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THE ADOPTION OF DIGITAL CURRENCY ELECTRONIC PAYMENT IN CHINA

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ABSTRACT

The misuse of unregulated digital currency with the absence of regulation is recognized by the central banks worldwide. In response to this, the Central Bank Digital Currency (or CBDC), a regulated digital currency was developed which have many advantages over unregulated digital currency. In China, the Digital Currency Electronic Payment (DC/EP or "digital yuan") was introduced in 2014 with the aim to improve its monetary and financial supervision. To date, the development on the effectiveness and acceptance level of DC/EP among the people of the Republic of China is still at infant stage after it underwent first trial in 2019. Using mixed method design, this study aims to develop the conceptual framework based on combination of two underpinning theories namely Theory of Reasoned Action (TRA) and Theory of Acceptance Model (TAM). The outcomes of this research provide a theoretical basis for future research on the implementation of Digital Currency Electronic Payment.

INTRODUCTION

Over the last few years, digital currency has been rapidly gaining much attention among consumers worldwide. Digital currency is an electronic form of currency for making payments using various online platforms, such as Coinbased, Bitstamp and Bitfinex. The European Banking Authority defined the virtual currency as "a digital representation of value, which is not issued by the central

bank or the authorities, nor is it linked to legal currency, it can be used as a payment, and it can also be transferred, stored or traded in electronic form, because it could be accepted by the public". Compared with other tangible payment methods (such as bill and coin), digital currency is controlled and exchanged on the digital system by computers. The cryptocurrency is one type of well-known form of unregulated digital currency that had been used frequently in the market. As Coinbase (2020) stated in the report, the cryptocurrency transaction volumes were 195 billion USD in 2020, which increased 141.7% compared to 2019. Due to its characteristics, which has no regulation, immutable and decentralized, the abuse of cryptocurrency lead to a series of financial crimes, such as terrorist financing, black market transactions, and illegal transfer of domestic assets (Teichmann and Falker, 2020). The decentralization of cryptocurrency has provided an insecure environment for online transaction. According to the report of Europol in 2015, the Bitcoin is the key cryptocurrency for payment between criminals and terrorists, and Bitcoin was used for illegal transactions over 40% in European countries (Internet Organized Crime Threat Assessment, 2015).

Realizing the importance and the needs to have better control of the digital currency application, the Central Bank Digital Currency (or CBDC) was introduced and issued by a country's Central Bank. It is digital version of a fiat currency which has many advantages over cryptocurrency which allows the central bank to track any transactions to ensure the stability of the domestic financial order (James, 2021). The transaction record of central bank digital currency only can be assessed by the central bank or the authorized third-party institutions. To ensure the sovereignty of the national currency, the CBDC has become the popular research objective of the central bank worldwide. In China, Research on development of CBDC were carried out since 2014 which saw the Central Bank of China established a special research team to develop the Digital Currency Electronic Payment; a digital version of the RMB (or digital yuan). On August 14, 2020, China issued the "Comprehensive Deepening of Service Trade Innovation and Development Pilot Program" conducted in Shenzhen, Chengdu, Suzhou, and Xiong'an new district. In this study, it aims at finding out the determining factors to user's intention to use Digital Currency Electronic Payment (DC/EP) in China. The findings of this study would provide the future improvement of DC/EP to relevant departments.

PROBLEM STATEMENT

There were several issues identified within the digital currency scholars and implementation which driven the research to be conducted, which are basic functions of Digital Currency Electronic Payment to users, the market competition between Digital Currency Electronic Payment and other mobile payment methods, user's privacy and user's trust towards Digital Currency Electronic Payment. Due to the payment could be realized through the mobile applications. However, people with visual impairments or those who are not familiar with the usage of mobile phone functions would be so many inconveniences. Compared with the application of Digital Currency Electronic Payment or the other mobile payment methods, the use of cash is more convenient for the special groups like them. Because they even cannot use mobile devices very well. Thus, the improvement of Digital Currency Electronic Payment application for the special group is important. Due to the population of China is large, it is hard to carry out currency revolution. These factors would cause the issues that affecting the perceived ease of use of the Digital Currency Electronic Payment. These problems are not only arising in the digitization stage of the Digital Currency Electronic Payment, but also affect the subsequent promotion and application of all the digital currencies.

