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# **Factors Affecting Customers Perceived Intention to Use Near field communication Payments in Lebanon**

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## Abstract

This study examines the factors influencing the intention to use Near Field Communication (NFC) payments. Through a survey of 200 participants, the relationships between subjective norms, perceived usefulness, perceived ease of use, perceived security, trust, attitude, and the intention to use NFC payments were investigated. The results indicate that subjective norms, perceived ease of use, perceived security, trust, and attitude have significant positive effects on individuals' intention to adopt NFC payments. Theoretical implications highlight the applicability of the theory of reasoned action in explaining adoption behavior. From a practical perspective, the study offers recommendations for organizations and policymakers to facilitate NFC payment adoption, including educational initiatives, enhancing user experience, fostering positive social norms, and targeted marketing strategies. Future research opportunities include investigating cultural variations, longitudinal studies, individual differences, and the impact of external factors on NFC payment adoption. This study enhances the understanding of NFC payment adoption and provides insights for researchers and practitioners in the field of technology adoption and payment systems.

**Keywords:** NFC, Subjective Norms, Perceived Usefulness, Perceived Security, Perceived Ease of Use, Trust and Attitude and Intention to Use NFC.

## المستخلص:

هذه الدراسة تفحص العوامل التي تؤثر على النية لاستخدام الدفع عبر تقنية الاتصال قريب المدى (NFC) من خلال استبيان شمل ٢٠٠ مشارك، تم التحقيق في العلاقات بين المعايير الذاتية، الفائدة المتصورة، السهولة المتصورة للاستخدام، الأمان المتصور، الثقة، الموقف، والنية لاستخدام الدفع عبر NFC. تشير النتائج إلى أن المعايير الذاتية، السهولة المتصورة للاستخدام، الأمان المتصور، الثقة، والموقف لها تأثيرات إيجابية كبيرة على نية الأفراد لتبني الدفع عبر NFC. تسلط الآثار النظرية الضوء على قابلية تطبيق نظرية الفعل المنطقي في تفسير سلوك التبني. من منظور عملي، تقدم الدراسة توصيات للمنظمات وصناع السياسات لتسهيل تبني الدفع عبر NFC، بما في ذلك المبادرات التعليمية، تحسين تجربة المستخدم، تعزيز المعايير الاجتماعية الإيجابية، واستراتيجيات التسويق المستهدفة. تشمل فرص البحث المستقبلي دراسة الفروق الثقافية، الدراسات الطولية، الاختلافات الفردية، وتأثير العوامل الخارجية على تبني الدفع عبر NFC بشكل عام، تعزز هذه الدراسة فهمنا لتبني الدفع عبر NFC وتوفر رؤى للباحثين والممارسين في مجال تبني التكنولوجيا وأنظمة الدفع.

**الكلمات المفتاحية:** NFC المعايير الذاتية، الفائدة المتصورة، الأمان المتصور، السهولة المتصورة للاستخدام، الثقة، الموقف، النية لاستخدام NFC.

## 1.1 Research Background

The electronic payment system is defined as a payment service that utilizes the information and communication technologies including integrated circuit (IC) card, cryptography, and telecommunication networks. An efficient electronic payment system reduces the cost of trading and is thought to be essential for the functioning of capital and inter-bank markets. With the advancement of technology, electronic payment system has taken many forms including credit cards, debit cards, electronic cash and check systems, smart cards, digital wallets contactless payment methods and mobile payments (Bezovski, 2016; JosephNg et al., 2022).

Recent cryptographic advances have enabled all modern payment services, such as digital payments and smart credit/debit cards, to provide a better degree of financial safety, which is often supported by standard systems engineering security criteria (Ramos-de-Luna et al., 2017).

Furthermore, this study focuses on examining the factors that influence customers' perceived intention to use NFC payments. The independent variables include subjective norms, perceived usefulness, perceived security, perceived ease of use, trust, and attitude, with subjective norms and perceived ease of use impacting attitude. Subjective norms capture social influence and societal expectations (Joseph Ng et al., 2022), while perceived usefulness reflects the practical benefits of NFC payments (Kakish & Shah, 2016). Perceived security relates to concerns regarding personal and financial information protection, while perceived ease of use pertains to the simplicity of using NFC payments. Trust represents confidence in the technology and service providers. Attitude reflects overall evaluations, influenced by subjective norms and perceived ease of use. The dependent variable is the intention of use, indicating individuals' willingness and planned behavior to adopt and utilize NFC payments.

## 1.2 Research Problem

The absence of such requirements can cause critical financial damage to the institutions, consumer, merchant, and whole payment system (Joseph Ng et al., 2022). Although many experts claim that mass adoption of mobile payments is inevitable, many of the mobile

payment solutions launched around the world in recent years are having a hard time consolidating (Kakish & Shah., 2016).

The use of mobile terminals is a rapidly growing, creating new problems, like the use of terminals owned by the healthcare personnel and increasing the privacy breach. As a consequence, if any of these devices are lost or stolen, security breaches occur that may affect patients whose data were stored in those devices (Kowalevicz, Pirrone & Huerta., 2017).

The future of a specific electronic payment system depends upon how it overcomes the practical and analytical challenges faced by various means of online payments. These challenges include issues of law and regulation (buyer and seller protection), technological capabilities of e-payment service providers, commercial relationships, and security considerations such as verification and authentication issues (Bezovski. 2016).

An additional reason for NFC enabled payment systems to not be fully analyzed is the lack of merchants who are equipped with NFC payment terminals, more specifically Contactless Terminals. Several small businesses shy away from implementing contactless terminals solely because of the additional costs of the newer terminals; However, but several larger retailers are similarly restrictive due to their previous commitments to competing merchant networks with lower interchange fees, such as the Merchant Customer Exchange (MCX) (Kakish & Shah., 2016).

According to Almaiah et al., (2022), location-based mobile services (such as NFC) may be difficult to use when moving about due to personalized dialogues. Because they lack the knowledge, skills, and capacity to use a technology when it is still in its early stages of development, the majority of customers may choose not to adopt it, according to Almaiah et al., (2022), a customer's perception of how convenient NFC mobile payments will be the main aspect of TAM's perceived ease of use component (Almaiah et al., 2022).

A lack of trust topped the list, with some people hesitant to make payments over the Internet because of potential security threats. The thought of someone else potentially having access to their bank account is a deal-breaker for certain people. People in this category may have no prior experience with the Internet and only a rudimentary

understanding of how it operates. Therefore, mobile payments are a big step into the unknown, mainly when no one can guide them or explain the details (JosephNg et al., 2022). According to Almaia et al. (2022), perceptions of security and privacy issues, as well as credit cards' mobile payment capabilities, are all obstacles to Internet-based transactions. Additionally, the absence of robust security measures in mobile payment services can lead to critical financial damage for all involved parties, including financial institutions, consumers, merchants, and the entire payment system (Joseph Ng et al., 2022).

In the context of Lebanon, there are specific challenges and issues surrounding the adoption of mobile payments and NFC-enabled payment systems. One significant problem is the security issue that arises due to the involvement of multiple parties in a mobile payment service, including mobile devices, financial institutions, network providers, and merchant systems. The absence of proper mutual authentication raises concerns about potential financial damage to institutions, consumers, merchants, and the overall payment system. This security issue becomes even more critical in the healthcare sector, where the use of mobile terminals may lead to privacy breaches and security breaches if these devices are lost or stolen, potentially affecting patients' data stored on those devices. Furthermore, the practical and analytical challenges faced by various means of online payments, such as law and regulation issues, technological capabilities of e-payment service providers, commercial relationships, and security considerations, impact the future of electronic payment systems.

