check for updates

Factors affecting the blockchain operation in Asia-Europe

Mahadi Hasan Miraz[1+]

Hwang Ha Jin[2]

Mohammad Tariq Hasan[3]

Mohammad Amzad Hossain[4]

Md. Kazimul Hoque[5]

[1]*Department of Management, Marketing and Digital Business, Faculty of Business, Curtin University Malaysia, Malaysia.*
[1]*Email: mahadimiraz1@gmail.com*
[2]*Department of Business Analytics, Sunway University, Malaysia.*
[2]*Email: hjhwang@sunway.edu.my*
[3,4,5]*School of Business and Economics, United International University, Bangladesh.*
[3]*Email: tariq2060@gmail.com*
[4]*Email: ahmaruf87@gmail.com*
[5]*Email: kazimul@bus.uiu.ac.bd*

(+ Corresponding author)

ABSTRACT

This study's primary goal is to identify the factors that affect the blockchain in retail markets to support more significant benefits to retail customers. Also, this study constructs blockchain facilities, blockchain volatility, blockchain transactions, blockchain intentions, and blockchain operations. This research also used a questionnaire survey; this research collects primary data from consumers in Asia and Europe. The researcher also presents the underlying theory, the theoretical structure, and the hypotheses through systematic random sampling to ensure the research objectives. Besides that, there were 233 responses to the survey questions sent to retail consumers. PLS-SEM tools are used for data analysis. The study's findings are that the Blockchain facility, blockchain volatility, and blockchain transaction were all found to positively impact the blockchain operation (dependent variable) in the Asia-Europe retail market via the mediation of behavior intention. The outcome of this research offers a valuable understanding of blockchain adoption in developing and developed countries. In addition to academic contributions, this paper's findings are significant for blockchain companies and their operations in developing countries. Additionally, blockchain is beneficial to the Asia-Europe retail market. Hence, this study offers a considerable foundation for comprehending the associations between blockchain and the retail industry. This study did not consider SMEs or general industries. Also, this study's scope is limited to Asia and Europe. Additionally, this study solely employed cross-sectional data. Future studies should use longitudinal data to better understand how the link develops.

Contribution/Originality: This study offers new operational contributions that add value to the blockchain industry literature by testing the moderation model in the blockchain industry. To the best of our knowledge, this is one of the most comprehensive studies of blockchain in the retail market in Asia and Europe.

1. INTRODUCTION

It is significant to realize the fundamental factors affecting Asia-Europe's blockchain retail development (Queiroz & Wamba, 2019). Asia-European retail must meet more digital monetary policies to overcome the technically challenging retail market (Reyna, Martín, Chen, Soler, & Díaz, 2018). Also, it must be noted that there is a shortage of payment and payment transactions for blockchain operators (Miraz, Hasan, & Sharif, 2019, 2020;

Miraz, Hasan, Sumi, Sarkar, & Majumder, 2020; Miraz, et al., 2020; Miraz, Hye, & Habib, 2019; Miraz, et al., 2020; Miraz, Sharif, & Hasan, 2020). Describing how manufacturers handle their inventory using blockchain is a critical component of the industrial supply chain and is well documented in the industry (Miraz, Kabir, Habib, & Alam, 2019; Miraz, et al., 2020).

Blockchain facilities are not introduced to the retail sector as they give a massive opportunity to the retail industry (Sharif et al., 2021). Blockchain implementation of empirical literature in the retail sector is not widely available (Hargrave, 2019). The retail industry's new monetary transaction policy is not straightforward for purchasing and selling consumer products (Sotelo & Hamoud, 2020). Blockchain operation (BO) impacts retailers' goals of implementing the actual acceptance of blockchain retail in Asia-Europe, which has not been studied yet (Sulaiman & Rahim, 2019). In addition, the media effect of blockchain adaptation has not been studied previously (Talaei-Khoei, 2019). The retail procurement and sales process is long and inadequate (Tandon, Dhir, Islam, & Mäntymäki, 2020). No more consumer payment or retail sector blockchain projects are in place (Tanwar, Kaneriya, Kumar, & Zeadally, 2020). Blockchain activity and transaction management have the most connections to blockchain information. Thus, this study's primary goal is to bring blockchain to retail markets to support the retail supply chain for a more significant benefit to retail customers.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Blockchain Operation

Blockchain technology allows cryptocurrencies to operate without a central authority because of their distributed nature (Lohmer & Lasch, 2020). This not only decreases risk but also removes many of the processing and transaction expenses (Li et al., 2022). Digital transformation can make it possible to use block chain applications in operations management (OM) and manufacturing (Lohmer & Lasch, 2020). Blockchain operation is fundamental to understanding its nature and completing the business process. Behavior intention by the consumer influences it. Also, the procedure goes smoothly with its transactions, volatility, and facilities (Govindan, Nasr, Saeed Heidary, Nosrati-Abarghooee, & Mina, 2023). In other words, adding more operation features would boost a service's transaction and thus increase behaviour intention. Also, blockchain operation depends on volatility and stability. The more volatile, the more challenging it is to operate the blockchain. It drives the behavior intention as a mediation towards the blockchain operation.

