Journal of
Risk and Financial Management

MDPI

Article

Factors Impacting Senior Citizens' Adoption of E-Banking Post COVID-19 Pandemic: An Empirical Study from India

Rabindra Jena

Institute of Management Technology, Nagpur 440013, India; rkjena@gmail.com

Abstract: The global economy and the financial sector have suffered due to the COVID-19 epidemic. The banking industry has seen an increase in digital channels and payments, consumer behavior changes, regulatory and supervisory relief, and new operational resilience challenges due to the COVID-19 pandemic. Therefore, seniors have had to adopt new channels and technologies instead of traditional cash and traditional channels. However, older people in India are not tech-savvy and avoid e-banking. Thus, stakeholders (e.g., bank authorities, governments) must focus on variables affecting the older population's use of e-banking to reduce financial isolation. Thus, this study uses an extended Unified Theory of Acceptance and Use of Technology (UTAUT) framework to examine senior citizens' intentions to use e-banking. Data from "456" senior citizens from central India were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) techniques. The study identified different significant predictors (e.g., performance expectancy, effort expectancy, perceived risk, self-efficacy, perceived trust, and anxiety) of older users' intention to use e-banking post-COVID-19. This is the first study from central India to determine elderly people's intention to use online banking during and after the COVID-19 pandemic. The findings will help bank authorities and other stakeholders increase senior citizens' financial inclusion in India.

Keywords: e-banking; UTAUT; senior citizen; financial inclusion; India

Citation: Jena, Rabindra. 2023. Factors Impacting Senior Citizens' Adoption of E-Banking Post COVID-19 Pandemic: An Empirical Study from India. *Journal of Risk and Financial Management* 16: 380. https://doi.org/10.3390/jrfm16090380

Academic Editor: Thanasis Stengos

Received: 13 June 2023
Revised: 11 July 2023
Accepted: 15 July 2023
Published: 24 August 2023

1. Introduction

Increases in health care, wealth, and standards of living have all contributed to a rise in life expectancy, which in turn has led to a dramatic increase in the number of people over 60. In 2020, almost 13.5 percent of the world's population was 65 and older, making up more than a billion individuals. By 2050, experts predict it will have risen to 2.1 billion (Benu 2023). The older population in Asia will triple between 2006 and 2050, as shown in Figure 1. The period from 2021 to 2030 was designated "A Decade of Healthy Ageing" by the World Health Assembly in August 2020. It is estimated that 14% of adults aged 60 and over are unable to achieve their most fundamental needs, according to the baseline study of A Decade of Healthy Ageing (World Health Organization 2020). The three components that make up this functional capacity are self-grooming, medication compliance, and budgeting.

The widespread use of technology in the financial sector (Lee and Shin 2018; Savić and Pešterac 2019) has led to a boom in high-tech services around the world over the past 10 years. The rise of digital payment methods, such as mobile wallets, P2P e-banking, real-time payments, Fintech portals, and cryptocurrencies, is a major trend in the global payments industry. In recent years, cash and credit have lost ground to digital payment methods among businesses and consumers worldwide. The digital payments model has been criticized and looked into many times because of worries about privacy (Albashrawi and Motiwalla 2019), security (Ribeiro et al. 2016), and service quality (Jun and Palacios 2016; Shankar et al. 2020). However, the e-banking market has been growing, both in terms of consumers and service providers. From 2020 to 2027, the global e-banking market is predicted to expand by nearly 30% due to rising interest in the industry's growth and intensifying competition (Borasi and Khan 2020). By 2025, the total value of all e-banking

is projected to increase by 90% to $4.60 trillion (Statista 2021). Money transfers and bill payments were the most popular uses of e-banking, followed by shopping (via coupons and discounts) and transportation (via bookings and boarding passes) (Borasi and Khan 2020).

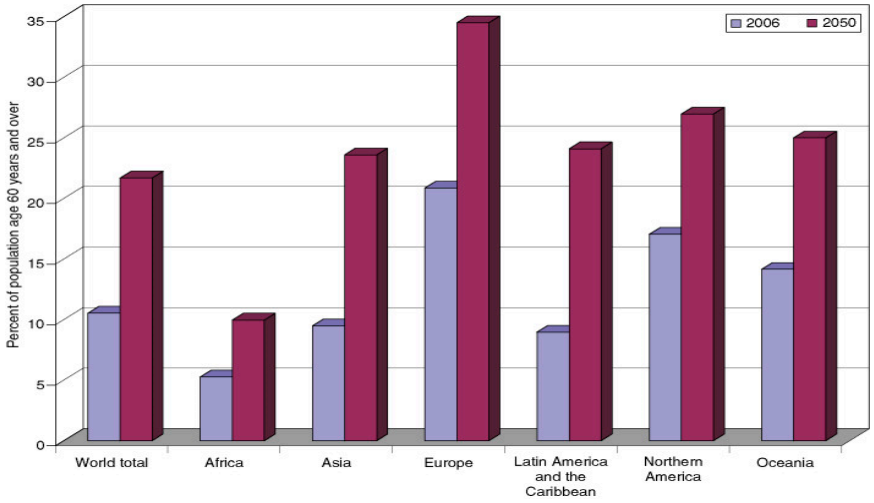

Figure 1. Projected older population (adapted from Bloom and Luca (2016)).

Since the COVID-19 pandemic started in 2020, it has been hard for people and institutions to deal with money transactions because of issues such as social distancing, total lockdowns, partial lockdowns, and forced and voluntary quarantines. These constraints have prompted people and institutions to adjust to the 'new normal' lifestyles, leading to feelings of helplessness and anxiety (Billore and Billore 2020b; Mogaji 2020; Shareef et al. 2021). Consumers' behavior has also changed as a result of the stress and vulnerability brought on by epidemiological situations such as lockdowns (Abouzid et al. 2021). Due to the pandemic, many consumers were ready to explore and adopt digital solutions in a hurry, including those in India's low-income segment who quickly adopted Fintech services (Billore and Billore 2020a). Consumers' widespread adoption of digital payment methods such as e-banking services can largely be attributed to the COVID-19 pandemic (Auer and Böhme 2020; Darma and Noviana 2020). However, a balanced dynamic between customers, retailers, and financial institutions is essential to the long-term success of this shift in behavior.

To sustain consumers' e-banking behavior, particularly among senior citizens in India, internet connectivity and people's attitudes, needs, and faith in the system are very important. In terms of connectivity, high internet connectivity in cities and easy access to mobile and internet technology have helped the digital payment industry in India grow quickly. In terms of people's needs and attitudes towards online banking in India, they changed after demonetization in 2016 (Sobti 2019). The Unified Payments Interface (UPI), a real-time payment system made by the National Payments Corporation of India, made it much easier for banks to send and receive money. In India, where the number of people who use the internet grew from 4% in 2007 to almost 50% in 2020, there has been a trend towards e-banking (Hameed and Nigam 2022). According to a study of Indian app users, the majority (85%) of banking customers between the ages of 27 and 37 have abandoned paper and plastic in favor of e-banking apps, but the trend among older people is not that encouraging. Further, the Reserve Bank of India has made it clear that it is prioritizing measures to ensure stringent security for e-banking in order to secure consumer confidence and trust and enhance convenience by guaranteeing offline payment options for e-banking. The paradox of developing nations such as India is that while the country has one of the world's fastest-growing internet and mobile penetration rates, its use of digital finance is still in its infancy due to barriers arising from a lack of awareness and motivation (Akhtar et al. 2021). Those over the age of 55 have been found to be among the least likely to use

digital financial services. According to a survey by one of the Big Four accounting firms, Klynveld Peat Marwick Goerdeler (KPMG), India, this group of consumers increased their use of the internet from 8% before the pandemic to nearly 30% after the first six months of the pandemic, spending the majority of their time on healthcare platforms and grocery applications (Bhatt and Mehta 2020). However, this demographic is also the last to adopt e-banking technologies (Statista 2021). According to Isa et al. (2022), elderly people require additional time and trust before adopting digital financial services. There are a number of layered reasons why people are hesitant to fully adopt financial technologies (Nguyen et al. 2022). Constant technological advancements, such as gaps in accessibility or a lack of motivation and opportunity, widen the digital divide between technology and the senior citizen as the technology user (Wong and Mohamed 2021). The elderly consumer base is distinguished by its low financial literacy, low income, and resistance to technological advancement (CBILAMGE 2015; Oluwatayo 2013). The elderly have been portrayed as resistant to technological adoption (Andalib and Hashim 2018; Gilly et al. 2012), and possessing low levels of confidence when it comes to using new systems and tools (Peacock and Künemund 2007; Teng et al. 2009). Past studies also indicate that seniors are less likely to have equal access to technological literacy (Olsson et al. 2019; Tan and Chan 2018).

