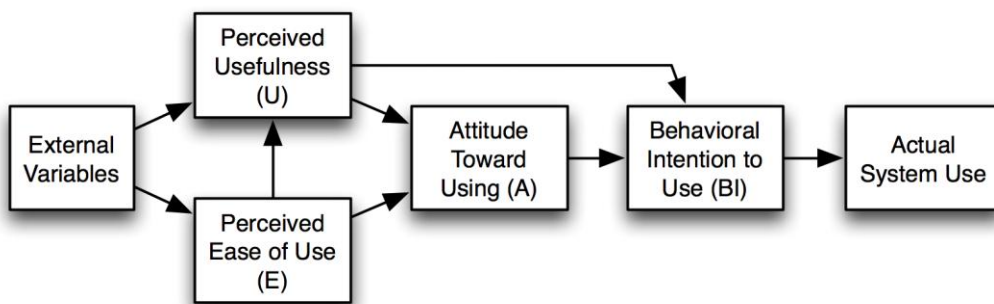
### Statistics

1. Descriptive statistics
2. Correlation
3. Chi-Square Test

4. F-test for two sample variance
5. Principal Component Analysis

During the survey, Technology Acceptance model along with few iteration during the survey was found to be useful to understand the subject and test out the hypothesis outlined during the research.

- Perceived ease of use
- Perceived usefulness



Technology Acceptance Model version one (Davis, Bagozzi & Warshaw 1989)

Principal component analysis is done to find the most contributing factor.

### **Problem Statement, Review of Literature and Research Gap:**

Perception and benefits of this technology associated with Plastic money and virtual wallets drive the usage and benefits for the users. Perception is influence by technology which is the key enabler for the proliferation of financial instruments. Technology also changes the usage and transaction patters of user. The study provides insight which can help in the framing of action, activities, policy and strategy to augment the use of Plastic Money (credit and debit cards) and Virtual Wallet Services in India.

In order to fulfill study on Plastic money and virtual wallet a set of secondary objectives are framed to assess the level of awareness among the banking customers pertaining to the use of Plastic Money and its use and benefits along with the use of Virtual Wallet Services. Study has been done with Specific Reference to

Bengaluru City and nearby areas to access the demographic factors like age, education, gender for both plastic money and virtual wallets and compare user preference for emerging payment modes like virtual wallets.

Various studies point out the scope of further research in various payment instruments. Current study appreciates the existence of multiple payment modes in modern age and a generic approach is preferred for the current landscape. As the payment industry is evolving rapidly with a great push from technology so Technological Acceptance model is used to analyze the impact of technology in the usage and adoption of payment instruments. The study focuses on debt balance in cards and credit instruments. Research approaches the uses with an open mind and uses a set of focused question and open ended query's. The use of various question patterns helps in generalizing which in turn gives a different approach to analyze the factors influencing the adoption of debit /credit cards and virtual wallet are expected to give a view of the system and highlight the intricate details of the payment industry.

Current study gives equal importance of both average spending as well as average frequency of use as there is lot of disparity in spending patterns in debit /credit cards and virtual wallets.

Three key points that came out of the pilot survey questionnaire indicate the following.

- The financial institutions have driven adoption, uses and perception of cards but a lot needs to be done. Companies to focus less on profitability and be driven by an urge to find the target customers. This would change the adoption patterns for plastic money and cards and the payment instruments would have reached a wider section of society if the focus was on solving the needs of the users.
- Earlier there was no incentive to adopt these electronic payment modes except few discounts and loyalty benefits which mostly were not adequate to spread the user base in the country.
- Cards and virtual wallets have a combined influence in the way electronic payments are made. Studying one aspect may not reveal user preferences as

plastic money and virtual wallets usage is based on convenience, security and perception factors.

On the basis of problem statement mentioned above. The study identifies the research gaps. Studied 100 plus existing literature including and Ph. D. theses that have been published. Apart from this, articles and other resources were used for literature review.

1. Comprehensive list of factors is not identified for plastic money and virtual wallet.
2. Non Users have not been extensively studied in Indian and suggestions have not been provided based on the most critical contributing factors.
3. Impact of Demographic variables and various factors on usage of plastic money and virtual wallet has not been prioritized by the researchers in Indian context.

