DO CONSUMERS TRUST BLOCKCHAIN TECHNOLOGY?

A systematic review

IRMA DUPUIS, LISA TOOHEY, SIDSEL GRIMSTAD, BERIT FOLLONG, TAMARA BUCHER
The University of Newcastle

Globalisation has increased consumer demand for verified provenance in food supply chains to alleviate their concerns about food safety, authenticity, and sustainability.

INTRODUCTION

While food producers are adopting blockchain apps, research on consumer trust in blockchain remains scant. A blockchain consists of a tamper-proof chain of time-stamped transaction records (blocks) verified in a peer-to-peer network. Despite being called a “trust-free” technology [1], user trust remains essential for its adoption. This review investigates trust in blockchain and provides directions for future research.

Fig. 2. Wine bottle with a blockchain-enabled label for the Chinese market *(courtesy of Tamburlaine Wines)*

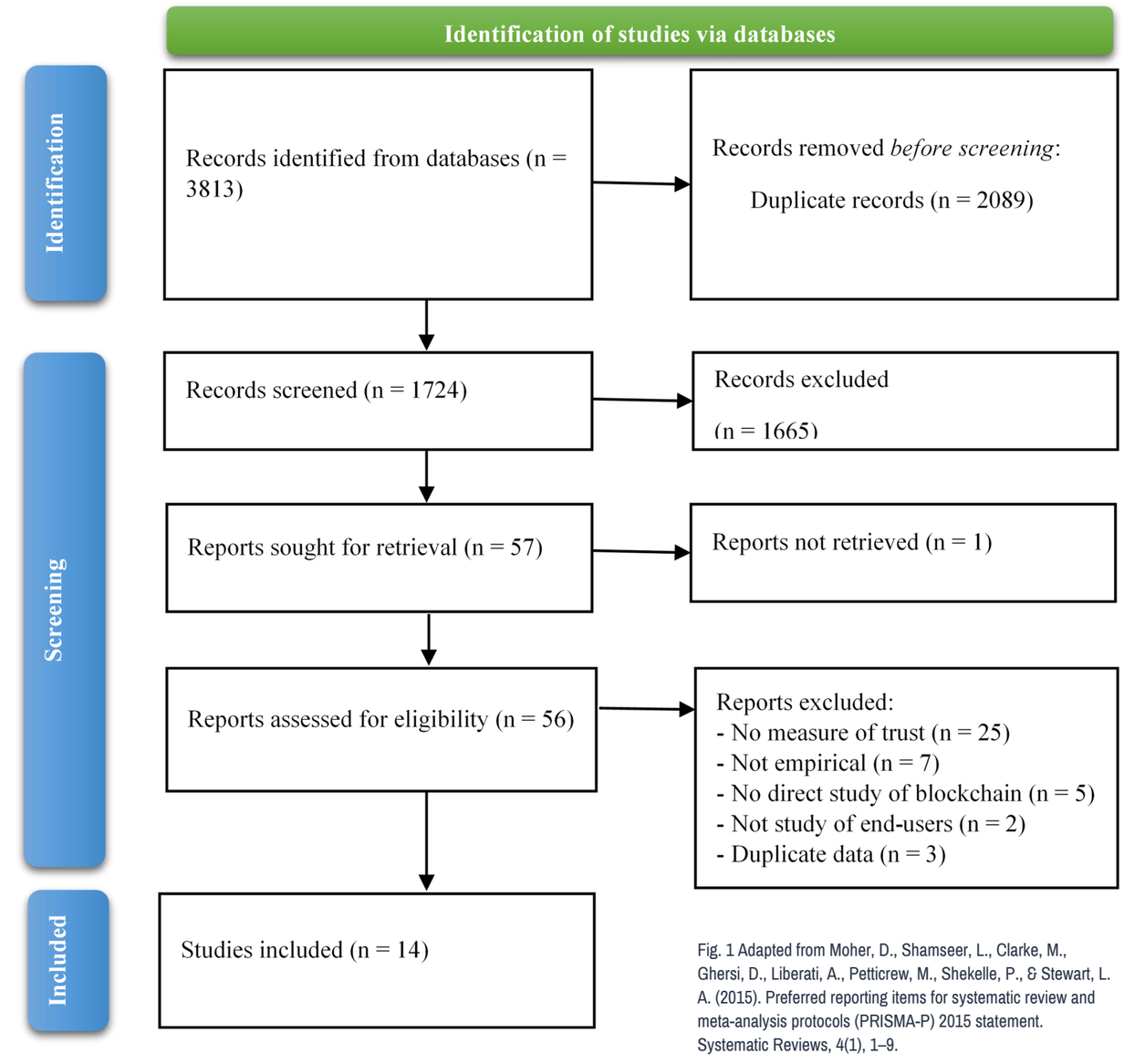

Fig. 1 Adapted from Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., & Stewart, L. A. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. Systematic Reviews, 4(1), 1–9.

