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Exploring Online Payment System Adoption Factors in the Age of COVID-19—Evidence from the Turkish Banking Industry

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Abstract: Turkey's e-commerce market is rapidly expanding, and the country is ranked first in the world in monthly mobile purchases. The purpose of this study is to determine the factors that influence the adoption of online payments systems among the customers of a Turkish bank during the COVID-19 pandemic. 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

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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.

This study is one of the few investigating the factors affecting the adoption of online payments during COVID-19 pandemic. The findings can be used forr future research on other fintech products. Data were gathered from Turkey, which has one of the highest rates of online payment use. The major goal was to investigate factors that influence the attitude, behavioral intention and actual usage of online payment systems from the viewpoint of internet banking users in Urla, Izmir. The technology acceptance model (TAM) was extended with a number of influential factors in the online payments system adoption. This work aimed to contribute to online payment services, the effects of which can be seen in the nation's e-commerce activities. The next section presents a literature review, and the third section covers the research methodology and results. The last section is the concluding remarks.

2. Literature Review

2.1. 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 Karjaluoto 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).

2.2. 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 study 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).

Table 2. *Cont.*

Factor	Definition	Previous Studies
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).
Quality of Internet Connection (QIC) *E-TAM*	The quality of the internet connection allows users to complete their transactions quickly and easily.	(Sathye 1999; Al-Somali et al. 2009).
Ubiquity (UB) *E-TAM*	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) *E-TAM*	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) *E-TAM*	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) *E-TAM*	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 (Bhattacherjee 2000).	(Bhattacherjee 2000; Lin 2011)
Facilitating Conditions (FC) *UTAUT*	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) *E-TAM*	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.

2.3. Theoretical Framework

Ajzen and Fishbein (1980) used the theory of reasoned action (TRA) to develop a general structure for explaining human behavior. When predicting an individual's behavior, the role of beliefs, according to this framework, should be considered. According to TRA, an individual's behavioral intention to exhibit a specific behavior is formed in response to his or her attitude toward the behavior and perceived subjective norms. The attitude towards behavior refers to a person's perception that his or her actions have consequences, as well as the person's assessment of those consequences, whether positive or negative. The more positive one is, the more powerful the behavioral intention. Attitude toward a given system is also a significant predictor of intention to use it, which results in actual usage behavior.

Davis (1989) developed the Technology Acceptance Model (TAM) to explain how users adopt computer-based information systems. According to the TAM, perceived usefulness (PU) and perceived ease of use (PEU) determine technology adoption. The main premise of the effect of other variables on intention to use, according to TAM, is a person's attitude toward using technology. The attitude determinant of intention, according to the technology acceptance model, is attitude. User behavior is determined by intent (Davis 1989; Davis et al. 1989). A person's belief that utilizing a particular system will improve job performance is referred to as PU. The PEU is defined as the degree to which an individual believes that using the system will be effortless. TAM was used to predict the adoption of mobile payment systems in which new factors influencing adoption were determined and resulted in the formation of an extended TAM (E-TAM) research stream (Raleting and Nel 2011; Aboelmaged and Gebba 2013; Hanafizadeh et al. 2014). Venkatesh et al. (2003) developed the Unified Theory of Acceptance and Use of Technology (UTAUT). The incentive for user behavior, such as perceived usefulness or relative advantage, is the emphasis of UTAUT theory. This model is essentially an expanded version of the TAM model. It is based on four factors: performance expectancy, effort expectancy, social influence (SI) and facilitating conditions. Participants' gender, age, experience and volunteerism are also taken into account by UTAUT.

The Innovation Diffusion Theory (IDT) was developed by E.M. Rogers (1995). A new concept, practice or object is perceived as novel by an individual or another unit of adoption. Diffusion is the process by which an innovation spreads over time among members of a social system via specific channels. According to the IDT theory, potential users decide whether to embrace or reject an innovation based on their beliefs about the innovation. IDT is made up of five innovation qualities: relative advantage, compatibility, complexity, triability and observability. Table 3 provides a taxonomy of prior studies in light of the theories discussed. Recent research includes literature reviews on the adoption of digital payments (Ghosh 2021; Sahi et al. 2021). Additionally, Bommer et al. (2022) conducted a meta-analysis of e-Wallet adoption using the UTAUT model. The classifications of previous studies are summarized in Table 3.

Table 3. Taxonomy of prior studies.

Authors–Theory	Aim (To Identify the Determinants of)	Sample (No. of Partici-pants/Country)	Methodology	Independent Variables	Findings
Raleting and Nel (2011) *E-TAM*; *UTAUT*	Attitude towards mobile phone banking	465/South Africa	Confirmatory factor analysis (CFA)	PU, PEU, SE, FC, PR, PC	PEU and PU influence attitude

