Factors Influencing Guests' Intentions to Use Smartphone Apps and Contactless Payment at Hotels in the USA

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ABSTRACT

This study aims to find the factors affecting the guests' intention to use contactless payment in hotels in the USA, to evaluate the criteria that make the contactless payment method more preferable during the stay of the guests in the hotels, and to present suggestions for the development of the sector accordingly. The widespread use of contactless payment systems depends on the guests' intention and satisfaction with using them. This study investigated the factors affecting the preference for contactless payment by guests staying at Hilton Hotels in Washington, DC.

The data used in this study were collected from guests staying at Hilton Hotels in Washington, DC, USA. The data collected from 224 participants with the convenient sampling method were analyzed with SPSS software. The study tested seven hypotheses. The model variables are ease of use, usefulness, intention, security, trust, satisfaction, convenience, and social value. The results showed that perceived usefulness, security, and trust dimensions positively predict satisfaction. Also, satisfaction positively indicates the intention to use intensely. As a result, it was concluded that perceived usefulness, security, and trust dimensions affect satisfaction positively, and satisfaction affects intention to use positively.

Keywords: Hotel; Guest; Smartphone Apps; Contactless Payment; Willingness to use; Check-in; United States

ÖZ

Bu çalışmanın amacı, misafirlerin ABD'deki otellerde temassız ödeme kullanma niyetlerini etkileyen faktörleri bulmak, temassız ödeme yöntemini misafirlerin otellerde kaldıkları süre boyunca daha tercih edilebilir kılan kriterleri değerlendirmek ve bu doğrultuda sektörün gelişimine yönelik öneriler ortaya koymaktır. Temassız ödeme sistemlerinin yaygınlaşması, konukların kullanım niyetlerine ve memnuniyetlerine bağlıdır. Bu çalışmada, Amerika'nın başkenti Washington DC'deki Hilton Otellerinde konaklayan misafirlerin temassız ödemeyi tercih etmelerini etkileyen faktörler araştırılmıştır.

Bu çalışmada kullanılan veriler ABD, Washington DC'deki Hilton Otelleri'nde konaklayan misafirlerden toplanmıştır. 224 katılımcıdan toplanan veriler SPSS yazılımı ile analiz edilmiştir. Çalışma yedi hipotezi test etmektedir. Sonuçlar, algılanan kullanışlılık, güvenlik ve güven boyutlarının memnuniyeti istatistiksel olarak anlamlı ve olumlu bir şekilde tahmin ettiğini göstermiştir. Ayrıca memnuniyet, yoğun olarak kullanma niyetini olumlu olarak göstermektedir. Sonuç olarak algılanan fayda, güvenlik ve güven boyutlarının memnuniyeti olumlu, memnuniyetin ise kullanım niyetini olumlu etkilediği sonucuna ulaşılmıştır.

Anahtar Kelimeler: Otel; Misafir; Akıllı Telefon Uygulamaları; Temassız Ödeme; Kullanma isteği; Otele giriş; Amerika Birleşik Devletleri

DEDICATION

I am dedication my Thesis to my Parents.

ACKNOWLEDGMENT

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Chapter 1

INTRODUCTION

Humanity has used certain assets and systems throughout history to meet their daily needs or perform payment transactions in commerce. The primary purpose of these changes is to perform payment transactions faster and more practically. Looking at the history of payment methods, it is seen that people first exchanged a good with an economic value for a different good; that is, they used the barter system. With the inadequacy of the barter system, precious metals were used, and then paper money was put into circulation (Abdulrazzaq & Aljawder, 2018). With technological developments, the search for payment tools that are safer and easier to use than money has started. Electronic systems and money have replaced cash, the most frequently used medium of exchange. The money that has settled into the world of electronic payment continues to be used through electronic fund transfers, card payment systems, electronic money, internet banking, and mobile banking (Özer et al., 2019).

Increasing digitalization and information technologies make contactless payments using smartphones and cards. Due to the young population, the adoption of contactless payment systems is happening faster with the increase in the use of smartphones. Contactless payments allow small payments to be made faster and easier. In order to realize contactless payments, smart cards with technological features such as contactless readers, Near-field communication (NFC), Radio-frequency identification (RFID), mobile devices, or wearables are required. Payment transactions are realized

because of technologies with NFC or cards that capture RF waves at a maximum distance of 10 cm from the reader (Cengiz, 2010).

In addition to many advantages, contactless payment systems stand out with their hygienic nature during and after COVID-19. Today, it is recommended to be used by the World Health Organization against the epidemic that affects the whole world. The spread of viruses and bacteria is accelerating with paper and metal coins. Considering the benefits and potential uses of contactless payment, it can be foreseen that these technologies will become increasingly widespread. On the other hand, it is essential to determine the factors related to the adoption and use of these systems to remove and spread the obstacles to using them. When the literature on the subject is examined, it is seen that there are not enough studies on this subject.

1.1 Aim and Objectives

The study aims to determine what factors influence guests to use or not use these new technological trends at the hotel, such as contactless payment methods.

"What are the main factors that affect/will affect the behavioral intention and usage behavior of guests towards contactless payment technologies?" search for an answer to the question. This main problem is evaluated with the Technology Acceptance Model (TAM) developed by Davis (1989); however, the basic model has been expanded with different variables by current approaches and research topics, and a new hybrid research model has been introduced. To investigate and analyze the research results related to the independent variables' relationship with satisfaction (ease of use, usefulness, security, trust, convenience, and social value) and their effect on the dependent variable (intensions to use Contactless Payment). Moreover, this

study attempts to assess the effectiveness of contactless payment methods at the hotel and determine how to affect contactless payment methods in the sector.

1.2 Scope of Study

With the increase in the number of new technological trends, users use every day to pay and create a more manageable life in a country like America. People use online (Hotel check-in application on the phone) and contactless payment methods (Apple Pay and Google Wallet) during shopping and Starbucks. Starbucks is an excellent example of this new technological trend because Starbucks is using contactless payment (Apple Pay and Google Wallet). Also, it has a phone application where people can get points for each purchase without waiting in line. After Covid, people started to prefer contactless payment and did not want to carry a credit card. However, guests who come to the hotel are unwilling to use these new trends, such as contactless check-in through the apps and contactless payment. The user of these new technological trends is not many in the hotel.

As a result of this predicament, the primary goal of this research is to investigate which factors induce guests to utilize or not use these new applications during hotel check-in. The scope of this study is determined to search hotel applications and contactless payment platforms, specifically Apple Pay, Google Wallet, and Hilton Honor App.

1.3 Proposed Methodology

Because this research aims to uncover characteristics influencing guests' inclinations to utilize contactless payment methods at hotels, this quantitative study develops survey research using questionnaires to permit comparisons between groups.

Data was collected from the guest staying in the hotel and used or not used for this new trend. There are many questions on the survey to understand their behavior at the hotels. There is no gender limit for the survey, but the age limit is above eighteen years old. We will focus on guests living in the USA because some countries, such as Turkey, do not use this technology. For this reason, it can create more accurate information. It took one month to collect all data by using a survey. We completed our survey at Hilton Hotels.

The Statistical Package for the Social Sciences was used to examine the data collection process (SPSS). The analysis was created in order to meet the study's goals.

1.4 Structure of Study

This study will contain six parts. The first section is an introduction; this section gives brief information, explaining the aims and objectives, the scope of the study, and the proposed methodology. The second part will be about the literature review. This section brings information from different articles and research about contactless payment, NFC, RFD, intelligent cards, and their effects on the tourism sector. The research hypothesis and conceptual model that will be developed will be presented in Chapter 3. The methodology for the survey will be presented in full in Chapter 4. In Chapter 5, we will look at the outcomes of the analysis performed. The conclusion, findings, future research directions, and study limitations will all be included in the last chapter.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

There have been many studies on the factors affecting the use of the contactless payment system. First, the brief information on mobile payment and NFC was examined, then the contactless payment method was examined. Lastly, research for the tourism industry was examined.

2.2 Mobile Payment Systems

With the development of technology, the usage area of internet technologies is expanding, and web applications have more place in daily life. With the development of the infrastructure of web applications, electronic commerce systems that offer the opportunity to shop on the internet have also developed. Thus, traditional trade has changed and has started to take place in consumers' lives in a different form. Electronic commerce systems, which offer consumers the experience of shopping without going to physical stores, have also allowed electronic retailers to become widespread. Also, in the tourism and hospitality sector, consumers can book hotels or flights without going to a travel agency.

Mobile payment; is defined as a form of payment used to initiate, authorize and approve an exchange of financial value in exchange for goods or services in transactions performed via a mobile device (Poustttchi, 2003). According to another definition, mobile payment; is to be able to purchase goods and services and pay bills

with mobile devices by making use of wireless and other communication technologies (Dahlberg et al., 2008).

Mobile payments, electronic payments, and payments in electronic commerce are possible, and they are an alternative to livelihood with decreasing cash (Mallat, 2007). Usage areas of mobile payments; can be examined in two categories: cash, check, purchases used as a complement or alternative to bank cards, money transfers, internet banking payments, and bill payments used as automatic payment (Dahlberg et al., 2008). We expect users to turn to systems that can be targeted more efficiently and with fewer steps (Massoth & Bingel, 2009). Mobile payments are those that use different technologies as various services emerge. The motivation to develop a mobile payment readiness for places of changing value continues with our goal and development (Dennehy, 2015).

A study was conducted to determine the number of mobile payment users in the United States from 2019 to 2025 (Best, 2021). As seen in Figure 1, there was a significant increase from 2019 to 2020, and it is predicted that the number of mobile payment users in the USA will increase rapidly in the coming years. As we understand from this research, mobile payment shows that it will have an important place in our lives and offer us that people will use it more.

Number of proximity mobile payment users in the United States in 2019 and 2020, with forecasts from 2020 to 2025 (in millions)
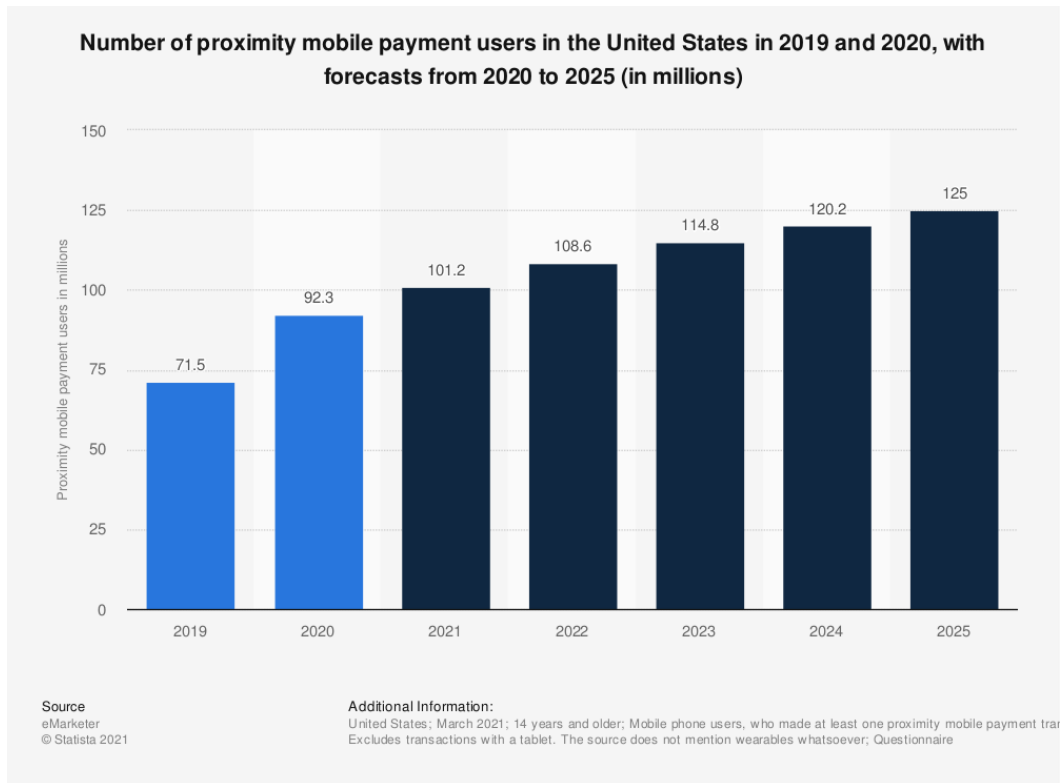
Figure 1: Number of proximity mobile payment users in the United States in 2019 and 2020, with forecasts from 2020 to 2025. Source eMarketer (2021) website (www.statista.com)

2.3 Mobile Payments Classification and Methods Used

Mobile payments can be classified according to the features of the device used, the structure of the shopping platform, the amount of the payment, and the environment in which the payment is made. These classifications provide an understanding of mobile payments from different perspectives and explain the methods. Mobile payments can be gathered under two roofs, remote and near (Slade et al., 2015).

2.3.1 Remote Payments

Remote payments refer to technologies used when the payer and the mobile device used to make payments do not need to be the same as the payment point. Remote payments enable users to purchase digital products, mobile tickets, digital money, or send cash between individuals regardless of location (Karnouskos, 2004). Short

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message services (SMS), mobile banking, and wireless application protocols are examples of remote payment methods. The first examples of the remote mobile payment structure were realized by presenting logos and ringtones to consumers for a fee and the mobile billing operators (Mallat, 2007). With the change in technology and the development of the capacities of mobile devices, remote payment methods have started to offer a different structure for users. In remote payment methods, the user is usually asked to save bank or credit card information in the application beforehand. This data is stored, allowing quick payment without asking for information in later transactions (Chandra et al., 2010). Other methods used in remote payment are SMS and wireless application protocol.

2.3.2 Near Payments

Near payments are made when the payment point, the person making the payment, and the mobile device they use are in the same place. The consumer must be present at the payment point when making the payment. These payment points; can be expressed as shops, restaurants, or vending machines. Short-distance data exchange occurs via radio frequency recognition, near-field communication, barcode payments, infrared, Bluetooth, and contactless chips, which are protocols used in close payment (Karnouskos, 2004).

