Factors Influencing Consumer Acceptance of Mobile Payment during the COVID-19 Pandemic & Usage Continuance Intent: A Quantitative Study

Syed Faizan Hussain Zaidi [1*] , Omar Ali [1], Marsela Thanasi-Boçe [1]

[1] College of Business Administration, American University of the Middle East, Egaila, 54200, Kuwait.

Abstract

The presence of COVID-19 has transformed the business sector's paradigm and prompted a speedy consumption of mobile payment software systems of diverse ranges. Corporate sectors and businesses across the globe brought a shift to offer mobile payment methods; consequently, consumers were urged to maximize the use of mobile payment throughout the pandemic. The present research aims to investigate the factors that might influence consumers' intent to accept mobile payments and their relationships during COVID-19. The technology adoption model and the unified theory of acceptance and use of technology were employed in this proposed mobile payment adoption framework. A quantitative research approach was identified as a suitable method for this research. An online survey was administered, and 304 participants responded to the questionnaire. The results of the data analysis revealed statistically significant relationships and a positive impact of the factors perceived performance, social influence, consumers' satisfaction, and perceived usefulness on consumers' usage continuation intention. However, the results identified that factors such as transaction risk didn't affect perceived usefulness, and financial transaction transparency didn't affect consumers' usage intention. This study makes a substantial contribution to the consumers' technology acceptance literature in terms of validating a proposed theoretical framework that highlights the factors that influence consumers' mobile payment usage intentions. As this study was conducted at a later stage of the COVID-19 pandemic, it adds value to the existing literature by providing insights to business managers on the factors influencing mobile payment usage. Considering the practical perspective, this study offers evidence of the essential elements that mobile payment service designers and marketers should consider.

1- Introduction

COVID-19 is presently the largest health calamity of the 21st century and has had a significant impact on the global economy and social health. Consequently, people worldwide adopted online transactions to avoid direct exposure to the deadly virus and keep themselves protected from the diseases [1]. Notably, COVID-19 brought profound variations in the use of digital devices for availing of the digital services that are being offered by various business and financial sectors [2]. This is realized due to today's technological progression, specifically because of the emergence of mobile technologies. Technological advances are enabling financial transactions via mobile payments (MPs), which are tremendously faster and can be performed without any restriction of time as well as place [3]. Mobile devices such as near-field communication (NFC), wireless handsets, and radio frequency devices assist in authorizing and performing financial transactions [4, 5]. MPs were largely introduced and well-accepted throughout COVID-19 due to their reliability and contactless characteristics [6]. Mobile banking, e-wallets, NFC, digital wallets, and smartphone debit and

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credit cards have been widely adopted as contactless payment methods, and usage of these methods is still continuing even after COVID-19 [7]. Digital wallets, including Apple Pay, PayPal, and Google Pay, offer consumers a contactless and convenient mode of digital payment options. Further, a substantial change in human behavior is noticed in the way individuals are inclined towards contactless payment and started having confidence in digital modes of payment [8]. MPs have seen substantial global growth due to MPs' technologically reliable, convenient, and interactive features, which have enhanced their circulation in a number of countries [9].

Contactless technologies are anticipated to create a number of business opportunities both within and outside of the COVID-19 pandemic in light of the emergence of the disease and the volatile expansion of MP. Contactless MP technologies were viewed as the inevitable solution during the pandemic to strike a balance between the social distance where less human interaction was necessary and the continuation of regular life in terms of purchasing and processing payment transactions. The advantages of MPs technologies could even be widened beyond the COVID-19 pandemic, explicitly for those who consider them beneficial and inexpensive [10]. The use of MPs has expanded as a result of the huge decline in the physical use of cash, credit, and debit cards, especially during the COVID-19 pandemic; thus, the expansion in MP's market potential for businesses in various settings has been clearly witnessed [11]. As per the "World Payment Report of 2020", 46% of e-commerce MP transactions accounted for; however, the surge in these types of transactions was noticed after COVID-19 [12]. Another report, "WorldPay Global Payment Report," mentioned that MPs accounted for 22% of the overall "points of sale" expenditure in 2019, and this ratio will rise to 29.6% during 2023 [13]. A recent study of small and medium enterprises (SMEs) in China revealed that business factors, technological competencies, and the environment positively influence the adoption of MP services [11]. Researchers are investigating the phenomenon in response to the rise of MPs.

Previous research studies have focused on the factors that influence MP adoption [14, 15], with less emphasis on post-pandemic MP adoption [16]. However, due to the varied contexts of prior studies, these findings can't be generalized. According to earlier research, many of these publications have examined "*stakeholder expectations, cultural orientation differences, customer satisfaction, security and privacy risk, design characteristics, and innovation*" as well as factors that affect the outcome, customer acceptance, and adoption of digital payments [17, 18]. Further, some of the studies focused on the MP adoption factors are related to "*government policies, technological development, and technological acceptance*" [17, 19, 20]. Some studies, such as [21, 22], have observed consumers' / users' behaviors towards utilizing digital payments. The UTAUT model proposed by Venkatesh et al. [23], also known as "*the unified technology acceptance and use of technology theory*" examined technology acceptance by users and users' usage intentions. The UTAUT model, which identified the factors "*performance expectancy, effort expectancy, social influence, and facilitating conditions*" have been used in a number of studies to examine consumers' MPs and perceived MP benefits [1, 9, 24-26]. Primarily, trust in MPs has been mentioned as one of the bases for uncertainty and considered as a reason that led to the resistance towards MPs through mobile applications, as highlighted in previous empirical studies of MPs [27]. As per Guo et al. [28], the literature has determined that trust is an essential factor that causes non-adoption of MPs.

In the other study carried out by Al-Sharafi et al. [10] related to contactless payment during COVID-19, focusing on the importance of security and trust factors in the adoption of MPs, it was mentioned that the MPs during COVID-19 and post pandemic era there is a need to further investigate the effect of these two factors on sustainability and adoption. Zhao & Bacao [9] highlighted the importance of security as a factor in building consumers' trust in MPs, which also influences consumers' inclinations to use MPs. Also, Hellemans et al. [29] argued that there is no question that an easy, safe, and secure MPs process is an essential tool for advancing consumers' experiences and allowing consumers to quickly complete their MPs transactions. By reviewing the literature carefully, it is observed that several studies have been carried out for MP adoption during COVID-19, but all these studies used different factors / criteria for the adoption assessment. Probably, the inclusion of varied factors in previous studies was based on specific countries, policies, cultures, and technological infrastructure. There has been uneven growth in MP research across contexts, so the researchers are instructed not to align the results of MP studies in developed countries with those in developing countries [30].

Cash-based financial transactions in India are commonly carried out via paper currency, and this is the widely accepted leading monetary approach for all substantial commerce-based transactions [31]. The apprehension of a cashless society in India will undoubtedly not be easy due to the uneven dispersal of MPs services, where socioeconomic factors vary by location and region. Regions falling into metropolitan and urbanized cities are believed to have the potential to speed up the progression of MP adoption in India. The global economy and financial markets have been adversely affected by the outbreak of COVID-19, and as a result, digital payment systems have replaced cash-based transactions in India, similar to other countries [25]. To maintain social distance and guarantee personal safety during commercial transactions, MPs have been largely accepted by Indian customers and enterprises to abide by COVID-19 regulations [9]. However, India is one of the nations where the use of digital payments has increased recently due to the availability and access to mobile devices / smartphones, infrastructure improvements, and regulatory provisions from the government following the demonetization of currency. In fact, demonetization strategies enhanced MP usage in India. In the developing Indian market, MPs are a relatively new construct [32]. Despite providing accessibility and

benefits to customers, MP mechanisms have not been widely used in both developed and developing nations [33]. Studies related to MPs during COVID-19 and afterwards from an Indian perspective are very limited in the literature. Less technological adoption by the people within the countryside areas of India is clearly sighted. Studies [32, 34–36] related to MPs in India argue that perceived risk, perceived usefulness, acceptance readiness, innovativeness, trust, convenience, and social values are the primary factors affecting MP adoption. Further, operational infrastructure and technological facilities can positively influence consumers' intentions to enhance MP usage [35]. As per the authors' knowledge, the question of what influences contactless payment or MP adoption during the pandemic and usage continuation intention thereafter is still unexplored. Moreover, due to the application of various acceptance and adoption theories in the field, studies conducted in the Indian context have been contradictory in relation to the factors that affect MP usage, and most of these factors have overlapped with each other.