2.2. Underpinning Theory

This thesis's findings all follow from using the Unified Theory of Acceptance and Use of Technology 2 (UAUT2) hypothesis (Chao, 2019). In contrast, workers are seen to provide more to their companies than they receive in wages, thereby generating expanded interchange between the two groups (Dwivedi, Rana, Tamilmani, & Raman, 2020). The researcher first looked at transaction costs. Also, the researcher looked at the transaction cost theory. Some contract ideas come from the same source as property theory; the two theory cases are Agency Theory and transaction cost theory.

2.2.1. Research Framework

The research framework of this study is constructed in Figure 1. The independent variables are blockchain facility (BF), blockchain volatility (BV), and blockchain transaction (Escobar-Rodríguez & Carvajal-Trujillo, 2014). On the other hand, the blockchain operation conclusion of this report will have suitable policy options and programs that could improve the value of applying the technology in the retail sector. The works attempt to enhance the industry outcome; this research may help retailers and others improve retail work. In addition, the study proposes a structure that would form the basis for future studies. Finally, the analysis will better understand the best way to achieve Asia-Europe retail industry growth. Blockchain operation (BO) represents the dependent variable.

Thus, the mediator of this study is behavior intention (BI). Based on the framework, this study constructs the hypothesis from the earlier studies.
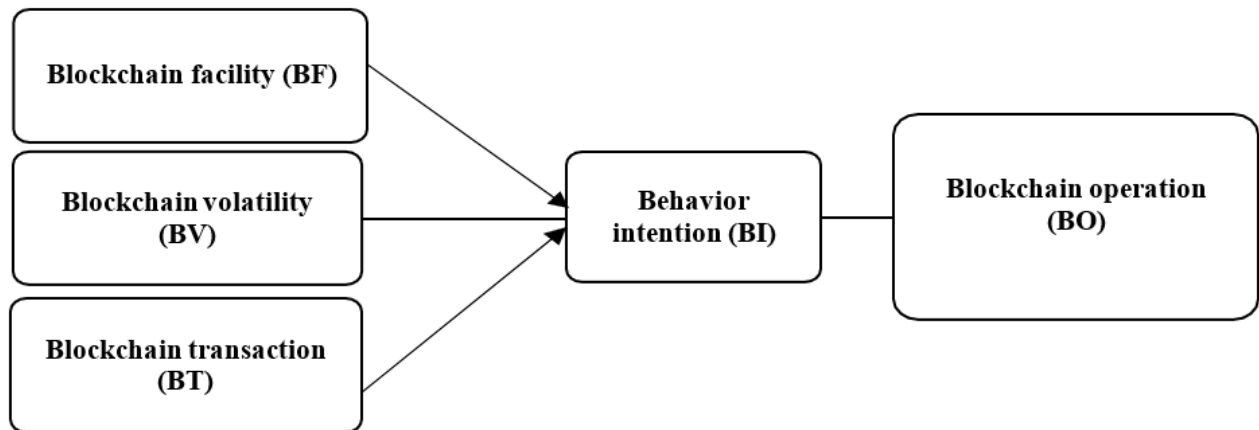

Figure 1. Research framework.

2.3. Empirical Review and Hypothesis

The following sub-sections and hypotheses are established to attain the research goals and build up the research methodology.

2.3.1. Blockchain Facility and Behavior Intention

The blockchain facility (FC) concept is the level at which a person assumes that regulatory and technological infrastructures support the mechanism (Ling, Masrom, & Din, 2013). In addition, it is an individual who believes in an organizational and technical structure for supporting emerging technologies (Onaolapo & Oyewole, 2018). The ease of use promotes and facilitates a more profound comprehension of their behavioural intentions (Mustafa et al., 2022). Another study suggested that an exceptional service facility approach be used to meet the company's needs while also comprehending the dynamic relationship between the various stakeholders in the digital market (Yeong, Kalid, Savita, Ahmad, & Zaffar, 2022). Relationships between facility and behavior and intention are essential factors for most businesses. Thus, they must be supported to work effectively (Fang et al., 2022). An observational analysis also shows a good impact. In contrast, another researcher found that the purpose was broad and essential. The researcher also found a considerable effect on conduct conditions (Taherdoost, 2022). This study would demonstrate an appreciation of staff resources for supporting blockchain operations in organizations.

H1: Blockchain facility has a significant positive effect on behavior intention.

