Government Digital Transformation: Understanding the Role of Government Social Media

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ABSTRACT

Government social media has been integrated as part of the government administrative tools to improve public service and promote public goals. However, the current government information literature is limited to understanding government social media adoption and its purpose for political marketing. The present study seeks to understand the role of government social media in promoting government digital initiatives (i.e., government-backed digital currency). The study validated the inter-relationships between government social media effort, privacy concerns, trust in technology, reachability, and citizens' participation in government-initiated digital innovations. A total of 505 responses from Chinese citizens were collected through an online self-administered questionnaire survey, and the data was submitted to a two-stage Partial Least Squares Structural Equation Modelling-Artificial Neural Network analysis. The analytic results revealed that privacy concerns, trust in technology, and reachability positively influence digital participation. In addition, the information quality and perception of trust in government social media have significant positive influences on government social media engagement. The study provides strategic practical suggestions to government agencies in effectively utilizing social media as a communication platform to foster citizens' participation in government's digital initiatives.

1. Introduction

The imminent growth of digital innovations and heightened citizens' expectations have compelled governments to engage in digital transformation. The undertaking of digital initiatives by governments is expected to increase government operation efficiency and solve public problems in increasingly turbulent times. In correspondence, governments are embracing the digitization of the economy, aiming to launch large-scale digital government services, such as banking and currencies. Despite the critical importance of government digital initiatives as a means of adapting to dynamic social, political, and technological environments, the understanding of the government's role in promoting its engagement and adoption is still moot (Hong, Kim, and Kwon, 2022). To achieve the goal of the government's digital initiatives and harness its benefits to the fullest, it is imperative to take the perspective from the government as the digital initiatives are planned, implemented, promoted, and regulated by the government (Ølnes, Ubacht, and Janssen, 2017). In this respect, a key question arises in government innovation research and practice: how can government promote citizens' engagement in government digital initiatives?

Government communication with the public is the foundation for conveying digital initiatives-related information to the public and soliciting public participation in government digital initiatives. In correspondence, social media as an informational, communication, and interaction channel in the contemporary world is progressively gaining popularity and governance administrations of countries are actively

leveraging social media collective dominance to promote public goals (Mansoor, 2021; Oliveira and Welch, 2013). This is because social media profiles are easily accessible to government agencies, and they carry the advantage of communication affordances for different purposes. Furthermore, citizens' prevalent usage of social media for publishing and exchanging government-related content and opinions has presented social media as a platform to support and promote government digital initiatives (Loukis, Charalabidis, and Androutsopoulou, 2017). Prior studies have found that general media sentiments could affect the value of emerging innovations. For example, a more positive media sentiment toward bitcoin would lead to a value increase in this cryptocurrency (Mai, Shan, Bai, Wang, and Chiang, 2018). Interestingly, Mai et al. (2018) also opined that the effect of social media sentiment is driven mainly by the silent majority, who rarely being active and posting content. Their finding agrees with the opinion that the popularity of bitcoin cannot be controlled by a particular person but by the overall media sentiment (Tandon, Revankar, Palivela, and Parihar, 2021).

Against this background, it is critical for government to utilize social media in facilitating the diffusion of government digital initiatives and policies by promoting a positive media sentiment and educating the public about government digital initiatives so that the implementation and sustainability of the initiatives can be realized. Thus far, the existing studies mainly focus on the communication effects of government information under crisis management or government-related topics. For example, citizen participation in government social media (GSM) during the crisis (Guo, Liu, Wu, and Zhang, 2021), GSM and citizen engagement during the Covid-19 pandemic (Chen et al., 2020; Mansoor, 2021b), social media and *E*-governance (Criado, Sandoval-Almazan, and Gil-Garcia, 2013), citizens' government-led E-participation through social media (Alarabiat, Soares, and Estevez, 2021; Simonofski, Fink, and Burnay, 2021) as well as social media and E-government services (Aladwani and Dwivedi, 2018; Dwivedi et al., 2017; Khan, Umer, Umer, and Naqvi, 2021). There is still a lack of understanding of government information dissemination effect on cultivating innovation acceptance. In particular, the government information literature has not explicitly considered how social media can be used as an instrument for promoting government digital initiatives. Such understanding is vital for the government in effectively strategising their social media effort to chart the pathway toward government digital initiatives diffusion and beyond.

The present study aims to address the phenomenon through the 'Central Bank Digital Currency' (CBDC), a government digital initiative in China, in response to the shortcomings and potential risks (e.g., tax evasion and volatility) of unregulated and non-government-backed digital currencies while serving as a strategic alternative in championing the digital economy (Chorzempa, 2021; Nabilou, 2020). The Chinese government deems this IT-based public administrated fintech could generalize more convenient, safe, inclusive, and private-oriented currency payment scenarios (Ølnes et al., 2017; People's Bank of China, 2021). The operation of CBDC matches China's ideology of being a socialist country that can not bear the domination of digital payment channels owned by private fintech monopolies. As an emerging innovation, the public has not been fully aware of the existence of CBDC. Although several trial programs have been operated in first-tier and second-tier cities in China, the public understanding and acceptance of central bank digital currency remain suboptimal. China has a powerful government that is strong in state intervention and social governance (Li and Yang, 2022). Hence, China's state media might be essential in leading public opinions and guiding companies' practices. From the end-user perspective, government digital initiatives may replace and advance the function of their conventional alternatives. Therefore, this study adopts the framework of push-pull-mooring (PPM) to explain users' technology switching based on factors associated with users' discard of old technology (push), the attraction of new technology (pull), and the reasons either restrict or promote the switching (mooring). In addition, cultivation theory is incorporated into the research model to highlight the role of GSM in facilitating individuals'

digital participation. PPM framework has been widely applied and validated in previous studies which focused on consumer switching behavior (e.g., Loh, Lee, Tan, Ooi, and Dwivedi, 2020; Wang, Luo, Yang, and Qiao, 2019), and cultivation theory measures how media's outputs affect an individual's perceptions and opinions toward the specific subject (Tang, 2021).

The rest of the paper is presented as follows: the second section presents the literature review and the hypotheses development. The third section discusses the hypotheses proposed and the research model. The fourth section introduces the methodology employed in addressing the proposed research question. The fifth section presents the data analysis, followed by the discussion of the result in section six. Finally, the last section comprises research implications, limitations, recommendations, and a conclusion.

2. Literature review

2.1. Digital participation studies

A large body of technology acceptance research examined individuals' engagement in particular applications, such as mobile payment (Loh et al., 2020), e-commerce (Zhang, Zhu, and Liu, 2012), and e-healthcare (Chong, Blut, and Zheng, 2022). However, most current studies primarily focused on the technological aspects of consumer adoption rather than a more comprehensive granularity. Therefore, our study adopts the concept of digital participation to generalize the research question to the societal level. Digital participation (DP), according to Seifert and Rössel (2019), refers to a person's active use of modern information communication technology (ICT), such as the Internet, which is a sign of involvement in the digital society. However, we believe ICT is a broad concept that may not strictly limit to particular kinds of technologies (e.g., technology for communication) but can reflect a wide range of digital services that build up the architecture of social governance. The current research on digital participation has extended the traditional scope of intention studies dominated by the technology acceptance model (TAM) (Davis, 1989) and the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003) with other themes. For example, privacy uncertainties encountered while using ICT technologies have called for attention from academics and industries. The successful operation of many e-applications requires users' truthful disclosure of privacy (Wang et al., 2019). However, consumers might feel that the privacy they share with the service providers is beyond the requirement to proceed with digital services (Dewan and Chen, 2005). Hence, studies on information security and information system generally agree that privacy risks are barriers to users' digital participation (Kummer, Pelzl, and Bick, 2021). Researchers also examined the effects of technological attractions on digital participation behaviors. Loh et al. (2020) found that convenience is an advantage in attracting users' engagement, while Wang et al. (2019) confirmed the role of monetary incentives in facilitating participation. Although the technological attractions are diversified and context-depended, researchers generally agree that the users' perceived benefits of using technology enhance their digital participation. Hence, it explains the necessity of investigating technological attractions under different application settings. Lastly, trust is another element of digital participation research. The roles of consumers' trust in digital technology and service providers have been studied in different contexts, such as e-payment (Shao, Zhang, Li, and Guo, 2019) and e-commerce applications (Zhang et al., 2012). Hwang and Lee (2012) argued that users' trust reflects their perceptions of technology providers' honesty, ability, and reputation. In the context of this study, China has a stable centralized government with a strong passion for facilitating government initiatives to improve citizens' well-being and digitalize society. Hence, examining citizens' trust in the digital technologies initiative would be interpretive of the government's efforts.

