Mukesh Patel School of Technology Management & Engineering

M-PESA SERVICES IN INDIA

A Research Project submitted in partial fulfilment

of the requirements for the degree of

MBA (Tech)

In

Electronics and Telecommunication

BY

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Under Supervision

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2016

DECLARATION

We hereby declare that the research project titled, "M-PESA Services in India", submitted by us is based on original work carried out by us. We certify that it has not been submitted anywhere else. We further declare that Mukesh Patel School of Technology Management and Engineering- NMIMS (deemed-to-be-university) will have the copyright on the project report submitted by us to the college (MPSTME).

Thanking You

Amandeep Singh Chatrath

Shreyans Gurjar

Ayush Shah

Medha Jain

Acknowledgement

Any endeavor can be successful only with advice and support of well-wishers.

We are grateful to our faculty mentor Prof. Alaknanda Lonare for her profound encouragement, guidance and support in helping us take this research.

We also express our deepest gratitude to Vodafone store manager who helped us in filling up the questionnaire and collecting data.

We take this opportunity to express our gratitude and appreciation to all those who helped us and whose work we referred during this period.

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Abstract

M-Pesa is operated by Vodacom that is mobile network operator (MNO) which is not classed as deposit-taking institutions, such as a bank. M-Pesa customers can deposit their money as well as withdraw it from a network of agents that includes airtime resellers and retail outlets acting as banking agents. The service enables its users to:

- Deposit and withdraw money
- Transfer money to other users and non-users
- Pay bills
- Purchase airtime
- Transfer money between the services

After Huge success in Kenya, M-Pesa launched in India by Vodafone in the year 2010. Since then Vodafone was not able to make an impact with M-Pesa in India. There are many areas where M-Pesa has not done leading to limited users.

So in the research project, taking into consideration all the parameters which affect the success of M-Pesa services in India. We have given some suggestions so that they can improve on their parameters where they are lacking and are able to make an impact in India as they were able to do in Kenya. SPSS software the analysis was done.

1. Introduction

1.1 Background study

M-Pesa is operated by Vodacom that is mobile network operator (MNO) which is not classed as deposit-taking institutions, such as a bank. M-Pesa customers can deposit their money as well as withdraw it from a network of agents that includes airtime resellers and retail outlets acting as banking agents.

After Huge success in Kenya, M-Pesa launched in India by Vodafone in the year 2010. Since then Vodafone was not able to make an impact with M-Pesa in India. There are many areas where M-Pesa has not done leading to limited users.

1.2 GAP

M-Pesa is a USSD-based technology that helps people to send and receive money over the mobile phone and also apart from that it also helps people in making utility bill payments, and recharging mobile and DTH accounts. It is a SMS based service which does not require internet.

It is a unique mobile payment service which is mobile-based money transfer and microfinancing service in the sense that it is made available by Vodafone as a semi-closed wallet as well as an open mobile wallet through its wholly owned subsidiary Vodafone M-Pesa Limited in a partnership with ICICI bank. Due to this, M-Pesa also supports cash withdrawal or redemption from the users. VMPL has the required RBI authorization to set up as well as operate a payment system in India.

This app can also be used for other mobile wallet functions like online prepaid recharge, postpaid recharge (only Vodafone), DTH recharge (for Dish TV, Airtel, Tata Sky, Big TV, Sun Direct and Videocon), utility bill payment, broadband internet recharge, quick money transfer to any bank account or M-Pesa wallet, online shopping, etc.

Within a year of M-Pesa's launch, Vodafone completed its pan-India rollout. Today, it has 80,000 outlets or banking correspondents, 60 per cent of which are in rural India, and all of them have the ability to cash out. Even though M-Pesa has other services like utility bill payments and recharge options, money transfer accounts for 60 per cent of the business.

To Vodafone's advantage, there is the limited banking infrastructure in the country and the migrant workers' need to send money home in a secure manner. What helps is that Vodafone has a distribution network that spans 1.7 million touch points, and deep penetration in rural India - of its 170 million users, 53 percent are in rural areas. But M-Pesa offers no reward points at all, while Airtel Money has only a few.

Vodafone’s M-Pesa has partnered with ICICI bank that enables ICICI bank account holders to avail withdrawal facility from their wallets by visiting nearby ATM, branch or M-Pesa outlet. From his or her M-Pesa account, a person can transfer money to the bank account of any person. However, if that person sends money in another M-Pesa account, the receiver should have an

account with ICICI bank to withdraw money from his or her digital wallet. Such a system deprives the unbanked population from enjoying the privileges of mobile technology, which has remained confined only to urban areas.

Money Transfer is the key service here where a customer would purchase a recharge card in one part of the country, inform a retailer in another part of the country of the prepaid recharge card details, and the retailer would give cash to the recipient in exchange for a small fee. (RURAL)

1.3 Research Problem

The research problem is stated as follows:

How should M-Pesa be more successful in India?

1.4 Research Objectives

The objectives of the research can be stated as:

- To identify customer perception about M-Pesa services in India.
- To assess the effectiveness of the marketing/communication strategies employed by M-Pesa.
- To determine the factors which will lead to increase in M-Pesa's customer base.
- To explore the extent of competition for this service in the Indian market.

2. Review of Related Literature

The main objective of M-Pesa was to provide mobile money transfer. It was first launched by Vodafone subsidiary that is Safaricom in Kenya in 2007 (Sen, 2014). It was considered to be successful mobile phone based financial service in the developing countries by 2010. It became the world leader in the adoption of this platform in the African continent (How M-Pesa is driving Africa's cashless future). Within five years of its launch, M-Pesa had 15 million customers, equivalent to 37.5% of the country's population, and was processing $10 billion annually. (Lal & Sachdev, 2015)

In the year 2010, Vodafone introduced the platform in India as a pilot project in Rajasthan and soon launched in April, 2013. It was seen that there was a slow start considering the fact that only 1.5 million users of Vodafone's 170 million subscribers used this service. (Sen, 2014)

To give its customers an exceptional mobile banking experience, Vodafone tied up with HDFC Bank as well as with ICICI bank. Vodafone has about 173 million users signed up for its mobile service in India. However, M-Pesa has yet to make that significant of an impact with just 3.1 million registered customers and only 378,000 active users reported in March 2015, which means that not even 1% of the Vodafone users, in India, use this service. (Roberts, 2015)

It was initially offered in Kolkata, West Bengal, Bihar and Jharkhand through over 8300 authorized agents. Then in April, 2014, M-Pesa completed pan-India rollout by launching in Andhra Pradesh. (SN, 2014)

In order to open an M-Pesa account in India, an applicant must first present the necessary identification documentation and sign two agreements: one with Vodafone and the other with ICICI Bank. Once these documents have been submitted, ICICI Bank verifies the applicant to be Know Your Customer (KYC) compliant. Users need to pay a minimum initial amount of Rs.200 of which Rs.100 is deducted as a one-time account activation fee and the remaining is credited to the users account. The customer's M-Pesa account then becomes a semiclosed open loop money wallet, from which the customer can make deposits, withdrawals, or transfers. At the back end, ICICI Bank opens a savings account for the M-Pesa customer who uses the Vodafone interface for all transactions. As per RBI regulations, the maximum balance a customer can hold in her M-Pesa account at any given time is Rs. 10,000. (Nikhil Joseph and Benjamin D. Mazzotta, 2014)

M-Pesa tied up with the National Rural Health Mission (MRHM) and the MNREGA (Mahatma Gandhi National Rural Employment Guarantee Act) to disburse money to the various government scheme beneficiaries. Although M-Pesa does not pay interests on deposits, and does not make loans, it can usefully be thought of as a bank that provides transaction services. M-Pesa provided many services including the facility to transfer money to any bank account or mobile number in just a few steps, M-Pesa can also be used to recharge Vodafone prepaid accounts very easily, Setup box can be recharged at any time of the day from any corner of the world, cash can be withdrawn from your M-Pesa account easily anytime and also Vodafone postpaid bill can be paid directly from the mobile phone and one needed to use any of these services was just a registered M-Pesa account and an internet connection. (M-Pesa, n.d.)

