

When Privacy Proclivity Meet Covid-19: No Longer Concerns of Today's M-Commerce Users?

James Thomas, Jacksonville State University, Jacksonville, AL
Jianping Coco Huang, Jacksonville State University, Jacksonville, AL
Brent Cunningham, Jacksonville State University, Jacksonville, AL
Jihye Lee, Jacksonville State University, Jacksonville, AL
Le Wu, Henan University, China. Correspondent author 10080054@vip.henu.edu.cn

Abstract - This is continuous research of our previous publication (Thomas et al., 2021). A new two by two study (Before and After COVID 19) X (China and the US culture) was designed to test the moderated mediation effect of the COVID pandemic on M-commerce user's privacy proclivity, trust, and M-commerce intention! A new sample was collected from two countries in different time periods (Before and after COVID pandemic) to investigate whether M-commerce users' concern about privacy proclivity has changed after COVID-19. Built on top of our 2021 publication, this study discovered that privacy proclivity no longer has a significant direct impact on consumers' M-commerce intentions after COVID, as consumers' desires for convenience outweigh their privacy risk concerns. However, privacy proclivity still has significant influence on consumers' M-commerce Trust, therefore, it has an indirect impact on M-commerce intentions, but the impact is limited. Finally, the results from Hayes' (PROCESS replicated our previous study findings that culture plays a moderating role in the relationship between privacy proclivity and m-commerce trust after COVID-19 outbreak (Thomas et al., 2021). The impact of privacy proclivity is stronger on M-commerce Trust in China than in the US.

Keywords - COVID-19, pandemic, privacy proclivity, M-commerce Trust, M-commerce intentions, Cross-cultural, Moderated mediation

Relevance to Marketing Educators, Researchers and/or Practitioners – We conducted a cross-cultural investigation on the impact of COVID on privacy proclivity. The study offers insights and trends that can guide businesses in developing marketing strategies for their omnichannel and expanding the e-commerce sectors.

Introduction

The COVID-19 pandemic has rapidly spread worldwide, bringing significant changes to the business and social landscape, and revealing vulnerabilities in the travel and dining industries due to CDC and government restrictions (McKinsey, 2021). It has also presented opportunities to accelerate digitization in the B2C business sector. In 2017, 4.3 billion consumers accessed the internet using smartphones, and this number increased to 6.38 billion by May 2021 (Statista, 2021). The transaction value of global M-commerce sales grew from 50 billion in 2014 to nearly 700

billion in 2019; China, India, and the US are currently leading countries with high M-commerce usage (Statista, 2021).

Prior to COVID-19, China was already a leader in M-commerce, with Chinese mobile payment penetration three times higher than that of the US. The pandemic further accelerated digitalization in various areas in China, such as "Dancing on the cloud," a term used for live-streaming music events; Key Opinion Leaders (KOLs), known as WangHong, who engage with their audience during live streams to present, promote, and sell products; E-doctor, providing online consultations with doctors (CMA, 2021); and the Property Platform Beike, which facilitates property viewings through its 3D showroom.

The significant growth of M-commerce consumers and services is driving a revolution in the business world, offering consumers more flexibility and convenience in their daily lives (Wagner et al., 2013). This revolution revolves around conducting business with consumers anytime and anywhere. However, it is important to explore whether the convenience of rapid M-commerce growth reduces barriers to consumer acceptance, such as privacy concerns. Does the varying growth of M-commerce between China and the US affect consumers' trust and intention to use M-commerce during the COVID-19 pandemic?

The expansion of M-commerce presents extensive opportunities for business process innovation and location-sensitive services. Surveys conducted on Chinese consumers indicate that around 55 percent are likely to continue purchasing groceries online post-COVID-19 (McKinsey, 2021). However, as organizations rush to incorporate M-commerce into their strategies, they need to identify barriers faced by M-commerce users and assess their perception of "risk management" (i.e., privacy concerns) and "trust in innovation." This understanding will guide future directions and provide convenience for consumer shopping behavior.

The objective of this research is to investigate whether M-commerce users' concerns about privacy have changed after COVID-19 and how it influences their trust and intention to use E-commerce. This study aims to answer the following questions:

Does the rapid diffusion of M-commerce activities during and after COVID-19 lower barriers to acceptance, such as privacy concerns? Considering that China and the US have adopted different policies and strategies to control COVID-19, are there any cultural differences in terms of M-commerce trust and purchase intention before and after COVID-19?

Literature Review and Model Development

M-commerce Privacy Proclivity

M-commerce is defined as "wireless B2B and B2C operational and financial data exchanges at different stages of the life cycle of a business relationship" (Elliott & Phillips, 2004). The current popular applications of B2C M-commerce include mobile shopping (e.g., m-retailing, m-ticketing, and m-live streaming), mobile financing (e.g., mobile wallets, m-banking, m-payment, and m-brokering), mobile entertainment (e.g., m-gaming, m-music, m-video, and m-social media), and mobile information (e.g., sports events, news, weather, research, and GPS, etc.) (Khalifa and Shen, 2008). Moreover, many retailers and social media sites such as Twitter and Pinterest have introduced one-click checkout to their sites. Since the COVID-19 outbreak, as regulations in

retailing, dining, and traveling were imposed, app usage has continued to grow, becoming a major contributor to sales growth, especially with Millennials and Gen Zers (Meola, 2020).

However, with Baby Boomers and Generation Xers, a risk barrier of m-commerce has been observable, namely privacy proclivity. M-commerce privacy proclivity is a behavior observed through the user's propensity to read privacy policies, agree to the m-commerce organizations or merchants' collection and handling of personal information, search for privacy seals of approval, and provide false personal information (Guo et al., 2020). Individuals differ in their technical proficiencies when it comes to computers and the internet, and therefore perceive risk differently when it comes to privacy and cybersecurity (Ryan and Power, 2018).