Additionally, the limited availability of merchants equipped with NFC payment terminals, particularly "Contactless Terminals," poses a barrier to the full analysis and adoption of NFC-enabled payment systems. The additional costs associated with newer terminals deter small businesses, while larger retailers may be restricted due to prior commitments to competing merchant networks with lower interchange fees. Trust is another significant concern, with some individuals hesitant to make payments over the Internet due to potential security threats and the fear of unauthorized access to their bank accounts. The lack of prior experience and understanding of the Internet further adds to the hesitance towards mobile payments. These challenges and issues specific to Lebanon contribute to the complexity and adoption barriers for NFC payments and mobile payment services in the country.

## 2. Theoretical Background

In this study, the theory of Planned Behavior (TPB) will be used on the intention to utilize NFC payments, the effects of six independent factors (subjective norms, perceived usefulness, perceived security, perceived ease of use, trust and attitude) will be investigated.

### 2.1. The Theory of Planned Behavior (TPB)

The theory of planned behavior (TPB) has been used successfully to explain and predict behavior in a multitude of behavioral domains (Ajzen, 2020). According to the theory of planned behavior (TPB), human behavior is guided by three kinds of considerations: behavioral beliefs produce a favorable or unfavorable attitude toward the behavior; normative beliefs result in perceived social pressure or subjective norm; and control beliefs give rise to perceived behavioral control or self-efficacy (Ajzen, 2006).

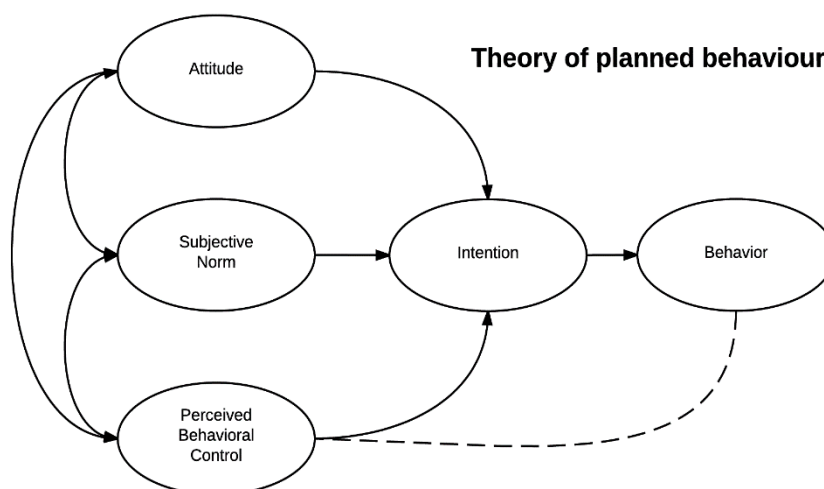


Figure 1 - Theory of Planned Behavior

Source: George (2004)

### 2.2. Variables Conceptualizations

This section discusses how the factors in the research are categorized, starting with the dependent variable, intention to use NFC, which is impacted by six independent variables: subjective norms,



perceived usefulness, perceived security, perceived ease of use, trust and attitude.

### **2.2.1. Subjective Norms**

Ajzen and Fishbein (1980) defined subjective norms as perceived social pressure to engage or not engage in a specific behavior. Conner and Armitage (1998) described subjective norms as the individual's perception of the social pressure to perform or not perform the behavior. Steffens et al. (2010) examined subjective norms in relation to intergroup conflict. They defined subjective norms as individuals' beliefs about the approval or disapproval of relevant reference groups regarding specific intergroup behaviors. Subjective norms are defined as the degree to which an individual considers the opinion of other individuals close to him (family and friends) regarding to the adoption of a system or carrying out a certain action. (Ramos-de-Luna et al., 2017).

### **2.2.2. Perceived Usefulness**

Perceived usefulness is defined here as the degree to which a person believes that using a particular system would enhance his or her job performance. (Pfeffer, 1982; Schein, 1980; Vroom, 1964). According to Davis (1993), the perceived usefulness is the degree to which a person believes that adopting a particular system will increase his effectiveness and job performance. Venkatesh and Davis (2000) expanded on the concept of perceived usefulness as the degree to which a person believes that using a particular system would enhance their performance in a specific context. Park, Lee, and Cheong (2007) defined perceived usefulness as the degree to which individuals believe that using a particular technology would be beneficial in achieving their goals. Moreover, Jiang et al. (2021) defined perceived usefulness as the subjective perception of the potential benefits or value that a user associates with a technology. Their definition emphasized the user's subjective perception of the advantages and benefits offered by a technology in meeting their needs or goals.

### **2.2.3. Perceived Security**

Security encompasses the establishment of secure mechanisms and protocols that ensure the integrity, confidentiality, and privacy of financial and personal data exchanged during mobile payment

transactions (Chellappa, 2008). From a consumer's perspective perceived security of an electronic commerce transaction may be defined as the subjective probability with which consumers believe that their personal information (private and monetary) will not be viewed, stored, and manipulated during transit and storage by inappropriate parties in a manner consistent with their confident expectations (Chellappa, 2008; Kowalewicz, Pirrone & Huerta, 2017; Luna, 2017). Consumers are more likely to use the mobile payment service if they believe that mobile service providers and retailers are honest; sincerely keep their promises; and take full responsibility in the eventuality of any identity theft, fraud, or security issues (JosephNg et al., 2022).

### 2.3.4 Perceived Ease of Use

Perceived ease of use refers to the degree to which a person believes that using a particular system would be free of effort. This follows from the definition of "ease": freedom from difficulty or great effort. Effort is a limited resource that a person may allocate to the various activities for which he or she is responsible (Davis, 1989).

In a following definition, Davis (1993) defined perceived ease of use as the degree to which a person believes that using a particular system would be free of effort. Venkatesh et al. (2012) expanded on the concept of perceived ease of use as the degree to which a person believes that using a specific technology would require minimal effort. They emphasized the individual's perception of the effortlessness involved in using a technology to accomplish tasks.

Additionally, Alalwan et al. (2018) described perceived ease of use as the subjective perception of the degree to which using a technology is effortless and requires minimal cognitive and physical effort. Their definition emphasized the user's subjective perception of the cognitive and physical effort required to interact with a technology (Almaiah et al., 2022).

### 2.3.5 Trust

Mayer, Davis, and Schoorman (1995) defined trust as the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control

that other party. McKnight and Chervany (2001, p. 396) expanded on the concept of trust as the belief that an entity (e.g., a person, organization, or system) is competent, open, reliable, and concerned with the well-being of others.

Gefen et al. (2018) described trust as the willingness of an individual or an organization to be vulnerable to the actions of another party based on the expectation that the other party will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party. This definition emphasized the willingness to be vulnerable and rely on another party's actions, regardless of the ability to monitor or control them. The term trust in payment services means that the user has a certain level of confidence in the service provider's ability, integrity, and benevolence. Therefore, building consumer trust leads to a long relationship with the consumer and continued use of mobile payments (Joseph Ng et al., 2022).

### **2.3.6 Attitude**

Attitude is a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor (Eagly & Chaiken, 1993, p. 1). Attitudes defined as object–evaluation associations (Fazio, 1995).

Attitudes reflect favorable or unfavorable feelings that people express through their behavior, which implies that attitudes develop over time as people gain experience (Luna, 2017). Attitudes are often the result of experience or upbringing. The main components of attitude are cognitive, affective, and behavioral, which means they incorporate thoughts, feelings, and actions (Cherry, 2023).

### **2.3.7 Intention to Use**

An important dependent variable in studies based on the TAM is the intention to use. This variable is also key in studies on the acceptance of mobile payments (Van Der Heijden, 2003; Chen & Adams, 2005; Kim et al., 2010; Yang et al., 2012).