The Digital Currency Electronic Payment (DC/EP) has an abundance of incipient features which require users to be acclimated with it. Rudimentary function such as making payment should be facilely applied by all users. Nowadays, some people put forward their questions about the facileness of application of DC/EP and most of them are elders and people with disabilities. Because it would be obstacles encountered by using it. For a few people, the utilization of cash is more convenient than the mobile payments. Although in many scenarios, mobile payment has become commonplace, such as in the parking lots, for conveyance, or shopping in stores, etc. Predicated on above scenarios, the payment could be realized through the mobile applications. However, people with visual impairments or those who are not habituated with the utilization of mobile phone functions would be so many inconveniences. Compared with the application of Digital Currency Electronic Payment or the other mobile payment methods, the use of cash is more convenient for the special groups like them. Because they even cannot use mobile contrivances very well. Thus, the amendment of Digital Currency Electronic Payment application for the special group is consequential. Due to the population of China is immensely colossal, it is hard to carry out currency revolution. These factors would cause the issues that affecting the perceived ease of use of the Digital Currency Electronic Payment. These problems are not only arising in the digitization stage of the fiat currency in China, but additionally affect the subsequent promotion and application of all the digital currencies.

RESEARCH OBJECTIVES

Since 2019, pilot testing on the use of Digital Currency Electronic Payment has been conducted involving more than 10 cities. To further assist the Central Bank of China and policy makers in creating awareness and to use the DC/EP, the feedback of the pilot test from Chinese residents is essential to evaluating the adoption of Digital Currency Electronic Payment. In regard to that, two objectives have been developed for this study. The main objective is to examine the determining factors on the intention to use Digital Currency Electronic Payment in China. Specifically, the objectives are listed as following:

- To determine the relationship between perceived ease of use and perceived usefulness with user's behavior intention to use the Digital Currency Electronic Payment.
- To determine the relationship between user's attitude and user's trust with user's behavior intention to use the Digital Currency Electronic Payment.
- To determine the relationship between with user's behavior intention to use the Digital Currency Electronic Payment.
- To asses the moderating effect of age and gender on user's behavior intention to use Digital Currency Electronic Payment.

LITERATURE REVIEW

Theory of Planned Behaviour

In 1980, Theory of Planned Behaviuor was developed by Ajzen and Fishbein (1980), the TPB (in Figure 1) is an extension of the Theory of Reasoned Action, which is predicting the people's intention behavioral during the specific period and location. The Theory of Planned Behavior is combined by six elements, which are attitudes, behavior intention, subjective norms, social norms, perceived power, and perceived behavioral control. TPB model can explain the people's ability to control their actions under the behavioural intentions.

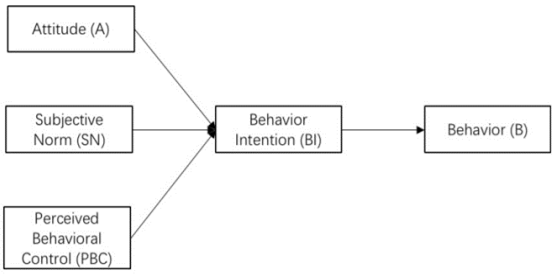

Figure 1 Theory of Planned Behaviour
Source: Ajzen and Fishbein (1980)

Technology Acceptance Model, TAM 2 & TAM 3

The Technology Acceptance Model was developed by the Davis (1989) based on the Theory Reasoned Action and Theory Planned Behavioral models in figure 2. The TAM is constructed by five components, which are actual system use, behavioral intention, perceived usefulness, perceived ease of use and external variables. The external variables and perceived ease of use are mutually influencing the perceived usefulness, and the perceived ease of use is merely determined by the external variables, such as system design, characteristics of users and policy impaction and so on. Then the perceived usefulness and perceived ease of use would build a relationship to the Behavioral intention and impact the actual system use. Currently, the Technology Acceptance Model has been widely used in academic research in different fields, such as finance technology, online marketing, and digital communities.