2.3.2.1 Radio Frequency Identification (RFID)

Radio-Frequency Identification (RFID) is a technology that automatically identifies objects (Juels, 2005). Radio frequency identification is a short-range radio technology that transmits digital information for or between a permanent location and mobile objects. (Landt, 2005). A radio frequency identification tag and a microchip have been designed to transfer digital data transmitted between objects (Juels, 2005). Radiofrequency identification tags can be added to mobile devices later and produced

with this feature in their system (Park et al., 2006). Radiofrequency identification technology can identify anything in real life (Liu et al., 2006).

Radiofrequency identification technology in mobile devices provides personalized, secure services such as searching for product information, purchasing, verifying, and making payments over the wireless internet network (Han et al., 2010).

2.3.3 Near Field Communication (NFC)

Near Field Communication (NFC) has been developed by Philips, Sony, and Nokia (Chen et al., 2010). Near-field communication is a technology that can transmit data with short-range high-frequency wireless communication technology. With this technology, transactions are carried out by keeping a mobile device within the near field communication reader (Tan et al., 2014). Near-field communication technology provides new possibilities, such as more accessible device-to-device communication and reading of contactless chips. In this sense, it is similar to payment transactions with contactless cards.

Two methods, active and passive, are used to transfer data. While the operation can be performed from ten centimeters in the passive method, the range can reach up to twenty centimeters in the active method (Chen et al., 2010). Technologically near-field communication can be considered a contactless smart card and a mobile phone (Ondrus & Pigneur, 2009). Pham and Ho (2015) define near-field communication as a technology that turns phones into digital wallets (Pham & Ho, 2015). Near-field communication technology provides the opportunity to pay quickly without using cash or cards.

In near-field communication, authentication begins when NFC technology built into mobile phones reads a radio frequency identification (RFID) system tag containing the Point of Sale ID (POS ID). When the phone and the RFID tag touch each other, a connection is established with the server, and verification data is obtained. Finally, the user is asked to authenticate the PIN (Massoth & Bingel, 2009). The most crucial benefit of near-field communication is making a purchase quickly with a secure information flow (Pham & Ho, 2015).

The European Central Bank (ECB) has announced that NFC-based mobile payments are among potential customers' most promising payment tools. With NFC, payments are expected to be stable and fast because consumers' adaptation has increased to technology (Liebana-Cabanillasa, 2018). Especially with the 2014 launch of Apple Pay, more retailers are accepting mobile payments than ever before. Due to the dominant influence of governments and network operators on the development of mobile payment systems, some Asian countries (including Japan and South Korea) have made significant progress and achieved successful results in disseminating this technology and creating new business models. Therefore, NFC has been accepted as the future of mobile payment services (Ondrus & Pigneur, 2007). In the upcoming period, the number of users of the NFC-based wallet will reach 490 million in the USA by the end of 2021; The Value of transactions made via NFC phones reached $70 billion in 2018, and it is expected to reach $110 billion in 2019, $160 billion in 2020 and $240 billion in 2021.

2.3.3.1 Examples for NFC Applications

Today, it is seen that NFC technology has started to be applied in many sectors. As stated above, research shows that effective results are obtained. In this sense, many

famous brands in different sectors also attempt to use NFC technology. Sample applications of these initiatives are as follows.

Important companies such as Google, Apple, PayPal, Visa, and MasterCard have started to offer essential services to their customers by investing in NFC technology. For example, MasterCards has launched PayPass, a contactless payment service that works with Google Wallet. PayPass users can easily make contactless payment transactions with NFC technology in any store that supports contactless payment technology.

On the other hand, Apple has activated NFC technology for users to benefit from the ApplePay service, starting with the iPhone 6 and 6 Plus models. It is stated that NFC technology, which will be valid not only for iPhone products but also for Apple Watch products, will also be used in different areas. This feature is expected to bring significant opportunities to sector representatives and users in many sectors, especially in the automotive, construction, and tourism sectors.

Adidas's world-famous sportswear brand carries out another critical initiative by implementing NFC technology. Adidas has started registering its shoes with NFC technology, thus protecting its brand and customer against counterfeit products. At the same time, it has succeeded in offering a unique and customized new value, especially for its technology-friendly customers, by creating a dynamic two-way communication channel between the brand and consumers.

Personal care brand L'Oreal has released an NFC-enabled sensor that women put on their nails, watches, or sunglasses. When users connect it to the app provided with the small sensor, they can perform a test describing their skin type, track how long the person stays in the sun, and the UV levels they get throughout the day. Although L'Oreal does not currently use this data to recommend sun care products, it is stated that it will soon carry out a service process completed with purchase (https://www.lumavate.com/blog/heres-how-big-brands-using-) (NFC, 2019).

KFC has launched an NFC-based advertising campaign in the UK. This campaign aimed to promote KFC's 'Hot Shots Meal Box.' Advertising posters were placed outdoors, allowing those who brought their mobile phones close to the NFC tag to be linked to a map describing the nearest KFC restaurant. It has effectively directed consumers who are on the move and want to eat fast, which are connected to the map of the nearest restaurant.

All of these studies carried out by important brands show that; NFC technology is seen as an important technological development that can create significant innovative changes to existing business models and provide digital transformations that offer opportunities to all users in social and environmental terms. In this sense, when an evaluation is made among the implementing sectors, it is seen that especially the tourism sector stands out as the priority sector that can use many features of NFC technologies. All areas of NFC technologies provide a critical technological added value in many services provided in the sector.

2.3.3.2 NFC Advantages for Users

When the literature reviews and field applications of NFC technology are examined, it can be applied in many different sectors and fields (Coşkun et al., 2015). Therefore, when viewed from a broad sectoral perspective in studies on NFC technology, it offers significant benefits that provide convenience and functionality to the consumer. At the beginning of these benefits, NFC technology allows users to manage many services that users need through a single device (NFC-Forum).

Functionality - One of the essential user-oriented features of NFC technology is that it enables many operations from a single device. For consumers who are accustomed to performing many of their daily activities via smartphones, NFC technology can be used to carry out many activities, such as product tracking, participation in an organization, using vehicles, and obtaining information on a single device in a fast and straightforward process without the need for any application. NFC technology offers a faster connection compared to other wireless technologies. Users save significant time thanks to its processing speed, especially in crowded areas with high transaction density (public transportation, kiosks, etc.).

Security - The infrastructure of NFC technology ensures that data is transferred over secure channels and that sensitive information is encrypted. Although there are some risks in the current configuration, this feature of NFC increases information security and reduces the threat of hackers. On the other hand, thanks to short-range communication, which is the primary feature of NFC, it is not possible for a third device to participate in unsolicited communication within the distance where two

NFC-compatible devices communicate with each other. Therefore, one of the most critical aspects of NFC technology is internal security (Coşkun et al., 2015).

Efficiency - NFC consumes less power than similar technologies and does not require an installation connection with other devices such as Bluetooth. In addition, to use NFC technology, mobile devices do not need a battery, charger, or external electricity connection (Coşkun et al., 2015). In other words, NFC technology can be used even when mobile phones are turned off, providing a significant advantage for the user experience in applications.

2.4 Contactless Payment

Throughout history, people have created various payment tools or methods, used them for years, and continue to use them. With the development of technology, innovations have emerged in payment methods. One of the new payment methods is contactless technology, in which the verification and payment are completed by tapping a card or smartphone at a point of sale (POS) or point of purchase (POP) machine. Contactless payment is when customers make payments by bringing their NFC-enabled technological devices closer to the POS device while shopping or traveling (Abdulrazzaq & Aljawder, 2018). According to another definition, contactless payment is purchasing products and services using RFID and NFC technologies with credit cards or different payment devices (Kagan, 2020).

This new technology has changed customers' purchasing habits because customers no longer need to sign in or enter a PIN for verification (Abrial et al., 2001). Also, they do not need to carry a physical credit card with them because they can put all credit cards on their phone to use Apple Wallet or Google.

The contactless payment method has advantages and disadvantages for businesses and customers (Zakonnik et al., 2018). There are many advantages to using the contactless payment for customers. The most significant advantage of using contactless payment is saving the transaction time because customers cannot need to enter their PINs and can use their phones. Also, it is a user-friendly technique that takes up less wallet space, is simple to use, and offers convenience, flexibility, and dependability (Lacmanović et al., 2010). Besides the advantages, contactless payment has some disadvantages. The customer's primary concern is security and privacy (Kılın & Vaudenay, 2018). Some consumers also fear that the new technology would make it tougher to set spending limits. Customers believe that, compared to cash, contactless payments will encourage them to spend more because they can tap and purchase any items easily during shopping.

2.4.1 History of Contactless Payment Method

In the 2000s, the payment industry developed with the emergence of electronic wallets and Chip and PIN cards (Abdulrazzaq & Aljawder, 2018). The customer started to use a credit card, and this was because cash usage was decreased. While contactless payment systems are used for small customer purchasing payments, NFC technology is also used in different sectors like electronic passports, the defense sector, and transportation cards (Ranganathan et al., 2015).

There are many examples that customers can use contactless payment like Visa Contactless, MasterCard PayPass, American ExpressPay, Apple Pay, Google Wallet, and Samsung Pay (Lacmanović et al., 2010). South Korea leads the way in technology. For this reason, the first contactless payment started in South Korea. Contactless payment entered the literature in 1995 in a prepaid card called U-Pass for city bus trips

in South Korea (Chen, 2016). In 1997, ExxonMobil provided the opportunity to pay with a keychain called Speedpass, which can be used at gas stations (Exxon Mobil, ty). Google Wallet was created in 2011 (Google, 2020). In 2014, Apple Pay introduced a contactless payment feature to iPhone 6 and higher models (Jeffries, 2014). In 2015, Samsung introduced Samsung Pay for contactless payments (Abdulrazzaq & Aljawder, 2018).

2.4.2 Technologies Used in Contactless Payment Method

NFC is the next-generation wireless communication technology. NFC plays a significant role in many sectors, such as security and transportation. It is a two-way short-distance communication technology that enables data exchange up to 10 cm between electronic devices that comply with NFC standards. NFC technology requires very little energy. NFC is indispensable for passive devices (Madlmayr et al., 2008). NFC technology has application areas such as POS, mobile access points, kiosks, transportation cards, match tickets, secure access, personnel tracking systems, cars, homes, workplaces, hotels, garage doors, vehicle access systems, and parking systems (Çelikel, 2008).

The primary usage area of NFC technology is mobile phones. It has a wide range of uses applied to terminals with Android and iOS installed. In addition, users do not have to pay license fees (Liébana-Cabanillas et al., 2019). The smartphones or devices must have NFC technology to realize contactless payment. Afterward, users define their contactless card information in their mobile wallets and perform the payment process by bringing their NFC technology devices closer to the POS during shopping (Akinyokun & Teague, 2017).

Mobile wallets in smartphones can also be used outside of payment applications. Wallets running on smartphones promise to do all the transactions they do with the documents they carry in their wallets. While mobile wallets are used in transportation services, they also allow the addition of driver's licenses, identity cards, and loyalty cards (Aydin, 2016).

2.4.3 Working Principles of Contactless Payment Systems

Contactless payment is provided with smart cards, debit and credit cards, mobile applications, and different technological devices with NFC features. Thanks to the contactless payment feature, customers can make payments without contacting their devices with POS or devices. This technology is giving many advantages to businesses and customers.

For smart cards, debit, and credit cards to be used in contactless payments, there must be a wave sign representing contactless payment on the front of the cards. Many Banks, or Visa and Mastercard, produce credit cards with a contactless payment sign on the top of the credit card. Technically, the chip's antenna in the card communicates with the reader via radio frequency waves, and the payment or the desired transaction is realized (Liébana-Cabanillas et al., 2019). Contactless technologies aim to perform authenticated, optionally encrypted communication between the reader and the card or devices at a low cost without touching (Yunu, 2005).

With contactless payments during purchasing are made in the following order (Gouda et al., 2017):

1. While the price of the goods or services is displayed on the screen, the point of sale tries to communicate with NFC.

2. After checking the displayed price, the customers bring their cards or phone to the NFC range of the sales point, and communication is established between the sales point and the contactless card.

3. The point of sale sends a request message to the contactless card or phone.

4. The contactless card or phone responds to the request message with a card information message, provides the point of sale with the necessary information to initiate a transaction, and identifies the card-issuing bank or institution.

5. Then, the point of sale sends an expense request message to the bank or organization. This message is sent securely over the internet.

6. The bank or phone application verifies the details of the charging request and responds to the point of sale with a confirmation message indicating whether the charge is valid.

When making contactless transactions with mobile payments, mobile devices must have NFC technology. It is sufficient to bring the device closer to the reader machine to make payments with a phone or a technological device with an NFC feature. When making mobile payments, a PIN is expected to be entered when the payment exceeds the amount determined by the Interbank Card Center (İşler & Gülaç, 2017).

Customers must first have a debit card, credit card, or store card for mobile payment. Then users define their contactless card information to their mobile wallets. Mobile wallets such as Apple Pay, Samsung Pay, Google Pay, and Paypal are commonly used. Cards defined as mobile wallets are added to the wallets after being checked by the applications. The card to be used before the payment is selected in the mobile wallet. Later, when the payment transaction is to be made, the smartphone or NFC-enabled

devices are held over the terminal with NFC technology, and the payment process is performed. The realization of the payment process is technically the same as card payments.

Mobile payment systems can be classified as mobile at POS, mobile as POS, mobile payment platform, and standalone mobile payment. Mobile in POS is the ability of users to pay using their mobile wallets with their smartphones or devices with NFC technology. The mobile payment as POS allows more merchants to use their mobile devices as POS. In this method, the seller needs the application downloaded to the mobile device and the mobile device with NFC technology enabled. It enables micro-scale businesses to receive fast and secure payments from their mobile phones.