The primary reason of M-Pesa not been so successful in India is due to stringent banking regulations and marketing models aimed at acquiring the predominantly urban and technologically advanced users. Despite the immense potential of mobile money in promoting financial inclusion in India, very little efforts have been made by the RBI and banks to promote the model among the prospective low-income clients The central banking regulatory body in India, Reserve Bank of India (RBI), views M-Pesa as a banking service rather than a money transfer client and has set regulation standard as such. Therefore if any user wishes to register for the service they have to go through with the hassle of signing up as if opening a bank account, which is quite a time consuming process. In contrast, in Kenya the process is much smoother and does not require any documentation except for an ID card or a passport, making it very convenient. Additionally, the transactions need to be conducted on a phone via an internet connection, which is not only a relatively expensive service but also requires a basic know-how about the internet technology. (Roberts, 2015)

The government has been a major client in successful models of mobile banking. Telenor's Easy paisa mobile banking service in Pakistan has partnered with the Pakistani government. The

government utilizes the service to disburse salary along with income and educational support stipends. Similarly, in Kenya, the government is a stakeholder in the sense that it uses M-Pesa to disburse salary. Disbursement of salary and funds using mobile banking makes it easier for both parties as the transaction is done instantly, electronically, with no paper or legwork. But in India, the government is not the client. Apart from this, most mobile wallets are do not have any registration fees and also provide additional discounts and cashbacks, unlike M-Pesa which has a Rs.100 registration charge and also charges for every transaction. (Roberts, 2015)

Looking at the current scenario, roughly 40% of India's population do not use any type of banking service. Therefore it leaves a huge scope for mobile banking to appeal to. There are many rural region in the country whch are generally the main target of mobile banking services. So Vodafone can look forward to expand and this is the main reason why it has pressed on with expansion of M-Pesa even though it has not yet been as fruitful as the company hoped. (Roberts, 2015)

In India, M-Payment is done through SMS, mobile web applications and direct mobile billing systems. There is a need to have end to end security to the system. For the security reason information should be encrypted end to end in the transactions. mPIN is used for authentication in mobile applications. The security should be given through username, password and mPIN so that it cannot be beaked. Security to the information should be given when it is transferred from end to end in the system. Biometric identity with unique identification number for the users of the mobile commerce application is another approach to achieve transaction security. (Deshmukh & Naware) As the population of India is unbanked and also economically poor. The M-Payment systems should be developed such that they compatible for not only high configurations mobile phones but they are also for low configuration mobile phones so that poor population can also use the M-Payment applications. (Deshmukh & Naware)

In India, people use different languages. So to overcome this issue there should be an option to select language for transactions in the M-Payment systems in India. Awareness programs should be organized for M-Payment systems by bank sectors to give guidelines to the customers. M-Payment systems in India are limited to Indian Currency only. In M-Payment systems currency should be transformed from one type of currency into another under the rules and regulations of RBI. (Deshmukh & Naware)

Besides Vodafone there are other players such as Airtel Money, Tata DOCOMO of Mobile Wallet Payment System has a licensed through its wholly owned subsidiary. Idea Cellular received a prepaid mobile wallet license for five years in December 2013 and they also made a partnership with Axis Bank for the mobile money transfer services. Reliance Jio who received a pan-India unified license also got prepaid payment instrument called 'Jio Money' in November 2013. (SN, 2014)

3. Research Methodology

3.1 Sources of Data

The data for accomplishing this research was collected from primary sources. The primary data was collected by the means of questionnaires with respondents as the M-Pesa users and the information given by them was directly recorded.

3.2 Sampling Procedures

Quantitative Analysis has been used for our Research Project as the generated data is transformed into useable statistics. It quantifies attitudes, opinions, behaviors, and other defined variables – and results are generalized from the selected sample population. Measurable data is used to formulate facts and understand patterns in research. The data collection methods includes paper surveys, face-to-face conversations, and systematic observations.

Sample design

A Sample Design is a definite plan for obtaining a sample from a given population. It refers to the technique to the procedure adopted in selecting items for the sampling designs are as below:

- Sample size:
  The substantial portions of the M-Pesa users that are sampled to achieve reliable result are 54.
- Universe:
  M-Pesa users of India
- Sampling method:
  Probability sampling method

3.3 Data Collection Method

The data was gathered in form of questionnaire where the respondents were the M-Pesa users. The questionnaire was filled after going to the Vodafone stores. Therefore, the data of 54 M-Pesa users was obtained.

3.4 Statistical Tests

Descriptive Analysis:

Descriptive analysis is the foremost analysis that is performed to describe relevant aspects and detailed information for each variable.

Quantitative Analysis:

In the quantitative analysis, first Reliability test was done in which Cronbach's Alpha value was taken into consideration. Then we did factor analysis in which we found out most important variables. After this, we found out correlation matrix in which we checked the relation between important variables and the success of M-Pesa. Lastly in moderator analysis, we compared the two

regression analysis in order to see the effect of moderating variable found the effect of the moderating variable on success of M-Pesa.

Tool for conducting the Analysis:

The tool used for conducting the tests was Statistical Package for the Social Sciences (SPSS).

3.5 Variables

Dependent Variable:

M-Pesa's Success in India

Finding out the factors which will lead to M-Pesa's success is the problem statement of our research. Thus, computing factors for success is our aim of conducting this study making "Success" as our dependent variable.

Other Variables:

1. **Better App**
    a. Interface
    b. Speed
    c. Technology

Improving the quality of the app will increase the customer satisfaction which will in turn lead to success of the app.

2. **Marketing Efforts**
    a. Advertisements
    b. Hoardings
    c. Tagline
    d. Promotional tools
    e. Logo
    f. Positioning
    g. Targeting

Marketing efforts will make the app more visible to the people which will in turn lead to success of the app.

3. **Associations**
    a. Banks
    b. Government
    c. Insurance companies
    d. Commercial Entity
        i. Companies
        ii. New start-ups

More tie-ups with the banks will give more options to the M-Pesa users which will increase the customer base which will in turn lead to success of the app.

4. **Better Services**

a. Online Shopping
b. Brick/Mortar shops
c. Movie Tickets
d. Cab Services
e. DTH payments
f. Train tickets

Improving the services of the app will increase the customer satisfaction which will in turn lead to success of the app.

5. Reward Points

a. Cashbacks
b. Deals & Discounts
c. Free gifts & top-ups
d. Loyalty points

They will act as a contingent benefit which will lead to customer loyalty and retention.

6. Safety and Security

It will give confidence to the customer which will lead to more usage of the app.

3.6 Theoretical Framework & Hypothesis

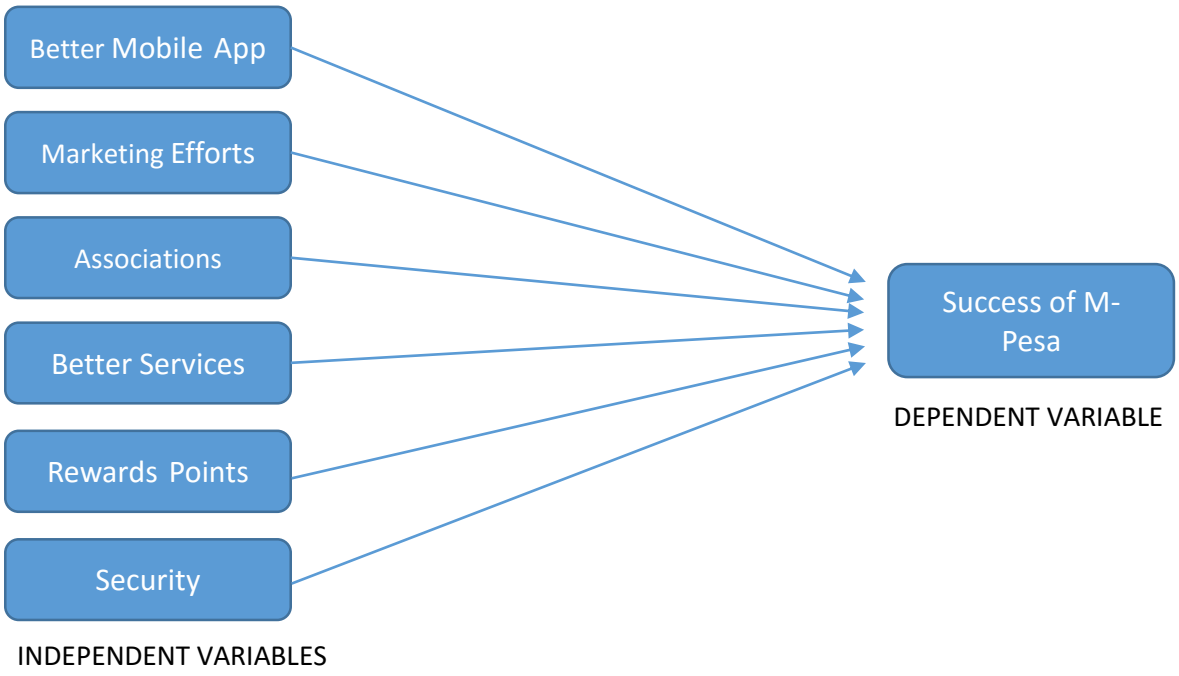


Figure 1: Theoretical Framework 1

Figure 5 shows the theoretical framework 1 of the study. It can be seen that there are six factors or variables having direct relationship with the success of M-Pesa. Better mobile Application, Marketing efforts, Associations, Better services, Reward points and Security are independent variables.