In light of the above discussion, researchers have begun to wonder if the senior consumer cohort's behavior is affected by the permeation of the digital environment into the modern socioeconomic milieu and whether, as a result, the cohort's attitudes and behavioral patterns towards technology may shift from reluctance to possible faster adoption. Elderly citizens, despite showing signs of fear and anxiety during the early stages of the pandemic, were observed to exhibit rapid behavioral adaptation and express positive changes in their attitudes towards adjusting to the demands of the new normal lifestyle (Berg and Liljedal 2022), suggesting a strong possibility for improved usage of technology by elderly consumers. Therefore, there is a need for additional research into the causes that may be the primary barriers to e-banking being widely adopted as the rapidly developing financial service of the future (Akhtar et al. 2021; Nguyen et al. 2022; Wong and Mohamed 2021). There are many frameworks available to assess and predict people's intentions to use technology, but UTAUT is a widely recognized model in the field of information systems and technology adoption. It was developed by Venkatesh and colleagues in 2003 to explain and predict the acceptance and usage behavior of various technologies by individuals within an organization or a society (Venkatesh et al. 2003). The UTAUT model combines elements from four previously established technology acceptance models: the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Theory of Planned Behavior (TPB), and the Model of PC Utilization (MPCU). By integrating these models, UTAUT provides a comprehensive framework for understanding technology adoption and use. Initially, the UTAUT model had only four constructs (e.g., "performance expectancy", "effort expectancy", "social influence", and "facilitating conditions"), but later researchers extended it by adding more situation-specific constructs. Therefore, this study aimed to extend the basic UTAUT framework by adding context-specific constructs to it. Furthermore, to test the proposed model, PLS-SEM was used. SEM is a statistical technique used for analyzing relationships between variables in a structural equation model. PLS-SEM (Partial Least Squares Structural Equation Modeling) and CB-SEM (Covariance-Based Structural Equation Modeling) are two different approaches to analyzing SEMs. PLS-SEM is often employed when data are not normally distributed, there is a strong emphasis on predicting the dependent variables, and the relationships between variables are not well understood. Therefore, PLS-SEM is used as a tool to validate the model.

To summarize, to the best of the author's knowledge, no structured research has been conducted in India to explore the antecedents of senior citizens' adoption of e-banking facilities following the COVID-19 pandemic. This paper addresses these knowledge gaps by investigating the important predictors of senior citizens' adoption of e-banking following the COVID-19 pandemic. This paper also aimed to extend the UTAUT model by incorporating context-specific constructs. The main objectives of the study are to:

- Assess senior citizens' intentions to use digital technology for banking transactions;
- Extend the UTAUT model to predict the key antecedents of older citizens' e-banking intentions;
- Validate the proposed model using the PLS-SEM technique.

The results showed that context-specific constructs, such as perceived risk and anxiety, are very important for extending and validating the basic UTAUT model.

2. Theoretical Foundation and Hypothesis Development

The relationship between users and technology is being examined, particularly in the context of the COVID-19 pandemic, which has forced people of all ages around the world to increase the use of digital services (Sheth 2020). Multiple models have been created to dissect the reasons for people's acceptance of technology and their future plans for using it. These models are grounded in the Theory of Rationed Action (TRA) (Fishbein and Ajzen 1977), which proposes that users' behaviors are determined by their rational evaluations of the consequences of those behaviors. Therefore, the individual's beliefs play a pivotal role in setting expectations. Taking into account the significance of social influence on expectations and usage, the UTAUT model combines the most important relevant models from the 1990s (most notably the Technology Acceptance Model (TAM)) (Venkatesh et al. 2003). It has four constructs (i.e., expectations of effort and performance, social factors, and supportive conditions) and four moderating variables (i.e., age, gender, education, and voluntariness of use). Evaluation of behavioral intentions is also directly influenced by the constructs, along with various moderating variables (Venkatesh et al. 2003). The UTAUT model is commonly used to measure how well people adapt to new technologies (Williams et al. 2015). In recent years, predictive analytics (Brünink 2016), recommenders (Kadim and Sunardi 2023; Wang et al. 2015), and chatbots are just some of the technologies that have been evaluated using the UTAUT model (Kim et al. 2019). Understanding how senior people interact with e-banking tools and services may be revealed through the presentation and growth of acceptance. Finally, this study critically examines the widespread use of UTAUT as a theoretical basis for this study modeling. Despite the fact that research into the topic of technology acceptance is relatively well organized, many questions remain unanswered. There are ongoing discussions about the generalizability and validity of various technologies due to the wide variety of study populations, settings, and analyzed tools (Jena 2022a; Scherer and Teo 2019).

Since COVID-19 began spreading, it has had serious negative effects on people's health and ability to make a living, as well as the economy, the financial markets, and public employment (Vinerean et al. 2022). Even though e-banking systems have this flaw, they have been shown to work (Alghamdi and Basahel 2021; Haapio et al. 2021). To stop the COVID-19 pandemic from spreading around the world, most countries have put in place preventative measures such as national lockdowns and laws that separate people from each other (Vinerean et al. 2022). Due to the COVID-19 pandemic, people were also hesitant to use physical currency in their transactions with one another (Zhao and Bacao 2021). Furthermore, numerous health agencies have advocated the adoption of e-banking as one of the measures to reduce the spread of the COVID-19 pandemic, including "The Centers for Disease Control and Prevention" and the World Health Organization. Many people opted to keep their financial dealings to themselves during the pandemic by using the e-banking mode of payment (Daragmeh et al. 2021; Goel et al. 2022; Zhao and Bacao 2020). This has led to e-banking's rapid growth over the past few years. Venkatesh et al. (2003) developed the UTAUT model by combining ideas from different well-known Information System (IS) theories (e.g., TAM, TRA, etc.). The UTAUT model's "performance expectation," "effort expectation," "social influence," and "facilitating conditions" are the four essential components that affect the intent and use of technology. Additionally, the moderating effects of age, experience, gender, and the recipient's decision to participate in the study are taken into account. In addition, Venkatesh et al. (2012) proposed UTAUT2 after making some modifications to the UTAUT by including three new aspects, including

"hedonic motivation", "price value", and "habit". UTAUT2 has greater potential for comprehensiveness and for explaining individuals' IT adoption behavior, so it has been heavily utilized by many researchers (Anshari et al. 2021; Aslam et al. 2022; Dhiman et al. 2020; Jena 2022b; Santosa et al. 2021). Later, with the help of extensive research, the UTAUT2 model was revised and improved to account for the spread of e-banking systems (Al-Saedi and Al-Emran 2021; Chauhan et al. 2022; Widyanto et al. 2022).

Reviewing past studies, it was found that the "Performance expectancy" (PE), "efort expectancy" (EE), "social influence" (SI), "perceived trust" (PT), "self-efficacy" (SE), "perceived risk" (PR), and "behavioural intention" (BI) are all important factors in achieving an appropriate extension of UTAUT to assess technology adoption (Al-Saedi and Al-Emran 2021; Chauhan et al. 2022; Widyanto et al. 2022). However, no study has used all of these factors together to predict how people will make use of technology. Thus, the suggested model is built around the basic UTAUT constructs and other pandemic-related constructs in order to identify the most important predictors of senior citizens' e-banking adoption after COVID-19. Figure 2 shows the approach that is being suggested. The details of the constructs used in the proposed model and their relationships are presented in the form of hypotheses below:

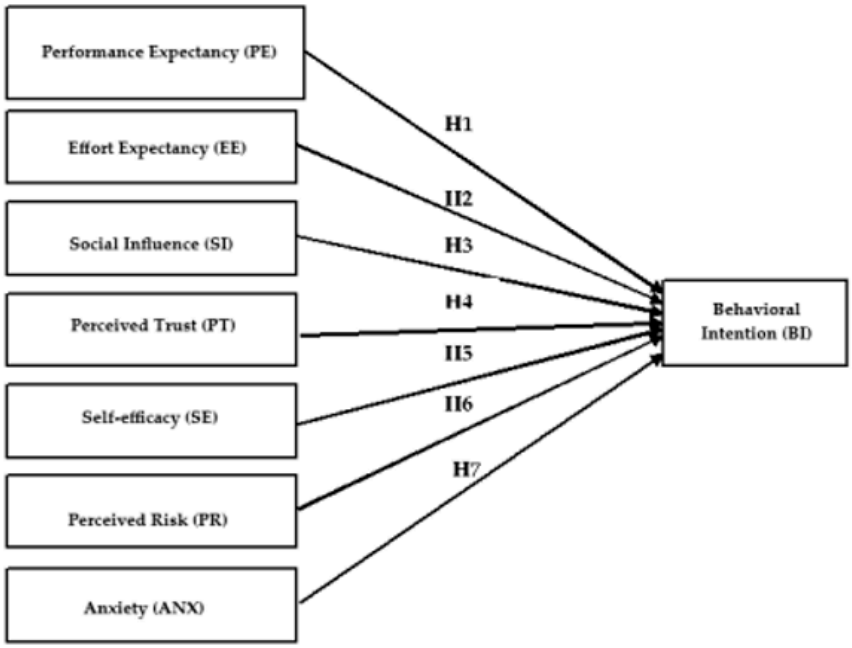

Figure 2. Proposed model.

Behavioral Intention (BI)

The term "behavioral intention" describes an individual's plans to carry out a wide range of actions (Fishbein and Ajzen 1977). The construct BI was first proposed in the Theory of Planned Behavior (TPB) and the Theory of Rationed Action (TRA), and it has since been adopted by many other models for spreading new technologies. The TPB states that BI is the best predictor of human behavior (Ajzen 1991). Furthermore, previous research has shown that self-efficacy, social influence, perceived trust, perceived risk, and anxiety (ANX) are strong predictors of BI (Kamboj and Joshi 2021; Patil et al. 2020; Saha and Kiran 2022).