2.2. Studies in government social media (GSM)

Social media is a sum of activities encompassing social interaction, content creation, and integration of information communication technology. In 2020, the number of active social media users globally reached 3.8 billion (Mansoor, 2021). It is believed that appropriate and strategic use of social media can improve decision-making and problem-solving effectiveness at the societal level (Linders, 2012). Given that the interactive nature of social media is interactive and facilitates two-way communication, the presence of the government on social media is vital for government entities to reach citizens effectively (Gao and Lee, 2017; Houston, Aitalieva, Morelock, and Shults, 2016). Tang (2021) defined government social media as the social media profile created and operated by a governmental entity. Khan et al. (2021) government social media has emerged as an effective tool for the government to build and maintain relations with their citizens by offering a platform for exchanging information and enhancing government transparency. However, Medaglia & Zhu (2017) advocated a different view, delineating that the use of government social media is still confined to one-way information provision rather than a two-way channel for citizen interaction. Regardless of the debate over the effectiveness of government social media for two-way communication, researchers generally believe that government social media is necessary for information provision.

Zhang (2012) argued that the Chinese government had adopted a dual-way media strategy in managing its public relations. On the one hand, the government continues to use Soviet-style propaganda that disseminates government information through a top-down approach. Researchers generally agree that government social media benefits government-public interaction and studies related to government social media use have been conducted in many fields. Tang (2021) opined that crisis management is one of government social media's required fields used by governments and supranational entities (e.g., United Nations and World Health Organization) to communicate with the public. Guo et al. (2021) argued that the involvement of government social media during a crisis could help enhance the public's understanding and knowledge of the crisis, relieving public panic and controlling the fake news. In addition to crisis management, government social media studies are also concentrated in other directions. Medaglia and Zheng (2017) mapped government social media research into six general categories including 1) social media platform properties that focus on the application features of government social media (e.g., interactivity or application interface); 2) social media management which focuses on the government's actions on social media and the strategy; 3) user characteristics which focus on government social media user's demographic profile; 4) user behavior which highlights the user has observed behaviors such as content generation and social networking; 5) context which focuses on the external influences on government social media; as well as 6) social media effect which focuses on government social media's impact on the stakeholders (e.g., citizen engagement and empowerment). However, the role of government social media in promoting new technologies by the government is under-researched. Yavetz and Aharony (2020) stressed that user engagement in the information disclosure of government social media plays an essential role in strengthening the government-public relationship. Therefore, it can be anticipated that users' engagement might enhance their trust in government entities, favoring the public's acceptance of government initiatives (e.g., adopting new technology).

2.3. Push-pull-mooring (PPM) framework

The PPM framework, which originated from the migration theory (Ravenstein, 1885), has received wide attention in the literature to explain people's switching behavior (Wang, Wang, and Yang, 2020). It consists of three components, namely the push factor, the pull factor, and the mooring factor, where the push factor drives people away from the status quo, the pull factor entices people to an alternative solution. The mooring factor reflects the reasons that either restrict or promote people's switching behavior (Moon, 1995). In one of the early studies, Bansal, Taylor, and St. James (2005) opined that the PPM framework could explain consumers' decision-making of switching products or services because such switching behaviors are similar to migrants' relocation decisions.

Researchers have confirmed that PPM is a robust framework for investigating consumer's switching behavior of different mobile-based technologies, such as mobile cloud storage services (Cheng, Lee, and Choi, 2019), social networking services (Tang and Chen, 2020) as well as mobile shopping sites (Zhou, 2016). In fintech studies, Loh et al. (2020) explored the slow adoption of m-payment services in Malaysia based on the PPM perspective and found that the attractiveness of alternatives plays a crucial role in consumers' switching intention to m-payment services. Besides, Wang et al. (2019) found user inertia as the mooring factor restricting the switching intention of the new m-payment platform. Although the PPM framework has been widely applied to conventional m-payment studies, the perspective has not yet been discussed in the CBDC context.

In the context of our research, applying the PPM framework is crucial to understand potential users' digital participation in CBDC. Conventional digital payment technologies have been questioned for violating consumers' privacy, such as hacking, fraud, and privacy abuse (Shao et al., 2019; Tan and Ooi, 2018; Xia and Hou, 2016). Hence, from the PPM perspective, the shortcomings of CBDC's competitors become factors that push users away from the currently in-use technologies. Like other pairs of competing technologies, the CBDC performs similar functions to its conventional competitors and surpasses the latter with advantages. For CBDC or any other emerging innovations, the advanced features are likely to become a pull factor that attracts people to participate. Finally, PPM's mooring component is also essential to interpret users' switching behavior because individual differences, such as how a person trusts the new technology, could become either facilitators or barriers to the switching decision. However, the PPM is insufficient to explain human behavior corresponding to real-world complexity. The environmental stimulus could also influence digital participation (Bigne, Chatzipanagiotou, and Ruiz, 2020). Considering CBDC is a newly emerged technology that most individuals are unfamiliar with, the information intake from media could be recognized as a significant external stimulus. Therefore, our study incorporates PPM with cultivation theory to investigate how citizens' digital participation is formed under the media effect.

2.4. Cultivation theory

Cultivation theory explains the viewers' behavior in response to the information disclosure by mass media (Gerbner, Gross, Morgan, Signorielli, and Shanahan, 2002). Gerbner (1994) defined the term 'cultivation' as viewers' conception of social reality following media information exposure. In other words, cumulative exposure to media enhances the development and maintenance of people's particular set of beliefs (Cheng, Mitomo, Otsuka, and Jeon, 2016). According to Hermann, Eisend, and Bayón (2020), the media's cultivation effect could reform viewers' perception of the world based on the information exposed in media rather than the reality of the world. Researchers classified media cultivation into two cognitive processes: mainstreaming and resonance (Tang, 2021). During the mainstreaming process, viewers with different opinions and beliefs gradually merge and align their views with the mediated content. On the other hand, the resonance process amplifies the cultivation effect when viewers' opinions and real-life experiences resonate with the media-delivered content (Hermann et al., 2020).

Correspondingly, Eschholz, Chiricos, and Gertz (2003) indicated that media consumption that overemphasizes violence and crime could generate fear and victimization among viewers, affecting viewers'

attitudes and behaviors corresponding to reality (Lett, DiPietro, and Johnson, 2009). However, Shah, Chu, Ghani, Qaisar, and Hassan (2020) argued that media alerts the public toward criminal activities and other purposes such as crisis management. Apart from conventional media channels, researchers have also applied cultivation theory in the online context. Similar to traditional media channels such as television, online community, and social networking sites can generate shared symbols that deliver information and values to diversified groups of users (Tsay-Vogel, Shanahan, and Signorielli, 2018). Social media content is more fragmented and customized with social features than traditional media.

Shen, Xia, Shuai, and Gao (2022), who measured the impact of social media sentiment on the Chinese stock market, opined that media sentiments could be measured by tone, optimism, attention, tone dispersion, and emotional polarity. Their study found that the five parameters could significantly affect the investors in Chinese stock investors and eventually predict stock market returns and volatilities. Similarly, Duan, Liu, and Wang (2021) revealed a correlation between the media sentiments regarding COVID-19 and stock market changes in China. In addition to the financial market, Yin et al. (2022) studied the positive roles of Chinese social media's cultivation effects in mitigating disinformation and directing public opinion to comply with important government initiatives. The researchers further commented that the media's cultivation strategies are necessary to control the mass spread of negative public sentiments and raise the public's attention toward negative events in Chinese society (Yin et al., 2022). Although researchers have made efforts to apply cultivation theory to a particular industry in China (e.g., the stock market) and investigate the role of cultivation in social governance in collectivist China, there are still fewer understandings of cultivating the public's sentiments regarding fintech acceptance. Besides, the existing studies were mainly conducted based on the collective intelligence of netizens and private social media agencies on social networking sites rather than the information of government social media agencies (GSMs). Therefore, the fact highlights the necessity to investigate government social media's cultivation effect in promoting CBDC because government social media agencies might be more proactive in Chinese society, which has a collectivist culture and a powerful central government.

3. Hypotheses development and research framework

3.1. Privacy concern (PC)

Westin (1968) describes the term 'privacy' as the right of the individual or organizational entity to determine whether to share their information with others in a controllable manner. In technology acceptance studies, PC refers to users' worries about organizations' potential misconduct in misusing their sensitive information (Kayhan and Davis, 2016). Researchers have identified PC as a barrier to users' information technology acceptance. For example, Wang et al. (2019) revealed that consumers' concerns about privacy hinder the continuance of usage of the current m-payment platform. In addition, Fan, Jiang, Deng, Dong, and Lin (2021) suggested that PC compels users to discontinue usage of social network applications. In our research context, conventional m-payment services require users' truthful disclosure of personal information to authorize and verify the transaction. Consumers may feel that the platform might collect too much sensitive information beyond the requirement to proceed with the transaction (Dewan and Chen, 2005). The public has become concerned about privacy security after several data security scandals were exposed in China. For example, the inappropriate collection of consumer information by a mobile car-hailing company (Tencent News, 2021) and privacy data abuse by m-payment provider 'Alipay' (Peng, 2018). Consumers would likely switch to another technology (e.g., CBDC) once they believe the existing incumbent technology to be unsafe or the alternative can offer privacy protection. Therefore, this study recognizes PC as a push factor in the PPM framework that promotes potential users'

digital participation in CBDC, and the following hypothesis is proposed:

H1. : The privacy concern (PC) on conventional services positively affects potential users' digital participation.