In the beginning of the pandemic, only a few research studies examined the impact of the pandemic emergency concerning to MPs adoption [9, 37, 38]. Furthermore, theoretical evidence for the use of MPs in emergency situations is inadequate [9] and there isn't enough empirical research looking at consumers' intentions to utilize and continue MPs services after they've been adopted [36]. Therefore, further investigation is necessary to understand consumers' adoption and usage continuation of MPs [34, 39]. There are inadequate empirical studies comparing the uptake and use of MPs technology before to, during, and following the pandemic crisis within the context of India [25]. It is therefore interesting for researchers to explore whether the consumers of MPs through the pandemic will remain using MPs in the future and what may encourage or impede such MPs usage behaviour. As this study is conducted at an afterwards of the COVID-19 pandemic so it addresses the following research questions: First, *what are the factors that might influence the consumers' intent to adopt MPs? Second, whether consumer's intention is to continue using MPs even after the pandemic situation?*

This paper is organized as follows. In the literature review section, we discuss literature related to MPs and identify research gaps. Then, we elaborate on a conceptual model supported by the theoretical foundations of MPs and formulate hypotheses. The methodology is discussed, and a model is developed. The data analysis and discussion of results are followed by conclusions regarding the study's theoretical and practical contributions.

2- Literature Review

MP has developed as prevalent online payment gateway to support various online payments and offering facility in completing the transactions to the users. One of the most important factors for the success of mobile commerce is MP. The adoption of various mobile devices and the development of new technologies have had a big impact on customers' choices regarding payment transactions [14]. The demand of MPs is due to the various associated benefits offered to both businesses and consumers, including quick and easy payment processing, the ability to store numerous loyalty cards conveniently on a mobile device, data collection for a variety of uses, and promotions that are tailored to users' purchasing patterns [22]. Conversely, to get the customers / users to accept and use MP systems, firms must overcome a number of obstacles, including a lack of trust, transparency, and a high risk of monetary losses. Lack of users' trust, system complexity, and the propensity for paying in cash are the main challenges that prevent consumers from utilizing MP [40]. Further, when consumers take a shift from cash to MP then a number of important factors such as privacy, security, trust, attitude, willingness, social influence, and technological aspects of MP consumers substantially consider [41]. However, COVID-19 pandemic has accelerated the MP adoption by various businesses and consumers too [34]. According to study by Bhattacherjee [42], "understanding information systems continuance: an expectation-confirmation model" determined the distinctions involving initial adoption and continued usage of technology using "expectation-confirmation theory" which means success of technology depends upon the consumers' usage continuance intention.

A number of theories have been employed to evaluate MP usage, such as technology acceptance model (TAM) [43], unified theory of acceptance and use of technology (UTAUT) [44], the UTAUT 2 [45], expectancy-value theory [46], mental accounting theory (MAT) [47], innovation resistance theory (IRT) [48], and diffusion of innovation (DOI) [49], out of these preceding theories, TAM and UTAUT were widely utilized for evaluation the MP adoption [50]. Nevertheless, the UTAUT was criticized for ignoring the characteristics of technology users, which may affect the usage of MP technology, whereas the TAM was criticized for offering broad information regarding people's opinions and acceptance of MP technology [35]. To describe certain context and research settings, these theories have been combined and employed with additional elements. To study the adoption of MP, factors perceived trust and risk were widely utilized to expand the UTAUT model [51]. Singh [51] study embraces perceived security and trusts factors and supported the UTAUT and Expectation Confirmation Model (ECM). ECM theory includes four primary constructs (confirmation, perceived usefulness, satisfaction, and continuance usage intention) [39]. Lee et al. [52] extended the UTAUT model by including privacy risk and studied the determinants of MP usage and the moderating effect of gender. Puriwat and Tripopsakul [39] carried out a study entitled "explaining an adoption and continuance intention to use contactless payment technologies during the COVID-19 pandemic" determined an adoption and continuance intention to use contactless technologies by integrated the "Expectation-Confirmation and Health Belief" models. This study revealed

that perceived usefulness was found to be significant determinant of consumer satisfaction, whereas perceived usefulness, susceptibility, seriousness, and satisfaction were found to significantly influence continuance usage intention of contactless payment technologies. Participant population in the research of Puriwat and Tripopsakul [39] was 142 which as per structural equation model (SEM) context is considered as quite low. Eka Putri et al. [38] study entitled "method of payment adoption in Indonesia e-commerce", has factors influencing the use of MP were divided into three primary categories including technological (feature, user interface, speed, platform, and security), behavioral (perceived ease of use), and personal characteristics (age, occupation, gender, education, and income).

Within the context of COVID-19 pandemic, consumers' perceptions related to the advantages of using technology can be positively influenced when the features of that technology can support them in specific situations. Upadhyay et al. [25] studied "consumer adoption of mobile payment services during COVID-19" and the meta-UTAUT model with perceived severity and self-efficacy factors. These two factors emerged as an indirect determinant of consumer use behaviour through attitude and effort expectancy. A study by Zhao & Bacao [9] in China shown that consumers' adoption intentions of MPs during the COVID-19 outbreak were influenced by both their technological and mental perspectives. In addition, the perceived advantages of MPs are highly influenced by social influence and trust, which is consistent with the pandemic situation. Reviewing the MP related literature has shown two connected issues. First, instead of analyzing consumers' long-term behavior, acceptance models examine their initial intent to adopt. Second, such models focus on the elements that accelerate the adoption of technology rather than those that delay it [15]. In a study, Hellemans et al. [29] highlighted that only perceived risk, perceived trust, perceived cost, and self-efficacy consistently demonstrated significant correlation within the UTAUT model, which has been expanded for MP evaluation. While these elements are known, there is little to no study that explores their causes, what they entail, when they apply, to whom, and how they might be modified or managed [53].

Al-Qudah et al. [2] in their study mentioned that digital payments growth was estimated to 9% per year from 2014 – 2019, while half of this growth was estimated in Europe in similar period. Whereas Puriwat & Tripopsakul [39] in their study stated that China adopted 23% contactless payment using e-wallet for purchases which indicated the high rate of online payments compared to many other countries. Additionally, research in future should determine to which extent findings acquired throughout the pandemic are applicable when the pandemic restrictions are lifted [29]. According Loh et al. [54], after the pandemic when restrictions were relaxed in Germany, most customers went back to offline and started making in-person supermarket purchases, while certain adopted and switched to online grocery shopping. Substantial growth in double digits is anticipated in upcoming years in the offering of MP services. Additionally, researchers and academics contend that businesses offering proximity payments such as Apple Pay and Google Pay offer consumers more reasons to use MPs [55]. According to Hassan et al. [55], researchers have investigated the customer usage experiences of MPs in their individual countries by applying quantitative and qualitative research approaches. By considering the social and economic context of MP, these researchers substantially utilized the value-based adoption model (VAM) and TAM as adoption theories to determine the adoption factors of MPs.

TAM [43] and UTAUT [44] theories are widely seen in the literature to assess the technology adoption and MP adoption phenomena. The TAM model has been broadly applied by researchers to comprehend and investigate mobile contactless MPs by modifying and expanding its core constructs [56]. To overcome the shortcomings of TAM and to resolve the obstacles posed by the various theories in employing for technological adoption Venkatesh et al. [45] introduced UTAUT model with constructs such as "performance and efforts expectancy, social influence, and facilitating conditions affect individual intention to use the technology" [25]. Even after substantial updates provided by UTAUT model for TAM, Taherdoost et al. [56] study considered the limitations in UTAUT model, which essentially leads to the reasonable research gap. However, selection of appropriate constructs to update the TAM and UTAUT theories and assimilation of these constructs always offers researchers the likelihood to test the technological adoption. Coming to MP systems, the effective utilization of MPs depends on identifying the reasonable adoption elements and the primary challenges which MPs have been facing. There is a lack of consensus regarding the challenges and important elements that make up the effective usage of MPs particularly in a nation like India. Consequently, a clear knowledge gap about the challenges and essential elements of using MPs has been observed. Despite the availability of more articles on MPs or digital payments, there is little peer-reviewed research on how they are adopted and what factors influence it. Particularly, to overcome this research gap, a thorough literature evaluation and empirical research are still needed to provide suggestions for future research on emerging economic nations concerning the adoption of MPs. The review of earlier research mentioned above enables us to examine many research gaps. Research on the uptake of MPs in developed economies sometimes ignores the existence of a reliable financial system. Studies on MPs largely emphasize developing nations. To study potential drivers of MP adoption in the context of an emerging economy, we explicitly strive to incorporate a theoretical approach. Within the context of India, Upadhyay et al. [25] stated in his research that India is a heterogeneous and multilingual society, so the existing study's findings and models are not appropriately applicable to the Indian setting.

