



STUDY OF ACCEPTANCE OF CONTACTLESS PAYMENTS USING NEAR FIELD COMMUNICATION (NFC) TECHNOLOGY IN MUMBAI AND CHENNAI WITH RESPECT TO AGE, EDUCATIONAL BACKGROUND AND OCCUPATION

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ABSTRACT

Banking has evolved from a traditional branch banking setup to a computerized era. Banking was completely dependent on large infrastructure of branch network and accounts were maintained in large ledgers in manual setup. The emergence of computers and technology has revolutionized the way banking and payment works.

Banking moved from branches to electronic form via internet banking. Payments which were done by cash and cheque instruments saw the emergence of electronic movement of funds. The electronic transmission of funds is much faster and cost effective. However, such a transfer protocol is also ridden with risk.

The payments world is evolving at greater pace with the retail revolution with all major retail chains now being available online. Not, only retail chains, but other utility payments as well as other facilities like travel booking etc have gone online in a remarkable way.

The usages of cards, like ATM cards, Debit cards and Credit cards have also seen a significant increase in past few years. The general usage of cards is done by swiping the same at POS (Point of Sale) terminal.

The new type of card which is emerging right now is contactless card using the Near Field Communication (NFC) technology. Such a card needs to be tapped or, waved at a close proximity of the merchant terminal to complete a transaction. This paper intends to study the acceptance of such a contactless payment mode amongst two major metropolitan cities in India, Mumbai and Chennai and tries to establish a relation with the age of the citizens who are willing to use such a technology for doing their payments.

INTRODUCTION

Banking has taken a long leap from manual branch operations to computerized

Inter-networked branches. Banking transactions have also ridden a wave of IT revolution from manual cash and cheque transactions to electronic payments.

The IT revolution has brought in the concept of electronic payments wherein one can use internet to make payments and need not visit the merchant or, payee for actual transactions. This has eased the payment mechanism as one can pay anytime and anywhere across the world. The physical and geographical barriers suddenly vanished with the advent of e-payments (electronic payments).

The retail revolution and presence of retail stores as online mart has sped up the e-payments space. Further, the reducing cost of mobile phones is increasing the penetration of mobile handsets in the country. With the mobile revolution, e-payments space has taken up a major stride forward as users can use their mobile device for online payments.

Mobile based transactions have gone up by 35% in volume, from 40 million transactions in May 2015 to 54 million transactions in July 2015, as per data provided by Nielson Informate Mobile Insights. The astonishing fact is that around 40% – 50% of the transactions are coming from Tier II and Tier III towns. However, the trend clearly shows that penetration of any new payment or, banking mode first begins at metro cities and Tier I cities and later permeates across Tier II and Tier III cities.

Post the evolution of mobile payments and app based payments; the technology has



reached further advanced stage wherein contact-less payments is now made possible.

With the advent of Near Field Communication (NFC) technology, the payments domain is set to witness a completely transformed phenomenon and that is a universe of contact-less payments.

Near-field communication (NFC) technology allows data to be exchanged between devices via short-range, high-frequency wireless communication technology by combining the interface of a smartcard and reader into a single device.

New age smart phones like Google Android smart phones, Nokia smart phones and Apple iPhones have come up with the ability to exchange information such as web links and directions as well as make payments for products using NFC technology.

One example of NFC chips is its usage in navigation. NFC chip is embedded into maps and, where upon touching the phone to the chip, it will open the map with directions on the phone.

Till now, for payments at Point of Sales (POS) terminals, one has to swipe the card – ATM / Debit Card / Credit Card along-with second factor authentication like Personal Identification Number (PIN) or, One-Time Password (OTP) etc. However, with NFC technology evolving, it is now possible to wave or, tap the NFC embedded payment card (ATM Card/ Debit Card / Credit Card) near the merchant terminal and funds would be transferred instantly. The same technology when used via mobile phone with necessary payment card details already stored in, just a wave or, tap with the mobile device would enable the payment.

This easy way of payment just by waving or, tapping a handheld mobile device is the

easiest and user friendly mode of payment the world has ever seen.

This is set to revolutionize the payment world, however it comes with a greater risk of mobile being stolen or, being misused by others who are not authorized users of the phone.

The 'Global Payments Evaluation Study', based on 32,000 respondents in 16 countries found that Australia leading the way for contactless ownership and usage with 53% Australians having made a contactless transaction. The survey found Singapore to be the second largest market with 45% having made a purchase using the NFC technology.