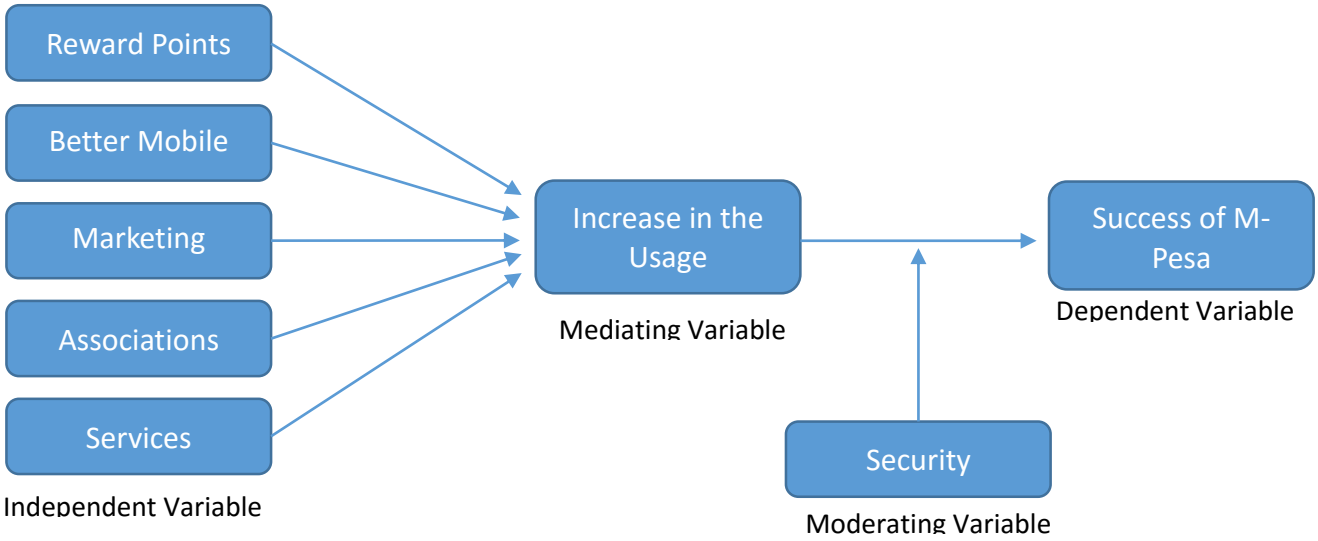


Figure 2: Theoretical Framework 2

Figure 6 shows the theoretical framework 2 of the study. Reward points, Better mobile Application, Marketing efforts, Associations, Better services are independent variables. Increase in the usage of M-Pesa services have mediating factors related to it and security is considered as the moderating variable in this framework. Finally, success of M-Pesa in India is considered as dependent variable.

Hypothesis 1:

H_{01}: A better mobile app is not related to usage of M-Pesa.
H_{11}: A better mobile app will lead to increase in usage of M-Pesa.

Hypothesis 2:

H_{01}: An increase in the marketing efforts is not related to usage of M-Pesa.
H_{11}: An increase in the marketing efforts will lead to increase in usage of M-Pesa.

Hypothesis 3:

H_{01}: More number of associations, partnerships is not related to usage of M-Pesa.
H_{11}: More number of associations, partnerships will lead to increase in usage of M-Pesa.

Hypothesis 4:

H_{01}: Improving the services is not related to usage of M-Pesa.
H_{11}: Improving the services will lead to increase in usage of M-Pesa.

Hypothesis 5:

H_{01}: Providing more reward points is not related to usage of M-Pesa.
H_{11}: Providing more reward points will lead to increase in usage of M-Pesa.

Hypothesis 6:

H_{01}: Better safety and security features is not related to usage of M-Pesa.
H_{11}: Better safety and security features will lead to increase in usage of M-Pesa.

Hypothesis 7:

H_{01}: An increase in usage is not related to success of M-Pesa.
H_{11}: An increase in usage will lead to success of M-Pesa.

Hypothesis 8:

H_{01}: There is no relation between the security the success of M-Pesa.
H_{11}: Higher the security, higher will be the success of M-Pesa.

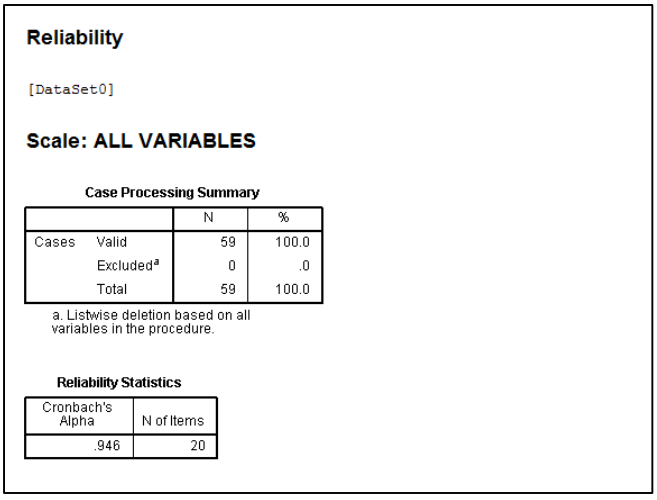
4. Analysis and Results

4.1 Cronbach Alpha test/Reliability Test

Cronbach's alpha is the most common measure of internal consistency ("reliability"). It is most commonly used when you have multiple Likert questions in a survey/questionnaire that form a scale and you wish to determine if the scale is reliable.

Total Variables Considered for reliability test are 20 which are as follows:

1. Interface
2. Speed
3. Discounts
4. Cashbacks
5. Government Association
6. E-Commerce Association
7. Eminent Investors Association
8. More Banks Association
9. Advertisements
10. Hoardings
11. Catchy Tagline
12. Appealing Logo
13. Able to pay on Online Shopping Sites
14. Able to pay Cab Services via wallet
15. Able to pay Movie Tickets via wallet
16. Able to pay train tickets via wallet
17. Able to pay DTH services via wallet
18. Able to pay at Brick/Mortar Shops
19. Security
20. Success of the wallet



Reliability

[DataSet0]

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	59	100.0
	Excluded[a]	0	.0
	Total	59	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.946	20

Figure 3: Screenshot of Reliability test

From the SPSS software after doing the reliability test, we found out that the Cronbach's Alpha value comes out to be 0.946 which indicates that the internal consistency is high as we can see in figure 7.

4.2 FACTOR ANALYSIS

Factor analysis is a method of data reduction. It does this by seeking underlying unobservable (latent) variables that are reflected in the observed variables (manifest variables). There are many different methods that can be used to conduct a factor analysis. There are also many different types of rotations that can be done after the initial extraction of factors, including orthogonal rotations, such as varimax and equimax, which impose the restriction that the factors cannot be correlated, and oblique rotations, such as promax, which allow the factors to be correlated with one another. We also need to determine the number of factors that you want to extract.

A. KMO and Barlett's Test

a) **Kaiser-Meyer-Olkin Measure of Sampling Adequacy** - This measure varies between 0 and 1, and values closer to 1 are better. A value of .6 is a suggested minimum.
b) **Bartlett's Test of Sphericity** - This tests the null hypothesis that the correlation matrix is an identity matrix. An identity matrix is matrix in which all of the diagonal elements are 1 and all off diagonal elements are 0. We reject this null hypothesis.

Taken together, these tests provide a minimum standard which should be passed before a factor analysis (or a principal components analysis) should be conducted

B. Communalities

This is the proportion of each variable's variance that can be explained by the factors (e.g., the underlying latent continua). It is also noted as h^2 and can be defined as the sum of squared factor loadings for the variables.

- **Extraction** - The values in this column indicate the proportion of each variable's variance that can be explained by the retained factors. Variables with high values are well represented in the common factor space, while variables with low values are not well represented.

C. Total Variance Explained

Cumulative Percentage - This column contains the cumulative percentage of variance accounted for by the current and all preceding factors. For example, the third row shows a value of 68.313. This means that the first three factors together account for 68.313% of the total variance.

Extraction Sums of Squared Loadings - The number of rows in this panel of the table correspond to the number of factors retained. The values in this panel of the table are calculated based on the common variance. The values in this panel of the table will always be lower than the values in the left panel of the table, because they are based on the common variance, which is always smaller than the total variance.

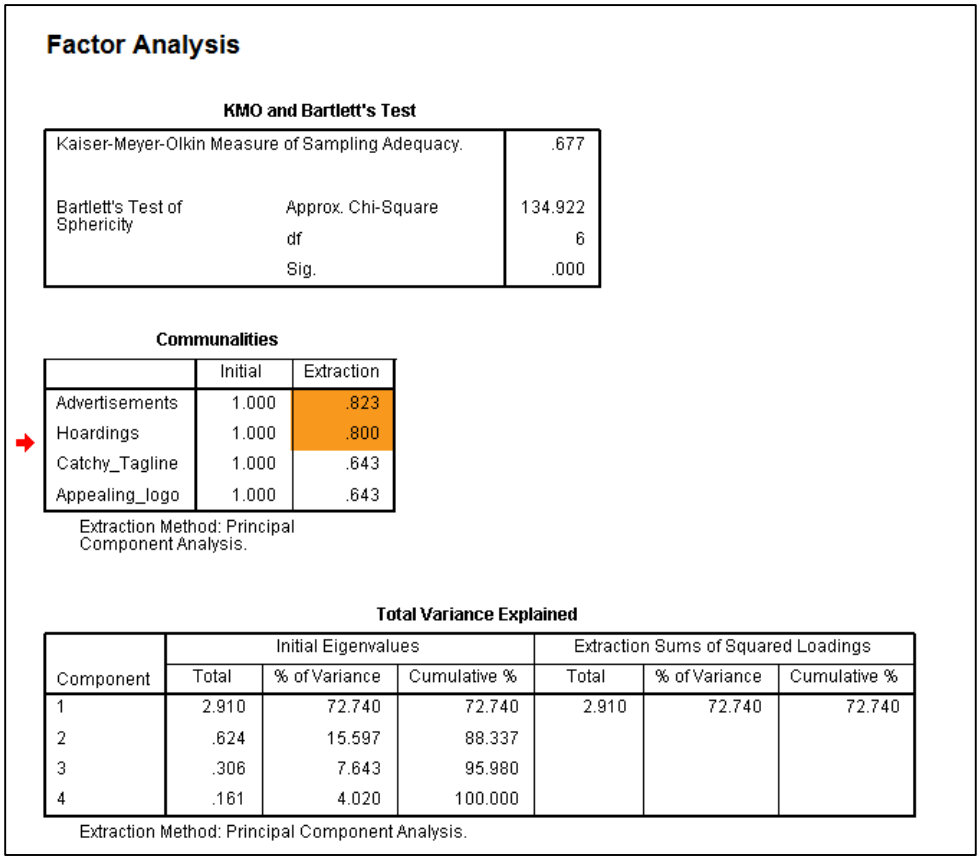
D. Scree Plot

The scree plot graphs the eigenvalue against the factor number. We have chosen the Eigen value as 1.