To address and overcome the above discussed research gaps, our study developed a model that considered TAM and UTAUT as base theories and reasonable updates were derived from the extensive review of literature and presented in

proposed model for MPs adoption evaluation. The succeeding section highlighted the proposed model with constructs "expected performance, transaction risk, technological transparency, social influence, perceived usefulness, and usage continuation intention" and conceptualized nine hypothesized relationships among these proposed constructs. Inclusion of these constructs and detailed relationships among constructs given in successive section are fully supported by extensive review of literature.

3- Research Hypothesis Development

This section elaborates on the formulation of hypotheses addressing features of constructs and relationships within the proposed model. Figure 1 shows the proposed conceptualized model for evaluation of the consumers intent to accept MP. Based on previous studies and arguments presented in preceding literature review section, this section identifies the novel constructs and hypothesized their relationships. About 10 hypotheses are presented in this study pertinent to the main research topic (see Figure 1).
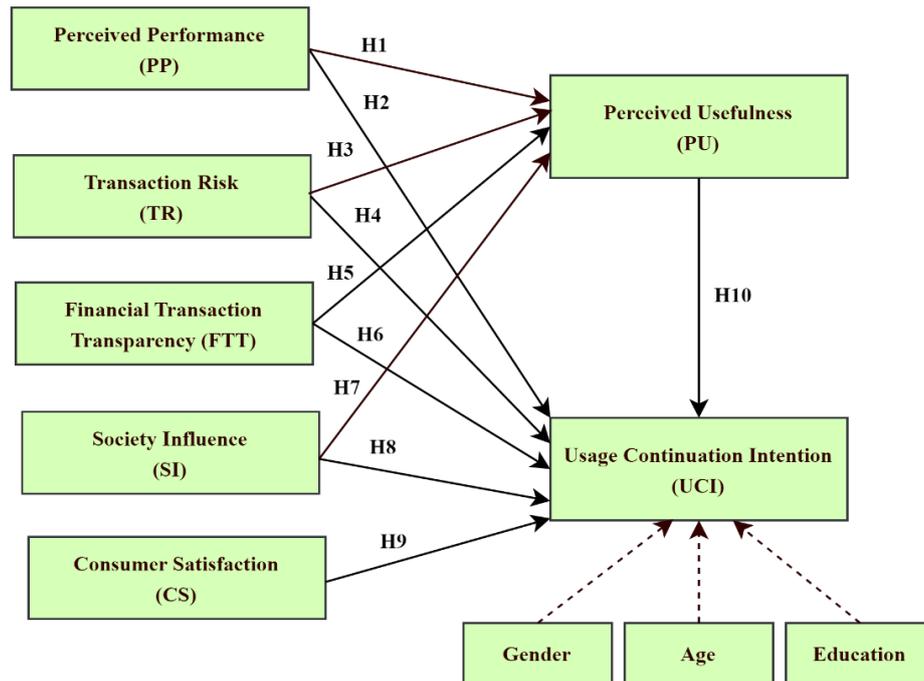

Figure 1. MP acceptance model

Perceived Performance (PP): PP describes the extent to which a consumer's usage of technology benefits them when engaging in a particular activity [51]. Some studies used the construct "performance expectancy" however within the context of present study "perceived performance" was found appropriate. According to Venkatesh et al. [57], perceived performance is a considerable predictor of consumers' views and intents about the acceptance of technology. Users are particularly concerned about payment efficiency and accuracy especially during the COVID-19 pandemic [9]. Performance expectancy specifically has considerable influence on users' adoption intentions in diverse circumstances in the MP adoption element [9, 22, 58]. Perceived performance is regarded as a crucial component that positively influences end-user sentiments about the system [59]. Consumers are currently looking for shopping options that are more convenient. Consumers' expectations have changed as a result of technological advancements in the payment ecosystem, which now offer them diversity, speediness, accessibility, and savings [60]. Ease of use has been determined to have the greatest impact on MP adoption since it raises consumers' perceptions of the worth of technology. Perceived performance as a major factor in determining behavior when using mobile banking system [61, 62]. Following hypotheses are deduced as below:

Hypothesis 1: *Perceived performance has a positive influence on the perceived usefulness of MP.*

Hypothesis 2: *Perceived performance has a positive influence on the usage continuation intention of MP.*

Transaction Risk (TR): TR is influential in the acceptance of MP technology. MP transactions may carry a small but possible risk of undetermined potential related to specific criminal acts, such as theft, account hacking, fraudulent transactions, and data breaches [63, 64]. When people use a credit card or another type of card for performing online financial communications then they perceive risk in such financial transactions. People are more prone to consider the potential risks involved in such circumstances [65]. Developing economies have unique conditions like products cost sensitivity and low digital utilization trends in society, the significant chance of failure could have an impact on the

continued use of MPs in these nations [66]. Within the context of MP adoption during COVID-19, Al-Qudah et al. [2] explained the positive relationship between perceived usefulness intention to use. Yang et al. [41] extended the TAM and studied the adoption of MPs among the older adults. Their study mainly classified perceived risk in "privacy, performance, psychological, financial, and time" related risks and shown how these various risks impact the perceived usefulness and behavioral intention of adult older in using MPs. Following hypotheses are deduced as below:

Hypothesis 3: *Perceived risk has a positive influence on the perceived usefulness of MP.*

Hypothesis 4: *Perceived risk has a positive influence on the usage continuation intention of MP.*

Financial Transaction Transparency (FTT): MPs are identical to other forms of cashless payment, such various cards bank issue to perform or complete the financial transactions. It seems logical that this assumption is correct for two reasons. First, while looking at its charging system, MPs often use an established payment method, like banks' various cards. Second, compared to other cashless payments given its psychological process, MP too has limited transaction transparency [67, 68]. Studies highlight that payment methods might affect consumers' inclination to pay and consumption patterns [69]. Many companies have modified their payment systems to include the MP option in compliance with COVID-19 regulations, enabling authentic identity and higher FTT for customers. FTT is associated with privacy issues, which have a detrimental effect on adoption-related decisions [15]. The continuous use of MP might be influenced by perceptions of security and trust [9]. Users' confidence in the MP systems providers and their investment can increase when MP systems offer suitable security features and methods [51]. Additionally, FTT in MP systems enhances perceived usefulness and consumer's intention to continue using MP systems. Following hypotheses are deduced as below:

Hypothesis 5: *Financial transaction transparency has a positive influence on the perceived usefulness of MP.*

Hypothesis 6: *Financial transaction transparency has a positive influence on the usage continuation intention of MP.*

Society Influence (SI): SI refers to the extent to which consumers value a particular technology in light of their peers' and influential people's perceptions [70]. SI has been demonstrated to be a major predictor of behavioral intentions in several research that considered UTAUT [71]. The SI construct has been cited as a significant influencing factor in numerous MP research. It is comparable to the subjective norm construct utilized in the TAM [50]. It demonstrates how a person's decision to accept MP services was influenced by the opinions of others. The efficacy of such services is made more widely known when friends spread favorable word-of-mouth about them, and people may feel more inclined to use them. In this context, the term "word-of-mouth" refers to informal communication that shapes people's opinions, attitudes, and actions towards various goods and services. The relationship between MP usefulness and continuous usage is discussed by Ambalov [72]. The adoption of MP technology among Indonesian Batik SME consumers has been influenced more by the level of technology users' understanding than by any other factor during the COVID-19 epidemic [73]. According to Morosan & DeFranco [74], society influence significantly influences consumer's intentions to use MP. Following hypotheses are deduced as below:

Hypothesis 7: *Society influence has a positive influence on the perceived usefulness of MP.*

Hypothesis 8: *Society or community influence has a positive influence on the usage continuation intention of MP.*

Consumer satisfaction (CS): CS is the outcome of consumers' decision on the subject and the degree to which the features of the product or service fulfill the expectations of the customer [75]. Bhattacherjee [42] refers satisfaction as "a psychological or affective state that is connected to and produced by a cognitive evaluation of the gap between expectancy and performance is referred to as satisfaction". It is important to ascertain the current customers' satisfaction in order to gain a deeper understanding of the consumers' usage intention towards MP. In other words, to have deep understanding about the consumers' usage intention to use MP, it is suggested to evaluate the customers' satisfaction [76]. Geebren et al. [77] asserted that satisfaction has been commonly acknowledged as a crucial evaluating indicator of continuous continuation intention to measure the success of e-commerce.