Davis et al. (1989) defined intention to use as the degree to which an individual has formulated conscious plans to perform or not perform some specified future behavior. This definition emphasized the individual's conscious plans and decisions regarding their future behavior. In addition, Taylor and Todd (1995) described intention to

use as the degree to which a person has the willingness to use a particular system. Their definition focused on the individual's willingness and readiness to adopt and use a specific system.

Adding to this, Venkatesh et al. (2003) expanded on the concept of intention to use as the degree to which an individual has the purpose or the plan to use a specific system. They emphasized the individual's purposeful intent and plan to engage with a particular system. Bagozzi et al. (2012) described intention to use as the conscious, cognitive, and volitional state of an individual with respect to the engagement in a behavior. Their definition emphasized the conscious, cognitive, and volitional aspects of an individual's state related to their engagement in a specific behavior.

Finally, Liébana-Cabanillas et al. (2020) defined intention to use as the individual's purpose or plan to use a specific technology. Their definition highlighted the individual's purposeful intent and plan to adopt and utilize a particular technology.

### **2.3. Literature Review and Hypotheses Development**

The next section includes various analysis relationships among variables and whether they have a positive or negative impact on the intention to use NFC payments, and it will aid in the construction of hypotheses to explore and obtain findings.

#### **2.3.1. The Effect of Subjective Norms on attitude**

The importance of the relationship between subjective norms and attitude on technology has been confirmed by several studies (Taylor & Todd, 1995; Venkatesh & Davis, 2000; Schepers and Wetzels, 2007; Yang et al, 2012; Hansen et al., 2012; Wang et al., 2013; Choi & Chung, 2013). Moreover, other studies have shown the positive relationship of between subjective norms and attitude toward using mobile applications (Schierz et al., 2010; Grandón et al., 2011). Therefore, subjective norms play a crucial role in influencing individuals' attitude towards adopting and using Near Field Communication (NFC) technology for payment purposes (Ramos-de-Luna et al., 2017). For instance, in a study by Liu and Liang (2020), subjective norms were identified as a significant predictor of individuals' intention to adopt NFC payments in the context of China. They found that individuals who perceived greater social pressure and

influence from their social network to use NFC payments were more likely to have a positive attitude towards NFC and express a higher intention to use it. For example, in a study by Koenig-Lewis et al. (2010), subjective norms were found to have a negative impact on individuals' intention to adopt contactless payment technology, which encompasses NFC payments. The authors suggested that the influence of subjective norms might not always align with individuals' personal attitudes and preferences, leading to a divergence between social expectations and individual intentions. Therefore, the hypothesis will be formulated as follows:

H1: Subjective norms have a positive effect on individuals' attitude towards NFC payments.

### **2.3.2. The Effect of Perceived Ease of use on Attitude**

The influence of perceived ease-of-use on attitude towards intention to use NFC has been supported by previous studies (e.g., Liébana-Cabanillas et al., 2013, 2014; Muñoz-Leiva et al., 2017; Hsu et al., 2011; Püschel et al., 2010) have confirmed the positive impact of perceived ease-of-use on attitude. Individuals who perceived NFC payments as easy to understand and use were more likely to develop a positive attitude towards NFC and express a higher intention to use it. In addition, according to Bendary and Al-Sahouly, (2018), while exploring the extension of unified theory of acceptance and use of technology, UTAUT2, the results indicated positive effect of perceived ease of use on attitude.

However, according to Luna et al. (2017), the effect of perceived ease of use on attitude to use of NFC technology does not positively impact. The study of Liébana-Cabanillas et al. (2015, 2017) failed to find a significant linkage between perceived ease-of-use and attitude. Therefore, the hypothesis will be formulated as follows:

H2: Perceived ease of use have a positive effect on individuals' attitude towards NFC payments.

### **2.3.3. The Effect of Perceived Security on intention to use NFC**

The perception of security has always been associated with negative consequences that the consumer might suffer if he modifies his intention to use (Luna et al., 2017). For instance, in a study

conducted by Liu and Liang (2020) in China, perceived security emerged as a significant predictor of individuals' intention to adopt and use NFC payments. Individuals who perceived NFC payments as secure and trustworthy were more likely to develop a positive attitude towards NFC and express a higher intention to use it. Similarly, in a study by Ng, Sim, and Yeo (2019) in Malaysia, perceived security was found to have a positive impact on individuals' intention to adopt mobile payment services, including NFC payments. Chen et al. (2019) investigated the influence of perceived security on intention to use NFC technology. The findings revealed a positive effect, indicating that higher levels of perceived security significantly increased users' intention to use NFC. The study emphasized the importance of user perceptions of security in fostering the adoption and usage of NFC technology.

For example, in a study conducted by Alalwan et al. (2017), perceived security was identified as a significant determinant of individuals' intention to adopt NFC payments among customers in KSA. The study found that individuals who perceived NFC payments as secure and trustworthy were more likely to express a higher intention to use NFC technology. Similarly, in a study by Oumer and Andersen (2018) that examined factors influencing consumers' acceptance of mobile payments, perceived security emerged as a critical factor positively influencing individuals' intention to adopt NFC payments.

However, studies (Yang & Liu, 2015; Ng et al., 2020) focusing on the negative relationship between perceived security and intention to use NFC have also been conducted. For example, in a study by Yang and Liu (2015) that explored factors influencing individuals' adoption of mobile payment systems, perceived security was identified as a significant barrier to NFC adoption. Participants expressed concerns regarding the security of NFC technology, such as the risk of unauthorized access to their financial data or the potential for identity theft. These concerns negatively influenced their intention to use NFC payments. Moreover, Tang et al. (2020) examined the relationship between perceived security and intention to use NFC. The findings revealed a negative effect, suggesting that higher levels of perceived security did not significantly increase users' intention to use NFC. For instance, in a study by Ling, Chai, and Piew (2019) that explored the factors affecting consumers' acceptance of NFC payments in Malaysia,

perceived security was found to be a significant barrier to NFC adoption. Participants expressed concerns about the security of NFC technology, such as the risk of unauthorized access to their financial data or the potential for identity theft. These concerns negatively influenced their intention to use NFC payments.

H3: Perceived security has a positive effect on the intention to use NFC payments.

#### **2.3.4. The effect of perceived usefulness on intention to use NFC**

The perceived usefulness is a fundamental antecedent to the attitude towards the use of a particular technology (Davis, 1989). Several studies (Venkatesh et al., 2012; Alalwan et al., 2018; Almaiah et al., 2022) have also proved the importance of this construct for the study of technology acceptance (Ramos-de-Luna et al., 2017). Similarly, in a study by Liu and Liang (2020) in China, perceived usefulness emerged as a significant predictor of individuals' intention to adopt NFC payments, indicating that a simpler and more user-friendly NFC system fosters a positive attitude and higher intention to use it.

Contrarily, some studies (Laukkanen, 2007; Ng et al., 2020) have suggested a negative relationship between perceived usefulness and the intention to use NFC. For example, in a study by Laukkanen (2007), perceived usefulness was found to have a negative impact on individuals' intention to adopt mobile payment services, which encompass NFC payments.

Based on the existing literature, the following research hypothesis is formulated:

H4: Perceived usefulness has a positive effect on individuals' attitude towards NFC payments.

#### **2.3.5 The Effect of Trust on intention to use NFC.**

Numerous studies have demonstrated a positive relationship between trust and the intention to use NFC. For instance, in a study conducted by Alalwan, Dwivedi, and Rana (2017), trust emerged as a significant determinant of individuals' intention to adopt NFC payments among Arab Gulf region consumers. The study found that

individuals who had higher levels of trust in NFC technology and service providers were more likely to express a stronger intention to use NFC. Similarly, in a study by Ling, Chai, and Piew (2019) that examined factors affecting consumers' acceptance of NFC payments, trust was identified as a significant predictor of individuals' intention to use NFC technology among Shanghai consumers. Individuals who perceived the NFC ecosystem as trustworthy were more inclined to adopt and use NFC payments.