We found the most important variables corresponding to the 5 independent variables:

1. Better Mobile App
   Interface and Speed both are important variables accounting for the better mobile App.

2. Marketing Efforts
   As seen, the Advertisement and Hoarding have high Communality value of 0.823 and 0.800 respectively and thus considered as important variables accounting for the "Marketing Efforts" independent variable.



Factor Analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.677
Bartlett's Test of Sphericity	Approx. Chi-Square	134.922
	df	6
	Sig.	.000

Communalities

	Initial	Extraction
Advertisements	1.000	.823
Hoardings	1.000	.800
Catchy_Tagline	1.000	.643
Appealing_logo	1.000	.643

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.910	72.740	72.740	2.910	72.740	72.740
2	.624	15.597	88.337			
3	.306	7.643	95.980			
4	.161	4.020	100.000			

Extraction Method: Principal Component Analysis.

Figure 4: Factor Analysis of Marketing Efforts

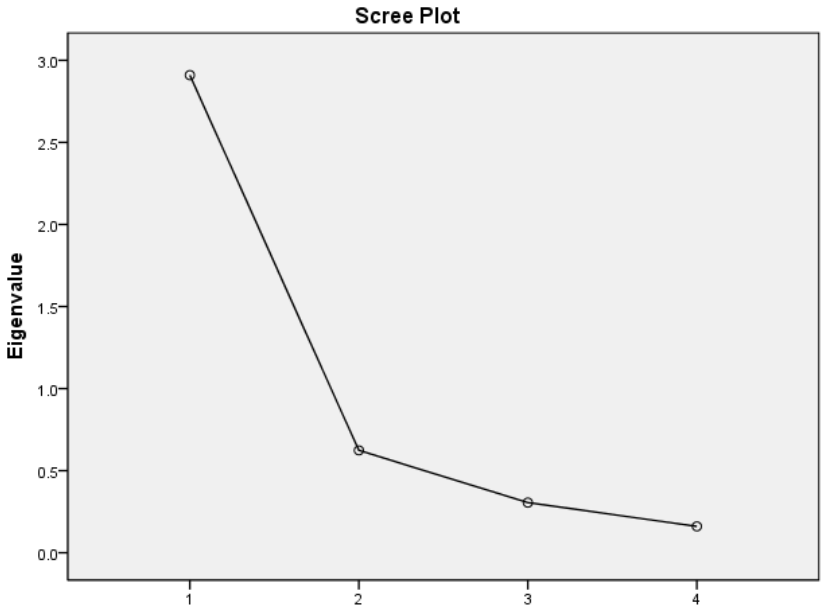


Figure 5: Graph of marketing efforts

3. Associations:
   As we can see, more association with the banks is giving the highest communality value, we select it as the most important factor accounting for more associations.

Factor Analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.649
Bartlett's Test of Sphericity	Approx. Chi-Square	74.094
	df	6
	Sig.	.000

Communalities

	Initial	Extraction
Government	1.000	.555
Ecommerce	1.000	.584
Eminent_Investors	1.000	.586
More_Banks	1.000	.694

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.419	60.466	60.466	2.419	60.466	60.466
2	.832	20.789	81.255			
3	.468	11.699	92.954			
4	.282	7.046	100.000			

Extraction Method: Principal Component Analysis.

Figure 6: Factor analysis of Associations

4. Reward Points
   Discounts and Cashbacks are both important factors which account for reward points.

5. Services
   As seen, the ability to pay on online shopping sites has the highest value of communality followed by ability to pay cab services and movie tickets via the mobile wallet.

Factor Analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.831
Bartlett's Test of Sphericity	Approx. Chi-Square	262.304
	df	15
	Sig.	.000

Communalities

	Initial	Extraction
Online_shopping_sites	1.000	.776
Cab_Services	1.000	.735
Movie_tickets	1.000	.742
Train_Tickets	1.000	.686
DTH_Payments	1.000	.696
Brick_Mortar_Shops	1.000	.565

Extraction Method: Principal Component Analysis.

Figure 7: Factor analysis of Services

Figure 8: Graph of services

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.199	69.979	69.979	4.199	69.979	69.979
2	.756	12.596	82.575			
3	.423	7.047	89.623			
4	.314	5.236	94.859			
5	.212	3.537	98.396			
6	.096	1.604	100.000			

Extraction Method: Principal Component Analysis.

Table 1: Component Analysis

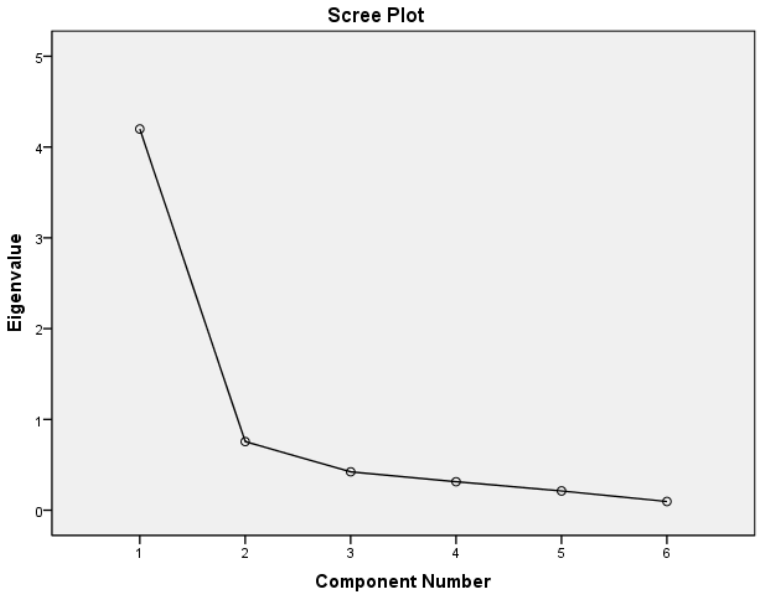


Figure 9: Graph of all components

Thus, after factor analysis, out of 18 variables, 10 are considered to be important for further analysis of the research and rest are more latent factors.

Most Important Factors	Latent Factors
Interface	Govt. Association
Speed	E-Commerce Association
Advertisements	Eminent Investors Association
Hoardings	Catchy Tagline
More Banks	Appealing Logo
Discounts	DTH Payments
Cashbacks	Brick/Mortar Shops
Online Shopping sites	Train Tickets
Cab Services	
Movie Tickets	

Table 2: Most Important factors and Latent factors

Hypothesis of the important factors from factor analysis:

Hypothesis 1:

H_{01}: A better Interface of app is not related to the success of M-Pesa.
H_{11}: A better Interface of app will lead to the success of M-Pesa.

Hypothesis 2:

H_{01}: High Speed of the app is not related to success of M-Pesa.
H_{11}: High Speed of the app will lead to success of M-Pesa.

Hypothesis 3:

H_{01}: More number of advertisements is not related to success of M-Pesa.
H_{11}: More number of advertisements will lead to success of M-Pesa.

Hypothesis 4:

H_{01}: More number of visible Hoardings is not related to success of M-Pesa.
H_{11}: More number of visible Hoardings will lead to success of M-Pesa.

Hypothesis 5:

H_{01}: Associating with more number of Banks is not related to success of M-Pesa.
H_{11}: Associating with more number of Banks will lead to success of M-Pesa.

Hypothesis 6:

H_{01}: Providing more discounts is not related to success of M-Pesa.
H_{11}: Providing more discounts will lead to success of M-Pesa.

Hypothesis 7:

H_{01}: Providing more cashbacks is not related to success of M-Pesa.
H_{11}: Providing more cashbacks will lead to success of M-Pesa.

Hypothesis 8:

H_{01}: Providing service of payment through wallet on online shopping sites is not related to the success of M-Pesa.
H_{11}: Providing service of payment through wallet on online shopping sites will lead to the success of M-Pesa.