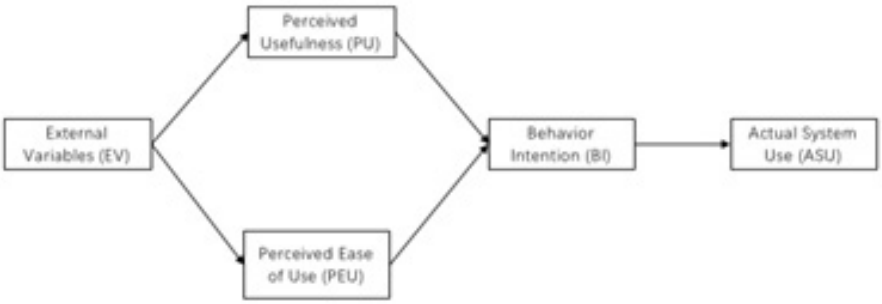

Figure 2 Technology Acceptance Model
Source: Davis (1989)

However, the basic TAM cannot provide the persuasive theoretical model to latest research. Thus, the development of Technology Acceptance Model 2 in the figure 3 and Technology Acceptance Model 3 in the figure 4 are more suitable for this research. TAM 2 was developed by Venkatesh and Davis (2000) to clarify the determinants to perceived usefulness from two aspects, which were social influence processes and cognitive instrumental processes. Whats' more, the TAM 3 was developed by Venkatesh and Bala (2008) to evaluate the acceptance and intention to use the new intelligent technologies. TAM 3 is focusing on the extension on determinants of perceived ease of use to user's behavior intention to use new technology.

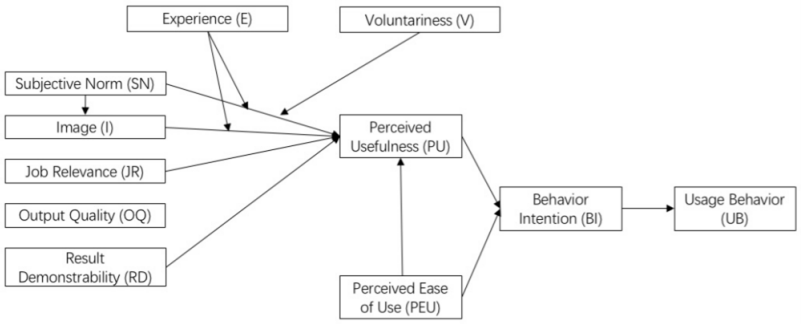

Figure 3 Technology Acceptance Model 2
Source: Venkatesh and Davis (2000)

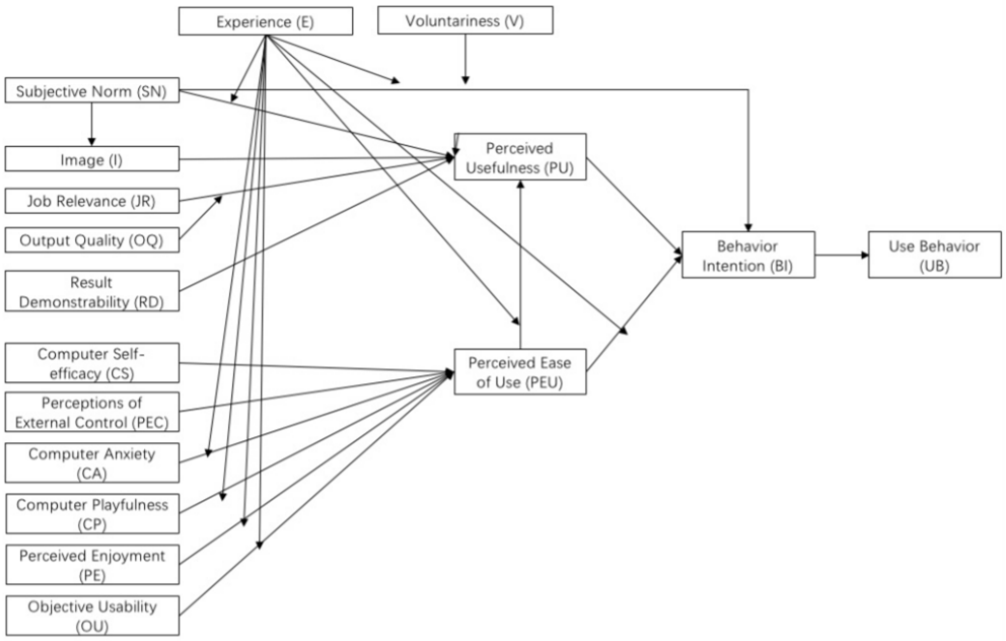

Figure 4 Technology Acceptance Model 3
Source: Venkatesh and Bala (2008)