It is already launched in India and penetration is picking up with awareness. Another factor is the readiness of the POS terminals to accept such form of payments. Apart from the readiness of merchants, awareness amongst Indians is the most crucial factor for the adoption of this type of new technology and acceptance of high risk factor along-with the ease to use.

It is pertinent to study the acceptance of contactless payments via Near Field Communication (NFC) technology in Indian market and its relationship with the age of the users.

This paper is made to study the acceptance of contactless payments via Near Field Communication (NFC) technology amongst two major metropolitan cities in India, Mumbai and Chennai and to validate whether any relationship can be established between the acceptance and the age of the citizens.

OBJECTIVE

1. To examine the acceptance of contactless payments – usage of Near Field Communication (NFC) technology in payments.

2. To analyze whether the acceptance of Near Field Communication (NFC) technology for payments is dependent on factors like age, educational-background and occupation.

HYPOTHESIS

The null hypothesis, denoted by H_0 , is usually the hypothesis that sample observations result purely from chance. Alternative hypothesis, denoted by H_1 or H_a , is the hypothesis that sample observations are influenced by some non-random cause.

H_{01} : The acceptance of NFC in payment services is dependent on factors like age, educational-background and occupation.
 H_{a1} : The acceptance of NFC in payment services is not dependent on factors like age, educational-background and occupation.

RESEARCH METHODOLOGY

The primary research is based on a survey conducted with the use of a simple questionnaire taken from citizens living in Mumbai and Chennai and belonging to different age groups.

A structured survey approach was followed including questions on factors like age, educational-background and occupation and also factors which can be used as most preferred reason for using Near Field Communication (NFC) technology for payment services.

Respondents were selected randomly from the citizens living in Mumbai and Chennai. The sample size for the primary research was 100.

The data analysis was done using MS Excel. Graphical tools like bar graph and column graph were used to validate the null hypothesis.

The secondary data was collected from various published reports, renowned web sites, newspapers and internet articles.

LIMITATION

The study is limited to the customers of new generation private sector banks in the metropolitan cities of Mumbai and Chennai.

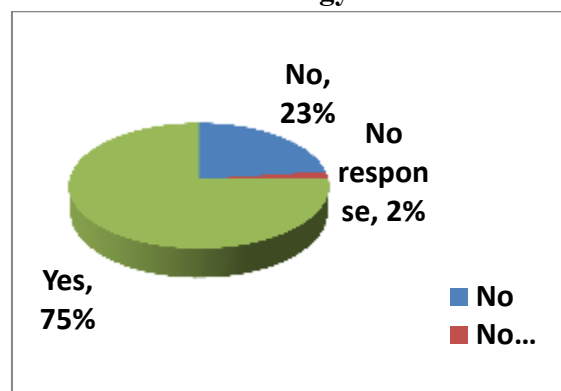
DATA ANALYSIS

Study consists of acceptance of contact-less payments using Near Field Communication technology.

The respondents responded with the following options: 'Yes', 'No' and 'No response' to the survey seeking acceptance of contact-less payments using Near Field Communication technology.

The data was collated and percentage of users with each of the response type was plotted into a pie-chart using Microsoft Excel.

**Figure 1.0: Percentage of responses to
 "Acceptance of Contact-less Payments
 using
 Near Field Communication (NFC)
 technology"**



The above figure depicts that 75% of respondents were ready to accept Near Field Communication (NFC) for Payments, whereas 23% of the respondents were not ready to accept the new form of technology and 2 % were not able to provide any response.

This graphical representation and analysis has given an overall picture of acceptance