On the other hand, the mobile payment platform indicates the necessity of applications, namely mobile wallets, for using mobile devices for payments in online payment services. Independent mobile payment systems are companies or institutions offering applications such as mobile payment platforms. Examples of these are Starbucks, Amazon, etc. mobile applications can be given (Wang et al., 2016).

2.4.3.1 Smart Chip Cards

The smart card has more data storage area and higher data security than traditional magnetic cards. Average transaction costs are low. In terms of content, they are divided into three groups memory only, memory with security logic, and memory chip cards with their processor. In terms of their connections with the outside world, they are divided into two separate groups contact and contactless.

On March 31, 2006, PIN use started and became mandatory on July 1, 2007. Thanks to the chip technology, the PIN kept on the chip must be entered during shopping. The previous application was for identity control and the signing of magnetic tape cards. France and England were the countries to implement this practice in Europe. With a contactless credit card in the USA, people do not need to enter pins or passwords.

Smart chip cards have several advantages over magnetic cards. These advantages are:

- It is safer because it is difficult to imitate and access the microchip.

- It is suitable for multifunctional use.

- Can work offline (no connection required).

- Since it is resistant to all kinds of environments where people can live, it is suitable for use for a long time.

- It can be used with contactless technology, allowing guests to check out faster.

2.4.3.2 Contactless Credit Card

Credit cards work with magnetic tapes and the information in their chips. In order to access the information on the cards, credit cards must be passed through the pos machine in magnetic cards and left in the pos machine in chip cards. On the other hand, contactless credit cards can make transactions without any contact, but contactless credit cards also work with chip technology. Thanks to these cards, which can be read from a distance, transactions can be carried out more quickly.

While there are contactless types of credit cards, keychains or clock-shaped ones attach to specific devices in sticky form. At the same time, studies have been conducted to enable contactless transactions via mobile phones and have been put into practice.

2.4.3.3 Types and Operation of Contactless Credit Cards

Both Visa Paywave and Mastercard Paypass contactless credit cards have a chip and radio frequency antenna. Thanks to this short-range wireless network technology, transactions can work without contact. The symbol seen in figure 1 must be present where contactless credit cards can be used. This symbol is also found on contactless credit cards.

Figure 2: EMV contactless symbol used on compatible payment terminals

When you go to any place where this sign is available, you should indicate to the machine that you want to conduct the transaction without contact. Then the salesperson sends the necessary payment information to the contactless payment point. The device is shown in Figure 2, whose payment information is sent and is ready to make the payment.

Figure 3: Contactless Payment Terminal

When the operation is ready to take place, it gives an audible warning to the user, and only one of the green lights on it is on. The user who receives the warning is ready to operate. The amount to be paid appears on the payment device. The user can securely perform the payment transaction within a maximum distance of 5-6 cm. The fact that this distance is short prevents accidental payment from another card. When the process is completed, all the lights on the reader turn green and an audible warning indicates that the process is done. This process takes place in less than 1 second.

For the transactions to be carried out securely, the chips in the card and payment point send the data in an encrypted form. The payment transaction, sent encrypted by the payment point, is also resolved by the chip on the card, and the payment information is sent to the payment point in an encrypted form. The encrypted payment information is sent to the bank where the payment will be made, and this encrypted information is decrypted. The transaction amount is withdrawn from the bank or credit card account. Since all transactions here are encrypted, the data seized by unauthorized persons and unauthorized use are prevented.

Two essential organizations offer contactless credit cards. One of them is Paypass issued by Mastercard and Paywave cards issued by Visa.

2.4.3.4 Visa Paywave

It is a contactless payment technology realized by Visa. Visa payWave is a payment option that allows consumers to pay with their Visa cards or a mobile device at the point of sale (POS). Instead of swiping his card or presenting it to a cashier, the consumer waves his card or mobile device in front of the secure scanner at checkout.

All transactions can be carried out in less than a second without requiring a password or POS device contact.

The features of Visa Paywave contactless credit cards are:

- It ensures that payment transactions are carried out quickly.

- Since you see the payment amount and the card is in your hand, you do not make involuntary payments.

- Transactions can be made securely, as it provides multi-layered security support against unauthorized uses.

- Your card is not affected by magnetic fields.

There are cards in classic sizes, but there are also cards in smaller sizes and micro-cards in the form of keychains. It has the feature of being applied to different areas besides the keychain.

2.4.3.5 MasterCard PayPass

Another contactless credit card company is Mastercard. This technology, called Paywave, uses similar technologies to Visa Paywave. Both card issuers use EMV standards for their Contactless credit cards.

There are various products in plastic cards, mobile phone stickers, key chains, and wristwatches. It can be used for all transactions with the Mastercard Paypass system and have a radio frequency antenna with the chip. When the PayPass card is brought 2-5 cm closer to the payment terminal, the antenna on the card transmits the payment information via radio waves.

These cards can be used in many countries where the contactless transaction logo appears. The user requests a password regardless of the transaction limit when consecutive transactions are made. This situation has arisen for security purposes. Thus, an attempt was made to prevent unauthorized persons' use of the card.

The benefits of the Mastercard Paywave system to its users are:

- It does not oblige to carry coins. It can be used for low-volume transactions.

- Various security measures protect it against unauthorized use. Its use is restricted in case of theft or loss.

- It ensures that low usage expenditures are kept under record.

- It enables fast transactions in places such as fast-food restaurants, where shopping is done in small quantities.

2.4.3.6 Security on Contactless Cards

It can be considered that there is a security problem in contactless cards since the use of a password, signature, or card is delivered to the seller, and there is no identity card control.

Contactless cards use radio frequencies. In order to carry out the transaction, the contactless card must be brought 2-5 cm closer to the POS device, at most 10 cm. These cards, which work with radio frequency, have higher security measures than magnetic cards. Each transaction is encrypted using various certificates and is accompanied by a unique transaction number. The point to be considered here, or the point that people are worried about, is that someone walking around with a POS device will reach the necessary proximity and take action. However, although the low transaction limits and the prevention of consecutive transactions reduce the losses, the

banks that issue contactless cards work to ensure that the user is not victimized in such cases.

The POS device where each transaction is made is known, the device is tracked, and necessary actions are taken according to the situation. If such uses are detected, the banks that issue cards try to eliminate the people's grievances.

The most important thing here can be considered the risk of stealing card information. However, the point to be considered here is that the information is encrypted, and it is almost impossible to decrypt these passwords and access the card information.

2.4.4 Advantages and Disadvantages of Contactless Payment Method

While using the contactless payment method has advantages and disadvantages for governments, businesses, consumers, and economies, as in every system. Although cash is generally seen as a less costly payment tool than electronic payment methods, as a result of the research, the cost of using cash is higher for all options involved in the shopping system. In addition, using cash naturally feeds the insecure and informal economy. Contactless payment methods are noticeably faster and safer than other payment methods. Contactless payment methods are also more convenient than using and carrying cash. Contactless payment methods enable cash-based businesses to provide faster service, reduce queues, and minimize the risks and costs involved in cash transactions. It has also led to different areas, such as contactless payment and mobile and wearable technologies. In addition, contactless payments are primarily used in transportation, fast service couriers, fast food restaurants, markets, pharmacies, and fuel stations. According to VISA registrations, contactless payments are making

more progress in developing economies. Examples are Belarus, Costa Rica, the Czech Republic, Georgia, Hungary, Singapore, Taiwan, etc. (VISA, 2020).

According to the Interbank Card Center (BKM), seven reasons are sufficient to make contactless payments (BKM, 2017). These: are having a fast payment method, ease of use, control of the card or device used by the user, a hygienic payment method, offering a different and comfortable experience, securing payments, and preparing the future for payment methods.

Today, the fundamental reason that increases the use of contactless payment is that it is hygienic. When it was revealed that COVID-19 was transmitted from the areas touched and kept without distance, it was understood how important and influential the contactless payment method was. Regarding contactless payments, the consumer's payment device does not need to be physically in contact with any payment terminals (Alliance, 2007). Due to the virus, people started to avoid touching by paying attention to their hygiene. During and after COVID-19, the contactless payment method plays a significant role in shopping for people. Fear of people getting sick by touching anything is a driving factor in using contactless payments. Nearly 60 percent of American consumers are concerned about using banknotes to pay, while 82 percent say that contactless payment is a better option (Kornitzer, 2020).

Besides using a contactless payment method, there are some disadvantages to using a contactless payment method for businesses and customers. Mobile payment systems and contactless payment methods constantly face threats and attacks. While using their mobile devices or payment cards, users try to make their payments securely by using

fingerprint, username, password, multi-factor authentication, pin code, screen lock, and specific item.

Communication vulnerabilities and data retention or storage on mobile devices are associated with certain risks when using contactless payment systems. First, users create security vulnerabilities through their own mistakes and carelessness. It does not keep account information, personal data, or payment data in secure elements. Users desire to access sensitive data quickly and do not need access controls to pose a risk when mobile users install malicious software on their devices (Büyükgöze, 2019).

In addition, since technologies with NFC technology can add more than one card, users can increase their carrying comfort by adding their ID cards, payment cards, or store cards to a single device. However, the possibility that mobile devices or other devices may run out of batteries and be lost despite their secure nature is considered a disadvantage (Demirel, 2011).

2.4.5 The Future of Contactless Payment Systems

Contactless payment systems are among the payment methods of the future. It is predicted that contactless payment systems will become more familiar with developing technologies such as blockchain and 5G (Yücel & Aytekin, 2017).

Smartphones or wearables with NFC technology run out of battery life or discharge. When the devices' batteries run out, they have created a system that makes it possible to automatically separate a small part of the energy so that NFC technologies can be used (Charnay, 2015).

In 2025, it is predicted that the global market value of wearable technologies will reach 1.5 trillion dollars. With the impact of Covid-19, it is predicted that the transition trend to digital applications will accelerate and create new business opportunities in different fields.

2.5 Mobile Technologies in the Tourism Sector

Mobile devices are one of the most used information and communications technology (ICT) in the tourism sector. Many people say they cannot imagine a life without cell phones. This situation is valid for industrialized societies. The particular usage rates from Asian and African regions show a global phenomenon (Egger & Jooss, 2010). In addition, many transactions, which can be done through many different applications and devices, can be done from a single device, increasing the dependence on mobile phones. Therefore, it is predicted that shortly, in parallel with the increase in mobile phone ownership globally, the dependence and intensity of use of tourism consumers on mobile devices will continue to increase. Mobile technologies also significantly affect tourism (Egger & Buahlis, 2008; Egger, 2013; Wang et al., 2011). Many mobile-based services and applications create high added value in various areas of the industry. The convenience of having the information and service that tourism consumers want to obtain anytime and anywhere, before, during, and after their travel, on a single device, also strengthens the place of mobile phones in tourism. This ensures that mobile phones will be the top priority in ICT to create a satisfactory tourism experience far beyond communication in the tourism sector.

In order to find out which contactless choices hotel customers preferred to use for check-in and check-out instead of the traditional reception desk method, a global study was carried out from July to August 2020 during the coronavirus (COVID-19)

pandemic (Lock, 2021). As seen in figure 4, the reception demand used for the traditional check-in and check-out processes has decreased. The survey's findings showed that 62% of participants preferred using hotel apps for check-in and check-out. Only 8% of respondents said they preferred to utilize a public kiosk, whereas 30% chose to use a website (Lock, 2021).
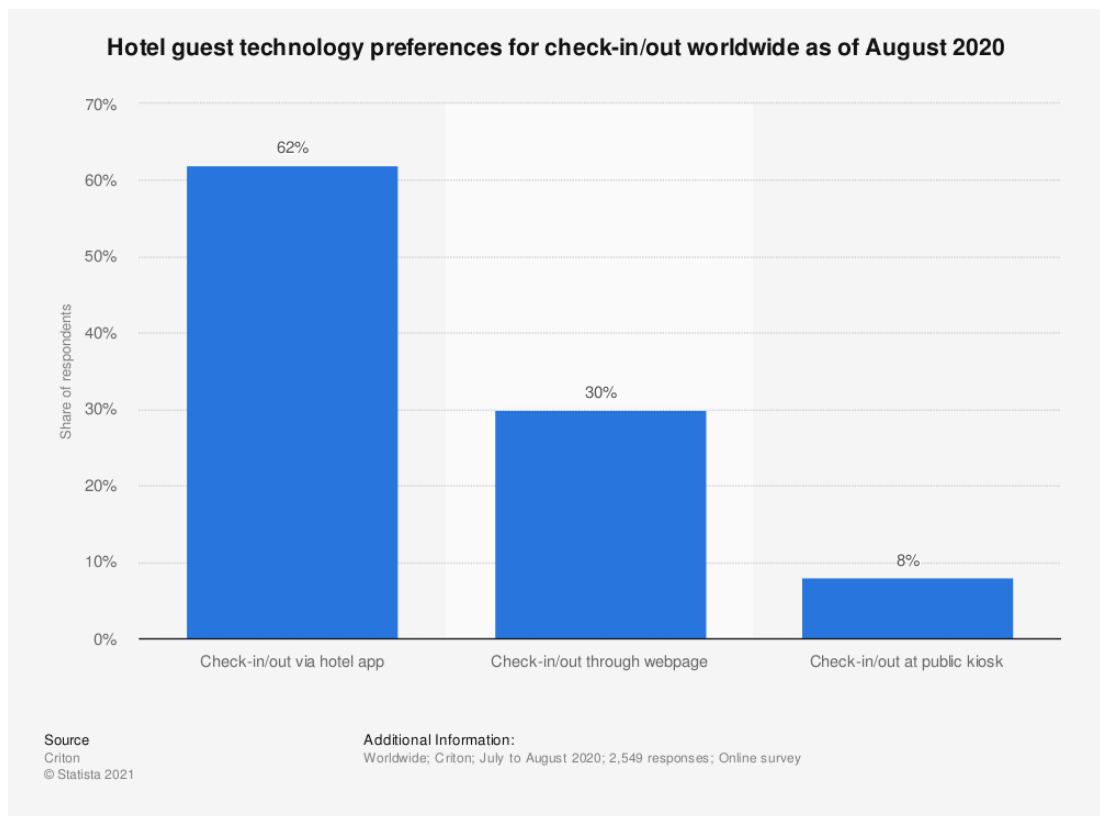
Figure 4: Hotel guest technology preferences for check-in/out worldwide as of August 2020. Source: Criton (2021) website (www.statista.com)

Various studies conducted in recent years have also emphasized the contribution of mobile technologies and mobile applications to the tourist experience and behavior. Emphasizing the importance of understanding the capabilities of the mobile channel in his research on mobile applications, Ricci (2011) also stated that one of the primary application areas of smartphones, which has become an essential platform for

information access, is the tourism sector. Fuentetaja et al. (2013) revealed that today the widespread use of mobile devices has led to incredible growth in the development of mobile applications in the tourism sector. Schieder et al. (2014) stated that smartphones and mobile applications help tourism consumers be more flexible and independent while increasing their temporal and spatial awareness, thus enriching their tourism experience.