Table 3. *Cont.*

Authors–Theory	Aim (To Identify the Determinants of)	Sample (No. of Partici-pants/Country)	Methodology	Independent Variables	Findings
Bankole et al. (2011) *UTAUT*	Mobile banking adoption	231/Nigeria	Regression Analysis	PT, Utility Expectancy, Effort Expectancy (EE), Utility Expectancy, Social Factors, Power Distance, Convenience and Cost	Utility Expectancy, effort expectancy and power distance have an impact on BI
Sheng et al. (2011) *TAM and IDT*	Acceptance of individual mobile banking	278/China	Exploratory Factor Analysis (EFA) and Regression Analysis	PU, PEU, CMPA, Triability, PR	PU, PEU, CMPA and PR influence BI
Tobbin and Kuwornu (2012) *E-TAM and IDT*	Acceptance of mobile money transfer	298/Ghana	Structural equation modeling (SEM)	PU, PEU, PT, PR, RA, Triability, Transactional Cost, Perceived Privacy	PEU, PU, PR and PT affect BI
Hanafizadeh et al. (2014) *E-TAM*	Mobile banking adoption by bank clients	361/Iran	SEM	PU, PEU, need for personal interaction, PR, PC, CMPA, PT, PCR,	All of the independent variables affect behavioral intention
Cao (2016) *TAM, UTAUT, Motivational Model and Adoption of Risky Technologies*	Acceptance of all-in-one payment method	117/Finland	EFA, CFA, SEM	PEU, PU, PE, PIN, SI, Need for Minimalism, Price Value, Security Concerns, Perceived Information	PU, Price Value, SI, PIN, Security Concerns, PE, Perceived Information affect BI
Abdullah et al. (2018) *UTAUT*	Adoption of fintech in mutual fund/unit trust investment	203/Malaysia	EFA and Regression Analysis	SI, Performance Expectancy, EE, FC, Perceived Credibility	Performance Expectancy, EE and SI have an impact on BI

3. Research Methodology

3.1. Measures and Data Collection

The purpose of this study is to determine the factors that affect users' attitudes, behavioral intentions and actual usage of online payment systems from the perspectives of internet banking customers at a bank branch in Urla, Izmir. With the COVID-19 pandemic, substantial changes in working circumstances occurred, and many organizations encouraged staff to work from home during periods of higher pandemic danger. As the pandemic's effectiveness declined, some businesses ceased working from home entirely and returned to the office environment, while others continued to work alternately from home and the office. The predominance of working from home and the fact that it will remain for an extended period of time as a result of the pandemic has generated psychological strain on employees, which has resulted in many opting for detached houses over apartment living. People have begun to favor residential regions with isolated settlements that are calm. The Urla district in Izmir is one of the districts that fits this criterion. Urla, as a district largely free of noise, where natural life can flourish to the maximum extent possible, and

as a district with the lowest carbon imprint in Turkey, is a place where working, retired and student populations coexist, particularly during the pandemic season. It has grown in popularity as a result. Urla was chosen as the selection point in our analysis based on these factors. The research revealed the factors influencing the adoption of online payment transactions by consumers in the Urla district. To obtain the study's results and analyses, data were collected through questionnaires presented to 348 internet banking users using a simple random sample procedure. A questionnaire was developed using a five-point Likert scale of 1 = strongly disagree to 5 = strongly agree. Table A1 presents 80 statements from existing literature across 18 dimensions.

3.2. Descriptive Statistics

The survey was conducted among the online payment users. As shown in Table 4, the female density of the 345 individuals who participated in the study was 57.3%; the male population was 42.7%. The majority of the respondents were university graduates or above (95.1%). 24.8% of the respondents were working in the public sector, while 36.6% were working in the private sector. The majority of the respondents were between 18–45 years of age (89.5%).

Table 4. Descriptive statistics.

Gender	%	Education of Participants	%	Current Job Participants	%
Male	42.7	High school	4.9	Public Sector	24.8
Female	57.3	University	65.4	Private Sector	36.6
		Graduate school	29.7	Self Employed	7.8
				Student	27.4
				Retired	3.5
Age of Participants	**%**	**Income of Participants**	**%**	**Frequency of Card Payments of Participants**	**%**
18–25 years	30.5	0–3.000 TL	29.6	Less than once a week	37.1
26–35 years	16.7	3.001–6.000 TL	18.8	At least once a week	27.2
36–45 years	42.4	6.001–9.000 TL	15.7	2–3 times a week	18.5
46–55 years	6.9	9.001–12.000 TL	11.3	4–5 times a week	7.3
56–65 years	3.5	12.001–15.000 TL	7.5	More than 5 per week	9.6
		15.000 TL and above	17.1	More than 5 per month	0.3

3.3. Analyses

In the first stage, an exploratory factor analysis was used to determine the most important factors in online payments adoption. Using the results of the previous stage, a multiple regression analysis was performed in the second stage to determine the factors that influence behavioral intention.

3.3.1. Exploratory Factor Analysis

Factor analysis determines the interrelationships (correlations) between a large number of variables by defining sets of variables that are highly interrelated, known as factors. The variable groups (factors) are assumed to represent dimensions in the data. In general, the researcher would not analyze factors with a sample fewer than 50 observations, and ideally, the sample size should be 100 or larger. A statistically significant Bartlett's test of sphericity (sig. < 0.05) indicates that sufficient correlations exist among the variables to proceed. Measure of sampling adequacy (MSA) values must be greater than 0.50 for both the overall test and each variable (Hair et al. 2006). Variables with values less than 0.50 should be omitted from the factor analysis. A component factor analysis is a data reduction technique that focuses on the minimum number of factors required to account for the greatest proportion of the total variance represented in the original set of variables. A factor

analysis was carried out in this study. The survey asked users of online payments about the 18 factors listed in Table A1. The results were obtained using IBM SPSS Statistics 20 for Windows. Ozturkoglu et al. (2016) presented an outline of the factor analysis research methodology used to investigate the primary factors influencing online payment adoption. To improve the interpretation, a varimax rotation was used.

3.3.2. Regression Analysis

A regression analysis is a highly reliable method for measuring correlations between multiple variables (Higgins 2005). With the factor analysis, 18 factors were reduced to 11 factors. The regression analysis was used to identify the impact of the factors obtained through the exploratory factor analysis on behavioral intention, attitude and actual usage. The analysis included the factors given in Figure 1. Furthermore, dummy variables for gender, education, job, age and gender were created.