3.2. Trust

The concept of trust is derived initially from social psychology, reflecting the faith in the other party's generosity behavior, integrity, and capacity (Zhou, 2011). He, Zhang, and Zeng (2020) commented that trust is the essential component and outcome of successful cooperation. Shao et al. (2019) pointed out that trustful parties are characterized by the predictable manner and altruism of the reaction. Researchers have generally agreed that trust is essential to a consumer's decision-making in technology acceptance (e.g., Albayati, Kim, and Rho, 2020; Sharma, 2019; Stewart and Jürjens, 2018). McKnight, Choudhury, and Kacmar (2002) argued that strong trust helps users to diminish perceived risks and insecurity while enhancing confidence in interacting with new technology. This study divided the concept of trust into two different forms: trust in technology (TT) and trust in government social media agencies (TSM). The former describes an individual's degree of trust in the quality and safety of studied technology. The latter is adopted to assess an individual's trust in government social media agency's quality and credibility. In terms of TT, Sas and Khairuddin (2015) argued that non-government entities operate private cryptocurrencies such as bitcoin, lacking trust even though the cryptocurrencies themselves provide a level of control on privacy (Arli, van Esch, Bakpayev, and Laurence, 2020). Xia and Hou (2016) revealed that consumers' trust in a conventional m-payment platform positively impacts system parameters such as compatibility and relative advantage, enhancing the intention to use.

Moreover, trust is vital to foster citizens' government social media engagement (SME). From a political science perspective, Houston and Harding (2013) argued that trust guarantees the legitimacy and acceptance of government entities by its people and compels people to engage with the government's initiatives. In this study, it is argued that when people believe that their government social media agencies are taking care of their best interests and concerns, they would be more willing to participate and interact with the information delivered by government social media. Following the logic above, the following trust-related hypotheses are proposed:

H2. : Trust in technology (TT) positively affect users' digital participation.

H3. : Trust in government social media agency (TSM) positively affect potential users' government social media engagement (SME) behaviors.

3.3. Reachability (REA)

Reachability (REA) refers to mobile technology's capacity to provide effective connection without the time and location restrictions (Kim, Mirusmonov, and Lee, 2010). Li, Chung, and Fiore (2017) argued that connectivity (e.g., the connection speed of the internet) is vital to an electronic transaction, as a poor connection may cause transaction failure, which results in low perceived usefulness and poor user experience (Chong, Ooi, Lin, and Bao, 2012). Kim et al. (2010) found that REA has significant positive relationships with perceived usefulness and ease of use, implying that successful REA enhances consumers' positive look on m-payment technology. Notably, REA is one of the most noticeable system features of CBDC as it does not require an Internet connection to perform mobile-based transactions. Thus, it benefits the usage scenarios where an internet connection is not accessible. For example, the transaction occurred in remote rural areas. This study considers REA as a pull factor that attracts consumers to the CBDC because its reachability is deemed a compelling factor that successfully attracts users' attention. Following this, the following hypothesis is

made:

H4. : Reachability (REA) positively affect potential users' digital participation.

3.4. Government social media agency's information quality (IQ)

The quality information of government social media agencies has been proven to substantially affect citizens' participation in governmental initiatives such as online political participation (Arshad and Khurram, 2020). Sarkar, Chauhan, and Khare (2020) defined information quality as a set of parameters for assessing information's relevance, timeliness, accuracy, and sufficiency. Failures in ensuring information quality undermine the user's experience response and decrease the trustworthiness of the information provider (Gao, Waechter, and Bai, 2015). Piotrowski and Liao (2012) stressed that information alone could not result in people's participation, but quality characteristics such as timeliness and usability are needed to facilitate behavior. When explaining people's engagement with government social media, it can be assumed that when people perceive that the information provided is usable and timely, they will be more likely to choose to engage in government social media on the internet. On the contrary, if the government social media agencies' provision of information is persistently inaccurate and out-of-date, the audiences might lose enthusiasm to follow up because the updates for emerging innovations usually require accurate, high-frequent, and in-time information to catch the public's attention. With this logic, the following hypothesis is proposed:

H5. : Government social media agency's information quality (IQ) positively affects potential users' government social media engagement (SME).

3.5. Government social media engagement (SME)

Government entities adopt social media channels mainly for three reasons: collecting the public's opinions, seeking citizens' cooperation toward initiatives and policies, and informing citizens about ongoing governmental processes and governmental decisions (Mergel, 2013a; Mergel, 2013b). Therefore, government social media can be recognized as a potential channel to help the Chinese government cultivate a digital participation atmosphere among its citizens. The idea is supported by previous studies on the cultivation effect of media channels. For example, Hermann et al. (2020) found that the social networking platform 'Facebook' creates a sentiment of cultivating users' perceptions and attitudes toward ethnic diversity. In addition to the sentiment, the cultivation theory (Cheng et al., 2016) suggests that frequent exposure to media could enhance audiences' beliefs about a particular subject or phenomenon. Hence, Chinese citizens' frequent exposure to CBDC news from government social media agencies could directly enhance their opinion in engaging with the emerging digital money, and the following assumption is made:

H6. : Government social media agencies' engagement (SME) positively affects potential users' digital participation.

3.6. The moderating effect of government social media engagement (SME)

Privacy concern has been confirmed as an attribute that causes users' uncertainty about the technology (Li, Liu, Lee, and Huang, 2019), eventually resulting in consumers' disengagement with mobile applications (Fan et al., 2021). In recent years, the Chinese state media has progressively highlighted news and discussion regarding citizens' privacy and information security along with the enaction of China's "personal information protection law". Cheng et al. (2016) opined that the media cultivation effect could affect the relationships between people's perceptions of adverse events and their corresponding behaviors. Therefore, the Chinese public is more likely to be aware of the privacy

safety issues encountered when using conventional m-payment tools operated by commercial organizations after gaining information from government social media. However, it is also possible for the Chinese government social media agencies to act positively to mitigate the panic of adverse events and direct the public's opinion (Yin et al., 2022), it is reasonable to assume that China's government social media agencies proactively create a media sentiment that favors the diffusion of CBDC. On the other hand, the mainstreaming and resonance effects of media cultivation suggest that if government social media makes efforts to educate the public about the advances of innovation, people who engage with government social media often might be pushed away from the privacy hazard of conventional m-payment and be more willing to switch (Tang, 2021). Hence, it is reasonable to assume that:

H7a. : Government social media engagement (SME) positively moderates the relationship between users' privacy concern (PC) and digital participation.

Trust is the foundation of relationship development and maintenance for business and the adoption of innovation (e.g., digital government services). Prior studies have confirmed the role of trust in technology (Albayati et al., 2020) as the fostering of pre-requisitions for fintech acceptance. The establishment of trust fosters a "reservoir of Goodwill" reduces fear, and stimulates cooperation. Trust has been established as a critical component for people to engage online and adopt e-government services (Luo, 2002; Santa, MacDonald, and Ferrer, 2018). It is even truer in the context of innovation (i.e., CBDC), where uncertainty prevails. Leveraging from the social media marketing literature that established social media enhance awareness (e.g., Hermann et al., 2020), we posit government social media engagement (e.g., with the online communities) as an amplifier for trust in technology and a vital strategy to compel digital participation. Social media attributes (wide reach and multi-way interactions) empower government information dissemination and sharing. A high government social media engagement signals people's active social media interaction experience with the government and others on social media, resulting in a better understanding of the innovation and augmenting the power of trust in it (Liu, Lee, Liu, and Chen, 2018).

H7b. : Government social media engagement (SME) positively moderates the relationship between users' trust in technology (TT) and digital participation.

Reachability has been investigated as a positive valence that encourages potential users to adopt mobile technology (Li et al., 2017). In addition, researchers in China have confirmed media cultivation potential in creating positive sentiment for guiding public opinion (Duan et al., 2021; Shen et al., 2022). The Chinese government's social media has been used to promote government initiatives such as CBDC applications in the 2022 Beijing Winter Olympic Game (ChinaDaily, 2021). By introducing successful operations, the Chinese might plan to demonstrate and enhance CBDC's daily usage capacity and promote greater accessibility. Chinese social media have applied similar strategies to encourage the public to comply with government initiatives (Yin et al., 2022). Hence, we assumed that a high frequency of exposure to government social media's CBDC news could enhance REA's role in facilitating CBDC engagement (Hermann et al., 2020), and the following hypothesis is proposed:

H7c. : Government social media engagement (SME) positively moderates the relationship between reachability (REA) and users' digital participation.

