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ABSTRACT

This article has developed a structural equation model, aimed at evaluating the impact factors on people's holding intention of Bitcoin, a cryptocurrency created by the Blockchain technology. Specifically, this study directs its attention on the Bitcoin holder's perceived value and risk, the moderating effects of gender, income, age, and the experience of digital token provided by the respondents. The conclusions are: (1) The majority of individuals do not have any understanding of the values or risks of Bitcoin; (2) The more transaction and speculative risks of Bitcoin people perceive, the less government intervention they are expected to have. Nevertheless, even if government intervention is necessary, it would not impact their holding intention; (3) The higher value of Bitcoin people perceive, the more government intervention people would prefer. Despite this preference, people's holding intention remains intact. However, its degree of influence is definitely less conspicuous than the above effect of the second conclusion; and (4) The government advocacy about the values and risks of Bitcoin should be differentiated by the more nuanced factors such as gender, income, the experience of digital token usage, and age of users, in order to obtain an effective regulation of Bitcoin.

1. Introduction

There are many unofficial virtual monies have been created and circulated in public, which acts like any other convertible currency; the most well-known one should be the cryptocurrency that is generated by Blockchain technology. As triggered by the technological developments and the increased usage of the Internet, some of the virtual communities have created and circulated their currencies, used for exchanging the goods and services enabled by virtual currencies, and accordingly provide a medium of exchange and a unified account in that specific virtual community. However, several virtual currencies, like Bitcoin, Litecoin, Dogecoin, are circulated

outside the virtual communities, which exhibit the attributes like bidirectional flows with buy and sell exchange rates. Approximately more than 4,000 types of monies are currently under circulation, which includes both the statutory and unofficial currencies. While a substantial amount of literature has thrown discussion on the holding motives of the statutory currencies, the work that addresses unofficial currencies is scarce or otherwise overlooked, despite the fact that types of unofficial currencies are more frequently used than statutory currencies in society (Lietaerm & Dunne, 2013; European Central Bank, 2012; Steele, 2007; Hayek, 1978).

This article is motivated to discuss people's holding intention of Bitcoin, as a representative of the virtual currency schemes (or payment instrument) with the bidirectional flows. While more and more cryptocurrencies have been created, held and transacted, and the growing concerns associated with the virtual currency schemes with bidirectional flows, many countries try to regulate people's holding behavior of cryptocurrencies now, however, the contents of these regulations should be consistent with the factors contributing to increase or decrease people's holding intention, so the target of this article should be a timeliness issue. Despite its significance, this topic is understudied. Until today, Bitcoin is not only the first but also the best known decentralized cryptocurrency generated by the Blockchain technology, which neither carries the double spend issue or the Byzantine generals' issue, if they are put in comparison with several other digital currencies. Bitcoin is designed to be a point-to-point, decentralized and trust-minimizing digital payment system where the users carry out direct trading without intermediaries and supervisors. These kinds of records of the transaction would be openly recorded on the Blockchain, and all the participants could supervise the transaction as well. Furthermore, Bitcoin is not backed by any physical assets as a guarantee (price limitless) (Grinberg, 2012).

A number of scholars, as Chuen (2015), Dostov and Hust (2014), Polasik, Piotrowska, Wisniewski, Kotkowski, and Lightfoot (2015), Sauer (2016), Vovchenko et al. (2017), Wang and Vergne (2017), considered the mechanics and classification of Bitcoin as the electronic currency or payment instruments. Particularly, Harwick (2016) termed Bitcoin not just as a medium of indirect exchange, but also as the supplanter of the existing regime of fiat currencies because of its portability, durability, divisibility, security, liquidity, salability, and stability of the value. Although not a few governments and investors are likely to treat Bitcoin and other cryptocurrencies as the investing financial assets or commodities, yet Bartos (2015) observed the fact that the price of Bitcoin follows a standard economic model of currency price formation and macroeconomic and financial variables or the behaviors of investors would not significantly affect the price of Bitcoin.

In this article, the motives for the individuals to hold Bitcoin have been associated with transactional requirements or speculative behavior rather than a precautionary objective. Accordingly, the transactional and precautionary motives of people's money demand should be the key function of interest rate, transfer costs, and expected patterns of cash flows; the speculative motives of people's money demand should be the function of future asset price uncertainty. As suggested by current literature, the motives of people for holding money could be classified into three categories: transaction, precaution, and speculation; but Bitcoin appears to have no commodity value,

together with its limitation on currency circulation and governance. Polasik et al. (2015) carried out the investigation of the payment and investment features of Bitcoin (Lucas & Nicolini, 2015; Telyukova & Wright, 2008; Alvarez, Atkeson, & Kehoe, 2002; Romer, 1986; Jovanovic, 1982; Brunner & Meltzer, 1971; Tobin, 1956; Baumol, 1952; Keynes, 1936).