Hypothesis 9:

H_{01}: Providing service of payment through wallet for cab services is not related to the success of M-Pesa.
H_{11}: Providing service of payment through wallet for cab services will lead to the success of M-Pesa.

Hypothesis 10:

H_{01}: Providing service of payment through wallet for Movie Tickets is not related to the success of M-Pesa.
H_{11}: Providing service of payment through wallet for Movie Tickets will lead to the success of M-Pesa.

Hypothesis 11:

H_{01}: High Security of the wallet is not related to success of M-Pesa.
H_{11}: High Security of the wallet will lead to success of M-Pesa.

4.3 Correlation Analysis

Pearson Correlation - These numbers measure the strength and direction of the linear relationship between the two variables. The correlation coefficient can range from -1 to +1, with -1 indicating a perfect negative correlation, +1 indicating a perfect positive correlation, and 0 indicating no correlation at all. (A variable correlated with itself will always have a correlation coefficient of 1.) If the correlation was higher, the points would tend to be closer to 1; if it was smaller, they would tend to 0. Also note that, by definition, any variable correlated with itself has a correlation of 1.

Sig. (1-tailed) - This is the p-value associated with the correlation. The footnote under the correlation table explains what the single and double asterisks signify. This value will tell you if there is a statistically significant correlation between your two variables. If the Sig (1-Tailed) value is greater than 05, it means that there is no statistically significant correlation between your two

variables. i.e., increases in one variable do not significantly relate to increase in your second variable.

If the Sig (1-Tailed) value is less than or equal to .05, then there is a statistically significant correlations between your two variables. That means, increases in one variable do significantly relate to increases in your second variable.

We used One-tailed significance test because we had a specific direction and our research and we only wish to find out how M-pesa will succeed if we INCREASE certain factors, not otherwise.

H0: $\rho = 0$ ("the population correlation coefficient is 0; there is no association")

H1: $\rho > 0$ ("the population correlation coefficient is greater than 0; a positive correlation could exist")

Where, ρ is the population correlation coefficient.

N - This is number of cases that was used in the correlation. Because we have no missing data in this data set, all correlations were based on all 200 cases in the data set. However, if some variables had missing values, the N's would be different for the different correlations.

Now, we need to correlate all the independent variables to see the relationship with the dependent variable, that is, success.

Correlations

		Success
Interface	Pearson Correlation	.778**
	Sig. (1-tailed)	.000
	N	59
Speed	Pearson Correlation	.812**
	Sig. (1-tailed)	.000
	N	59
Security	Pearson Correlation	.679**
	Sig. (1-tailed)	.000
	N	59
Discount	Pearson Correlation	.649**
	Sig. (1-tailed)	.000
	N	59
Cashback	Pearson Correlation	.603**
	Sig. (1-tailed)	.000
	N	59
Government	Pearson Correlation	.367**
	Sig. (1-tailed)	.002
	N	59
Ecommerce	Pearson Correlation	.500**
	Sig. (1-tailed)	.000
	N	59
Eminent_Investors	Pearson Correlation	.347**
	Sig. (1-tailed)	.004
	N	59
More_Banks	Pearson Correlation	.578**
	Sig. (1-tailed)	.000
	N	59
Advertisements	Pearson Correlation	.656**
	Sig. (1-tailed)	.000
	N	59
Hoardings	Pearson Correlation	.611**
	Sig. (1-tailed)	.000
	N	59
Catchy_Tagline	Pearson Correlation	.498**
	Sig. (1-tailed)	.000

	N	59
Appealing_logo	Pearson Correlation	.489**
	Sig. (1-tailed)	.000
	N	59
Online_shopping_sites	Pearson Correlation	.632**
	Sig. (1-tailed)	.000
	N	59
Cab_Services	Pearson Correlation	.549**
	Sig. (1-tailed)	.000
	N	59
Movie_tickets	Pearson Correlation	.505**
	Sig. (1-tailed)	.000
	N	59
Train_Tickets	Pearson Correlation	.434**
	Sig. (1-tailed)	.000
	N	59
DTH_Payments	Pearson Correlation	.502**
	Sig. (1-tailed)	.000
	N	59
Brick_Mortar_Shops	Pearson Correlation	.380**
	Sig. (1-tailed)	.002
	N	59
Sucess	Pearson Correlation	1
	Sig. (1-tailed)	
	N	59

**. Correlation is significant at the 0.01 level (1-tailed).

Table 3: Correlation Matrix

From the table 3 given below, following results have been found out:

- Speed is highly correlated with the success variable with the highest Pearson's co-efficient of 0.812.
- Interface is also strongly related with success as it is also having significant Pearson's coefficient of 0.778.
- Security, Discounts and Advertisements are also closely related to the success with the Pearson's coefficients lying between 0.6 and 0.7.
- Cashbacks, More Banks, Catchy Tagline and Cab Services are also moderately correlated with the success variable with Pearson's coefficient around 0.6.

- E-commerce, Hoardings, Appealing logo, Movie Tickets and DTH Payments have their Pearson's coefficients around 0.5
- All the variables are +ve and thus show that success factor increases with the increase in their respective values, irrespective of the extent of that rise.
- All the Significance values lie less than 0.01, thus the 1 tailed test shows that there is statistically significant relationships between the independent variable and the success factor.
- All the Null Hypothesis mentioned above can be rejected as the significance value is less than 0.01 and the alternate hypothesis can be accepted.
- It tell us that all these independent variables does have an effect on the success and is correlated with the dependent variable.
- 59 observations were taken into account making the N value equal to 59.

Independent Variables	Pearson's Coefficient with Success
Speed	0.812
Interface	0.778
Security, Discounts, Advertisements, Online shopping	0.6> Pearson's Coff. <0.7
Cashbacks, More Banks, Hoardings, Cabs	Around 0.6
E-Comm., Catchy Tagline, Logo, Movie Tickets, DTH	Around 0.5
Gov. Investors, Train Tickets, Brick/mortar shops	Less than 0.45

Table 4: Pearson's Coefficient with Success

4.4 Moderator Analysis

A moderator analysis is used to determine whether the relationship between two variables depends on (is moderated by) the value of a third variable. This relationship is commonly between dependent variable and independent variable, which is modified by a dichotomous moderator variable.

We multiply the moderator variable with the independent variable to get a new variable which in turn will give us the results. We check the linear regression with the new variable and the dependent variable to check the R^2 difference. This R^2 difference tells us if the variable is having a moderating effect on the independent-dependent variable relationship.

We take independent variable as Speed for computing this is speed is having maximum effect on the success.

When linear regression is found between success as dependent variable and security and speed as independent variable, here is the result:

Regression 1

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Speed, Security	.	Enter

a. All requested variables entered.

b. Dependent Variable: Success

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.814[a]	.662	.650	.68896

a. Predictors: (Constant), Speed, Security

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	52.063	2	26.031	54.842	.000[a]
	Residual	26.581	56	.475		
	Total	78.644	58			

a. Predictors: (Constant), Speed, Security

b. Dependent Variable: Success

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.709	.284		2.499	.015
	Security	.077	.112	.088	.688	.495
	Speed	.698	.121	.741	5.767	.000

a. Dependent Variable: Success

We need to centralize the two variables together (speed and security) and then multiply them in order to find the third variable which will be used to test the moderation.

1. We find the Descriptive Statistics which creates two Z values which is helping in standardizing the variable.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Security	59	1	5	3.73	1.337
Speed	59	1	5	3.53	1.237
Valid N (listwise)	59				

2. Two Z values are formed which are then multiplied to form the moderator.
3. Again Regression is done taking the moderator value also in the independent variable column.

Regression 2

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Moderator, Security, Speed	.	Enter

a. All requested variables entered.

b. Dependent Variable: Success

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.821[a]	.674	.656	.68282

a. Predictors: (Constant), Moderator, Security, Speed

We can see that that is just the change from 66.2% to 67.4% change in the R^2 value of the two regression analysis. This shows that even though Security is affecting and enhancing the relationship of independent and dependent variable, it is very less. Thus, the moderator's effect is very less in the framework. Even though it is highly correlated with the dependent variable individually, it does not brings significant change to the dependent-independent relationship.

Thus, the major factors which can lead to the success of M-Pesa are:

1. Speed
2. Interface

3. Advertisements
4. Discounts
5. Hoardings
6. More Banks
7. Online Shopping sites

5. Summary and Conclusion

5.1 Conclusion

Thus we were successfully able to complete the research project in specified time. After doing the analysis in SPSS software, we were able to see the areas due to which M-Pesa was not able to make an impact in India. From the analysis we found out that M-Pesa is lacking in several areas like:

User interface of M-Pesa app is not that user friendly due to which users are limited. Secondly, they are serving with less services as compared to their competitors. Therefore, M-Pesa is not having any competitor advantages. Lastly, they are lacking in most important areas of marketing tools. M-Pesa needs to market well so that they can spread more awareness about M-Pesa and increase their customer base.

