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THE RELATIONSHIP AMONG U-CONSTRUCTS, TRUST AND SATISFACTION: EVIDENCE FROM MOBILE BANKING USERS

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ABSTRACT

The last few decades have witnessed a drastic change in the nature of commerce due to the development of ubiquitous computing technologies. E-commerce has evolved to an ultimate stage that is called u-commerce. This study seeks to provide an understanding of consumer satisfaction and trust in u-commerce characteristics. Thus, the research examined how u-constructs affect satisfaction and trust from the mobile banking perspective. Ubiquity, uniqueness, universality, and unison comprise the characteristic features represented as u-constructs. In this study, a total of 1012 samples were analysed using Structural Equation Modelling (SEM). The results showed that characteristics of ubiquity and universality have positive effects on customer satisfaction, yet they do not have any effect on

trust. It was also found that uniqueness and unison have positive effects on trust and that trust has a positive effect on satisfaction. This study contains some theoretical and practical implications for researchers and practitioners who are interested in u-commerce and improving customer satisfaction.

Keywords: U-commerce, marketing, u-constructs, satisfaction, trust.

INTRODUCTION

Today, rapidly developing technologies have been used in all walks of life. Among these technologies, the concept of ubiquitous computing, first mentioned by Weiser in 1988, has a crucial place. Ubiquitous computing can be described as a post-desktop model of human-computer interaction in which computing is fully integrated into everyday objects and activities (Deng et al., 2011). Weiser stated that in the near future, invisible computers will be integrated into the objects of daily life so that objects will communicate through networks uninterruptedly. Ubiquitous computing technologies have become a part of everyday life along with invisible technological devices such as micro sensors, small processors, and wireless communication elements (Weiser, 1991). In this regard, mobile phones, which promise quite advanced features compared to PCs, have an important place today (Bredican & Vigar-Ellis, 2014; Pitt et al., 2011). In line with this, individuals can perform numerous tasks in their daily lives using their mobile devices. For example, they can buy the products through their mobile devices and control the objects in their houses. Therefore, it is possible to perform multiple tasks simultaneously through these devices (Galanxhi-Janaqi & Nah, 2004; Morrison et al., 2015) and with mobile applications (Treen et al., 2017). New horizons have emerged in the commercial field with the spread of modern wireless connection technologies and the omnipresence of computers. It is evident that there is a transformation in the commerce with ubiquitous computing. E-commerce (electronic commerce), which is an internet-based commerce format, and m-commerce (mobile commerce), which is a mobile-based commerce format, have begun to leave the ground to u-commerce (ubiquitous commerce) (Hsia et al., 2018; Jelassi & Martínez-López, 2020; Watson et al., 2002).

U-commerce refers to a form of trade that can be conducted anywhere and anytime with wireless and wide connection options (Accenture,

2001). It is the ability to interact with anyone, anywhere and anytime (Sabati et al., 2010) and to be everywhere, devices must be used universally functional. In this way, incompatibilities with information systems can be overcome (Junglas & Watson, 2006). Personalisation is one of the essential aspects of u-commerce as you can dynamically change the content of goods and services provided according to consumers' immediate needs and context awareness (Hung et al., 2009; Mannan, 2013). Personalisation is critical because one can dynamically change the content of the goods and services offered according to the context-awareness characteristics of individuals, considering the needs of the consumers (Faisal & Khan, 2016; Park et al., 2007; Wu & Hisa, 2008). However, seamless data flow and synchronisation are required for personal apps across multiple devices when creating value (Junglas & Watson, 2006). For this reason, Watson (2000) argued that u-constructs (known as 4Us) include ubiquity, uniqueness, universality, and unison for u-commerce. From this perspective, u-commerce does not offer only the advantage of ubiquity, but it also offers the advantage of universal availability, the advantage of being unique and the advantage of staying in unison (Morrison et al., 2015).

Watson et al. (2002) stated that "U-commerce will affect the customers served by an industry and the firms within it so that marketing decision makers will have to ask what changes it will cause in customer behaviour and the nature of firms within the industry." Therefore, it is possible to foresee some changes in consumer behaviour, such as increases in customer satisfaction, in the framework of u-commerce and its key characteristics referred to as u-constructs. To illustrate, the customer value generated by enhanced customer relationships with U-commerce could shift customer satisfaction (Kim et al., 2009). Even current modes of information processing do not meet the demands of consumers. This is attributed to the new kind of information processing modes that are available with u-commerce, whereby satisfaction must be taken into consideration (Zhang & Liu, 2011). Additionally, u-commerce offers customers personalised services with its unique construct. Thereby, companies could improve customer satisfaction via ubiquitous computing technologies (Al-Haidary & Mohammad, 2016).

Recent years have seen a change in the banking-related usage preferences of consumers who use banking services (Anan et al., 2020; Ernst & Young, 2020; Windasari et al., 2022). Due to the need to

use physical, electronic and mobile bank branches in a synchronised and integrated manner, more personalised, anywhere and anytime, has arisen. The effects of existing utilities of u-commerce on the satisfaction levels of consumers have not been sufficiently studied in the literature. This study is important because it examines the effects of u-constructs, which show the basic features of u-commerce, on satisfaction. In addition, the relationship between features such as the integrated use of various channels, which are among the utilities provided by u-commerce, and consumer satisfaction has not been sufficiently studied in the literature. This research is significant in that it reveals the relationship between u-constructs' characteristics and satisfaction.

As a result of the findings obtained in the research, it is predicted that consumer behaviours in the field of banking will be better understood by determining which u-commerce features are important to individuals using mobile banking applications and revealing whether these features have effects on the satisfaction and trust levels of the customers. Again, in line with the current research results, businesses will be able to see how they can benefit from the relevant u-commerce features and what they should include in their services, and they can consider these results in other areas other than banking.