Notably, this article has developed the questionnaire survey and a structural equation for testing the impact factors on the people's holding intention of Bitcoin as their perceived value and risk of transaction and speculation. For the target of this article is people's holding intension of Bitcoin for their transaction and inspection motives, not their real transaction or investment behaviour, so the method of focus group or and other alternative methods should not be adapted for this article, for experts' opinions should not be the same as most people in many political or monetary issues. Polasik et al. (2015) discovered that the customers' knowledge about Bitcoin constitutes the critical factor for holding Bitcoin. Brunner and Meltzer (1971) considered money, using peculiar technical attributes and the low marginal cost of acquiring information and transacting, as an explanation to the holding of money by people. Saving (1971) was of the view that the fundamental motive of using money involves minimizing the transaction cost. Recently, Ragot (2014) observed that 22% of the total statutory money stocks are held for the transactional motives against the financial motives which account for 78%.

Furthermore, this article considers government regulations as an intermediary variable between the people's perceived risk of Bitcoin and their holding intension of Bitcoin. Numerous countries have started monitoring and regulating virtual currencies through law or government advice. If the political direction and control exercise is regarded as a proxy of the majority of people's intention, the rule is most likely to be created for lowering the transactional and speculative risks associated with the digital money. In the year 2017, the notice released by China government apparently suggested that (1) Offering virtual currencies (as Bitcoin) essentially constitutes an illegal public financing activity if it is done without approval; (2) The management of virtual currencies related platforms should be strengthened; and (3) Financial institutions and non-bank payment institutions should not provide those products or services, which are associated with the unapproved virtual currencies. The notice also shed light on several risks (false asset, operation, speculation) linked to the offering, fundraising and trading of virtual currencies. In the year 2015, New York and Connecticut of USA proposed a framework for the regulation of the digital currency businesses in the transmission, storage, purchase, sales, exchange, issuance or administration of virtual currency. In accordance with the definition proposed by the New York State Department of Financial Services (NYSDFS, 2015), virtual currency is a digital unit, which could be a medium of exchange or a form of stored value, suggesting that not all the monetary stages are subjected to the government supervision. The first virtual currency license was issued in New York to a Bitcoin exchange, itBit Trust Company, and the first BitLicense application was granted to a virtual currency firm, Circle Internet Financial (PBC, CAC, MIIT, SAIC, CBRC, CSRC and CIRC 2017; New York State Department of Financial Services (NYSDFS), 2015; State of Connecticut, 2015; European Central Bank, 2012).

What is worth mentioning in the previous research is that it revealed that gender and age might be among the key factors affecting people's money holding intention. Accordingly, this article investigated the moderating effects of gender and age on the relationships mentioned above. Hatem (2017) explored the positive impact of age on cash holdings of the firms operating in Japan; nevertheless, a contrary effect was observed in China. Furnham and Okamura (1999) found that females manifested less likelihood of taking moral risks of money. Asgary, Gregory, and Mokhtari (1997) explored the volume of money held by the people would be different from their demographic factors (as gender, age, education, and the number of children) (Duca & Whitesell, 1995).

Moreover, recent literature has proved that the income, interest rate, and payment habits are expected to constitute the key factors affecting the holding quantity of statutory money; By the same logic, this article assesses the impacts on the people's holding intention of Bitcoin from the questionnaire respondents by taking into consideration their income and experience of digital token usage. Mamoon, Iftikhar, and Hassan (2017) has suggested that the income, interest rate, fiscal deficit, and the exchange rate will substantially affect the money demand. Fujiki and Tanaka (2014) also discovered that the demand for currency is expected to increase in line with the adoption of electronic money. Dreger and Wolters (2014) defined the elasticity of money demand concerning the scale variables, income and wealth. Knell and Stix (2005) indicated that the cross-country comparisons on the holding of money by people have particular relevance to the national attributes (for instance, payment habits). Asgary et al. (1997) explored that the demand for money depends on income, wealth, underground economy. However, Bitcoin is market-neutral and has no interest payout.

Given the growing concerns associated with the virtual currencies, understanding the holding intention of decentralized cryptocurrency, for instance, Bitcoin, can encourage people to develop more precise and complex usage rules. This research aims at achieving the following objectives: (1) To understand whether or not the perceived value and risk of transaction and speculation impact the holding intention of Bitcoin. (2) To understand whether or not the government regulations exert an intermediary impact on the holding intention of Bitcoin. (3) To understand whether or not the relationship between the perceived value and risk of Bitcoin and its holding behavior is affected by gender, age, income and the experience of digital token usage.