Mobile devices can provide significant advantages for both service providers and consumers. While enabling the establishment of much more diverse and effective communication and marketing channels for service providers in the tourism sector, it can continuously keep tourism consumers in tourism activities. Thanks to mobile devices, access to all information, especially tourism activities, can be realized independently of place and time. The fact that navigation applications provide tourism consumers with the opportunity to find destinations and access transportation channels quickly increases the knowledge level of tourism consumers about destinations and their desire to reach the destination. In addition, navigation-based applications for creating routes also support individuals to be constantly on the move during tourism activities and to do effective tourism planning.

On the other hand, social media interactions, which have become more accessible with mobile devices, also trigger mobility. Written and visual supported experiential sharing during the travel process primarily increases participation in tourism activities. Individuals are constantly under visual and experiential pressure to reach information about many unknown tourism destinations and become more demanding in reaching these destinations thanks to this sharing. The research of Wang et al. (2011 & 2012)

on this subject; stated that mobile phones have the potential to affect touristic experiences significantly; stated that with the increasing interest of travelers in using mobile applications before, during, and after travel, the experiences of consumers had become widespread thanks to mobile phones. In addition, the sharing travelers remember their experiences again, ensuring that the demand is kept constant and warm for future periods. In this sense, Tussyadiah and Fesenmaier (2007) stated that the images and pictures shared by travel lovers are effective in the "remembering process and recalling past experiences." Neuhofer and Buhalis (2012), on the other hand, stated that mobile applications have significant potential for both consumers and businesses, especially in the destination experience; He emphasized that sharing experiences helps tourists remember previous trips.

Beyond all these, the tourism industry now needs value-added services based on technologies integrated with interaction and entertainment in recent years. New technologies such as augmented reality (AR), virtual reality (VR), and near-field communication (NFC) come to the fore as technologies that can offer much more personalized content and services. There is a lot of engineering and research on integrating these technologies with the tourism sector and their effects on tourism consumers. Sociological studies are carried out. All this research on the latest technological developments sheds light on how mobile technologies and m-tourism applications affect or mediate the tourist experience and behavior. In this sense, NFC technology, one of the most up-to-date wireless technologies, is expected to be an indispensable mobile technology that provides significant added value to the tourism sector and offers new services to travel lovers in tourism experiences, thanks to its wide application. These new technologies will bring many advantages to the tourism

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industry, especially hotels. With the development of payment methods, the waiting time at the front desk will decrease.

2.5.1 Importance and Areas of NFC Technology for the Tourism Industry

NFC technology is considered one of the latest information communication technologies with great potential for the tourism industry. NFC technology can have a significant and positive impact on the travel and tourism industry, as it can offer various functions; They emphasized that tourism cities have the potential to attract investors and provide other significant economic benefits. Pesonen and Horster (2012) present a view parallel to this approach that NFC technology has the potential to have significant effects on both the tourism sector and tourism research; He stated that the technological progress in recent years is one of the following most significant steps and therefore more profound research by tourism professionals is necessary. In this sense, although the studies examining NFC applications are not sufficient, they have started to be examined in recent years both in the tourism sector and, in parallel, within the scope of academic research.

NFC technology offers various applications to the tourism industry, both within the scope of B2C and B2B. On the other hand, an ecosystem of mobile devices, mobile communication service providers, credit card companies, and the like has encouraged the widespread use of NFC in recent years. Suppose a wide-ranging penetration can be achieved in this way. In that case, NFC technology will be a technology that can provide a significant competitive advantage for service providers in many sectors, especially tourism.

2.5.2 Research on Applications in the Tourism Sector

Significant research is also carried out in the academic community regarding the applications of NFC technology in the sector. While the research in this field primarily focuses on developing NFC technology applications in the sector based on engineering, social-based research examines the usage areas of the related technology, especially in the tourism sector. Consumers' attitudes and usage behaviors towards this new technology have increased significantly in recent years. Within the scope of social-based research, the primary research on NFC wireless technologies is as follows;

Fischer (2009) explained the potential applications of NFC technology in the tourism sector. In parallel with this research, Pesonen and Horster (2012) reviewed NFC technology's current and potential applications in tourism with case studies in various fields; provided important information about technology to industry stakeholders. Kneissl et al. (2009), a social networking platform created by skiers, was created with the NFC-based "All-I-Touch - One-touch" prototype application. While this application presents product-related information to the user at the point of sale, users are also provided to share this information, comments, and experiences by connecting to the social network on Facebook. Thus, people on the platform also have more meaningful product information enriched with comments. Kneisl et al. (2009) emphasized in the same research that it is a suitable method for manufacturers to equip their products with NFC tags for viral marketing; in this way, it is much more possible for them to reach the right target audience and obtain independent user comments about the product.

Madlmayr and Scharinger (2010) classified the application areas of NFC technologies into three categories: information systems, workforce management, and location-based services. They conducted exemplary practices in the tourism sector in Germany. Two examples are described in the first category. The first is a field trial of public transport systems in Hanau, Germany. The pilot study prepared bus schedules accessible via NFC, and a payment system based on RFID tags was integrated. With this study, bus programs were automatically downloaded to mobile devices by users through an application. A second study was carried out on the touristic island of Sylt in Germany. RFID tags have been placed at tourist attractions, local restaurants, and meeting points around the island. Island visitors who read the labels with their mobile phones could automatically connect to websites that shared certain information about the island. In the third study on positioning, Using NFC tags, a navigation system has been developed that can be used in situations with no internet or WiFi connection. With this study, Madlmayr and Scharinger (2010) recommended that a tourism organization integrate NFC technology, which is made available with only one application, into their logos and help travelers provide information on many subjects to eliminate the many confusions.

They exemplified the NFC technology-based automatic check-in system application for hotels in the tourism sector. With this application, it is stated that the room information and digital key are defined on the mobile phone of the person who makes the room reservation, and that the person can go directly to the room without visiting the reception during the entrance to the hotel and open the door with an NFC-enabled mobile phone. It has been stated that checkout can be done using an NFC-enabled device in the room or an NFC-enabled kiosk desk at the reception. Even if the guests

visit reception during check-in, they can decrease waiting time thanks to NFC technology because they can use contactless credit cards or applications.

Ceipidor et al. (2013: 5) designed the Genoa Wolfsononiana Smart Museum mobile application. They conducted field research to research the "Usability" and "User Experience" of NFC technology applied to the touristic-cultural area. The research explained the essential steps to be followed in the mobile application design process with a better user experience and usable user interface.

Basili et al. (2014: 254) have produced a new service application called NFC-SMTC adapted to support tourism and cultural heritage within their research on developing intelligent tourism systems. The proposed application offered a wide range of information, mobile payment, mobile ticketing, device matching, location-based services, access authorization, loyalty management, bonus, and membership cards. With this research, it has been revealed that the practices to be carried out in cooperation with the telecommunication operator, the tourism sector, and local authorities can contribute more to tourism's economic and regional development by creating significant added value for both B2B and B2C markets. Ronay and Egger (2014) tried to explain the impacts and applications of NFC technology in the potential roles of future Smart City concepts and conveyed future scenarios for stakeholders in tourism destinations. The scenarios described in the research make essential contributions to the future strategies of tourism destinations.

Cerruela et al. (2017: 518) developed a service system that includes customizable multimedia systems on mobile devices using dynamic websites within the scope of

tourism services. It interacts with smart objects enriched with NFC tags so users can receive customizable information and services in the metamodel. With this research, it has been shown that solutions can be applied to any tourism sector by associating metamodels with objects. Pedroza et al. (2017), meetings, conferences, exhibitions, etc., examined how NFC and mobile applications contribute to tourism development within the scope of services. Research has shown that NFC technology with a mobile application creates different experiences and added value for both the user and the organizer.

2.5.3 Impact on Tourism Industry for Contactless Payment

Foreign tourists especially spend their holidays providing foreign currency inflow to the country. It significantly impacts reducing the foreign exchange deficit, one of the country's problems. With credit cards with contactless payment or phone applications, domestic tourists can shop abroad without holding foreign currency. In contrast, foreign tourists can shop and vacation in our country without having to hold country currency. Thanks to contactless payment, tourists do not need to enter their PINs.

People can both have their holidays and can shop without having cash. With a single credit card, shopping and travel opportunities are available anywhere. Banks collect high-limit cards for their respected customers so that all transactions can be made through credit cards instead of cash. As a result of using credit cards with contactless payment by tourists, foreign currency inflows into the country, and domestic tourists' expenditures also mean foreign currency transfer.

2.5.4 The Use of Contactless Payment Method in the Tourism Sector

The tourism sector plays a vital role in revenue and gaining more income for a country. The tourism sector is a broad spectrum and includes airlines, tour operators, hotels, car

rentals, tourist attractions, shopping malls, and restaurants (Lei & Law, 2019). Post

COVID-19, the tourism sector started new standards and rules to promote tourism safe.

Due to Coronavirus (COVID-19) pandemic, guests' behavior changed, and they started

to request more comfort levels in the hotels. According to the survey, as of May 2020,

60% of guests said that more frequent cleaning and disinfecting processes would make

them feel more comfortable staying in hotels during the coronavirus epidemic. (Lock,

2021). As seen in Figure 5, one of the most important results of the research is the high

rate of those requesting contactless payment. Guests want to minimize contact during

their stay at the hotel, and therefore, want to take precautions against corona by using

contactless payment.
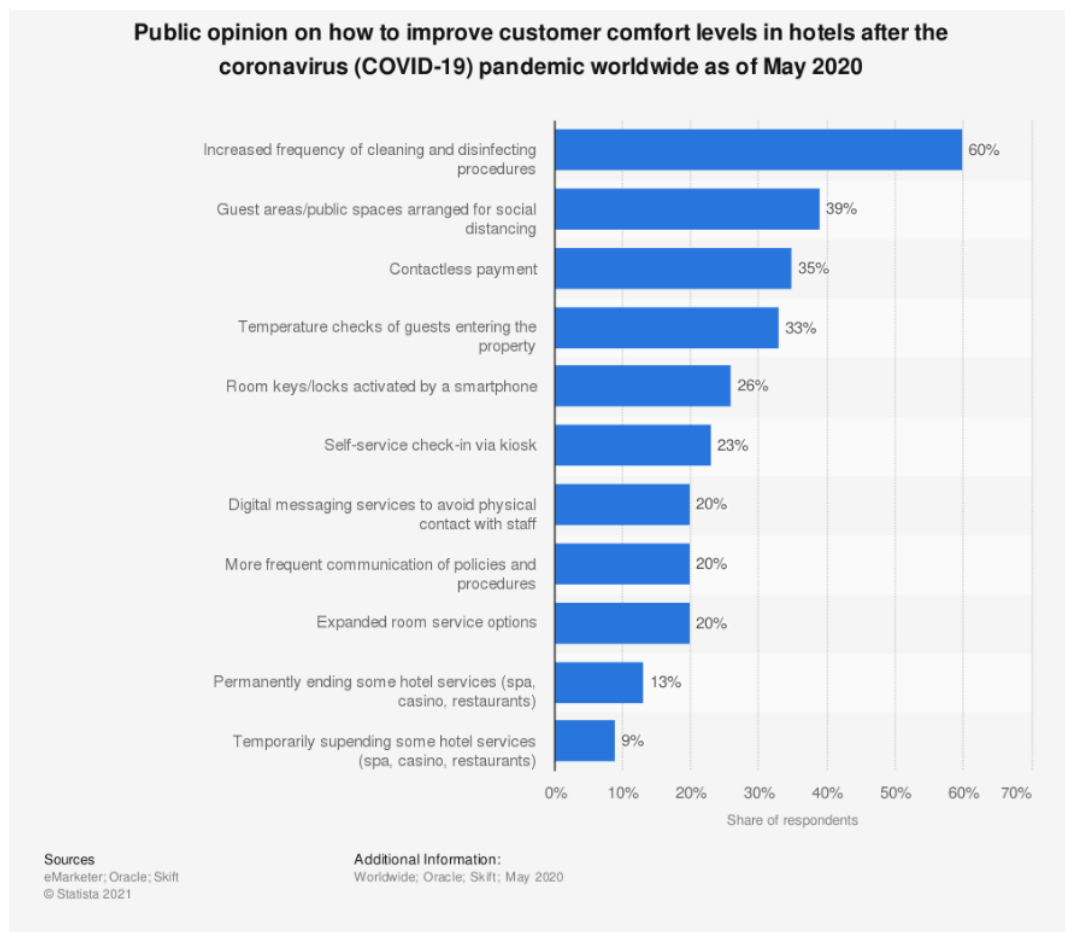
Figure 5: Public opinion on how to improve customer comfort levels in hotels after
the coronavirus (COVID-19) pandemic worldwide as of May 2020. Source:
eMarketer (2020) website (www.statista.com)

These included introducing contactless mobile payment methods and better cleanliness and social separation. However, it is commonly understood that the sluggish expansion of mobile commerce, especially mobile payment systems, can hurt and stifle the hospitality and tourist sectors. Contactless payment technologies and their widespread adoption are critical to the survival and expansion of the hospitality and tourist industries. This is due to the increased efficiency and efficacy of such systems and the helpful innovation to the industry (Alqatan, Noor, Man & Mohemad, 2019).