The impact of u-commerce on consumer behaviour is closely related to technological developments such as the development of mobile devices worldwide and data processing (Jain & Roy, 2017). It is, therefore, necessary to decide how the u-constructs are viewed by customers and to expose their effects on customer satisfaction. Thus, in this research, the main objective is to examine u-constructs and to empirically assess the influence of u-constructs on satisfaction and trust. This study was conducted in Turkey due to the availability of developing technologies in banking and the active use of millions of users with different demographic characteristics. Thus, it is expected to create a better understanding of the usage preferences of consumers with different characteristics.

LITERATURE REVIEW

The advancement of technological innovations, g-commerce (geographic commerce), in which people had to physically come

together, has evolved into e-commerce (Junglas, 2003). E-commerce, in which people use the internet for trade, has changed the form of commerce (Cox & Dale, 2001; Watson et al., 2007). In line with this, mobile phone technologies have created another commerce form called mobile commerce (m-commerce). M-commerce is known as a trade that comes true to wireless networks and devices (Coursaris & Hassanein, 2002). Today, the need to use the above-mentioned trade modes together has become inevitable. In this direction, mobile applications, mobile networks, mobile devices and data synchronisation have provided us with the ultimate form of commerce called u-commerce (Junglas, 2003; Galanxhi-Janaqi & Nah, 2005). Therefore, it is necessary to understand what u-commerce is and to reveal the characteristic features of the u-construct (ubiquitous, unique, universal, unison) that form the basis of u-commerce. It is important to include at this stage, taking into account how trust and satisfaction can affect the relevant structures.

Trust

Trust includes terms such as "confidence," "assured reliance," and "assured belief" (Collins Dictionary, 2022). Expectation or predictability can be shown as an element common to many uses of trust. Trust includes the concept of motivational relevance and predictability. If the person expects that something will happen and this event is a motivational relevance, the concept of trust would be appropriate (Deutsch, 1958). Trust matters in conditions of uncertainty and risk. In digital settings, shopping involves more confusion and risk than traditional shopping. In the transfer of personal and sensitive data via online networks, situations that affect trust may occur, such as the inability to always control the security of the data and the unpredictable third parties' handling of the data.

In this respect, the element of trust in digital environments becomes more and more important (Lee & Turban, 2001). Because of the features of ubiquitous computing, if consumers' concerns about privacy can be removed, they can trust u-commerce (Faisal & Khan, 2016; Galanxhi-Janaqi & Nah, 2004). From the banking perspective, trust is extremely important for customers who do not go to the physical branch and do not interact with any employees (Mukherjee & Nath, 2003). There is a growing body of literature that emphasises the importance of trust in the field of banking (Fungáčová et al., 2019; Khan, 2021; Sharma & Sharma, 2019).

Satisfaction

Satisfaction is a judgement response that fulfills consumption-related goods/services delivered (Oliver, 2014). Customer expectations and the overall functionality of the services can change satisfaction assessment (Gerpott et al., 2001). If the true output of the service or product is better than expected, there will be a positive confirmation of customers' satisfaction level (Shao Yeh & Li, 2009). Three critical components of customer satisfaction can be listed as a summary: an affective response of varying intensity, a time-specific point of determination and limited duration, and focal aspects of product acquisition and/or consumption (Giese & Cote, 2000). Considering these components, it would be beneficial to consider together the forms of satisfaction exhibited in traditional, electronic and mobile environments due to their u-commerce and u-construct characteristics. The usefulness of the facilities offered from the banking perspective is related to the satisfaction of the customers receiving the service (Casaló et al., 2008). For this reason, it is expected that various opportunities offered in the field of banking will affect satisfaction (Eren, 2021; Ganguli & Roy, 2011; Md Nor et al., 2010; Raza et al., 2020).

U-Commerce and U-Constructs

U-commerce is based on the claim of doing business at the speed of light with the support of developing information technologies (Watson et al., 2002). It emphasises the necessity of not having constraints on the axis of place and time. It is important to emphasise that u-commerce is the next wave in digital commerce, yet not a substitute for existing types of commerce (Sabati et al., 2010).

U-commerce was originally defined by Watson et al. (2002) as "the use of ubiquitous networks to support personalised and uninterrupted communications and transactions between a firm and its various stakeholders to provide a level of value over, above, and beyond traditional commerce". While u-commerce provides continuous communication and data sharing, it creates various effects on business and society. Hereby, u-commerce, which involves all modes of exchange of value between all stakeholders, can be explained as the ultimate evolution of electronic commerce and mobile commerce

(Bredican & Vigar-Ellis, 2014). It is possible to say that it enhances economic growth as it lubricates all changes (McGuigan & Manzerolle, 2014). Customers can connect anytime and anywhere without the need to remain connected via power and telephone/ landlines. U-commerce can generate greater convenience levels and added value by the physical and electronic means of convergence (Galanxhi-Janaqi & Fui-Hoon Nah, 2004; Xin, 2009). Homes, stores, highways, airlines, kiosks, billboards, etc., are the places where u-commerce can take place. (Oreku, 2013). Thus, u-commerce takes place in u-space. U-space is the merger between the marketplace where g-commerce takes place and the market space where e-commerce takes place (Watson et al., 2004).

U-commerce shows that commercial activities can be done anywhere and anytime through the ubiquity of computers and networks. In line with this, commercial activities are also universal. The possibilities of ubiquitous computing also enable a business to provide their customers with personalised goods and services. For seamless information flow, ubiquitous computing enables synchronisation between different devices and communication options. The current u-construct (ubiquitous, unique, universal, unison) combination, which is characterised as the main characteristic of u-commerce, makes it easy to reveal new horizons in commercial terms (Junglas & Watson, 2006; Watson et al., 2002). This situation shows that commercial interactions can be made anywhere and anytime without the limitation of time and place. Therefore, it is important to understand u-construct and know what it offers in terms of the prevalence and usability of u-commerce.