Contrarily, some studies have indicated a negative relationship between trust and the intention to use NFC. For example, in a study by Liao et al. (2015) that investigated the factors influencing consumers' adoption of mobile payments, including NFC, trust was found to be a significant barrier to NFC adoption. Participants expressed concerns about the security and reliability of NFC technology, leading to a reduced intention to use NFC payments. These findings suggest that trust is a multifaceted construct that can have both positive and negative influences on individuals' intention to use NFC, depending on their perceptions of the NFC ecosystem.

Based on the existing literature, the following research hypothesis is formulated:

H5: Trust has a positive effect on the intention to use NFC payments.

### **2.3.6. The Effect of Attitude on intention to use NFC**

Attitude, as a psychological construct, plays a crucial role in shaping individuals' intentions to adopt and use NFC payments (Ramos-de-Luna et al., 2017). It refers to individuals' overall evaluation, positive or negative, of NFC technology and its associated benefits.

Numerous studies (Luna, 2017; Alalwan et al., 2017; Ramos-de-Luna et al., 2017) have demonstrated a positive relationship between attitude and intention to use NFC. For instance, in a study conducted by Alalwan, Dwivedi, and Rana (2017), attitude was identified as a significant determinant of individuals' intention to adopt NFC payments. Similarly, in a study by Ling, Chai, and Piew (2019) that examined factors affecting consumers' acceptance of NFC payments, attitude emerged as a significant positive predictor of individuals' intention to use NFC technology.



On the other hand, fewer studies (Liao et al., 2015; Oumer & Andersen, 2018) have highlighted the negative relationship between attitude and intention to use NFC. For example, in a study by Oumer and Andersen (2018) that explored factors influencing consumers' acceptance of mobile payments, including NFC, negative attitudes towards NFC technology were found to negatively impact individuals' intention to adopt NFC payments. Participants with unfavorable attitudes were less likely to express an intention to use NFC technology, indicating a negative relationship between attitude and intention to use NFC (Liao et al., 2015).

Based on the existing literature, the following research hypothesis is formulated:

H6: Attitude has a positive effect on the intention to use NFC payments.

## 2.4 Conceptual Framework

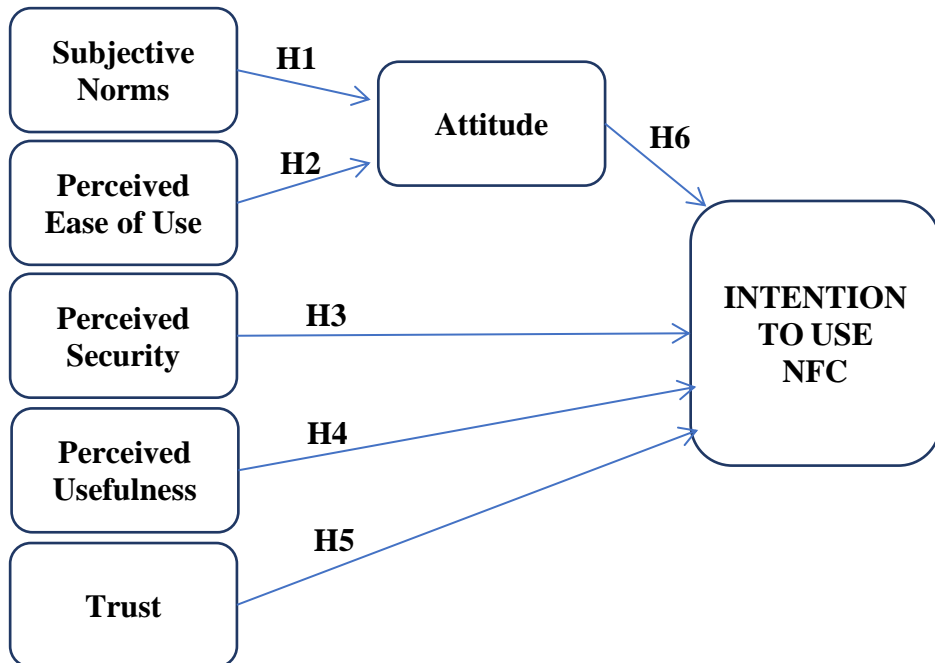


Figure 2 - Conceptual Framework

Source: Joseph Ng et al. (2022) and adjusted by the research.

### 3. Variable's Definitions and Measurements

The conceptualization of the variables, as well as the operating definitions of the variables, are presented in the table below:

Table 1 - Variables Definitions and Measurements

<b>Variables</b>	<b>Operational Definition</b>
Subjective norms	3 items on 5- point Likert scale according to (Kakish & Shah., 2016).
Perceived usefulness	4 items on 5- point Likert scale according to (Kakish & Shah., 2016).
Perceived security	4 items on 5- point Likert scale according to (Kakish & Shah., 2016).
Perceived ease of use	4 items on 5- point Likert scale according to (Kakish & Shah., 2016).
Trust	4 items on 5- point Likert scale according to (Kakish & Shah., 2016).
Attitude	4 items on 5- point Likert scale according to (Kakish & Shah., 2016).
Intention to use NFC	3 items on 5- point Likert scale according to (Kakish & Shah., 2016).

### 4. Methodology

In this part of the methodology section, the sampling method, data collection, and statistical analysis techniques are presented.

#### 4.1. Sampling

The sample is a group of people who were asked to respond to surveys regarding using mobile banking and NFC payments. Although it is more randomly chosen, the sample chosen is similar to the population. It represents a portion of the population in terms of how many people use mobile banking and the conditions that let them to use NFC payments. The analysis and conclusion of this study are attributed to the research population.

## 4.2. Data Collection

Customers who are using NFC or intend to use it were given a self-administered questionnaire by 400 persons from the target market using a Google form, and the factors were explained to them.

The sample size for this study was 200 participants. The calculation of the sample size involved considering factors such as the expected effect size, desired level of significance, and statistical power. The formula used to calculate the sample size for this study depends on several factors, including the desired level of precision, the desired level of significance (alpha), the expected effect size, and the desired statistical power (1 - beta).

One commonly used formula for calculating sample size in hypothesis testing is (BDL, 2022):

$$n = (Z^2 * \sigma^2) / E^2 = 200 \text{ participants}$$

Where: n = sample size Z = Z-value corresponding to the desired level of significance  $\sigma$  = estimated population standard deviation E = desired margin of error (precision)

To calculate the sample size, the researchers would have determined the Z-value based on the desired level of significance, such as 95% confidence level (Z = 1.96). They would have estimated the population standard deviation ( $\sigma$ ) based on previous research or pilot studies if available. Finally, they would have determined the desired margin of error (E) based on the level of precision they wanted to achieve.

Additionally, the data was examined using the SPSS statistics tool, and the outcomes were displayed as tables.

## 4.3. Descriptive Analysis

The survey questions used descriptive analysis to characterize respondents' demographic characteristics, such as age, gender, marital status, level of education, and annual income level.

## 4.4. Sample Profiling

Understanding the characteristics of the participants in a study requires knowledge of their demographics. In the current study, the

participant's demographic profile was evaluated to learn more about their gender, age, education level, marital status, and income. It is crucial to analyze these demographic factors because they can provide the findings context and help determine how representative the sample is (Hair et al., 2014).

Table (2) presents the frequency and percentage distribution of respondents' gender. Out of the total respondents, 122 (61.0%) identified as female, while 78 (39.0%) identified as male. This indicates that the sample had a higher representation of female respondents compared to male respondents. The gender distribution provides insights into the composition of the respondents, which can be considered when analyzing the data and drawing conclusions related to the research objectives.