The remaining article is organized as hereunder. In Section 2, both the hypothesis and research methods for the people's holding intension of Bitcoin are briefly reviewed. Section 3 provides the description and analysis of the statistical results of the questionnaires, followed by utilizing the results for the validation of the hypothesis. Section 4 presents the conclusions, followed by outlining the future works at the end.

2. The hypothesis and methods

The new idea of digital currency creation was proposed for the removal of the intermediaries and supervisors, meanwhile still providing safety and transparency, aimed

at improving the effectiveness and efficiency of the monetary cycle. Bitcoin is the first of the ones that are created using the Blockchain technology, and is market-neutral and thus provides the required public validation and transparency. The complexity of the monetary cycle has exhibited rapid growth in contemporary society, and its each participant (as the government, the central bank, and the private bank) possesses one's motives of calculated self-interest, giving rise to different kinds of classic financial theories and models that were unable to explicate a financial status, which might cause misleading in the prediction. In a typical monetary cycle, the operational mechanism of money creation is that the companies receive money lent by the banks or invested by the capitalists, followed by paying workers' salaries and costs to the other production factors. Conversely, in the money offset phase, consumers made use of money for buying products or services from corporations or save money in banks. Subsequently, the corporations pay money to repay to the banks or pay dividends to the capitalists. Eventually, the principals of debt or investment are offset; nevertheless, their interests are still expected to be there. Moreover, all the stages are subjected to the supervision of both the government and the central bank.

The media of exchange and the natural scarcity are termed as the most critical attributes of Bitcoin, and a critical point that differentiates Bitcoin from a legal tender can be defined this way: The scarcity of Bitcoin is associated with its key mode creation, which is almost uncontrollable by a small group of people. The production costs are substantially increased when it comes to mining a new Bitcoin, and a limited quantity was set in this money creation mechanism. Conversely, the scarcity of legal tender follows the monetary rules that can be modified by the concerned authorities, subjected to numerous circumstances. The ruled scarcity of legal tender is asserted by some literature, which is meant for the self-interest of monetary authorities as well as no meaningful enforcement of its ruled scarcity (Selgin, 2003, 2008, 2015).

In accordance with the results obtained by Swan (2015), Berti and Bombi (1981) and other literature, the monetary measures dealing with the digital currencies include its level of impact, territory to reach, the degree of awareness, level of interaction, the speed of circulation, and so on. Additionally, the understanding of the perceived risk and value of Bitcoin should be able to allow the individuals to develop more precise and intricate usage rules of Bitcoin. The research framework of this article is designed to figure out the link between the perceived values and risks to the motives of holding Bitcoins. The selection of variables and the operational definition is carried out in accordance with the literature review. Aimed at developing the evaluation model, the independent variable is established as the holding intention of people (on the bases of their motives of transaction and speculation). The dependent variables are suggested as the perceived values and risks on both the transaction and speculation of Bitcoin. The regulation intention is termed as the intermediary variable. The four moderator variables include respondent's gender, age, income and the experience of digital token usage.

The variable of Holding Intension (HI) on Bitcoin can be measured with the help of the items (HI_t; HI_s) that is the people's Holding Intension of Bitcoin divided by the transaction and speculation motives of the people.

The variable of Perceived Transaction Values (PV_t) could be measured by 1. Lower transactional cost ($PV_{t,1}$): the transactional cost of Bitcoin is way below a legal tender when looking at its point-to-point payment system without any financial intermediaries. 2. Less restriction and supervision of production ($PV_{t,2}$): the supply of Bitcoin is not constrained or monitored by the government (politically-motivated). 3. Natural scarcity ($PV_{t,3}$): The total amount of Bitcoin is not expected to be changed in any situation (like innovations). 4. Less restriction and supervision of exchange ($PV_{t,4}$): the exchange of Bitcoin is not constrained or monitored by the government (politically-motivated) (Wang & Vergne, 2017; Chuen, 2015; Yermack, 2015; European Central Bank, 2012).

The variable of Perceived Transaction Risks (PR_t) can be measured by (1) Credit risk ($PR_{t,1}$): there is no guarantee or deposit insurance of Bitcoin. (2) Liquidity risk ($PR_{t,2}$): There is more liquidity risk associated with Bitcoin than any legal tender. The daily transaction ratio is quite low when limited merchants accept it (as Overstock, New Egg, Dell). (3) Technical, hacking and theft risk ($PR_{t,3}$): there are technical, hacking and theft accidents for the trading platform of Bitcoin. (4) Legal and policy risk ($PR_{t,4}$): Government would impose regulations or policies putting Bitcoin under surveillance since the money laundering and terrorism financing can have possible involvement in the transaction and speculation, and its uncontrolled supply or exchange. As suggested by Harwick, the primary practical barrier of Bitcoin is its purchasing power volatility that originates from a rigid money stock with extensive volatility in demand (Gandal, Hamrick, Moore, & Oberman, 2018; Vovchenko et al., 2017; Chuen, 2015; Yermack, 2015; Dostov & Hust, 2014; U. S. Department of the Treasury and Financial Crimes Enforcement Network, 2013; European Central Bank, 2012).