5.2 Recommendation

1. Better Mobile App:

According to the SPSS analysis, Interface and Speed are highly important factors having high correlation with success. According to the responses:

Around 40% people are not satisfied with the user-friendliness which is acting as a hindrance in the success of M-Pesa. We suggest M-Pesa to monitor its interface and speed so as to match or exceed the customer satisfaction level. To be more successful, these are the basic conditions as suggested by the analysis.

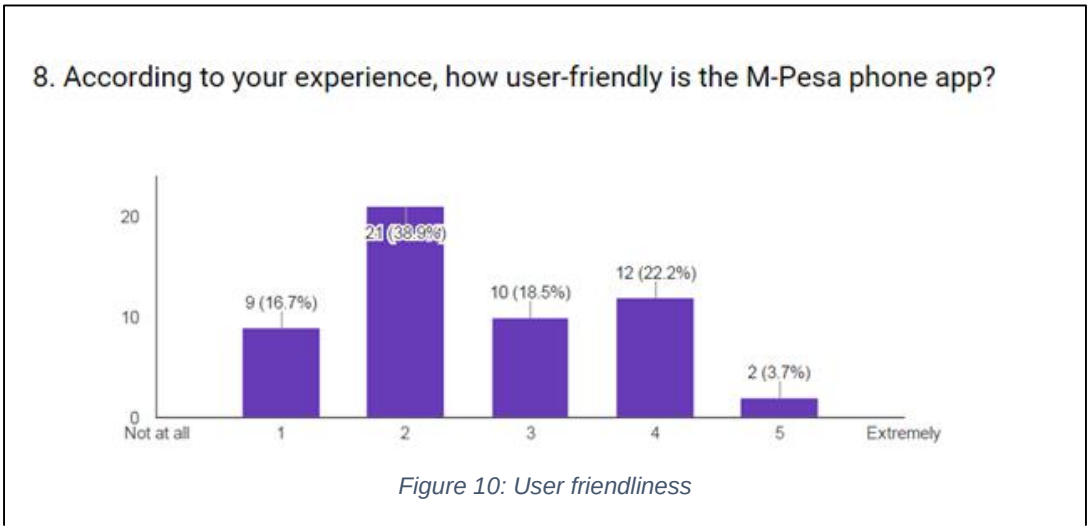


Figure 10: User friendliness

2. Associations

According to the SPSS analysis, associations with more number of banks is an important factor which is highly related to the success.

Currently, M-Pesa has only tied up with HDFC and ICICI for its business even though the transactions can take place through number of banks. Tying up with the banks permits M-Pesa to give benefits to customers of that particular bank.

According to the data, around 43% people would benefit if M-Pesa ties up with State bank of India and around 35% people will benefit if it happens with Axis bank. Thus, we recommend M-Pesa to associate with SBI and Axis bank to increase customer satisfaction.

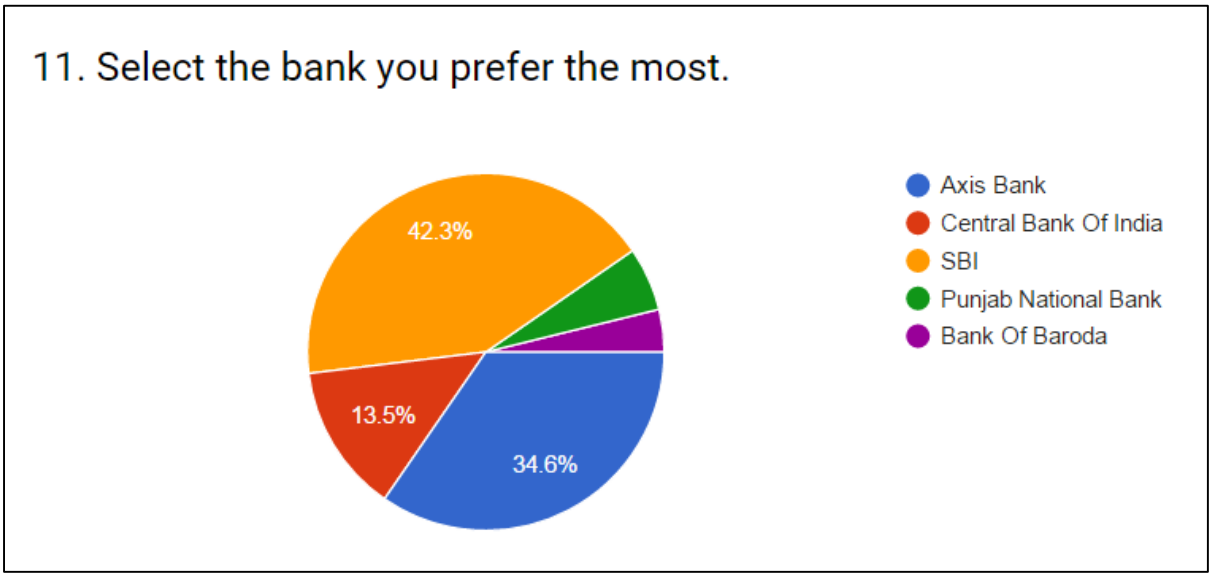


Figure 11: Preferred banks

Apart from banks, associations with E-Commerce businesses will also lead to more usage of the mobile wallet. We suggest M-Pesa to look forward to such opportunities.

3. Services

a. DTH Services: It is not an important variable and does not have a high correlation with the success variable. Thus, even if the DTH services are more than satisfactory, it is not contributing significantly towards the success of M-Pesa. We suggest M-Pesa to look towards more services and not to pay whole attention towards DTH services.

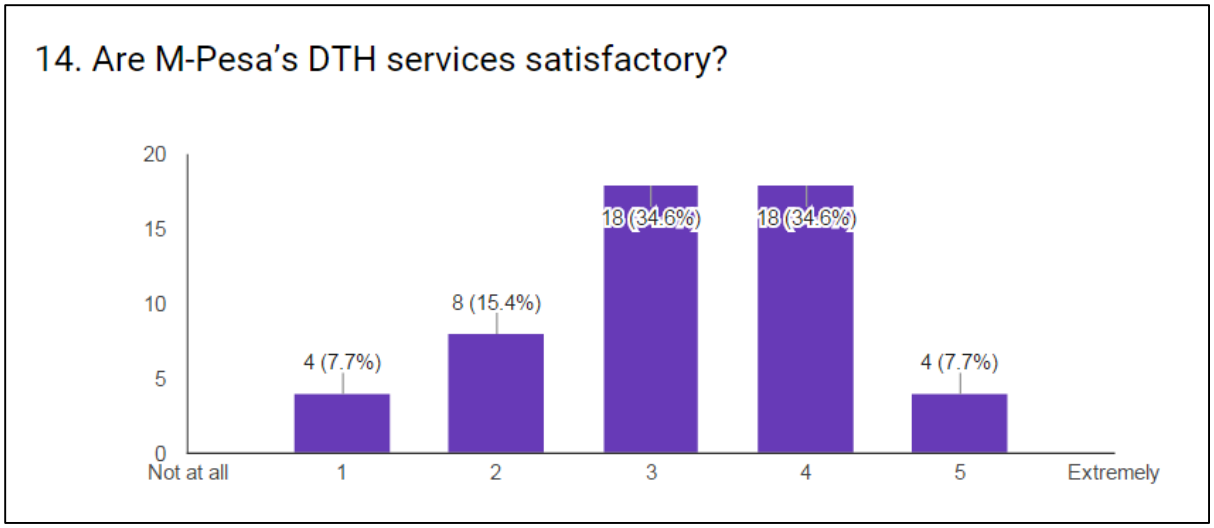


Figure 12: DTH services

b. The M-Pesa customers are unhappy with the number of services being provided to them. And around 43% wish more of the services while 6% are completely dissatisfied. Less services leaves them with no competitive advantage over others and can lead to customer dissatisfaction.

According to the survey and SPSS analysis put together, being able to pay on online shopping sites, book movie tickets and pay cab services via wallet are some key services which M-Pesa should venture into immediately.

There is a high demand rise of these services and they are being extensively provided by other mobile wallets in India, thus M-Pesa should also consider these opportunities.