Table 2 - Demographics

Gender Groups					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	122	61.0	61.0	61.0
	Male	78	39.0	39.0	100.0
	Total	200	100.0	100.0	
Age Groups					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Between 18-23 years	71	35.5	35.5	35.5
	Between 24-28 years	42	21.0	21.0	56.5
	Between 29-33 years	37	18.5	18.5	75.0
	Between 34-38 years	19	9.5	9.5	84.5
	Between 39-43 years	18	9.0	9.0	93.5

	Between 44-48 years	5	2.5	2.5	96.0
	Between 49-53 years	6	3.0	3.0	99.0
	Between 54-58 years	1	.5	.5	99.5
	Above 59 years	1	.5	.5	100.0
	Total	200	100.0	100.0	
<b>Educational Groups</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School	55	27.5	27.6	27.6
	Bachelor	62	31.0	31.2	58.8
	Masters	74	37.0	37.2	96.0
	DBA	3	1.5	1.5	97.5
	PhD	6	3.0	3.0	100.0
	Total	200	100.0	100.0	
Total		200	100.0		
<b>Relationship Groups</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	119	59.5	59.5	59.5
	Married	74	37.0	37.0	96.5
	Widowed	3	1.5	1.5	98.0
	Divorced	4	2.0	2.0	100.0
	Total	200	100.0	100.0	

Income Groups					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 8.000.000 LBP	55	27.5	27.5	27.5
	Between LBP 8.000.000 and LBP 12.000.000	18	9.0	9.0	36.5
	Between LBP 13.000.000 and LBP 16.000.000	23	11.5	11.5	48.0
	Between LBP 17.000.000 and LBP 20.000.000	19	9.5	9.5	57.5
	Between LBP 21.000.000 and LBP 24.000.000	15	7.5	7.5	65.0
	Between LBP 25.000.000 and LBP 30.000.000	70	35.0	35.0	100.0
	Total	200	100.0	100.0	

Moreover, table (2) presents the frequency and percentage distribution of respondents' age groups. Among the respondents, the majority (35.5%) fell within the age range of 18-23 years, followed by 24-28 years (21.0%) and 29-33 years (18.5%). The distribution shows a decreasing trend as the age groups progress, with smaller proportions in the older age categories. It is worth noting that the sample appears to have a relatively higher representation of younger age groups, with the majority of respondents falling within the 18-33 years range.

Among the respondents, 55 (27.5%) had a high school education, 62 (31.0%) had a bachelor's degree, and 74 (37.0%) had a master's degree. A smaller proportion of respondents held advanced degrees, with 3 (1.5%) having a Doctor of Business Administration (DBA) degree and 6 (3.0%) holding a Ph.D. The educational group distribution indicates that the majority of respondents in the sample had either a bachelor's or a master's degree. This suggests a relatively higher level of educational attainment among the participants.

Among the respondents, the majority (59.5%) identified as single, followed by married individuals (37.0%). A smaller proportion of respondents reported being widowed (1.5%) or divorced (2.0%). The distribution of marital status provides insights into the relationship status of the participants. It indicates that a significant portion of the

sample consists of single individuals, while a considerable number are married.

Among the respondents, 55 (27.5%) reported having a monthly income below 8,000,000 LBP. The distribution shows varying proportions across different income ranges, with 18 (9.0%) falling between 8,000,000 and 12,000,000 LBP, 23 (11.5%) between 13,000,000 and 16,000,000 LBP, 19 (9.5%) between 17,000,000 and 20,000,000 LBP, 15 (7.5%) between 21,000,000 and 24,000,000 LBP, and the highest proportion of 70 (35.0%) falling between 25,000,000 and 30,000,000 LBP. Analyzing the respondents' income ranges provides insights into their financial situation and can help understand how income levels may relate to their attitudes and behaviors regarding NFC usage.

#### 4.4 Reliability Analysis

The reliability coefficient known as Cronbach's Alpha examines the average correlation between items and calculates an approximation of the scale's internal consistency. The reliability test provides confidence in the measurement of the variables and indicates that the items used in the questionnaire are reliable indicators of the constructs being assessed. This ensures that the data collected from the respondents can be relied upon for further analysis and hypothesis testing. According to Field (2013), for an item to be reliable, the Cronbach alpha must be higher than 0.7.

The Cronbach's Alpha coefficient for the scale is .924, indicating a high level of reliability. The scale consists of 25 items in total. A Cronbach's Alpha value of .924 suggests that the items within each variable are highly correlated with each other, indicating that they are measuring the same underlying construct consistently. This high reliability coefficient indicates that the scale used in this study has good internal consistency and can be considered reliable for measuring the variables (see table 3).

Table 3 - Overall Reliability

Reliability Statistics	
Cronbach's Alpha	N of Items
.924	26

Source: SPSS v.26

The reliability test was conducted to assess the internal consistency of the items measuring each variable. The Cronbach's Alpha coefficients for all variables range from .907 to .930, indicating high internal consistency and reliability. These values suggest that the items within each variable are highly correlated, indicating that they measure the same underlying construct consistently (Field, 2013). This indicates that the scales used to measure the variables are reliable and suitable for further analysis and hypothesis testing.

The high reliability coefficients provide confidence in the accuracy and consistency of the measurements, ensuring that the data collected from the respondents are reliable and can be used for meaningful analysis in the study. The reliability coefficients for each individual variable in Table (4) indicate acceptable to good levels of internal consistency. These reliability coefficients show that each variable's items are trustworthy and consistently measure the desired constructs.

Table 4 - Item Reliability

Variables	Number of Items	Cronbach's Alpha
Subjective Norms	3	.930
Perceived Usefulness	4	.914
Perceived Security	4	.912
Perceived Ease of use	4	.909
Trust	4	.908
Attitude	4	.907
Intention to use	3	.907

Source: SPSS v.26

#### 4.5. KMO and Bartlett's Test

The appropriateness and validity of doing factor analysis on a particular dataset are evaluated using validity tests such the Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy. While Bartlett's test determines if the correlation



matrix significantly differs from an identity matrix, the KMO measure analyzes the proportion of variance in the variables that may be explained by underlying factors (Field, 2013).

In this analysis, the KMO measure is .896, which is considered excellent. It indicates that the data are highly suitable for factor analysis (see table 5). Bartlett's test examines whether the correlation matrix of the variables is significantly different from an identity matrix, indicating the presence of underlying factors. The test statistic is approximately 1070.650 with 21 degrees of freedom, and the significance level is .000. The significance level being less than .05 indicates that the correlation matrix is significantly different from an identity matrix, supporting the presence of underlying factors (see table 6). The high KMO measure suggests that there is a high amount of common variance among the variables, making them suitable for extracting meaningful factors. Additionally, the significant result of Bartlett's test suggests that there are underlying factors present in the data that can be explored further through factor analysis.

Table 5 - KMO Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.896
Bartlett's Test of Sphericity	Approx. Chi-Square	1070.650
	df	21
	Sig.	.000

Source: SPSS v.26

The number of items in each variable and their respective KMO extraction values are shown in table (6), along with the results of the KMO validity tests for each variable. The validity per item values ranges from .758 to .880, indicating moderate to high correlation between each item and the total score of its corresponding variable. The values indicate that the items within each variable are reasonably correlated with the overall construct they are intended to measure, supporting the reliability and validity of the measurement instrument.

Table 3 - KMO per Variable

Variable	Number of Items	Validity Per Item
Subjective Norms	3	.758
Perceived Usefulness	4	.813
Perceived Security	4	.859
Perceived Ease of use	4	.874
Trust	4	.878
Attitude	4	.880
Intention to use	3	.775

Source: SPSS v.26

#### 4.6 Correlation Coefficient

Typically utilizing the Pearson correlation coefficient ( $r$ ), it evaluates the strength and significance of the linear link between variables (Pallant, 2016). The Pearson correlation coefficient has a range of -1 to 1, with closer values to -1 or 1 suggesting a greater association and closer values to 0 indicating a weak or no correlation.

