

Factors Influencing Behavioural Intention to Adopt Blockchain Technology

Saad ALAKLABI^{1,2} and Kyeong KANG¹

¹University of Technology, Sydney, Australia

²Shaqra University, Saudi Arabia

saad.alaklabi@student.uts.edu.au

Kyeong.kang@uts.edu.au

Abstract:

This short paper proposes the potential effect on individuals' behavioural intention to adopt blockchain technology. It recognises the importance of blockchain and its associate Bitcoin, and it seeks to shed light on the factors that enable or challenge individuals' behavioural intention to utilise the new phenomena. In particular, this study argues there are three potential dimensions in which one's behavioural intention can be impacted. It suggests that the behavioural intention to adopt blockchain technology is associated with perceived risk, perceived value, and personal innovativeness. This study provides an opportunity for future research to validate the proposed model and suggests a plan to conduct such verification.

Keywords: Blockchain, Bitcoin, Perceived Risk, Perceived Value, Personal Innovativeness

Introduction and Background

The rapid change in technology has enabled the creation of innovative ideas to enable advancements in how people do business. The core concept of blockchain technology is that all transactions are decentralised and sorted into distributed databases, removing the need for an intermediate or third party, and it is "...an incorruptible digital ledger of economic transactions that can be programmed to record not just financial transactions but virtually everything of value" (Don & Alex, 2016). One popular use of blockchain technology is through Bitcoin cryptocurrency, which is the most commonly associated with blockchain. To emphasise the rapid growth of such technologies, it is predicted that 10% of the global GDP will be stored by utilising blockchain technology by 2027 (Pete, 2015). Therefore, blockchain adoption is becoming a popular topic amongst researchers. The use of blockchain technology, popularised by Bitcoin, brings several adoption challenges. The focus of this study is on the cultural factors that may move the trust and authority from central entities to public-trusted ledgers, as blockchain suggests. In particular, this study investigates users' points of view on the following three concepts: perceived risk (PR), perceived value (PV), and personal innovativeness (PI). Moreover, the possible influence of those factors on the behavioural intention to adopt blockchain technology is explored.

1. Research aim and objectives

The aim of this research is to address the following question:

- What are the factors that influence individuals' intention to adopt blockchain technology?

The purpose of this research is to identify the individual factors that determine people's intention to embrace new technologies. More specifically, the study aims to understand some of the individual factors that influence embracing Bitcoin, which is the world's most popular

cryptocurrency. In particular, this research will investigate the PR, PV, and PI of people that determine their intention to adopt Bitcoin.

To achieve the purposes of this research, the following objectives are placed:

- To identify factors that influence the intention to adopt blockchain technology
- To propose a conceptual framework for blockchain adoption

1.1 Factors influencing intention to adopt blockchain technology

This section provides an overview of the factors that are related to the behavioural intention to adopt blockchain technology, namely PR, PV, and PI. Factors are defined and contextualised to indicate its relevance to the phenomena being investigated. At the end of this section, a model is depicted based on the discussion, and then the relationships are summarised and supporting literatures are referred to.

1.1.1 Perceived risk

It is inevitable that PR will influence the intention to use a new technology (Thakur & Srivastava, 2014; Williams, 2018). Blockchain technology as a new phenomenon is not free of risks (Wahl, 2016). Thus, it is predicted that the use of Bitcoin will incur PR amongst its users. There are several dimensions to PR, including security, privacy, and monetary risk (Madan & Yadav, 2016; Thakur & Srivastava, 2014). Security risk is the case in which users fear that the use of a certain technology is not technically secure, whereas privacy risk is related to the confidentiality of information in which users' private information may be leaked to unintended sources. Monetary risk, on the other hand, is related to the associated cost with the use of a new technology (Thakur & Srivastava, 2014). In the context of blockchain technology, those dimensions could potentially impact individuals' intention to use Bitcoin (Thakur & Srivastava, 2014; Williams, 2018); therefore, the following can be argued:

H1: Perceived risk influences the intention to adopt blockchain technology.

1.1.2 Perceived value

PV is defined as the assessment of a possible gain or loss that can occur from using a given product or service (Zeithaml, 1988). In this research, PV is a multidimensional factor that assesses PV in two ways: individuals' perceived usefulness and perceived enjoyment (Hsu & Lin, 2015; Mingxing, Jing, & Yafang, 2014). Usefulness is mentioned in technology adoption as an enabler of individuals' intention to use a certain technology. The assessment of intention to adopt a new technology is referenced in many studies (Mingxing et al., 2014; Pham & Ho, 2015) as the benefits one can gain from a given technology and how useful it is for individuals. It is therefore expected that the behavioural intention to use blockchain technology will be affected by individuals' perception about its usefulness and enjoyment (Yang, Yu, Zo, & Choi, 2016). There are numerous studies in the literature that suggest the influence of usefulness and enjoyment on behavioural intention (Alalwan, Baabdullah, Rana, Tamilmani, & Dwivedi, 2018; Baabdullah, 2018). Further, the effect of PV on behavioural intention has been validated in the literature (Abramova, 2016; Pei, Wang, Fan, & Zhang, 2015; Zeithaml, 1988). Considering PV as a multidimensional factor, individuals' expectation for blockchain to bring higher PV could potentially increase their behavioural intention to use it. Therefore, we hypothesised the following:

H2: Perceived value influences the intention to adopt blockchain technology.