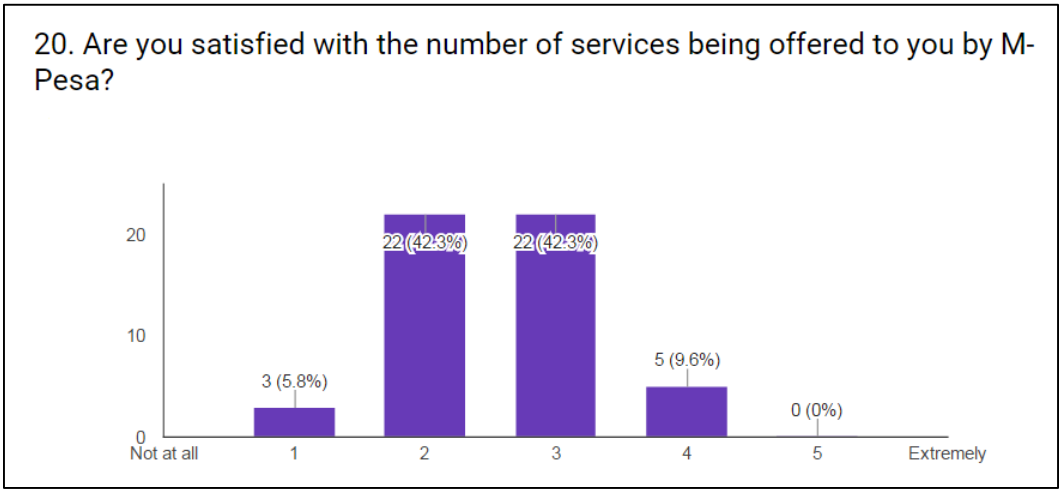


Figure 13: Services

4. Reward Points:

Discounts and Cashbacks have emerged as major contributors in the success of any mobile wallet by SPSS analysis. In today's scenario, every new/old mobile wallet are providing with numerous discounts to lure and retain customers. However, M-Pesa has not been able to keep its customers in this domain. Around 47% feel that they hardly get discounts in the wallet and around 10% people are really unhappy because of that. Loyalty programs, free gifts etc. are very important to retain the customers and thus M-Pesa should cater to this need of its customers.

We suggest M-Pesa to enable cashbacks in the wallet and also provide with some exciting offers and discounts to remain in the competition.

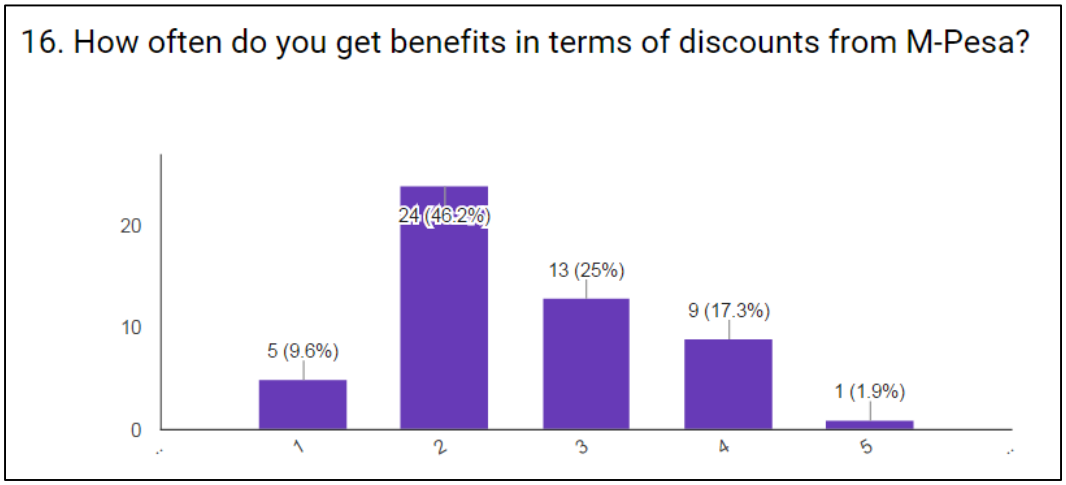


Figure 14: Discounts

5. Marketing Efforts

From the SPSS analysis, advertisements and hoardings are important variables which will lead to success of M-Pesa.

But according to the survey, people have not watched visual advertisements of this wallet. Around 47% people have hardly seen any ads and 17% people have never encountered with any visual advertisements.

Also, around 60% think that M-Pesa's promotions are not memorable. More than 70% people also think that M-Pesa should better advertise their offerings and services and people are unaware of its existence.

This is a major setback for M-Pesa and they should concentrate and invest in Marketing Efforts. We suggest that M-Pesa should be more visually present as Hoardings and should invest in advertisements which will eventually lead to success.

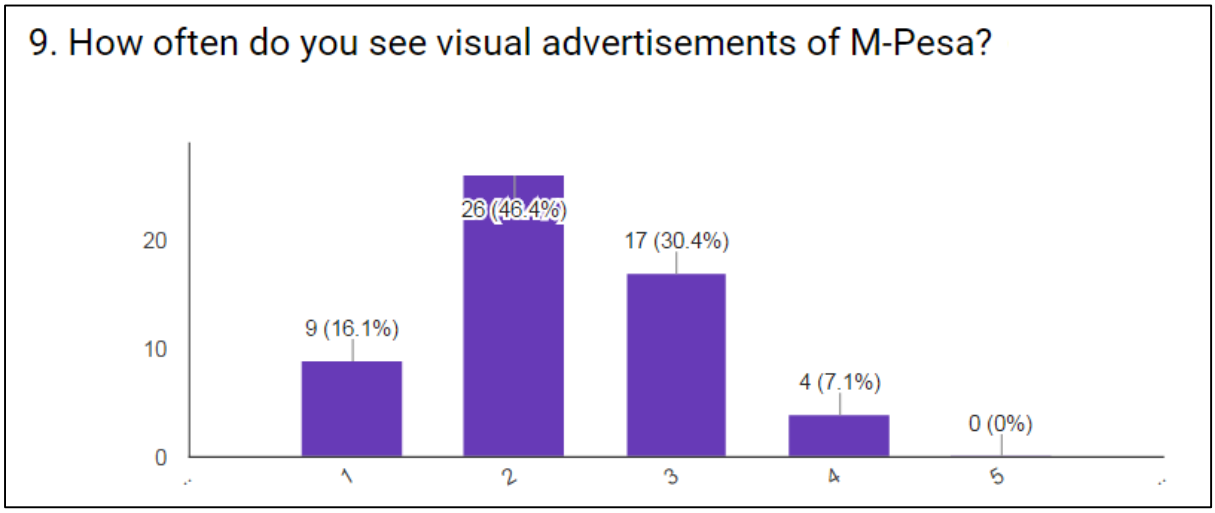


Figure 15: Visual Advertisements

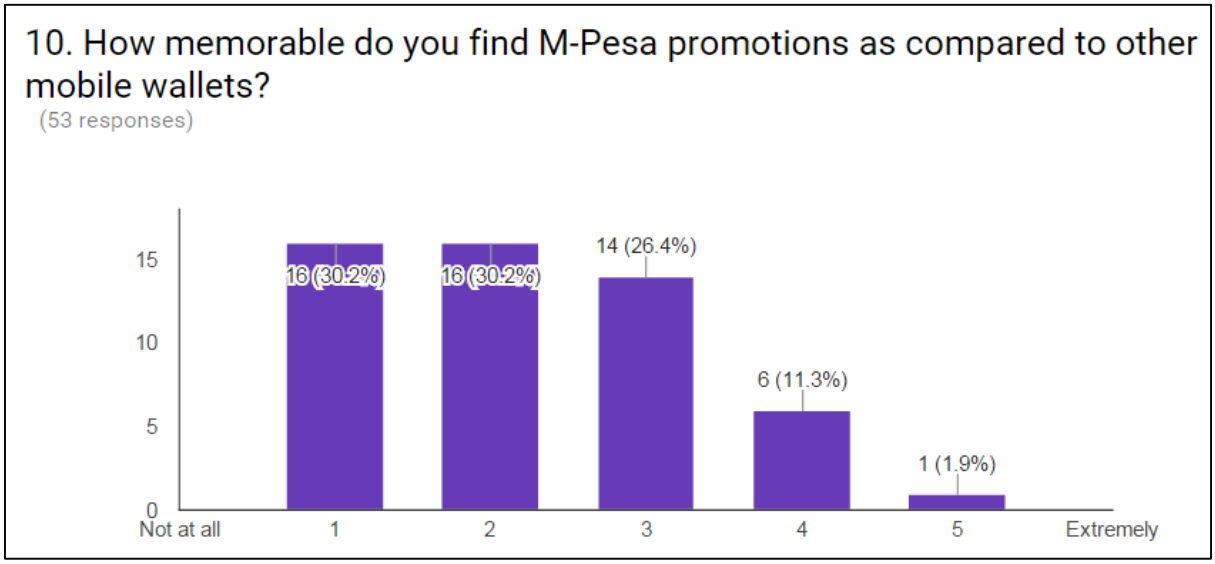


Figure 16: Promotions

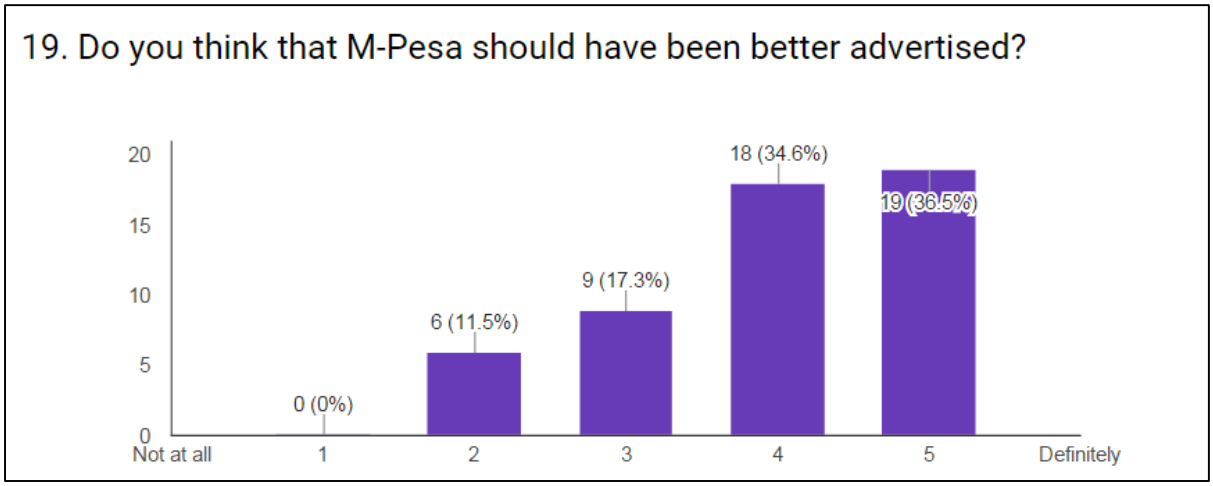


Figure 17: M-Pesa - Better Advertised

6. Security

Security is highly correlated to the success thus an important variable contributing towards the increasing customer satisfaction. According to the survey analysis, people don't encounter security issues and are satisfied with it. Thus, M-Pesa is doing well in this area and should continue its efforts in proving customers with high security. Around 62% don't encounter any such issues which is a nice figure.