Performance Expectancy (PE)

According to Venkatesh (Venkatesh et al. 2003), performance expectancy is a term that is used commonly in the field of technology adoption to describe a person's level of trust in a technology's capacity to help them achieve certain goals or improve their performance at work. Similarly, in the field of e-banking, it implies that individuals are

more likely to engage in such practices when they believe that doing so would lead to positive consequences. People with a higher perception of PE in e-banking are more likely to use such transaction techniques (Santosa et al. 2021). Furthermore, numerous researchers have demonstrated that PE and BI are positively correlated with e-banking implementation (Abegao Neto and Figueiredo 2022; Giovanis et al. 2019; Lu and Kosim 2022). Consequently, the following hypothesis is postulated:

H1: *PE significantly influences users' BI to adopt e-banking.*

Effort Expectancy (EE)

"Effort expectancy" is defined as the perceived ease or difficulty of using a given technology (Venkatesh et al. 2003). Similarly, a user's familiarity with, and comfort with, using e-banking services may affect their propensity to do so (Giovanis et al. 2019; Santosa et al. 2021). Furthermore, consumers who believe e-banking to be user-friendly are more likely to employ it in monetary transactions (Majumdar and Pujari 2022; Tripathi et al. 2022). The level of EE and BI towards employing e-banking methods was also found to have a striking correlation in previous studies (Abegao Neto and Figueiredo 2022; Giovanis et al. 2019; Lu and Kosim 2022; Saha and Kiran 2022; Sleiman et al. 2022). As a result, the following hypothesis is formulated:

H2: *EE is a significant predictor of BI to adopt e-banking.*

Social Influence (SI)

The term "social influence" is used to describe one's firm belief that others should follow one's lead and adopt e-banking (George and Sunny 2021). As a result, prospective users often ask influential people in their lives what they think about e-banking systems before making a final decision (Giovanis et al. 2019; Sharma et al. 2017). Therefore, SI is very likely to significantly affect potential consumers' actions (Al-Saedi and Al-Emran 2021; Patil et al. 2020). Additionally, many studies have shown a positive correlation between SI and BI when employing e-banking (Abegao Neto and Figueiredo 2022; Giovanis et al. 2019; Lu and Kosim 2022; Saha and Kiran 2022; Singh and Srivastava 2020; Sleiman et al. 2022). For this reason, it is anticipated that:

H3: *SI significantly influences the user's e-banking adoption.*

Perceived Trust (PT)

The term "perceived trust" is used to describe an individual's impressions of the institutional setting. This can include things such as having faith in financial institutions or telecommunications companies because of positive past interactions or a solid reputation (Al-Saedi et al. 2020; Anand and Abhilash 2022; Giovanis et al. 2019; Kaur et al. 2021). Initial trust affects a person's BI, claims Widyanto (Widyanto et al. 2022). As a result, cognitive cues and other seemingly irrational factors are likely to play a role in fostering initial trust in new acquaintances (Shin 2009). Additionally, previous research has shown that PT and BI have a positive correlation in favor of e-banking adoption (Chawla and Joshi 2019; Giovanis et al. 2019; Lisana 2021; Saha and Kiran 2022). This leads to the formulation of the following hypothesis:

H4: *PT significantly influences users' BI to adopt e-banking.*

Self-Efficacy (SE)

One's confidence in one's own ability to employ e-banking strategies in commercial transactions is known as "self-efficacy" (Kaur et al. 2021; Lisana 2021). Those who have a high level of e-banking SE are more likely to feel confident in their ability to use these payment methods effectively, deal with any difficulties that may arise, and be at ease

with the associated technology (Luarn and Lin 2005). A low SE in e-banking is associated with a lack of comfort and confidence in using digital payment systems, which can make people reluctant to adopt them (Chao 2019; Lisana 2021). Additionally, prior studies have demonstrated that SE significantly predicts people's BI to adopt and use e-banking (Al-Saedi and Al-Emran 2021; Chao 2019). This leads to the formulation of the following hypothesis:

H5: SE significantly predicts users' BI to adopt e-banking.

Perceived Risk (PR)

The term "perceived risk" refers to the extent to which people worry that implementing e-banking strategies could result in unfavorable outcomes such as financial loss, fraud, or identity theft (Alhassany and Faisal 2018). As a result of this misconception, people may be hesitant to use e-banking because they worry about the legitimacy of the transaction (Chauhan et al. 2022). PR can range from low to high, depending on the user's background, familiarity, and faith in the system in question (Yang et al. 2022). The development of efficient risk mitigation techniques relies on an awareness of the aspects that affect public relations in e-banking, which in turn relies on the acceptance and use of these payment methods by the general public (Abegao Neto and Figueiredo 2022; Zhao and Bacao 2021). Behavioral intentions under pressure depend on how individuals perceive risk. According to Xie et al. (2017), perceived risk has a negative effect on perceived behavior control. Several studies (De Bruin and Bennett 2020; Sobkow et al. 2020; Yang et al. 2022) have found that risk perception is a crucial predictor of proactive behavior. Various studies have found that risk perception is a crucial predictor of preventive behaviors (De Bruin and Bennett 2020; Sobkow et al. 2020; Yang et al. 2022). This encourages us to frame the following hypothesis:

H6: PR significantly impacts users' BI to adopt e-banking.

Anxiety (ANX)

Anxiety is the term used to describe the emotions of apprehension, worry, and unease that some people may feel when utilizing e-banking techniques (Patil et al. 2020). Various factors, including worries about privacy and security, unfamiliarity with the technology, and the potential for mistakes during transactions, can contribute to this ANX (Celik 2016). People may be hesitant to adopt and use e-banking because of their fear of the unknown and the security risks associated with it (Bailey et al. 2017). Reducing ANX in e-banking is important for increasing e-banking's uptake and utilization because it can enhance users' views of the technology and boost their enthusiasm for employing it (Celik 2016). The influence of ANX on individuals' BI and technological adoption has also been shown in previous studies of IT adoption (Bailey et al. 2017; Patil et al. 2020). Thus, the following hypothesis is postulated.

H7: *Users' BI is significantly influenced by ANX.*

3. Methodology

The purpose of this study was to investigate the preference of senior citizens for the adoption of e-banking in light of the earlier discussion on technological challenges and attitudes toward digital finance. The scope of this study was comprehensive and cross-sectional. PLS-SEM (Partial Least Squares Structural Equation Modeling) is a cutting-edge statistical technique for estimating complicated cause-and-effect relationship models that include latent and observable variables (Hair et al. 2017). PLS-SEM calculates how well the model describes the target constructs of interest by estimating the associations between the latent variables (i.e., their strengths). PLS-SEM is becoming increasingly popular due to its ability to estimate extremely complex models and its lenient data requirements (Hair et al.

2017). Therefore, PLS-SEM was used in this study to validate the proposed model and test the hypothesis.

3.1. Measures

Since the study was conducted amongst senior citizens in India, the obvious choice of survey communication and questionnaire design was the region's local language. The questionnaire was designed with a 5-point Likert scale to keep the scale measures simple and easy to understand for the elderly consumers and the finer differences between responses typically seen in a 7-point scale were avoided. The questionnaire was pre-tested on a group of ten elderly respondents, based on which some language and vocabulary-related changes were made to the instrument. This pre-testing also confirmed that the use of the 5-point scale was better than the 7-point scale for elderly respondents in this study (Table 1). The items used in this study can be found in Appendix A.

Table 1. Description of Study Instrument.

Constructs	No of Items	Scale	Source
Behavioral Intention (BI)	4	Five-point Likert scale	Lisana (2021)
Performance Expectancy (PE)	4		Venkatesh et al. (2003, 2012)
Effort expectancy (EE)	4		Venkatesh et al. (2003, 2012)
Social Influence (SI)	4		Lisana (2021)
Perceived Trust (PT)	5		Yang et al. (2022)
Self-efficacy (SE)	4		Lisana (2021)
Perceived risk (PR)	5		Sripalawat et al. (2011)
Anxiety (ANX)	5		Patil et al. (2020)

3.2. Data Collection

The sample size of the study was determined by SEM requirements. Boomsma and Hoogland (2001) state that a minimum of two hundred responses are essential to reduce the likelihood of bias in SEM findings. In this investigation, the survey aimed to obtain at least 200 valid responses from elderly Indians who are 60 years of age or older. A total of 800 questionnaires were distributed over the course of seven months (June–December 2022). The study area consisted of four states (i.e., Maharashtra, Madhya Pradesh, Odisha, and Chhattisgarh) in central India. Convenience and snowball sampling were used to find the right people to take part in the study. The majority of the participants were chosen from railway stations, city centers, large retail stores, shopping malls, hotels, bus stops, gram-panchayat offices, and other locations such as airports and train stations. The participants were informed about the study and assured that the data would only be used for academic research. Once the participants agreed to participate in the study, a link to the survey was sent through WhatsApp and Twitter with the assistance of research scholars from the local universities. The survey link was only sent to people who met the demographic criteria (older than 60). Scholars also verified that the respondent information provided in the responses was consistent with the study's target respondent profile. Finally, 456 valid responses were used for data analysis after discarding 29 responses with missing or incomplete information. This relatively large sample size was used to reduce sampling error (Fricker 2016).

3.3. Sample Profile

The majority of the sample is composed of men (68%). Previous research has shown that elderly males in India were more likely to be financially literate, own assets, and manage those assets (Akhtar et al. 2021). Most of the participants were in the age range of 71–80. The majority of participants were graduates. Further, most of the participants

were from urban India and were in self-owned businesses. Table 2 shows the profiles of the study respondents.

Table 2. Sample profile.