Consumer behavior has shifted and will continue to shift during and post-COVID-19; Chinese consumers responding to e-commerce are faring better compared to other countries. Chinese e-commerce consumers have a different perception of privacy proclivity than their US counterparts. A cross-cultural comparison study found that Chinese consumers are more inclined to participate in online group buying than US consumers (Tsai and Zhang, 2016). We believe that the difference in the perceived risk of privacy safety between the two countries has been enlarged post-COVID-19 as the growth of the "stay-at-home economy" has occurred.

M-commerce Trust

Consumers are becoming more aware of their privacy security and are hesitant to provide complete information for digital transactions (Korzaan and Boswell, 2008). Consumer fears concerning internet security and ordering over the Internet can influence online buying behavior. Groß (2014) indicated that trust in a mobile vendor is one of the main determinants of a consumer's intention to be involved in online shopping via mobile devices.

Trust refers to the "willingness of an individual to be vulnerable, reliance on parties other than oneself, or a person's expectation" (Kim et al., 2008, p. 545). Trust in digital marketing refers to the "basic requirement in order to engage in a purchase decision through this online shop, irrespective of whether engaging in M-commerce" (Cleff et al., 2015). Before COVID-19, consumers were skeptical about whether m-commerce is technologically feasible and secure (Siau & Shen, 2003), for example, grocery/restaurant curbside pick-up and delivery, live conferences, live lecturing, and mobile OA app. Research suggests that college students are more willing to take risks and get involved with new trends, even when they are not fully developed; Those who are highly intellectual are receptive to new ideas and experiences (Tsiriktsis, 2004). Also, intellectual individuals were more open to online purchasing (Korzaan and Boswell, 2008). However, some findings indicate that a well-known website with certification can reassure potential customers, improve trust, and thus increase the probability of purchase (Jiang, Jones, and Javie, 2008).

M-commerce Intentions

This study adopted Gefen and Straub's 2004 B2C study of e-commerce users' purchase intent instrument. This state-of-the-art, highly replicated instrument consists of two items: "I am very likely to purchase products using mobile technology" and "I would be comfortable using my credit card to purchase products using mobile technology."

While many governments aim to strike the right balance between containing viral transmission and restarting locked-down economies, consumers have changed their saving, borrowing, investing, and consumption behavior during the COVID Pandemic. For example, in a

survey, 42 percent of Chinese respondents stated their intention to save more than before COVID-19. The risk-avoidance cultural value indicates that Chinese M-commerce intentions will be lower than in the US.

The Mediating Role of Trust

Privacy proclivity can increase the perception of risk, thus decreasing consumers' trust in M-commerce organizations (Coursaris and Hassanein, 2001). The doubt and distrust of the integrity of digital vendors can be obstacles that discourage consumers' purchase intentions (Morosan, 2016). Thomas and his colleagues (2021) found that privacy proclivity has a negative relationship with M-commerce intentions and Trust, and M-commerce Trust has a positive influence on M-commerce intentions. Ghazali and his colleagues investigated M-commerce in Malaysia and found that trust influenced consumers' intentions towards adopting mobile shopping (Ghazali et al., 2018). In this paper, we aimed to examine this result further by comparing the relationship between privacy proclivity and M-commerce Trust in different time periods, that is, before and after the COVID-19 pandemic. Based on the above literature, we predict that trust still plays a mediating role between privacy proclivity and consumers' M-commerce intentions, whether before or post COVID-19. When consumers have more concerns about privacy, they will have less trust in M-purchasing, thereby lowering M-commerce intentions.

Based on previous literature and analysis, we suggest that:

H1: Privacy proclivity has a significant impact on M-commerce Trust.

H2: M-commerce Trust has a positive relationship with M-commerce Intentions.

The Moderating Role of Culture Differences

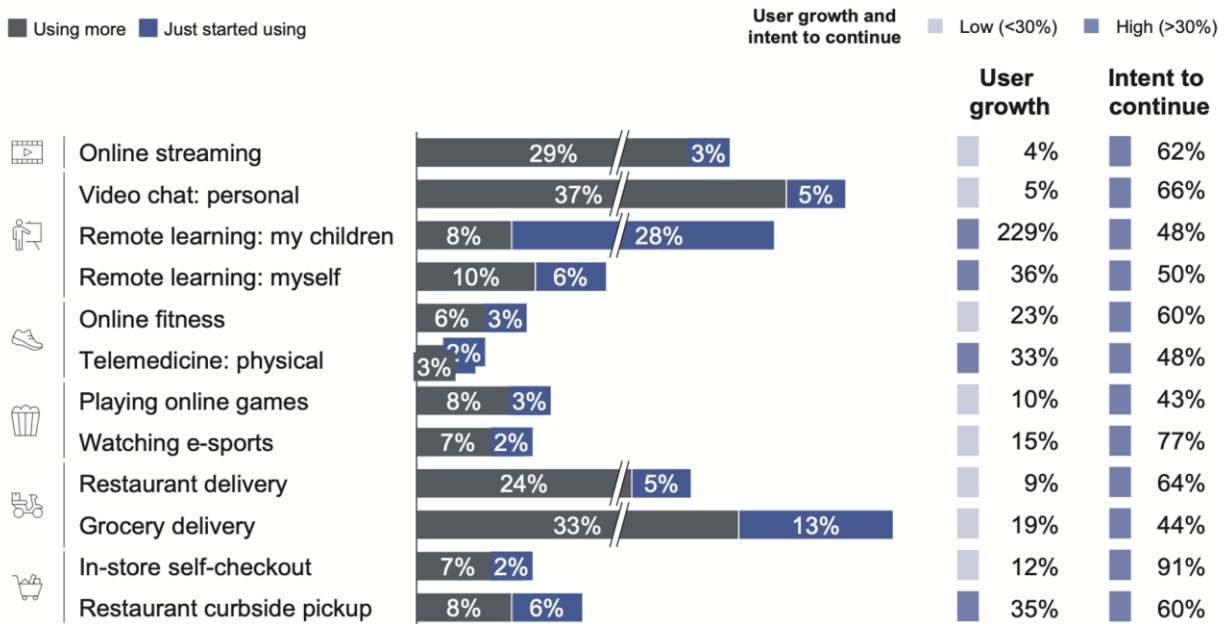
Cultural differences in collectivistic and individualistic values suggest that Chinese and US users have different levels of trust and intentions to share, seek, and use the Internet for collective and individual benefit (Nemati, Wall, and Chow, 2014). Research shows that US and Chinese users exhibit variations in their privacy coping and information sharing behaviors. Chinese users may face a higher risk of privacy violations due to their M-commerce practices, such as WeChat Pay and AliPay. Moreover, Chinese users tend to be more addicted to M-commerce, with platforms like Pinduoduo APP (a Chinese E-Retail, Nasdaq: PDD) pioneering features like "team purchase" that promote the idea of "purchasing together with friends brings more savings and more fun"! In comparison to the US, Chinese consumers place a higher value on collectivism, leading to significant concerns about privacy, including identity issues on social network sites and apps.