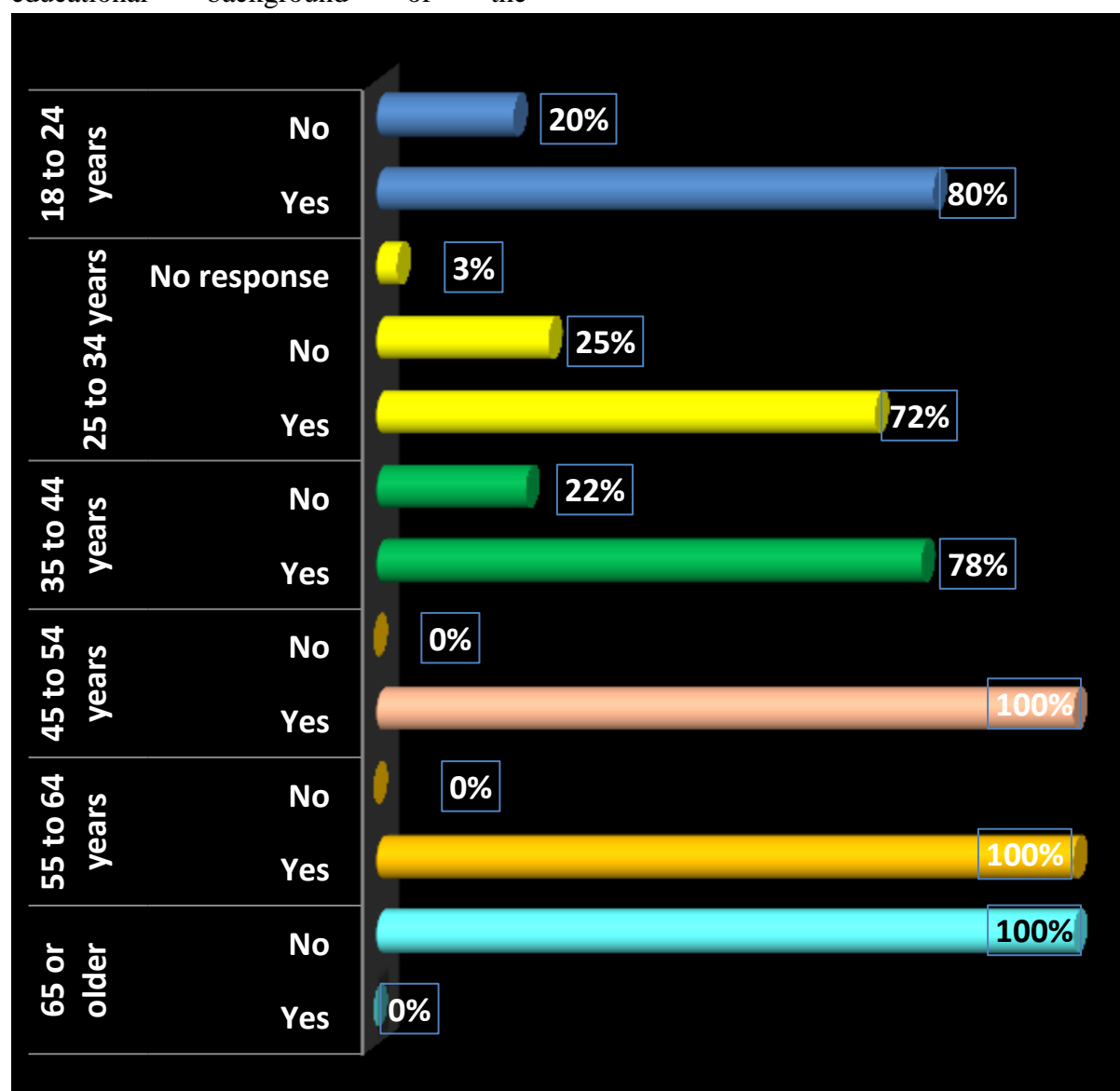
of Near Field Communication (NFC) for contact-less payments amongst Indian population based on study conducted on two metro cities.

However, in order to understand in-depth, there needs to be a study on the relationship of such acceptance or, denial of acceptance of Near Field Communication (NFC) technology in payments with factors like age, educational background and occupation.

Our study includes three factors. They are educational background of the

respondents, occupation of the respondents & their age. We have picked up age as basis of our study of relationship between demographic factors and acceptance of contact-less payments through Near Field Communication (NFC) technology.

**Figure 2.0: Percentage of age-wise responses to
“Acceptance of Contact-less Payments
using
Near Field Communication (NFC)
technology”**



The above figure depicts that in the age group of 18 – 24 years, 80% of respondents were ready to accept Near Field Communication (NFC) technology for Payments, whereas 20% of the respondents were not ready to accept the new form of technology.

In the age group of 25 – 34 years, 72% of respondents were ready to accept Near Field Communication (NFC) technology for Payments, whereas 25% of the respondents were not ready to accept the new form of technology and 3 % were not able to provide any response.