Hypothesis 9: *Consumer satisfaction has a positive influence on the usage continuation intention of MP.*

Perceived Usefulness (PU): PU is described as "the degree to which users evaluate whether using a particular good or service can enhance their productivity and effectiveness at work" [43]. Present research study considers the degree of consumers' evaluation of whether MP technologies can make the consumers' proficiency. Within the context of MP, it can be stated that consumer's greater satisfaction leads to continued usefulness of MP. Perceived usefulness reflects customers' post-adoption expectation that they will derive value from using any product [42]. It can also be argued that perceived usefulness of MP represents the consumers' subjective perceptions of how technology enhances their transactional experience [58]. Additionally, it has been suggested that consumers form opinions regarding a new technological or information system use in the early stages post-adoption [74]. Talwar et al. [33] hypothesized the positive relationship between perceived usefulness and MP continuation intention. Which means consumers evaluate and see the advantages of a new technology then they are more likely to accept, and their continuation intention turn to adopt for future usage. Following hypothesis are deduced as below:

Hypothesis 10: *Perceived usefulness has a positive influence on the usage continuation intention of MP.*

Usage Continuation Intention (UCI): UCI is the term describing a person's willingness and effort to carry out the underlying behavior. According to researchers and academics, the different motivational variables that cause consumers to act in a certain way could be captured by intents. Usage continuation intention of MP positively influenced by various factors discussed in preceding explanations of conceptualized hypotheses. TAM theory also confirms the positive impact of perceived usefulness on user's behavioral intention to use the system [43]. Similarly, UTAUT theory confirms that the expectations of effort and performance, social pressure, and enabling circumstances affect the user's behavioral intention to utilize the technology [23, 57]. With reference to MP, undoubtedly, the UTAUT model is quite useful for analyzing how technology is incorporated into literature, especially for identifying the aspects that affect both the intention to use and the actual usage of technology. Finally, while researching consumer's behavioral intent towards continue usage intention of MP technologies, consumer characteristics such as gender, age, education, and experience with MP technologies should be identified as control factors and found to be investigated in this study since these variables show some effect on the association between the dependent variables of proposed model and other factors [3, 10, 52]. To test the proposed hypotheses, we conducted an empirical analysis as described in the next section.

4- Research Methodology

Surveys are a common research tool owing to their respondent-friendliness, as they are pliable to incorporate knowledge, traits, and experience into their responses [78, 79]. The focal point of this research survey was to examine and analyze the research conceptual framework. The hypotheses were tested by meta-analysis, wherein previous studies pertaining to IT adoption in general and mobile payment technology, in particular, were collated and investigated [80]. Meta-analysis has been widely adopted in research studies owing to its dependability, cost-effectiveness, and time-effectiveness [81, 82]; the cause of which the current study resorts to this method of investigation.

Each variable is studied using an instrument with a seven-point Likert scale, wherein '1' indicates strong disagreement and '7' indicates strong agreement. A seven-point Likert scale was adopted in this survey due to the reflective character of the research questions, and the necessity for respondents to correct, vivid, subjective interpretation of the survey items [83]. The seven-point Likert scale is evinced to be sensitive, and reduce interpolations, while yet being sufficiently compressed to answer proficiently. The seven-point Likert scale is extremely simple to use and delivers great objective precision and accuracy [84]. The instrument was administered online, for convenience and to reach a larger audience [85]. A pre-study was conducted to test and thematically examine the survey design's suitability, and validity; and allow the researchers to enhance its efficiency [86, 87]. Then, a pilot test was carried out to develop the measuring equipment [85, 88, 89].

4-1- Measurement Scale Development

The measurement scale that this research adopted is as follows: Transaction Risk; in this research, different items were used to measure TR. These items were adapted from previous studies such as Kaleta & Mahadevan [65], which examined "the differences in perceptions of trust, privacy and risk in home and public Wi-Fi internet channels". Leong et al. [63] that examined the "users' MP intention". Also, Dahlberg et al. [90] investigated "FinTech payments in the era of COVID-19". Therefore, considering the context of present study 4 items were identified from preceding studies to measure the TR in MP and each measurement item assessed for independent use. Financial Transaction Transparency; for the measurement of FTT a different number of items were adapted from previous studies such as Zhao & Bacao [9], this study examined "How Does the Pandemic Facilitate Mobile Payment?". Therefore, considering the context of present study 4 items were adopted from the mentioned study to measure the FTT in MP. Perceived Usefulness; this study adopted 4 measurement items to measure PU from the previous studies such as [63, 91, 92].

Also, some of the selected items have been used in research by Daragmeh et al. [90] which used to measure the usefulness of "FinTech payments in the era of COVID-19". Following the context of our study 4 items were found appropriate to measure PU. Society Influence; effect of society influence on usage continuation intention was studied by [93-95]. Tu et al. [95] investigated "the adoption of QR code MP technology during COVID-19" and addressed the impact of SI on behavioral intention, whereas the research that conducted by Talukder et al. [94] used to measure the similar impact. This study adopted only 4 items to measure the SI on MP usage intension. Perceived Performance; is related to PP where 4 different items were used to measure. These items were adapted from previous studies such as Zhao & Bacao [9] this study used to investigate the MP adoption and indicated the expected performance positively affects users' adoption intentions. Similarly, Talukder et al. [94] in their study they address the effect of performance expectancy on behavioral intention. This study identified 4 items from preceding study to measure the EP and its effect on UCI. Consumer Satisfaction (CS) in this study related to the satisfaction of consumers in using the MP transactions. 4 items were identified from the literature to measure CS and its effect is studied on UCI. Usage Continuation Intention; this study identified 4 items in measurement scale to measure the UCI by MP user during COVID-19 from previous studies such as [63, 91, 94]. For more details about the measurement scale that is adopted in this study see Appendix I.

4-2- Reliability of Measurement Scale

A solid research study with appropriate instrument design and precise performance is essential to produce high-quality results, as testing its feasibility before executing the main study may be highly advantageous [96, 97]. In this research study, the item reliability and validity were already established through conducting pre-study, pilot test as recommended by Tu et al. [95]. In the pre-study stage, three of the university academic staff checked, reviewed, and validated a survey tool. They offered recommendations for structural alterations to a few questions and the removal of uncertainty.

Then, a pilot study was conducted as the second technique to validate the survey tool. This technique is a miniature study that aids in the design and adjustment of the major study [98, 99]. In large-scale investigations, the pilot study frequently precedes the main trial to assess its reliability and validity. A priori, researchers must entirely inter-articulate the study's objective, research questions, techniques, and timeline [84]. The pilot study orients the investigators to the research design of the major investigation; while assisting in the appropriate choice of research technique based on the research question [84, 97].

The preceding pilot study examined the survey design, and its validity and identified deficiencies, to enhance survey effectiveness [87]. Cronbach's alpha reliability is a measure of internal consistency that shows how well all measurement items on a scale assess the same concept [100]. The amount of quality assessment elements in a construct determines the value of Cronbach's alpha [101]. Internal consistency is a measure of item-to-item correlation; to calculate Cronbach's alpha for a construct, at least three measuring items are necessary [100]. Cronbach's alpha spans between 0 to 1, with higher values indicating more reliability of the concept and measurement scale employed for the survey [101]. A Cronbach's alpha value of 0.9 or more is excellent, a value of 0.8 or greater is good, a value of 0.7 or greater is acceptable, a value of 0.6 or greater is questionable, a value of 0.5 or greater is poor, and a value less than 0.5 is unacceptable, as stated by Mabad et al. [84], Warmbrod [102], and George & Mallery [103].

At this stage, 25 questionnaires were administered to various participants, with 22 survey replies received. Cronbach's alpha was used to evaluate the reliability of the research tool, relative to their conceptual structure [104]. The comparison of internal stability using Cronbach's alpha values is shown in Table 1. The reliability varied from 0.721 to 0.850, suggesting that all the measures had a good level of internal consistency [105].

Table 1. Reliability indicators

Constructs	No. of items	Cronbach's Alpha
Perceived Performance (PP)	4	0.850
Transaction Risk (TR)	4	0.749
Financial Transaction Transparency (FTT)	4	0.721
Society Influence (SI)	4	0.828
Consumer Satisfaction (CS)	4	0.801
Perceived Usefulness (PU)	4	0.838
Usage Continuation Intention (UCI)	4	0.760
Total	**28**	

Participants in this research study were drawn from a wide range of different consumers who have using mobile payment. The research study focused on responses, particularly consumers how had a good experience in using mobile payment. Each participant was received a link to the survey. Also, participants been asked to share the link among their friends particularly people with good experience in using mobile payment technology, and this strategy called snowballing strategy [106]. Snowballing strategy allows researchers to contact informants using the contact information given by other informants. The 'snowball' effect represents the core quality of this sampling process and its accumulative dimensions in this case [106]. To check repetitive attempts of the anonymous survey by the same respondent, the IP addresses of responding devices were kept as log information for audit reasons.