H3: The negative relationship between privacy proclivity and M-commerce Trust is stronger in the US than in China.

The moderating role of COVID-19 M-commerce markets in the US and China before and after COVID-19 The number of mobile internet users in China had already exceeded 751 million before COVID-19, driven by platforms like AliPay and WeChat Pay. M-commerce experienced significant growth during the COVID-19 pandemic and is expected to continue growing post-COVID-19, as consumers have recognized the convenience of online shopping and delivery. The usage of pickup digital apps and low-touch activities has seen a dramatic increase in the post-COVID-19 period. The growth in the number of M-commerce users after COVID-19 is presented in Table 1 (McKinsey, 2021).

Figure 1 M-commerce usage before and after COVID-19

% of respondents who replied using more or just started using



¹Q: Have you used or done any of the following since the COVID-19 situation started? If yes, Q: Which best describes when you have done or used each of these items? Possible answers: "just started using since COVID-19 started"; "using more since COVID-19 started"; "using about the same since COVID-19 started"; "using less since COVID-19 started."

Source: McKinsey COVID-19 China Consumer Pulse Survey

In response to COVID-19, US consumers' spending patterns have shifted rapidly from traditional in-store purchases to online shopping or curbside pickup. According to the 2017 IBIS World Industry report, B2C e-commerce websites are currently the fastest-growing type of M-commerce in the US. The percentage of B2C e-commerce sales accounted for 4.2% of total sales in 2017, and in the second quarter of 2021, e-commerce sales accounted for 13.3% of total sales (Statista, 2021).

The economic growth in China has caused significant social change and reduced extraordinary pressure on the privacy concerns of its citizens (Zhu and Sarkis, 2016). Liu and his colleagues (2011) found that trust has a significant mediating effect on purchasing and is considered important in strengthening the relationship between consumers and E-commerce stores. After COVID, with the quick development of E-commerce business and new technology, consumers have learned that allowing access to personal information is unavoidable as it is a tradeoff for the conveniences of advanced technology. Therefore, they are less likely to think too deeply about privacy and security as technology further penetrates their lives (Javed et al., 2019).

Moreover, because Chinese culture tends toward unity and conformity, Chinese consumers take time to generate trust and be able to share and disclose information as they are afraid of making unwise purchase decisions, losing money and face. They are more willing to purchase products through online resources that are endorsed by opinion leaders or social media influencers to protect their privacy. In contrast, US culture values individualism, and US consumers are less

likely to seek out opinion leaders or social media influencers' opinions, thus they are less concerned with reducing the risk of a data privacy breach.

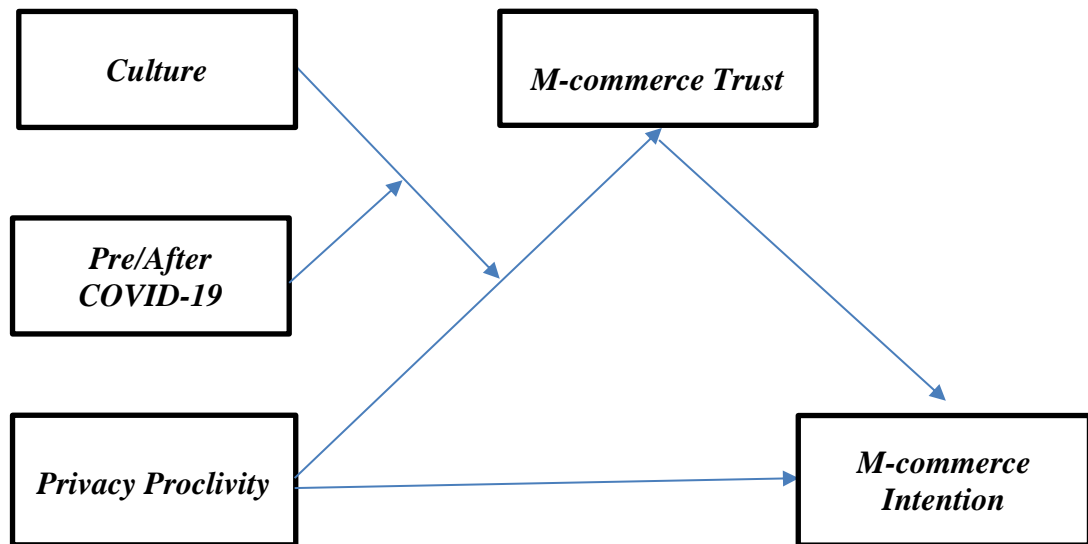
Therefore, compared to before COVID-19, consumers may be more vulnerable to privacy violations post-COVID-19 as they have less concern about privacy proclivity. COVID-19 has a stronger impact on privacy violations and trust among Chinese consumers than US consumers.