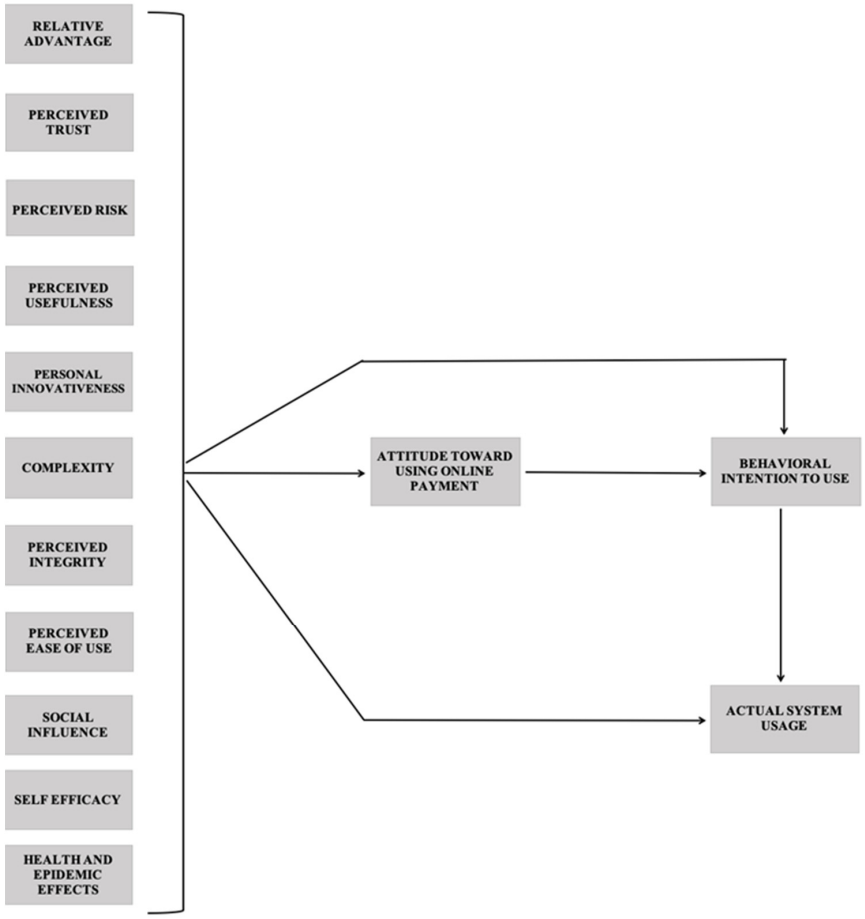

Figure 1. Proposed research model.

4. Results and Discussion

4.1. Exploratory Factor Analysis

Table 5 shows the KMO and Bartlett's results. The KMO measures the sampling adequacy and would be expected to be greater than 0.5. The KMO value was 0.911, which revealed the sufficiency of the data set for factor analysis. This value is higher than the recommended value. Therefore, the data obtained are suitable for factor analysis. The sufficiency of the correlations among items was tested through Barlett's test of sphericity. Bartlett's test examines whether there is a relationship between variables based on partial correlations. Barlett's test provided that the correlations, when taken collectively, were highly significant at the 0.000 level. Both results showed that the sample size was suitable for factor analysis.

Table 5. KMO and Bartlett's Test.

Kaiser–Meyer–Olkin Measure of Sampling Adequacy.		0.911
Bartlett's Test of Sphericity	Approx. Chi-Square	17,136.359
	df	2556
	Sig.	0.000

In the first round of factor analysis, 18 factors were examined. The Varimax method (orthogonal rotation) was used in the rotation process. Those with components below 0.50 were removed, and the analysis was repeated. As shown in Table A2, the first factor explained relatively large amounts of variance of 29.606%. The factor analysis revealed 11 distinct factors with eigenvalues greater than 1.0, explaining 63.753% of the variance. As seen from Table A3, all the factor loadings were found to be greater than 0.5. The reliability analysis provides information about relationships between individual items in the scale. In the factor analysis, the Measure of Sampling Adequacy (MSA) tests the convenience of each question. In the MSA test, items with values under 0.5 should be removed from the analysis. Table 6 shows the Cronbach's alpha values for each factor.

Table 6. Factors and related items.

Factors	Items	Item Description	Cronbach Alpha Value (α)
1. Relative advantage (RA)	CMPA1	Customer lifestyle	0.959
	CMPA2	Payment management	
	CMPA3	Way of working	
	RA1	Access facility	
	RA2	Fast transactions	
	RA3	Benefit of adoption	
	HEI1	Delay of transactions	
	HEI2	Current customer transactions	
	HEI5	Continuity of customer transactions	
	QIC1	Access to the internet	
	QIC2	Benefits of internet access	
	QIC3	Efficiency of internet access	
	PE2	Feeling positive	
	PE4	To feel wise	
	FC1	Have the necessary resources	
	FC2	Have the necessary information	
	FC3	Compatible with lifestyle	
	FC4	Ease of access to help	
	UB1	Transactions from anywhere	
	UB2	Transactions whenever the customer wants	
	UB3	Transactions online anytime, anywhere.	