RESULTS & DISCUSSION

Trust in blockchain technology is necessary for the adoption of its applications. Instead of a "trust-free" system, blockchain creates a "trust paradox" requiring multi-level trust to function. A theoretical model of trust in blockchain [2, 3, 4, 5] including at least design [2, 3, 5, 6, 7, 8, 9, 10, 11, 12], attitude [2, 4, 5, 8, 9, 10 12, 13, 14], and security [4, 5, 10, 11, 12, 14] is necessary to inform research. Although this review's findings point towards user trust in blockchain [8, 10, 13, 15], further research should delineate trust in blockchain technology, algorithm, and peers to inform researchers and practitioners.

This systematic review is the first to synthesise current research on users' trust in blockchain, trust antecedents, and the different variables affecting trust in blockchain applications. We confirm the need to investigate the paradox of trust in blockchain, utilise demographic moderators, and focus on actual use to guide blockchain development in the industry 4.0 era.

References:
[1] Hawlitschek, F., Notheisen, B., & Teubner, T. (2018). The limits of trust-free systems: A literature review on blockchain technology and trust in the sharing economy. Electronic Commerce Research and Applications, 29, 50–63. **[2]** Albayati, H., Kim, S. K., & Rho, J. J. (2020). Accepting financial transactions using blockchain technology and cryptocurrency: A customer perspective approach. Technology in Society, 62, N.PAG-N.PAG. **[3]** Liu, N., & Ye, Z. (2021). Empirical research on the blockchain adoption – based on TAM. Applied Economics, 53(37), 4263–4275. **[4]** Shin, D. (2019). Blockchain: The emerging technology of digital trust. Telematics and Informatics, 45, 101278. **[5]** Shrestha, A. K., Vassileva, J., Joshi, S., & Just, J. (2021). Augmenting the technology acceptance model with trust model for the initial adoption of a blockchain-based system. PeerJ Computer Science, 7, e502. **[6]** Arli, D., Esch, P. van, Bakpayev, M., & Laurence, A. (2020). Do consumers really trust cryptocurrencies? Marketing Intelligence & Planning, 39(1), 74–90. **[7]** Cao, S., Powell, W., Foth, M., Natanelov, V., Miller, T., & Dulleck, U. (2021). Strengthening consumer trust in beef supply chain traceability with a blockchain-based human-machine reconcile mechanism. Computers & Electronics in Agriculture, 180, N.PAG-N.PAG.**[8]** Goryagin, K., Wagner, R., Bratianu, C., Zbuchea, A., & Vitelar, A. (2018). Trusting in trustless trust: blockchain information storage in product communication. Strategica: Challenging the Status Quo in Management and Economics, PG-718-729, 718–729 **[9]** Lin, X., Chang, S.-C., Chou, T.-H., Chen, S.-C., & Ruangkanjanases, A. (2021). Consumers’ Intention to Adopt Blockchain Food Traceability Technology towards Organic Food Products. International Journal of Environmental Research and Public Health, 18(3), 912. **[10]** Sas, C., & Khairuddin, I. E. (2017). Design for Trust. Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems, 2017-May(PG-6499-6510), 6499–6510. **[11]** Shao, Z., Zhang, L., Wang, J. D., & Assoc Informat, S. (2020). Uncovering the Trust Transfer Mechanisms in a Blockchain-Based Healthcare Platform: A Mixed Method. In Amcis 2020 Proceedings **[12]** Shin, D., & Bianco, W. T. (2020). In Blockchain We Trust: Does Blockchain Itself Generate Trust? Social Science Quarterly, 101(7), 2522–2538. **[13]** Garaus, M., & Treiblmaier, H. (2021). The influence of blockchain-based food traceability on retailer choice: The mediating role of trust. Food Control, 129, 108082. **[14]** Sander, F., Semeijn, J., & Mahr, D. (2018). The acceptance of blockchain technology in meat traceability and transparency. British Food Journal, 120(9), 2066–2079. **[15]** Li, J., Qu, F., Tu, X., Fu, T., Guo, J., & Zhu, J. (2018). Public Philanthropy Logistics Platform Based on Blockchain Technology for Social Welfare Maximization. 2018 8th International Conference on Logistics, Informatics and Service Sciences (LISS), PG-, 1–9

Ms Irma Dupuis
corresponding author
irma.dupuis@uon.edu.au
Scan to connect

Industry partners:
Tamburlaine Wines
First Creek Wines
MCC Australia
Laava