H4: The negative relationship between privacy proclivity and M-commerce Trust is stronger before COVID-19 than post-COVID-19.

H5: COVID-19 has a stronger impact on the relationship between privacy violation and trust in China than in the US.

Given the prior research examined in the literature review, the conceptual model is demonstrated in Figure 2; Control variables are Age and Gender.

Figure 2. Moderated Mediation Effect of COVID-19 and Privacy Trust M-commerce Model



Methodology

Data Collection

The Pre-Pandemic (Pre) sample was collected by students in a Marketing Research course through personal interviews. Each student received training on ethical treatment of subjects, sample selection, and interview techniques before conducting their fieldwork. The questionnaire used was a hard-copy instrument, which will be discussed further. The data was collected from both students and non-students at a university in the southeastern United States and its surrounding area. The timeframe for data collection was from January 2019 to February 2020. The study received approval from the university's Institutional Review Board (IRB). Students were required to have a copy of the university's Privacy Policy during their interviews, and subjects could request access to a copy of the IRB approval through a provided hyperlink.

The Post-Pandemic (Post) sample was collected from students at the same university between May 2021 and July 2021. Students in this part of the study received the same training

before collecting data. Although the questions remained the same, a self-administered electronic questionnaire was used for data collection. Students were instructed to follow a hyperlink to access the questionnaire. The study was approved by the university's IRB, and students could view both the Privacy Policy and the IRB approval through hyperlinks.

Sample

A total of 2148 samples were collected. The Pre sample consisted of 1548 respondents, with 639 from China and 909 from the US. Among them, 78.2% were college students and 21.8% were non-students. The female respondents accounted for 57.9% of the sample, and the average age was 24.43. Approximately 55% of the respondents used Apple mobile devices, and on average, they used 2.59 devices.

The Post sample consisted of 600 respondents, with 286 from China and 314 from the US. The average age of the sample was 23.43. Among the respondents, 87.2% were college students, and females represented 55% of the sample. The Post sample used an average of 1.83 mobile devices, with 49.3% using Apple devices.

While these samples primarily consist of convenient student samples, it is important to note (Ferber, 1977) that such samples are appropriate under specific conditions. First, the items being investigated must be relevant to the respondents who have questions. Second, the study must be exploratory in nature. This study examines issues that are highly relevant to college students, such as mobile commerce, and it is one of the first studies to explore the impact of the pandemic on mobile commerce behavior.

Measures

The questionnaire included questions designed to measure m-commerce behavior, privacy proclivity (whether respondents take steps to protect their privacy online), trust in e-commerce, and m-commerce intentions. Each scale used in the questionnaire has been developed, tested, and validated in previous studies. Demographic information being collected includes items such as gender, year of birth, marital status, residency, etc.

Scale Items

The constructs examined in this study include Privacy Proclivity, M-commerce Trust, and M-commerce Intentions. Each scale has been previously developed, tested, and validated, with minor modifications made for the current study. A 5-point Likert-type scale will be used to measure each construct, where 1 indicates strong disagreement with a statement and 5 indicates strong agreement. Before testing the study hypotheses, reliability and principal components factor analyses were conducted to assess the appropriateness of the scales used.

Reliability assessment was performed using coefficient alpha following Churchill's (1979) eight-step process. Principal components factor analysis with varimax rotation was used to determine the minimum number of factors accounting for variance within each measure. A minimum item loading value of 0.40 was considered as an indication of the scale item's loading on a factor. To create dimensions, a minimum Eigenvalue of one was used as a criterion, as suggested by Hair, Anderson, Tatham, and Black (1992). After purifying the scales, final Cronbach's alphas were calculated. An ideal coefficient alpha for a purified scale should exceed 0.70 (Nunnally, 1978). Once the scales were purified, each variable was summated and standardized for efficient testing of the study hypotheses.

Privacy Proclivity was adapted from previous privacy research (Guo et al., 2020; Tsai and Zhang, 2016) to measure tendencies such as reading privacy policies, providing personal information, and searching for privacy seals of approval. Examples of statements include "Before I buy a product using my mobile device, I read the site's privacy policy" and "If a site lacks a privacy seal of approval, I do not use my mobile device to buy products from that site." A 5-point scale ranging from strongly disagree (1) to strongly agree (5) was used to rate the answers to six items assessing privacy proclivity behavior.

M-Commerce Trust was developed based on Gefen's (2000) studies on consumer trust in B2C e-commerce. It consists of five items measuring trust in mobile devices. Participants rate their agreement with statements such as "Mobile devices do not give me any trouble in use" and "I trust using mobile devices" on a Likert scale ranging from strongly disagree (1) to strongly agree (5). The scale also assesses any problems experienced during the use of mobile devices.

M-Commerce Intentions assessed participants' intention to purchase a product via mobile devices. Adapted from a B2C e-commerce study by Gefen and Straub (2004), a single item was developed: "I am very likely to purchase products using my mobile device."

Results

In this study, we utilized the PROCESS tool in SPSS to analyze the data and test the hypotheses (Hayes, 2013). PROCESS is a flexible computational tool used to estimate mediation or moderation models. It is based on multiple linear regression and is considered appropriate for analyzing interactions between continuous independent variables (Hayes & Matthes, 2009; Hayes, 2013).