Table 6. *Cont.*

Factors	Items	Item Description	Cronbach Alpha Value (α)
2. Perceived trust (PT)	PT1	Transaction security	0.906
	PT2	Information security	
	PT3	Information privacy	
	PT4	Trust privacy	
	PT5	Feeling of trust	
	PCR1	Believe in personal information's privacy	
	PCR2	Believe in the transaction processes	
	PCR3	Believe in the confidentiality of information sharing	
3. Perceived risk (PR)	PR1	Transaction risk	0.878
	PR2	System risk	
	PR3	Payment risk	
	PR4	Security risk	
	PR5	Financial risk	
	PR6	Security risk	
4. Perceived usefulness (PU)	PU1	Productivity, efficiency and performance increase	0.867
	PU2	Saving of time and labor saving	
	PU3	Gain control over transactions	
	PU4	Usefulness of transactions	
	PU5	Useful transactions	
5. Personal innovativeness (PI)	PIN1	Giving advice about new products and innovations	0.785
	PIN2	Buying new and different things	
	PIN3	Testing new products	
	PIN4	Keeping up with technological advances	
6. Complexity (COMPE)	PC3	Financial barriers	0.755
	COMPE1	Customers' mental effort	
	COMPE2	Customers' technical skills	
	COMPE3	Frustration of online payments	
7. Perceived integrity (PI)	PI1	Honesty	0.887
	PI2	Fulfilling commitment	
	PI3	Unbiased information about the transactions	
8. Perceived ease of use (PEU)	PEU1	Easy payments	0.786
	PEU3	Easy to perform	
	PEU4	Easy to complete	

Table 6. *Cont.*

Factors	Items	Item Description	Cronbach Alpha Value (α)
9. Social influence (SI)	SI1	Suggestions from friends/family members/mass media	0.503
	SI2	Many people who have an important place in my life	
	SI5	Status in society	
10. Self-efficacy (SE)	SE2	Directions in the system	0.515
	SE3	Tried by someone else	
11. Health and epidemic effects (HE)	HE3	Increasing of payment transactions	0.584
	HE4	Perception of my online payment transactions.	

4.2. Regression Analysis

The factor analysis reduced 18 factors to 11 factors. The regression analysis was used to identify the impact of the factors obtained through an exploratory factor analysis on behavioral intention, attitude and actual usage. Tables 7 and 8 show the results for seven alternate regression specifications. Since heteroscedasticity was present according to the White test, all estimates were obtained by using White's heteroscedasticity-consistent covariance matrix. According to the models A1, A2 and B1 in Table 7, relative advantage, perceived trust, perceived usefulness, personal innovativeness, perceived integrity, perceived ease of use, social influence, self-efficacy, health and epidemic effects and gender being male have a positive impact on the attitude and behavioral intention to use an online payment system. There was no relationship between complexity and attitude, but perceived risk has a negative impact on attitude and behavioral intention. According to model B2, relative advantage, perceived usefulness, personal innovativeness, perceived integrity, perceived ease of use, social influence, self-efficacy and attitude have a positive effect on behavioral intention. When attitude was brought into the model, the effects of perceived trust, perceived risk, health and epidemic effects and gender being male on behavioral intention were eliminated.

According to the models C1 and C2 in Table 8, 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. Perceived risk and age have a negative impact on the actual online payment system usage. According to model C3, behavioral intention, income, private sector employment and self-employment all have a positive effect on actual online payment system usage. Age has a negative impact on actual online payment system usage. When behavioral intention was brought into the model, the effects of relative advantage, perceived trust, perceived usefulness, personal innovativeness, perceived integrity, perceived ease of use and health and epidemic effects on actual online payment system usage were eliminated. The findings in Tables 7 and 8 are consistent with previous research.

Table 7. Least Squares Estimations.

Least Squares Estimations				
	Dependent Variable: ATTITUDE		**Dependent Variable: BI**	
	Model A1	**Model A2**	**Model B1**	**Model B2**
Constant	−0.046389	−0.041862	−0.093456	−0.060632
	(0.2958)	(0.3367)	(0.0716)	(0.1662)
RA	0.632394 ***	0.633335 ***	0.563767 ***	0.210851 ***
	(0.0000)	(0.0000)	(0.0000)	(0.0021)
PT	0.21437 ***	0.212892 ***	0.165903 ***	0.044416
	(0.0000)	(0.0000)	(0.0000)	(0.2493)
PR	−0.103106 ***	−0.106335 ***	−0.095877 ***	−0.034668
	(0.0052)	(0.0032)	(0.0073)	(0.3057)
PU	0.276212 ***	0.276271 ***	0.279803 ***	0.128394 ***
	(0.0000)	(0.0000)	(0.0000)	(0.0086)
PI	0.259707 ***	0.259304 ***	0.318178 ***	0.170387 ***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
COMPE	−0.03926		−0.058463 *	−0.040417
	(0.3023)		(0.1009)	(0.2254)
PI	0.163167 ***	0.162509 ***	0.186166 ***	0.097349 ***
	(0.0000)	(0.0000)	(0.0000)	(0.0101)
PEU	0.064403 *	0.064669 *	0.104433 ***	0.068636 **
	(0.0634)	(0.0591)	(0.0013)	(0.0221)
SI	0.163175 ***	0.16486 ***	0.188692 ***	0.09493 **
	(0.0000)	(0.0000)	(0.0000)	(0.0272)
SE	0.222056 ***	0.222435 ***	0.20402 ***	0.0801 *
	(0.0000)	(0.0000)	(0.0000)	(0.0614)
HE	0.074867 **	0.073289 *	0.06818 *	0.022918
	(0.0484)	(0.0524)	(0.0737)	(0.5385)
D_MALE1	0.15345	0.137926	0.169284 *	0.074832
	(0.0369)	(0.0493)	(0.0547)	(0.3385)
ATTITUDE				0.558413 ***
				(0.0000)
N. of Obs.	288	288	289	286
R-squared	0.716997	0.715593	0.619945	0.701073
Adjusted R-squared	0.704648	0.704258	0.603421	0.686786
F-statistic	58.06017	63.13088	37.51758	49.07074
Prob(F-statistic)	0	0	0	0

White heteroskedasticity-consistent standard errors and covariances are used in estimation. *p*-values in parenthesis. ***, **, * indicate significance levels of 1%, 5% and 10%, respectively.

Table 8. Ordered Logit Estimations.