Since it was first put forward, its basic features (e.g., u-construct) have been revealed (Junglas & Watson, 2006; Watson et al., 2002). Moreover, what its components are (types of commerces are silent, voice, geographic, mobile, electronic, TV) (Galanxhi-Janaqi & Fui-Hoon Nah, 2004; Kumar et al., 2015) how businesses should pay attention to transformations (e.g., new business models, capabilities) (Murakami, 2004; Strassner & Schoch, 2002; Wu & Hisa, 2008), possible innovations in marketing (e.g., new types of marketing) (Nagumo, 2002; Watson et al., 2004), possibilities for consumers (e.g., marketing mix, new consumer experiences) (Cox, 2004; Sánchez-Pi & Molina, 2009), and possible negativities (e.g., privacy, security,

trust) to be experienced with u-commerce (Galanxhi-Janaqi & Nah, 2006; Sheng, 2006) have been theoretically discussed. Among the theoretical studies, there are also studies showing; how u-commerce can be applied in different sectors (John, 2013), how content awareness can be used (Kwon et al., 2005), how it contributes to sustainability (Pitt et al., 2011), examining the effects on consumer behaviour (Borrego-Jaraba et al., 2013; Hong & Wang, 2011), sectoral innovative evaluations (Morrison et al., 2015; Nakajima, 2002), and examining possible negative aspects (McGuigan & Manzerolle, 2014).

Existing literature offers various empirical studies on u-commerce. A large body of work has investigated the perceptions of different experiences in retailing (Kourouthanassis & Roussos, 2006), reflections of informatics everywhere on the perception of quality and value (Kim et al., 2009), perceived enjoyment and usage intention relationships with systems (Kim et al., 2013), acceptance of u-commerce (Yoon & Kim, 2007; Yu & Guo, 2008; Al-Haidary & Mohammad, 2016), the relationship between u-commerce practices and demographic factors (Ojo, 2017), context-awareness and decision making (Wook et al., 2013), context-awareness and hedonic and impulsive consumption relationship (Wang et al., 2017), usefulness and satisfaction effects (Sabati et al., 2010), and sharing personal information (Roussos & Moussouri, 2004; Wang & Wu, 2014). On the other hand, research has revealed that privacy (Asahi, 2010; Sheng et al., 2008), security (Faisal & Khan, 2016), and trust (Gu et al., 2016; Lee, 2005) are essential issues to be considered. Studies on u-commerce reveal that the level of satisfaction (Lim et al., 2006; Sammer et al., 2011) may vary. There are also studies that focus on the possible effects of u-construct elements that show the essential characteristics of u-commerce (Aksoy, 2017; Jain & Roy, 2017; Junglas & Watson, 2003; Okazaki et al., 2012; Sheng et al., 2008; Wook et al., 2013).

The possible effects of existing u-construct elements can be explained by the Task Technology Fit theory in information systems. According to this theory, the compatibility of the technological characteristic with the desired task has an effect on usage, performance and belief (Goodhue & Thompson, 1995). If a technological feature has the expected functionality to complete a related task, it is more likely to be used. It is clear that ubiquitous, unique, universal and unison

constructs have technological aspects that complement each other, and, therefore, these u-constructs together have effects on performance and beliefs (Junglas, 2003). Some researchers suggest that ultra-yield, ultimacy, usefulness, and uniformity variables should be considered in the adoption of u-commerce (Hung et al., 2009). Apart from the existing u-construct, no consensus has emerged on the topic yet.

Ubiquitous

Ubiquity ensures that networks can enable a rich range of computational and connectivity technologies and resources for nomadic users as they travel in a clear, interconnected, easy, seamless and compatible manner (Wu & Hisa, 2008). The pervasive existence of computer chips means that not only are they everywhere, but they are "nowhere". Because they become unnoticable when we we don't pay attention (Watson et al., 2004). Most of these devices today are not like desktop and laptop computers. These computers can be used at home, at work, on the street, at a station, etc., in the form of phones, cards, smart wearable devices, home appliances, etc. These devices are also connected to cellular and wireless networks. Ubiquity integrates the philosophy of accessibility, reachability, and portability into a single construct (Junglas & Watson, 2006). Thus, ubiquity means customers reach any goods and services anytime, anywhere (Morrison et al., 2015) and they can be reachable anytime, anywhere without restrictions (Mannan, 2013; Morrison et al., 2015; Sheng et al., 2008).

There has been an increasing amount of literature that takes the ubiquitous construct into account. In these studies, the importance of the "anywhere/everywhere" structure is emphasised in matters such as the expansion of commercial activities (Galanxhi-Janaqi & Fui-Hoon Nah, 2004), the development of benefits to be offered (Watson et al., 2011), the proliferation of consumer-oriented activities (Bredican & Vigar-Ellis, 2014), and the meeting of changing demand (Cox, 2004). On the other hand, it is also stated that the consumer group, who is likely to be constantly disturbed, may not be indifferent to brands (Runnalls, 2006). It has been seen that the ubiquitous construct is a determinant of trust and attitude (Okazaki et al., 2012), affects final decisions (Wook Seo et al., 2013), and affects willingness to share (Aksoy, 2017). There are also studies that take the possible effects during the pandemic period into account (Loh & Stephenson, 2021).

Considering that information technology elements will become widespread everywhere, the fact that they can be found everywhere should be studied due to the high potential of their features and transformation.

Uniqueness

Uniqueness is connected to the values and identities related to the geographical location that customers are from. Uniqueness requires in a single concept the notion of location, identification and portability. Identification provides an unambiguous assignment of individuals and localisation provides the portion of the geographic location (Junglas & Watson, 2006). Customers need information that is unique depending on their current role, context, time, location and expressed preferences. Hence, u-commerce proposes individuality, which ensures that the information given to consumers can be conveniently adapted to their context and desires at any time and everywhere. It can be stated that the mass personalisation of information is always possible, but the main need is contextual customisation (Galanxhi-Janaqi & Nah, 2004; Watson et al., 2002). Thus, customers should be able to find any information that may be related to any goods and services depending on identification, location, and portability (Morrison et al., 2015; Watson et al., 2002).