The variable of Perceived Speculation Values (PV_s) can be measured by (1) High return rate ($PV_{s,1}$): The average annual returns rate of Bitcoin between 2009 and 2018 hit more than 100%. (2) Portfolio diversification and market-neutral ($PV_{s,2}$): and, Bitcoin's daily exchange rates exhibit almost zero correlation with most of the legal tenders and gold (Chuen, 2015; Yermack, 2015; European Central Bank, 2012).

The variable of Perceived Speculation Risks (PR_s) can be measured by (1) Higher volatility of exchange rate ($PR_{s,1}$): The volatility of the exchange rate on Bitcoin is quite higher as compared with the volatilities of most of the legal tenders and gold. (2) The doubt of the Ponzi scheme ($PR_{s,2}$): Most investors do not have any understanding of the real content and risk of Bitcoin. (3) Political risk ($PR_{s,3}$): Increasing numbers of countries are taking into consideration forbidding or controlling of the investment of digital money. Till today, there are a few countries that have completely banned the investment of Bitcoin, including Bangladesh, Ecuador, Kyrgyzstan, Polysia, and Vietnam. Other countries like China, France, Germany, South Korea, and Thailand, uphold the belief that Bitcoin is not suitable for investment in the country. European Unions, Switzerland, Poland, Canada, and the United States are still throwing discussions on the investment issues associated with Bitcoin (Chuen, 2015; Yermack, 2015; U.S. Securities and Exchange Commission, 2013; European Central Bank, 2012).

The variable of Income, Experience of Digital Token Usage, Gender, and Age (I; DT, G, A) can be measured by the monthly income, monthly spending on the

digital token, gender and age of the respondents. The variable of Regulation Intention (RI) can be measured by the items (RI_t; RI_s) including the Regulation Intention of Bitcoin divided by its transaction and speculation motives of Bitcoin (Sauer, 2016).

The measurement of each potential variable is pre-tested with the help of the online questionnaire survey. In the design of the questionnaire, 80 possible problems were set up to cover the possible research concepts, by the experts' opinions and pre-questionnaires survey, and then the problems were limited to 21 to obtain the accurate opinions of the interviewees effectively. As the question that "Do you know of Bitcoin?" has presented in the pre-questionnaire, but the pre-interview result was 100% of respondents say yes, so this question was deleted. The other question in the pre-questionnaire was "Have you ever owned Bitcoin?", however; the pre-interview result was 98% of respondents say no, so this question was deleted, too. This article originally designed a table that included the explanation of proper nouns for the interviewees. However, after expert opinions and preliminary interview results of the questionnaire, it was found that since most of the interviewees' education level is college or above, and the proper nouns used in questionnaire, like risk, value, volatility, exchange rate, deposit insurance, transaction or inspection motives for the holding of money, are fundamental terms for economics (a subject for most first-year college students), so the table was later deleted (Porter, 2011).

By the pre-test reliability analysis, only the Cronbach's alpha coefficient on the variable of Perceived Speculation Values (PV_s) is -0.12; on the other hand, other ones are greater than 0.7, suggesting that the respondents show no concerns about both the portfolio diversification and market-neutral of Bitcoin. Accordingly, this item is removed from the model. The new variables of Perceived Transaction and Speculation Values ($PV_{t,s}$) have changed, which include five items as hereunder: 1. Lower transaction cost ($PV_{t,s,1}$). 2. Less restriction and supervision of production ($PV_{t,s,2}$). 3. Natural scarcity ($PV_{t,s,3}$). 4. Less restriction and supervision of exchange ($PV_{t,s,4}$). 5. Higher return rate ($PV_{t,s,5}$).

In a bid to summarize above, the hypothesis and research architecture are illustrated in Figure 1. The paths of model (i.e. Hypothesis) include: Perceived Transaction Risks to Regulation Intention ($PR_t \rightarrow RI$; H_1); Perceived Speculation Risks to Regulation Intention ($PR_s \rightarrow RI$; H_2); Regulation Intention to Holding Intention ($RI \rightarrow HI$; H_3); and Perceived Transaction and Speculation Values to Holding Intention ($PV_{t,s} \rightarrow HI$; H_4). The hypothesis ($H_{5,a}$, $H_{5,b}$, $H_{5,c}$, $H_{5,d}$; $H_{6,a}$, $H_{6,b}$, $H_{6,c}$, $H_{6,d}$; $H_{7,a}$, $H_{7,b}$, $H_{7,c}$, $H_{7,d}$; $H_{7,a}$, $H_{7,b}$, $H_{7,c}$, $H_{7,d}$; $H_{8,a}$, $H_{8,b}$, $H_{8,c}$,
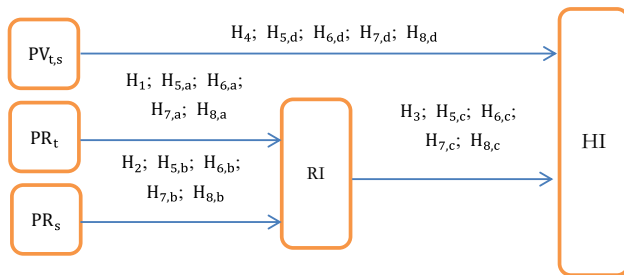