Based on all the hypotheses mentioned above, the research model of this study is proposed (see Fig. 1), grounded in the integration of the PPM framework (Wang et al., 2020) and cultivation theory (Gerbner, 1994).
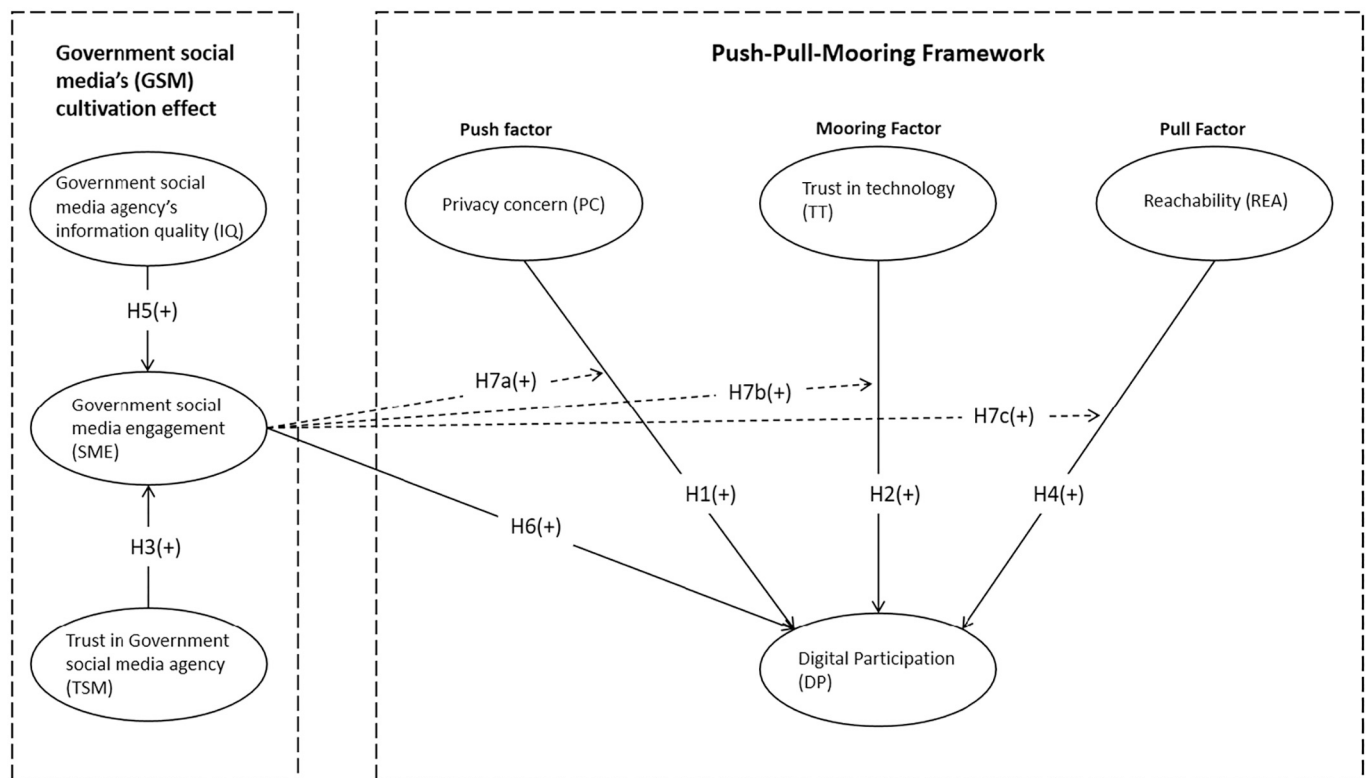
Fig. 1. Research model.

4. Research methodology

4.1. Research instrument

Due to the non-existence of a sampling frame, this study adopted a non-probability sampling approach: convenience sampling in sourcing respondents. Convenience sampling is advantageous when the sampling frame is unavailable. In addition, this study used an online self-administered questionnaire as the tool to collect research data. The self-administered questionnaire survey technique has been widely applied in studies focused on financial technology acceptance (e.g., Cao, Yu, Liu, Gong, and Adeel, 2018; Yan, Tan, Loh, Hew, and Ooi, 2021); therefore, this technique is recognized as a suitable way to obtain data associated with the subject of CBDC engagement in China. In Table 1, this study adapted established measurement items from previous studies. All items were measured by a seven-point Likert scale, from strongly disagree (1) to strongly agree (7).

4.2. Data collection and respondent profile

This study adopts an online questionnaire approach to achieve a sufficient sample size and prevent the potential health hazards of conducting via face-to-face survey due to the Covid-19 pandemic context. The questionnaire was prepared electronically and distributed via China's leading internet survey platform, 'SoJump'. The Sojump survey platform is used because it has over 2.6 million registered users who are available as the sampling pool of this study (SoJump.com, 2021). Therefore, offsetting the deficiency of non-probability sampling in the absence of a sampling frame. Combing the research question with the context, the data collection of this study focuses on obtaining respondents' CBDC opinions as a case to understand citizens' digital participation in government digital initiatives. Shih, Yang, and Yang (2018) opined that the age gap could differentiate people's attitudes toward adopting new technology, of which people under 34 years old are more open to innovations. Hence, this study explicitly targets the young generations who are more likely to become the first wave of initial adopters engaged in CBDC to mitigate the interference caused by the age gap.

Four independent researchers who specialized in technology acceptance assessed the measurement items of the questionnaire to assure content validity. A revision of the questionnaire's layout and language was made, and then the questionnaire was translated into Chinese for a pilot test to reconfirm reliability and validity via the forward-backward translation. A total of 505 effective responses were obtained from the formal data collection process, and the number of effective responses exceeded the minimum sample size threshold of 118 based on G*Power (version 3.1.9.2) calculation with 0.80 power level, 0.05 alpha value, 0.15 impact size, and ten predictors.

Before answering the questionnaire, respondents need to read through the instruction section on the research purpose and the confidential use of their responses. The first section of the questionnaire recorded information associated with respondents' demographic profiles, such as gender, age, number of m-devices owned, number of financial apps used, and monthly living expenses (Table 2). A total of 54.1% of respondents were female, and 45.9% of respondents were male. The primary age group was 19 to 29 (80.6% of the sample size). Thus the influence of diversified age groups, such as differences in individual innovativeness, was minimized (Tan and Ooi, 2018). Most of the respondents use their mobile devices between 2 and 9 h per day (80.8%). Finally, 55.6% of respondents had Chinese Yuan (CNY) 1000–1500 for monthly consumption, followed by 22% with monthly expenses of CNY 1501–2000.

5. Data analysis

5.1. Statistical analysis

A two-stage Partial Least Squares-Structural Equation Modelling-Artificial Neural Networking (PLS-SEM-ANN) approach was used to analyze the collected data. The PLS-SEM analysis was first applied to test

Table 1

Measurement items.

Construct	Items	Source
Digital participation (DP)	DP1: If I have CBDC, I will think about using it. DP2: When transacting, I will think about CBDC a lot. DP3: CBDC stimulates my interest in learning more about this technology. DP4: If I have the chance, I intend to engage with CBDC rather than use any other alternative.	Glavee-Geo, Shaikh, Karjaluoto, and Hinson (2020)
Privacy concern (PC)	PC1: I am concerned that the information I submit to the "Alipay" or "Wechat" platform could be misused. PC2: I am concerned that others can find private information about me from the "Alipay" or "Wechat" platform. PC3: I am concerned about providing personal information to the "Alipay" or "Wechat" platform because of what others might do with it. PC4: I am concerned about providing personal information to the "Alipay" or "Wechat" platform because it could be used in a way I did not foresee.	Wang et al. (2019)
Trust in technology (TT)	TT1: CBDC is a safe financial service. TT2: I feel secure about using CBDC to conduct my bills. TT3: I feel comfortable about using CBDC to conduct my bill.	Gong, Zhang, Chen, Cheung, and Lee (2020)
Reachability (REA)	REA1: In general, I feel I would be reachable by others through CBDC. REA2: CBDC can be connected regardless of location. REA3: It is always possible for me to use CBDC when it is needed.	Kim et al. (2010)
Government social media engagement (SME)	SME1: I always read the content posted by the GSM. SME2: I always share the content posted by the GSM. SME3: I always recommend the content posted by the GSM to my friends. SME4: I will think about GSM's initiative.*	Tang (2021)
Government social media information quality (IQ)	IQ1: (I feel that) the GSM agency provides sufficient content of news & information to me in order to understand and get necessary facts. IQ2: The GSM agency provides accurate information to me in order to understand the government & policy news correctly. IQ3: The GSM agency provides diverse and various information to me. IQ4: The GSM agency provides the news & information timely.*	Arshad and Khurram (2020)
Trust in government social media agency (TSM)	TSM1: I have confidence in the agency and its service. TSM2: I have confidence in the agency's content on its social media. TSM3: (I feel that) the agency's social media provides better	Arshad and Khurram (2020)

Table 1 (*continued*)

Construct	Items	Source
	government services for contacting citizens TSM4: The agency's social media promoted my positive outlook toward government authorities.	

Note: a superscript indicates a self-developed item.

Table 2

Demographic profile.