Effect of Moderating Factors: Age and Gender

Besides the application of Technology Acceptance Models, the perceived usefulness and perceived ease of use would be affected by other external variables, such as user's age and gender. According to the study of Dzandu, et al (2016), the gender and age have significantly influences on perceived usefulness and perceived ease of use to the adoption of social media. Thus, for better analyzing the gender effect, Abdulwahab, et al (2019) conducted a research on the adoption of computer services and analyzed the data based on different gender. Under the same structural model, the comparison of result on both female and male groups was significance to better understand the gender effect on the adoption of computer services. Moreover, Ngabiyanto, et al. (2021) have conducted a research on the E-learning evaluation, and their conceptual framework was developed based on the experience, gender, age to perceived usefulness and perceived ease of use, to evaluate the E-learning system in Covid-19 pandemic by using Technology Acceptance Model. The finding showed that the different genders and experiences would influence teacher's intention to use E-learning system. The younger teacher preferred to use E-learning, and older teacher more concerned about the usability of E-learning system. What's more, the male teachers thought that E-learning would reflect the ease of it. Thus, the perceived usefulness and perceived ease of use would be affected by moderating effects which are age and gender.

Commitment-Trust Theory

Trust is a future expectation of individual based on the previous performance, which represents the feedback to past interactions. In virtual environment, the users cannot directly control transactions. Thus, trust is an important factor in ensuring the operation of new technology systems. Trust is one of the reasons why users do not use online transactions is their distrust of online systems (Donna, et al., 1999). When users choose to use electronic payment, they need to establish trust in the system, which could be sourced from the accuracy of information that dealing with user uncertainty (Jarvenpaa, et al., 2000; Koufaris, 2002). The Commitment-Trust

Theory was developed by Morgan and Hunt (1994). The CTT model consists of two basic components, which are trust and relationship commitment that ensuring the successful of achieving the long-term relationship between business and customers. Due to the original CCT model is complex in Figure 5, the modified CTT model in the Figure 9 developed by Mira, et al. (2013) is clearer. The commitment is an important factors in generating a sense of trust, that enabling to enhance user's confidence in successful transactions and reduce the fear of uncertainty in complex situations (Bhattacherjee, 2002; Flavián, et al., 2006). Thus, there is a certain relationship between commitment, user's trust and user's behavior intention.

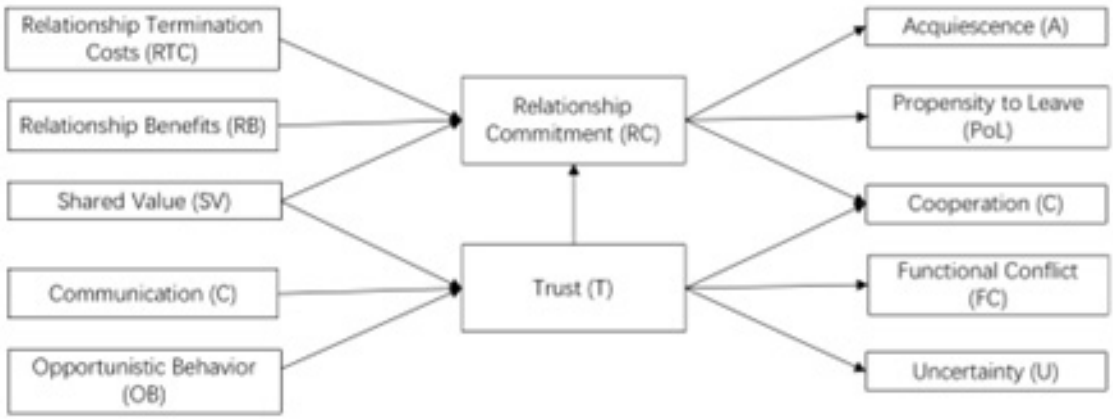

Figure 5 Commitment-Trust Theory
Source: Morgan and Hunt, (1994)