### Objectives:

The objectives of this study are as follows:

1. To assess the level of usage, spend and awareness about features among the users pertaining to;
  1. Plastic Money
  2. Virtual Wallet Services
2. To analyze the perception and preference of user's transactions through bank branches vis-à-vis through Plastic Money and Virtual Wallet Services.
3. To identify, on the basis of analysis of perception, the factors that impact growth and use of plastic money and virtual wallet

### Hypotheses:

Category: Plastic Money	Category: Virtual Wallet
Significance Level 0.05	Significance Level 0.05
To assess the level of usage, spend and awareness about features among the users	To assess the level of usage, spend and awareness about features among the users
Hypothesis Statement	Hypothesis Statement
Variables: Gender	Variables: Gender
Hypothesis HP10: Plastic Money use is not influenced by gender.	Hypothesis HW1 <sub>0</sub> : Gender <u>has no influence</u> on how many times virtual wallet is used.

Hypothesis HP1a: Plastic Money use is influenced by gender.	Hypothesis HW1a: Gender <u>has influence</u> on how many times virtual wallet is used.
Hypothesis HP2-0: Spends of Plastic Money is not influenced by gender.	Hypothesis HW2-0: Spends of virtual wallet are not influenced by gender.
Hypothesis HP2a: Spends of Plastic Money is influenced by gender.	Hypothesis HW2a: Spends of virtual wallet is influenced by gender.
Hypothesis HP10: Awareness about features of Plastic Money is not influenced by gender.	Hypothesis HW10: Awareness about features of Plastic Money is not influenced by gender.
Hypothesis HP1a: Awareness about features of Plastic Money is influenced by gender.	Hypothesis HW1a: Awareness about features of virtual wallet is influenced by gender.
<b>Variables: Education</b>	<b>Variables: Education</b>
Hypothesis HP30: There <u>is no association</u> between education and high usage of card.	Hypothesis HW30: Education has <u>no influence</u> on the preference for particular type of wallet.
Hypothesis HP3a: There <u>is association</u> between education and high usage of card.	Hypothesis HW3a: Education <u>has influence</u> on the preference for particular type of wallet.
Hypothesis HP40: There is no association between education and Spends of card.	Hypothesis HW4-0: Spends of virtual wallet are not influenced by education.
Hypothesis HP4a: There is association between education and Spends of card.	Hypothesis HW4a: Spends of virtual wallet is influenced by education.
Hypothesis HP10: Awareness about features of Plastic Money is not influenced by education.	Hypothesis HW10: Awareness about features of Plastic Money is not influenced by education.
Hypothesis HP1a: Awareness about features of Plastic Money is influenced by education.	Hypothesis HW1a: Awareness about features of virtual wallet is influenced by education.
<b>Variables: Occupation</b>	<b>Variables: Occupation</b>
Hypothesis HP50: Plastic Money use is not influenced by occupation.	Hypothesis HW50: Occupation <u>has no influence</u> on how many times virtual wallet is used.
Hypothesis HP5a: Plastic Money use is influenced by occupation	Hypothesis HW5a: Occupation <u>has influence</u> on the preference for particular type of wallet.
Hypothesis HP60: There is no association between occupation and Spends of card.	Hypothesis HW6-0: Spends of virtual wallet are not influenced by occupation.
Hypothesis HP6a: There is association between occupation and Spends of card.	Hypothesis HW6a: Spends of virtual wallet is influenced by occupation.
Hypothesis HP10: Awareness about features of Plastic Money is not influenced by occupation.	Hypothesis HW10: Awareness about features of Plastic Money is not influenced by occupation.



Hypothesis HP1a: Awareness about features of Plastic Money is influenced by occupation.
<b>Variables: Age</b>
Hypothesis HP70: Plastic Money use is not influenced by age
Hypothesis HP7a: Plastic Money use is influenced by age
Hypothesis HP80: There is no association between age and Spends of card.
Hypothesis HP8a: There is association between age and Spends of card.
Hypothesis HP10: Awareness about features of Plastic Money is not influenced by age.
Hypothesis HP1a: Awareness about features of Plastic Money is influenced by age.
<b>Variables: Marital Status</b>
Hypothesis HP90: Plastic Money use is not influenced by marital status
Hypothesis HP9a: High plastic moneys use is influenced by marital status
Hypothesis HP100: There is no association between marital status and Spends of card.
Hypothesis HP10a: There is association between marital status and Spends of card.
Hypothesis HP10: Awareness about features of Plastic Money is not influenced by Marital Status
Hypothesis HP1a: Awareness about features of Plastic Money is influenced by Marital Status.
<b>Plastic Money</b>
Level 0.05
To analyze the perception and preference of user's transactions through bank branches vis-à-vis through Plastic Money and Virtual Wallet Services.

