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Mobile Cryptocurrency for Development in Asia-Moderating Effects of Advantage, Complexity, and Compatibility

Emergent Research Forum (ERF)

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Abstract

Information and communication technologies (ICTs) have been proven to promote the development of countries and regions. Asia is one of the leading regions in adopting new ICTs like mobile payment, artificial intelligence, and blockchain. The innovative technologies, relevant business values, and impacts related to blockchain are overestimated in the short term yet underestimated for a long time. While the blockchain is in the hype of both research and practice, there is minimal research related to the blockchain adoption. Among many blockchain-based applications, cryptocurrency been widely utilized in Asia. This Emergent Research Forum (ERF) Paper provides preliminary research in understanding how blockchain-based cryptocurrency revolutionizes ICT for development in Asia. This research introduces a model that considers Cryptocurrency/Bitcoin Innovation Factors (BIF), including cryptocurrency advantage, cryptocurrency complexity, and cryptocurrency compatibility as moderators. The survey method is selected and will be conducted in the future.

Keywords

Blockchain, Electronic Invoicing Systems, IT for Development, Asia.

Introduction

Information and communication technologies (ICTs) have been proved to promote the development of countries and regions. It is without double that ICTs have changed the way people live (Silverstone & Haddon, 1996; Xiong & Qureshi, 2012). Blockchain is one of the emerging ICTs that could potentially change the way people are conducting businesses. With a very short history of less than a decade (Gupta, 2017; Schlegel, Zavolokina, & Schwabe, 2018; Sompolinsky & Zohar, 2018), blockchain is believed to have brought an unprecedented decentralization revolution to not only the technology field but also to the structure of human society (Baruffaldi & Sternberg, 2018; Lu & Zheng, 2018; Sadhya & Sadhya, 2018; Swan, 2015; Tapscott & Tapscott, 2016).

Among all different types of blockchain-based applications, blockchain-based cryptocurrency offers the most promising potentials to disrupt the way people conduct businesses (Chuen, Guo, & Wang, 2017). Cryptocurrencies are becoming a popular application of blockchain technology (Avital, Beck, King, Rossi, & Teigland, 2016; Beck & Müller-Bloch, 2017; Qureshi & Xiong, 2019). As a financial tool, cryptocurrencies based mobile payment can potentially play an essential role in the sustainable development of the global economy (Nguyen, 2016). By enabling greater transparency, accountability, and business opportunity, cryptocurrencies bring borderless economic opportunities to new groups (Qureshi & Xiong, 2019).

However, very few studies have been conducted to investigate the factors in determining the adoption of cryptocurrencies in the developing regions in Asia. More importantly, many moderating effects are missing from previous research. This research in progress paper utilizes the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003; Venkatesh, Thong, & Xu, 2016; Venkatesh & Zhang, 2010) as well as diffusion of IT innovations theory (Moore & Benbasat, 1991). Overall,

the proposed research questions are ***How cryptocurrency revolutionizes ICT for development in Asia, and what are the moderating effects of advantage, complexity, and compatibility?***

Theoretical Background

Blockchain has attracted research attention from different domains. Blockchain has attracted research attention from many different disciplines. Blockchain is attracting attention in Information Systems (IS) community, ranging from the economics of cryptocurrencies (Li & Wang, 2017; Lustig & Nardi, 2015), business models (Ingram Bogusz & Morisse, 2018), to IS implementation and organization (Ingram & Morisse, 2016; Ying, Jia, & Du, 2018). In the existing literature, most research focuses on the bitcoin, and only a few touches the real cases of blockchain applications such as supply chain management (Kshetri, 2018) and E-commerce (Ying et al., 2018). Though some literature proposes innovative applications in various domains, most are theoretical models without realistic implementations. The lack of discussion of enterprise blockchain applications is primarily due to the current early stage of blockchain adoptions in which real and large scale blockchain applications are still scarce. There is an urgent call for studies on representative blockchain applications with emphasis on the adoption, value creation, and lessons for practitioners.