Based on table (7), the correlation analysis between the dependent variable "Intention to Use" and the independent variables (Subjective Norms, Perceived Usefulness, Perceived Security, Perceived Ease of Use, Trust, and Attitude) is as follows:

Subjective Norms: The Pearson correlation coefficient between Subjective Norms and Intention to Use is .519\*\* ( $p < .001$ ). This indicates a moderate positive correlation between Subjective Norms and Intention to Use.

Perceived Usefulness: The Pearson correlation coefficient between Perceived Usefulness and Intention to Use is .628\*\* ( $p < .001$ ). This indicates a moderate positive correlation between Perceived Usefulness and Intention to Use.

Perceived Security: The Pearson correlation coefficient between Perceived Security and Intention to Use is .743\*\* ( $p < .001$ ). This

indicates a strong positive correlation between Perceived Security and Intention to Use.

*Perceived Ease of Use:* The Pearson correlation coefficient between Perceived Ease of Use and Intention to Use is .684\*\* ( $p < .001$ ). This indicates a moderate positive correlation between Perceived Ease of Use and Intention to Use.

*Trust:* The Pearson correlation coefficient between Trust and Intention to Use is .772\*\* ( $p < .001$ ). This indicates a strong positive correlation between Trust and Intention to Use.

*Attitude:* The Pearson correlation coefficient between Attitude and Intention to Use is .757\*\* ( $p < .001$ ). This indicates a strong positive correlation between Attitude and Intention to Use.

These correlation results suggest that all the independent variables (Subjective Norms, Perceived Usefulness, Perceived Security, Perceived Ease of Use, Trust, and Attitude) are positively and significantly correlated with the dependent variable, Intention to Use NFC. The strength of the correlation's ranges from moderate to strong, indicating that these independent variables may have a significant influence on individuals' intention to use NFC as a payment method.

Table 8 - Correlation Analysis

		Correlations						
		Subjective Norms	Perceived Usefulness	Perceived Security	Perceived Ease of use	Trust	Attitude	Intention to Use
Subjective Norms	Pearson Correlation	1	.578**	.493**	.501**	.495**	.480**	.519**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	200	200	200	200	200	200	200
Perceived Usefulness	Pearson Correlation	.578**	1	.588**	.671**	.591**	.710**	.628**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	200	200	200	200	200	200	200

Correlations								
		Subjective Norms	Perceived Usefulness	Perceived Security	Perceived Ease of use	Trust	Attitude	Intention to Use
Perceived Security	Pearson Correlation	.493**	.588**	1	.637**	.814**	.633**	.743**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	200	200	200	200	200	200	200
Perceived Ease of use	Pearson Correlation	.501**	.671**	.637**	1	.691**	.801**	.684**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	200	200	200	200	200	200	200
Trust	Pearson Correlation	.495**	.591**	.814**	.691**	1	.703**	.772**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	200	200	200	200	200	200	200
Attitude	Pearson Correlation	.480**	.710**	.633**	.801**	.703**	1	.757**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	200	200	200	200	200	200	200
Intention to Use	Pearson Correlation	.519**	.628**	.743**	.684**	.772**	.757**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	200	200	200	200	200	200	200
**. Correlation is significant at the 0.01 level (2-tailed).								

Source: SPSS v.26

The values for each variable's Tolerance and Variance Inflation Factor (VIF) are shown in Table (9) statistics on collinearity.

Based on the provided collinearity statistics, all the variables (Subjective Norms, Perceived Usefulness, Perceived Security,

Perceived Ease of Use, Trust, and Attitude) have Tolerance values above 0.1, indicating a low level of collinearity. Additionally, the VIF values are below 5 for all variables, suggesting a moderate level of multicollinearity.

Table 9 - Collinearity Statistics and VIF

Variables	Collinearity Statistics	
	Tolerance	VIF
Subjective Norms	.322	3.125
Perceived Usefulness	.326	3.072
Perceived Security	.322	3.107
Perceived Ease of use	.271	3.688
Trust	.315	3.174
Attitude	.305	3.154
Intention to use	.315	

Source: SPSS v.26

## 4.7. Hypothesis Testing Using Multiple Regression Test

### 4.7.1 Regression One: Subjective Norms, Perceived Ease of Use, and Attitude

In Model 1, the predictors are Perceived Ease of Use and Subjective Norms. The coefficient of determination (R Square) indicates that approximately 51% of the variance in the dependent variable can be explained by these predictors.

In Model 2, an additional predictor, Attitude, is included. The inclusion of Attitude improves the model's performance, as indicated by a higher R Square value of 0.613. The adjusted R Square, which considers the number of predictors and the sample size, is 0.608.

The standard error of the estimate reflects the average deviation between the predicted values and the actual values of the dependent variable. For Model 1, the standard error of the estimate is 0.57049, and for Model 2, it is slightly lower at 0.50787.

These results suggest that the combination of Subjective Norms, Perceived Ease of Use, and Attitude can significantly contribute to explaining the variance in the dependent variable.

Table 4 - Model Summary for Regression One

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.714 <sup>a</sup>	.510	.505	.57049
2	.783 <sup>b</sup>	.613	.608	.50787
a. Predictors: (Constant), Perceived Ease of Use, Subjective Norms				
b. Predictors: (Constant), Perceived Ease of Use, Subjective Norms, Attitude				

Table (11) shows the ANOVA test for both Model (1) and Model (2). For Model 1, the ANOVA indicates a significant regression, as the F-statistic is 102.437 with a p-value of .000. This suggests that the predictors (Perceived Ease of Use and Subjective Norms) have a significant impact on the dependent variable (Intention to use). Similarly, for Model 2, the ANOVA also shows a significant regression, with an F-statistic of 103.689 and a p-value of .000. The inclusion of the additional predictor (Attitude) further improves the model's ability to explain the variance in the dependent variable. These results confirm that the regression models involving Subjective Norms, Perceived Ease of Use, and Attitude are statistically significant in explaining the variation in the dependent variable (Intention to use).

Table 11 - ANOVA for Regression One

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	66.677	2	33.338	102.437	.000 <sup>b</sup>
	Residual	64.114	197	.325		
	Total	130.791	199			

2	Regression	80.236	3	26.745	103.689	.000 <sup>c</sup>
	Residual	50.555	196	.258		
	Total	130.791	199			
<p>a. Dependent Variable: Intention to use</p> <p>b. Predictors: (Constant), Perceived Ease of Use, Subjective Norms</p> <p>c. Predictors: (Constant), Perceived Ease of Use, Subjective Norms, Attitude</p>						

The regression analysis was conducted to examine the relationship between the independent variables (Subjective Norms, Perceived Ease of Use, and Attitude) and the dependent variable (Intention of Use). Two models were presented in table (16), and their results are as follows.

In Model 1, it was found that both Subjective Norms and Perceived Ease of Use had significant positive effects on Intention of Use. Subjective Norms had a coefficient of .227 ( $p < .001$ ), indicating that individuals who perceive stronger subjective norms are more likely to have a higher intention to use NFC technology. Similarly, Perceived Ease of Use had a coefficient of .612 ( $p < .001$ ), suggesting that individuals who find NFC technology easy to use are more likely to have a stronger intention to use it. These results highlight the importance of social influence and perceived ease of use in shaping individuals' intentions to use NFC technology.

In Model 2, an additional independent variable, Attitude, was included. The results showed that Attitude also had a significant positive effect on Intention of Use, with a coefficient of .579 ( $p < .001$ ). This indicates that individuals with more positive attitudes towards NFC technology are more likely to have a higher intention to use it. The inclusion of Attitude in the model further strengthens the understanding of the factors influencing NFC usage intention.