Ordered Logit Estimations			
Dependent Variable: ACTUALUSAGE			
	Model C1	**Model C2**	**Model C3**
BI	0.049328		0.576741
	(0.7618)		(0.0000)
RA	0.4073 ***	0.42729 ***	
	(0.0110)	(0.0018)	
PR	−0.321918 ***	−0.32925 ***	
	(0.0110)	(0.0086)	
PU	0.417511 ***	0.43161 ***	
	(0.0034)	(0.0012)	
PI	0.320476 **	0.34175 ***	
	(0.0182)	(0.0064)	

Table 8. *Cont.*

Ordered Logit Estimations			
Dependent Variable: ACTUALUSAGE			
	Model C1	**Model C2**	**Model C3**
COMPE	−0.233469 *	−0.2457 **	
	(0.0519)	(0.0397)	
PI	0.227614 *	0.24048 **	
	(0.0608)	(0.0423)	
PEU	0.435921 ***	0.44627 ***	
	(0.0036)	(0.0027)	
HE	0.238215 **	0.23238 **	
	(0.0388)	(0.0426)	
AGE	−0.654177 ***	−0.65566 ***	−0.540183 ***
	(0.0000)	(0.0000)	(0.0000)
INCOME	0.38169 ***	0.38345 ***	0.401535 ***
	(0.0000)	(0.0000)	(0.0000)
PRIEMP	0.519441 **	0.53488 **	0.41621 *
	(0.0464)	(0.0391)	(0.0784)
SELFEMP	1.703099 ***	1.73085 ***	1.421923 ***
	(0.0001)	(0.0001)	(0.0003)
N. of Obs.	289	291	327
Pseudo R-squared	0.126206	0.1264	0.090298
LR statistic	104.6538	105.383	85.80175
Prob(LR statistic)	0	0	0

Ordered logit parameters are estimated by the maximum likelihood with quadratic hill climbing method. *p*-values are in parenthesis. ***, **, * indicate significance levels of 1%, 5% and 10%, respectively.

4.3. Discussion

According to the findings, the first factor is a multidimensional factor that includes relative advantage, compatibility, quality of internet connection, ubiquity, perceived enjoyment and facilitating conditions. Among these factors, the most comprehensive of these factors is relative advantage; thus, this it is called relative advantage. Previous research identified 23 antecedents for relative advantage, which are the expected benefits provided by an innovation (Kapoor et al. 2014). The compliance of online payment transactions with the users' lifestyles and ways of doing business will have a positive impact on the users' adaptation to the online payment process. Users will be able to better adapt to payment transactions if transactions are completed more quickly. The fact that customers will continue to transact despite the epidemic will have a positive impact on their adoption. Users who make card transactions online will be more likely to adopt if they have a positive and smart feeling about it. Improving conditions, such as providing customers with the necessary resources and information when making online payments, as well as easy access to help in the event of a problem, will increase user adoption. The fact that users can conduct transactions whenever and wherever they want will encourage them to make online payments. Relative advantage has a positive impact on attitude and behavioral intention, where the findings are consistent with the previous research (Chitungo and Munongo 2013; Lin 2011; Shaikh and Karjaluoto 2015).

The second factor is perceived trust, which is one of the most important factors for user adoption. When users have sufficient confidence in transaction security, security and privacy of their information, their feeling of trust increases, and they adopt at a greater level. Users' trust in the transaction processes that occur while executing payment transactions, as well as their trust that the information they provide while the process is in progress, will favorably influence their adoption of the procedure. The third component in the analysis is perceived risk. Reducing risks such as transaction risk, system risk, payment risk, security risk and financial risk will have a positive impact on user adoption of online payment transactions and ensure a better degree of user adoption. As Hanafizadeh et al. (2014) also

report, the results indicate that perceived trust positively influences behavioral intention and attitude, while perceived risk negatively affects them.

Perceived usefulness is the fourth factor. The fact that users save time and effort while performing card payment transactions online increases their efficiency and productivity and will have a positive impact on their adoption. The fact that users believe they have control over the transactions they conduct will also ensure that adoption occurs at a higher level. Personal innovativeness is another factor. Receiving suggestions about new products and developments from the family of the innovative users will help them adapt better. Users who explore new products by following technological developments and purchasing new and different products will have a positive impact on their payment transaction adoption. Perceived usefulness and personal innovativeness positively influence attitude and behavioral intention. The findings are supported by earlier studies (Zhou 2012; Akturan and Tezcan 2012; Cao 2016).

Complexity is the sixth factor. Financial barriers are one of the most significant barriers stopping users from experimenting with payment methods, and efforts to remove these barriers will have a good impact on user adaptability. Furthermore, the assumption that the confusion in online transactions would need users to exert more mental effort and that they must have technical abilities to complete the transactions will have a negative impact on consumers' perceptions of the transaction procedures. Complexity has a negative impact on actual usage, corroborating Rogers' (1983) generalization stating that "the complexity of an innovation, as perceived by members of a social system, is negatively related to its rate of adoption". Perceived integrity is the eighth factor. Users are involved with companies in the operations of online card payment transactions. The experiences of users with the other party in their transactions are crucial. The integrity of the transaction processes increases as users perceive that the company they are dealing with is honest, that they will fulfill their commitments, and that there will be no deviations in the information they convey about the transactions. This ensures that adoption occurs at a higher level. Perceived integrity positively affects attitude and behavioral intention, confirming Lin (2011).