There is a significant link between the hotel and tourist industry and mobile commerce. After the COVID-19 catastrophe, mobile commerce, of which mobile payment is an integral component, is critical to the expansion of tourism, and this direct link has become stricter.

Hotels, like guests, have started to take precautions and change the service they provide. According to the research, whose graph is given below, 43 percent of the hotels have adopted and started to use contactless payment (Skift, 2020). Compared to other technological services, the rate of hotels that do not use contactless payment is lower. The rate of hotels switching to the contactless payment option in the future is not negligible. This shows us that the guests started to use this payment option and that the hotels responded to this demand, followed the technological trend in hospitality, and switched to the contactless payment system.
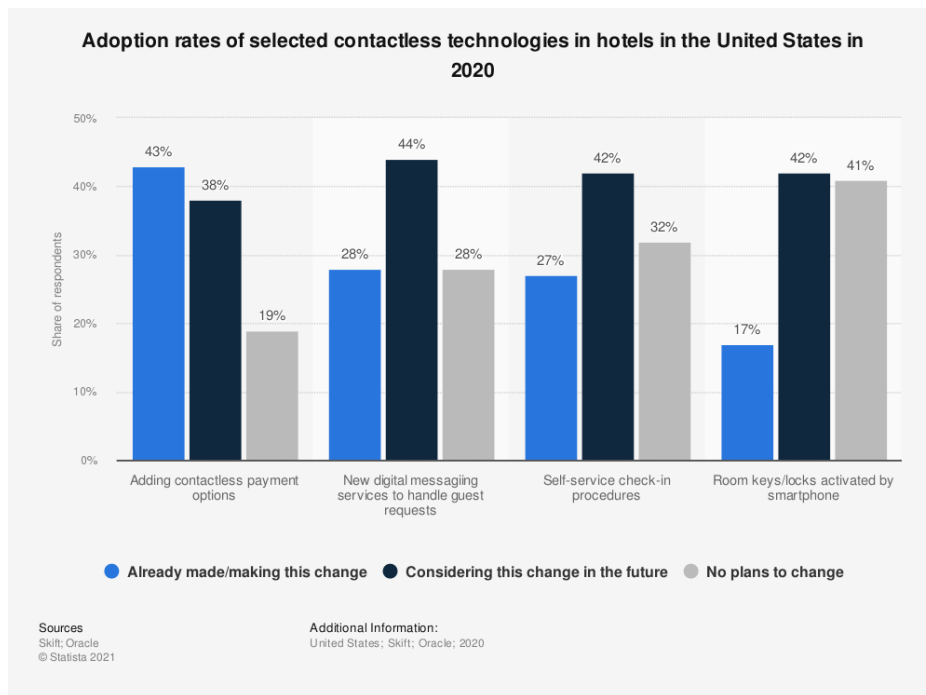
Figure 6: Adoption rates of selected contactless technologies in hotels in the United States in 2020. Source: Skift (2020) website (www.statista.com)

2.6 Technology Acceptance Model

Although technologies that have become widespread in all areas of our lives facilitate and simplify operations, people sometimes hardly adopt or do not adopt these systems or tools. Models have been created to investigate the causes here. Examining the acceptance of technology by individuals, different factors have been added or removed over time according to their effects on behavioral science in psychology and sociology. The theories created have been developed over the years and have emerged as extensions of each other (Akca & Ozer, 2012).

The Theory of Reasoned Action (TRA) is the oldest known technology acceptance theory. It was developed by Ajzen and Fishbein in 1967 (Momani et al., 2017). The Technology Acceptance Model (TKM) was proposed by Davis (1986) as an extension of TRA (Lee et al., 2003). According to TKM, there are two essential factors in using

information technologies. These are perceived usefulness and perceived ease of use. These factors affect the intention of people to use a product or service, and the intention to use affects the actual use of the products or services. Venkatesh and Davis created the "Improved User Acceptance Model" by adding the concepts of social impact and cognitive processes to the model to better understand whether users should adopt new technologies (Davis, 1985).

2.6.1 Studies Using TAM in Adoption of Contactless Payment Systems

Many studies around the world focus on customer intentions toward new technologies. In this section, studies were conducted with technology acceptance models in parallel with the subject of contactless payment methods worldwide.

Cabanillas, Molinillo, and Montanez (2019) conducted a study investigating the determining factors for using NFC mobile payment systems in public transport in Spain. In the study, the data were collected by the survey method of 180 people and analyzed using the technology acceptance model with additional variables. As a result of the research, it has been understood that satisfaction, service quality, effort expectancy, and perceived risk factors are influential in continuing to use this technology. It was understood that social value and perceived trust factors did not significantly correlate with other variables.

Abdulrazzaq (2018) conducted a study at the University of Bahrain to investigate the effects of contactless payment technologies on students. The study was conducted using a questionnaire with a modified technology acceptance model. As a result of the study, it was understood that most participants thought of using the contactless payment system. While reliability, privacy, and awareness are among the essential

factors affecting the intention of users to adopt contactless payment technologies, the ease-of-use factor is not considered an essential factor. In addition, it has been observed that students with high incomes have a higher rate of adopting this technology.

Jenkins and Ophoff (2016) studied the factors affecting NFC mobile payments from the South African perspective. In the study, the data of 331 people were analyzed with the online survey method. Using structural equation modeling, it has been understood that safety and security concerns are the most critical factors influencing perceived risk. In addition, it has been seen that social impact and ease of use positively affect perceived value.

Fiedler and Ozturen (2014) studied how consumers' perceptions of contactless payment instruments influence their choices. In the study, the data collected in the German market is currently still low to accept contactless payment. They completed the survey at two petrol stations in Hamburg. The findings of this study indicated that further research is needed into the social science aspects of felt trust and perceived security. Finally, the case may be made that the importance of utility increases with age in adopting the new payment process.

Özer, Poyraz, and Kızgın (2019) studied adopting electronic payment tools to create a cashless society. In the study, the data were obtained by applying a questionnaire, and the technology acceptance model was used. As a result of the study, it was stated that special norms, which are the dimensions of gender, age, having primary school education, seeing technology as a necessity, perceived behavioral control, behavioral

intention, and technology acceptance model, are effective in users' use of electronic payment tools. In addition, it has been understood that young users use electronic payment tools more, and their adoption rate is higher. While it was seen that the special norms in the technology acceptance model positively affected the tendency to use payment tools, it was seen that the perceived usefulness and perceived usefulness did not affect it positively.

Eren (2020) studied the factors affecting the intention to use contactless credit cards in shopping. In the study, the data were collected by the online survey method of 394 people and analyzed using the structural equation model. As a result of the research, the perceived benefit, perceived ease of use, perceived risk, the social environment that encourages individuals to use the contactless credit card, and the thoughts of peers to use the contactless credit card in the future are seen as factors affecting the intention to use the contactless credit card. It was concluded that the perceived personal innovativeness factor did not affect the intention of individuals to use their contactless credit cards in the future.

Topçuoğlu (2019) researched the cashless society and Turkey. The study was based on the combined technology acceptance and use model, with data collected from 396 participants by the survey method. As a result of the analysis, it was understood that perceived usefulness, perceived cost, and perceived trust were influential on the tendency to use non-cash payment instruments.

Trinugroho et al. (2017) investigated the adoption of mobile payment systems in Brazil. The research was analyzed using the theory of unified acceptance and the use

of technology. The research shows that perceived performance expectation, effort expectancy, risk, and social impact have significant effects on intention to use. In addition, no information perceived cost has a significant adverse effect on the intention to use.

Chapter 3

RESEARCH HYPOTHESES

3.1 Introduction

This chapter presents the hypotheses. This chapter discusses how the relationships among the study variables are developed. The study variables are ease of use, usefulness, intention to use, security, trust, satisfaction, convenience, and social value.

3.2 Research Model

There are a variety of study models that may be used to describe the way people use technology. In this research, the "Technology Acceptance Model" was used. A methodology known as the TAM helps us look at contactless payment methods adoption from customers' point of view and analyzes their attitudes toward various technological advancements (Davis, 1989). According to this approach, elements influencing a customer's choice to accept or reject a technological advance may be quantified and identified (Davis, 1989). Two key factors influence new technology acceptance: perceived usefulness and ease of use.

TAM aims to improve the use of information technologies by societies and individuals by explaining and logically expressing the factors that influence their use (Davis, 1989). TAM technology acceptance when measuring four from the factor benefits. These are perceived ease of use, usefulness, attitude towards use, and behavioral intention (Ugur & Turan, 2016).

The above-disclosed theoric model's synthesizer Figure 3 also created the "Contactless Payment Method Acceptance Model" used. The model variables are ease of use, usefulness, intention, security, trust, satisfaction, convenience, and social value.
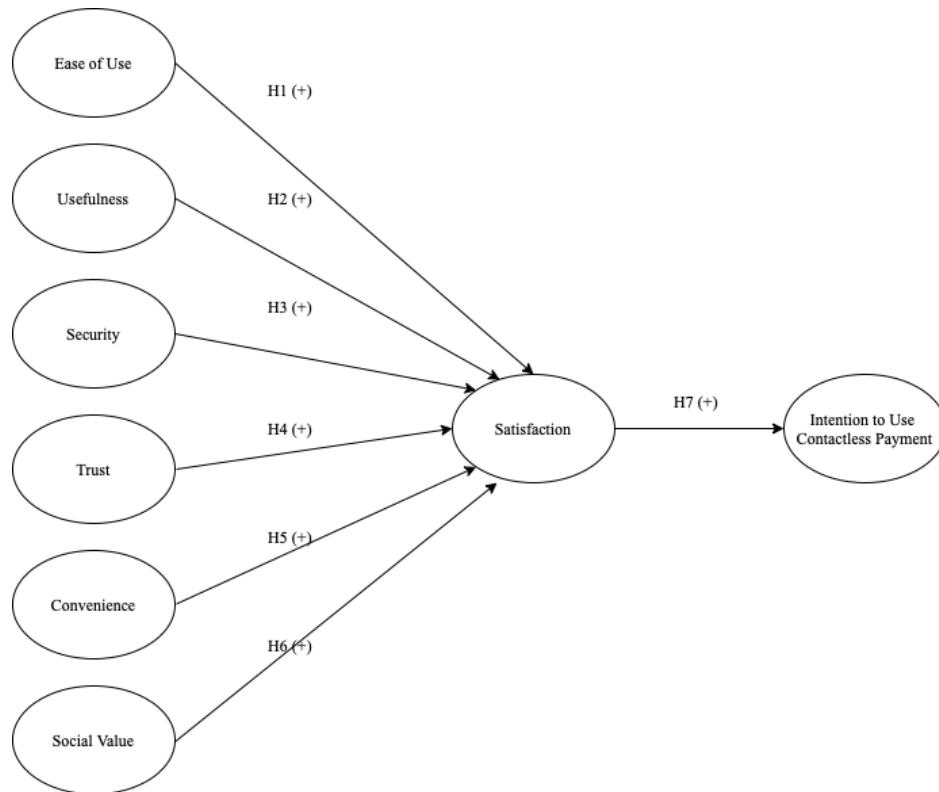
Figure 7: Research Model

3.3 Research Hypothesis

This study defines specific valuable components in the context of contactless payment methods and the intention to continue using contactless payment methods.

3.3.1 Ease of Use

Ease of use, one of the variables in the research model, is "the degree to which consumers use a technological application without any mental effort." In addition, ease of use is essential in accepting and using a particular technology (Davis et al., 1989). People adopt technology only when it makes their lives easier. It is thought that the

usefulness and ease of the systems used positively affect the usage intentions and satisfaction of the consumers (Pal et al., 2015).

The effort required to use technology is essential for individuals at the point of using it. Davis et al. (1989), in their study investigating behaviors towards computer use, concluded that after perceived usefulness, the most critical factor affecting behavioral intention is perceived ease of use. Other studies in the literature also support the significant relationship between perceived ease of use and satisfaction & intention to use (Venkatesh & Davis, 2000; Gefen et al., 2003; Banbasat & Wang, 2005; Tung et al., 2008; Kim et al., 2010). It is possible to talk about the effect of perceived ease of use on behavioral intention within the framework of mobile payment systems, as in many technology acceptance studies. Therefore, the following hypothesis is proposed: H1. Perceived ease of use positively affects guest satisfaction with the use of contactless payment methods.

3.3.2 Usefulness

Many studies in the literature show a direct and significant relationship between perceived usefulness and intention to use (Gefen et al., 2003; Wu & Wang, 2005; Banbasat & Wang, 2005; Tung et al., 2008; Kim et al., 2010). Individuals' perceptions of the benefits they will obtain from performing a behavior contribute to shaping their intention to perform the behavior. Davis et al. (1989), in their research on the Technology Acceptance Model, concluded that the most critical factor determining behavioral intention is perceived usefulness. Venkatesh and Davis (2000) expanded the Technology Acceptance Model and found a significant relationship between perceived usefulness and intention to use the new model they named TAM2. In this respect, it can be said that the perceived benefit of contactless payment methods affects

users' intention to use technology. These findings consequently lead to the following hypothesis:

H2. Perceived usefulness positively affects guest satisfaction with the use of contactless payment methods.