Thus, the regression analysis reveals that Subjective Norms, Perceived Ease of Use, and Attitude are important determinants of individuals' intention to use NFC technology. These findings suggest that fostering positive subjective norms, emphasizing the ease of use, and cultivating favorable attitudes towards NFC technology could promote its adoption and usage among individuals.

Table 12 - Regression One

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	.574	.211		2.716	.007
	Subjective Norms	.227	.056	.236	4.088	.000
	Perceived Ease of Use	.612	.062	.566	9.829	.000
2	(Constant)	.212	.194		1.090	.277
	Subjective Norms	.172	.050	.178	3.425	.001
	Perceived Ease of Use	.172	.082	.159	2.095	.037
	Attitude	.579	.080	.544	7.250	.000
Dependent variable: Intention of Use						

In the regression analysis, an examination of the excluded variable, Attitude (AT), was conducted to assess its potential impact on the relationship between the predictors (Subjective Norms and Perceived Ease of Use) and the dependent variable (Intention to Use). The results of the analysis are as follows.

The beta coefficient for Attitude (AT) was found to be .604 ( $p < .001$ ), indicating a significant positive relationship between Attitude and Intention to Use. This suggests that individuals with more positive attitudes towards NFC technology are more likely to have a higher intention to use it. The t-value of 9.450 further confirms the statistical significance of this relationship.

The partial correlation between Attitude and Intention to Use was calculated to be .559, indicating a moderate positive correlation between the two variables. This suggests that even when controlling for the effects of Subjective Norms and Perceived Ease of Use,



Attitude still contributes significantly to individuals' intention to use NFC technology.

Regarding collinearity statistics, the tolerance value was reported as .489 for Attitude. This value suggests that there is no issue of multicollinearity among the predictors in the model, as the tolerance value is above the commonly accepted threshold of .1. This indicates that the predictors (Subjective Norms and Perceived Ease of Use) are not highly correlated with Attitude, ensuring the reliability of the regression results.

The analysis of the excluded variable, Attitude, reveals its significant positive impact on individuals' intention to use NFC technology. The findings emphasize the importance of considering Attitude as a predictor when examining the factors influencing NFC usage intention.

Table 13 - Excluded Variables

Excluded Variables <sup>a</sup>						
Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	AT	.604 <sup>b</sup>	9.450	.000	.559	.489
a. Dependent Variable: Intention to Use						
b. Predictors in the Model: (Constant), Subjective Norms, Perceived Ease of Use.						

Source: SPSS v.26

#### 4.7.2. Regression Two: Perceived Security, Perceived Usefulness, Trust, Attitude, and Intention of Use

The regression analysis for the second model (table 14), which includes the predictors Perceived Security, Perceived Usefulness, Trust, and Attitude, provides valuable insights into their effects on individuals' intention to use NFC payments. The model summary reveals that the overall model has a good fit. The R-squared value of .712 indicates that approximately 71.2% of the variance in the intention to use NFC payments can be explained by the combined

effects of the predictors included in the model. The adjusted R-squared value of .707 suggests that the model's fit is not inflated by adding more predictors. The standard error of the estimate (.43915) represents the average difference between the observed and predicted values of the intention to use NFC payments.

Table 5 - Model Summary for Regression Two

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.844 <sup>a</sup>	.712	.707	.43915
a. Predictors: (Constant), Perceived Usefulness, Perceived Security, Trust, Attitude				

The ANOVA in table (14) provides important information about the overall significance of the regression model and the individual predictors in explaining the variance in individuals' intention to use NFC payments. The table shows that the regression model as a whole is highly significant, with a p-value of .000. This indicates that the combined effects of the predictors (Perceived Usefulness, Perceived Security, Trust, and Attitude) significantly explain the variance in the intention to use NFC payments. Therefore, the model has the ability to provide valuable insights into the factors influencing individuals' intention to use NFC payments. The F-statistic of 120.800 with 4 and 195 degrees of freedom indicates that the regression model is a significant improvement over the null model, which suggests that the predictors collectively have a substantial impact on individuals' intention to use NFC payments. Therefore, the ANOVA results provide strong evidence that the regression model, including Perceived Usefulness, Perceived Security, Trust, and Attitude as predictors, significantly explains the variance in individuals' intention to use NFC payments.

Table 6 - ANOVA for Regression Two

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	93.185	4	23.296	120.800	.000 <sup>b</sup>
	Residual	37.606	195	.193		
	Total	130.791	199			
a. Dependent Variable: Intention to Use						
b. Predictors: (Constant), Perceived Usefulness, Perceived Security, Trust, Attitude						

Table (15) presents the unstandardized coefficients, standardized coefficients (Beta), t-values, and p-values for each predictor. The constant term is also included in the model.

The results show that Perceived Usefulness has a non-significant effect on individuals' intention to use NFC payments, as indicated by the small Beta value (.160) and the non-significant t-value (1.060,  $p = .090$ ). This suggests that perceived usefulness does not have a significant impact on the intention to use NFC payments when considered along with the other predictors in the model.

On the other hand, Perceived Security, Trust, and Attitude have significant positive effects on individuals' intention to use NFC payments. Perceived Security has a Beta value of .255 ( $p < .001$ ) and a corresponding t-value of 3.745. Perceived usefulness has also a Beta value of .160 ( $p < .020$ ). Trust has a Beta value of .277 ( $p < .001$ ) and a corresponding t-value of 3.806. Attitude has the strongest influence with a Beta value of .359 ( $p < .001$ ) and a corresponding t-value of 5.702. These results indicate that higher levels of perceived security, trust, and positive attitudes are associated with a stronger intention to use NFC payments.

The results of Regression Two highlight the importance of perceived security, perceived usefulness, trust, and attitude in influencing individuals' intention to use NFC payments. These

findings imply that organizations and policymakers should focus on enhancing security measures, fostering trust, and shaping positive attitudes toward NFC payments to encourage adoption and usage in the market.

Table 7 - Regression for Model Two

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.147	.171		-.862	.390
	Perceived Usefulness	.058	.054	.160	1.060	.020
	Perceived Security	.288	.077	.255	3.745	.000
	Trust	.312	.082	.277	3.806	.000
	Attitude	.382	.067	.359	5.702	.000
Dependent: Intention to Use.						

#### 4.8. Results and Discussion

The study aimed to investigate the factors influencing the intention to use Near Field Communication (NFC) payments. NFC technology has gained prominence in recent years as a convenient and secure method of making electronic payments. Understanding the determinants of individuals' intention to use NFC payments is crucial for both researchers and practitioners in promoting its adoption and usage.

In this research, a comprehensive analysis was conducted to explore the relationships between several key variables and the intention to use NFC payments. The study examined the impact of subjective norms, perceived ease of use, perceived security, trust, and attitude on individuals' intention to use NFC payments. The data collected from a sample of respondents was analyzed using statistical techniques to test the research hypotheses and draw meaningful conclusions.

The results of the study support H1, which posits that subjective norms have a positive effect on individuals' attitudes towards NFC payments. The results are in line with several studies (Taylor & Todd, 1995; Venkatesh & Davis, 2000; Schepers and Wetzels, 2007; Yang et al, 2012; Hansen et al., 2012; Wang et al., 2013; Choi & Chung, 2013; Schierz et al., 2010; Grandón et al., 2011; Ramos-de-Luna et al., 2017; Liu & Liang, 2020; Koenig-Lewis et al., 2010). This suggests that individuals' attitudes are influenced by the social pressure and expectations surrounding the adoption and use of NFC payments. In the context of NFC payments, subjective norms can stem from various sources, such as family, friends, colleagues, or perceived societal norms. Positive subjective norms imply that individuals perceive a favorable social environment that encourages the use of NFC payments, leading to more positive attitudes towards this payment method. The positive effect of subjective norms on attitudes towards NFC payments underlines the significance of social influence in shaping individuals' perceptions and acceptance of new technologies.