In the age group of 35 – 44 years, 78% of respondents were ready to accept Near Field Communication (NFC) technology for Payments, whereas 22% of the respondents were not ready to accept the new form of technology.

In the age group of 45 – 54 years, 100% of respondents were ready to accept Near Field Communication (NFC) technology for Payments, whereas none of the respondents were found not to be ready to accept the new form of technology.

In the age group of 55 – 64 years, 100% of respondents were ready to accept Near Field Communication (NFC) technology for Payments, whereas none of the respondents were found not to be ready to accept the new form of technology.

In the age group of 65 years and above, none of the respondents were ready to accept Near Field Communication (NFC) technology for Payments.

The analysis can be summed up in the following table:

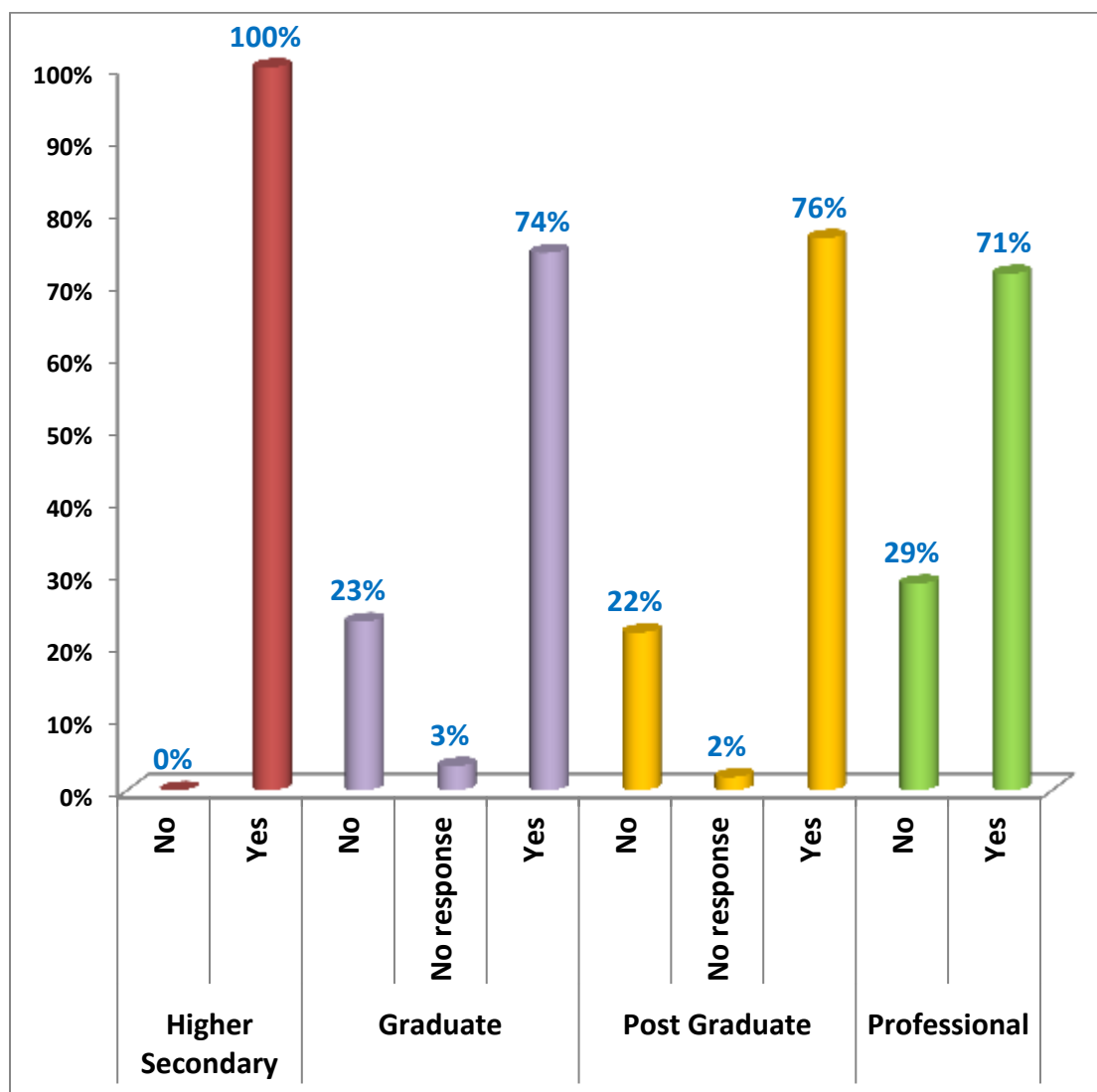
Age Bracket	18 to 24 years		25 to 34 years			35 to 44 years		45 to 54 years		55 to 64 years		65 years or older	
Acceptance	YES	NO	YES	NO	NA	YES	NO	YES	NO	YES	NO	YES	NO
Percentage of Response	80%	20%	72%	25%	3%	78%	22%	100%	0%	100%	0%	0%	100%

