

Online Payment System Adoption Factors during COVID-19

Subjects: Others

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Turkey's e-commerce market is rapidly expanding, and the country is ranked first in the world in monthly mobile purchases. The factors that influence the adoption of online payments systems among the customers of a Turkish bank during the COVID-19 pandemic was determined. The research model extends the technology acceptance model (TAM) by further examining the impact of 11 factors on attitude, behavioral intention and actual usage. The results suggest a strong influence of these factors on attitude and behavioral intention. Relative advantage, perceived trust, perceived usefulness, personal innovativeness, perceived integrity, perceived ease of use, health and epidemic effects, income, private sector employment and self-employment all have a positive effect on actual online payment system usage. However, perceived risk and age have a negative impact on the actual online payment system usage.

Keywords: online payment systems ; TAM ; attitude ; behavioral intention ; actual system usage

1. Introduction

The concept of e-commerce evolved as internet usage increased, and financial technology advancement first appeared on e-commerce platforms. The rise of financial technologies (fintech) has increased in recent years. Financial technology is now widely used in a variety of applications, the most prominent of which are online payment systems. Due to technological advances, the process of transitioning from cash to card payments and then from card payments to online payments has accelerated. Digital payments are defined as any payments made using digital instruments. In digital payment, the payer and the payee both use electronic modes to send and receive money. No hard cash is used ([Kumar 2019](#)). The online payment method is called the methods of payments made through the internet. These methods are the money order/electronic fund transfer (EFT) method, mobile wallet method, online wallet method, credit card, debit card (debit card), prepaid cards and virtual cards ([Khan et al. 2017](#)). Payments made with card payment systems are now the most common electronic payment option. Card payment methods are non-cash payments for goods or services made with cards linked to an account. The two most common types of card payment instruments are debit cards and credit cards ([Sumanjeet 2009](#)). Mobile payment refers to the payment of goods, services and invoices using a mobile device that uses wireless and other communication technologies. Mobile payment can also be expressed as a channel that is used to enable users to perform their financial transactions accurately and in a timely manner ([Meharia 2012](#)). The amount after the payment transaction is completed in these transactions is made available via mobile phone. It is reflected on the customer's invoice (payment made on postpaid lines) or via e-money, which is uploaded to the phone after the funds have previously been transferred to the customer's organization account (prepaid lines) ([Magnier-Watanabe 2014](#)).

Turkey led the market in monthly mobile transactions in 2016 ([Interactive Advertising Bureau 2016](#)). According to [J.P. Morgan \(2020\)](#), Turkish e-commerce has seen excellent revenue growth in recent years: in 2018, the market increased by 42 percent, followed by 31 percent in 2019. Currently, 67 percent of the Turkish population makes online purchases ([We Are Social 2022](#)). Turkey is a growing e-commerce market, with excellent sales growth over the last three years. Consumer behavior is fast changing as a younger generation uses cellphones and social media to find and buy things. Cards are the most commonly used online payment option in Turkey. Card usage is increasing, and by 2023, cards will account for 71% of all transactions. According to projections, e-commerce volume will more than double in dollars by 2025 ([Statista 2021](#)). Consumption expenditures decreased in the early months of the epidemic due to concern for the future, but online payments increased significantly during the quarantine process ([Kalkan 2021](#)). As of October 2020, 74.8 million credit cards and 183.4 million debit cards, for a total of 258.2 million cards, were used in Turkey, representing a 52 percent increase in card payment volume over the same period in 2019. The proportion of online card payments in total card payments increased from 18% to 22% ([BKM 2020](#)). Given that the epidemic is not expected to cause a significant decline in income elements in the short-term, card payments made over the internet are expected to rise. It has been

concluded that the growth in card payments made via the internet is not solely due to constraints, but also due to the epidemic's effect on payment and shopping habits, and that the increase is projected to continue growing in the future.

2. Next-Generation Payment Instruments

Mobile payment is a relatively recent development in comparison to other financial technological advancements. With the proliferation of smartphones, financial service providers have the opportunity to improve business efficiency and market share. Financial users have more favorable access to financial products. While the benefits of this new financial service are numerous, usage has not yet reached the anticipated level. While mobile phone subscriptions account for 96% of the global population, mobile phone users account for 8% of the global population ([Shaikh and Karjaluo 2015](#)). It is seen that the number of people using mobile payment systems is quite low compared to the number of mobile phones registered in the world. On the other hand, this situation shows that there are still new opportunities in terms of developing and marketing these payment systems. In recent years, electronic payment systems have begun to replace cash payment methods. With the COVID-19 pandemic affecting the entire world in 2020, online purchasing became more popular, and the demand for next-generation payment tools increased. Recent studies include QR digital payment system adoption ([Jiang et al. 2021](#)), e-money ([Fabris 2019](#); [Omodero 2021](#)) and central bank digital currencies ([Náñez Alonso et al. 2020](#); [Náñez Alonso et al. 2021](#); [Cunha et al. 2021](#)). **Table 1** addresses the most recent generation of electronic payment instruments, whose use has expanded recently.