Using Andrew F. Hayes's PROCESS for SPSS model 11, we tested the following hypotheses: (1) the mediation role of Trust between privacy proclivity and m-commerce intention; (2) the moderation role of culture (H3) and COVID-19 (H4 and H5) between privacy proclivity and m-commerce trust (H3). Initially, we investigated the relationships between privacy proclivity and m-commerce Trust (H1) and the relationship between m-commerce trust and m-commerce intentions (H2).

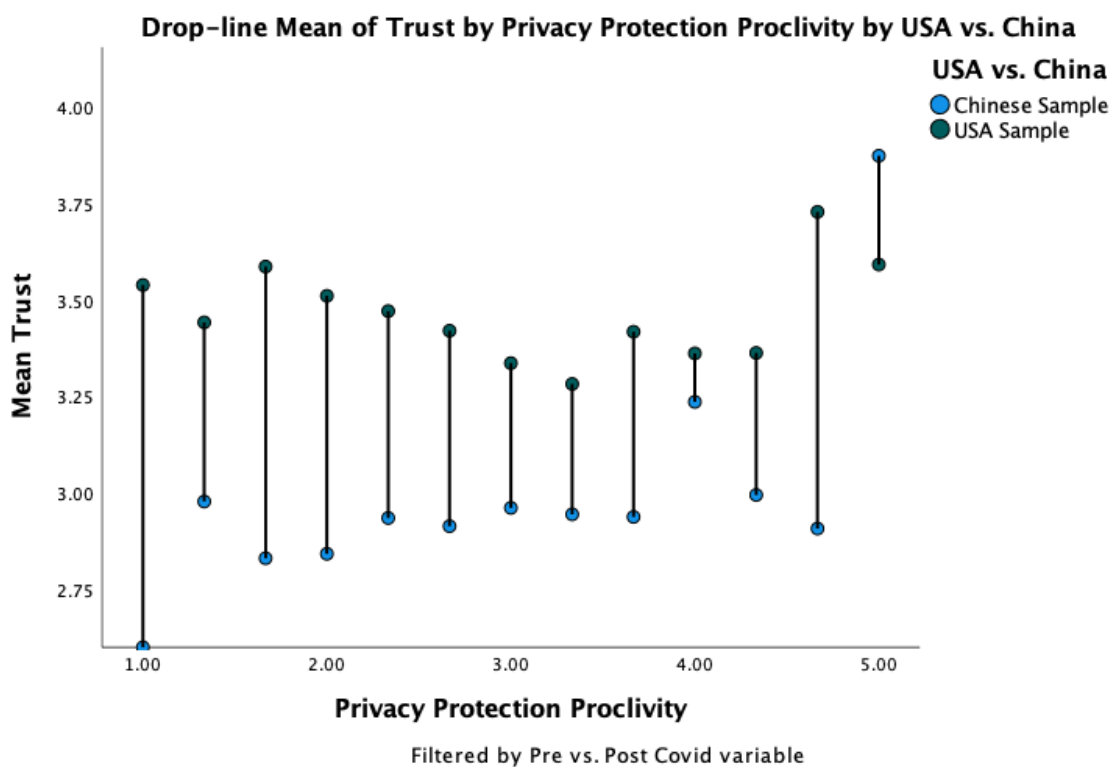
Mediation Analysis of M-commerce Trust between Privacy Proclivity and M-commerce Intention

Hypothesis 1 suggested that privacy proclivity has an impact on m-commerce Trust. As predicted, PROCESS model 11 yielded significant results with $F(7,2129) = 45.14$, $p < .01$, $R^2 = 0.13$, indicating a good overall model fit. The coefficient of privacy proclivity ($\beta = 0.97$, $t = 5.86$, $p < .001$) indicated a statistically significant impact on m-commerce Trust, thus supporting H1. Hypothesis 2 suggested a positive relationship between m-commerce Trust and m-commerce Intention. The results from PROCESS model 11 with $F(2,2134) = 114.98$, $p < .001$, $R^2 = 0.10$, indicated a good overall model fit. The coefficient of e-commerce Trust ($\beta = 0.42$, $t = 15.16$, $p < .001$) showed a statistically significant positive impact on m-commerce Intention, thus supporting H2. Additionally, the coefficient of privacy proclivity ($\beta = 0.02$, $t = 1.28$, $p > .05$) indicated that privacy proclivity does not have a significant direct impact on m-commerce Intention, supporting the mediation role of e-commerce Trust between Privacy Proclivity and m-commerce Intention.

Moderation Analysis of Culture Difference

After testing the main effects, we used Hayes's (2013) PROCESS Model 8 with 5000 bootstrap samples and 95% bias-corrected confidence intervals (CIs) to assess whether the mediated effects of m-commerce Trust between privacy proclivity and m-commerce Intention remain valid in different cultures. The results revealed a significant unconditional interaction effect of privacy proclivity and culture on m-commerce Trust with $F(1,2133) = 62.45, p < .01, R^2 = 0.03, (\beta = -0.52, t = -5.54, p < .001)$. Consistent with Hypothesis 3, the results indicated that the relationship between privacy proclivity and m-commerce intention is stronger in China ($\beta = .21, t = 7.99, p < .001$) than in the US ($\beta = 0.04, t = -2.34, p < .01$). Therefore, H3 was supported. The plot of the interaction is illustrated in Figure 3.