3.3.3 Security

New technologies often have specific inherent hazards (Schmerz et al., 2010). Most people fear that their personal information will be accessed using the contactless payment method. Security is a big problem during shopping because banks and phone applications have enough consumer trust. Consequently, consumers provide their personal information to these companies much more quickly (Mallat & Tuunainen, 2008). Security has risen to the top of the priority list with the existing state of safety for electronic transactions and commercial information transmission (Kadiwai & Zilfiquar, 2007). Security is one of the most significant challenges (Kim et al., 2010, Linck et al., 2006).

Concerns about hacker attacks on users' contactless payment methods are another deterrent to widespread contactless payment use in the United States. New contactless payment technologies are being held back by consumers' lack of confidence (Tavilla, 2012).

Many personal data must be transferred to the contactless payment system to perform payment transactions via mobile devices. Security perceptions, which deal with concepts such as data protection and privacy of personal information, have been the subject of many sectoral studies. The literature states that consumers' contactless payment usage intentions are affected by their security perceptions (Shin, 2009;

Oliveira et al., 2016). Considering the situation in question, it has been seen that security perceptions have a significant effect on the usage intention in theory and practice. This study, which examines the determinants of usage intention for contactless payment systems, was decided to deal with the security perceptions of consumers. Therefore, the following hypothesis is proposed:

H3. Security positively affects guest satisfaction with the use of contactless payment methods.

3.3.4 Trust

The relationship between perceived trust in online transactions and intention to use has been the subject of many studies (Banbasat & Wang, 2005, Tung et al., 2008). Pavlou (2002) added the trust variable to the Technology Acceptance Model, the technology-adapted version of the Planned Behavior Theory. Pavlou (2002) concluded that the trust factor, directly and indirectly, affects the intention to transact online transactions. Gefen et al. (2003) argued that people's lack of physical interaction in online purchasing behaviors leads to differences in the perception of trust. As a result of this research, it was determined that there is a direct relationship between perceived trust and intention to use (Gefen et al., 2003). It can be said that trust is an essential factor for mobile payment systems where transactions are carried out digitally. In addition to the studies mentioned above, this study also deals with the effect of perceived trust in mobile payments on technology usage intention. Therefore, the following hypothesis is proposed:

H4. Perceived trust positively affects guest satisfaction with the use of contactless payment methods.

3.3.5 Convenience

(Roy et al., 2016) says that consumers who are short on time favor companies that offer added value by making it easier to find, buy, and use services in the current marketing landscape. People today only trust technology if it improves their lives (Limantara et al., 2013). When compared to traditional ticketing systems, mobile tickets have many benefits. For example, passengers can pay for services from anywhere and anytime; they do not have to wait in lines, are easy to use, and are always available (Mallat, 2007). Convenience is a combination of time and place utility that can affect a user's decision to use a particular system and their satisfaction with using it (Pal et al., 2015). Seiders et al. (2005) and Lim and Kim (2011), as well as Seiders et al. (2005) and Seiders et al. (2007), all say that ease of use will make people happier with the technology. So, we propose the following:

H5. Convenience positively affects guest satisfaction with the use of contactless payment methods.

3.3.6 Social Value

Social value refers to the acceptability or usefulness of consumers or users of contactless payment systems in their relations with social groups (Liébana-Cabanillas et al., 2019). When the social value is evaluated for this study, it is tried to understand whether contactless payment systems are an influential factor in social groups.

Taylor and Todd (1995) consider discussing social influence and expression in Behavior and Planned Behavior (Taylor Todd, 1995). You can have a positive perception of people to achieve something positive. Venkatesh et al. (2003). Venkatesh et al. (2003) created the unified Technology Acceptance and Use Theory, and social impact is considered a factor that directly affects preference (Venkatesh et al., 2003).

Sheth et al. (1991) define social value as the perceived usefulness of a person's connection with one or more specific social groups. Fandos Roig et al. (2006) define it as the acceptability or usefulness of a person's relationships with their social environment. In the context of mobile technology, it is clear that mobile systems are seen as modern product or service that is becoming more useful (Chang, 2015), which makes users happier with their use. In the mobile environment, social value is the usefulness of mobile apps based on how well they are thought to improve people's lives (Chang, 2015; Wang et al., 2013). This leads us to the following hypothesis:

H6. Social value positively affects guest satisfaction with the use of contactless payment methods.

3.3.7 Satisfaction

Intention to use and satisfaction are essential when evaluating the experiences consumers have when purchasing or using a product or service. It is thought that users' beliefs about the system effectively determine the usage intention (Kacer et al., 2018). Consumer satisfaction is paramount during the evaluation phase of a consumer's experience with a product or service, such as buying, using, or consuming it. This is because the consumer's long-term responses, such as their intention to buy again and their loyalty, will depend on how satisfied they are with the product or service (Liébana-Cabanillas et al., 2014a). I have used information systems theories like the technology acceptance model and the innovation diffusion theory to examine how users adopt contactless payments. However, few studies have examined how users use contactless payments after adopting them (Yuan et al., 2016; Zhou, 2014). Satisfaction is a good predictor of a person's continuance intention, which is the degree to which a user plans to keep using an information system or, in this case, the payment system in

question (Hsu & Lin, 2015; Shang & Wu, 2017; Zhou, 2011b) So, based on what we know from previous research, we propose the following:

H7. Satisfaction has a positive effect on the intention to use contactless payment systems.

Chapter 4

RESEARCH METHODOLOGY

4.1 Introduction

This section will emphasize the aim, the sample of the research, the data collection method used in the research, the theoretical model, and the research hypotheses.

4.2 Purpose And Significance of The Research

This study aims to determine factors influencing guests' intentions to use contactless payment at hotels in the United States. The importance of the study is that with the increasing technological developments around the world, countries use or try to use systems that provide ease of payment. In addition, the factors affecting the adoption of contactless payment methods are essential.

4.3 Limitations of the Study

The study aimed to determine what factors affect hotel contactless payment. Washington DC province was selected as the population of the study. Guests from Hilton Hotels in Washington, DC, were selected as a sample.

4.4 Sample and Data Collection

A literature review was first done in this study, and the studies and results related to the research subject were summarized. The quantitative analysis method was used as the research method. The research sample was determined by the principles of the easy access sampling method. Within this framework, the easy access method; is defined

as the researcher choosing the participants he can easily reach while determining the research sample from the universe (Balcı, 2010).

The data collected within the research framework were analyzed using the SPSS.25 program. The demographic data obtained from the questionnaire were examined with frequency distributions, and the total score obtained from the research scale was analyzed by the average method. The reliability of the research scale was examined with Cronbach's Alpha test, and the skewness and kurtosis values in the normality distribution were examined.

A questionnaire study was applied to the guest staying at Hilton Hotels in Washington, DC. The survey consists of 3 stages. In the first stage, demographic questions were asked demographic questions about age, gender, degree, and annual income. In the second stage, questions about the usage of contactless payment were asked. These are the frequency of a stay at the hotel, average length of stay at the hotel, the purpose of stay at the hotel before using contactless payment, which place they used contactless payment, and which contactless payment system they used. The "Technology Acceptance Model" developed by Davis (1989) was used in the third stage of the questionnaire used in this study. The universe of the study consists of individuals staying in hotels in Washington for various purposes. The universe of the study is not known precisely because the Washington city government does not disclose tourism statistics on accommodation. The study sample consists of the participants selected from this universe with the easy access method. By definition, the easily accessible sampling method, on the other hand, means that the researcher chooses the sample from the determined universe as the participant that she can reach most easily (Balcı,

2010). For this purpose, the research sample consists of participants who stay at the Hilton Hotel Washington, where the research can easily reach. The survey was administered via Google Forms over the internet. The survey link (https://forms.gle/efQqKtBFZFcDcy2d8) was sent to the participants to whom the survey would be administered via text message and e-mail. The questionnaire application for data collection was carried out at Hilton Hotel in Washington DC between February 01, 2022, and May 24, 2022. A total of 224 guests filled out this survey. The data were evaluated using the SPSS statistical program.

The scale consists of 5 dimensions and 30 statements. 4 statements measure perceived ease of use, four statements perceived usefulness, five statements intention to use, five statements security, three statements trust, two statements satisfaction, three statements convenience, and four statements social value of contactless payment method. A 5-point Likert Scale was used in the study. The statements in the scale match with the judgments 1-" Strongly disagree," 2- "Disagree," 3- "Neither Agree nor Disagree," 4- "Agree," and 5- "Strongly Agree."

The expressions of the scales used in the research model are given in Table 1.

Table 1: Expressions of the Scales Used

Code	Indicators (items)	
Perceived ease of use		
PEOU1	Using a contactless payment method is as easy as using an actual payment card	Venkatesh et al., 2012; Shaw, 2014
PEOU2	Understanding how to use the contactless payment method is clear and understandable	Venkatesh et al., 2012; Shaw, 2014
PEOU3	Using a contactless payment method would be easy	Venkatesh et al., 2012; Shaw, 2014

PEOU4	Learning to use a contactless payment method would be easy	Venkatesh et al., 2012; Shaw, 2014
Perceived usefulness		
PU1	Using a contactless payment method would be useful	Venkatesh et al., 2012; Shaw, 2014
PU2	Using a contactless payment method would be more convenient for me	Venkatesh et al., 2012; Shaw, 2014
PU3	Using a contactless payment method would increase my efficiency	Venkatesh et al., 2012; Shaw, 2014
PU4	Using a contactless payment method would help me pay more quickly	Venkatesh et al., 2012; Shaw, 2014
Intention of use		
ITU1	I expect my use of the contactless payment method to increase in the future	Venkatesh et al., 2012; Shaw, 2014
ITU2	I intend to use the contactless payment method in the future	Venkatesh et al., 2012; Shaw, 2014
ITU3	I will recommend the use of the contactless payment method to friends	Venkatesh et al., 2012; Shaw, 2014
ITU4	I will always try to use the contactless payment method	Venkatesh et al., 2012; Shaw, 2014
ITU5	I plan to use the contactless payment method frequently	Venkatesh et al., 2012; Shaw, 2014
Security		
SEC1	I feel secure about the transactions performed using contactless payment method	D. J. Kim et al., 2008; Luarn & Lin, 2005; Schierz et al., 2010; Shin, 2010b; Zhou, 2011a: Johnson et al., 2018
SEC2	The contactless payment provider takes security measures to protect my payments	D. J. Kim et al., 2008; Luarn & Lin, 2005; Schierz et al., 2010; Shin, 2010b; Zhou, 2011a: Johnson et al., 2018
SEC3	The contactless payment provider has the ability to verify user's identity to ensure payment security	D. J. Kim et al., 2008; Luarn & Lin, 2005; Schierz et al., 2010; Shin, 2010b; Zhou, 2011a: Johnson et al., 2018

SEC4	The contactless payment provider can ensure the security of payment information	D. J. Kim et al., 2008; Luarn & Lin, 2005; Schierz et al., 2010; Shin, 2010b; Zhou, 2011a: Johnson et al., 2018
SEC5	I feel safe making transactions using contactless payment method	D. J. Kim et al., 2008; Luarn & Lin, 2005; Schierz et al., 2010; Shin, 2010b; Zhou, 2011a: Johnson et al., 2018
Trust		
TR1	I think that it is safe to use contactless payment method to pay for hotel	Zarmpou et al., 2012; Liebana-Cananillas et al., 2019
TR2	I think that my personal data is safe while using contactless payment method	Zarmpou et al., 2012; Liebana-Cananillas et al., 2019
TR3	I think that the use of contactless payment is trustworthy	Zarmpou et al., 2012; Liebana-Cananillas et al., 2019
Satisfaction		
SA1	I think that I made the correct decision to use contactless payment method	Vila and Kuster, 2011; Liebana-Cananillas et al., 2019
SA2	I am satisfied with contactless payment method experience at the hotel	Vila and Kuster, 2011; Liebana-Cananillas et al., 2019
Convenience		
CON1	The contactless payment method is convenient because I can use it anytime	Pal et al., 2015; Liebana-Cananillas et al., 2019
CON2	The contactless payment method is convenient because I can use it in any situation	Pal et al., 2015; Liebana-Cananillas et al., 2019

CON3	The contactless payment method is convenient because it can be used in any location	Pal et al., 2015; Liebana-Cananillas et al., 2019
Social Value		
SV1	The use of contactless payment method helps me to feel acceptable in the society	Sweeney and Soutar, 2001; Liebana-Cananillas et al., 2019
SV2	The use of contactless payment method improves the way I am perceived by others	Sweeney and Soutar, 2001; Liebana-Cananillas et al., 2019
SV3	The fact that I use contactless payment method leaves a good impression on people I know	Sweeney and Soutar, 2001; Liebana-Cananillas et al., 2019
SV4	The use of contactless payment method provides me social approval	Sweeney and Soutar, 2001; Liebana-Cananillas et al., 2019

Chapter 5

RESULTS OF STUDY

This chapter of the thesis will present a detailed examination of the descriptive analysis and hypothesis tests. In the first part of the chapter, the descriptive analyses will be conducted through the frequencies, percentages, and means. Later, the hypothesis tests will be conducted with adequate statistical tests.

5.1 Descriptive Findings

In this section, the descriptive findings were presented throughout the examining the distribution of the demographic and usage variables with the frequencies and percentages. In Table 2 below, the distribution of the demographic variables was presented. According to the results, 86 (%38) of the participants are male, and 138 (%62) are female. The ages of the participants are distributed as follows; 73 (%33) of the participants are between 18-24, 70 (%31) of the participants aged between 25-34, 52 (%23) of the participants aged between 35-44, 17 (%8) of the participants aged between 45-54 and lastly, 12 (%5) of the participants' age 55 and above. The education levels of the participants are distributed as follows; 34 (%15) of the participants have high school diplomas, 26 (%12) of the participants have associate degrees, 108 (%48) of the participants have bachelor's degree, 47 (%21) of the participants have master's degree, and lastly, 9 (%4) of the participants have a doctoral degree. Finally, the annual incomes of the participants are distributed as follows; 39 (%17) participants have an annual income of under $20.000, 73 (%33) participants have an annual income between $20,001–$60,000, 69 (%31) participants have an annual income between

$60,001–$100,000, and lastly, 43 (%19) of the participants have an annual income of over $100,000.