Demographic characteristics		Frequency	Percentage (%)
Gender	Male	232	45.9
	Female	273	54.1
Age	18 years old and under	14	2.7
	19 to 23 years old	281	55.6
	24 to 28 years old	126	25.0
	Above 29 years old	84	16.7
Device daily usage frequency	<2 h	21	4.2
	2 to 5 h	204	40.4
	6 to 9 h	204	40.4
	>9 h	76	15
Number of mobile payment apps used	0	3	0.6
	1	21	4.2
	2	331	65.5
	3	67	13.3
	4 and above	83	16.4
Monthly living expenses	Less than CNY 1000	44	8.7
	CNY 1000 to CNY 1500	281	55.6
	CNY 1501 to CNY 2000	111	22
	More than CNY 2000	69	13.7

the proposed relationships via SmartPLS software (version 3.2.9). According to Leong, Hew, Ooi, and Chong (2020), PLS-SEM can effectively predict the linear relations in the model with complexity, but the technique falls short in detecting potential non-linear relationships. Therefore, this study adopted the ANN analysis in the second stage of the analytic process to capture the potential non-linear effects in the model and to check the robustness of the PLS-SEM path model (Sarstedt et al., 2020). The ANN analysis was performed based on a vast network with neurons in the input, hidden, and output layers (Hew, Leong, Tan, Ooi, and Lee, 2019). The features of the ANN network showed that this approach stimulates the human brain's decision-making process. Thus, ANN is an ideal method for detecting non-linear relationships in the model (Chong, 2013). However, ANN as an analytic approach is not without limitations. Sim, Tan, Wong, Ooi, and Hew (2014) pointed out that ANN is questioned by its 'black box' algorithm calculation. Therefore this approach might be ineffective in testing parametric-based hypotheses.

5.2. Common method bias (CMB) testing

Since the multiple-variable data were collected from respondents with a similar background, common method bias may exist. A common method of factor analysis proposed by Liang, Saraf, Hu, and Xue (2007) is used to cope with this potential issue. As per Table 3, CMB is unlikely to be a concern, as all items in Ra^2 are empirically significant, and the ratio of average Ra^2 divides the average Rb^2 is at an apparent high level (68.833).

Table 3
Common method variance (CMV).

Latent construct	Indicators	Substantive factor loading (Ra)	Ra²	Method factor loading (Rb)	Rb²
DP	DP - > DP1	0.955	0.912	0.013	0.000
	DP - > DP2	0.964	0.929	0.042	0.002
	DP - > DP3	0.951	0.904	0.019	0.000
	DP - > DP4	0.906	0.821	−0.078	0.006
SME	SME - > SME1	0.896	0.803	0.021	0.000
	SME - > SME2	0.882	0.778	−0.179	0.032
	SME - > SME3	0.915	0.837	−0.154	0.024
	SME - > SME4	0.821	0.674	0.322	0.104
IQ	IQ - > IQ1	0.926	0.857	−0.003	0.000
	IQ - > IQ2	0.944	0.891	−0.071	0.005
	IQ - > IQ3	0.933	0.870	0.043	0.002
	IQ - > IQ4	0.913	0.834	0.032	0.001
PC	PC - > PC1	0.877	0.769	−0.002	0.000
	PC - > PC2	0.87	0.757	−0.015	0.000
	PC - > PC3	0.883	0.780	−0.023	0.001
	PC - > PC4	0.899	0.808	0.039	0.002
REA	REA - > REA1	0.923	0.852	0.146	0.021
	REA - > REA2	0.931	0.867	−0.004	0.000
	REA - > REA3	0.896	0.803	−0.150	0.023
TSM	TSM - > TSM1	0.865	0.748	0.042	0.002
	TSM - > TSM2	0.887	0.787	−0.247	0.061
	TSM - > TSM3	0.886	0.785	0.104	0.011
	TSM - > TSM4	0.869	0.755	0.096	0.009
TT	TT - > TT1	0.935	0.874	−0.024	0.001
	TT - > TT2	0.95	0.903	−0.069	0.005
	TT - > TT3	0.943	0.889	0.092	0.008
	Average		**0.826**		**0.012**

Table 4
Loadings, Dijkstra Henseler composite reliability, and average variance extracted.

	Items	Loadings	Dijkstra Henseler's (rho_A)	Composite reliability (CR)	Average variance extracted (AVE)
DP	DP1	0.955	0.961	0.97	0.892
	DP2	0.965			
	DP3	0.951			
	DP4	0.905			
IQ	IQ1	0.924	0.947	0.962	0.863
	IQ2	0.943			
	IQ3	0.933			
	IQ4	0.915			
SME	SME1	0.897	0.903	0.931	0.772
	SME2	0.873			
	SME3	0.908			
	SME4	0.835			
PC	PC1	0.874	0.913	0.933	0.778
	PC2	0.864			
	PC3	0.882			
	PC4	0.908			
REA	REA1	0.93	0.913	0.94	0.84
	REA2	0.93			
	REA3	0.889			
TSM	TSM1	0.862	0.904	0.93	0.768
	TSM2	0.876			
	TSM3	0.893			
	TSM4	0.875			
TT	TT1	0.934	0.94	0.96	0.889
	TT2	0.948			
	TT3	0.946			

5.3. Outer measurement model

The Dijkstra-Henseler's rho (rho_A) and composite reliability (CR) were employed to test the data reliability of the outer measurement model. According to Table 4, all rho_A and CR values exceeded the minimum threshold of 0.7, suggesting satisfactory reliability for all the measurement items applied in this study (Dijkstra and Henseler, 2015). In addition, items' outer loadings and average variance extracted (AVE) are used to assess the data's convergent validity (CV). In Table 4, all items' outer loadings are above 0.7, and the AVE of each construct is beyond 0.5. Hence, the result is confirmed with CV (Loh, Lee, Tan, Hew, and Ooi, 2019). Although the criteria proposed by Fornell and Larcker (1981) could be used for checking data's discriminant validity (DV) in technology acceptance studies, Henseler, Ringle, and Sarstedt (2015) argued that Fornell and Larcker's method lacks DV in the common research situation. As a result, this study adopts the Hetero-Trait-Mono-Trait (HTMT) ratio (Henseler et al., 2015) for assessing DV (Table 5). Based on the results, DV has been confirmed as the values are below 0.90. Additionally, using the 5000 subsamples' bootstrapping presented in Table 5, all the values are below the HTMT inference value of 1, which is the recommended threshold by Hair, Hult, Ringle, and Sarstedt (2017). Hence, it is confident that all the constructs in the research model are distinguished from each other with empirical support.

5.4. The inner structural model

The inner structural model was assessed by inspecting path coefficients with a bias-corrected and accelerated (BCa) bootstrapping

approach of 5000 subsamples at a 0.05 two-tailed alpha value. According to Table 6 and Fig. 2, all the hypotheses were supported, of which PC ($\beta = 0.068$, $P < 0.05$) indicated a weak significant connection with CBDC. On the other hand, TT ($\beta = 0.363$, $P < 0.001$), REA ($\beta = 0.212$, $P < 0.001$) and SME ($\beta = 0.346$, $P < 0.001$) shown strong significant association with CBDC. In terms of SME, both IQ ($\beta = 0.511$, $P < 0.001$) and TSM ($\beta = 0.385$, $P < 0.001$) have a strong and significant impact on SME. Overall, the PLS-SEM analysis indicated that TSM and IQ could explain 70% of the changes in SME, whereas PC, TT, and REA can explain 70% of changes in DP.

5.5. The moderating effect

As presented in Table 7, the moderated PLS-SEM analysis showed that SME does not play a role in moderating the relationships between the antecedents and DP. Thus, H6$_{a-c}$ were unsupported.

5.6. Predictive relevance and effect size

The approach recommended by Hair et al. (2017) was employed in assessing the predictive relevance. According to Table 8, all the Stone-Geisser's Q^2 calculated by the cross-validated redundancy were greater than zero suggesting the model has predictive relevance (Ooi, Foo, Tan, Hew, and Leong, 2020). In addition, the effect sizes of the outcome variables were tested based on the f^2 metric (Table 9). The thresholds of 0.35, 0.15, and 0.02 indicate the paths' large, medium, and small effects, and the value under 0.02 is recognized as no effect (Cohen, 2013). All variables in the model exhibit medium to large effects except for PC, which showed a small effect. In addition, the PLSpredict technique is used to confirm the out-of-sample predictive power in the model (Hair, Risher, Sarstedt, and Ringle, 2019). As shown in Table 10, all the DP indicators exhibited positive Q^2 predictive value. Nevertheless, all the root mean squared error (RMSE) values in PLS-SEM were larger than the RMSE values under the liner model benchmark; the model in this study is recognized with relatively weak predict power.

Table 5
Hetero-trait-mono-trait (HTMT inference).