1.1.3 Personal innovativeness

PI is referred to as "the willingness of an individual to try out any new information technology" (Agarwal & Prasad, 1998). This suggests that individuals who have a higher PI are most likely to develop a positive attitude, and this increases the chance of trying a new technology (Lu, 2014). Researchers in the e-commerce domain have viewed PI to be linked to individuals' behavioural intention to use a particular new technology (Agarwal & Prasad, 1998; Alalwan et

al., 2018; Thakur & Srivastava, 2014; Williams, 2018). Blockchain is a fairly new technology. Thus, it is highly expected that PI will play a role in individuals' behavioural intention to adopt blockchain technology.

H3: Personal innovativeness influences the intention to adopt blockchain technology.

1.1.4 Intention to adopt blockchain technology

Behavioural intention – defined as “the person’s subjective probability that he or she will perform the behaviour in question” (Venkatesh, Morris, Davis, & Davis, 2003, p. 451) – has been used in acceptance literature to predict the actual use of a technology (Norazah & Norbayah, 2016).

Based on the above, this study suggests the following model on the predictors of intention to adopt blockchain.

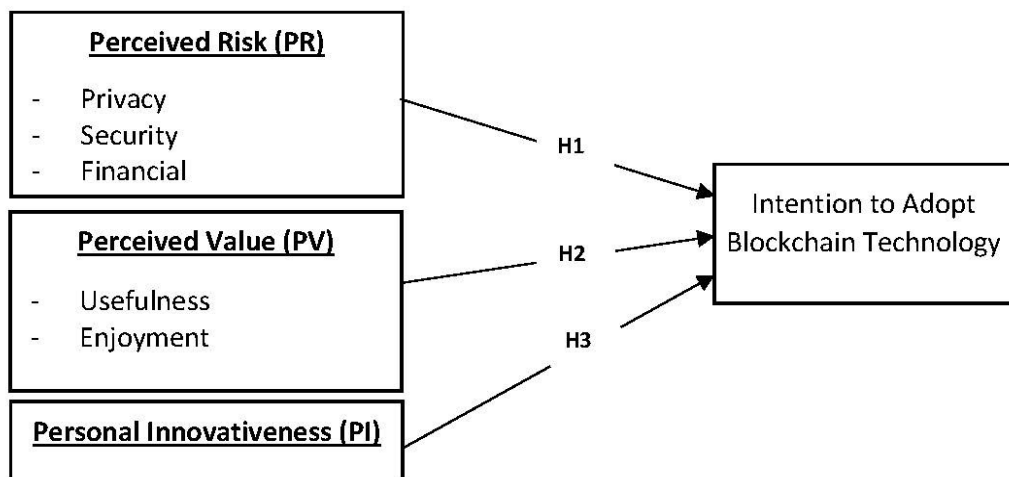


Figure 1: Research model

The proposed model has one dependent variable (intention to adopt blockchain technology) and three control variables (perceived risk, perceived value, and personal innovativeness), as shown in Figure 1. The three hypotheses developed based on the above model are summarised in the table below:

Table 1: Summary of the research hypotheses

Hypotheses		Reference
H1:	Perceived risk influences the intention to adopt blockchain technology.	(Thakur & Srivastava, 2014; Williams, 2018)
H2:	Perceived value influences the intention to adopt blockchain technology.	(Abramova, 2016; Pei et al., 2015; Zeithaml, 1988)
H3:	Personal innovativeness influences the intention to adopt blockchain technology.	(Agarwal & Prasad, 1998; Alalwan et al., 2018; Thakur & Srivastava, 2014; Williams, 2018)

2. Conclusion and future work

This paper presents the potential use of blockchain technology, specifically Bitcoin. It suggests that individuals' behavioural intention to adopt such an innovation is predicted by PI, PV, and PR. It provided the proposed relationships and presented an additional gap in the literature to carry the studies. In the near future, the model will be validated, and the research hypothesis will be examined to provide empirical evidence to the relationships proposed.

The method will be used in this research as a survey questionnaire for collecting primary data from people living in Saudi Arabia. The questionnaire method was chosen among the other methods for several reasons, such as low cost, the time and effort required in gathering data from a large sample, and geographic separation. In addition, in quantitative studies, greater confidence in the outcomes is approved by the structured approach through data collection and analysis, using statistical analysis and a large data sample, which presents a reasonable explanation for the outcomes in a manner that can be related entirely to others. The survey will be managed by the web-based method. Furthermore, Survey Monkey will be the survey hosting site, and Twitter will be used to share the survey with potential respondents.