2.3.2. Blockchain Volatility and Behavior Intention

The price of blockchain is too speculatively unpredictable. While physical commodities can be purchased using blockchain in specific locations, most purchases focus on investment (Smales, 2022). The blockchain is inconsistent in this purchase-sale period (Raimundo Júnior, Palazzi, Tavares, & Klotzle, 2022). Blockchain volatility is highly impactful for further use (Yan, Mirza, & Umar, 2022). According to blockchain volatility, employees realize how vital it is to believe in the digital market they must use (Özdemir, 2022). According to research, coworkers' and friends' thoughts and deeds have an impact on people at the individual level of blockchain volatility (Pagnotta, 2022). Also, it is a significant element in enhancing consumer behaviour and intention (Yarovaya & Zięba, 2022). Few researchers mention that if volatility is high, behaviour intention is low (Assaf, Bilgin, & Demir, 2022). Another researcher said that volatility is correlated with consumer behaviour.

H2: Blockchain volatility has a significant positive effect on behavior intention.

2.3.3. Blockchain Transaction and Behavior Intention

Blockchain transactions refer to the models through which the user interacts with behavior intention. Its links across its network support activities at all stages of the digital market (Soomro, Shah, & Abdelwahed, 2022). Blockchain transactions can increase transaction integrity and traceability in the digital market based on the consumer's intention (Hasan, Ayub, Ellahi, & Saleem, 2022). In addition, this study argues that the openness of blockchain transactions is an essential predictor of behavioral intentions in the digital market of Asia-Europe (Wu et al., 2022). Furthermore, transparency in blockchain can improve consumer cooperation, which leads to a significant change in the industry and the digital market (Saputra & Darma, 2022).

Similarly, the openness of the blockchain transaction keeps users attached to behavior (Li & Fang, 2022). Also, according to another study, the transparency of blockchain transactions in the Asia-Europe retail market is a crucial predictor of behavioural goals (Wamba & Queiroz, 2022). This can lead to greater consumer collaboration and a dramatic transformation in the digital market and the industry (Aste, 2019). Similarly, the transparency of blockchain transactions encourages users to show their true intentions (Marikyan, Papagiannidis, Rana, & Ranjan, 2022). The transaction attached to behavioural intention makes blockchain operations more reliable (Yeong et al., 2022). The transaction openness attachment with behavior purpose makes blockchain more secure (Martin, Chrysochou, Strong, Wang, & Yao, 2022). Different prompts for openness in dealings link behavior intentions.

H3: Blockchain transactions have a significant positive effect on behavior.

2.3.4. Behavior Intention and Blockchain Operation

Mediation is a sequence of stimuli in which a second component affects a third. A mediator shown in several studies is the aim to the study (Chao, 2019). The purpose of behavior is a precious media structure. Confidence builds trust in behavior intentions that affect blockchain operation (Shao, Zhang, Brown, & Zhao, 2022). Customers with greater intention and satisfaction will maintain the partnership with the blockchain operation (Soomro et al., 2022). The behavior intention has improved its operations to entice more people to utilize them in future transactions (Li & Fang, 2022). To put it another way, using behavior intention develops a desire to do so. In addition to improving operations, the intention is to use cryptocurrencies to strengthen their financial sector (Hasan et al., 2022). The purpose of actions is to be trustworthy (Yeong et al., 2022). The purpose of behavior as a mediator in blockchain operation is well known. Establishing a confidence bond provides many possibilities for blockchain operations (Martin et al., 2022). Competence causes customers intentions to use blockchain operations.

H4: Behavior intention has a significant positive effect on blockchain operation.

3. METHODOLOGY

This study relied on a systematic random sampling technique. Besides that, there were 233 responses to the survey questions sent to retail consumers. PLS-SEM is a data analysis tool used for data analysis. This study covers Japan, China, Lebanon, Switzerland, South Africa, the United Kingdom, Singapore, the Bahamas, the United States, and Estonia as research areas and respondents who responded to our questionnaire.

3.1. Data Analysis Tools

The researcher used pilot testing to analyse the Social Science Statistical Kit (SPSS v23). The Smart PLS (Partial Test Squire) 4.0 is often used because its purpose is to predict structures. The data is not distributed in a standard way, so we have used PLS. The pilot study questionnaire was based on a Likert scale of five points ranging from 1 = = strongly disagree to 7 = strongly agree.

3.2. Sampling Technique and Data Collection

Systematic samples are a group of probability samples. The author includes sample selection by simple random

chance or at some fixed intervals during systematic sampling.

4. RESULTS

Composite reliability is between 0.6 and 0.7. Throughout this investigation, the dependability values for all composites were acceptable; in other words, they were higher than the 0.7 norms established by the researchers in Table 1.

Table 1. Internal consistency reliability.