Mobile Payment and Cryptocurrency

Cryptocurrency as a mobile payment method has emerged recently. With the leapfrogging development of Information and Communications Technology (ICT), Rao (2003) argues that mobile phone usage is generating a *Wireless Tsunami* that brings both opportunities and challenges to the world. More than ten years ago, Dahlberg, Mallat, Ondrus, and Zmijewska (2008) conducted a literature review of the past, present, and future of mobile payments research. Their research model provides four primary areas of changes that will promote the future development of mobile payment service, including 1) changes in social/cultural environment, 2) changes in commerce environment, 3) changes in the technological environment and 4) changes in legal, regulatory, and standardization environment (Dahlberg et al., 2008). They also identified four forces that will shape the mobile payment industry, including traditional payment services, consumer power, merchant power, and new e-payment power (Dahlberg et al., 2008). After more than ten years, there has been a promising IS research in mobile payment services. In 2013, Flood, West, and Wheadon (2013) compared the mobile payment trends in developing and advanced economies. They found that the mobile payment adoption rate in developing economies has been much higher than in advanced economies (Flood et al., 2013). Dahlberg, Guo, and Ondrus (2015) later conducted a critical review of mobile payment-related research. They identified that there is a lack of study related to incremental knowledge in mobile payment research, particularly in cryptocurrency. Thus, much research attention is needed to understand why this is the case and how to interpret the results.

Information and communication technologies (ICTs) have been proved to promote the development of countries and regions (Qureshi & Xiong, 2019; Xiong & Qureshi, 2012). It is without a doubt that countries in Asia like China, Japan, and South Korea are leading countries in adopting new ICTs like mobile payment, artificial intelligence (AI), and blockchain. The innovative technologies, relevant business values, and impacts related to blockchain are overestimated in the short term yet underestimated for a long time. This research focuses on cryptocurrency adoptions in Asia to further identify factors that are important during the IT diffusion process.

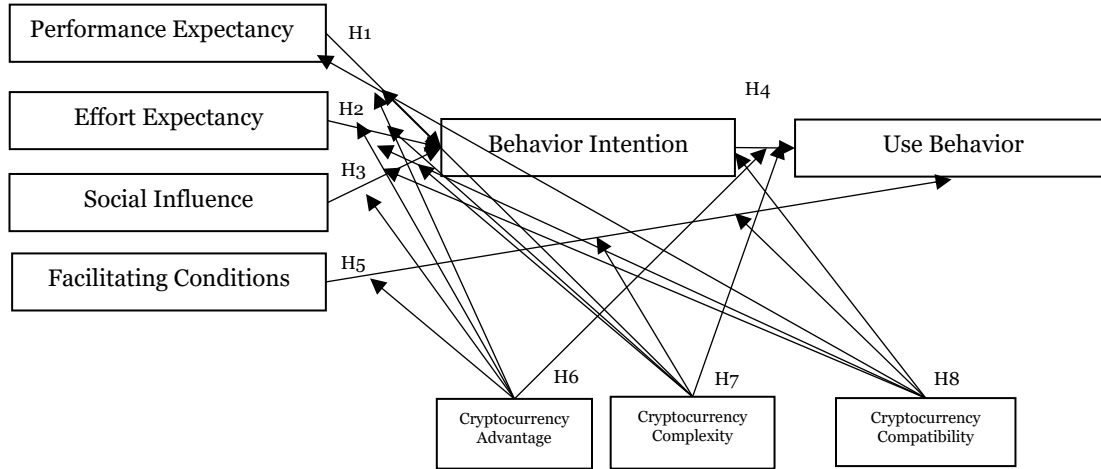
UTAUT and diffusion of IT innovations theory

This study applies the theoretical lenses of Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003; Venkatesh et al., 2016; Venkatesh & Zhang, 2010) as well as diffusion of IT innovations theory (Moore & Benbasat, 1991) to investigate the research question further. As the research model is built upon two well-known theoretical frameworks, the contribution of this research is in creating three new moderators. The proposed new moderators are blockchain advantage, blockchain complexity, and blockchain compatibility. They form the Blockchain Innovation Factors (BIF).

Research Model and Hypothesis

Figure 1 provides the proposed research model.

Figure 1: Research Model



Due to the page limit, the following hypotheses are briefly provided. A more detailed discussion will be provided in the full research paper.