The relationship between a demographic factor like age and acceptance of Near Field Communication (NFC) technology in payments is quite visible from above graphs.

We also studied the relationship between another factor like educational background and acceptance of Near Field

Communication (NFC) technology in payments.

Figure 3.0: Percentage of educational background wise responses to “Acceptance of Contact-less Payments using Near Field Communication (NFC) technology”



The above figure depicts that 100% of respondents whose education is Higher Secondary are ready to accept Near Field Communication (NFC) technology for Payments.

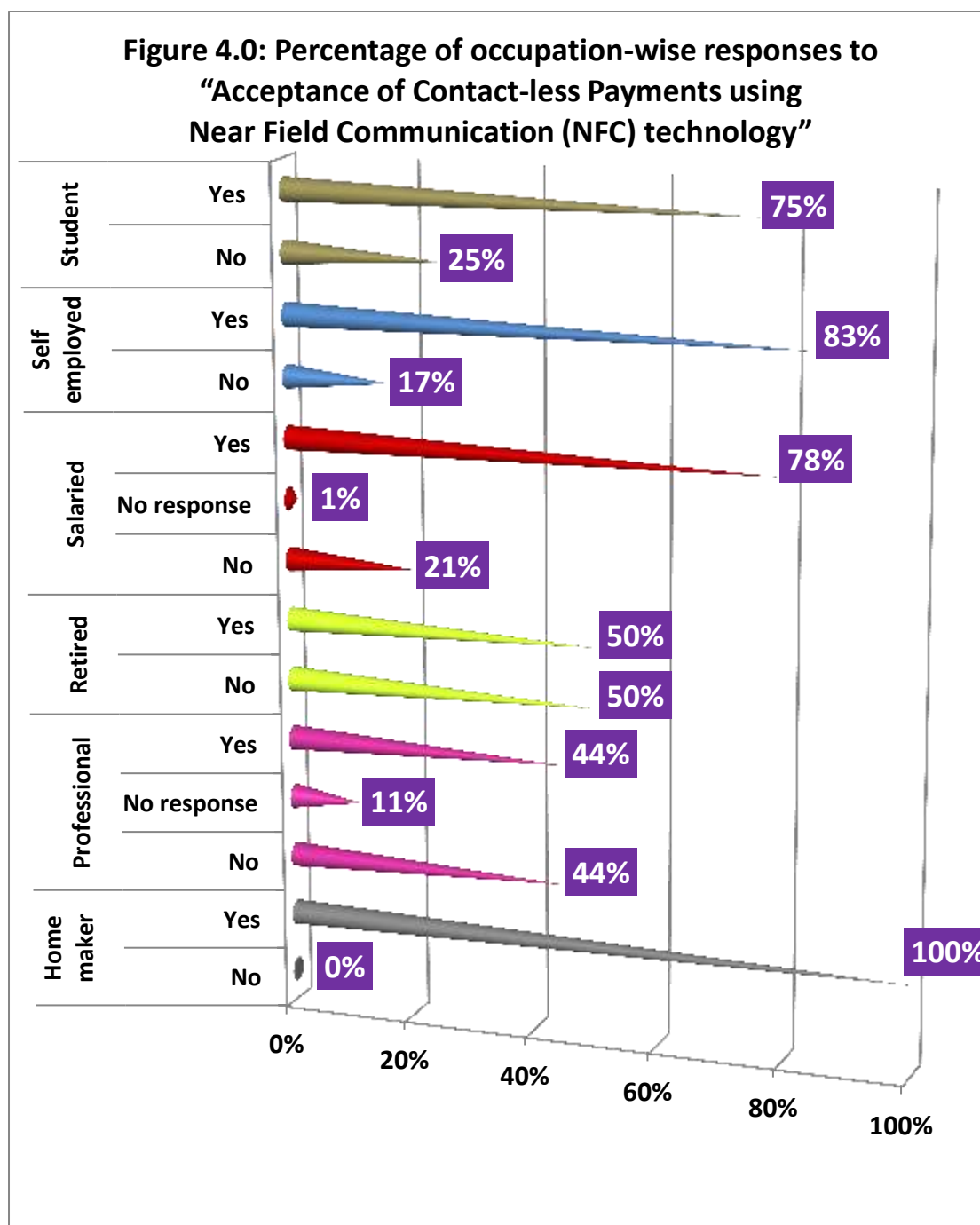
Amongst the respondents who are Graduates, 74% of respondents were ready to accept Near Field Communication (NFC) technology for Payments, whereas 23% of the respondents were not ready to accept the new form of technology and 3 % were not able to provide any response.