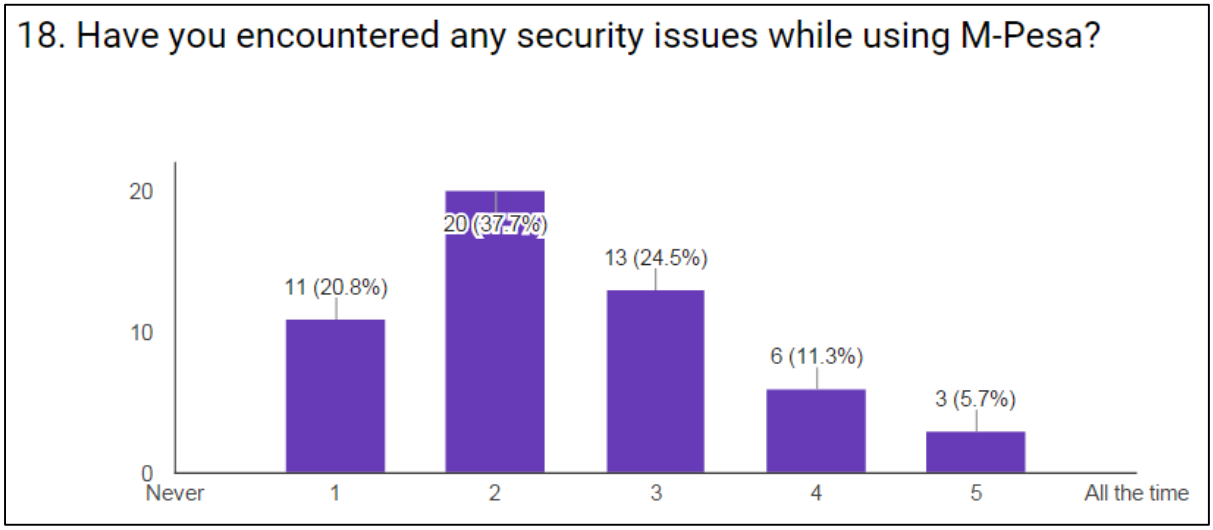


Figure 18: Security issues

- M-Pesa should monitor its interface and speed so as to match or exceed the customer satisfaction level.
- M-Pesa should associate with SBI and Axis bank to increase customer satisfaction.
- M-Pesa should look towards providing more services and not to pay complete attention towards DTH services.
- M-Pesa should let its customers pay on online shopping sites, book movie tickets and pay cab services via wallet which are some key services. There is a high demand rise of these services and they are being extensively provided by other mobile wallets in India, thus M-Pesa should also consider these opportunities.
- M-Pesa should enable cashbacks in the wallet and also provide with some exciting offers and discounts to remain in the competition.
- M-Pesa should be more visually present as Hoardings and they should invest in advertisements which will eventually lead to success.

5.3 LIMITATIONS

- The study was confined to urban areas as it was not possible for us to travel to the rural parts of India. Hence the entire findings are limited and refer to urban consumers only.
- The Geographical coverage was low, as only Mumbai was taken into consideration. It is not sure whether the findings will apply to the whole country.
- The research can be done more accurately and precisely with larger sample size. However, due to shortage of M-Pesa users in the vicinity, the sample size could not increase more than 30.
- There was shortage of time because of which the study could not be termed as highly accurate.

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Nikhil Joseph and Benjamin D. Mazzotta October 2014

7. Appendix

Questionnaire

M-Pesa Services in India - Questionnaire

* Required

1. **1. Name**

_____

2. **2. Age**

_____

3. **3. Gender**

Mark only one oval.

- ◯ Male
- ◯ Female

4. **4. Rate how much does the following factors affect your usage of M-Pesa? (1: Not at all ; 5: Very Much)**

Mark only one oval per row.

	1	2	3	4	5
Interface	◯	◯	◯	◯	◯
Speed	◯	◯	◯	◯	◯
Security	◯	◯	◯	◯	◯
Exciting Discounts	◯	◯	◯	◯	◯
Cashbacks	◯	◯	◯	◯	◯

5. **5. How much will the associations of M-Pesa with the following institutions affect your usage? (1: Not at all Much ; 5: Very Much)**

Mark only one oval per row.

	1	2	3	4	5
Goverment	◯	◯	◯	◯	◯
E-Commerce	◯	◯	◯	◯	◯
Eminent Investors	◯	◯	◯	◯	◯
More banks	◯	◯	◯	◯	◯

6. **6. How much does the following marketing tools motivate you to use any online wallet? (1: Not at all; 5: Very Much)**
Mark only one oval per row.

	1	2	3	4	5
TV advertisements					
Hoardings					
Catchy Tagline					
Appealing Logo					

7. **7. Rate how important is it for you to be able to pay through M-Pesa wallet for the following: (1: Not at all ; 5: Very Much)**
Mark only one oval per row.

	1	2	3	4	5
Online Shopping Sites					
Cab Services					
Movie Tickets					
Train Tickets					
DTH Payments					
Brick/Mortar Shops					

8. **8. Given that the above selected choices are taken into account, do you think the M-Pesa mobile wallet will be a success? ***
Mark only one oval.

	1	2	3	4	5	
Definitely No						Definitely Yes

9. **9. According to your experience, how user-friendly is the M-Pesa phone app? ***
Mark only one oval.

	1	2	3	4	5	
Not at all						Extremely

10. **10. How often do you see visual advertisements of M-Pesa? ***
Mark only one oval.

	1	2	3	4	5	
Rarely						Very Frequently

11. **11. How memorable do you find M-Pesa promotions as compared to other mobile wallets?**
Mark only one oval.

	1	2	3	4	5	
Not at all	◯	◯	◯	◯	◯	Extremely

12. **12. Select the bank you prefer the most.**
Mark only one oval.

- ◯ Axis Bank
- ◯ Central Bank Of India
- ◯ SBI
- ◯ Punjab National Bank
- ◯ Bank Of Baroda

13. **13. How satisfied are you with M-Pesa in terms of the ease of registration process as compared to other mobile wallets?**
Mark only one oval.

	1	2	3	4	5	
Not at all	◯	◯	◯	◯	◯	Extremely

14. **14. How frequently do you use other online wallets apart from M-Pesa?**
Mark only one oval.

	1	2	3	4	5	
Never	◯	◯	◯	◯	◯	Always

15. **15. Are M-Pesa's DTH services satisfactory?**
Mark only one oval.

	1	2	3	4	5	
Not at all	◯	◯	◯	◯	◯	Extremely

16. **16. How satisfied are you with the M-Pesa agents who help in depositing and withdrawing money?**
Mark only one oval.

	1	2	3	4	5	
Not at all	◯	◯	◯	◯	◯	Extremely

17. **17. How often do you get benefits in terms of discounts from M-Pesa?**
Mark only one oval.

	1	2	3	4	5	
Rarely	◯	◯	◯	◯	◯	Very Frequently

18. **18. How often do you use the bill payment service of M-Pesa?**
Mark only one oval.

	1	2	3	4	5	
Rarely	◯	◯	◯	◯	◯	Very Frequently

19. **19. Have you encountered any security issues while using M-Pesa?**
Mark only one oval.

	1	2	3	4	5	
Never	◯	◯	◯	◯	◯	All the time

20. **20. Do you think that M-Pesa should have been better advertised?**
Mark only one oval.

	1	2	3	4	5	
Not at all	◯	◯	◯	◯	◯	Definitely

21. **21. Are you satisfied with the number of services being offered to you by M-Pesa?**
Mark only one oval.

	1	2	3	4	5	
Not at all	◯	◯	◯	◯	◯	Extremely

22. **22. Based on your experience, how strongly would you recommend the app to others?**
Mark only one oval.

	1	2	3	4	5	
Not at all	◯	◯	◯	◯	◯	Definitely