Variables	Sample Category	Responses
Gender	Men	68%
	Women	32%
Age	60–70	41%
	71–80	46%
	81 and above	13%
Education	High School	29%
	Graduate	53%
	Post Graduate	18%
Residence	Urban	61%
	Rural	39%
Profession	Service	37%
	Business	46%
	Farming	17%

4. Data Analysis

Structural Equation Modeling (SEM) based on PLS was used to analyze the data obtained from 456 participants from central India. The data were analyzed in two stages: first, the scale's and measurement's validity and reliability were checked (measurement model assessment), and then the data were subjected to structural equation modeling to assess the proposed model and test the hypothesis (structural model assessment).

4.1. Measurement Model Assessment

The measurement model analysis aims to ensure that measurements are precise and accurately represent the theoretical component using the reliability and validity of the study instrument. Composite Reliability (CR) values were used to examine the degree to which the items were consistent with one another. Further, a cutoff of 0.7 was chosen for the reliability coefficient (Cronbach's alpha) and CR (Hair et al. 2017). Cronbach's alpha and item CR are presented in Table 3. The CR and Cronbach's alpha values are above the cutoff values. Thus, the used instrument is found to be reliable.

Table 3. Construct Reliability.

Construct	Loading	Cronbach's Alpha	AVE	CR
Behavioral Intention (BI)	0.81–0.89	0.77	0.66	0.82
Performance Expectancy (PE)	0.71–0.82	0.73	0.63	0.75
Effort expectancy (EE)	0.61–0.83	0.78	0.63	0.84
Social Influence (SI)	0.65–0.82	0.75	0.65	0.82
Perceived Trust (PT)	0.71–0.87	0.76	0.64	0.78
Self-efficacy (SE)	0.73–0.83	0.74	0.62	0.79
Perceived risk (PR)	0.73–0.87	0.78	0.66	0.81
Anxiety (ANX)	0.62–0.83	0.72	0.61	0.74

Further, to ensure discriminant validity (DV), the extracted $\sqrt{AVE}$ values for each construct (shown in boldface in Table 4) to the correlation across all constructs are compared, as recommended by Fornell and Larcker (Fornell and Larcker 1981). The $\sqrt{AVE}$ value of each construct is greater than its correlation values with other constructs. Hence, DV is not a problem for this study.

Table 4. Discriminant validity (Fornell–Larcker Criterion).

Constructs	Mean	SD	BI	PE	EE	SI	PT	SE	PR	ANX
BI	3.31	0.11	**0.81**							
PE	3.63	0.12	0.34 *	**0.79**						
EE	3.09	0.17	0.32 *	0.33 *	**0.79**					
SI	3.45	0.22	0.31 *	0.30 *	0.36 *	**0.81**				
PT	3.39	0.31	0.38 *	0.31 *	0.43 *	0.41 *	**0.80**			
SE	3.79	0.26	0.34 *	0.31 *	0.35 *	0.33 *	0.36 *	**0.79**		
PR	2.89	0.19	0.41 *	0.26 *	0.34 *	0.34	0.41 *	0.36 *	**0.81**	
ANX	3.01	0.21	0.29 *	0.42 *	0.41 *	0.29	0.31 *	0.33 *	0.37 *	**0.78**

Note: * $p < 0.05$.

From the above results, it is found that the overall statistical performance of the model constructs shows high levels of internal consistency, reliability, and validity.

4.2. Structural Model Assessment

Goodness-of-fit (GoF), path coefficients, and R^2 were used to figure out how well the proposed model explained the relationship among variables. GoF value is calculated using the formula (GoF $= \sqrt{\overline{AVE} * \overline{R^2}}$), as suggested by Alolah (Alolah et al. 2014). The GoF of the model is shown in Table 5.

Table 5. GoF Index.

Constructs	AVE	R^2
BI	0.66	0.63
PE	0.63	
EE	0.63	
SI	0.65	
PT	0.64	
SE	0.62	
PR	0.66	
ANX	0.61	
Average Score	0.64	0.63
GoF $= \sqrt{R^2 * AVE}$	0.63	

The model's calculated GoF value was 0.63, which is greater than the minimum threshold value of 0.36 (Alolah et al. 2014). Therefore, the proposed model was of sufficient quality, and PLS-SEM can be used for further investigation. The direct associations among PE, EE, SI, PT, SE, PR, ANX, and BI are presented in Figure 3. All the relations among BI and its antecedents are significant (shown in Figure 2) as the path coefficients are PE (0.36), EE (0.49), SI (0.38), PT (0.39), SE (0.42), PR (0.32), and ANX (0.33). Hence, hypotheses H_1, H_2, H_3, H_4, H_5, H_6, and H_7 are supported.

The obtained R^2 value of 0.63 shows that the proposed model is very good at making predictions. However, studies have shown that the R^2 statistic cannot be used alone to judge the quality of a PLS-SEM structural model (Hair et al. 2017). Therefore, the predictive ability of the proposed model was determined using Stone's Q^2 Geisser's test (Stone 1974). The blindfolded procedure is used to determine the Q2 value. Predicted variables have high predictive power if Q^2 is greater than 0.3 (Hair et al. 2017). The Q^2 value for the proposed model was 0.39, indicating high predictive relevance for the adoption of e-banking among the elderly.

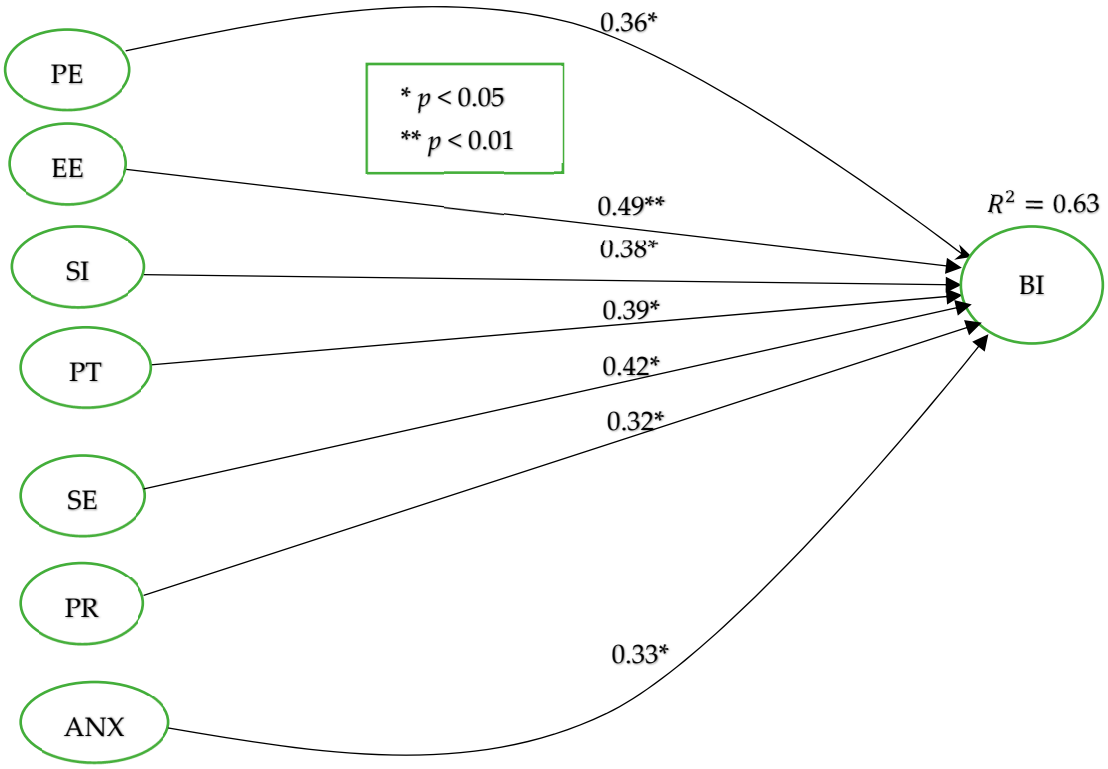

Figure 3. Path Coefficients (Direct).

Hypothesis Testing

To assess the significance of the hypotheses, the structural model's path coefficients (β), *p*-values, and t-statistics are used in this study (Hair et al. 2021). The bootstrapping method is used to evaluate the structural model by looking at the significant value to determine the effect between factors. The hypothesis test results are shown in Table 6. All the proposed hypotheses are supported. The results revealed that perceived risk and anxiety among senior citizens negatively influence behavior intentions.

Table 6. Hypothesis test results.

Relationship	Coefficient (β)	t-Values	*p*-Values	Result	f^2
PE→BI(H1)	0.36	6.09	0.02	Supported	0.162
EE→BI(H2)	0.49	7.89	0.00	Supported	0.227
SI→BI(H3)	0.38	6.31	0.03	Supported	0.174
PT→BI(H4)	0.39	6.92	0.03	Supported	0.328
SE→BI(H5)	0.42	7.19	0.02	Supported	0.213
PR→BI(H6)	−0.32	5.21	0.04	Supported	0.189
ANX→BI(H7)	−0.33	5.26	0.03	Supported	0.109

To better comprehend the proposed model, effect size values (f^2) were determined. If f^2 is above 0.15, the effect is believed to be good enough (moderate), less than 0.02 is a small effect, and anything above 0.35 is a big effect (Hair et al. 2021). Table 6 shows the f^2 values of each hypothesis. The results show that the effect size varies from the highest effect size (EE→UI, f^2 = 0.227) to the lowest effect size (ANX→BI, f^2 = 0.109). The effect size of all the hypotheses is found to be moderate (>0.15).