	DP	IQ	SME	PC	REA	TSM	TT
DP							
IQ	0.732 [0.650,0.803]						
SME	0.745 [0.663,0.812]	0.857 [0.808,0.902]					
PC	0.412 0.311,0.510	0.350 [0.240,0.455]	0.406 [0.294,0.510]				
REA	0.789 [0.726,0.844]	0.647 [0.553,0.732]	0.653 [0.551,0.744]	0.372 [0.258,0.478]			
TSM	0.739 [0.659,0.809]	0.793 [0.737,0.846]	0.839 [0.779,0.891]	0.316 [0.205,0.420]	0.604 [0.499,0.699]		
TT	0.791 [0.726,0.845]	0.621 [0.527,0.704]	0.599 [0.496,0.690]	0.351 [0.240,0.458]	0.885 0.841,0.924	0.54 [0.437,0.635]	

Table 6
Hypothesis testing.

Hypotheses	Path coefficients	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Remark
H1	PC - > DP	0.069	0.068	0.035	1.979	0.048	Yes
H2	TT - > DP	0.364	0.363	0.05	7.233	<0.001	Yes
H3	TSM - > SME	0.385	0.388	0.051	7.566	<0.001	Yes
H4	REA - > DP	0.211	0.212	0.051	4.109	<0.001	Yes
H5	IQ - > SME	0.511	0.51	0.053	9.631	<0.001	Yes
H6	SME - > DP	0.345	0.346	0.058	5.952	<0.001	Yes

Notes: [a]***$p < 0.001$, **$p < 0.01$, NS $p > 0.05$.
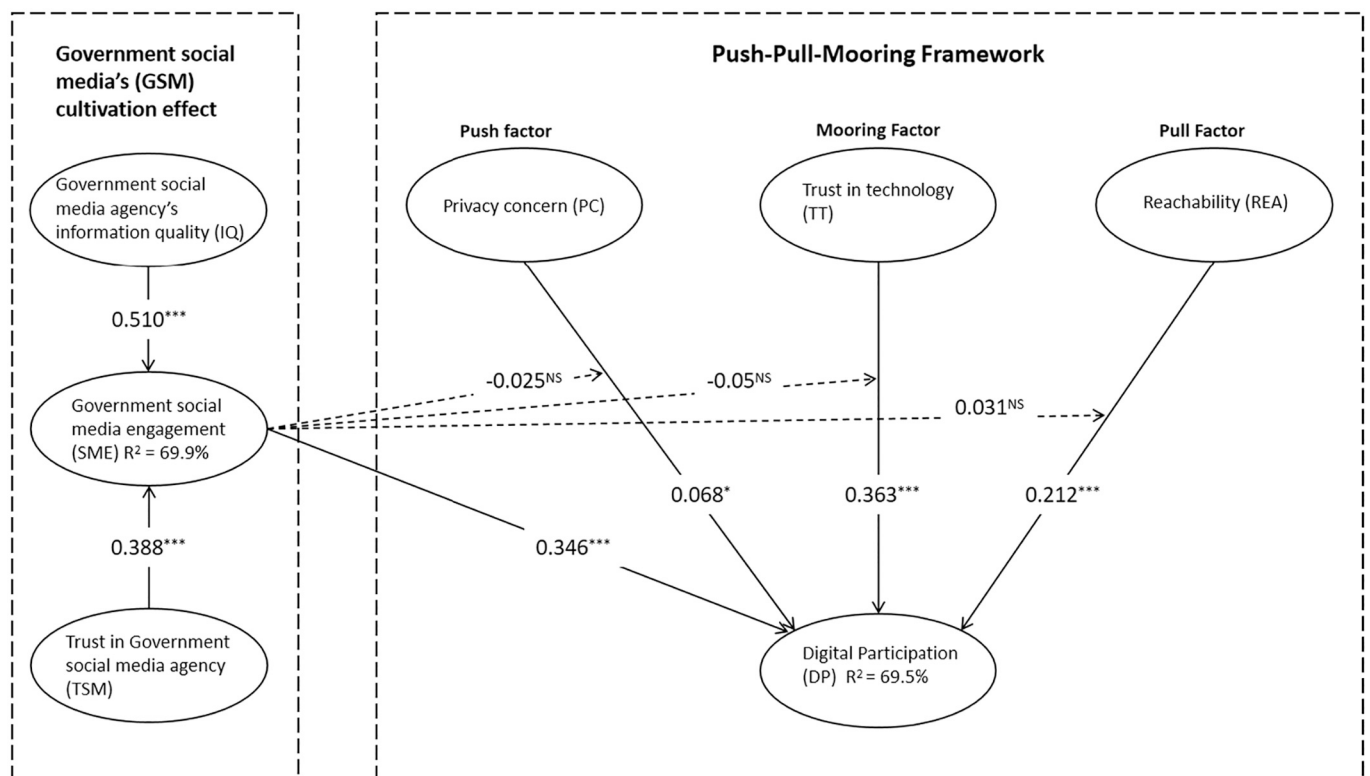
Fig. 2. Structural model test.

5.7. Artificial neural network (ANN) analysis

Haykin (2004) describes ANN as an algorithmic mechanism modeled by simulating the human brain's operation on specific tasks or functions. Therefore, ANN differs from the regression analytic technique as it can examine the non-compensatory decision-making process (Svozil, Kvasnicka, & Pospichal, 1997) and does not require a normality assumption (Lau et al., 2021). The ANN model type, feed-forward-back-propagation (FFBP) multi-layer perceptron (MLP), was used to train and test the data. The MLP type consists of three model layers: the input layer, the hidden layer, and the output layer. Leong et al. (2020) argued that the MLP model is suitable for complementing

Table 7
Moderating effect.

		Original sample (O)	Standard deviation (STDEV)	T Statistics (|O/STDEV|)	P values	Confident interval (2.5%)	Confident interval (97.5%)	Remarks
H6a	SME*PC- > DP	−0.025	0.04	0.628	0.53	−0.101	0.05	Not supported
H6b	SME*TT- > DP	−0.05	0.065	0.759	0.448	−0.176	0.083	Not supported
H6c	SME*REA - > DP	0.031	0.059	0.527	0.598	−0.073	0.161	Not supported

Note: ***$p < 0.001$, **$p < 0.01$, NS $p > 0.05$.

Table 8
Predictive relevance (Q^2).

	SSO	SSE	Q^2 (=1-SSE/SSO)
DP	2020.00	842.424	0.583
SME	2020.00	999.294	0.505

Table 9
Effect size (f^2).

	DP	SME
IQ		0.399
PC	0.016	
REA	0.043	
TSM		0.226
TT	0.137	

Table 10
PLSpredict results.

	PLS-SEM			Liner model benchmark	
	Q^2_predict	RMSE	MAE	RMSE	MAE
DP4	0.517	0.967	0.734	0.94	0.618
DP2	0.599	0.830	0.669	0.761	0.520
DP3	0.578	0.866	0.689	0.778	0.537
DP1	0.580	0.834	0.668	0.765	0.514

Table 11
RMSE value of 10-fold ANN models.

	Model A		Model B	
	Input: IQ, TSM		Input: PC, TT, REA, SME	
	Output: SME		Output: DP	
	Training	Testing	Training	Testing
Neural network	RMSE	RMSE	RMSE	RMSE
ANN1	0.079	0.095	0.397	0.380
ANN2	0.078	0.095	0.399	0.351
ANN3	0.083	0.059	0.412	0.367
ANN4	0.080	0.078	0.404	0.347
ANN5	0.082	0.063	0.395	0.413
ANN6	0.078	0.092	0.402	0.402
ANN7	0.077	0.065	0.387	0.438
ANN8	0.082	0.076	0.391	0.365
ANN9	0.073	0.092	0.410	0.340
ANN10	0.073	0.095	0.422	0.357
Mean	0.079	0.081	0.402	0.376
SD	0.003	0.014	0.010	0.032

Table 12
Sensitivity analysis.

	Model A (Output: SME)		Model B (Output: DP)			
Neural network	IQ	TSM	PC	TT	REA	SME
ANN1	0.616	0.384	0.067	0.367	0.12	0.447
ANN2	0.531	0.469	0.039	0.247	0.407	0.307
ANN3	0.609	0.391	0.108	0.238	0.416	0.238
ANN4	0.551	0.449	0.026	0.358	0.197	0.419
ANN5	0.517	0.483	0.033	0.233	0.272	0.462
ANN6	0.531	0.469	0.067	0.389	0.205	0.340
ANN7	0.550	0.450	0.051	0.334	0.275	0.340
ANN8	0.500	0.500	0.058	0.338	0.288	0.317
ANN9	0.544	0.456	0.055	0.373	0.183	0.389
ANN10	0.564	0.436	0.144	0.178	0.410	0.268
Average relative importance	0.551	0.449	0.065	0.299	0.295	0.342
Normalized relative importance (%)	100.000	81.389	19.00	87.40	86	100

the PLS-SEM model because it captures non-linear relationships and operates in a cause-effect way. Specifically, using a typical sigmoid function with a gradient ranging from 0 to 1, the MLP learning network will generate an input signal and feed it toward the output layer via the hidden layer. Each layer contains neurons interconnected with the neurons in other layers with synaptic-weighted linkages (Leong et al., 2020).