Figure 1. The hypothesis and research architecture.

and $H_{8,d}$) makes an assumption that H_1, H_2, H_3, and H_4 should be substantial in accordance with the respondents' gender, income, experiences of digital token usage, and age.

Formally, this article can write the equations for the above model as follows:

$$RI_i = \beta_{1,i}PR_{t,i} + \epsilon_{1,i};$$

$$RI_i = \beta_{2,i}PR_{s,i} + \epsilon_{2,i};$$

$$HI_i = \beta_{3,i}RI_i + \epsilon_{3,i};$$

$$HI_i = \beta_{4,i}PV_{t,s,i} + \epsilon_{4,i};$$

As regards i = all respondents, male, female, monthly income below RMB 5,000, monthly income above or equivalent to RMB 5,000, monthly spending of digital token below RMB 500, monthly spending of digital token above or equivalent to RMB 500, age below or equivalent to 30, and age above 30. $\epsilon_{1,i}$, $\epsilon_{2,i}$, $\epsilon_{3,i}$, and $\epsilon_{4,i}$ constitute the error terms.

3. The statistical results for the people's holding intension of bitcoin

In this study, Smart PLS 2.0 software has been employed for analyzing the structural equation pattern, which is primarily divided into the following analyses: the reliability and validity analysis, suitability analysis, and multi-group analysis.

The participants in this research include the individuals having internet access in China. An aggregate of 4,000 questionnaires was collected online in March of 2018. Subsequent to removing invalid questionnaires, 3,511 valid surveys were put to use in the analysis, with the effective rate amounting to be 87.8%. Although the trading of Bitcoin was forbidden in October 2017 in China, the trading of Bitcoin kept going in other countries, and the Shenzhen Court of International Arbitration has made a benchmarking determination on the legal nature of Bitcoin and the validity of Bitcoin trading contracts in 2018, it affirmed the validity of Bitcoin trading contract with the concept of freedom of contract. In the other side, the target of this article is people's holding intension of Bitcoin, not their real transaction behavior so that the respondents would be college students, ordinary people or Bitcoin investors.

Following the narrative statistics, among the total effective respondents, 2,171 are males (61.8%), and 1,340 (38.2%) are females. Out of all the respondents, 1,786 (50.9%) respondents' monthly income is below RMB 5,000 dollars, 2,002 (57.0%) respondents spend digital token of below RMB 500 dollars monthly, and, 1,718 (48.9%) respondents are aged 30 or below.

The results obtained from the narrative analysis and reliability and validity test have been presented in Table 1. By Table 1, more than 80% of respondents are interested in owning Bitcoin, who also hope that the government proposes relevant regulations. Furthermore, the Higher Return Rate ($PV_{s,1}$) is the only item of the Perceived Risks and Perceived Values that receives recognition by more than half of the respondents. The

other Perceived Risks and Values are not known to the majority of respondents, among which, the ratios are below 15.0%. As evident from the above, people are unlikely to understand the content of Bitcoin, and only the higher return rate draws people's interests.

Besides that, Factor Loadings (Loading), Cronbach's α (α), Composite Reliability (CR), and Average Variance Extracted (AVE) are employed for the reliability and validity test and suitability analysis of these results. As presented in Table 1, all the values of Cronbach's α and Composite Reliability are above 0.5. The Factor Loadings of the perceived transaction value ($PV_{t,1}, PV_{t,2}, PV_{t,3}$, and $PV_{t,4}$) are below 0.4, and their value of AVE is below 0.3. Consequently, the reliability and the convergent validity of these variables should fall within the acceptable range. For simplicity, this article figured out the existing discriminant validity of these variables, which was nevertheless not listed in the table.