Hypothesis	Theoretical Background
<i>H1. Cryptocurrency users' intention to adopt cryptocurrency increases if more benefits are perceived from doing that.</i>	UTAUT
<i>H2. Cryptocurrency users' intention to adopt cryptocurrency increases if more ease of use is perceived from doing that.</i>	UTAUT
<i>H3. Social influence positively affects Cryptocurrency users' intention to adopt cryptocurrency.</i>	UTAUT
<i>H4. Cryptocurrency users' intention to adopt cryptocurrency is positively related to the actual usage.</i>	UTAUT
<i>H5. Cryptocurrency usage is positively associated with the available resources and assistance they receive.</i>	UTAUT
<i>H6a. The relationships between Cryptocurrency usage and Behavioral Intention are strengthened by Cryptocurrency Advantage.</i>	Diffusion of Innovation Theory
<i>H6b. The relationships between Cryptocurrency usage and Facilitating Conditions are strengthened by Cryptocurrency Advantage.</i>	Diffusion of Innovation Theory
<i>H6c. The relationships between Behavior Intention and Performance Expectancy are strengthened by Cryptocurrency Advantage.</i>	Diffusion of Innovation Theory
<i>H6d. The relationships between Behavior Intention and Effort Expectancy are strengthened by Cryptocurrency Advantage.</i>	Diffusion of Innovation Theory
<i>H6e. The relationships between Behavior Intention and Social Influence are strengthened by Cryptocurrency Advantage.</i>	Diffusion of Innovation Theory
<i>H7a. The relationships between Cryptocurrency usage and Behavioral Intention are weakened by Cryptocurrency Complexity.</i>	Diffusion of Innovation Theory
<i>H7b. The relationships between Cryptocurrency usage and Facilitating Conditions are weakened by Cryptocurrency Complexity.</i>	Diffusion of Innovation Theory

<i>H7c. The relationships between Behavior Intention and Performance Expectancy are weakened by Cryptocurrency Complexity.</i>	Diffusion of Innovation Theory
<i>H7d. The relationships between Behavior Intention and Effort Expectancy are weakened by Cryptocurrency Complexity.</i>	Diffusion of Innovation Theory
<i>H7e. The relationships between Behavior Intention and Social Influence are weakened by Cryptocurrency Complexity.</i>	Diffusion of Innovation Theory
<i>H8a. The relationships between Cryptocurrency usage and Behavioral Intention are strengthened by Cryptocurrency Compatibility.</i>	Diffusion of Innovation Theory
<i>H8b. The relationships between Cryptocurrency usage and Facilitating Conditions are strengthened by Cryptocurrency Compatibility.</i>	Diffusion of Innovation Theory
<i>H8c. The relationships between Behavior Intention and Performance Expectancy are strengthened by Cryptocurrency Compatibility.</i>	Diffusion of Innovation Theory
<i>H8d. The relationships between Behavior Intention and Effort Expectancy are strengthened by Cryptocurrency Compatibility.</i>	Diffusion of Innovation Theory
<i>H8e. The relationships between Behavior Intention and Social Influence are strengthened by Cryptocurrency Compatibility.</i>	Diffusion of Innovation Theory

Table 1. Hypotheses Development

Data Collection

The sample of the study includes mobile users who utilized cryptocurrency in Asia. The survey method will be utilized in the future.

Expected Outcome and Conclusion

It is expected that after the data collection, all hypotheses will be tested. By developing this new research model, this utilizes the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003; Venkatesh et al., 2016; Venkatesh & Zhang, 2010) and diffusion of IT innovations theory (Moore & Benbasat, 1991).

In this paper, we present research in progress paper that addresses the questions How Cryptocurrency Revolutionizes ICT for Development in Asia? It is expected that after the data collection and analysis, a more detailed conclusion will be provided. The outcome of the research will help us understand the factors that lead to the adoption of cryptocurrency. Additionally, Cryptocurrency Innovation Factors (BIF), including cryptocurrency advantage, cryptocurrency complexity, and cryptocurrency compatibility as moderators, will be tested in the future.

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