Similarly in the pool of Post Graduates, 76% of respondents were ready to accept Near Field Communication (NFC)

technology for Payments, whereas 22% of the respondents were not ready to accept the new form of technology and 2% of the respondents were not able to provide any response.

The respondents who completed their professional education have 71% ready for payments through use of Near Field Communication (NFC) technology whereas 29% were not ready for such a mode of payment.

Further, we also studied the relationship between occupation and acceptance of Near Field Communication (NFC) technology in payments.



The above figure depicts that 75% of Student community are ready to accept Near Field Communication (NFC) technology for Payments, while 25% of them are still not readily accepting the new payment mode.

Amongst the Self-employed population, 83% of respondents were ready to accept Near Field Communication (NFC)

technology for Payments, whereas 17% of the respondents were not ready to accept the new form of technology.

Similarly in the Salaried class, 78% were ready to accept Near Field Communication (NFC) technology for Payments, whereas 21% of the salaried employees were not ready to accept the new form of technology and 1% of the respondents

were not able to provide any response. The retired population was divided equally as 50% of retired persons were ready to accept Near Field Communication (NFC) technology for Payments, whereas other 50% were absolutely rejected the use of such technology for payments. In case of professional practitioners, 44% were favoring acceptance of Near Field Communication (NFC) technology for Payments, while other 44% were against the usage of payments through this new form of technology and rest of 11% yielded 'No response.' Out of Homemakers, 100% were ready to use Near Field Communication (NFC) technology enabled payments.

Thus, based on these results, **we accept the Null hypothesis i.e. Acceptance of NFC in payment services is dependent on factors like age, educational-background and occupation.**

CONCLUSION

From the questionnaire survey done on acceptance of contactless payments through Near Field Communication (NFC) technology and based on the analysis done on the survey findings, the following can be concluded:

1. Three fourth of the population are ready to accept new form of technology i.e., Near Field Communication (NFC) technology which will drive contactless payments.
2. The younger age groups are readily accepting the new form of technology i.e., Near Field Communication (NFC) technology in the payments domain, while the older age group i.e., 65 years and above have completely rejected the

use of new form of technology i.e., Near Field Communication (NFC) technology in the payments space.

3. In case of educational background-wise classification, lesser the education more is the acceptance towards contact-less payments enabled through Near Field Communication (NFC) technology.
4. Occupation-wise, it can be concluded that three fourth of the Salaried, Self-employed and Students are ready to accept Near Field Communication (NFC) technology equipped contactless payments, whereas Retired persons and Professional practitioners are divided equally for acceptance and non-acceptance. Interestingly, Homemakers are 100% ready for accepting contact-less payments.

It would be interesting to study the correlation between all the demographic factors and acceptance of contact-less payments through Near Field Communication (NFC) technology, which is beyond the scope of this paper.

The study can also be extended to find out the reasons for which the respondents are accepting or, rejecting the Near Field Communication (NFC) technology enabled payments. The factors may include the reasons for usage of contact-less payments, advantages of using such technology and risk factors involved in using the same. To determine the cause for acceptance / rejection of use of Near Field Communication (NFC) technology in payments space, another



in-depth further analysis needs to be done based on these above-mentioned factors.

As of now, based on analysis done as part of this research paper, **it can be concluded that acceptance of contact-less payments through Near Field Communication (NFC) technology is dependent on factors like age, educational-background and occupation of the users.**

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