4-3- Data Collection

The online survey link was set up and made available 24/7 from February 8th, 2021, to May 30th, 2021. The instrument yielded 327 individual replies from various consumers who have using mobile payment in their payment process. Following the collection of study data, a step of preparation was implemented. This phase was necessary to discover input mistakes, missing data, and outliers to clean the input data and properly execute the primary statistical analysis [107]. According to Bazeley [108], data preparation has a direct impact on analysis outcomes since mistakes in data, missing data, and extreme responses can skew the data; affect statistical analysis and lead to inaccurate conclusions [86].

To prepare the data for the research study, the following treatment were garnered: (1) Checking received data to ensure it was accurately arranged, uniformly entered, and complete [109], (2) Ensuring data accuracy and quality before

input into SPSS, which included searching for illegitimate codes, illogical relationships, and testing the basics in filter questions [110], and (3) Numbering the responses and assessing their relevance based on participant qualifications, missing data, and how the questions were answered [78, 111]. Considering the preceding steps, the number of individuals replies was decreased from 327 to 304 and included in the analysis stage. Table 2 shows the demographics of the respondents that this research includes in the analysis stage.

Table 2. Research participants details (N = 304)

Demographics	Frequency	Percent
Gender		
Male	144	47.05%
Female	160	52.28%
Age		
18 to 20	21	6.86%
21 to 30	95	31.03%
31 to 40	132	43.17%
41 to 50	49	16.01%
51 and above	9	2.93%
Education		
SSC and lower	17	5.55%
Bachelor	119	38.88%
Master	148	48.39%
PhD	22	7.18%
Knowledge related to Mobile Payment		
Little knowledge	12	3.94%
Some knowledge	34	11.18%
Good knowledge	110	36.19%
Excellent knowledge	148	48.69%
Employment status		
Private	159	51.96%
Public	40	13.07%
Students	107	34.97%
Total	**304**	**100 %**

Table 2 represents descriptive statistics, which included the respondent's gender, age, education level, employment status, and their knowledge related to mobile payment process. A total of 52.28% of respondents are female. In addition, a total of 43.17% of the research participants are between 31 – 40 years old. Also, about 48.39% of the survey participants were holding master's degree. Furthermore, 48.69% of contributors had proficient and exceptional knowledge related to the mobile payment process. In all, 51.96% of the research participants worked in private sector organizations.

5- Research Results

5-1- Measurement Model Fit Indices

The present study applied statistical methods to evaluate the measurement model fit indices and then reliability and validity of the proposed scale was determined. To verify internal consistency of the measurement, the validity and reliability were tested. The essential factor analysis technique helps to ensure scale validity. Using confirmatory factor analysis (CFA), we primarily examined the measurement model fit indices available in Table 3. AMOS Graphics 22 was employed to carry out CFA for evaluation of measurement model fit indices. Measurement scale's validity can be confirmed using the essential factor analysis technique and proposed scales can be updated as well using this testing approach [112]. The goal of CFA is to assess the theories, this is why it is incorporated in the research. Three different rounds of CFA were performed to confirm the measurement model fit and as the outcome measurement model fit indices achieved the benchmark values available in Tables 3 and 4. After performing multiple rounds of CFA for achieving measurement model fit and refining our proposed model, all the identified items corresponding constructs were successfully loaded with high factor loading accepted score >0.50 [107].

Table 3. Model fit indices

Model Fit Indices	Obtained Values	Acceptable Values	Reference
Chi-square: CMIN / DF	1.496	< 3	
GFI	0.921	>0.9	
AGFI	0.903	≥0.85	
CFI	0.947	≥0.85	
RMR	0.047	<0.05	
NFI	0.923	≥0.85	[116-120]
RFI	0.931	≥0.85	
IFI	0.948	≥0.85	
TLI	0.937	≥0.85	
RMSEA	0.040	<0.08	

Table 4. Measurement scale's reliability and validity

Factors	Items	Standardized Regression Weights	($α_c$)	Composite Reliability (CR)	SMC (R^2)	AVE
Perceived Performance (PP)	PP1	0.799			0.639	
	PP2	0.672	0.806	0.826	0.452	0.545
	PP3	0.822			0.676	
	PP4	0.644			0.415	
Transaction Risk (TR)	TR1	0.682			0.465	
	TR2	0.588	0.707	0.735	0.346	0.571
	TR3	0.610			0.358	
	TR4	0.687			0.473	
Financial Transaction Transparency (FTT)	FTT1	0.776			.603	
	FTT2	0.668	0.820	0.825	.446	0.557
	FTT3	0.857			.735	
	FTT4	0.630			.397	
Social Influence (SI)	SI1	0.619			0.384	
	SI2	0.700	0.776	0.777	0.490	0.561
	SI3	0.639			0.408	
	SI4	0.768			0.589	
Consumers Satisfaction (CS)	CS1	0.812			0.659	
	CS2	0.842	0.846	0.854	0.709	0.596
	CS3	0.782			0.612	
	CS4	0.635			0.403	
Perceived Usefulness (PU)	PU1	0.753			0.567	
	PU2	0.572	0.740	0.766	0.327	0.552
	PU3	0.664			0.441	
	PU4	0.688			0.474	
Usage Continuation Intention (UCI)	UCI1	0.689			0.475	
	UC12	0.716	0.769	0.765	0.512	0.583
	UC13	0.666			0.444	
	UC14	0.606			0.368	

Confirmatory factor analysis (CFA) and "*reliability and validity*" assessments were used to conduct the preliminary analysis for confirming the measurement model fit. CFA was used to assess the measurement model's goodness-of-fit (GOF). During refinement, model fit indices particularly (Chi-sq/DF=1.496, GFI=0.921, AGFI=00.903, RMSEA=.040, RMR=0.047, CFI=0.947) met the threshold and confirmed the goodness-of-fit of the proposed model. For more details see Table 3.

5-2- Reliability and Validity of the Scale

The constructs' validity and reliability were assessed using a variety of methods. The recommended acceptable level for Cronbach's alpha was ≥0.70 [117], and the values for the constructs were between .707 and .820. Standardized regression weights (SRWs) have been used to assess convergent validity. Here, the factor loading is proposed to be 0.50 or higher [107]. The values returned ranged from 0.572 to 0.857, which indicated the confirmation of convergent validity. The recommended value for squared multiple correlation (SMC) is ≥0.30. This correlation shows the dependency between items present within factor determination [107, 118]. The returned values of the SCM test were in the range of .358 to .735. Last, a value larger than 1.96 is the recommended value for the critical ratios (CR) [118], and the values that were returned are between 6.685 and 11.400. Hence, the constructs of the research model have high regression validity, as indicated by these measures. Table 4 shows all measurement scale's reliability and validity tests values.

The measurement model fit was further confirmed by moving on to the determination of discriminant validity. Table 5 provides a clear explanation of how discriminant validity was achieved because its diagonal values are higher than its residual column values.

Table 5. Discriminant validity test results

	TR	FTT	SI	CS	UCI	PU	EP
TR	**0.755**						
FTT	0.144	**0.746**					
SI	0.901	0.109	**0.748**				
CS	0.074	0.059	0.098	**0.772**			
UCI	0.113	0.290	0.081	0.096	**0.763**		
PU	0.092	0.773	0.037	0.128	0.206	**0.742**	
EP	0.141	0.194	0.167	0.030	0.202	0.187	**0.738**

5-3- Structural Equation Model

Following the validation of the measurement model, the structural model is evaluated by looking at the model's prediction abilities and the linkages between the constructs. The goal of this proposed MP research study was to identify the critical factors that might affect MP acceptance during COVID-19 and to assess the usage continuation intention of the consumers. Seven factors were extracted and tested for their influence on the consumers' MP acceptance and consumers' usage continuation intention while consumers utilize the application of MP. According to Arbuckle [119], a methodology has been advanced by SEM in which the association among latent variables is determined.

Table 6 shows the regression analysis results of the variables used in the proposed MP acceptance model. Findings confirmed 8 hypothesized relationships and gained positive support. The path coefficient (β), critical ratio (t-value) and p value were used to determine the SEM results in this research. For a t-value greater than 1.96 and a p value of *** p < 0.001, ** p < 0.01, * p < 0.05, the standard decision rules are used.