The path relationship between each variable is estimated with the help of the Structural Equation Model (SEM), and the relevant data have been presented in Table 2. As suggested by Table 2, people perceived the transaction and speculative risks of Bitcoin, which would not exert any impact on their holding intention. Predictable manner, they also would not want the government to propose relevant regulations. As indicated by the narrative analysis, people are of the view that the perceived risks of Bitcoin were not the majority, who could receive benefits in the game. Less government intervention is likely to provide them with the extra premium. Conversely, the perceived value could substantially impact the holding intention of Bitcoin; nevertheless, the impact is not as substantial as the perceived risk. The significant path coefficients of variables include $PR_t \rightarrow RI$ (-0.48), $PR_s \rightarrow RI$ (−0.50), and $RI \rightarrow HI$ (0.03); accordingly, H_1, H_2, and H_4 are supported.

As suggested by the aforementioned, people are unlikely to show concern about the transaction and speculative risks despite the fact that numerous literature observed the risks to be capable of giving rise to some issues.

Theoretically, with the creation of Bitcoin, a certain level of transparency and safety can be satisfied by the Blockchain technology. People get persuaded that the

Table 1. Narrative analysis, reliability and validity test of the variables.

Variable	Item	Ratio	Loading	α	CR	AVE
$PV_{t,s}$	$PV_{t,1}$	33.6%	0.31	0.53	0.55	0.25
	$PV_{t,2}$	13.4%	0.32			
	$PV_{t,3}$	9.8%	0.37			
	$PV_{t,4}$	6.2%	0.21			
	$PV_{s,1}$	59.0%	0.94			
PR_t	$PR_{t,1}$	6.1%	0.71	0.71	0.82	0.53
	$PR_{t,2}$	10.8%	0.80			
	$PR_{t,3}$	6.2%	0.74			
	$PR_{t,4}$	4.5%	0.67			
PR_s	$PR_{s,1}$	6.5%	0.75	0.66	0.81	0.59
	$PR_{s,2}$	7.7%	0.79			
	$PR_{s,3}$	6.0%	0.77			
RI	RI_t	87.4%	0.90	0.75	0.89	0.80
	RI_s	81.7%	0.89			
HI	HI_t	83.5%	0.87	0.68	0.86	0.76
	HI_s	85.0%	0.87			

Table 2. The evaluation of structural equation model.

Path	Coefficient	T-value
$PR_t \rightarrow RI$ (H_1)	-0.48^{***}	38.94
$PR_s \rightarrow RI$ (H_2)	-0.50^{***}	45.99
$RI \rightarrow HI$ (H_3)	0.03	1.62
PR_t, $PR_s \rightarrow RI \rightarrow HI$	$R^2=0.75$	
$PV_{s,t} \rightarrow HI$ (H_4)	0.15^{***}	8.98
$PV_{s,t} \rightarrow HI$ PR_t, $PR_s \rightarrow RI \rightarrow HI$	$R^2=0.02$	

$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 3. Multi-group analysis of gender.

	Coefficient (S.E.)		
Path/Model	Male	female	Difference
$PR_t \rightarrow RI$ (H_1)	-0.48^{***}	-0.48^{***}	0.006
	(0.01)	(0.01)	
$PR_s \rightarrow RI$ (H_2)	-0.50^{***}	-0.51^{***}	0.01
	(0.01)	(0.01)	
$RI \rightarrow HI$ (H_3)	0.05^{**}	-0.01	0.06^{**}
	(0.02)	(0.02)	
PR_t, $PR_s \rightarrow RI \rightarrow HI$	$R^2=0.74$	$R^2=0.76$	
$PV_{s,t} \rightarrow HI$ (H_4)	0.13^{***}	0.17^{***}	0.04^{**}
	(0.02)	(0.02)	
$PV_{s,t} \rightarrow HI$ PR_t, $PR_s \rightarrow RI \rightarrow HI$	$R^2=0.02$	$R^2=0.03$	

$^*p < 0.05$, $^{**}p < 0.01$. $^{***}p < 0.001$.

transaction can be performed reliably without the intervention of both the intermediaries and supervisors. The traders are aware of the fact that the perceived risk of Bitcoin can stem from a financial or an ideological community, who might not consider that the government intervention will be essential following their interests or beliefs. It indicates why the perceived risks are not expected to impact the regulation intention. Furthermore, the perceived risks might either be unknown or put aside facing the high return rate. That is why the perceived risks do not impact the holding intention by the result.

By developing a structure model for understanding whether or not the above relationships are affected by their gender, this article present the relevant data in Table 3. As presented in Table 3, respondents' gender would make the relationships substantially different from the Regulation Intention to Holding Intention and the Perceived Value to the Holding Intention. As regards the females, the impact on their Perceived Value to Holding Intention is more robust, and the relationship between their Regulation Intention to Holding Intention is not considered as well. Conversely, men are expected to possess their stronger holding intention in a case where the regulations are capable of mitigating their perceived risk. Their holding intention of Bitcoin will receive a considerable impact on their regulation intention. On the bases of this, the study develops an assumption that $H_{5,c}$, and $H_{5,d}$ are supported, whereas, $H_{5,a}$ and $H_{5,b}$ do not get support.