Hypothesis HW1a: Awareness about features of virtual wallet is influenced by occupation.
<b>Variables: Age</b>
Hypothesis HW7 <sub>0</sub> : Age <u>has no influence</u> on how many times virtual wallet is used.
Hypothesis HW7 <sub>a</sub> : Age <u>has influence</u> on how many times virtual wallet is used.
Hypothesis HW8-0: Spends of virtual wallet are not influenced by age.
Hypothesis HW8a: Spends of virtual wallet is influenced by age.
Hypothesis HW1 <sub>0</sub> : Awareness about features of Plastic Money is not influenced by age.
Hypothesis HW1a: Awareness about features of virtual wallet is influenced by age.
<b>Variables: Marital Status</b>
Hypothesis HW9 <sub>0</sub> : Marital Status <u>has no influence</u> on how many times virtual wallet is used.
Hypothesis HW9 <sub>a</sub> : Marital Status <u>has influence</u> on how many times virtual wallet is used.
Hypothesis HW10-0: Spends of virtual wallet are not influenced by Marital Status.
Hypothesis HW10a: Spends of virtual wallet is influenced by Marital Status.
Hypothesis HW1 <sub>0</sub> : Awareness about features of Plastic Money is not influenced by Marital Status
Hypothesis HW1a: Awareness about features of virtual wallet is influenced by Marital Status.
<b>Virtual Wallet</b>
Level 0.05
To analyze the perception and preference of user's transactions through bank branches vis-à-vis through Plastic Money and Virtual Wallet Services.

Hypothesis Statement
<b>Variables: Preference</b>
Hypothesis HP11 <sub>0</sub> : Banking Customers <u>do not prefer</u> Plastic Money to Physical Visit to Bank Branches
Hypothesis HP11 <sub>a</sub> : Banking Customers <u>prefer</u> Plastic Money to Physical Visit to Bank Branches

Hypothesis Statement
<b>Variables: Preference</b>
Hypothesis HW11 <sub>0</sub> : Banking Customers do not prefer Virtual Wallet to Physical Visit to Bank Branches
Hypothesis HW11 <sub>a</sub> : Banking Customers prefer Virtual Wallet to Physical Visit to Bank Branches

Plastic Money
Level 0.05
To identify, on the basis of analysis of perception, the factors that impact growth and use of plastic money and virtual wallet
Hypothesis Statement
<b>Variables: Security</b>
Hypothesis HP12 <sub>0</sub> : Level of Security is not responsible for customers not opting for Plastic Money
Hypothesis HP12 <sub>a</sub> : Level of Security is responsible for customers not opting for Plastic Money
<b>Variables: Education</b>
Hypothesis HP13 <sub>0</sub> : Amount of Surcharge does not influence customers not opting for Plastic Money
Hypothesis HP13 <sub>a</sub> : Amount of Surcharge influences customers not opting for Plastic Money
<b>Variables: Support</b>
Hypothesis HP14 <sub>0</sub> : Support of Banks does not influence customers not opting for Plastic Money
Hypothesis HP14 <sub>a</sub> : Support of Banks influences customers not opting for Plastic Money

Virtual Wallet
Level 0.05
To identify, on the basis of analysis of perception, the factors that impact growth and use of plastic money and virtual wallet
Hypothesis Statement
<b>Variables: Security</b>
Hypothesis HW12 <sub>0</sub> : Level of Security is not responsible for customers not opting for virtual Wallet
Hypothesis HW12 <sub>a</sub> : Level of Security is responsible for customers not opting for virtual wallet
<b>Variables: Education</b>
Hypothesis HW13 <sub>0</sub> : Amount of Surcharge does not influence customers not opting for Virtual Wallet
Hypothesis HW13 <sub>a</sub> : Amount of Surcharge influences customers not opting for virtual wallet
<b>Variables: Support</b>
Hypothesis HW14 <sub>0</sub> : Support of Banks does not influence customers not opting for virtual wallet
Hypothesis HW14 <sub>a</sub> : Support of Banks influences customers not opting for virtual wallet

## Methodology:

For impact analysis a holistic view has been taken to feel the needs and demands of the users and prospective users of plastic money and virtual wallets.

- ✓ Economic factors like Growth and Saving.
- ✓ Technical factors that determine use of these instruments.
- ✓ Demographic factors like age and how it affects the usage and adoption of cards.
- ✓ Perceptions factors like security, ease of use, convenience
- ✓ Education and awareness about the use of these instruments that affect the use.

