



Near Field Communication

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Abstract

Technology has evolved rapidly in the past few years, and there is no telling where the future will take the evolution of technology. Technology has made it easier for people to do things that would not be possible if not for how advanced technology has come.

Technology has helped us to connect to loved ones overseas, conduct research, watch movies, and purchase things with just the tip of our fingers.

Near Field Technology (NFC) is a technology that is developed for short range radio communication technology allowing users to make secure transactions, exchange digital contents with just a touch of a finger.

With how recent NFC is, there is still concerns of how well this technology safeguards users' information's.

Introduction & Research Question

Introduction

Over the past few years, many tech companies have adopted Near Field Communication to introduce wallet less payments. After 2011, several big technology companies and industry partners, such as Google, Apple, and Samsung decided to support the mobile payment services using the NFC technology. This technology has made it possible to use electronic payment methods for products and services with an application called mobile wallet without the need of their physical cards or wallet.

How likely are young adults ages 18 to 35 with no prior experience with Near Field Communication technology willing to adopt to NFC in their everyday lives

With the increase in Smartphone usage, and the age range of the target audience, it is very likely they are willing to adopt to NFC or wallet less payments.

Financial Experiences

Payment method

Which of the following payment methods do you use at local retail stores, such as grocery stores, restaurants, and gas stations? (Check all that apply)

1. Cash
2. Check
3. Debit card
4. Credit card
5. Prepaid card or gift card

Dependent Variable

Intention to adopt NFC mobile payment

1. I am likely to use NFC mobile payment in the near future
2. Given the opportunity, I will use NFC mobile payment immediately
3. I am willing to use NFC mobile payment in the near future
4. I will think about using NFC mobile payment
5. I intend to use NFC mobile payment services when the opportunity arises

Beliefs

Trust

1. I trust NFC mobile payment to be reliable
2. I trust NFC mobile payment to be secure
3. I trust NFC mobile payment to be trustworthy
4. Overall, I trust NFC mobile payment

Type of non-NFC mobile payment experience

Have you used mobile payment to pay for the following transactions in the past 12 months? (Yes/No)

1. Sent money to relatives or friends (e.g., Venmo, PayPal, Google Wallet, your bank's app)
2. Paid for something in a store scanning a QR code
3. Purchased a physical item or digital content remotely by using your mobile phone's web browser or an app
4. Paid a bill using your mobile phone's web browser or an app
5. Made a donation or other payment using a text message
6. Paid for parking, a taxi, car service (e.g., Uber), or public transit

Perceived ease of use

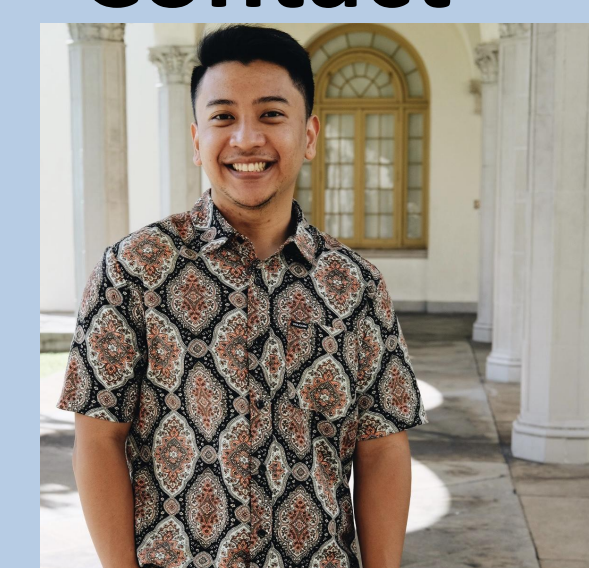
1. Using NFC mobile payment is clear and understandable
2. Using NFC mobile payment does not require mental effort
3. Learning to use NFC mobile payment is easy for me

Perceived usefulness

1. NFC mobile payments are fast
2. NFC mobile payments are efficient
3. NFC mobile payments are convenient

Chart 1 Measurement

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Research Design & Data Collection