Table 6. Structural model fit results

Hypotheses	Structural Path		Hypothesized Path Relationship Results				
			Path Coefficient (β)	S.E.	C.R. (t) (t)	P-Value	Results
H1	PP →	PU	0.379	0.074	5.878	***	Supported
H2	PP →	UCI	0.413	0.077	6.372	***	Supported
H3	TR →	PU	0.090	0.042	2.321	0.117	Rejected
H4	TR →	UCI	0.361	0.062	5.665	***	Supported
H5	FTT →	PU	0.394	0.068	6.121	***	Supported
H6	FTT →	UCI	0.121	0.039	2.173	0.112	Rejected
H7	SI →	PU	0.278	0.059	5.276	***	Supported
H8	SI →	UCI	0.403	0.073	6.157	***	Supported
H9	CS →	UCI	0.446	0.075	6.894	***	Supported
H10	PU →	UCI	0.479	0.068	6.120	***	Supported

Regression results supported the 8 hypotheses out of 10 and constructs are positively associated with consumers' MP usage continuation intention. Hypothesized relationships among (TR and PU) and hypothesized relationship among (FTT and UCI) were rejected due to insignificant p-value (0.117) and p-value (0.112). Forthcoming section discusses

results in detail, obtained through performing the structural model fit analysis. Figure 2 shows in detail the MP acceptance path diagram for these final relationships. Age, one of the control factors, significantly influenced the consumer's MP usage continuation intention, although consumer's gender and education had no significant impact on MP usage continuation intention. Age with ($\beta = 0.279$, $p < 0.01$) significant influenced the consumer's MP usage continuation intention. This finding is similar to the finding of Li and Li [120]. Age is variable which was found as significant moderator in Kapoor et al. [121] study and considered that youth consumers are much more technologically savvy and friendly than aged consumers.
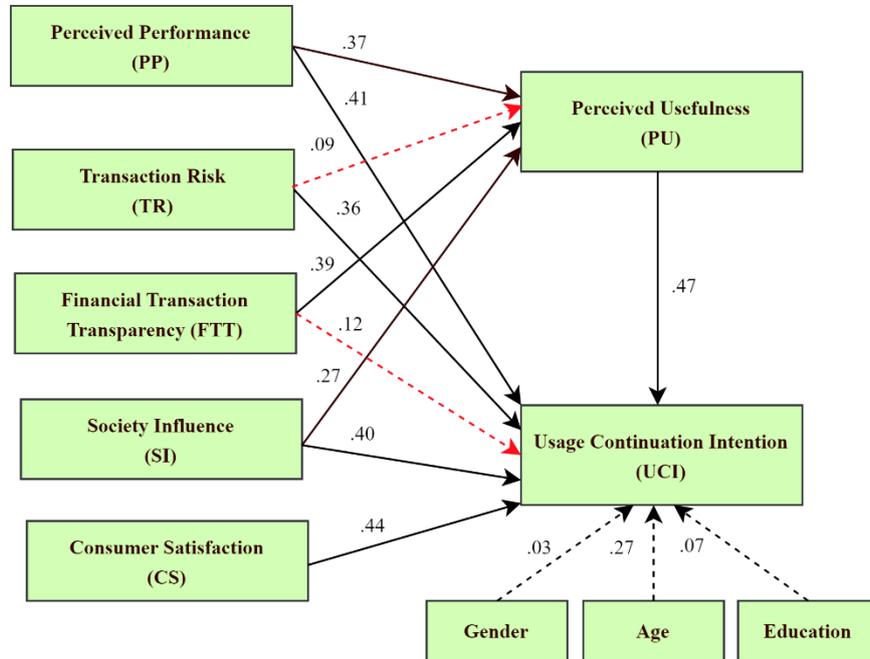

Figure 2. MP acceptance path diagram

6- Results Discussion

Examining the variables that affect MPs usage continuation intentions at the later stage of COVID-19 pandemic in India was the goal of the current empirical study. A variety of factors were identified in the present study to determine the consumer's intention to continue usage of MP during COVID-19. The introduced framework assimilates both TAM and UTAUT models and both TAM and UTAUT's core assumptions were found to be supported in this research. The introduced integrated framework embraced (PP, TR, FTT, SI, and CS) as independent variables, whereas PU and UCI are the dependent variables.

Figure 2 illustrates that Hypotheses H1, H2, H4, H5, H7, H8, H9, and H10 were accepted and H3 and H6 were rejected, as the obtained p-values (0.117 and 0.112) did not meet the specified criteria (*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$), indicating that TR did not positively influence PU and FTT did not influence UCI when consumers using MPs. However, PP, TR, FTT, SI, CS, and PU show relatively good impacts on usage continuation intentions during COVID-19, as they met the suggested criteria (*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$). Khanra et al. [15] in their research consider that TT is related to privacy issues; however, their study shows the negative influence of TT on the intention to adopt MP services. Similarly, the authors' present study does not show the impact of FTT on the UCI to continue using MP services during COVID-19 in India. In the present study, trustworthiness, MP transparency, allowing authentic transactions, legal guidelines, and MP options (according to COVID-19 guidelines) were included as FTT items; however, FTT did not influence the consumer's intention to continue using MP, indicating that participants who used MP options during COVID-19 in India look for better FTT and expect clear MP guidelines to be followed during COVID-19. Further, TR didn't influence the PU due to insignificant p-value (0.117) which shows no relationship in present study, however TR shows reasonable influence on UCI which means transactional risk directly impact the MP consumer's usage continuation intention. Some studies [1, 2] show negative and indirect influence of TR on usage intention in MP environment.

Hypothesis (H1&H2): Hypothesized relationship H1 with path analysis (PP → PU) shows positive hypothesized relationship among the consumers' perceived performance and consumers' perceived usefulness of MP through accepted values ($\beta = 0.37$, $t = 5.878$, ***p value). Whereas, hypothesized relationship H2 with path analysis among (PP → UCI), PP shows the positive relationship with the consumers' MP UCI through accepted values ($\beta = 0.413$, $t = 6.372$, ***p value). Venkatesh et al. [23] in their research explained performance expectancy as "*the degree to which people believe*

that adopting the system would help them to improve their job performance". Earlier studies on MPs adoption identified performance expectancy as a key factor which influences the individuals' usage intentions to utilize MPs [94, 122]. In addition, Jung et al. [123] in their study found performance expectancy as influential factor of customer behavioural intention towards using MP. Finding of the present authors' study is consistent with previous findings where these authors stated the positive relationship among performance expectancy and intention to use the MPs. Items such as convenient mode of payment (PE1), performing other parallel activities (PE2), quick transaction (PE3), and easy accessibility (PE4) are responsible for efficient payment transaction options and were used to measure consumers' PP. This relationship confirms the importance of the performance of MP system which enables participants to increase their participation in performing transactions. MP performance expectancy characteristics such as quick transaction completion, easy accessibility, and convenience [25, 33] elevate participants' confidence and hence impact on the intention to continue usage.

Hypothesis (H3 & H4): Hypothesized relationship H3 with path analysis (TR → PU) was rejected as discussed earlier however hypothesized relationship H4 with path analysis (TR → UCI) shows the positive relationship among TR and consumer's UCI through accepted values (β =0.36, t =5.665, ***p value). This indicates that consumer's perception about risk while making online payment is the determining factor which encouraged consumer to adopt MP during pandemic. This relationship is also confirmed in other study carried out by Liébana-Cabanillas et al. [22] which shows the positive influence of perceived risk on the intention to use MP services in India. Further, Talwar et al. [33] also studied risks and impact of these risks on users' continuation intention of MP. These two studies supported the hypothesized relationship among TR and UCI. TR in present study included the item security in online payments (TR1). Here, the consumer perceives the certain level of "transaction security" provided to him while he makes MP transaction through online banking, debit, and credit cards. MP user is also concerned about his sensitive information (TR2) and individual information (TR3) which usually included while making the MP. Risk free transaction (TR4) during COVID-19 were included in TR. Risk arises from a disparity between customer expectations and the expected outcomes of digital banking technologies. These four items were found to be successfully loaded and confirmed their association with UCI in the presented framework. Confirmed hypothesized relationship acknowledged that the TR is a significantly important factor for participants of MP and once the participants understood that there was no risk in performing MP through MP systems then only their intention was inclined towards the continuous usage. Consumer's perception related to transactional risk is essential element related to consumer's decision to avail financial services or to embrace other new online payment service options [121].