Data was collected from both primary and secondary sources. Data on the use of plastic money and virtual wallet was done by two different questionnaires which are similar in nature and constitute the primary data source for this research. Pilot test was carried out using a set of questionnaire.

As two sets of survey are conducted so separate results are obtained for plastic money and virtual wallet technology. Both these data set are compared for demography, usefulness and other features.

Composition of sample	
Mobile wallet	566
Total Credit and debit Cards	
Surveyed and answered	
No. Of People who had Credit Card in survey	599
No. Of People who had Debit Card in survey	599
Non User	150 respondents

Table giving the composition of Sample in final Survey

- Sampling: Blend of Non-Random (Judgmental) and Random (Simple)

The data is drafted and tabulated on which the statistical analysis is carried out. Inferences and conclusions are arrived using the following statistical analysis tools like.

1. Descriptive statistics

2. Correlation
3. Chi-Square Test
4. F-test for two sample variance
5. Principal Component Analysis

#### MODEL USED

1. Technology Acceptance Model

#### Findings:

Awareness, cost, demography, features, perception, preference, security, suggestion and usage have to be analyzed in depth. Important findings are.

Objective 1.To assess the level of usage, spend and awareness about features among the users pertaining to plastic money and virtual wallet
<b>Usage</b>
On average people use the card 2 times every week for debit and credit cards.
Five of Six people including both male and female used one card only.
Respondents have used the card for medical bill payments and followed by shopping.
Around 40 percent of users shared the card with someone like parents, spouse Etc
Transfer Money, Mobile recharge and Banking transactions are top three uses of Mobile wallet as stated by respondents.
Average money spent per week on mobile wallet and cards differ significantly.
There is much more predictable and consistent spend for the mobile wallet users
<b>Spend</b>
The average spend is mobile around Rs.1000 (currently).
Transaction values shows that mobile Wallet has a far greater acceptance in user and a higher usage and adoption within a short span of last 5 years.
<b>Awareness</b>
Above fifty percent people not fully aware of the benefits/features of card
Awareness on virtual wallet is similar between married and single people. Self-employed people have high level of awareness as compared to salary people.
Awareness of virtual wallet features is high amount low income user.

Objective 2.To analyze the perception and preference of users transactions through bank branches vis-à-vis through Plastic Money and Virtual Wallet Services.
<b>Preference</b>
While there is a preference for cards people show slightly high preference for credit card at 34 percent over all other cards, number of people who has both credit and debit card is 33 percent as well as only Debit card seems to be significant at 33 percentages.
Respondents have been using the card for 5 or more years on an average showing high loyalty with cards.
People have a similar usage patterns for virtual wallet and plastic money.
Respondents to use the same card and retain the bank accounts they have.
Saving for future is one of the primary financial goal for respondents.
People buy more when they get discount coupons.
There is equally likely chance of using the mobile wallet with or without discount coupons.
Education does not seem to have changed the preference for virtual wallet.
<b>Perception</b>
Users using both debit and credit cards and are likely to be less satisfied than when using either debit card or credit card.
Card generally not used for loan payments
Low concern over credit rating.
Online transactions, Long association with bank, service are the top three reasons why the respondents keep using the same bank.
Objective 3.To identify, on the basis of analysis of perception, the factors that impact growth and use of plastic money and virtual wallet
<b>Safety</b>
Low safety awareness.
Need more safety features.
Fifty percent chance of always carrying card and high chance of carrying one card.
People who are worried of security do not carry the card. Young and a section of mid age people are more confident in carrying.
Users have shared the card(s) with relatives.
<b>Charges / Surcharge</b>

Undesirable and High. For both debit and credit cards more than two third of the respondents think that the charges on the cards are undesirable and high.
The spending habits of the set of users using wallet and plastic money does not show huge variation with the increase in salary.
As seen 54 percent males and 45 percent of female respondents feel they are stuck with the bank.
<b>Support</b>
Equal likely chances of user being neither very satisfied nor very sad with the cards.
For mobile wallet accessibility, open wallet and ease of payment seems to have the greatest influencing factors and would help in mobile adoption rates.
Mobile Wallet reload facility satisfaction is divided almost equally.

### Reason for not having a card (Non users)

Category: Non Users		
Action	Reason for not having cards (150 respondents)	
No	Reason	Percentage
1	Very young / Not earning	6
2	Not requires as uses family member's cards or cash	12
3	Do not have document for KYC/ID	16
4	Low income	5
5	Peace of mind and no need to maintain credit score or charges on cards	18
6	Financing purchases can lead to bad spending or over spending	9
7	Others/ Unanswered	34

### Conclusion:

On the basis of the findings of the study, the bankers and banking stakeholders involved in formulating objectives, policies and strategies will gain from the research. Stakeholder will be able to make informed decision that leads to better awareness of banking products, highlights the need for education and increase the usage of debit/credit cards and virtual wallets.