Its unique construct is important because it emphasises the ability to make necessary customisations (Morrison et al., 2015). Sustainability (Pitt et al., 2011), personalisation (Kim et al., 2016; Kourouthanassis & Roussos, 2003), and acceptance (Jain & Roy, 2017) are the issues that have been discussed in studies that consider its unique construct. It can be stated that personalisation raises privacy concerns and affects acceptance (Sheng et al., 2008). It is seen that technological characteristics affect the work performance that is desired to be done everywhere (Junglas & Watson, 2003). Today, due to the increasing importance of personalisation and the necessity of understanding the needs of individuals correctly, its unique construct fills an important gap.

Universal

The concepts of universal usability, multifunctional objects, and interoperable elements are integrated into universality. Universality

encompasses the notion of mobile networks and mobile devices into one construct (Junglas & Watson, 2006) and shows us that networked computers can be used everywhere (Morrison et al., 2015). The principle of universality also includes the multifunctionality term. In this respect, devices such as mobile phones, laptops, and wristbands are required to perform multiple functions. This does not require carrying a large number of devices for multiple tasks and enables a wide variety of tasks with a single device. Thus, universality can be explained as resolving the problem of incompatibility with information systems (Junglas & Watson, 2006). While they were not widely used in devices such as mobile phones before, they are widely used today. This situation is associated with the global spread of universality standards. Similarly, the functional use of devices for multiple tasks is also related to universality today (Jain & Roy, 2017).

Mobile devices are recognised for ubiquitous customer targeting due to their universal connectivity. On the other hand, it should be noted that current research is mostly conducted from the m-commerce perspective (Chopdar & Balakrishnan, 2020). From this perspective, it is seen that the universal construct has not been sufficiently researched in the literature. Research on universality seems to have dealt mostly with the issues of necessity (Klemm & Wallace, 2017), demographic factors (Heller et al., 2001), ethics (Bohn et al., 2005), education (Glavinic et al., 2008; Tsai, 2016), and multifunctional usage (Arruda Filho, 2022). However, the fact that devices might have problems in switching between connections and that some devices are limited to performing only certain functions can create significant obstacles. This construct should be considered for the functionality of ubiquitous and unique construct features (Junglas, 2003).

Unison

The concept of unison supports the principle of synchronised information through various applications and devices, such that people, regardless of the system used, have a clear view of their data and information. In this respect, it offers applications and synchronisation under a single construct (Junglas & Watson, 2006). Individuals need to be able to access the information they need from a single interface, regardless of location and time, as customers switch from one device to another while using various electronic tools (e.g., cell phones, laptops, TVs) and connection systems (e.g., 4G,

Bluetooth, WiFi). There is compatibility with unison through unified information access and synchronisation in line with the information customers need (Novotny et al., 2009; Watson et al., 2002). Today, unison has extended to home appliances, cars, wearable things, etc., which are related to the Internet of Things (Morrison et al., 2015). Furthermore, it is possible to say that the unison is quite similar to the convergence of technology and devices (Jain & Roy, 2017).

As in the universal construct, there are limitations in the studies carried out from the u-commerce perspective regarding the unison construct. Since it is complementary to ubiquitous and unique constructs (Junglas, 2003) and enables the merging of physical and digital spaces (Wang, 2021), it needs to be examined in various ways. There are studies in the literature that take these issues into account as their construct emphasises synchronisation and application use. Current literature presents studies on usage preferences related to applications (Carter & Yeo, 2016), contextual usage (Girginkaya Akdağ & Ergen, 2020), customer behaviour (Zolkepli et al., 2021), personalisation (Camacho ve Barrios, 2016), quality (Treen et al., 2017). On the synchronisation side, there are published studies on cloud service (Shin, 2015), increased motivation (Piskorski & Johnson, 2012), benefits (Millán, 2018), and standards and values (Nakatani et al., 2006).

HYPOTHESES DEVELOPMENT

U-commerce that happens with ubiquitous computing has the potential to change the customer's behaviour. Watson et al. (2002) noted that there is a "need to identify or formulate theories that will aid in the explication of information and probability's impacts on the actions of organisations and the behaviour of their customers. A superabundance of information and humans' limited processing capabilities are likely to exacerbate information asymmetries between parties in many forms of exchange. With u-commerce, customers can be satisfied with their participation in processes related to products and services. Thereby, customers no longer need to deal with the abundance of details about products and services. In addition, if customers interact with businesses, they can predict the difference between what businesses offer and their expectations. Thus, it is possible to say that customer satisfaction can increase with emerging u-commerce based on ubiquitous computing (Hong & Wang, 2011). Based on previous

studies, it is possible to claim that u-commerce with u-constructs can affect customer behaviour (Jain & Roy, 2017; Junglas, 2003). It is noted that some u-construct elements (e.g., ubiquity, uniqueness) can have various effects on customer satisfaction (Junglas, 2003; Okazaki & Mendez, 2013). Sullivan et al. (2009) suggested that satisfaction in a ubiquitous computing environment is different from satisfaction in a traditional environment. It is also important to consider how u-commerce influences customer satisfaction (Borrego-Jaraba et al., 2013; Bredican & Vigar-Ellis, 2014; Lee et al., 2017; Nakajima, 2002) with variables such as u-constructs.