5. Discussion and Implications

The goal of this study was to find out what makes senior citizens likely to use electronic banking following the COVID-19 pandemic. Statistics show that despite the rapid growth of internet and mobile access in India (Statista 2021), the use of e-banking, Fintech services, and others is not growing rapidly (Keeley and Benton-Short 2019; Sobti 2019). There is an urgent need to find out what leads elderly people to use financial services made possible by technological advances. The study demonstrated that e-banking usage is lower among rural senior citizens, which is consistent with past studies (Fan et al. 2022). COVID-19 played a critical role in further outlining the antecedents of the adoption of digital finance and how they can be influenced by various measures taken both from a managerial and policy perspective, while technology-related behaviors are changing with the development of technology in India (Billore and Billore 2020a). The empirical data analysis has supported all the study hypotheses. Several antecedents, such as perceived usefulness (Giovanis et al. 2019), effort expectancy (Lin 2007), perceived risks (Featherman et al. 2021), social influence (Bhattacharjee 2010), perceived trust (Lin et al. 2013), self-efficacy, and anxiety (Mehmood et al. 2014), appeared to play a critical role in determining the behavioral intention to use e-banking facilities in post-COVID-19 pandemic India. Taylor and Todd (1995) indicate that elderly people are still wary about the use of e-banking platforms. The results of this study are also in line with the above result, as the antecedent (EE) has a higher influence on BI than other predictors. According to previous studies (Billore and Billore 2020b; Kaur et al. 2021; Senali et al. 2022), peoples' behavioral intentions about e-banking were significantly influenced by their perceptions of the financial, privacy, performance, and psychological risks. Our study also found similar findings. Again, when compared to external influences such as visuals, online media, and print-based information, the effect of social influences on senior citizens' BI to adopt e-banking was found to be significant, suggesting that interpersonal communication and the influence of in-circle friends and family have a greater impact on the elderly's intentions to adopt e-banking. The UTAUT model's overall explanatory power for behavioral intention was 63%, suggesting that there is a relatively high percentage of variation among the elderly in India regarding their intention to adopt e-banking as a mode of financial transaction. Even though the COVID-19 pandemic has led to a greater emphasis on digital finance and the digitization of India's communication and infrastructure for a variety of goods and services, the likelihood that the behavioral intention of senior citizens will be influenced by proposed antecedents that can impact their intensity to use e-banking methods remains intriguing.

5.1. Academic Implications

By focusing on e-banking adoption in a developing country (i.e., India), this study adds to the existing understanding of senior citizens' adoption behavior on e-banking. The importance of this research is highlighted by the current brawl between advanced technological progress in India and obstacles to its widespread adoption (Gupta et al. 2020). This study extended the UTAUT model to investigate the adoption of digital finance (Giovanis et al. 2019; Khasawneh and Irshaidat 2017), and more specifically, e-banking, due to the dearth of research employing this particular framework in this domain. In addition, this study found that perceived risk is a significant antecedent of BI to highlight the role that people's worries about losing money, having their personal information stolen, or being unable to complete a transaction successfully (in this case, via e-banking) play in discouraging their use of digital finance tools. The effects of self-efficacy and the impressions of interpersonal sources can go either way, positively or negatively. Prospective customers for e-banking can be developed in the elderly segment by enhancing facilitating conditions and employing them as a tool for consumer conversions. To the author's knowledge, this is the first study of its kind, providing nuanced insight into a unique empirical source by investigating senior citizens' behavioral intentions for e-banking in a rapidly developing economy. In addition, the UTAUT can be used in conjunction with TPB

predictors to provide a more comprehensive picture of the aforementioned sample group (Giovanis et al. 2019).

5.2. Practical Implications

The main reason for this study is that there seems to be a contradiction between the fact that technology-based services are becoming more available in India and the fact that older people do not use digital finance very much, especially in light of the COVID-19 pandemic and in the future. Many of the factors that influence e-banking behavior among the elderly in India have been identified through UTAUT analysis. There is wide use of mobile telephony in both rural and urban landscapes, but the author argues that there is still reluctance and latent fear towards the use of digital platforms for banking and financial transactions. The majority of companies around the world are currently transitioning from physical to digital locations, making this hesitation counterproductive. In that regard, the current state of affairs is consistent with earlier findings (Papias and Ganesan 2010) and has not changed significantly in the last decade or so. The study's empirical analysis supports findings from prior research suggesting that peoples' impressions of how safe and simple e-banking methods are may dampen their propensity to use them (Makanyeza 2017; Mudiri 2013). This suggests that the elderly are especially vulnerable to fraud because of their heightened sensitivity to financial insecurity (e.g., Ghilarducci 2022; Lee and Andrade 2015; Salignac et al. 2022). This highlights the significance of providing elderly consumers with not only information about their rights when using digital finance but also the knowledge and skills to exercise those rights effectively. Previous research on the topic has confirmed that it is essential to reduce users' fears of and dissatisfaction with digital platforms and their service providers (Billore and Billore 2020a; Refera et al. 2016; Shankar et al. 2020). Furthermore, self-efficacy has a significant impact on behavioral intention, suggesting that elderly consumers' digital literacy and digital comfort can be significantly attuned to stronger behavioral intentions for e-banking if the knowledge base of the user is strengthened along with relevant support structures. To achieve this goal, initiatives and financial literacy campaigns that target elderly consumers should be prioritized. During and after the COVID-19 pandemic, it is more important than ever to emphasize the correct way of disseminating technological innovations across all user cohorts, especially senior adults (Crespo and Del Bosque 2010; Rogers 1985). Uniform dissemination of innovation knowledge in society can help spread positive word of mouth and significantly reduce the impact of misappropriation and instances of financial fraud. Given the rapid pace at which technology is evolving and being integrated into everyday life, it is believed that such managerial actions can also reduce the percentage of digital exclusion, especially among elderly users (Olsson et al. 2019; Seifert 2020). The National Council on Ageing (NCOA) stresses the importance of further efforts to bridge the generation gap between senior adults and advanced technologies such as smartphones and tablets.

6. Conclusions

The goal of this study was to use an extended UTAUT model to identify the factors influencing e-banking adoption among senior citizens in India. To learn more about why Indian consumers over 60 use e-banking, the study analyzed the real-world impact of performance expectancy, effort expectancy, perceived risk, self-efficacy, trust, and anxiety on the behavioral intention of older people to use e-banking for financial transactions. To the best of the authors' knowledge, this is one of the very few studies to use the UTAUT model to analyze premeditated user behavior in an economically dynamic country such as India. The results indicate that all proposed hypotheses are accepted, suggesting that all tested antecedents contributed to a good fit for the tested model. The study highlights some important positive factors (self-efficacy, effort expectancy) and negative factors (e.g., anxiety and perceived risk) that influence user behavior regarding e-banking, and these factors are consistent with statistical observations on the state of digital finance tools among the elderly in society. The obtained results have been supported by various studies in different

contexts (Featherman et al. 2021; Bhattacharjee 2010; Mehmood et al. 2014). Given the rapid transition of financial services to digital platforms as a result of technological advancement and the COVID-19 pandemic situation, the discussion emphasizes the importance of improving digital literacy, confidence, and trust in e-banking services to increase their rate of adoption among older consumers.

Limitations and Future Scope

There are a number of limitations in this study, even though it has made important contributions. In the first stage of our analysis, this study mainly focused on the direct impact of independent variables on dependent variables, so it is not clear what role indirect effects and interactions play in this research paradigm. Thus, more research is needed on the factors that affect users' intention to adopt e-banking, including the possible roles of mediators and moderators. Second, for a country to realize its cashless economy goal, e-banking must be accepted by all stakeholders, but this study only focused on how to increase older people's openness to e-banking. However, more research is needed on the perspectives of other stakeholders such as retailers, banks, payment processing companies, and others to increase the widespread adoption of e-banking following the COVID-19 pandemic. Third, the data for this inquiry were gathered using a non-probabilistic sampling strategy rather than a probability sample, which may not be representative of the population at large. Thus, future studies should adopt more reliable sampling strategies. Fourth, this research concentrates on central India, where the socio-economic conditions are different from the rest of India. Studying the rest of the population, with representatives from all over India, could lead to a greater understanding and adoption of e-banking. Further, this research does not make use of additional important antecedents, such as complexity and time risks, that could be incorporated to extend the UTAUT for a more thorough understanding of e-banking adoption. Finally, a cross-cultural analysis of the elderly e-banking users of developing and developed countries would greatly benefit future digital consumer behavior research.

Funding: This research received no external funding.

Data Availability Statement: Data will be shared on request.

Acknowledgments: I acknowledge the support of my friends and colleagues in developing the paper.

Conflicts of Interest: The author declares no conflict of interest.

Appendix A

Table A1. Study Constructs.