The findings of this research will help the new startups in the mobile banking space and help them to provide value added services and features. The usage, spend and awareness on plastic money and virtual wallets is accessed. Perception and preference of banking customers (both users and non-users of plastic money or virtual wallet services) on transactions through bank branches vis-à-vis through Plastic Money and Virtual Wallet Services is studied.

Factors that insist the customers not to use the Modern banking gadgets like virtual wallet and plastic money were studied under the following categories.

1. Economic factors like Growth and Savings
2. Technical factors covering direct and indirect influencers
3. Demographic Factors
4. Perceptions factors like security, ease of use and convenience
5. Education and Awareness Factors

Based on the analysis of perception, the following key actions are identified.

1. Create **awareness** among the customers about all these modern banking gadgets and their usefulness.
2. **Educate** the customers in order to wipe out the wrong perception, if any, on plastic money and virtual wallet services.
3. Strengthen the **security** aspect involved in all such gadgets which is the main concern of the customers for using those gadgets.

**Create awareness among the customers about all these modern banking gadgets and their usefulness.**

- ✓ Teenage group can be educated to use the wallet for frequent regular usage and also for high value transaction.
- ✓ Average usage frequency plastic money is low when compared with mobile wallet and average usage of Plastic Money can be increased.
- ✓ Increase the awareness for various features
- ✓ Significant portion of the work has to go in increasing the awareness across all groups.
- ✓ Loading mobile wallets is difficult for some people. Needs education.
- ✓ Emergence of virtual wallet over plastic money and more features needed

**Educate the customers in order to wipe out the wrong perception, if any, on plastic money and virtual wallet services.**

- ✓ Educate the customer that even mobile wallet can be used for high value transaction
- ✓ Carrying special education classes for 70 plus age group.
- ✓ Education and profession have influence on plastic money usage.. For virtual wallet Gender and profession seems to have a significant impact on spending habits. Demonetization strategy if any must be such that all the groups across all demography must be comfortable in using the card.
- ✓ Frequent usage of card, higher education and particular occupation would have a tendency to increase the card usage and to also likely to process multiple cards. Education is required to prevent wrong usage of cards.
- ✓ Awareness about different types of wallets and their features would help eliminate search caps and also remove the wrong perception that all wallets are same.
- ✓ Cards and wallets are perceived useful for mainly shopping which is not true and there are definite financial benefits in other usage as well.

**Strengthen the security aspect involved in all such gadgets which is the main concern of the customers for using those gadgets**

- ✓ Additional features can be incorporated to address the concerns of customers.
- ✓ People who are worried about security are less likely to carry about their card to various places.
- ✓ Plastic wallet space that encourage people to use a variety of security but the thing is absent in mobile wallet

**Benefits of Research Findings**

- ✓ On the basis of the findings of the study, the stakeholders would be made aware of the usage and awareness factors.
- ✓ The findings of this research will help in shaping new policies and practices for better perception management.



- ✓ In fact, this study will help in creating new plans and strategies based on suggestions provided in the study.
- ✓ The relevance of this Project can be extended to other financial instruments.

### **Scope for Future Research:**

- 1) Cards and wallets payment features are increasingly using additional devices, tags, QR code readers and NFC communication which are clearly helping in the usage and proliferation of electronic payments. Future research can be done to access the usefulness and detect usage issues around these extensions.
- 2) Similar research can be extended to compare two countries and a wide range of factors can be compared.
- 3) Focused research can be done to find out the core differences post demonetization.
- 4) Gap analysis can be done in wallet spending patterns for next few years to analyze the differences in usage patterns with rapid technological innovation in payment industry each year.

### **Contribution to Management**

Unfolding the reasons for using or not using Plastic Money and Virtual Wallets as modes of payments, the finding of this Study will help in popularizing the digital modes of payment, off late which has been the slogan of the Indian economy. It will also help the organizations dealing with the Plastic Money and Virtual Wallets to strategize aptly for stretching the incidence and depth of the usage of digital modes of payments. This study takes a look at the impact of various Management Theories like Technology Acceptance model (TAM) and also does various kinds of analyses to arrive at summary. It also shows how the basic functions and practices of Management as well as the role of the manager and approaches to Management have contributed to the practice in the Banking industry.