In some studies, the contribution of u-constructs to individual performances has been included (Junglas, 2003) and it has been determined that the ubiquitous computing technologies used have positive reflections on the satisfaction of individuals (Jain & Roy, 2017; Lim et al., 2006; Yoon & Kim, 2007). Furthermore, it has been stated that some issues arising from technology may cause privacy concerns and trust problems (Asahi, 2010; Faisal & Khan, 2016; Poole et al., 2008; Sheng et al., 2008). Although it has been stated in many theoretical studies (Cox, 2004; Hong & Wang, 2011; John, 2013) that u-construct features affect satisfaction and trust, no studies have been found showing how each of them affects satisfaction. The technological opportunities offered to consumers (e.g., unique options, unison application services, etc.) involve the consumer in the flow of use (Csikszentmihalyi & Csikzentmihaly, 1990) and ensure the realisation of positive satisfactions (DeLone & McLean, 1992) that are compatible with the goals to be achieved (Goodhue & Thompson, 1995). It is necessary to determine how u-constructs offer technological opportunities and how the satisfaction of individuals who use these opportunities is affected. Considering that the banking sector is open to subjective evaluations, this study attempted to confirm the effect of u-commerce on trust and satisfaction.

Ubiquity, uniqueness, universality, and unison can be viewed as technological characteristics of u-commerce. All the developments or implements of u-constructs can show us the changing nature of tasks and needs (Junglas & Watson, 2006). Yet, u-constructs can bring some trust issues that affect customer satisfaction levels (Galanxhi-Janaqi & Nah, 2004; Kourouthanassis & Roussos, 2006; Lee, 2005; Roussos & Moussouri, 2004; Tran & Wei, 2011). Therefore, the opportunities offered in u-commerce based on u-constructs can also affect consumer

trust, and trust can affect customer satisfaction. Thus, the following hypotheses were proposed:

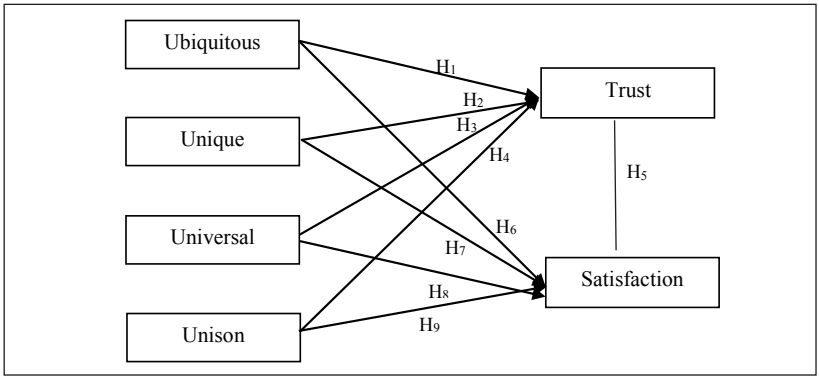
H_1: Perceived ubiquity is positively associated with trust.
H_2: Perceived uniqueness is positively associated with trust.
H_3: Perceived universality is positively associated with trust.
H_4: Perceived unison is positively associated with trust.
H_5: Perceived trust is positively associated with satisfaction.

After using any related ubiquitous technology, perceiving the usefulness of ubiquitous technologies positively predicts consumer satisfaction (Larsen et al., 2009). Some characteristics like ubiquity, localisation, personalisation, reachability, connectivity (Lee et al., 2011), omnipresence, context, interactivity (Jung, 2014), mobility, and customisation (Marinkovic & Kalinic, 2017) affect customer satisfaction, and those characteristics are closely related to u-constructs. Also, marketing activities based on u-commerce can affect customer satisfaction (Hong & Wang, 2011). Therefore, it is expected that u-constructs can affect customer satisfaction. Thus, the following hypotheses are represented:

H_6: Perceived ubiquity is positively associated with satisfaction.
H_7: Perceived uniqueness is positively associated with satisfaction.
H_8: Perceived universality is positively associated with satisfaction.
H_9: Perceived unison is positively associated with satisfaction.

Figure 1

Research Model



In the context of the research, the research variables tested are included in Figure 1. The variables related to the model mentioned and hypotheses built based on related research literature are discussed in this section. The research model proposed a theoretical model based on the relationships between u-constructs, trust, and satisfaction. The ubiquitous, unique, universal and unison variables on trust and satisfaction are shown. In addition, the variable of trust on satisfaction was also integrated.

METHODOLOGY

Data Collection

The research model, which includes u-constructs, trust, and loyalty, comprises six variables (Appendix A). A five-point Likert scale questionnaire, which ranges from "strongly disagree" to "strongly agree" was used to collect data. The survey questionnaire used in this study was adapted from existing literature (Table 1). Following the back-translation process, which is the most widely used translation technique due to its consistency and precision (Bracken & Barona, 1991), the statements on the scale were translated into Turkish. The final research questionnaire with 30 participants, which comprised academicians, public and private employees, and undergraduate students, was pretested. The findings of the pilot results were found to be extremely reliable, and the measurements were valid.

Table 1

Measurement Sources

Variables	Adapted From
Ubiquitous	Okazaki ve Mendez (2013)
Unique, Unison, Universal	Jain ve Roy (2017)
Trust	Brodie et al. (2013), Chu et al. (2012), Gefen et al. (2003), Suh & Han (2002), Sanchez Torres & Arroyo-Cañada (2017)
Satisfaction	Ribbink et al. (2004) , Chiu et al. (2009), Cyr & Bonanni (2004), Lin & Wang (2006)

Mobile banking apps in Turkey have a good fit with u-constructs. Customers can use ATMs, banking branches, e-banking services, etc., at the same time with mobile banking apps. Moreover, customers can use all banking services anywhere at any time and this is called u-banking (John, 2013). Customers who utilised mobile banking applications in Turkey made up the research's target audience. The data were collected using convenience sampling, which is a non-random sampling method. The research sample consists of those who used mobile banking applications and they were randomly chosen. Istanbul and Ankara were chosen because these are metropolitan cities where customers live together with unique characteristics. Individuals over the age of 18 (the official age limit) were included in the sample. Individuals who did not use mobile banking applications were not included in the study. The surveys were conducted on digital devices, face-to-face and on a voluntary basis. Participants were asked to answer each question. All individuals who used mobile banking applications in an integrated way with other banking channels in the world could be included as a sample in this study. However, it was not possible to reach all of them due to time, availability, and cost. In this respect, the sample set, which used the relevant banking features and possible to generalise the results of the research to the selected population, was preferred. The sample may be expected to represent the population since participants from different characteristics participated in the survey.