Constructs	Item Code	Items
Behavioral intention(BI)	BI1	I hope to begin/continue utilizing e-banking in the future
	BI2	I anticipate using or continuing to use e-banking
	BI3	I will continue to use e-banking often in the future
	BI4	I will suggest to my friends and relatives e-banking services
Performance Expectancy (PE)	PE1	I feel that utilizing e-banking will save me time and money
	PE2	I believe that by using e-banking, I can easily access my bank accounts from anywhere and at any moment
	PE3	I believe that e-banking services fit my lifestyle
	PE4	Overall, I find e-banking to be quite valuable in my financial activities

Table A1. *Cont.*

Constructs	Item Code	Items
Effort expectancy (EE)	EE1	It is simple for me to learn how to utilize e-banking services for banking
	EE2	I believe that learning how to complete banking tasks using e-banking services was rather simple for me
	EE3	I believe that the e-banking website's interactivity is simple
	EE4	I believe that utilizing e-banking services provides me with a sense of security
Social Influence (SI)	SI1	Several influential persons in my life have suggested that I should use e-banking
	SI2	Individuals who use e-banking have a good reputation
	SI3	Using e-banking is a status symbol among my friends
	S14	The majority of folks in my immediate vicinity use e-banking
Perceived Trust (PT)	PT1	In my opinion, e-banking is trustworthy
	PT2	I have confidence in my bank to assist me in securing e-banking services
	PT3	I trust providers of e-banking services to aid in ensuring the security of e-banking
	PT4	I would rely on my telecom provider to provide reliable and stable internet connectivity for e-banking
	PT5	I feel that e-banking is dedicated to offering honest financial services
Self-efficacy (SE)	SE1	I could use e-banking services even in the absence of assistance
	SE2	I can use e-banking services even if others are not utilizing E-BANKING
	SE3	By observing how others use the e-banking system, I may soon become skilled in it
	SE4	While utilizing e-banking services, I can seek solutions to my problems
Perceived risk (PR)	PR1	Using e-banking services raises privacy concerns for me
	PR2	I'm concerned about financial information being recorded in an unlawful manner
	PR3	I'm scared that when I'm using e-banking, unauthorized people will take my account and password
	PR4	I'm afraid about using e-banking services since others could have access to my bank account
	PR5	I'm apprehensive about using e-banking services since they may result in my bank account being hacked
Anxiety (ANX)	ANX1	The security of e-banking does not reassure me
	ANX2	I'm concerned that I'll forget my username and/or password
	ANX3	I'm concerned that pressing the wrong key while using e-banking may cause me to lose important information
	ANX4	I'm scared that by utilizing e-banking, I'll make irrevocable errors
	ANX5	I'm worried that the equipment I'm using for e-banking will be stolen, misplaced, or abused by others

References

Abegao Neto, Fernando Luis, and Julio César Bastos de Figueiredo. 2022. Effects of Age and income moderation on the adoption of mobile payments in Brazil. *Innovation & Management Review*. Available online: http://anpad.com.br/uploads/articles/112/approved/8efb100a295c0c690931222ff4467bb8.pdf (accessed on 1 May 2023).

Abouzid, Mohamed, Dina El-Sherif, Nael Kamel Eltewacy, Nesrine Ben Hadj Dahman, Salah Okasha, Sherief Ghozy, and Sheikh Mohammed Shariful Islam. 2021. Influence of COVID-19 on lifestyle behaviors in the Middle East and North Africa Region: A survey of 5896 individuals. *Journal of Translational Medicine* 19: 1–11.

Ajzen, Icek. 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Processes* 50: 179–211. [CrossRef]
Akhtar, Akhtar, Mahfooz Alam, and Mohd Shamim Ansari. 2021. Measuring the performance of the Indian banking industry: Data envelopment window analysis approach. *Benchmarking: An International Journal* 29: 2842–57. [CrossRef]
Albashrawi, Mousa, and Luvai Motiwalla. 2019. Privacy and personalization in continued usage intention of mobile banking: An integrative perspective. *Information Systems Frontiers* 21: 1031–43. [CrossRef]
Alghamdi, Mona, and Sarah Basahel. 2021. COVID-19 and continuance intention to use mobile payment technology: A moderated mediation model. *International Journal of Human Potentials Management* 3: 1–18.
Alhassany, Hiba, and Faisal Faisal. 2018. Factors influencing the internet banking adoption decision in North Cyprus: An evidence from the partial least square approach of the structural equation modeling. *Financial Innovation* 4: 1–21. [CrossRef]
Alolah, Turki, Rodney A. Stewart, Kriengsak Panuwatwanich, and Herif Mohamed. 2014. Determining the causal relationships among balanced scorecard perspectives on school safety performance: Case of Saudi Arabia. *Accident Analysis & Prevention* 68: 57–74.
Al-Saedi, Karrar, and Mostafa Al-Emran. 2021. A systematic review of mobile payment studies from the lens of the UTAUT model. *Recent Advances in Technology Acceptance Models and Theories* 2021: 79–106.
Al-Saedi, Karrar, Mostafa Al-Emran, T. Ramayah, and Eimad Abusham. 2020. Developing a general extended UTAUT model for M-payment adoption. *Technology in Society* 62: 101293. [CrossRef]
Anand, Mohan, and V. Abhilash. 2022. Behavioural Intention of Investors Regarding Trading Apps in India with an Implication of UTAUT Model. *Management Dynamics* 22: 1–10. [CrossRef]
Andalib, Sara, and Noor Hazarina Hashim. 2018. The influence of dispositional resistance to change on seniors' mobile banking adoption in Malaysia. *Journal of Soft Computing and Decision Support Systems* 5: 1–12.
Anshari, Muhammad, Munirah Ajeerah Arine, Norzaidah Nurhidayah, Hidayatul Aziyah, and Md Hasnol Alwee Salleh. 2021. Factors influencing individual in adopting eWallet. *Journal of Financial Services Marketing* 26: 10–23. [CrossRef]
Aslam, Wajeeha, Danish Ahmed Siddiqui, Imtiaz Arif, and Kashif Farhat. 2022. Chatbots in the frontline: Drivers of acceptance. *Kybernetes ahead-of-print*.
Auer, Raphael, and Rainer Böhme. 2020. The technology of retail central bank digital currency. *BIS Quarterly Review March*.
Bailey, Ainsworth Anthony, Iryna Pentina, Aditya Shankar Mishra, and Ben Slim Ben Mimoun. 2017. Mobile payments adoption by US consumers: An extended TAM. *International Journal of Retail & Distribution Management* 45: 626–40.
Benu, Parvati. 2023. By 2050, 'Indian Society Will Be 'Aged' Going by UN Definition'. Available online: https://www.thehindubusinessline.com/data-stories/by-2050-indian-society-will-be-aged-going-by-un-definition/article66815 (accessed on 1 May 2023).
Berg, Hanna, and Karina T. Liljedal. 2022. Elderly consumers in marketing research: A systematic literature review and directions for future research. *International Journal of Consumer Studies* 46: 1640–64. [CrossRef]
Bhatt, Viral, and Bhoomi Mehta. 2020. Factors Influencing Overall Service Quality of Online Banking: A Comparative Study of Indian Public and Private Sector Banks. *The Journal of Applied Business and Economics* 22: 152–67.
Bhattacharjee, Amit. 2010. Constraints and consequences: Psychological reactance in consumption contexts. *ACR North American Advances*.
Billore, Soniya, and Gautam Billore. 2020a. Consumption switch at haste: Insights from Indian low-income customers for adopting Fintech services due to the pandemic. *Transnational Marketing Journal* 8: 197–218. [CrossRef]
Billore, Soniya, and Gautam Billore. 2020b. Internationalization of SMEs and market orientation: A study of customer knowledge, networks and cultural knowledge. *European Business Review* 32: 69–85. [CrossRef]
Bloom, David E., and Dara L. Luca. 2016. The global demography of aging: Facts, explanations, future. In *Handbook of the Economics of Population Aging*. Amsterdam: North-Holland, vol. 1, pp. 3–56.
Boomsma, Anne, and J. Jeffrey Hoogland. 2001. The robustness of LISREL modeling revisited. *Structural Equation Models: Present and Future. A Festschrift in Honor of Karl Jöreskog* 2: 139–68.
Borasi, P., and S. Khan. 2020. *Mobile Payment Market by Payment Type, Transaction Mode, End User, Purchase Type, and Application: Opportunity Analysis and Industry Forecast. 2020–2027, Allied Market Research. 2020*. Available online: https://www.alliedmarketresearch.com/mobile-payments-market (accessed on 1 January 2023).
Brünink, L. A. 2016. Cross-Functional Big Data Integration: Applying the UTAUT Model. Master's thesis, University of Twente, Enschede, The Netherlands.
CBILAMGE, PANDIT. 2015. MARKETING OF INSURANCE PRODUCTS IN RURAL INDIA: A BIG CHALLENGE. *CLEAR International Journal of Research in Commerce & Management* 6: 28–31.
Celik, Hakan. 2016. Customer online shopping anxiety within the Unified Theory of Acceptance and Use Technology (UTAUT) framework. *Asia Pacific Journal of Marketing and Logistics*. [CrossRef]
Chao, Cheng-Min. 2019. Factors determining the behavioral intention to use mobile learning: An application and extension of the UTAUT model. *Frontiers in Psychology* 10: 1652. [CrossRef] [PubMed]
Chauhan, Chauhan, Asif Akhtar, and Ashish Gupta. 2022. Customer experience in digital banking: A review and future research directions. *International Journal of Quality and Service Sciences*. [CrossRef]
Chawla, Deepak, and Himanshu Joshi. 2019. Consumer attitude and intention to adopt mobile wallet in India–An empirical study. *International Journal of Bank Marketing*. [CrossRef]