Table 1. Next-Generation Payment Instruments.

Instrument	Definition	Advantages
Near Field Communication (NFC)	A wireless application that enables close-range communication between electronic devices as an extension of radio frequency identification technology. The devices are brought closer together via NFC technology, and the transaction takes place at a 10 cm range and without contact (Husni et al. 2011).	It provides easy and secure communication between two electronic devices. During the NFC payment process, any NFC-enabled account must be chosen and the phone read by the contactless POS equipment.
Quick Response Code (QR)	A new generation two-dimensional barcode type, designed for usage in the Japanese automotive industry. The QR code can contain any type of data, including text, a website address, or a video link. (Soon 2008).	The QR Code reader software can quickly and easily read a QR Code from a mobile phone and open the corresponding product or service page. It simplifies the payment process and enables payment across a broad network of access points by being produced via channels such as POS, ATM and a web page.
Digital Wallet	A software program that is used to store and transmit payment authorization data for one or more credit or deposit accounts (Levitin 2017). By uploading the payment account information to the digital wallet, the consumer can use the wallet as a payment device.	The user contacts the bank via a digital wallet and is granted the authority to approve the transaction. The bank is responsible for implementing the required security measures to ensure a smooth transaction procedure.
Biometric Payment	Payments made by consumers using a unique feature such as their fingerprint, eye, or voice to validate their identification during payment transactions.	With the use of digital payments, concerns about the confidentiality and security of consumer payment transactions arose, and consumers requested that transactions be terminated with two-factor verification, which involves performing a personal verification in addition to the transaction password (Kumar and Ryu 2009).
Blockchain	Blockchain technology was created as distributed ledgers for bitcoin (Du et al. 2018). Blockchain technology is being used in the financial sector for the following purposes: payment transactions, transfer transactions, purchase-sale platforms, authorization, digital identity management, and document management.	The absence of authority and intermediary systems cuts costs while also speeding up transaction activities. The use of several points of control operations reduces the likelihood of system fraud (Saygili and Ercan 2021).

3. Factors Affecting the Adoption of Online Payment Systems

The adoption of online payments services is measured with the attitude, behavioral intention and actual usage. Attitude is defined as the consumer's degree of positive and negative judgments of the fintech service ([Ajzen 2002](#)). An individual's attitude can be defined as his or her assessment of his or her readiness to use a particular system ([Lederer et al. 2000](#)). Attitude is influenced by the individual's prior experiences, as well as the situation in which he finds himself, and it can change over time. As a result, it influences the proclivity to behave in a particular way ([Pazvant 2017](#)). Numerous studies

have shown that an individual's attitude has a direct and significant effect on their behavioral intention to use a specific e-application ([Moon and Kim 2001](#); [Püschel et al. 2010](#); [George 2002](#); [Zheng and Li 2020](#)). The subjective judgments of consumers regarding the likelihood of their willingness to use the fintech Service in the future can be expressed as behavioral intention ([Ajzen 2002](#)). The main dependent variable in TAM studies is the intention to use, which is defined as an individual's likelihood of using technology ([Venkatesh et al. 2003](#)). Behavioral intention is an individual's ability to perform a specific behavior and is the determinant of the behavior. According to the technology acceptance model, perceived usefulness and attitude influence behavioral intention ([Fishbein and Ajzen 1975](#); [Davis et al. 1989](#)). Factors included in this entry are defined in **Table 2**.

Table 2. Factors Affecting the Adoption of Online Payment Systems.