Hypothesis (H5 & H6): Hypothesized relationship H5 with path analysis (FTT → PU) among FTT and consumers' PU of MP shows the positive relationship and obtained values (β =0.39, t =6.121) confirmed this hypothesized relationship H5. Bhattacherjee [42] in their study used "Expectation Confirmation" (EC) as variable which indicates the "users' perceptions of the congruence between the expectation of information system usage and its actual performance". Further, Bhattacharjee [42] also confirmed the hypothesized relationship "expectation confirmation has a significant positive effect on the perceived usefulness of mobile payment contactless technologies". Present study also confirmed this hypothesized relationship. Al-Sharafi et al. [10] in their study conceptualized the hypothesis "consumers' expectation confirmation as a factor has a significant positive effect on the perceived usefulness of mobile payment contactless technologies". In present study, author confirmed the similar relationship among consumer's financial transaction transparency with perceived usefulness which means financial transaction transparency is a significant factor which determine the consumer's perceived usefulness of MP. Path analysis for hypothesized relationship H6 between FTT with consumer's UCI of using MP returned values (β=0.121, t=2.171), however, this relationship was not supported due to insignificant p-value (0.112).

Items FTT1 (trustworthy), FTT2 (transparent while making transactions), FTT3 (authenticate transaction), and FTT4 (adhere to legal guidelines) loaded successfully on FTT. Aji et al. [64] mentioned that regardless of cashless payment transaction in Malaysia and Indonesia during COVID-19, citizens of both the countries are preferring traditional payment method. This is due to the fear in online transaction due to distrust and fraudulent activities hence transaction transparency arises a question among MP consumers' fraternity towards the continuous usage intension of MP payment. Previous studies emphasized the importance of transaction trust in transparent MP services which draw the MP users' attention concerning continuance usage [33, 41]. Consequently, Khatun et al. [124] emphasized the importance of endorsing the fact that mobile banking transactions are secure and reliable enough to persuade potential users to make MP. However, the use of cutting-edge digital technologies, such as effective MP apps, quantum cryptography, 5G, and blockchain technology choices, might enable secure and reliable transparent mobile transaction services and future FTT. Many firms are reluctant to reveal comprehensive financial transaction information, especially on digital platforms, due to concerns about financial security [120]. Foregoing discussed reasons clearly indicate and justify the cause of rejection of the hypothesis H6 as participants are looking for more financial transaction transparency in their MP transactions.

Hypothesis (H7 & H8): Hypothesized relationship H7 (SI → PU) among SI shows the positive relationship with consumer's PU of MP through accepted significant values (β =0.27, t =5.276, ***p value). Zhao & Bacao, [9] validated the relationships among SI with user's perceived benefits related to the usefulness of MP during COVID-19.

Additionally, society influence has a huge impact on how consumers view the benefits of utilizing MP systems as a factor in forming their attitudes towards the usefulness of the MP services. Similarly, hypothesized relationship H8 (SI → UCI) among SI shows the positive relationship with consumer's UCI of MP through accepted significant values (β =0.40, t =6.157, ***p value) which is similar to the studies [9, 25, 122] addressed positive relationships between SI and continuation intention in their model. Reiting et al. [125] in their study addressed the effect of social influence on intention to use the MP whereas, within the context of MP, Lin et al. [18] highlighted the positive relationships with users' behavioural intentions towards using MP during COVID-19. These preceding studies evidently confirm the hypothesized relationship (SI → UCI) which conceptualized in present author's study. Items usage by friends (SI1), continuous motivation (SI2), MP beneficial during COVID-19, (SI3), and friends considered MP as safe option (SI4) chosen for factor were loaded successfully and confirmed their association with SI. This relationship identified the important role of society and social influences as motivating factors to increase the participants' adoption of MP which further impact the intention to continue usage. An individual's mental expectations and consumer's behavioural intention are significantly influenced by society influence or pressure and the opinions of significant, relevant persons. Consumers tend to view MP as a beneficial and valued financial transaction option when they hear recommendations from their close friends or families that it is advantageous for protecting their personal safety by avoiding contact with people during a transaction process [9].

Hypothesis (H9): Hypothesized relationship H9 (CS → UCI) among CS shows the positive relationship with consumer's UCI of MP through accepted significant values (β =0.44, t =6.894, ***p value) which is similar to the study [39] addressed positive relationships between satisfaction and continuation intention in their model. Similar study "understanding the consumer's intention to use the e-wallet services" by Ariffin et al. [126] hypothesized the relationship among user satisfaction with consumer's intention to continue use of e-wallet and confirmed the positive relationship. Ariffin et al. [126] also mentioned that customers today have sufficient resources to reuse their electronic wallets and that they will continue to use these services as long as the functionality of the system meets or exceeds their expectations. According to Bhattacherjee [42], consumer's psychological or affective state that is connected to and produced by a cognitive evaluation of the gap between expectancy and performance is referred to as satisfaction. Within the context of present study, CS is the psychological state of consumer which makes the consumer's positive perception towards MP satisfaction and if his satisfaction level is achieved by using product or service then consumer tends to continue using the MP service in future.

Hypothesis (H10): Hypothesized relationship H10 (PU → UCI) among consumer's PU of MP and the UCI shows the positive relationship through accepted significant values (β =0.47, t =6.120, ***p value). According to Davis et al. [43] the subjective opinion of a potential customer that utilizing a specific technology will improve his or her job performance in an organizational context is known as PU. Various researchers have cited perceived usefulness as one of the factors which influences the consumer's intention to use the mobile technology for MP [126]. In present research, items; easier payment process (PU1), clarity in payment process to complete the transaction (PU2), specific skills (PU3), and useful options for purchase (PU4) were loaded successfully and confirmed their association with PU and path coefficient β =0.47 which confirmed the positive relationship with UCI. This relationship confirms that participants find the MP system to be a useful option as it is quick and enables participants to complete the MP option without requiring any special skills. To enhance MP usage intention among consumers, the MP system providers should focus more on emphasizing the usefulness of MP system and its prospects [123]. Consumer's intentions to utilize MP is significantly influenced by perceived usefulness and proved to be the important determinant in a study carried out by Mun et al. [127] which is similar to the authors' findings in present study. Further, findings are similar to the findings of Talwar et al. [33] who identified the positive association between usefulness and continuation intention of MP. Control variables age, gender, and education were considered and their effects on consumer's usage intention have studied in this research. While the consumer's gender and level of education had no discernible effects on their intention to continue using MP, their age, one of the control factors, had a substantial impact. Age was found to be a key mediator, and it was concluded that younger consumers are significantly more technologically knowledgeable and receptive than older consumers. Even descriptive statistics estimates show the MP consumers fall within the age bracket (21 to 30) and (31 to 40).

Examining each relationship in our framework in detail, discrete characteristics (PP, TR, FTT, SI, CS, PU) positively influenced the UCI in the context of MP during COVID-19. This result shows that consumers require a high level of confidence in this innovative MP solution, which is in line with earlier research on MP [18, 63]. According to the study's findings, consumers would likely continue using MP services. To reduce the spread of viruses during the COVID-19, consumers' inclinations were fundamentally shifted towards digital payment methods such as acceptance of MP services. Without considering other potential benefits, customers considered using the various offered MP services that maintain privacy, security, timeliness, safety, and quick transactions during MP. Further, consumers intend to continue the usage of MP in future too. The substantial influence that COVID-19 has had on the MP which served as a reason to conduct this study. Confirming our claim that the theory of planned behavior (TPB) explains how consumers' attitudes affect their behavioral intentions, is valid. We consider that consumers' learnt behaviors and experiences from using COVID-

19 through the adoption of MP [128] will shape consumers' attitudes that influence decisions regarding the future acceptance of MP and intentions to continue usage them in future. The results emphasize the significance of MP participants' intentions in the Indian setting both before and after the pandemic. Earlier, participants were not experienced enough about online payment procedure of MP, as few experienced in online MP. However, many businesses have adopted online MPs during COVID-19, so customers must now consider MP payment authenticity for future usage adoption.

7- Research Implications

7-1- Theoretical Implications

The majority of businesses and organizations chose to stick with a contactless payment method for routine transactions right after the COVID-19 problem began in 2019. The advancement of smart gadgets and internet connections has aided in the increase in adoption of mobile services like MP [63]. Consequently, there has been an expansion in MPs, and many traditional consumers have switched to MP options [9]. The COVID-19 situation has given us the prospect to investigate TAM and UTAUT theories to see if they may be used to assess the consumer's intention to continue using MP. God number of studies have utilized the TAM [43] and the UTAUT [44]. However, these theories have drawn criticism for being overly simplistic and for taking a narrow perspective that only considers the thoughts, beliefs, and intended purposes of certain adopters [129]. The TAM's applicability for comprehending today's determined user behavior has not yet been determined [63]. Hence, hypothetically, by investigating the determinants of adopting MP technology during the COVID-19, this study contributes to studies on consumers' intention to continue using MP. The TAM model enables the incorporation of external variables and thus the PP, TR, FTT, SI, and CS as new additions to existing theories. It has been determined that these elements are technically necessary to consider in the current study of the evaluation of consumer's usage intention to adopt MP during COVID-19. The hypothesized relationship between FTT and the continuance usage intention (UCI) of MP was rejected due to the trivial difference in acceptance criteria; also, transactional risk didn't influence the consumer's perceived usefulness for utilizing the MP. Given that many traditional customers disapproved of the MP option when it initially appeared during COVID-19, this outcome demonstrates that businesses providing MP services can gain consumers' trust by providing MP services in a more transparent manner.