Figure 3. Moderation Effect of Culture and Privacy M-commerce Trust



The Moderated Mediation Effect Analysis of COVID-19 in Different Cultures

Hypothesis 4 suggested that the moderation effect of culture difference has changed after COVID-19. Compared to before COVID-19 time, consumers have less concern of privacy proclivity. Utilizing the highest order unconditional interactions test in PROCESS Model 11, the results revealed a significant unconditional interaction effect of privacy proclivity and culture at different (Pre and Post) COVID-19 time with $F(1,2129) = 9.58, p < .01, R^2 = 0.004, (\beta = -0.52, t = -5.54, p < .001)$. The results indicated the relationship between privacy proclivity and m-commerce Trust has weakened post COVID-19 ($\beta = -0.10, F = 2.99, p < .08$) than before COVID-19 ($\beta = -0.31, F = 68.95, p < .001$). Therefore, H4 is supported.

Hypothesis 5 suggested that COVID-19 has a stronger impact on privacy violation and trust among Chinese consumers than the US consumers. The results suggested a strong three-way

interstation between privacy proclivity, culture differences, and COVID-19 time (pre and post) with ($\beta = 0.21$, $t = 3.10$, $p < .01$). The detailed results indicated that relationship between privacy proclivity and m-commerce Trust in China ($\beta = 0.08$, $t = 1.69$) has weakened more significantly than in the US ($\beta = -0.02$, $t = -.59$) post COVID-19, compared to pre COVID-19 (China: $\beta = 0.26$, $t = 8.42$; US: $\beta = -0.05$, $t = -2.42$). Therefore, H5 is supported. Table 1 demonstrated the results of the impact of three-way interaction on m-commerce Trust!

Table 1. Results of PROCESS (Model 11) on M-Commerce Trust and Intention

Predictor variables	Moderated Mediation Model (M) (m-commerce trust)					
	B	SE	t	p	Boot 95% CI	
($R^2 = .13$, $p < .001$)						
constant	-0.31	0.54	-0.58	0.56	-1.38	0.75
pp	0.97	0.16	5.86	0.00	0.64	1.29
culture	1.98	0.29	6.73	0.00	1.40	2.55
pp*culture	-0.52	0.09	-5.54	0.00	-0.71	-0.34
COVID-19	1.12	0.39	2.86	0.00	0.35	1.89
COVID*pp	-0.39	0.12	-3.29	0.00	-0.63	-0.16
COVID*culture	-0.59	0.21	-2.76	0.01	-1.01	-0.17
COVID*pp*culture	0.21	0.07	3.10	0.00	0.08	0.35

Predictor variables	Dependent variable model (Y) (m-commerce intention)					
	B	SE	t	p	Boot 95% CI	
($R^2 = .1$, $p < .001$)						
constant	2.77	0.11	25.67	0.00	2.56	2.98
pp	0.02	0.02	1.28	0.20	-0.01	0.06
trust	0.42	0.03	15.16	0.00	0.36	0.47

The plot of the interaction was illustrated in Figure 4. Note: PP refers to Privacy Proclivity.

Figure 4. Moderation Effect of Pre vs. Post Covid and Privacy M-commerce Trust



In addition, a preliminary ANOVA analysis was conducted to test control variables and investigate how consumers' m-commerce behavior has changed after COVID-19 compared to pre-COVID-19. Statistically significant differences were found between the two groups in the following variables: (1). Number of Mobile Devices Used: The mean number of mobile devices used by consumers decreased from 2.59 before COVID-19 to 1.83 after COVID-19. (2). Percentage of Total Expenses Spent on Mobile Devices: Consumers spent a smaller portion of their total expenses on purchasing mobile devices after COVID-19 (mean = 43.34%) compared to before COVID-19 (mean = 53.11%). (3). Impulse Buying Tendency: Consumers' impulse buying tendency significantly increased after COVID-19 (mean = 3.12) compared to before COVID-19 (mean = 2.91). Additionally, consumers currently have a better knowledge and understanding about privacy proclivity after COVID-19 (mean = 3.91) compared to pre-COVID-19 (mean = 3.77).

Discussion

This study extends previous research (e.g., Khoi et al., 2018; Shah et al., 2020; Thaichon et al., 2021; Thomas et al., 2021) by developing a theoretical framework that incorporates COVID-19, social cultural factors, and privacy proclivity to explain consumers' trust and intentions to adopt M-commerce in both developing countries like China and developed countries like the US. By simultaneously considering the physical and social environment in the models, this study explores how changes in the physical and social environment, such as those caused by COVID-19, impact consumers' perception of privacy proclivity, thereby influencing their trust and intentions to adopt M-commerce.

The results of the moderated mediation analysis demonstrate the reliability and validity of the constructs and indicate a good fit of the estimated models. Consistent with previous research (Thomas et al., 2021), this study replicates the finding that privacy proclivity significantly impacts consumer trust. Supporting Hypothesis 1, the study reveals that privacy proclivity and related behaviors, such as expressing disagreement with M-commerce organizations or merchants collecting and handling personal information, having concerns about the absence of privacy seals of approval, and providing false personal information, create obstacles for consumers' trust in the security and reliability of M-commerce. Consequently, consumers are less likely to purchase products using mobile technology and hesitate to use their credit cards for M-commerce transactions.

Furthermore, the study finds a positive association between consumers' M-commerce trust and their M-commerce intentions, such as engaging in highly personal transactions over a cell phone, supporting Hypothesis 2. In addition to confirming the mediation role of M-commerce trust between privacy proclivity and M-commerce intentions as found in previous research (Thomas et al., 2021), this study contributes to the literature by discovering that privacy proclivity no longer has a significant direct impact on consumers' M-commerce intentions. This suggests that privacy concerns may have diminished after the COVID-19 pandemic, as consumers prioritize convenience over privacy risks. However, privacy proclivity still exerts a significant influence on consumers' M-commerce trust, thus having an indirect impact on M-commerce intentions, albeit to a limited extent.