The eighth factor is perceived ease of use. One of the most important known factors influencing adoption is perceived ease of use, and making payments by completing transactions easily has a good impact on consumers' adoption. Perceived ease of use has a positive impact on attitude and behavioral intention, supporting the results of Shaikh and Karjaluoto (2015). Social influence is another factor which affects users while making financial transactions. Users tend to perform more online transactions, which promotes their adoption positively. depending on their social position and the recommendations they receive from their relatives. The 10th factor is self-efficacy. Directions are one of the variables that must be present for users to have a great transaction experience. The system's directions during the transaction process have a favorable impact on user adoption. Furthermore, seeing the transaction procedures of other users before performing their own transactions will increase their adoption. Social influence and self-efficacy positively affect attitude and behavioral intention, in line with the previous research (Abdullah et al. 2018; Shaikh and Karjaluoto 2015).

The 11th and last aspect is health and epidemic effects. Problems originating from health and epidemic effects have changed consumers' perspectives on online payment, and they have increased their adoption by taking into account the efficiency and effectiveness of transactions, as well as the rapid improvements made in processes. Health and epidemic affects have a positive impact on attitude, behavioral intention and actual usage. This is a contribution of this research. Another contribution is that 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. Perceived risk and age have a negative impact on the actual online payment system usage. The findings are summarized in Table 9.

Table 9. Summary results.

	Dependent Variables					
Independent Variables	**Attitude (Models A1, A2)**	**Behavioral Intention (Model B1)**	**Behavioral Intention (Model B2)**	**Actual Usage (Model C1)**	**Actual Usage (Model C2)**	**Actual Usage (Model C3)**
Relative advantage (RA)	(+)	(+)	(+)	(+)	(+)	
Perceived trust (PT)	(+)	(+)				
Perceived risk (PR)	(−)	(−)		(−)	(−)	
Perceived usefulness (PU)	(+)	(+)	(+)	(+)	(+)	
Personal innovativeness (PI)	(+)	(+)	(+)	(+)	(+)	
Complexity (COMPE)				(−)	(−)	
Perceived integrity (PI)	(+)	(+)	(+)	(+)	(+)	
Perceived ease of use (PEU)	(+)	(+)	(+)	(+)	(+)	
Social influence (SI)	(+)	(+)	(+)			
Self-efficacy (SE)	(+)	(+)	(+)			
Health and epidemic effects (HE)	(+)	(+)		(+)	(+)	
Gender—male	(+)	(+)				
Income				(+)	(+)	(+)
Age				(−)	(−)	(−)
Private sector employment				(+)	(+)	(+)
Self-employment				(+)	(+)	(+)
Attitude			(+)			
Behavioral intention						(+)

Limitations

This study provides the perspectives of bank customers in Izmir, Turkey's third largest city. The study was conducted among one bank branch's 345 online payment users. This is the study's primary limitation. Future studies, according to the authors, should collect data from additional locations and countries. This study focused on online payments, although additional research on the adoption of next-generation payment instruments, such as digital wallets, NFC and QR codes, could be done.

5. Conclusions

The Coronavirus pandemic began in December 2019 in Wuhan, China, the world's second-largest economy, and has spread globally since 2020. In 2022, the virus is still active. Millions of people became ill, and millions died about two years later. Without a doubt, given the close economic ties that countries have with one another and the dimensions of global trade, it will be useful to assess the effects of the Corona epidemic that has affected the entire world, as well as the potential for new epidemics and/or environmental disasters in the future. To promote recovery and facilitate the transition to the new normal, it is critical for the digital payments ecosystem to expand rapidly and contribute to the shaping of the post-COVID age. Governments, regulators and banks will all continue to push for the adoption of digital payments. As digital payment methods gain popularity and acceptance, they will transform from a convenience to a need. There will be an increase in the issuance and use of virtual cards. Small- and medium-sized businesses now have a stronger internet presence. Consumer behavior will shift due to the increased acceptance of digital payments. Concerns about virus spreading via physical currency exchange already increase online card transactions. Fund transfers to and from bank accounts are projected to increase as people abandon cash in favor of digital transfers (J.P. Morgan 2020).

Online payment systems are a critical component of fintech services. This study contributes to existing research on the adoption of fintech instruments by empirically analyzing the factors influencing online payment system adoption from the perspective of Turkish bank customers. The factors were identified through a review of existing UTAUT, IDT, TAM and E-TAM research. Several major conclusions are reached as a result of the research. To begin, this study is a pioneer in incorporating the impact of a pandemic as a new factor into the E-TAM model. The results indicate that health and epidemic effects influence attitudes, behavioral intentions, and actual use of online payment systems. Another contribution is that prior E-TAM models indicated a multitude of adoption factors, but this study reduced 18 factors to 11. Relative advantage is a multidimensional characteristic that includes compatibility, internet connection quality, ubiquity, perceived enjoyment and facilitating conditions. Previous research on the antecedents of relative advantage supports the findings (Kapoor et al. 2014). The conclusions about the factors are summarized as follows: Relative advantage, perceived usefulness, personal innovativeness, perceived integrity, perceived ease of use and health and epidemic effects all have a positive impact on attitude, behavioral intention and actual online payment usage. Perceived trust, social influence and self-efficacy all have a positive effect on attitude and behavioral intention, whereas perceived risk has a negative effect. Income, private sector employment and self-employment all have a positive effect on actual online payment system usage; however, complexity and age have a negative effect. When behavioral intention and adoption factors are examined in the same model, behavioral intention has no effect on actual usage. The high rate of online payment usage in Turkey explains this issue. The findings of this study will contribute to future research on the adoption of next-generation payment instruments.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of Yasar University (Meeting No.4, Date of Approval: 9 February 2021).

Informed Consent Statement: Informed consent was obtained from all participants involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not available due to privacy and legal issues.

Conflicts of Interest: The authors declare no conflict of interest.