Finally, the proposed valued framework embraced PP, TR, FTT, SI, CS, PU, and UCI and confirmed significant associations between them. PP, TR, FTT, SI, and CS represent new theoretical additions to the existing models that will effectively help to evaluate consumers' UCI of MP.

7-2- Managerial Implications

The study's findings have significance for managers in terms of determining the consumers' MP acceptance and usage. From a practical perspective, this study offers proof of the essential elements that MP service designers and marketers should take into consideration. Understanding of MP service advantages may lead to positive consumer's MP adoption and usage intention, so it is important for the MP service providers to raise awareness of the value and practicality of MP services among consumers. Businesses must develop compelling strategies in cooperation with financial institutions to persuade consumers that the new MP system is more advantageous than conventional payment methods. Promotional initiatives that highlight the benefits, convenience, simplicity, speed, and security of MP transactions are required to support these strategies. Customers may accept and use the MP system with greater confidence if it has features that make it simple to use and easy to navigate the MP application. Furthermore, it should be emphasized that MP ensures contact-free and risk-free transactions that shield consumers from any infection in light of the conditions surrounding COVID-19. Even in the later stages of pandemic contactless MP option would be the good choice for MP service providers and consumers. MP developers must employ more potent data encryption methods due to worries about data privacy and personal information to enable secure transactions [130]. These measures must be connected to advice and recommendations to make MPs secure, aiding consumers in developing confidence in MP applications and promoting their adoption.

Another managerial consequence is that managers should concentrate on SI because the data showed that it has a favorable impact on future plans to use MP systems. Consumers inclination towards social media use during the pandemic shows that consumers are more susceptible to the influence of their friends, families, and other social influencers when they use social media frequently. In order to inform and remind consumers about the use and effectiveness of MP, managers must amplify social media as a channel of communication and incorporate it into their social media strategy and promotion efforts. Understanding social media users or influencers, working with them directly, and crafting the correct messages to inspire other consumers to create and share content based on their good experiences are crucial to this process' success [131]. Finally, businesses should think about how to guarantee that the apps they created for COVID-19 remain applicable even after the pandemic.

8- Conclusion

COVID-19 has left a significant effect on our daily lives in many aspects and accelerated a digital transformation in society. The usage of MP has been prevalent since COVID-19, and usage continuance intention of consumers in India may extend digital payment utilization and attract more people to adopt MPs. Therefore, it is crucial to comprehend consumer behavior towards these MP services both before and after acceptance. In the context of digitally driven products like mobile-based payments, the proposed framework in this study aimed to further develop existing theories. In this study, a theoretical framework was developed to evaluate the behavioral intention driving the usage of MP. This research study is undertaken to find and evaluate the essential factors that could affect consumers' usage behavior towards MP during COVID-19 and post-COVID-19 consumers' MP usage continuation intentions. The findings of this study demonstrate that consumers' perceived performance, financial transaction transparency, and society's influence had a favorable effect on consumers' perceived usefulness of MP during COVID-19.

Similarly, consumers' perceived performance, transactional risk, society influence, consumer's satisfaction, and perceived usefulness had a reasonable effect on consumers' MP usage continuation intention during COVID-19. However, transactional risk didn't have an effect on the consumer's perceived usefulness, and financial transaction transparency didn't directly affect the consumer's usage intention while using MP. Additionally, it was determined that the consumer's contentment and long-term desire to use the MP were significantly influenced by the consumer's viewpoint, positive disconfirmation, perceived behavioral acceptance, and subjective norm. MPs help many service firms increase their market share. As a result, it is critical for service providers to understand how customers react to MP services and what will persuade them to use MP in the future. This study has developed and evaluated a combined UTAUT and TAM theory for MP adoption while providing a thorough analysis of the state of consumer's MP adoption. This unified theory finds the support of most hypotheses proposed in this research. Thus, these results can be employed as a guide for subsequent research on consumer's MP adoption evaluation.

8-1- Limitations and Future Research Directions

This study, which was carried out in a developing nation like India, covered MP generally rather than concentrating on a particular industry. For instance, consumers' intentions to accept MP in the real estate market may differ from those in the automotive or electronics industries. The significance of factors impacting the consumer's usage and intention to continue using MP may vary. In the future, research may consider utilizing tools that solve the issues of MP in particular sectors [15]. We were unable to communicate with respondents directly because the questionnaire had to be delivered online due to COVID-19 constraints. The findings cannot be generalized to all developing countries due to the specific context of the study. The adoption of MP technology may be influenced by additional elements such as culture, personal inventiveness, and economic conditions. The instrument developed in this study may be used in other research to confirm the role of the factors found in the context of other nations.

9- Declarations

9-1- Author Contributions

Conceptualization, O.A. and S.Z.; methodology, O.A., S.Z., and M.T.; formal analysis, S.Z.; investigation, O.A., S.Z., and M.T.; data curation, S.Z.; writing—original draft preparation, O.A., S.Z., and M.T.; writing—review and editing, O.A., S.Z., and M.T. All authors have read and agreed to the published version of the manuscript.

9-2- Data Availability Statement

The data presented in this study are available on request from the corresponding author.

9-3- Funding

The authors received no financial support for this research, authorship, and/or publication of this article.

9-4- Institutional Review Board Statement

Not applicable.

9-5- Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

9-6- Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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Appendix I: Measurement Scale Development

Constructs		Measurement Items	Source
Perceived Perform ance (PP)	PP-1	The mobile payment option does not consume too much time, and I can perform my other activities simultaneously during COVID-19.	[25, 59]
	PP-2	Mobile payment allows me to perform financial transactions quickly during COVID-19.	
	PP-3	I find mobile payment systems easy to access during the COVID-19 pandemic.	
	PP-4	Mobile payment systems offer me an efficient payment transaction option easy accessibility to COVID-19.	
Transaction Risk (TR)	TR-1	My debit or credit card/online transfer are fully secured by mobile payment systems during COVID-19.	[2, 58]
	TR-2	While transferring funds, sensitive information during mobile payment is secured during COVID-19.	
	TR-3	Individual information is well protected while using mobile payments during COVID-19.	
	TR-4	The mobile payment option offers me risk-free transactions during COVID-19.	
Financial Transact ion Transparency (FTT)	FTT-1	I consider that mobile payments are trustworthy in COVID-19.	[25,33]
	FTT-2	I consider that the mobile payment option offers transparency while making payments during COVID-19.	
	FTT-3	I consider that the mobile payment option allows me to conduct authentic transactions during COVID-19.	
	FTT-4	I consider that the mobile payment option is offered per legal guidelines during COVID -19.	
Society Influence (SI)	SI-1	My friends are also using mobile payment systems during COVID-19.	[25, 57]
	SI-2	I am gaining continuous motivation from my friends for using mobile payment systems during COVID-19.	
	SI-3	My friends view mobile payment systems as beneficial during COVID-19.	
	SI-4	People in my friend circle consider mobile payment system as a better and safe option during COVID-19.	
Consumer Satisfac tion (CS)	CS-1	Mobile payment provides me a convenient mode of payment during COVID-19.	[39]
	CS-2	Using mobile payment applications enables me to accomplish the purchasing process more easily.	
	CS-3	The offered mobile payment option is designed by considering the circumstances of COVID-19.	
	CS-4	I found contact-free payment to be a safe option during the COVID-19.	
Perceived Usefuln ess (PU)	PU-1	Mobile payment management systems made the payment process easier during COVID-19.	[2,4 3]
	PU-2	The mobile payment stages for completing a transaction during COVID-19 are clear.	
	PU-3	Do you need specific skills to complete mobile payments during COVID-19?	
	PU-4	I consider the mobile payment option a useful option for completing purchases during COVID-19.	
Usage continuatio n Intention (UCI)	UCI-1	I will regularly use mobile payment options in the future.	[35, 39, 42]
	UCI-2	I feel the mobile payment method will be beneficial means of payment even after COVID-19.	
	UCI-3	I am ready to use various mobile payment devices in different online transactions during COVID-19.	
	UCI-4	As mobile payment interaction becomes understandable, this understanding will help me to perform mobile payment transactions after COVID-19.	