A total of 1012 surveys were received from September to October 2019. The sample size was calculated (between 1713-360) considering the number of observable (41 variables) and latent variables (6 variables) in the model, the anticipated effect size (0.1-0.3), the desired probability (0.05) and statistical power levels (0.8). In this direction, the number of samples was sufficient (Cohen, 2013; Soper, 2021; Westland, 2010).

Method

Using maximum likelihood parameter estimation in a covariance-based structural equation model (SEM), we analysed our theoretical model. SEM was chosen to understand the correlation/covariance patterns among a set of variables and to explain their variance as much as possible with the specified model (Kline, 2015). To perform this research, IBM AMOS 24 was used to analyse the data in this study. In addition, IBM SPSS 24 was used to measure the reliability of the instruments and examine the demographic profile of the respondents.

RESULTS

Demographics

The demographics of the responders are shown in Table 2. The numbers of male and female participants are close to each other. Most of the responders are in the 18-29 age range. Most participants comprised of government officials (25.7%) and academicians (2.4%). The percentage of university graduates is the highest at 46.6 percent. At least 47.3 percent of the participants stated that they used mobile banking applications for 5 years or more.

Table 2

Demographic Characteristics of Sample

Demographics		N	%
Gender	Female	441	43.6
	Male	571	56.4
Age	18-29	494	48.8
	30-39	354	35.0
	40-49	116	11.5
	50-59	39	3.9
	Older than 60	9	0.9
Job	Employee	153	15.1
	Government official	261	25.7
	Student	235	23.2
	Retiree	27	2.7
	Housewife	46	4.5
	Merchant	32	3.2
	Self-employed	75	7.4
	Academician	24	2.4
	Other	159	15.7
Education	Primary school	34	3.4
	Middle School	39	3.9
	High school	140	13.8
	Undergraduate	133	13.1
	Graduate	473	46.7
	Master and Doctorate	193	19.1
Duration of using mobile banking applications	1 year and less	86	8.5
	2 years	134	13.2
	3 years	130	12.8
	4 years	183	18.1
	5 years and more	479	47.3

Reliability and Validity Analysis

A two-step methodology was used to develop and test the suggested model (Gerbing & Anderson, 1988). The measuring model was first tested to evaluate its reliability and validity. Then, the structural model to test hypotheses was examined. Before starting the tests, it was checked that the data had a normal distribution, and it was determined that all distributions were normal (Byrne, 2013; Weston & Gore Jr, 2006). To validate the measurement model, assessments of the content, composite reliability, convergent, and discriminant validities were conducted.

All measures from existing literature were adopted and content validity was established. Composite reliability (CR) for composite reliability, average variance extracted (AVE) for convergent validity and finally, heterotrait-monotrait (HTMT) ratio, which is a new discriminant validity technique for discriminant validity (Henseler et al., 2015) were used to ensure validity and reliability in the study. Some authors suggested the HTMT discriminant technique compared to the Fornell-Locker (FL) discriminant technique. HTMT discriminant technique has a better discriminant ability for covariance based-structural equation modeling (Voorhees et al., 2016).

Table 3

Confirmatory Factor Analysis

Construct	Number of items	Factor loadings	Cronbach's alpha	CR	AVE
Ubiquity	10	0.60-0.85	0.90	0.90	0.50
Uniqueness	6	0.73-0.77	0.89	0.89	0.57
Universality	5	0.70-0.77	0.85	0.85	0.55
Unison	7	0.72-0.75	0.89	0.89	0.54
Trust	4	0.74-0.85	0.88	0.88	0.66
Satisfaction	4	0.80-0.83	0.89	0.89	0.67

Based on composite, convergent and discriminant validation results, some items (UV4, UV5, UV8, UB2, and UB3) were removed from the measurement model because of low factor loadings. The last results are presented in Table 4 and Table 3. As can be seen, the Cronbach's alpha value of each variable is greater than 0.85. The results show that each variable value has high reliability. All standardised item loadings are greater than 0.60, composite reliability (CR) values range from 0.85-0.90 and average extracted variance (AVE) values range from 0.50-0.67. These results show the CR criterion (≥0.70) and the AVE criterion (≥0.50) met Bagozzi and Yi's (1988) and Chin's (1998) studies. Finally, the HTMT criterion (≤0.90) shows that there is no problem with discriminant validity (Franke & Sarstedt, 2019; Gold et al., 2001). Besides, CFA model fit results (x^2/df= 4.01; SRMR=0.03; NFI= 0.90; CFI=0.92; RMSEA=0.05) are good. All of these results are acceptable levels for composite reliability, convergent validity, and discriminant validity.

Table 4

Discriminant Validity of Heterotrait-Monotrait Ratio of Correlations (HTMT)

	Correlations of measurement variable					
Measurement variable	1	2	3	4	5	6
Ubiquity	1					
Uniqueness	0.83	1				
Universality	0.87	0.79	1			
Unison	0.82	0.81	0.90	1		
Trust	0.68	0.71	0.69	0.71	1	
Satisfaction	0.80	0.73	0.74	0.79	0.74	1

Note: For HTMT discriminant validity, all correlations must be ≤0.90.

Hypothesis Test Results

Structural equation analysis was applied to the research model and it was seen that the proposed relationships fit well. The actual values of fit indices (x2/df=4.01, SRMR=0.03, CFI=0.92, NFI=0.90 and RMSEA= 0.05) have good fit measures (Bentler & Bonett, 1980; Browne & Cudeck, 1992; Hu & Bentler, 1999). Hypothesis test results are shown in Table 5.