Table 2: Distribution of the Demographic Variables

		N	%
Gender	Male	86	38
	Female	138	62
Age	18-24	73	33
	25-34	70	31
	35-44	52	23
	45-54	17	8
	55 and above	12	5
Education Level	High School Diploma	34	15
	Associate degree	26	12
	Bachelor's degree	108	48
	Master's degree	47	21
	Doctoral degree	9	4
Annual Income	Under $20,000	39	17
	$20,001–$60,000	73	33
	$60,001–$100,000	69	31
	Over $100,000	43	19
Total		224	100

Table 3 below presents the distribution of the usage variables. For the frequency of a stay at the hotel, findings distributed as follows; 34 (%15) participants stay at the hotel less than once a year, 85 (%38) participants stay 1-2 times a year, 75 (%33) participants stay 3-6 times a year, 24 (%11) participants stay 7-12 times a year and lastly, 6 (%3) participants stay at the hotel more than 12 times a year. The average length of the stay at the hotel variable is distributed as follows; 27 (%12) of the participants' average length of the stay is one night, 139 (%62) participants' average is 2-3 nights, 51 (%23) participants' average is 4-7 nights, and last, 7 (%3) participants' average length of stay is 8-14 nights. According to the findings, participants' purposes of the stay distributed as; only business (*N=8; %=4*), mostly business (*N=19; %=8*), both business and leisure (*N=66; %=30*), mostly leisure (*N=81; %=36*) and only leisure (*N=50; %=22*).

For the variable that aims to explore the participant's contactless payment experience, 158 (%71) participants stated that they had used the contactless payment before, and 66 (%29) participants stated that they had not used the contactless payment before. The contactless payment systems that the participants encountered at the hotel vary as follows; 95 (%42) of the participants encountered Apple Pay, 22 (%10) of the participants encountered Google Wallet, and 83 (%38) participants did not use any contactless payment method, and 24 (%10) of the participants have stated other contactless payment methods.

Table 3: Distribution of the Usage Variables

		N	%
Frequency of Stay at the Hotel	Less than once a year	34	15
	1–2 times a year	85	38
	3–6 times a year	75	33
	7–12 times a year	24	11
	More than 12 times a year	6	3
Average Length of Stay	One night	27	12
	2–3 nights	139	62
	4–7 nights	51	23
	8–14 nights	7	3
Purpose of Stay	Only business	8	4
	Mostly business	19	8
	Both for business and leisure	66	30
	Mostly leisure	81	36
	Only leisure	50	22
Contactless Payment Before	Yes	158	71
	No	66	29
Contactless Payment System at the Hotel	Apple Pay	95	42
	Google Wallet	22	10
	Not Use	83	38
	Other	24	10
Total		224	100

Table 4 below presents the mean values of the research scales. According to the findings mean value of the intention to use is 18,4±5,8, which is close to the maximum

value, and the mean value of the satisfaction is 7,2±2,2, which is also close to the maximum value.

Table 4: Mean Values of the Research Scales

	M±Ss	Min-Max
Intention to Use	18,4±5,8	5-25
Satisfaction	7,2±2,2	2-10
Security	17,8±5,5	5-25
Perceived Ease of Use	15,4±4,5	4-20
Perceived Usefulness	15,7±4,5	4-20
Trust	10,6±3,4	3-15
Convenience	10,4±3,4	3-15
Social Value	10,7±4,6	4-20

5.2 Reliability and Normality Analysis

In this part of the research, the reliability analyses of the study's scales were conducted through the Cronbach's Alpha tests. Afterward, normality analyses were carried out to decide whether parametric or nonparametric tests would be used in the hypothesis tests of the research.

For the reliability analysis, Cronbach's Alpha tests were conducted regarding all questions of the scales. When the standard literature is reviewed, research scales, which are tested with Cronbach's Alpha test, are desired to get a reliability score of 0.70 and above for the considered reliable, and, increasing, reliability scores suggest a high level of statistical reliability. Table 5 presented below shows the Cronbach's Alpha scores of the research scales. According to the results, all the research scales have a very high level of statistical reliability. So this indicates that there is no statistical obstacle to using research scales in hypothesis testing.

Table 5: Cronbach's Alpha Results of the Research Scales

	Cronbach's Alpha	N of Items
Intention to Use	.951	5
Satisfaction	.878	2
Security	.962	5
Perceived Ease of Use	.954	4
Perceived Usefulness	.960	4
Trust	.935	3
Convenience	.932	3
Social Value	.951	4

Within the framework of normality analysis, the skewness and kurtosis values of the research scales were examined. In contrast, the skewness and kurtosis values between -2 and +2 indicate the normal distribution of the research data, which requires parametric tests on the hypothesis testing. In contrast, values other than these indicate an abnormal distribution of research data that requires nonparametric tests in the hypothesis tests. In Table 6, presented below, the skewness and kurtosis values of the search scales were presented. According to the results, all the research scales have skewness and kurtosis values between -2 and +2; this situation indicates that the research data have a normal distribution so that the parametric tests will be used in the hypothesis testing of the research.

Table 6: Normality Analysis of the Research Scales

	Skewness	Kurtosis
Intention to Use	-0,744	-0,363
Satisfaction	-0,734	0,096
Security	-0,800	0,041
Perceived Ease of Use	-1,185	0,742
Perceived Usefulness	-1,140	0,504
Trust	-0,783	-0,102
Convenience	-0,616	0,489
Social Value	0,222	-0,722

5.3 Hypothesis Testing

In this part of the chapter, the hypotheses created in line with the research questions and the research goals will be tested through the statistical testing methods and evaluated. The parametric test methods were used for the hypothesis testing, and, in this context, Multiple Regression tests and Linear Regressions tests were used.

Table 7 below presents the results of the multiple linear regression analysis conducted to explore the predictors of the satisfaction-dependent variable. According to the results the perceived usefulness ($\beta = .20$, $t(217) = 3,037$, $p < .05$), security ($\beta = .20$, $t(217) = 2.271$, $p < .05$) and trust ($\beta = .41$, $t(217) = 5.576$, $p < .05$) are the statistically significant predictors of the satisfaction.

When these results were investigated, it could be stated that; a one-unit increase in the Perceived Usefulness dimension increases satisfaction by 20%. A one-unit increase in the Security dimension increases satisfaction by 20%; lastly, a one-unit increase in the trust dimension increases satisfaction by %41. All in all, perceived usefulness, security, and trust dimensions predict satisfaction in a statistically significant, positive way. H2, H3, and H4 hypotheses were accepted.

Table 7: Multiple Linear Regression Analysis for the Predictors of Satisfaction Level

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Perceived Ease of Use	0,028	0,032	0,057	0,891	0,374
Perceived Usefulness	0,097	0,032	0,201	3,037	**0,003**
Security	0,080	0,030	0,201	2,721	**0,007**
Trust	0,268	0,048	0,414	5,576	**0,000**
Convenience	0,038	0,034	0,060	1,133	0,259
Social Value	0,026	0,018	0,054	1,394	0,165

Dependent Variable: Satisfaction; $R^2 = \%79$

Table 8 below presents the results of the simple linear regression analysis conducted to explore the prediction of the Intention to Use a dependent variable. According to the results the Satisfaction (β = .83, t(222) = 22,666, p < .05) is the statistically significant predictor of the satisfaction. When this result was investigated, it could be stated that satisfaction is a strong predictor of the intention to use; a one-unit increase in the satisfaction dimension increases the intention to use by %83. So, satisfaction positively predicts the intention to use strongly.

Table 8: Simple Linear Regression Analysis for the Intention to Use

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Satisfaction	2,214	0,098	0,836	22,666	**0,000**

Dependent Variable: Intention to Use; R^2 = %69

Table 9 presents the results of the multiple linear regression analysis conducted to explore the mediation effect of satisfaction on the intention to use. For this purpose, firstly, the predictors of the intention to use were examined through the contactless payment usage dimensions.

According to the results the perceived usefulness (β = .51, t(216) = 8.585, p < .05), security (β = .18, t(216) = 2.787, p < .05) and convenience (β = .11, t(216) = 2.471, p < .05) are the statistically significant predictors of the intention to use.

Table 9: Multiple Linear Regression Analysis for the Predictors of Intention to Use

| | Unstandardized Coefficients | | Standardized Coefficients | | |
	B	Std. Error	Beta	t	Sig.
Perceived Ease of Use	0,121	0,076	0,092	1,585	0,114
Perceived Usefulness	0,662	0,077	0,516	8,585	**0,000**
Security	0,198	0,071	0,187	2,787	**0,006**
Trust	0,067	0,116	0,039	0,581	0,562
Convenience	0,201	0,081	0,119	2,471	**0,014**
Social Value	0,077	0,044	0,061	1,743	0,083

Dependent Variable: Intention to Use; $R^2 = \%83$

Table 10 below shows the results of the multiple linear regression test conducted to explore the mediation effect of the satisfaction variable on the prediction of the intention to use. According to the results; perceived usefulness ($\beta = .46$, $t(216) = 7.883$, $p < .05$), security ($\beta = .13$, $t(216) = 2.100$, $p < .05$) and convenience ($\beta = .10$, $t(216) = 2.239$, $p < .05$) are the statistically significant predictors of the intention to use. However, this time it could be seen that these predictors' significance values appeared to decrease compared to the first case. Overall, it could be stated that satisfaction has a mediation effect on the intention to use.

Table 10: Mediation Analysis for the Satisfaction Variable

| | Unstandardized Coefficients | | Standardized Coefficients | | |
	B	Std. Error	Beta	t	Sig.
Perceived Ease of Use	0,103	0,074	0,078	1,393	0,165
Perceived Usefulness	0,600	0,076	0,468	**7,883**	**0,000**
Security	0,147	0,070	0,138	**2,100**	**0,037**
Trust	-0,104	0,119	-0,061	-0,873	0,383
Convenience	0,176	0,079	0,105	**2,239**	**0,026**
Social Value	0,061	0,043	0,048	1,414	0,159
Satisfaction	0,64	0,158	0,242	**4,056**	**0,000**

Dependent Variable: Intention to Use; $R^2 = \%83$

Chapter 6

DISCUSSION AND CONCLUSION

When the effects of the Covid-19 pandemic on tourism and accommodation are examined, there is no doubt that the shrinkage in the market, changing consumption and tourist habits, and the transformations experienced by the businesses come to the fore (Omar, Nazri, Ali, and Alam, 2021; Pillai, Haldorai, Seo, and Kim, 2021). Considering this change in consumer behavior from a general perspective; In particular, contactless experiences and behaviors came to the fore in all areas of life in order to reduce the risk of infection, and this ultimately affected consumer behavior (Bartik et al., 2020; Gössling, Scott and Hall, 2020). During this period, individuals requested various technologies and applications such as contactless payment, digital menus, service robots, smart assistants, and contactless delivery are necessary in order to minimize human-to-human contact. (Gürsoy, Chi, and Chi, 2020).

The COVID-19 pandemic has rapidly changed the behavior of individuals worldwide towards online channels and has also changed the cultural and behavioral patterns of working, thinking, shopping, and using technology (Shafqat & Byun, 2020). Smart digital devices and advanced technologies have made the "intact" service, which facilitates customer encounters without face-to-face communication with employees, even more, active and faster. Contactless consumption products and services; Self-service services, online purchasing and payment, technological innovations, and unattended kiosks based on the individual disposition of modern people can be given

as examples (Lee & Lee, 2020). In particular, the uncertainties caused by the pandemic and the inability to predict how long the pandemic process will continue to mean that it is not known what the future process will bring (Türker, 2020), and this situation will show that contactless technologies will develop even more in the coming years and affect the tourism industry, as well as the tourism industry. It is thought that it will also cover the field of science and research related to tourism (Dragović et al., 2018). The coronavirus epidemic, which has been showing its effect for a long time, has also affected tourism activities, under many topics such as to what extent the behavior of tourists will be affected by this process, what tourism businesses should do against the epidemic, what measures should be taken to minimize the effects of this epidemic, both nationally and internationally. This study examined the effects of the Covid-19 pandemic and the contactless payment systems used in hotels on customer satisfaction in various dimensions. Within the scope of this study, the effects of ease of use, usefulness, security, trust, convenience, and social value, which are the benefits of contactless payment methods to the user, on satisfaction and intention to use were examined. In addition, the effects of satisfaction on intention to use were investigated. In order to answer the research hypotheses, regression models were established. As a result of the regression analysis to determine the predictors of satisfaction, it was determined that perceived usefulness, security, and trust from contactless payment benefits predict satisfaction significantly and positively. When this finding is evaluated, it is seen that the sense of satisfaction with the use of contactless payment methods increases as the perceptions of usefulness, security, and trust increase. When the finding obtained within the scope of usefulness is evaluated, this finding is a finding that is within the expectations, and the increase in the perception of usefulness within the contactless payment framework positively affects the satisfaction due to the

benefits provided to the user. This finding is in line with the literature. Contactless payment applications, which have become more familiar with the Covid-19 pandemic, have provided many benefits such as speed, security, and convenience, especially in reducing contact with their users, whether in the accommodation industry or different industries. It has begun to be perceived as very useful since it is user-friendly and does not require much cognitive or physical effort (Wilson & Chen, 2020; Acar, 2020; Bhatti et al., 2020). When the findings obtained within the scope of the security dimension are examined, it is seen that as the perceived security in contactless payment behaviors increases, the satisfaction felt increases. This finding is within expectations and is compatible with the literature. Security is one of the essential limiters and difficulties in contactless payment applications when the research is examined. The application is relatively new, and its rapid adoption with the Covid-19 pandemic has brought strong concerns (Pantano, Pizzi, Scarpi, and Dennis, 2020). In particular, for contactless payment applications, individuals are concerned about the application's security; fraud, obtaining sensitive information, and theft are essential determinants of the use of the application.