The significant path coefficients of these variables by the male are $PR_t \rightarrow RI$ (-0.48); $PR_s \rightarrow RI(-0.50)$; and $RI \rightarrow HI$ (0.05), male, who do not perceive the transaction and speculative risks of Bitcoin, prefer that the government should be able to propose associated regulations. In a case where it happens, it is expected to slightly

Table 4. Multi-group Analysis of Income.

Path/Model	Coefficient (S.E.)		
	Income > 5000	Income≦5000	Difference
$PR_t \rightarrow RI$ (H$_1$)	−0.48***	−0.48***	0.004
	(0.01)	(0.01)	
$PR_s \rightarrow RI$ (H$_2$)	−0.50***	−0.51***	0.01
	(0.01)	(0.01)	
$RI \rightarrow HI$ (H$_3$)	−0.01	−0.01	0.002
	(0.01)	(0.02)	
PR_t, $PR_s \rightarrow RI \rightarrow HI$	R^2=0.76	R^2=0.74	
$PV_{s,t} \rightarrow HI$ (H$_4$)	0.14***	0.17***	0.03**
	(0.01)	(0.02)	
$PV_{s,t} \rightarrow HI$ PR_t, $PR_s \rightarrow RI \rightarrow HI$	R^2=0.02	R^2=0.04	

*p < 0.05, **p < 0.01, ***p < 0.001.

Table 5. Multi-group Analysis of Digital Token Experience.

Path/Model	Coefficient (S.E.)		
	Payment > 500	Payment≦500	Difference
$PR_t \rightarrow RI$ (H$_1$)	−0.49***	−0.47***	−0.02
	(0.02)	(0.01)	
$PR_s \rightarrow RI$ (H$_2$)	−0.52***	−0.50***	−0.02
	(0.02)	(0.01)	
$RI \rightarrow HI$ (H$_3$)	0.04**	0.03	0.01*
	(0.01)	(0.02)	
PR_t, $PR_s \rightarrow RI \rightarrow HI$	R^2=0.74	R^2=0.75	
$PV_{s,t} \rightarrow HI$ (H$_4$)	0.13***	0.17***	0.04**
	(0.01)	(0.02)	
$PV_{s,t} \rightarrow HI$ PR_t, $PR_s \rightarrow RI \rightarrow HI$	R^2=0.02	R^2=0.03	

*p < 0.05, **p < 0.01, ***p < 0.001.

yet positively impact their holding intention. Nonetheless, the relationship does not exist for females.

By respondents' income (see Table 4), it would make the relationship considerably different from the Perceived Value to Holding Intention. The people possessing less income manifested a more strongly positive connection from the Perceived Value to Holding Intention. On the bases of this, this research develops an assumption that H$_{6,d}$ is supported, whereas, H$_{6,a}$ H$_{6,b}$ and H$_{6,c}$ are not.

By respondents' experience of the digital token (see Table 5), it is expected to make the relationship considerably different from the Regulation Intention to Holding Intention and from the Perceived Value to Holding Intention. For the individuals, who spend on the digital tokens below or equivalent to RMB 500 per month, the higher significance is found in the connection from the Perceived Value to Holding Intention of Bitcoin, even though their regulation intention would not impact their holding intention. For the individuals, who spend the digital tokens above RMB 500 monthly, their stronger regulation intention for lowering the risk can boost their holding intention of Bitcoin. Accordingly, the results suggest that H$_{7,c}$, and H$_{7,d}$ are supported, nevertheless, H$_{7,a}$ and H$_{7,b}$ are not.

The significant path coefficients are $PR_t \rightarrow RI$ (−0.49); $PR_s \rightarrow RI$(−0.52); and $RI \rightarrow HI$ (0.04) for the individuals, who spend on the digital tokens more than RMB 500 monthly. The individuals, who do not perceive the transaction and speculative

Table 6. Multi-group Analysis of Age.

Path/Model	Coefficient (S.E.)		
	Age > 30	Age ≦ 30	Difference
$PR_t \rightarrow RI$ (H_1)	−0.45***	−0.50***	0.05***
	(0.01)	(0.01)	
$PR_s \rightarrow RI$ (H_2)	−0.51***	−0.48***	−0.03**
	(0.01)	(0.01)	
$RI \rightarrow HI$ (H_3)	0.02	0.03	0.01
	(0.02)	(0.02)	
PR_t, $PR_s \rightarrow RI \rightarrow HI$	$R^2 = 0.73$	$R^2 = 0.78$	
$PV_{s,t} \rightarrow HI$ (H_4)	0.15***	0.14***	0.01
	(0.02)	(0.02)	
$PV_{s,t} \rightarrow HI$ PR_t, $PR_s \rightarrow RI \rightarrow HI$	$R^2 = 0.03$	$R^2 = 0.02$	

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

risks of Bitcoin, are expected to in favor of the decision that the government should be capable of imposing associated regulations. In a case where that happens, it is supposed to slightly yet positively impact their holding intention. Nevertheless, this relationship is not existent for the people, who spend on the digital tokens less than or equal to RMB 500 monthly.