Crespo, Angel Herrero, and Ignacio Rodriguez Del Bosque. 2010. The influence of the commercial features of the Internet on the adoption of e-commerce by consumers. *Electronic Commerce Research and Applications* 9: 562–75. [CrossRef]
Daragmeh, Ahmad, Judit Sági, and Zoltan Zéman. 2021. Continuous intention to use e-wallet in the context of the covid-19 pandemic: Integrating the health belief model (hbm) and technology continuous theory (tct). *Journal of Open Innovation: Technology, Market, and Complexity* 7: 132. [CrossRef]
Darma, Gede Sri, and I. Putu Teddy Noviana. 2020. Exploring Digital Marketing Strategies during the New Normal Era in Enhancing the Use of Digital Payment. *Jurnal Mantik* 4: 2257–62.
De Bruin, Wändi Bruine, and Danial Bennett. 2020. Relationships between initial COVID-19 risk perceptions and protective health behaviors: A national survey. *American Journal of Preventive Medicine* 59: 157–67. [CrossRef]
Dhiman, Niraj, Neelika Arora, Nikita Dogra, and Anil Gupta. 2020. Consumer adoption of smartphone fitness apps: An extended UTAUT2 perspective. *Journal of Indian Business Research* 12: 363–88. [CrossRef]
Fan, Weilin, Haoqiang Wu, and Ying Liu. 2022. Does digital finance induce improved financing for green technological innovation in China? *Discrete Dynamics in Nature and Society* 2022: 1–12. [CrossRef]
Featherman, Mauricio S., Shizhen Jasper Jia, Christopher B. Califf, and Nick Hajli. 2021. The impact of new technologies on consumers beliefs: Reducing the perceived risks of electric vehicle adoption. *Technological Forecasting and Social Change* 169: 120847. [CrossRef]
Fishbein, Martin, and Icek Ajzen. 1977. *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Reading: Addison-Wesley.
Fornell, Claes, and David F. Larcker. 1981. *Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics*. Los Angeles: Sage Publications Sage CA.
Fricker, Ronald D. 2016. Sampling methods for online surveys. *The SAGE Handbook of Online Research Methods* 2016: 162–83.
George, Ajimon, and Prajod Sunny. 2021. Developing a research model for mobile wallet adoption and usage. *IIM Kozhikode Society & Management Review* 10: 82–98.
Ghilarducci, Teresa. 2022. United States Congress Joint Economic Committee Hearing on Building A Better Labor Market: Empowering Older Workers For A Stronger Economy. Microsoft Word—Written Testimony JEC Feb 9 Ghilarducci v7.docx. Available online: senate.gov (accessed on 1 February 2023).
Gilly, Mary C., Marry W. Celsi, and Hope J. Schau. 2012. It don't come easy: Overcoming obstacles to technology use within a resistant consumer group. *Journal of Consumer Affairs* 46: 62–89. [CrossRef]
Giovanis, Apostolos, Costas Assimakopoulos, and Christos Sarmaniotis. 2019. Adoption of mobile self-service retail banking technologies: The role of technology, social, channel and personal factors. *International Journal of Retail & Distribution Management* 47: 894–914.
Goel, Pooja, Aashish Garg, Anuj Sharma, and Nripendra P. Rana. 2022. I won't touch money because it is dirty: Examining customer's loyalty toward M-payment. *International Journal of Bank Marketing* 40: 992–1016. [CrossRef]
Gupta, Aakriti, Mahesh V. Madhavan, Kartik Sehgal, Nandini Nair, Shiwani Mahajan, Tejasav S. Sehrawat, Behnood Bikdeli, Neha Ahluwalia, John C. Ausiello, Elaine Y. Wan, and et al. 2020. Extrapulmonary manifestations of COVID-19. *Nature Medicine* 26: 1017–32. [CrossRef]
Haapio, Hannele, Joel Mero, Heikki Karjaluoto, and Aijaz A. Shaikh. 2021. Implications of the COVID-19 pandemic on market orientation in retail banking. *Journal of Financial Services Marketing* 26: 205–14. [CrossRef]
Hair, Junior F., G. Tomas M. Hult, Christian M. Ringle, Marko Sarstedt, Nicholas P. Danks, and Soumya Ray. 2021. *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook*. Heidelberg: Springer Nature.
Hair, Junior F., Marko Sarstedt, Christian M. Ringle, and Siefried P. Gudergan. 2017. *Advanced Issues in Partial Least Squares Structural Equation Modeling*. Thousand Oaks: saGe Publications.
Hameed, Shaheema, and Abhinav Nigam. 2022. Exploring India's Generation Z perspective on AI enabled internet banking services. *Foresight ahead-of-print*.
Isa, Helmi Mohamed, Rosilavi Mat Jusoh, Muhammad Hafiz Aswad Ahmad Kamal, Fatin Shairah Md Amin, and Puteri Fadzline Muhamad Tamyez. 2022. Enriching User Experience among Senior Citizens in the Digital Era: A Design-Thinking Approach to Constructing a Prototype of a Mobile Application. *Journal of Advanced Research in Business and Management Studies* 29: 20–27.
Jena, Rabindra. 2022a. Exploring Antecedents of Peoples' Intentions to Use Smart Services in a Smart City Environment: An Extended UTAUT Model. *Journal of Information Systems* 36: 133–49. [CrossRef]
Jena, Rabindra. 2022b. Examining the factors affecting the adoption of blockchain technology in the banking sector: An extended UTAUT model. *International Journal of Financial Studies* 10: 90. [CrossRef]
Jun, Minjoon, and Sergio Palacios. 2016. Examining the key dimensions of mobile banking service quality: An exploratory study. *International Journal of Bank Marketing* 34: 307–26. [CrossRef]
Kadim, A., and Nardi Sunardi. 2023. Financial management system (QRIS) based on UTAUT model approach in jabodetabek. *International Journal of Artificial Intelligence Research.*. [CrossRef]
Kamboj, Shampy, and Richa Joshi. 2021. Examining the factors influencing smartphone apps use at tourism destinations: A UTAUT model perspective. *International Journal of Tourism Cities* 7: 135–57. [CrossRef]
Kaur, Divya J., Niraja Saraswat, and Irum Alvi. 2021. Exploring the Effects of Blended Learning using WhatsApp on Language Learners' Lexical Competence. *Rupkatha Journal on Interdisciplinary Studies in Humanities*. [CrossRef]
Keeley, Melissa, and Lisa Benton-Short. 2019. *Urban Sustainability in the US*. Cham: Palgrave Macmillan, pp. 239–79.

Khasawneh, Mohammad H. A., and Rand Irshaidat. 2017. Empirical validation of the decomposed theory of planned behaviour model within the mobile banking adoption context. *International Journal of Electronic Marketing and Retailing* 8: 58–76. [CrossRef]
Kim, Jin W., Hye I. Jo, and Bong G. Lee. 2019. The study on the factors influencing on the behavioral intention of chatbot service for the financial sector: Focusing on the UTAUT model. *Journal of Digital Contents Society* 20: 41–50. [CrossRef]
Lee, Chan J., and Eduardo B. Andrade. 2015. Fear, excitement, and financial risk-taking. *Cognition and Emotion* 29: 178–87. [CrossRef]
Lee, In, and Yong J. Shin. 2018. Fintech: Ecosystem, business models, investment decisions, and challenges. *Business Horizons* 61: 35–46. [CrossRef]
Lin, Judy C.-C. 2007. Online stickiness: Its antecedents and effect on purchasing intention. *Behaviour & Information Technology* 26: 507–16.
Lin, Peng-C., Hsin-K. Lu, and Shang-C. Liu. 2013. Towards an Education Behavioral Intention Model For E-Learning Systems: An Extension Of UTAUT. *Journal of Theoretical & Applied Information Technology* 47: 1120–27.
Lisana, Lisana. 2021. Factors influencing the adoption of mobile payment systems in Indonesia. *International Journal of Web Information Systems* 17: 1–10. [CrossRef]
Lu, Ming-P., and Zunarni Kosim. 2022. An empirical study to explore the influence of the COVID-19 crisis on consumers' behaviour towards cashless payment in Malaysia. *Journal of Financial Services Marketing* 2022: 1–12. [CrossRef]
Luarn, Pin, and Hsin-Hui Lin. 2005. Toward an understanding of the behavioral intention to use mobile banking. *Computers in Human Behavior* 21: 873–91. [CrossRef]
Majumdar, Sudipa, and Vijay Pujari. 2022. Exploring usage of mobile banking apps in the UAE: A categorical regression analysis. *Journal of Financial Services Marketing* 27: 177–89. [CrossRef]
Makanyeza, Charles. 2017. Determinants of consumers' intention to adopt mobile banking services in Zimbabwe. *International Journal of Bank Marketing* 35: 997–1017. [CrossRef]
Mehmood, Natasha, Faiza Shah, Maryum Azhar, and Atta Rasheed. 2014. The factors effecting e-banking usage in Pakistan. *Journal of Management Information System and E-Commerce* 1: 57–94.
Mogaji, Emmanuel. 2020. Financial vulnerability during a pandemic: Insights for coronavirus disease (COVID-19). *Mogaji, E* 2020: 57–63. [CrossRef]
Mudiri, Joseck L. 2013. Fraud in mobile financial services. *Rapport Technique, MicroSave* 30: 1–48.
Nguyen, Nhung T. H., Nguyen Kim-Duc, and Teresa L. Freiburghaus. 2022. Effect of digital banking-related customer experience on banks' financial performance during Covid-19: A perspective from Vietnam. *Journal of Asia Business Studies* 16: 200–22. [CrossRef]
Olsson, Tobias, Ulli Samuelsson, and Dino Viscovi. 2019. At risk of exclusion? Degrees of ICT access and literacy among senior citizens. *Information, Communication & Society* 22: 55–72.
Oluwatayo, Isaac. 2013. Banking the unbanked in rural southwest Nigeria: Showcasing mobile phones as mobile banks among farming households. *Journal of Financial Services Marketing* 18: 65–73. [CrossRef]
Papias, Malimba M., and Palanisamy Ganesan. 2010. Financial services consumption constraints: Empirical evidence from Rwandan rural households. *Journal of Financial Services Marketing* 15: 136–59. [CrossRef]
Patil, Pushp, Kuttimani Tamilmani, Nripendra P. Rana, and Vishnupriya Raghavan. 2020. Understanding consumer adoption of mobile payment in India: Extending Meta-UTAUT model with personal innovativeness, anxiety, trust, and grievance redressal. *International Journal of Information Management* 54: 102144. [CrossRef]
Peacock, Sylvia E., and Harald Künemund. 2007. Senior citizens and Internet technology: Reasons and correlates of access versus non-access in a European comparative perspective. *European Journal of Ageing* 4: 191–200. [CrossRef]
Refera, Matewos K., Navkiranjit K. Dhaliwal, and Jasmindeep Kaur. 2016. Financial literacy for developing countries in Africa: A review of concept, significance and research opportunities. *Journal of African Studies and Development* 8: 1–12.
Ribeiro, Rafael, Altair Santin, Vilmar Abreu, João Marynowski, and Eduardo Viegas. 2016. Providing security and privacy in smart house through mobile cloud computing. Paper presented at 2016 8th IEEE Latin-American Conference on Communications (LATINCOM), Medellin, Colombia, November 15–17; pp. 1–6.
Rogers, Ronald W. 1985. Attitude change and information integration in fear appeals. *Psychological Reports* 56: 179–82. [CrossRef]
Saha, Poulami, and Kunjangada B. Kiran. 2022. What insisted baby boomers adopt unified payment interface as a payment mechanism?: An exploration of drivers of behavioral intention. *Journal of Advances in Management Research. ahead-of-print*. [CrossRef]
Salignac, Fanny, Julian Hanoteau, and Ioana Ramia. 2022. Financial resilience: A way forward towards economic development in developing countries. *Social Indicators Research* 2022: 1–33. [CrossRef]
Santosa, Allicia D., Nuryanti Taufik, Faizal H. E. Prabowo, and Mira Rahmawati. 2021. Continuance intention of baby boomer and X generation as new users of digital payment during COVID-19 pandemic using UTAUT2. *Journal of Financial Services Marketing* 26: 259–73. [CrossRef]
Savić, Jovana, and Aleksandra Pešterac. 2019. Antecedents of mobile banking: UTAUT model. *The European Journal of Applied Economics*. [CrossRef]
Scherer, Ronny, and Timothy Teo. 2019. Editorial to the special section—Technology acceptance models: What we know and what we (still) do not know. *British Journal of Educational Technology* 50: 2387–93. [CrossRef]
Seifert, A. 2020. The digital exclusion of older adults during the COVID-19 pandemic. *Journal of Gerontological Social Work* 63: 674–76. [CrossRef]