References

- Abramova, S., (2016). Perceived benefit and risk as multidimensional determinants of Bitcoin use: a quantitative exploratory study. *The Thirty Seventh International Conference on Information Systems*. Dublin: Publisher, pp. xx–xx.
- Agarwal, R., & Prasad, J., (1998). A conceptual and operational definition of personal innovativeness in the domain of information technology. *Information Systems Research* [online]. **9**(2), 204–215. [Viewed Day Month Year]. Available from: doi: 10.1287/isre.9.2.204
- Alalwan, A. A., Baabdullah, A. M., Rana, N. P., Tamilmani, K., & Dwivedi, Y. K., (2018). Examining adoption of mobile internet in Saudi Arabia: extending TAM with perceived enjoyment, innovativeness and trust. *Technology in Society* [online]. **x**(x), xx–xx. [Viewed Day Month Year]. Available from: <https://doi.org/10.1016/j.techsoc.2018.06.007>
- Baabdullah, A. M., (2018). Consumer adoption of mobile social network games (M-SNGs) in Saudi Arabia: the role of social influence, hedonic motivation and trust. *Technology in Society* [online]. **53**, 91–102. [Viewed Day Month Year]. Available from: <https://doi.org/10.1016/j.techsoc.2018.01.004>
- Don, T., & Alex, T., (2016). *Blockchain revolution: how the technology behind Bitcoin is changing money, business, and the world*. Portfolio.
- Hsu, C.-L., & Lin, J. C.-C., (2015). What drives purchase intention for paid mobile apps? – an expectation confirmation model with perceived value. *Electronic Commerce Research and Applications* [online]. **14**(1), 46–57. [Viewed Day Month Year]. Available from: <https://doi.org/10.1016/j.elerap.2014.11.003>
- Lu, J., (2014). Are personal innovativeness and social influence critical to continue with mobile commerce? *Internet Research* [online]. **24**(2), 134–159. [Viewed Day Month Year]. Available from: doi:10.1108/IntR-05-2012-0100
- Madan, K., & Yadav, R. (2016). Behavioural intention to adopt mobile wallet: a developing country perspective. *Journal of Indian Business Research* [online]. **8**(3), 227–244. Available from: doi:10.1108/JIBR-10-2015-0112
- Mingxing, S., Jing, F., & Yafang, L., (2014). An empirical study on consumer acceptance of mobile payment based on the perceived risk and trust. *The 2014 International Conference on Cyber-Enabled Distributed Computing and Knowledge Discovery*. Place of publication: Publisher, pp. xx–xx.

- Norazah, M. S., & Norbayah, M. S., (2016). Structural relationships in the embedding of role-play games in a class for Japanese language proficiency: towards a unified view. *Technology, Knowledge and Learning* [online]. x(x), xx–xx. [Viewed Day Month Year]. Available from: doi: 10.1007/s10758-016-9294-8
- Pei, Y., Wang, S., Fan, J., & Zhang, M., (2015). An empirical study on the impact of perceived benefit, risk and trust on e-payment adoption: comparing quick pay and union pay in China. *The 2015 7th International Conference on Intelligent Human-Machine Systems and Cybernetics*. Place of publication: Publisher, pp. xx–xx.
- Pete, R., (2015). World economic forum survey projects Blockchain tipping point by 2023 [online]. *Coindesk*. [Viewed 29 September 2018]. Available from: <https://www.coindesk.com/world-economic-forum-governments-blockchain/>
- Pham, T.-T. T., & Ho, J. C., (2015). The effects of product-related, personal-related factors and attractiveness of alternatives on consumer adoption of NFC-based mobile payments. *Technology in Society* [online]. **43**, 159–172. [Viewed Day Month Year]. Available from: <https://doi.org/10.1016/j.techsoc.2015.05.004>
- Thakur, R., & Srivastava, M., (2014). Adoption readiness, personal innovativeness, perceived risk and usage intention across customer groups for mobile payment services in India. *Internet Research* [online]. **24**(3), 369–392. [Viewed Day Month Year]. Available from: doi: 10.1108/IntR-12-2012-0244
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D., (2003). User acceptance of information technology: toward a unified view. *MIS Quarterly* [online]. **27**(3), 425–478. [Viewed Day Month Year]. Available from: doi: 10.2307/30036540
- Wahl, F., (2016). *Adoption of blockchains—a cross cultural comparison*. Master Thesis, Kassel University.
- Williams, M. D., (2018). Social commerce and the mobile platform: payment and security perceptions of potential users. *Computers in Human Behavior* [online]. x(x), xx–xx. [Viewed Day Month Year]. Available from: <https://doi.org/10.1016/j.chb.2018.06.005>
- Yang, H., Yu, J., Zo, H., & Choi, M., (2016). User acceptance of wearable devices: an extended perspective of perceived value. *Telematics and Informatics* [online]. **33**(2), 256–269. [Viewed Day Month Year]. Available from: <https://doi.org/10.1016/j.tele.2015.08.007>
- Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *Journal of Marketing* [online]. **52**(3), 2–22. [Viewed Day Month Year]. Available from: doi: 10.2307/1251446