On the other hand, the positive perception of users towards contactless payment increases the use and, most importantly, the satisfaction with the use and reduces the concerns of the consumers (Knowles, Ettenson, Lynch and Dollens, 2020; He and Harris, 2020; Hacıalioğlu & Sağlam, 2021). As a result, this finding was evaluated by similar research findings. Another significant finding obtained within the scope of the study is the positive effect of trust in contactless payment applications on satisfaction. According to this finding, it is seen that as consumers' trust in contactless payment applications increases, their satisfaction due to usage also increases. When the

literature is examined within the framework of similar studies, the trust in contactless payment applications in accommodation and different industries is an element that encourages the use of contactless payment in users and increases satisfaction. The fact that contactless payment applications are more effortless increases the tendency to use them. However, for the realization of use, a trust must be placed in the contactless payment application. Therefore, with the increase in trust, satisfaction also increases (Yıldız, 2020; Knock et al., 2020; Rapaccini et al., 2020).

Another important finding of the study is the optimistic prediction of satisfaction on intention to use. According to this finding, as individuals' satisfaction with contactless payment applications increases, their intention to use them increases. This finding is within the expectations. A consumption element, in general, creates satisfaction depending on the benefit it provides to the user. This sense of satisfaction experienced by the individuals leads to the intention to use and the intention to use again. When the literature is examined, it is seen that many different studies reach similar findings; in most of these studies, the benefits of the use of contactless payment technologies and the satisfaction it creates are essential factors in terms of acceptance and conversion into a habit (Zmijewska, Lawrence, and Steele, 2004; Lee, Cheung and Chen, 2005). In addition, some researchers state that satisfaction is an essential determinant of adaptation to new technologies, and with high perceived satisfaction, adaptation and use of technology increase (Sipirior, Ward, and Connolly, 2011). When this finding is considered within the framework of the Covid-19 pandemic and the accommodation industry, it is seen that it is parallel to the generally accepted approaches. Especially in the Covid-19 pandemic, it is seen that the health and safety perceptions of individuals increase with the use of contactless payment. Any application that reduces

contact creates a sense of satisfaction quickly accepted by the masses. Depending on this satisfaction and security perception, mass acceptance and intention to use increased enormously (Rivera, 2020; Sigala, 2020).

Another finding obtained within the scope of the study is that contactless payment dimensions are predictors of intention to use. According to the analyses, perceived usefulness, security, and convenience from contactless payment dimensions positively predict intention to use. When this finding is examined, as the perceptions of usefulness, security, and convenience of contactless payment users increase, their intention to use also increases. When these findings are examined within the framework of the literature, it is seen that other studies reach similar findings, especially with the Covid-19 pandemic, contactless applications are becoming intensely preferred, individuals adopt these applications more quickly, and these applications provide convenience, feel safe and secure for users. Useful ones come to the fore and are more preferred (Jiang & Wen, 2020; Kim, Lang, Kang, and Kim, 2020). When the finding is considered within the scope of the accommodation industry, as mentioned in the previous parts of the study, especially the Covid-19 pandemic has affected the accommodation industry quite negatively, and tourism applications, including contactless payment methods, have started to come to the fore as an essential preference factor. In this period, it directly affects the intention to use contactless payment methods, which make users feel safe, convenient, and valuable at the same time, their intention to use again, and their intention to recommend (Fong, Law, and Ye, 2020; Farmaki et al., 2020).

The last finding obtained within the scope of the research is to examine the mediating role of satisfaction in the effect of contactless payment usage perceptions on intention to use. As a result of the analyzes carried out, it is seen that satisfaction has a mediating role on the intention to use. According to this finding, although the positive perceptions of tourists toward contactless payment methods directly and positively affect the usage intention, satisfaction stands out as an essential factor in this relationship and indirectly influences the usage intention effects.

According to other findings obtained within the scope of the study, it was determined that the Ease of Use, Convenience, and Social Value dimensions were not significant predictor of the Satisfaction dimension. When this finding is examined within the framework of the literature, it is seen that there are studies that have reached different results.

Technological advancements impact many aspects of our lives and contribute to developing new applications. Contactless payment systems, for example, are technical systems that make people's lives easier and whose application field is constantly expanding. Payment systems, which had progressed slowly from barter to metal and paper money in the past, began to change swiftly with the rise of digital technologies. Payments made with credit card and debit cards appear to have been superseded for a while by contactless payment applications performed via smart devices in this change. Making payments via mobile phones is now possible thanks to a new technology called Near Field Communication (NFC). Because smartphones and other smart gadgets are becoming more and more prevalent in our lives, NFC-based contactless payment systems are expected to become more common. On the other hand, people's acceptance

of technology does not always follow projections. As a result, it is critical to conduct a study to discover the elements influencing the adoption and acceptability of technical innovations.

This study has developed a research model based on Technology Acceptance Model (Davis et al., 1989) and similar models to reveal the factors influencing guest intentions to use contactless payment systems at hotels. With a survey study conducted to test the hypotheses developed based on the research model, data were collected from 244 guests on the variables related to the adoption and use of contactless payment systems (intention to use and satisfaction, ease of use, usefulness, security, trust, convenience, and social value). Descriptive statistics were calculated on the collected data, and factor analysis and reliability tests were performed. The research hypotheses were tested with the regression analysis.

When the results of the use of contactless payment anywhere were examined;
- %71 of people stated that they are using contactless payment
- %29 of people stated that they never use contactless payment

For the variable that intends to investigate the participant's contactless payment experience, 158 (71%) participants reported that they had previously used contactless payment, and 66 (29%) participants stated that they had not used contactless payment. The contactless payment systems that participants encountered at the hotel differ as follows: 95 (percent 42) of participants encountered Google Play, 22 (percent 10) of participants encountered Google Wallet, 83 (percent 38) of participants did not use

any contactless payment method, and 24 (percent 10) of participants stated other contactless payment methods.

In general, %71 of the participants uses contactless payment, but only %62 of the participants use using at hotels. %9 of participants does not prefer to use contactless payment at hotels. Hotels or companies need to encourage contactless payment because hotels and bank companies can also get many advantages if these %9 percent of participants use contactless payment. Guests staying at the hotel pay a large amount, so hotels and banks must give importance to security and trust issues.

Trust, security, and usefulness predict satisfaction in a meaningful way because their sig value is less than 0.05. Also, they affect satisfaction positively, so if trust increases, satisfaction also increases. There is a positive increase between trust, usefulness, and security to satisfaction. All in all, perceived usefulness, security, and trust dimensions predict satisfaction in a statistically significant, positive way.

It could be stated that satisfaction is a strong predictor of the intention to use; a one-unit increase in the satisfaction dimension increases the intention to use by %83. So, satisfaction positively predicts the intention to use in a strong way.

We shaped the hypothesis that satisfaction is a mediation between intention to use to ease of use, usefulness, security, trust, convenience, and social value.

Satisfaction must have an impact on intention to use. In the findings, we can see that satisfaction impacts intention to use. Usefulness, security, and convenience are

positive because they are below 0.05. Satisfaction takes the role of mediator and increases the usage intention. Overall, it could be stated that satisfaction has a mediation effect on the intention to use.

To summarize, all hypotheses created by the research model are supported. Suppose the companies and hotels providing contactless payment system services consider the variables included in this study. In that case, it is predicted that the service they provide will become widespread, and the satisfaction level of the users will increase.

6.1 Contribution to Literature

For the contribution to the literature with this study, the effect of contactless payment methods, especially in the hospitality industry, on consumer satisfaction and intention to use has been revealed. The importance of contactless payment methods, which were accepted quickly by the masses and came to the fore as an essential preference factor during the Covid-19 period, was emphasized. For the contribution of the practice, it has been revealed that contactless payment is a vital preference factor, especially for accommodation businesses. It has been supported by the findings that the sustainability of the businesses that healthily implement these practices is more guaranteed; they gain a competitive advantage and can be preferred by tourists.

In addition, when the study results are considered within the framework of the TAM model; As stated in the literature, for technological innovation or application to be accepted quickly and widely by the masses, the application must either have a great effect on facilitating the lives of the users or provide protection against some risks. When the Covid-19 pandemic and contactless payment applications are handled from

this point of view, both making users' lives easier and protecting them against health risks reveals the validity of the TAM model.

6.2 Implications for Practice

The most significant contribution of this study is to practice; In particular, in the accommodation sector, which was hit economically by the epidemic, contactless payment methods are a practical resource for healing wounds. With this study, managers and business owners can take actions to encourage and increase user preference, turn this preference into satisfaction and create customer loyalty. Also, with this study, managers can develop an up-to-date perspective on contactless applications that limit the contagiousness of Covid-19, protect the health of tourists, and make them feel safe.

6.3 Limitation and Future Research Directions

This study, like others, has some limitations and restrictions. Due to time limits, the applicable questionnaire could not be applied to a more prominent guest, and most of the questions were filled out online. In future studies, repeating the study with new samples will help to disclose the effect of the factors in the study more clearly. In addition, to make the model more thorough, more variables can be incorporated. Future research can look into whether the effects and importance levels of the variables in the study change depending on the demographic characteristics of the users.

As a suggestion for future research, it was deemed appropriate to carry out the study on wider audiences, to include different contactless tourism practices, and to include different tourism facilities.

6.4 Conclusion

As a result, as can be seen within the scope of this study, contactless tourism applications that emerged during the Covid-19 period are an essential preference factor and directly affect customer satisfaction. In addition, with the Covid-19 pandemic, the accommodation industry has been hit hard, and many accommodation businesses have had to terminate their activities. With the revival of demand, tourists have started to prefer businesses where they will feel safe. Therefore, businesses that have implemented contactless applications and especially contactless payment methods, which are the main focus of this study, have started to be preferred more. The findings obtained within the scope of this research have also supported this phenomenon; contactless payment represents a perception of satisfaction and security for individuals and directly affects preference and accommodation satisfaction.

Overall, as a result of the study, it was concluded that Perceived Usefulness, Security, and Trust dimensions affect satisfaction positively, and satisfaction affects intention to use positively.

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APPENDIX

Questionnaire

Dear Participant,

I invite you to participate in a research study entitled: Factors Influencing Guests' Intentions to Use Smartphone Apps and Contactless Payment at Hotels in the USA. I am currently enrolled in the Tourism Management Master`s program at Eastern Mediterranean University in North Cyprus and am in the process of writing my Master's Thesis. The research aims to determine which factors cause guests to use or not use these contactless payments during check-in.

If you agree to participate in this project, please answer the questions on the questionnaire as best you can. It should take no more than three minutes to complete.

There are no right or wrong answers; what matters is your honest opinion. Thank you for your effort and time.

Sincerely yours,

Research Supervisor:
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Section A:

1. Gender
Male ☐ Female ☐

2. Age
☐18-24 ☐25-34 ☐35-44 ☐45-54 ☐55 or above

3. Education Level
☐ High School Diploma
☐ Associate degree
☐ Bachelor's degree
☐ Master's degree
☐ Doctoral degree

4. Annual Household Income
☐ Under $20,000
☐ $20,001–$60,000
☐ $60,001–$100,000
☐ Over $100,000

Section B: Usage Survey Questions

5. The frequency of stay at the hotel
☐ Less than once a year
☐ 1–2 times a year
☐ 3–6 times a year
☐ 7–12 times a year
☐ More than 12 times a year

6. Average length of stay at the hotel
☐ Under $20,000
☐ $20,001–$60,000
☐ $60,001–$100,000
☐ Over $100,000

7. The purpose of stay at the hotel
☐ Only business
☐ Mostly business
☐ Both for business and leisure
☐ Mostly leisure
☐ Only leisure

8. Have you ever used contactless payment for any purchase?
☐Yes ☐No

9. Where did you use contactless payment method? (Please tick as many as necessary)
☐ Starbucks
☐ Grocery
☐ Hotel
☐ Shopping
☐ Airport
☐ Other: …………………………...

10. What is the contactless payment system that you used for your stay at hotel?
☐ Apple Pay
☐ Google Wallet
☐ Not Use
☐ Other: …………………………...

Section C:

Please indicate the extent to which you agree or disagree with each of the following statements. Score of 1 represents "strongly disagree", 2 "disagree", 3 "neither agree nor disagree", 4 "agree", and 5 "strongly agree".

Statement	1	2	3	4	5
Using a contactless payment method is as easy as using an actual payment card					
Understanding how to use the contactless payment method is clear and understandable					
Using a contactless payment method would be easy					
Learning to use a contactless payment method would be easy					
Using a contactless payment method would be useful					
Using a contactless payment method would be more convenient for me					
Using a contactless payment method would increase my efficiency					
Using a contactless payment method would help me pay more quickly					
I expect my use of the contactless payment method to increase in the future					
I intend to use the contactless payment method in the future					
I will recommend the use of the contactless payment method to friends					
I will always try to use the contactless payment method					
I plan to use the contactless payment method frequently					
I feel secure about the transactions performed using contactless payment method					
The contactless payment provider takes security measures to protect my payments					
The contactless payment provider has the ability to verify user's identity to ensure payment security					
The contactless payment provider can ensure the security of payment information					
I feel safe making transactions using contactless payment method					
I think that it is safe to use contactless payment method to pay for hotel					
I think that my personal data is safe while using contactless payment method					
I think that the use of contactless payment is trustworthy					
I think that I made the correct decision to use contactless payment method					
I am satisfied with contactless payment method experience at the hotel					

The contactless payment method is convenient because I can use it anytime					
The contactless payment method is convenient because I can use it in any situation					
The contactless payment method is convenient because it can be used in any location					
The use of contactless payment method helps me to feel acceptable in the society					
The use of contactless payment method improves the way I am perceived by others					
The fact that I use contactless payment method leaves a good impression on people I know					
The use of contactless payment method provides me social approval					

Thank you very much for your participation in this survey.