This study adopts a 10-fold cross-validation approach to resolve the potential over-fitting issue, in which 10% of data is used for testing the ANN models, and the rest of 90% of data is used for training purposes. The predictive accuracy of the established models is valued through RMSE presented in Table 11. The small mean RMSE values indicate that training and testing results have considerable predictive accuracy. Predictors' predictive powers in ANN models are presented in Table 12. The results in model A indicated that IQ (100%) has a more substantial predictive relevance in explaining SME than TSM (81.389%). Moreover, the results of model B showed that SME (100%) has the strongest relative importance in predicting DP, followed by TT (87.4%), REA (86%), and PC (19%). The ANN models were listed in Fig. 3. The ranking and comparison of the power of predictors were presented in Table 13. Path coefficient results determine the ranking of PLS-SEM, and the normalized relative importance indicates the power of predictors in ANN models. The path coefficient of TT in PLS-SEM was greater than that of SME, whereas the ranked relative importance of the two predictors shows the opposite result. As such, the inconsistency of ranking may imply that hidden attributes could exist in enhancing the role of SME

under practical situations which could not be fully explained by the PLS-SEM analysis.

6. Discussion

Using CBDC as a case, this study investigates government social media's roles in cultivating the public's digital participation in China grounded on the PPM perspective. As hypothesized, PC on the conventional m-payment showed a strong positive influence on respondents' digital participation (DP), supporting H1. This finding is in line with Wang et al. (2019), who identified PC as a push factor in consumers' switching intention on m-payment platforms. Likewise, studies also found that a higher degree of privacy concern decreases consumers'
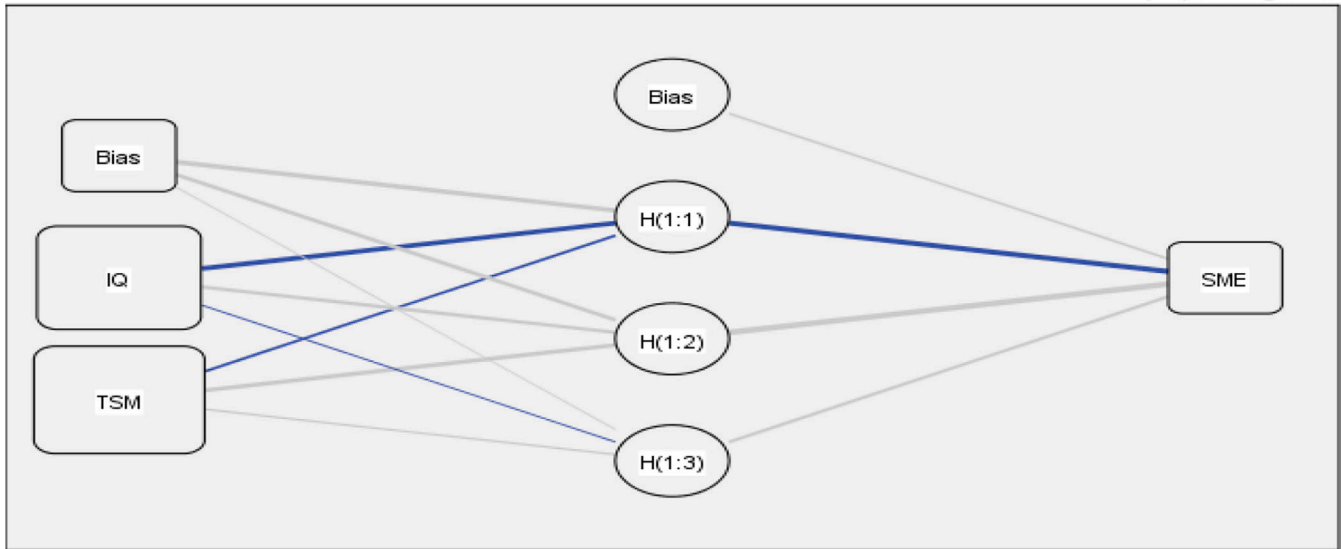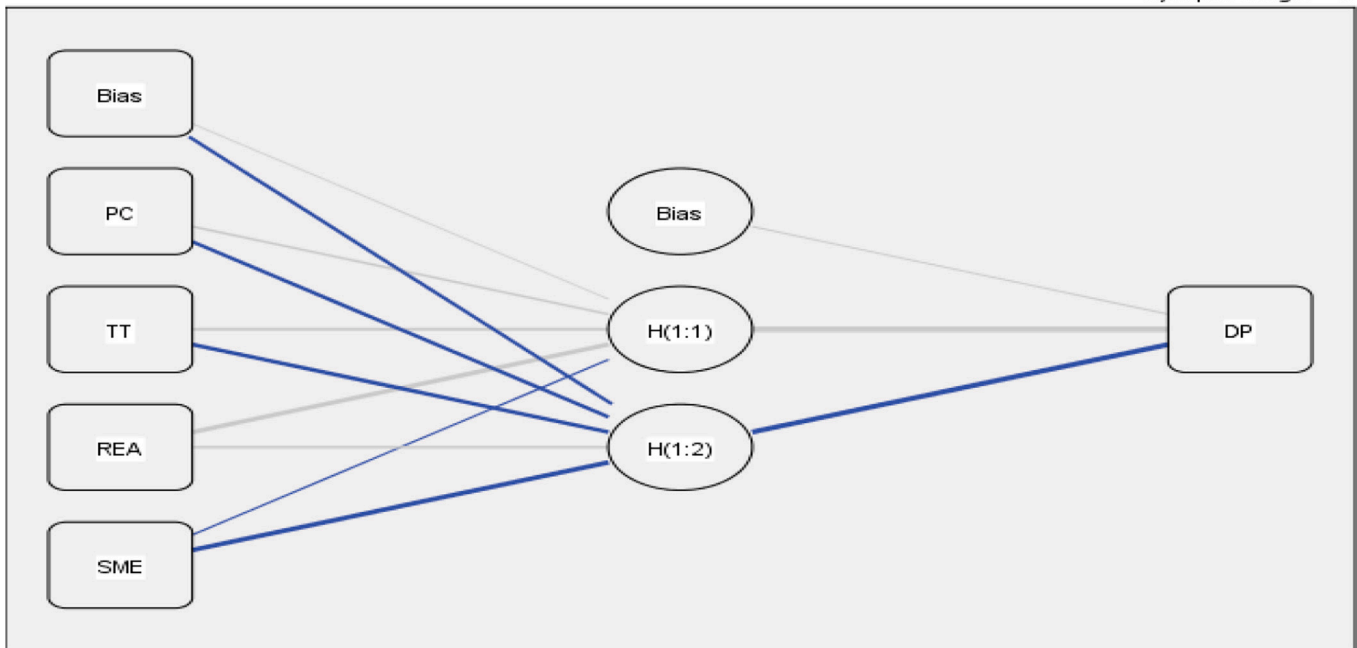
Fig. 3. ANN models.

loyalty toward online services because PC generally reflects that the user is uncertain about the service (Li et al., 2019; McCole, Ramsey, and Williams, 2010). However, unlike the above-discussed studies, which emphasized PC's negative effect on the behavioral intention of a particular fintech, this study revealed the fact that the PC of one fintech could be used as a push factor in promoting another more advanced fintech. In terms of media effect, this study confirmed that previous news reports on conventional payment privacy-related scandals could

have triggered sentiments that favor the DP of alternative fintech innovations.

In addition, TT was observed to exert a strong positive effect on DP, supporting H2. The finding is inconsistent with prior literature demonstrating the importance of trust in driving consumers' adoption of new technology (Fleischmann and Ivens, 2019; Kumar, Ramachandran, and Kumar, 2020). Previous studies on cryptocurrency adoption have confirmed the critical role of TT. For example, Arli et al. (2020) found

Table 13
Comparison of PLS-SEM and ANN results.

PLS path	Original sample (O)/ Path coefficient	ANN results: Normalized relative importance (%)	Ranking (PLS-SEM) [based on Path Coefficient]	Ranking (ANN) [based on normalized relative importance	Remark
Model A (Output: SME)					
IQ - >					
SME	0.511	100	1	1	Match
TSM - >					
SME	0.385	81.389	2	2	Match
Model B (Output: DP)					
PC - > DP	0.069	19	4	4	Match
					Not
TT - > DP	0.364	87.4	1	2	Match
REA - >					
DP	0.211	86	3	3	Match
SME - >					Not
DP	0.345	100	2	1	Match

that TT can significantly decrease individuals' anxiety about investing in Bitcoin. Similarly, Shahzad, Xiu, Wang, and Shahbaz (2018) found that TT fosters an individual's intention to use Bitcoin. TT is considered a mooring factor in this study that might either encourage or hinder the Chinese public's digital participation in CBDC. In contrast, the statistical results that conclude H2 suggest TT has a positive role in promoting DP. From a social governance perspective, this finding implies that the Chinese public trusts CBDC technology because they trust the entity that backup this government-initiated technology. This phenomenon corresponds to the public's common sense: government is usually more credible than the private sector. Therefore, researchers and practitioners should acknowledge the potential of government social media when deploying new technology innovations to society.