Abbreviations

Index of Acronyms

CFA	Confirmatory Factor Analysis
CMPA	Compatibility
COMPE	Complexity
EFA	Exploratory Factor Analysis
EFT	Electronic Fund Transfer
E-TAM	Extended Technology Acceptance Model
FC	Facilitating Conditions
Fintech	Financial Technologies
HE	Health and Epidemic Effects
IDT	Innovation Diffusion Theory
NFC	Near Field Communication
PC	Perceived Cost

PCR	Perceived Credibility
PE	Perceived Enjoyment
PEU	Perceived Ease of Use
PI	Perceived Integrity
PIN	Perceived Innovativeness
PR	Perceived Risk
PT	Perceived Trust
PU	Perceived Usefulness
RA	Relative Advantage
QIC	Quality of Internet Connection
QR	Quick Response Code
SE	Self-Efficacy
SEM	Structural Equation Modeling
SI	Social Influence
TAM	Technology Acceptance Model
TRA	Theory of Reasoned Action
UB	Ubiquity
UTAUT	Unified Theory of Acceptance and Use of Technology

Appendix A

Table A1. Measurement Items.

FACTORS	ITEMS	SOURCE
1. PERCEIVED EASE OF USE (PEU)	(PEU1) It is easy for me to make my payment transactions online. (PEU2) The online payment process is clear and understandable. (PEU3) I can easily perform my transactions such as shopping, public payments (invoices, taxes, etc.) online. (PEU4) I find it easy to complete my payment transactions online. (PEU5) I believe it is easy to adapt to paying online.	Davis et al. (1989); Venkatesh and Davis (2000); Schierz et al. (2010); Lin (2011); Chuang et al. (2016)
2. PERCEIVED USEFULNESS (PU)	(PU1) Making my payment transactions online increases my productivity, efficiency and performance. (PU2) I save a lot of time and effort by making my payments online. (PU3) Making my payments online gives me more control over my payment transactions. (PU4) Paying online is useful when processing my payment transactions. (PU5) I find it very useful to make my payments online.	Davis (1989); Hanafizadeh et al. (2014); Schierz et al. (2010); Gu et al. (2009); Raleting and Nel (2011)

Table A1. *Cont.*

FACTORS	ITEMS	SOURCE
3. PERCEIVED TRUST (PT)	(PT1) I am not worried about paying online, as I know my transactions will be safe and secure. (PT2) While I make my payment transactions online, I feel safe when sending sensitive information requested for the transaction. (PT3) Sites where I pay online will not disclose any information to a third party unless I give my permission. (PT4) I believe that privacy is guaranteed for sites where I pay online. (PT5) I trust my online payment transactions as if I made a physical payment.	Gefen et al. (2003); Al-Somali et al. (2009); Hanafizadeh et al. (2014)
4. PERCEIVED RISK (PR)	(PR1) I think that making payments online is more risky than other traditional payment services. (PR2) When paying online, the system I receive service may not perform well and may perform the payment incorrectly. (PR3) Paying online is risky. (PR4) I am afraid of the misuse of personal information when making payments online. (PR5) I am afraid that I will lose my money while making any payment transactions online. (PR6) I am afraid of making payments online because I think people will access my account and personal information.	Rogers (1983); Bauer et al. (2005); Raleting and Nel (2011)
5. SOCIAL INFLUENCE (SI)	(SI1) Suggestions from friends/family members/mass media influence my decision to make payments online. (SI2) Many people who have an important place in my life think that I need to make payments online. (SI3) In general, when I use any new technology, I trust my own instincts more than anyone else's advice. (SI4) Most people around me make their payments online. (SI5) Making my payments online improves my status in society.	Venkatesh and Davis (2000); Venkatesh et al. (2003); Sivathanu (2018); Gu et al. (2009)

Table A1. *Cont.*

FACTORS	ITEMS	SOURCE
6. COMPATIBILITY (CMPA)	(CMPA1) Making payments online is suitable for my lifestyle. (CMPA2) Making my payments online is compatible with the way I manage my payment transactions. (CMPA3) Adopting the internet card payment system to be able to make payments online fits my way of working.	Rogers (1983); Agarwal and Prasad (1998); Hanafizadeh et al. (2014); Schierz et al. (2010)
7. SELF EFFICACY (SE)	(SE1) I am sure that I will prefer to make payments online even if I have never made a transaction before. (SE2) If there are directions in the system about how to make transactions, I can make my payments online. (SE3) If I had seen someone else use it before trying it myself, I could have made my payments online.	Venkatesh and Davis (1996); Gu et al. (2009); Boonsiritomachai and Pitchayadejanant (2017)
8. RELATIVE ADVANTAGE (RA)	(RA1) I can access and make my payment transactions over the internet anytime and anywhere. (RA2) Making my payment transactions online enables me to perform my daily work quickly. (RA3) My adaptation to online card payment is useful for managing my payment transactions.	Rogers (1983); Moore and Benbasat (1991); Lin (2011)
9. PERCEIVED CREDIBILITY (PCR)	(PC1) Making my payment transactions online does not disclose my personal information. (PC2) I can find it safe to pay by card on the internet while carrying out the process of my payment transactions. (PC3) I can find the internet safe while requesting and receiving other information.	Wang et al. (2003); Hanafizadeh et al. (2014)
10. HEALTH AND EPIDEMIC EFFECTS (HE)	(HE1) Despite the COVID-19 pandemic, I did not delay the card payment transactions I made online. (HE2) With the COVID-19 pandemic, I made all my possible payment transactions online. (HE3) During the quarantine process caused by the COVID-19 pandemic, the number of my payment transactions (online shopping, invoices, etc.) increased compared to the online payment transactions I made in the normal period. (HE4) The COVID-19 pandemic has changed my perception of my online payment transactions. (HE5) Even after the COVID-19 pandemic is over, I will try to make my payments online.	Acemoğlu and Johnson (2007)