Senali, Madugoda Gunaratnege, Mohammad Iranmanesh, Fatin Nadzirah Ismail, Noor Fareen Abdul Rahim, Mana Khoshkam, and Maryam Mirzaei. 2022. Determinants of intention to use e-Wallet: Personal innovativeness and propensity to trust as moderators. *International Journal of Human–Computer Interaction* 2022: 1–13. [CrossRef]

Shankar, Amit, Biplab Datta, Charles Jebarajakirthy, and Srabanti Mukherjee. 2020. Exploring mobile banking service quality: A qualitative approach. *Services Marketing Quarterly* 41: 182–204. [CrossRef]

Shareef, Mahmud Akhter, Vinod Kumar, Yogesh K. Dwivedi, Uma Kumar, Muhammad Shakaib Akram, and Ramakrishnan Raman. 2021. A new health care system enabled by machine intelligence: Elderly people's trust or losing self control. *Technological Forecasting and Social Change* 162: 120334. [CrossRef]

Sharma, Sujjet K., Srikrishna M. Govindaluri, Saeed Al-Muharrami, and Ali Tarhini. 2017. A multi-analytical model for mobile banking adoption: A developing country perspective. *Review of International Business and Strategy* 27: 133–48. [CrossRef]

Sheth, Jagdish. 2020. Impact of Covid-19 on consumer behavior: Will the old habits return or die? *Journal of Business Research* 117: 280–83. [CrossRef]

Shin, Dong-H. 2009. Towards an understanding of the consumer acceptance of mobile wallet. *Computers in Human Behavior* 25: 1343–54. [CrossRef]

Singh, Sindhu, and R. K. Srivastava. 2020. Understanding the intention to use mobile banking by existing online banking customers: An empirical study. *Journal of Financial Services Marketing* 25: 86–96. [CrossRef]

Sleiman, Kamal Abubker Abrahim, Wang Jin, Lan Juanli, Hong Zhen Lei, Jingyi Cheng, Yuanxin Ouyang, and Wenge Rong. 2022. The Factors of Continuance Intention to Use Mobile Payments in Sudan. *SAGE Open* 12: 21582440221114332. [CrossRef]

Sobkow, Agata, Tomasz Zaleskiewicz, Dafina Petrova, Garcia-Rocio Retamero, and Jacub Traczyk. 2020. Worry, risk perception, and controllability predict intentions toward COVID-19 preventive behaviors. *Frontiers in psychology* 11: 582720. [CrossRef] [PubMed]

Sobti, Neharika. 2019. Impact of demonetization on diffusion of mobile payment service in India: Antecedents of behavioral intention and adoption using extended UTAUT model. *Journal of Advances in Management Research* 16: 472–97. [CrossRef]

Sripalawat, Jiraporn, Mathupayas Thongmak, and A. Ngramyarn. 2011. M-banking in metropolitan Bangkok and a comparison with other countries. *Journal of Computer Information Systems* 51: 67–76.

Statista. 2021. www.statista.com. Available online: https://www.statista.com/statistics/219339/us-prices-of-cement/#::text=In%202020%2C%20the%20cost%20of,highest%20in%20the%20last%20years (accessed on 1 March 2021).

Stone, Mervyn. 1974. Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society: Series B (Methodological)* 36: 111–33.

Tan, Kevin S., and Calvin M. Chan. 2018. Unequal access: Applying Bourdieu's practice theory to illuminate the challenges of ICT use among senior citizens in Singapore. *Journal of Aging Studies* 47: 123–31. [CrossRef]

Taylor, Shirley, and Peter Todd. 1995. Decomposition and crossover effects in the theory of planned behavior: A study of consumer adoption intentions. *International Journal of Research in Marketing* 12: 137–55. [CrossRef]

Teng, Weichen, Hsi-P. Lu, and Hueijeu Yu. 2009. Exploring the mass adoption of third-generation (3G) mobile phones in Taiwan. *Telecommunications Policy* 33: 628–41. [CrossRef]

Tripathi, Shalini N., Shalini Srivastava, and Sushma Vishnani. 2022. Mobile wallets: Achieving intention to recommend by brick and mortar retailers. *Journal of Marketing Theory and Practice* 30: 240–56. [CrossRef]

Venkatesh, Viswanath, James Y. Thong, and Xin Xu. 2012. Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly* 2012: 157–78. [CrossRef]

Venkatesh, Viswanath, Michael G. Morris, Gordon B. Davis, and Fred D. Davis. 2003. User acceptance of information technology: Toward a unified view. *MIS Quarterly* 2003: 425–78. [CrossRef]

Vinerean, Simona, Camelia Budac, Lia A. Baltador, and Dan-C. Dabija. 2022. Assessing the effects of the COVID-19 pandemic on M-commerce adoption: An adapted UTAUT2 approach. *Electronics* 11: 1269. [CrossRef]

Wang, Yen-Y., Andy Luse, Anthony M. Townsend, and Brian E. Mennecke. 2015. Understanding the moderating roles of types of recommender systems and products on customer behavioral intention to use recommender systems. *Information Systems and E-Business Management* 13: 769–99. [CrossRef]

Widyanto, Hanif A., Kunthi A. Kusumawardani, and Helmy Yohanes. 2022. Safety first: Extending UTAUT to better predict mobile payment adoption by incorporating perceived security, perceived risk and trust. *Journal of Science and Technology Policy Management* 13: 952–73. [CrossRef]

Williams, Michael D., Nrupendra P. Rana, and Yogesh K. Dwivedi. 2015. The unified theory of acceptance and use of technology (UTAUT): A literature review. *Journal of Enterprise Information Management* 28: 443–88. [CrossRef]

Wong, Chi Y., and Mohamed I. P. Mohamed. 2021. Understanding the factors that influence consumer continuous intention to use E-wallet In Malaysia. *Research in Management of Technology and Business* 2: 561–76.

World Health Organization. 2020. *Decade of Healthy Ageing: Baseline Report*. Geneva: World Health Organization.

Xie, Qijen, Wei Song, Xiaobao Peng, and Muhammad Shabbir. 2017. Predictors for e-government adoption: Integrating TAM, TPB, trust and perceived risk. *The Electronic Library* 35: 2–20. [CrossRef]

Yang, Cheng-C., Cheng Liu, and Yi-S. Wang. 2022. The acceptance and use of smartphones among older adults: Differences in UTAUT determinants before and after training. *Library Hi Tech. ahead-of-print*. [CrossRef]

Zhao, Yuyang, and Fernando Bacao. 2020. What factors determining customer continuingly using food delivery apps during 2019 novel coronavirus pandemic period? *International Journal of Hospitality Management* 91: 102683. [CrossRef]
Zhao, Yuyang, and Fernando Bacao. 2021. How does the pandemic facilitate mobile payment? An investigation on users' perspective under the COVID-19 pandemic. *International Journal of Environmental Research and Public Health* 18: 1016. [CrossRef] [PubMed]