Factor	Definition	Previous Studies
Perceived Ease of Use (PEU) TAM	The degree to which one believes it would be simple to use a specific system is referred to as perceived ease of use. Consumers are more inclined to adopt an application that is simpler to use than another (Davis 1989).	(Davis et al. 1989 ; Venkatesh 2000 ; Venkatesh and Davis 2000 ; Safeena et al. 2012 ; Hanafizadeh et al. 2014 ; Chuang et al. 2016 ; Kim et al. 2016 ; Tobbin and Kuwornu 2012).
Perceived Usefulness (PU) TAM	The degree to which an individual believes that utilizing a particular system will improve his or her job performance (Davis 1989). Perceived usefulness refers to the opportunities provided by mobile banking and whether it is advantageous to conduct financial transactions using a mobile phone (Aldás-Manzano et al. 2009).	(Davis 1989 ; Guriting and Ndubisi 2006 ; Riquelme and Rios 2010 ; Amin et al. 2008 ; Aldás-Manzano et al. 2009 ; Kazi and Mannan 2013 ; AlSoufi and Ali 2014 ; Hanafizadeh et al. 2014).
Perceived Trust (PT) E-TAM	PT is the anticipation that when one chooses to trust others, they will not behave opportunistically by taking advantage of the situation (Gefen et al. 2003). Trust reduces fraud, uncertainty, and potential threats, hence minimizing these worries and promoting e-commerce and e-payment transactions.	(Kurnia et al. 2007 ; Kim and Prabhakar 2004 ; Hanafizadeh et al. 2014 ; Mallat 2007 ; Tobbin and Kuwornu 2012)
Perceived Risk (PR) E-TAM	PR is a belief in the potential uncertainty of customers' mobile money transactions (Tobbin and Kuwornu 2012).	(Akturan and Tezcan 2012 ; Tobbin and Kuwornu 2012 ; Hanafizadeh et al. 2014).
Self-Efficacy (SE) E-TAM	An individual's assessment of his or her ability to use digital payment. It is a metric to assess one's capacity to use digital payments.	(Luarn and Lin 2005 ; Gu et al. 2009).
Social Influence (SI) UTAUT	Customers', friends', family members' and other consumers' perceptions of technology use can be defined as social influence. (Venkatesh et al. 2003).	(Venkatesh et al. 2003 ; Venkatesh and Zhang 2010 ; Tarhini et al. 2015 ; Sivathanu 2018).
Perceived Credibility (PCR) E-TAM	PC is the degree to which an individual feels that using mobile banking will create no security or privacy risks (Wang et al. 2003).	(Luarn and Lin 2005 ; Hanafizadeh et al. 2014).
Compatibility (CMPA) IDT	The degree to which an innovation is judged to be consistent with present values, prior experience and potential customers' demands (Rogers 1995). Kleijnen et al. (2004) defined CMPA in the context of mobile banking as the degree to which a product or service is compatible with the consumer's lifestyle and current needs.	(Rogers 1995 ; Kleijnen et al. 2004 ; Wessels and Drennan 2010 ; Khraim et al. 2011 ; Sheng et al. 2011 ; Hanafizadeh et al. 2014 ; Lin 2011).
Relative Advantage (RA) IDT	RA is the extent to which an innovation is judged to be superior to the idea it replaces. Although economic advantage can be measured, social-prestige elements, convenience and satisfaction are frequently key components. What matters is whether an individual views the invention as beneficial (Rogers 1995).	(Rogers 1995 ; Taylor and Todd 1995 ; Püschel et al. 2010 ; Lin 2011).
Health and Epidemic Effects (HE)	The pandemic impacts of e-commerce and e-payments where physical contact is avoided. Long-term quarantines, prohibitions, and limits are imposed due to health and epidemic issues affect mobile payments.	(Acemoğlu and Johnson 2007 ; Dmour et al. 2021 ; Jiang et al. 2021).
Complexity (COMPE) IDT	Complexity is the degree to which an innovation is thought to be difficult to utilize (Rogers 1983). Taylor and Todd (1995) describe it as the degree to which an innovation is perceived to be relatively difficult to comprehend and use.	(Rogers 1983 ; Taylor and Todd 1995 ; Khraim et al. 2011).

Factor	Definition	Previous Studies
Quality of Internet Connection (QIC) <i>E-TAM</i>	The quality of the internet connection allows users to complete their transactions quickly and easily.	(Sathye 1999 ; Al-Somali et al. 2009).
Ubiquity (UB) <i>E-TAM</i>	Ubiquity is defined as users' ability to access mobile banking from anywhere at any time using mobile terminals and networks (Zhou 2012). This enables users to trade from any location. However, it will necessitate additional resources and effort on the part of service providers.	(Zhou 2012 ; Yan and Yang 2015).
Perceived Enjoyment (PE) <i>E-TAM</i>	Perceived enjoyment is the degree to which technology use is regarded as a pleasurable activity in the absence of other factors.	(Nysveen et al. 2005 ; Teo et al. 1999).
Personal Innovativeness (PIN) <i>E-TAM</i>	Personal innovativeness is defined as a willingness to experiment with new technology (Agarwal and Karahanna 2000).	(Agarwal and Karahanna 2000 ; Zhou 2012).
Perceived Integrity (PI) <i>E-TAM</i>	The commitment to principles in the mutually occurring process is referred to as perceived integrity. This component includes the concept of honesty, which instills trust in those who are trusted and increases compliance by minimizing uncertainty (Bhattacharjee 2000).	(Bhattacharjee 2000 ; Lin 2011)
Facilitating Conditions (FC) <i>UTAUT</i>	Facilitating conditions indicate that users have access to the resources required to engage in any behavior (Taylor and Todd 1995).	(Taylor and Todd 1995 ; Raleting and Nel 2011 ; Crabbe et al. 2009 ; Sivathanu 2018).
Perceived Cost (PC) <i>E-TAM</i>	Cost is defined by Luarn and Lin (2005) as the degree to which "a person believes that using m-banking will cost money".	(Sathye 1999 ; Kleijnen et al. 2004 ; Luarn and Lin 2005).

TAM: Technology Acceptance Model; E-TAM: Extended TAM; UTAUT: Unified Theory of Acceptance and Use of Technology; IDT: Innovation Diffusion Theory.

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