Finally, the results from Hayes' (2013) PROCESS Model 11 replicate previous findings that the impact of privacy proclivity on M-commerce trust and M-commerce intentions differs between cultures, particularly after the COVID-19 outbreak (Thomas et al., 2021). The impact of privacy proclivity is stronger in China than in the US on M-commerce trust. This finding aligns with Fukuyama's (1995) and Thomas et al.'s (2021) research, which suggests that US consumers exhibit a higher degree of generalized trust and spontaneous sociability compared to Chinese consumers, who are more socially oriented. Trust boundaries vary in each culture or society, with the US having a broader trust boundary and China having a more closed-in boundary that requires more time to establish trust. Therefore, the impact of privacy proclivity is stronger in China than in the US. However, after two years of coexistence with COVID-19, the differences in trust boundaries have become more pronounced.

Overall, this study contributes to the understanding of how COVID-19, social cultural factors, and privacy proclivity influence consumers' trust and intentions to adopt M-commerce, providing insights into the changing landscape of consumer behavior in the context of mobile technology and online transactions.

Theoretical Implications and Managerial Implications

Theoretical Implications

There are three theoretical contributions from this study. First, it advances previous research by examining the impact of privacy proclivity on M-commerce trust and M-commerce intentions before and after COVID. In contrast to previous studies (Fukuyama, 1995; Thomas et al., 2021), this study reveals that privacy proclivity no longer directly affects consumers' M-commerce intentions after COVID. This suggests that privacy concerns may no longer be a significant

obstacle to online shopping in the future, as consumers prioritize the convenience of M-commerce and are willing to accept some privacy risks.

Second, these findings not only provide new insights into consumer attitudes and M-commerce purchase intentions but also offer predictions for future research in the development of global E-commerce. Specifically, cultural tendencies and how consumers in different cultures perceive and handle COVID are strongly associated with privacy outcomes, resulting in varying degrees of M-commerce trust.

Finally, this study replicates previous research findings that US consumers have a higher degree of generalized trust and spontaneous sociability compared to Chinese consumers (Thomas et al., 2021). Importantly, the differences between US consumers and Chinese consumers have significantly widened after COVID.

These contributions contribute to a deeper understanding of the impact of privacy proclivity, cultural factors, and the COVID-19 pandemic on consumers' trust and intentions in the context of M-commerce. They shed light on the evolving landscape of consumer behavior and provide valuable insights for researchers and practitioners in the field of E-commerce.

Managerial Implications

The findings of this study have valuable implications for marketers who aim to offer m-commerce applications in diverse geographic and sociographic markets post-COVID. Consequently, several strategies for m-commerce development are recommended.

First, marketers can tailor their promotion strategies based on consumers' previous purchase records, as consumers prioritize the advantages offered by the application and have reduced concerns about privacy. Application developers should focus on enhancing the convenience of the graphic user interface, such as providing one-click checkout by storing frequently purchased items, delivery addresses, and credit card information, as well as streamlining the return process.

Second, this study assists marketers in identifying their place strategies for maintaining and expanding their market presence. For instance, entering the m-commerce market may require more time and effort in certain Asian cultures like China, Thailand, and India, where consumers have a complex process of building trust and spontaneous sociability based on kinship. Therefore, marketers should develop long-term marketing plans, including loyalty programs and rewards programs, to encourage consumers to adopt m-commerce technology.

Limitations

As with any study, there are certain limitations that should be acknowledged. Firstly, the data collected relied on self-reported measures, which may be subject to response biases or inaccuracies. Secondly, the study's sample was limited to college students, thus limiting the generalizability of the results beyond this specific population. Lastly, the study focused on students from only two continents, and therefore, the results may vary when considering a broader scope of continents.

Future Research

Despite the limitations, this study suggests several interesting avenues for future research. Firstly, further investigation into basic relationships, such as age differences and gender differences, would

provide valuable insights. Secondly, examining the differences in mobile commerce usage between Apple product users and those who prefer non-Apple technology would be an intriguing area of exploration. Thirdly, to enhance the generalizability of the study's findings, replication with additional student samples from other continents as well as non-student samples would be beneficial. Fourthly, employing longitudinal designs in future studies would enable a better understanding of the phenomena explored in this study. Finally, examining additional psychographic variables, such as impulse buying behavior and the need for touch, would contribute to a more comprehensive understanding of the constructs examined in this study.

References

- Churchill Jr, G. A. (1979). A paradigm for developing better measures of marketing constructs. *Journal of marketing research*, 16(1), 64-73.
- Cleff, E., Elswailer, D., & Bodendorf, F. (2015). Trust in digital marketplaces: A literature review. In *Proceedings of the 23rd European Conference on Information Systems (ECIS), Münster, Germany*.
- CMA (2021). The Ultimate Guide to 'Key Opinion Leader' Marketing in China. Accessed on September,26,2021! <https://marketingtochina.com/ultimate-guide-key-opinion-leader-marketing-china/>
- Coursaris, C., & Hassanein, K. (2001). A Consumer-Centric Model.
- Elliott, G., & Phillips, N. (2004). *Mobile commerce and wireless computing systems*. Harlow: Pearson Education.
- Ferber, R. (1977). Research by convenience. *Journal of Consumer Research*, 4, 57-8.
- Fukuyama, F. (1995). Social capital and the global economy. *Foreign Aff.*, 74, 89.
- Ghazali, E. M., Mutum, D. S., Chong, J. H., & Nguyen, B. (2018). Do consumers want mobile commerce? A closer look at M-shopping and technology adoption in Malaysia. *Asia Pacific Journal of Marketing and Logistics*, 30(4), 1064-1086.
- Gefen, D. (2000). E-commerce: the role of familiarity and trust. *Omega*, 28(6), 725-737.
- Guo, B., Ding, Y., Yao, L., Liang, Y., & Yu, Z. (2020). The future of false information detection on social media: New perspectives and trends. *ACM Computing Surveys (CSUR)*, 53(4), 1-36.
- Gefen, D., & Straub, D. W. (2004). Consumer trust in B2C e-Commerce and the importance of social presence: experiments in e-Products and e-Services. *Omega*, 32(6), 407-424.
- Groß, M. (2015). Exploring the acceptance of technology for mobile shopping: an empirical investigation among Smartphone users. *The International Review of Retail, Distribution and Consumer Research*, 25(3), 215-235.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1992). *Multivariate Data Analysis* Macmillan. *New York*, 47, 82.