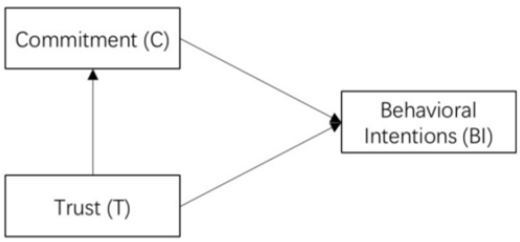

Figure 6 Modified Commitment-Trust Theory
Source: Mira, et al. (2013)

Conceptual Framework

In 1980, Theory of Planned Behavior was developed by Ajzen and Fishbein (1980), which is an extension of the Theory of Reasoned Action. In the TPB model, the perceived power is the perceived factors that hinder or improve the performance of behavioral intention. In addition, the Theory of Acceptance Model has been widely practiced in the information system, education, and several other disciplines to understand the adoption trends of innovative technologies (Roca, et al., 2006; Baker, et al., 2006; Ndubisi, 2006). In the study of Folkinshteyn and Lennon (2017), the TAM has been found out the wide-ranging model in predicting the individual intention to adopt new technology. Referring to the TAM 3, the perceived ease of use and the perceived usefulness were the two main factors to drive the Technology Acceptance Model, which would help to build the individual's intention to adopt the technology. There are several variables that influence the perceived usefulness and perceived ease of use, which are subjective norm, image, job relevance, output quality, result demonstrability, experience, gender and age, computer self-efficacy, perceptions of external central, computer anxiety and computer playfulness. Moreover, Mayer, et al. (1995) highlighted in study, the trust is the behavior that affected by individual beliefs to the expectation and willingness to the future and the past interactions. In this study, for analyzing the adoption of Digital Currency Electronic Payment, there are five factors should be considered in the research model, which are Perceived Ease of Use, Perceived Usefulness, User's Attitude and User's Trust. Then these five determining factors would

affect the intention towards using Digital Currency Electronic Payment. Due to the intention has been applied to do prediction the wide range of behaviors and it is an essential index to evaluate the psychological model of an individuals' behavioral. Therefore, this study aims at finding the determining factors to the intention to use Digital Currency Electronic Payment in China. Thus, referring to the above underlying theories and concepts, the conceptual structure of this research is designed as following Figure 7,

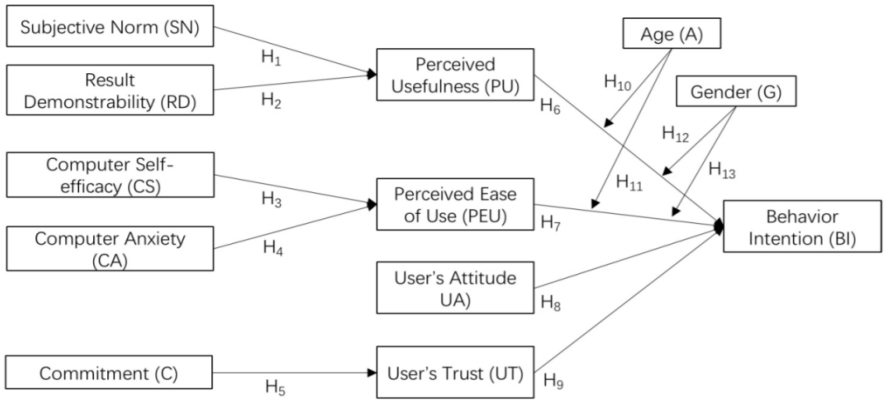

Figure 7 Conceptual Framework for Adoption of DC/EP in China
Source: Created by this research

CONCLUSION

There are four main determining factors which are perceived ease of use, perceived usefulness user's attitude and trust. These four determining factors will affect the adoption of Digital Currency Electronic Payment in China. By reviewing the past scholars, the different scholars have different definitions to the determining factors. Based on the Technology Acceptance Model 3, the perceived usefulness could be affected by subjective norm and result demonstrability. The perceived ease of use could be affected by computer self efficacy and computer anxiety. What's more, regarding to the commitment trust theory, the user's trust could be influenced by commitment. Thus, the combine definitions of determining factors in past scholars and the meaning of determining factors in this study as well.

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