Table A1. *Cont.*

FACTORS	ITEMS	SOURCE
11. QUALITY OF INTERNET CONNECTION (QIC)	(QIC1) My access to the internet is easy. (QIC2) The Internet enables me to handle my online financial transactions accurately. (QIC3) Using the internet for handling online financial transactions is efficient. (QIC4) The Internet guarantees that all transactions to the bank have been completed.	Sathye (1999); Al-Somali et al. (2009);
12. PERCEIVED COST (PC)	(PC1) It would be very costly to use the internet for my payment transactions. (PC2) I think that using the internet for my payment transactions will have a high cost of internet access. (PC3) I have financial barriers (eg internet access cost) to use the internet for my payment transactions.	Sathye (1999); Hanafizadeh et al. (2014)
13. PERCEIVED INTEGRITY (PI)	(PI1) I think the companies I pay for are honest. (PI2) I think the companies I make payment transactions will with fulfill their commitments. (PI3) I think the companies with which I make payment transactions give unbiased information about the transactions.	Bhattacherjee (2000); Lin (2011)
14. PERCEIVED ENJOYMENT (PE)	(PE1) Making my payments online is fun. (PE2) Making my payments online is positive. (PE3) Making my payments online is exciting. (PE4) Making my payments online is wise.	Davis et al. (1992); Pikkarainen et al. (2004)
15. FACILITATING CONDITIONS (FC)	(FC1) I have the necessary resources to make my payment transactions online. (FC2) I have the necessary knowledge to make my payment transactions online. (FC3) Making my payment transactions online is compatible with my life. (FC4) Help can be obtained when I have problems while making my payment transactions online.	Taylor and Todd (1995); Burnett (2000); Yu (2012)
16. UBIQUITY (UB)	(UB1) I can make my payment transactions from anywhere on the internet. (UB2) I can make my payment transactions online whenever I want. (UB3) If necessary, I can make my payment transactions online anytime, anywhere.	Anderson and Narus (1990); Zhou (2012)

Table A1. *Cont.*

FACTORS	ITEMS	SOURCE
17. COMPLEXITY (COMPE)	(COMPE1) Making payments online requires a lot of mental effort. (COMPE2) Making payments online requires technical skills. (COMPE3) Making payments online can be frustrating.	Rogers (1983); Taylor and Todd (1995)
18. PERSONAL INNOVATIVENESS (PIN)	(PI1) My friends and neighbors often come to me for advice about new products and innovations. (PI2) I like to buy new and different things. (PI3) I am usually among the first to try new products. (PI4) I like to keep up with technological advances. (PI5) It is very important to me to feel that I am a part of a group.	Agarwal and Karahanna (2000); Sulaiman et al. (2007); Lee et al. (2007)
ATTITUDE (AT)	(AT1) I think it is a wise idea to make payments online. (AT2) I am not satisfied with the traditional payment system. (AT3) Using the internet while purchasing products and services and paying bills is a nice experience. (AT4) I will encourage online card payments among my colleagues. (AT5) Overall, my attitude towards online card payment is positive.	Davis (1989); Schierz et al. (2010); Lin (2011)
BEHAVIORAL INTENTION TO USE (BI)	(BI1) I am thinking of making all my payments over the internet. (BI2) I am thinking of making payments online frequently. (BI3) I believe that it is valuable for me to adopt online payment transactions with a card.	Davis (1989); Venkatesh et al. (2003); Gefen et al. (2003); Schierz et al. (2010); Lin (2011)

Table A2. Total Variance Explained.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	21.316	29.606	29.606	21.316	29.606	29.606
2	5.440	7.556	37.162	5.440	7.556	37.162
3	4.735	6.576	43.738	4.735	6.576	43.738
4	2.571	3.571	47.309	2.571	3.571	47.309
5	2.177	3.024	50.333	2.177	3.024	50.333
6	1.923	2.671	53.004	1.923	2.671	53.004
7	1.797	2.497	55.501	1.797	2.497	55.501
8	1.641	2.279	57.780	1.641	2.279	57.780
9	1.555	2.160	59.939	1.555	2.160	59.939
10	1.434	1.991	61.931	1.434	1.991	61.931
11	1.312	1.822	63.753	1.312	1.822	63.753

Extraction Method: Principal Component Analysis.

Table A3. Total Variance Explained.

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11
UB2	0.840										
UB3	0.816										
FC1	0.806										
UB1	0.779										
FC2	0.767										
FC3	0.742										
RA1	0.681										
QIC2	0.649										
HE5	0.648										
QIC3	0.639										
RA2	0.624										
CMPA3	0.616										
PE4	0.609										
CMPA2	0.602										
PE2	0.591										
FC4	0.590										
HE1	0.573										
CMPA1	0.569										
RA3	0.549										
QIC1	0.536										
HE2	0.516										
PT4		0.828									
PT3		0.823									
PT2		0.642									
PC1		0.633									
PT5		0.633									
PC2		0.558									
PC3		0.549									
PT1		0.515									
PR5			0.760								
PR3			0.738								
PR4			0.730								
PR6			0.721								
PR1			0.703								
PR2			0.688								
PU2				0.760							
PU1				0.721							
PU3				0.710							
PU5				0.699							
PU4				0.681							
PIN3					0.809						
PIN2					0.766						
PIN4					0.672						
PIN1					0.610						
COMPE1						0.828					
COMPE2						0.809					
COMPE3						0.612					
PC3						0.519					
PI2							0.697				
PI3							0.681				
PI1							0.650				
PEU1								0.742			
PEU3								0.609			
PEU4								0.538			
SI2									0.745		
SI1									0.550		
SI5									0.514		
SE2										0.710	
SE3										0.651	
HE4											0.794
HE3											0.737

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