By respondents' age (see Table 6), it has made a different relationship from the Perceived Risk to Regulation Intention. For the people aged 30 or below, a higher impact takes place on the link from the Perceived Transaction Value to Holding Intention, even though the connection from the Perceived Speculation Value to Holding Intention is not entirely meaningful. On the bases of this, the research work builds on the assumption that $H_{8,a}$ and $H_{8,b}$ are supported, nevertheless, $H_{8,c}$, and $H_{8,d}$ are not.

4. Conclusion

Nowadays, because of its fast-growing value and potential holding risks, the most renowned unofficial currency should be Bitcoin, but there are not lots of discussions associated with the key factors that influence the holding intention of new types of digital money. Due to the scarcity of research on Bitcoin holder's intention, this article has developed a structural equation model aimed at testing the impact on the people's holding intention of Bitcoin by their perceived values and risks, together with exploring the moderating impacts of their gender, income, age, and experience of using digital money for payments. Gandal et al. (2018) indicated that the suspicious trades on a Bitcoin exchange are associated with the growths of the exchange rate and trading volume. The frictions existing in the intertemporal equilibrium of an ideal barter economy constitute the critical reason to utilize money as a medium of exchange (Klausinger & Vaubel, 1997; Alvarez & Lippi, 2009; Alvareza & Lippi, 2017).

In this study, more than 3,500 valid questionnaires have been collected online in China, and the empirical results indicate that: (1) Most people possess the intentions of owning Bitcoin, in addition to preferring to have government intervention; (2) Higher return rate of Bitcoin is the only item that is being recognized by more than 50% of respondents who are assessing the defined perceived values and risks of

Bitcoin; and (3) Most people are not actually aware of the content of Bitcoin, neither its values nor risks.

As suggested by the results of partial least squares analysis of the structural equation model, the empirical results indicate that: (1) The more perceived transaction and speculation risks of Bitcoin the people understand, the less government intervention they are expected to prefer to have; nonetheless, this is not going to impact their holding intention. The possible reason can be that those understanding the perceived risks of Bitcoin do not make the majority population; accordingly, they could receive benefits in the game. Less government intervention might also provide them with extra premium. (2) The more perceived value of Bitcoin the people perceive, the more government intervention people would prefer; however, the degree of the impact is less than the above situation (Wang & Vergne, 2017).

As suggested by the multi-group analysis of the moderate effects of the gender, income, experience of digital token usage, and age of people, the empirical results make it clear that: (1) Their gender, income, and experience of digital token usage would affect the relationship ranging from the Perceived Value to Holding Intention; (2) Their gender and experience of digital token usage would change the relationship ranging from Holding Intention to Regulation Intention; and (3) Their age would change the relationship ranging from the Perceived Transaction and Speculation Risk to Regulation Intention.

From the statistic results, the managerial implications and recommendations to the digital money operators and authorities are presented hereunder: (1) The government advocacy about the values and risks associated with the digital money, for instance, Bitcoin, should preserve the macroeconomic stability. Bitcoin, which can hardly be controlled by any authority, might not exhibit compatibility with any legal notes (Nagel, 2016; Dreger & Wolters, 2015; Selgin, 2015; King, 2004); (2) The power of persuasion about the high return rate of Bitcoin or other digital moneys by the operators is likely to enhance the holding quantity. Accordingly, the associated risks should also be highlighted in the declaration of any promotional activities, asked by the authority; and (3) The government advocacy, in purpose of gaining the awareness of the associated risks to the possible returns, should be differentiated by gender, income, experience of digital token usage, and age of people.

It can be an excellent area to emphasize in the prospective studies as to how the unofficial money is likely to impact government taxation as well as the current monetary cycle. For the current monetary, tax and law systems, there is no appropriate approach capable of explaining the entire transaction thoroughly as an unofficial currency has its value of existence in the monetary cycle. In the other side, the topics of future researchers are (1) To survey different investors in different places and at a different time or their trading data to compare the differences between people's trading behaviors and their holing intention. (2) To use more questions in the questionnaire being enough (both in length and variability of constructs) to obtain appropriate data quality, ensuring data validity and reliability (See Fowler, 2013). (3) To use the method of the focus group, a flexible and open-ended approach, to obtain the opinions of respondents thought processes, which could capture the motivation of would be or current investors in Bitcoin.

Disclosure statement

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