The findings of the study also provide support for H2, which suggests that perceived ease of use has a positive effect on individuals' attitudes towards NFC payments. This finding suggests that individuals' attitudes are influenced by their perception of the ease of using NFC payments. This means that when individuals perceive NFC payments as easy to understand, navigate, and integrate into their daily lives, they are more likely to develop positive attitudes towards this payment method. The convenience and efficiency associated with NFC payments, such as quick transactions and minimal physical interaction, contribute to the perception of ease of use. The findings of the study are in line with the literature review (e.g., Liébana-Cabanillas et al., 2013, 2014; Muñoz-Leiva et al., 2017; Hsu et al., 2011; Püschel et al., 2010; Bendary & Al-Sahouly, 2018; Luna et al., 2017). However, the results of the study contradict the literature review (Liébana-Cabanillas et al. (2015, 2017).

The results of the study provide support for H3, which posits that perceived security positively influences individuals' intention to use NFC payments. This finding suggests that addressing security concerns and implementing robust security measures in NFC payment systems can play a crucial role in promoting individuals' trust and confidence in these payment methods. When individuals feel that their

personal and financial information is protected and that transactions are secure, they are more likely to embrace NFC payments and engage in their usage. The findings are in line with the literature review (Luna et al., 2017; Liu & Liang, 2020; Ng, Sim, and Yeo, 2019; Chen et al. 2019; Alalwan et al. 2017; Oumer & Andersen, 2018). However, the results of the study contradict the previous studies (Yang & Liu, 2015; Ng et al., 2020; Tang et al., 2020; Ling et al., 2019).

Contrary to H4, the findings of the study show a significant relationship between perceived usefulness and the intention to use NFC payments. This means that individuals who perceive NFC payments to be more useful may have a slightly higher intention to use them. The findings of this study are consistent with (Davis, 1989; Venkatesh et al., 2012; Alalwan et al., 2018; Almaiah et al., 2022; Ramos-de-Luna et al., 2017; Liu & Liang, 2020). Contrarily, some studies are not in line with the literature review (Laukkanen, 2007; Ng et al., 2020; Laukkanen, 2007).

The results of the study support H5, indicating that trust significantly influences individuals' intention to use NFC payments. This means that when individuals perceive that their financial transactions are trustworthy and that their interests are protected, they are more likely to feel confident in using NFC payments. Fostering trust can be achieved through partnerships with trusted financial institutions, implementing strong security measures, and providing clear and accurate information about the benefits and safeguards of NFC payment systems. The findings of the study are in line with the previous literature (Alalwan, Dwivedi, and Rana, 2017; Ling, Chai, and Piew; 2019; Liao et al., 2015).

The findings of the study support H6, indicating that individuals' attitudes towards NFC payments have a significant positive effect on their intention to use. Individuals with positive attitudes towards NFC payments perceive them as convenient, efficient, and advantageous. Such positive attitudes are likely to increase their willingness to adopt and use NFC payments.

## 5.1. Theoretical Implications

The findings of this research have significant theoretical implications for the field of technology acceptance and adoption. By confirming the influence of subjective norms, perceived ease of use,

perceived security, trust, and attitude on the intention to use NFC payments, this study contributes to the existing body of knowledge. Theoretical frameworks have been validated and extended through this research. The identification and validation of these factors in the context of NFC payments provide a deeper understanding of the underlying mechanisms driving individuals' acceptance and adoption of NFC technology.

## 5.2. Research Recommendations

The practical implications of this study are crucial for practitioners and policymakers involved in promoting the adoption and usage of NFC payments. Understanding the factors influencing individuals' intention to use NFC technology enables the development of targeted strategies to enhance user acceptance and adoption rates. The findings highlight the importance of creating positive subjective norms and emphasizing the ease of use of NFC payments to enhance individuals' attitudes. Moreover, the study underlines the significance of addressing concerns related to perceived security and building trust among users. Policymakers can utilize these insights to design regulatory frameworks and security measures that instill confidence in users regarding the safety and reliability of NFC payments. Furthermore, practitioners can focus on improving the overall attitude towards NFC payments through effective marketing and educational campaigns, emphasizing the benefits and value of the technology. These practical implications can contribute to the widespread adoption and usage of NFC payments, ultimately benefiting both consumers and businesses in the digital payment ecosystem.

Organizations and policymakers can leverage this understanding to design interventions that enhance positive subjective norms and create an environment conducive to the adoption of NFC payments. By fostering social support and positive peer influences, individuals may develop more favorable attitudes towards NFC payments, ultimately increasing their intention to use this payment method.

Firstly, based on the findings of this study, it is recommended that organizations and stakeholders involved in promoting NFC payment adoption prioritize creating positive subjective norms. This can be achieved by fostering a supportive social environment where

individuals perceive that other in their social circle endorse and use NFC payments. Collaborating with influential individuals or groups within the community, such as opinion leaders or local businesses, can help reinforce positive norms and encourage wider acceptance of NFC payments.

Secondly, it is crucial to focus on enhancing the perceived ease of use of NFC technology. Clear and user-friendly interfaces, intuitive design, and streamlined processes can significantly contribute to individuals' positive attitudes and intentions to use NFC payments. Organizations should invest in user experience research and continuously refine their NFC payment systems to ensure simplicity and convenience, thereby minimizing any perceived barriers or complexities associated with the technology.

Thirdly, addressing concerns related to perceived security is essential for promoting NFC payment adoption. Organizations and payment service providers should prioritize implementing robust security measures and encryption protocols to safeguard user information and transactions. Transparent communication regarding the security features and privacy policies associated with NFC payments is also crucial in building trust and alleviating consumer apprehensions.

Lastly, leveraging the power of marketing and educational campaigns can significantly impact individuals' attitudes and intentions towards NFC payments. Highlighting the benefits and advantages of NFC technology, such as speed, convenience, and contactless transactions, can enhance the perceived usefulness and overall attitude towards NFC payments. Educating users about the secure nature of NFC payments and dispelling any misconceptions or myths surrounding the technology can also contribute to building trust and confidence among potential adopters.

By implementing these practical recommendations, organizations and stakeholders can effectively promote the adoption and usage of NFC payments, facilitating a seamless and secure digital payment experience for consumers while driving innovation in the payment industry.



### 5.3. Limitations and Ideas for Future Research

It is important to acknowledge the limitations of this research. Firstly, the study sample was limited to a specific geographical location and may not represent the diverse population. Future research should consider broader and more diverse samples to ensure generalizability of the findings. Secondly, the study relied on self-reported data, which may be subject to response biases and social desirability. Using objective measures or incorporating qualitative research methods could provide a more comprehensive understanding of the participants' attitudes and behaviors. Additionally, the study focused on a specific set of variables and did not consider other potential factors that could influence NFC payment adoption, such as cultural norms, individual differences, and situational factors. Future studies should explore these additional variables to gain a more holistic understanding of the adoption process.

Therefore, future research in the field of NFC payment adoption should focus on exploring the long-term adoption and user behavior, investigating contextual factors, delving into user experience and design aspects, examining trust and security dimensions, and conducting cross-cultural studies. These research directions will provide valuable insights into the lifecycle of NFC payment adoption, the influence of cultural and contextual factors, the user-centric design of NFC payment systems, the evolving security concerns, and the cultural variations in adoption patterns. By addressing these areas, researchers can advance the understanding of NFC payment adoption and provide practical implications for organizations and policymakers aiming to enhance digital payment innovation and user experience.

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