Table 5

Hypothesis Test Results

Path	Hypothesis	Coefficients (β)	t	p	Result
Ubiquity→Trust	H_1	0.07	0.87	n.s.	Not supported
Uniqueness→ Trust	H_2	0.32	4.83	*	Supported
Universality→ Trust	H_3	0.12	1.12	n.s.	Not supported
Unison→ Trust	H_4	0.26	2.76	*	Supported
Trust→ Satisfaction	H_5	0.27	7.62	*	Supported
Ubiquity→ Satisfaction	H_6	0.14	2.02	*	Supported
Uniqueness→ Satisfaction	H_7	-0.02	-0.35	n.s.	Not supported
Universality→ Satisfaction	H_8	0.67	6.58	*	Supported
Unison→ Satisfaction	H_9	-0.21	-1.45	n.s.	Not supported
Explained variance (R^2) of satisfaction = 0.80 and Explained variance (R^2) of trust=0.55					

*Notes: *p <0.05 and n.s.: Not Significant*

The strength of the relationship between the dependent and independent variables is shown by the path coefficients, and the R^2 value reflects the amount of variance explained by the independent variables. By estimating the path coefficients and R^2 values, we evaluated the structural model. The R^2 value and the path coefficient demonstrate how the hypothesised model is assisted by the data. As shown in Table 5, uniqueness (β=0.32, P<0.001) and unison (β=0.26, P<0.01) significantly influence the dependent variable of trust and the other independent variables, while ubiquity and universality do not significantly influence the dependent variable of trust. Thus, hypotheses H_2 and H4 are supported; hypotheses H_1 and H_3 are not supported. On the other hand, ubiquity (β=0.14, P<0.05) and universality (β=0.67, P<0.001) significantly influence the dependent variable of satisfaction, but uniqueness and unison do not. Finally, the variable of trust (β=0.27, P<0.001) significantly influences satisfaction. Thus, hypotheses H_4, H_6, and H_8 are supported; hypotheses H_7 and H_9 are not supported. The explained variance of satisfaction is 80% and the explained variance of trust is 55% for the sample.

DISCUSSIONS AND IMPLICATIONS

This study was conducted to analyse the potential effects of u-constructs, which include ubiquity, uniqueness, universality, and

unison on customer satisfaction with trust. This study examines how u-constructs affect satisfaction and trust with the effects of trust on satisfaction from a mobile banking perspective. The hypothesis test results show us that ubiquity and universality can increase the mobile satisfaction level. These results are in line with current literature (Dwivedi et al., 2013; Idoughi & Abdelhakim, 2018; Jain & Roy, 2017; Kim et al., 2009; Kourouthanassis & Roussos, 2006; Lim et al., 2006; Liu et al., 2018; Ojo, 2017; Poole et al., 2008; Virtanen, 2018). Accordingly, it is understood that ubiquitous and universality features, which are the characteristic features of u-commerce, have positive effects on the satisfaction levels of consumers while using banking services.

These results reveal that individuals using banking services want to access banking services everywhere (ubiquitous) without time and place limits. Thus, banking alternatives, such as applications, are effective in improving their satisfaction in this respect. In addition, the fact that mobile devices have features that can be used outside of the banking function and that they can be connected seamlessly between connection types makes it possible for individuals to experience universal banking. As a result, banking features offered with the u-commerce approach can improve consumer satisfaction (Cox, 2004; John, 2013; Morrison et al., 2015; Wu & Hisa, 2008). Also, results show that ubiquity and universality do not bring any issues that reduce the trust level. Customers can be satisfied with the possibility of ubiquitous mobile banking and universal mobile banking usage with no trust issues. The results related to this situation do not overlap with the inferences about trust in some studies, e.g. Okazaki and Mendez (2013) and Roussos et al. (2003), and it is concluded that connecting without space-time limitations and device universality does not have significant effects on creating trust concerns.

It was understood that uniqueness and unison did not predict satisfaction positively in line with the results. Similar studies on these results have not been found in the literature. This may be due to the banks' inability to offer their customers sufficient personalisation opportunities through applications (e.g., location-based promotion notifications, personal loan rates, etc.) and the need for people using mobile applications to switch to other devices. The transition between banking options is still not easy within the current technological

utilities due to security aspects in the banking field (e.g., not being able to enter the e-branch with a QR code, inability to sign with fingerprint, etc.). In order to fully understand the effects of these characteristics on satisfaction, it would be beneficial to re-examine them in different sample groups. But the uniqueness and unison bring some issues which reduce trust level. It is important because there is a positive effect on the satisfaction level and trust. These results are the same as some research findings, which show trust issues (Faisal & Khan, 2016; Gu et al., 2016; Sharma & Sharma, 2019; Sheng, 2006; Tran & Wei, 2011). Customers who use mobile banking apps can easily manage their privacy and safety details. But mobile banking services must offer much more customised mobile banking services to their customers. Therefore, if banking companies want to have satisfied customers, they have to provide services that include personalised banking services, detailed mobile apps, and taking synchronisation possibilities into consideration.

This study is significantly important in terms of showing the effects of ubiquitous, unique, universal and unison constructs on the satisfaction of users who use mobile banking applications. It has been found that some characteristics (ubiquitous and universal) have significant effects on consumer satisfaction and these constructs do not create trust concerns. On the other hand, it has been found that some constructs (unique and unison) have effects on trust but do not have significant effects on individuals' satisfaction. Besides, u-commerce features have been increasingly used. Thus, some features (e.g., unison, unique) cannot provide enough benefits at a fully functional level, and it may be necessary to make improvements and developments and make technological opportunities widely available in order for these features to offer as much benefit as expected (Liu, 2013; Zhang & Liu, 2011). In this respect, it is beneficial to consider the effects of the characteristics that have not yet been found on satisfaction that may have effects over time. In addition, issues affecting trust may need to be considered and trust-building innovations may need to be integrated into existing services (Galanxhi-Janaqi & Nah, 2005). It is quite clear that some features of u-commerce have an impact on satisfaction within the framework of current developments and may be in the future (Bredican, 2016; Gu et al., 2016; Zhang & Liu, 2011).