Hayes, A. F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior research methods*, 41(3), 924-936.

Hayes, A. F. (2013). Mediation, moderation, and conditional process analysis. *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*, 1, 20.

Javed, M. K., Degong, M., & Qadeer, T. (2019). Relation between Chinese consumers' ethical perceptions and purchase intentions: A perspective on ethical company/brand management strategies. *Asia Pacific Journal of Marketing and Logistics*.

Jiang, P., Jones, D. B., & Javie, S. (2008). How third-party certification programs relate to consumer trust in online transactions: An exploratory study. *Psychology & Marketing*, 25(9), 839-858.

Khalifa, M., & Shen, K. N. (2008). Explaining the adoption of transactional B2C mobile commerce. *Journal of enterprise information management*.

Kim, D. J. (2008). Self-perception-based versus transference-based trust determinants in computer-mediated transactions: A cross-cultural comparison study. *Journal of Management Information Systems*, 24(4), 13-45.

Khoi, N. H., Tuu, H. H., & Olsen, S. O. (2018). The role of perceived values in explaining Vietnamese consumers' attitude and intention to adopt mobile commerce. *Asia Pacific Journal of Marketing and Logistics*, 30(4), 1112-1134.

Korzaan, M. L., & Boswell, K. T. (2008). The influence of personality traits and information privacy concerns on behavioral intentions. *Journal of Computer Information Systems*, 48(4), 15-24.

Liu, C. T., Guo, Y. M., & Lee, C. H. (2011). The effects of relationship quality and switching barriers on customer loyalty. *International Journal of Information Management*, 31(1), 71-79.

Morosan, C. (2014). Toward an integrated model of adoption of mobile phones for purchasing ancillary services in air travel. *International Journal of Contemporary Hospitality Management*, 26(2), pp.246-271.

McKinsey (2021). COVID-19 China consumer pulse survey.
<https://www.mckinsey.com/~media/mckinsey/featured%20insights/china/china%20still%20the%20worlds%20growth%20engine%20after%20covid%2019/mckinsey%20china%20consumer%20report%202021.pdf>

Meola, A. (2020) . Rise of M-Commerce: Mobile Ecommerce Shopping Stats & Trends in 2021” Accessed on 09-16/2021 <https://www.businessinsider.com/mobile-commerce-shopping-trends-stats>

Nemati, H., Wall, J. D., & Chow, A. (2014). Privacy coping and information-sharing behaviors in social media: a comparison of Chinese and US users. *Journal of Global Information Technology Management*, 17(4), 228-249.

Nunnally, J. C. (1978). *Psychometric Theory 2nd ed.* Mcgraw hill book company

Ryan, A., & Power, A. (2018). Public Wi-Fi and Risk: Are individual differences associated with the decision to connect? In *Cyberpsychology and Society* (pp. 102-118). Routledge.

Shah, A. M., Yan, X., Shah, S. A. A., & Ali, M. (2020). Customers' perceived value and dining choice through mobile apps in Indonesia. *Asia Pacific Journal of Marketing and Logistics*.

Siau, K., & Shen, Z. (2003). Building customer trust in mobile commerce. *Communications of the ACM*, 46(4), 91-94.

Statista (2021). <https://www.statista.com/statistics/187439/share-of-e-commerce-sales-in-total-us-retail-sales-in-2010/>

Thaichon, P., Brown, J. R., & Weaven, S. (2021). Guest editorial: Special issue introduction: e-tailing: the current landscape and future developments. *Asia Pacific Journal of Marketing and Logistics*.

Tsai, W. H. S., & Zhang, J. (2016). Understanding the global phenomenon of online group buying: Perspective from China and the United States. *Journal of Global Marketing*, 29(4), 188-202.

Tsikriktsis, N. (2004). A technology readiness-based taxonomy of customers: A replication and extension. *Journal of service research*, 7(1), 42-52.

Thomas, J., Cunningham, B., Huang, J., & Lee, J. (2021). PRIVACY PROCLIVITY AND TRUST: NO LONGER CONCERNS OF TODAY'S INTERNATIONAL M-COMMERCE USERS?. *International Journal of Sales, Retailing & Marketing*, 10(2).

Wagner, G., Schramm-Klein, H., & Steinmann, S. (2013). Effects of cross-channel synergies and complementarity in a multichannel e-commerce system—an investigation of the interrelation of e-commerce, m-commerce and IETV-commerce. *The international review of retail, distribution and consumer research*, 23(5), 571-581.

Wong, X., Yen, D. C., & Fang, X. (2004). E-commerce development in China and its implication for business. *Asia Pacific Journal of Marketing and Logistics*.

Zhu, Q. and Sarkis, J. (2016). Green marketing and consumerism as social change in China: analyzing the literature, *International Journal of Production Economics*, Vol. 181, Part B, pp. 289-302.