Next, H3 is supported as REA is empirically confirmed to influence DP in CBDC positively. The finding concurs with Kim et al. (2010), who revealed that REA has a strong positive impact on users' perceived usefulness and ease of use in m-payment services. H3 is contextually new to fintech acceptance research because the REA of CBDC and other fintechs (e.g., conventional m-payment tools) might not necessarily be the same thing. Before CBDC, the mobile fintech discussed by researchers in consumer studies almost relied on an internet connection, while CBDC can operate in offline mode. Along with the progress of information technology, the discussion on the traditional meaning of REA, connectivity, or connection speed has become less popular in countries where internet infrastructure is well-developed. However, H3 confirms that consumers are still aware of REA when assessing mobile fintech services, and the definition of REA needs to extend to a new context that does not necessarily associate with internet connection.

Regarding respondents' SME, both IQ and TSM showed strong positive influences, suggesting that H4 and H5 are supported. In the context of citizens' online political participation, Arshad and Khurram (2020) have confirmed that government social media agencies' provision of quality information is a key driver of people's online political participation. A similar finding in another study focuses on an individual's behavioral intention of using electronic governmental services (Akram, Malik, Shareef, and Awais Shakir Goraya, 2019). Both studies suggested that providing accurate and helpful information by government social media agencies is the key to triggering people's behaviors. A similar conclusion can also be drawn on the relationship between respondents' trust and engagement with government social media agencies. Houston and Harding (2013) stressed that trust enhances the government's decision by enhancing acceptance and legitimacy. When people perceive a high degree of trust in government social media agencies, they will be more willing to believe that the agencies are working in the best of people's interests, which encourages them to engage. The path between SME and DP (i.e., H6) also revealed a significant positive relationship. The finding is agreed by Tang (2021), who argued that individuals' government social media engagement enhances their perceptions

denoting information security behaviors. Moreover, the supported H6 further confirmed the cultivation theory, which suggests frequent exposure to media information would directly influence the audiences' opinions (Cheng et al., 2016).

Apart from the supported hypotheses, all of the proposed moderating effects, including H7a, H7b, and H7c, are rejected. However, H4 and H5 suggest that the respondents trust government social media agencies and think highly of agencies' information quality, resulting in a high level of SME. The findings on H4, H5, H6, and H7a to H7c could reflect two possible situations: Firstly, SME does not necessarily cultivate the media sentiments that influence digital participation because SME mainly indicates government social media usage frequency. Therefore, corresponding to the supported result of H6, the construct might only be one of the elements in determining media sentiment in practice. Theoretically, the insignificant results of H7a, H7b, and H7c are supported by Hermann et al. (2020), who found that the power of media's cultivation is related to audiences' social environment. Furthermore, Cheng et al. (2016) argued that the cultivation effect of social media could be more influential to people with direct experience with the subjects or events. This explanation correspondent to the fact that most Chinese commercial banks are responsible for CBDC promotion (People's Bank of China, 2021), but so far, the banks are mainly focusing on introducing the concept rather than offering actual CBDC services. Hence, most of the Chinese public might only be heard of the technology without an in-depth understanding of the concept, and the social environment of CBDC digital participation has yet to be established.

6.1. Theoretical implications

The research has made theoretical contributions in several areas. The current work on citizen digital participation is centered on technical and policy design, and overlooked the importance of taking a public users' stance which is equally decisive to the successful diffusion of technology. Our study pioneers this line of research by undertaking the users' perspective to better understand how the China public perceives this government initiative. More specifically, the study investigates the potential role of China's government social media in driving public' favorable response toward CBDC by validating the power of SME in fostering citizens' digital participation. For the first time, this study integrates the push-pull-mooring framework with cultivation theory to discuss individual digital participation under media influences without relying on the conventional technology acceptance model lens but based on a technology competition view. The finding contributes to the government information literature by delineating how government social media can be utilized as an information and promotional tool to advocate government initiatives. Further enriching findings are presented along, whereby the study shows IQ and TSM as the ingredients to cultivate SME. The study further contributes by simultaneously

integrating privacy concern, trust, and reachability in paving way for a better understanding of digital participation. The findings add to the body of knowledge, whereby the people's reasons for holding back in dealing with innovation applies not only to private business context but also to government initiatives. Although the finding did not reveal significant moderating effects of SME on consumers' CBDC participation evaluation process, the result shows that Chinese citizens' media engagement frequency directly influences their opinion about participating behaviors. This fact implies that researchers might need to distinguish the effect of information exposure frequency from the overall sentiment. Specifically, in the context of CBDC acceptance, the frequent exposure to CBDC-related news could raise the public's interest in the technology but does not necessarily reflect the attitude change on other factors that determine CBDC acceptance. Hence, this phenomenon inspires future consumer behavior researchers in similar topics to look into other potential parameters that might facilitate media sentiments to guide public opinions. Moreover, this study clearly distinguishes CBDC from other payment tools (e.g., m-payment) and private cryptocurrencies (e.g., Bitcoin), assisting future studies in defining the CBDC concept.

6.2. Practical implications

Several practical implications can be derived from the findings of both supported and rejected hypotheses of this research. Given that all the PPM attributes can significantly lead to citizens' digital participation, we suggest the government seriously consider the questions associated with the PPM factors when attempting to facilitate government initiatives (e.g., CBDC, other new technologies, or policies) to the public. That is: what are the current issues without the new initiative? What are the attractions of the government initiative to the public? And, are there any attributes that could be a double-edged sword in implementing the initiative? Moreover, the study revealed a strong effect of SME on DP, implying that government social media's high information provision frequency can enhance audiences' DP behavior. Hence, we recommend that the government and government social media agencies use the story of CBDC as an example for other government initiatives which have yet to be effectively promoted. The case of CBDC is suitable to demonstrate the necessity of proactive and high-frequent utilization of government social media information in supporting government strategies throughout society. Lastly and most importantly, the insignificant moderating effects of citizens' government social media engagement urgently call agencies to maintain a high information provision frequency and cultivate an optimum media sentiment for facilitating government initiatives simultaneously. Particularly, agencies can devote efforts to emphasizing the interrelationship between audiences and the change in their social environments by the government initiatives (Hermann et al., 2020) and how the initiatives would directly influence personal life experiences (Cheng et al., 2016).

6.3. Limitations and future research directions

The study has several limitations which deserve attention. First, the study is grounded in a cross-section research design that captures digital participation at a snap of time. CBDC in the research context, China, is still at a pre-mature stage, implying that only a small part of Chinese citizens has fully experienced it. The finding may change over time and requires a longitudinal study by future studies for further insights. Second, although this study mainly concentrated on the young population aged from 18 to 29 years old to overcome the interference caused by age diversity in technology acceptance research (Loh et al., 2019; Shih et al., 2018; Tan and Ooi, 2018), the finding may not be generalizable to other age groups, thus future research can focus population with more diversified ages. Third, this study collected data from a single country (i. e., China), which limits the understanding of other cultures. Therefore, future studies could compare the model across countries with different cultures where similar government initiatives are emerging, such as

Finland, Canada, and the United States to identify the differences in terms of government information efforts and public responses. Moreover, the main purpose of this study is to investigate the government social media effect on facilitating government-initiated technologies using CBDC as a case. Hence, future studies can be done on different technology settings (for example, the metaverse and artificial intelligence) to complement a more comprehensive lens on the topic (Dwivedi et al., 2022, 2021). The research model can be extended further to include other variables such as public's perception toward the government, government information framing strategies, and political culture to enrich the understanding of citizens' digital participation behavior. Finally, the future research should also examine the adverse impact of using such technologies on climate change and sustainable development (Dwivedi et al., 2022).

7. Conclusion

This study provides an example to demonstrate social governance with Chinese characteristics by investigating the roles of government social media in facilitating citizens' digital participation in government-initiated technology, which has essential strategic meaning to China's future launching of programs and policies. The study contributes to the literature by highlighting the role of the critical mass (i.e., the practical scale of initial adopters) in sustaining the deployment of this technology. Moreover, the potential role of government information delivered by government social media is discussed. By integrating the push-pull-mooring framework with cultivation theory, this study attempts to simultaneously explain individuals' technology switching behavior and government information's effect on such behavior. The result of this study does not reveal significant relationships between young citizens' engagement with government social media and the push-pull-mooring factors attributed to their digital participation. However, it shows that the younger generation in China generally trusts their government's social media and believes it provides good quality government information. Therefore, government social media agencies could further enhance the delivery of quality information to assist the operation of government initiatives.

CRediT authorship contribution statement

Yun-Peng Yuan: Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. **Yogesh K. Dwivedi:** Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. **Garry Wei-Han Tan:** Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. **Tat-Huei Cham:** Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. **Keng-Boon Ooi:** Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. **Eugene Cheng-Xi Aw:** Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. **Wendy Currie:** Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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