Based on the findings of this study, it is possible to offer various suggestions to the groups that assume the regulatory role between

businesses that provide banking services, consumers and banks. It is quite obvious that consumers today will not want to use only physical bank branches or electronic branches. It becomes inevitable for banks to use many devices (smart home appliances, ATMs, digital wallets, etc.) through mobile applications in an integrated way to provide uninterrupted and enhanced experiences of banking services in order to capture whatever the age demands. In this respect, it is very important to offer the banking experience to the users without the limitation of time and place. It is also important in this respect to prevent situations where individuals may have confidence concerns in their banking experiences, and it is possible to state that banks that adapt to the expectations and concerns of individuals can create more satisfied customer bases. Furthermore, it is beneficial for third parties that undertake the regulation and supervision task between banks and consumers to make the necessary arrangements, considering possible concerns (e.g., confidentiality, data security, authorisation, etc.).

CONCLUSION, LIMITATIONS, AND DIRECTIONS FOR FUTURE RESEARCH

The demands and expectations of consumers are changing rapidly today. It is important to ensure the satisfaction of consumers and to reveal the factors that affect the level of trust. In this respect, businesses should consider the relevant factors by using the most up-to-date technological opportunities for consumers. Therefore, the perceptions of individuals using banking services with u-construct features are valuable. This research reveals the effects of u-constructs on trust and satisfaction. The present study contributes to the literature by investigating the effects of u-constructs and considering them with confidence. It is seen that the theoretical and applied studies in the literature, which are the basis of the research model, overlap with the results. The results showed some constructs do not affect satisfaction and those that do not affect satisfaction affect trust.

All these hypotheses were tested with data from mobile banking users. Thus, customers' expectations, experiences, anxieties, etc., with technological possibilities (e.g., ATMs, ubiquitous networks, devices, etc.) can affect customers' satisfaction and trust level. Customers who manage their banking activities on a mobile banking app care more

about their privacy, which can change trust and satisfaction levels. Moreover, using all banking channels anywhere and anytime with multiple devices, synchronisation possibilities, mobile apps, etc., can satisfy customers, albeit with some trust issues that harm satisfaction. Therefore, mobile banking is a good fit for the u-commerce research area but brings some critical issues that affect satisfaction. Technological development brings changes in financial services marketing, which affects customers' behaviour. With this detail, there may be a need for deep research from this context (Morrison et al., 2015). Thus, there is a need for further research, which can be done in different areas and different cultures.

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APPENDIX: Questionnaire Items

Constructs	Item No	Items
Ubiquity	UB1	Using these services keeps me well informed about matters related to banking at all times.
	UB2	With these services, I can always keep up with changes related to banking (EFT, exchange rate, campaigns, etc.).
	UB3	When I use these services, I don't have to interrupt my current task.
	UB4	These services allow me to access information related to banking at the best moment for me.
	UB5	When I cannot wait and I need a certain type of information immediately, I will use these services.
	UB6	When I need to receive an urgent response related to banking, I will use these services.
	UB7	These services are practical because I can use them without difficulty wherever I am.
	UB8	Using these services outside my home or my workplace is not a problem for me.
	UB9	I find it convenient to use these services because they don't make me dependent on any fixed installation.
	UB10	With these services, I can check out new things related to banking, regardless of where I am.
	UB11	Using these services helps me to reach my target information.
	UB12	When I use these services, I can achieve things (transactions without a bank card and ID, out of working hours, etc.) that I cannot achieve in any other way.
Uniqueness	UQ1	These services allow me to find local information/ possibilities related to banking.
	UQ2	If I use these services, I can easily access physical banking services (branch, ATM, campaign member, etc.) in a new location.
	UQ3	These services allow me to keep myself updated about banking opportunities and possibilities surroundings.
	UQ4	These services help me to find the right places related to banking.
	UQ5	These services allow me to find places related to banking and locations.
	UQ6	These services enable me to pinpoint services related to my banking requirements.

(continued)

Constructs	Item No	Items
Universality	UV1	These services allow me to multitask on a single device.
	UV2	These devices reduce the hassles of carrying multiple gadgets.
	UV3	These devices are useful since they are mobile and I can carry them at ease.
	UV4	These services reduce the need to switch to different modes of communication (WiFi, mobile networking, etc.) across locations.
	UV5	These devices allow me to share work/fun/ banking stuff with my peers.
	UV6	These devices help us keep in touch with peers/ my bank.
	UV7	These devices help us to transact at any place without hassles.
	UV8	These devices reduce the effort of networking to a great extent.
Unison	US1	The similarity of the banking apps used allows us to share information easily.
	US2	The ease of the banking apps allows me more freedom and control.
	US3	These services reduce the gap between time and space.
	US4	The devices are becoming similar, thereby allowing us to synchronise better across devices.
	US5	Interconnectivity between devices helps us to stay at the same level of updates.
	US6	These devices allow me to work simultaneously on multiple gadgets/apps (withdraw by telephone, mobile shopping password, etc.).
	US7	The services allow me to shift between multiple devices with ease (phone to computer, phone to ATM, etc.).
Trust	TR1	I know these services are trustworthy /honest.
	TR2	These services give me the confidence to buy online.
	TR3	I trust these services to keep my personal information safe.
	TR4	These services keep their promises and commitments.
Satisfaction	ST1	I am generally pleased with these services.
	ST2	I am satisfied with these services.
	ST3	These services have met my expectations.
	ST4	I think using these services is a good idea.