- The Transfer of Learning Theory and Technology Acceptance Model (TAM)
 - TAM - framed the influences of beliefs on the intention to adopt new technologies. determined by perceived ease of use, meaning, free of burdensome effort, perceived of usefulness.
- Data collected from U.S young adults 18-35.
 - Two quality control checkpoints - commitment question and speed check enforced to exclude those who spent less than on-third of the median to complete the survey.
 - Only 501 of 629 respondent completed questionnaire. final sample size 463
 - Study based on three factors: intention of adopting NFC, financial experience, belief of the technology
 - Trust , perceived ease of use and usefulness based on a 7 point- Likert scale.
 - Mobile banking experience based on five banking behavior. measurement ranging from 0 to 4
 - Mobile payment transaction measured with a 0 to 6 scale.

Results

- Majority of the respondents were white woman's ages 26-32 with the respondents with a college degree or a graduate degree. with house income ranging from less than \$30,000 to between \$30,000 and \$49,000.
- No measurable difference in the intentions to adopt and the trust levels of NFC.
- Big difference is within the perceived Ease of Use (PEU) and Perceived Usefulness (PU).
 - Highest PEU and PU on card-only user and cash-only users.
- Users are more likely to adopt NFC mobile payment with more mobile banking experience
 - Higher trust on technology and its PEU and PU
- More mobile banking type experience, the higher the intentions to adopt NFC
 - Higher PEU and difference in PU
 - Mixed results in PU and trust
 - Higher trust rates for participants with all six mobile experiences, followed by participants with three types of mobile payments.
 - Higher PU in participants with three or more mobile payments, followed by at least four types of mobile payments

	Intention	Trust	PEU	PU
Payment Method				
Card-only users (n = 41)	4.678	4.817	5.585	5.764
Cash-only users (n = 207)	4.562	4.821	5.396	5.617
Cash and card users (n = 215)	4.507	4.836	5.753	6.003
Type of Mobile Banking				
Never (n = 38)	3.858	4.395	5.421	5.474
1 type (n = 45)	4.098	4.639	5.467	5.585
2 types (n = 76)	4.608	4.905	5.509	5.825
3 types (n = 109)	4.473	4.851	5.657	5.850
4 types (n = 96)	4.735	4.953	5.622	5.899
5 types (n = 99)	4.867	4.874	5.616	5.896
Type of Mobile Payment				
Never (n = 79)	3.896	4.291	5.392	5.460
1 type (n = 103)	4.221	4.823	5.511	5.825
2 types (n = 97)	4.503	4.660	5.481	5.763
3 types (n = 87)	4.903	5.210	5.801	6.004
4 types (n = 61)	4.970	4.980	5.738	5.995
5 types (n = 23)	5.339	5.196	5.406	5.826
6 types (n = 13)	5.631	5.462	6.051	5.949

Note. NFC = near field communication; PEU = perceived ease of use; PU = perceived usefulness. Bold values indicate that the significant group mean differences based on analysis of variance (ANOVA) tests.

Chart 2 Results

Discussion

Before the Covid-19 pandemic, many retailers and consumers were reluctant in switching or trying mobile payments. Many consumers often prefer their physical debit and credit cards or cash. Consumers put high importance on reliability. NFC is a fairly new technology and the study on how safe NFC is limited and scarce, causing some major concerns to the consumers.

The Covid-19 pandemic gave retailers enough reason to adopt contactless payments to provide consumers alternative ways of payments without touching cash, PIN pads, and pens.

currently, 67% of retailers now accept some form of no touch payments, 58% of these retailers accept contactless cards, 56% takes mobile payments.

Based on Mastercard Contactless Consumer Polling, half of consumers are now using some form of contactless payments and 73% of merchants prefer their customers to pay with a card or mobile payment.

Conclusions

Payment methods has come a long way. The introduction of NFC wallet less payment has provided companies opportunities to provide users with other ways of payments. Although, the adoption of wireless payment had a slow start, the pandemic has increased the number of payments being made.

To grow, NFC service providers must not just know who their target audiences are, but also know how to get them to adopt the technology.

There is still a lot to learn about NFC payments as there is not a lot of studies on the security of the technology and how well it protects the user's sensitive information. Many studies is still needed to be looked at to provide the necessary information needed to get customers to adopt the technology.

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