Variable/ Construct	Cronbach's alpha	rho_A	Composite reliability	Average variance extracted (AVE)
Blockchain operation (BO)	0.881	0.847	0.870	0.771
Behavior intention (BI)	0.840	0.882	0.886	0.739
Blockchain facility (BF)	0.905	0.903	0.900	0.777
Blockchain volatility (BV)	0.890	0.900	0.923	0.752
Blockchain transaction (BT)	0.856	0.883	0.965	0.693

Table 1 shows the composite reliability of blockchain operation (0.870), behavior intention (0.886), blockchain facility (0.900), blockchain volatility (0.923), and blockchain transaction (0.965). Therefore, the study concludes that the data is reliable and above the internal reliability threshold.

Fornell-Larker criterion of discriminant validity shows below. The discriminant validity is well constructed if the diagonal value is higher than the below value.

Table 2. Fornell-Larker criterion.

Variable/ Construct	BF	BV	BT	BI	BO
BF	0.850				
BV	0.770	0.777			
BT	0.624	0.689	0.782		
BI	0.536	0.525	0.412	1.00	
BO	0.642	0.622	0.521	0.643	1.00

Table 2 shows that the diagonal value is higher and the respondents are well distributed. It also describes that the respondents answer the questions evenly, and the data is not biased. It further clarified that there had been no tampering with the data. Finally, it was disclosed that the entire dataset contains value for blockchain operations in Asia and Europe.

Table 3 demonstrates the path model. The relationship between blockchain facility and behavior intention was significant (p = 0.003), and hypothesis H1 was supported. Likewise, hypothesis H2 demonstrated that the relationship between blockchain volatility and behavior intention was significant (p = 0.009). However, blockchain transaction and blockchain intention have an insignificant relationship (p = 0.087) and are not supported in hypothesis H3. On the other hand, significant relations are seen in hypothesis H4, where the transaction has a significant (0.007) relationship in the direction of behavior intention.

Table 3. Assessments of the model and findings.

Hypothesis	Relationship	Beta value	SD	T-value	P-value	Findings
H1	BF->BI	0.160	0.047	3.302	0.003	Supported
H2	BV->BI	0.170	0.055	2.603	0.009	Supported
H3	BT->BI	-0.127	0.092	1.691	0.087	Not supported
H4	BI->BO	0.180	0.045	3.307	0.007	Supported

Due to the implications in the retail industry, the literature also suggests the findings of the blockchain

operation. The following results have been discussed in this study: This study explores the connection between blockchain facilities, blockchain volatility, and the impact of blockchain transaction policies in the retail sector. Therefore, this study reveals the behavior intention impact on blockchain operation.

This study reveals the most critical variable affecting the retail market in Asia and Europe. Customers' happiness is one of these characteristics. Other variables include blockchain facility, volatility, transparency, behaviour intention, and operation. These five factors were shown to be crucial in the study. Factors have hindered blockchain operation in Asia and Europe. This results in a Contradictory Evidence Gap (Miles, 2017), which reveals a positive consequence.

The digital money system is the backbone of blockchain. Today's cryptographic challenges that flawlessly handle the financial and non-financial systems' combined roles also do an excellent job of ensuring existing and future financial security. Regarding technology, it could benefit the retail sector; it offers a complete solution in digital currency. The blockchain paradigm developers want to solve the problem of finding the most efficient method of implementing blockchains. This model would enable the company to monitor and plan individual business and organizational decisions based on applying the blockchain and make strategic decisions with the blockchain's help.

5. DISCUSSION

The findings suggest that blockchain technology influences consumer behavior intentions in the Asia-Europe retail market (H1). This result was consistent with previous research (Giannakas & Yiannaka, 2023; Junnaidi, 2023). The blockchain facility predicts the usage of blockchain in the digital retail business (Singh, Shahare, Vikram, Srivastava, & Maan, 2023). The blockchain facility is seen as a source of trust (Utz, Johanning, Roth, Bruckner, & Strüker, 2023). It promotes user trust in blockchain, and the resulting improved understanding of blockchain boosts behavior intention (Chowdhury, Rodriguez-Espindola, Dey, & Budhwar, 2023). As a result, it has been widely considered that societies in Asia-Europe are more likely to trust a blockchain in the digital retail industry (Murimi, Bell, Rasheed, & Beldona, 2023).

A significant positive relationship between blockchain volatility and behavior intention (H2) has been discovered. Previous research findings back up this conclusion (Chowdhury et al., 2023). Blockchain volatility is an influential component that influences behavior intentions for future blockchain adoption in the retail industry (Veerasingam & Teoh, 2023). Similarly, blockchain volatility affects behaviour intention and generates a better behavior intention sensation (Benlagha & Hemrit, 2023). This is consistent with the findings, which show that volatility is a stable state that encourages the usage of blockchain in the retail sector (Trichilli & Boujelbéne, 2023).

Hypothesis H3 was not supported because blockchain transactions failed to explain the behaviour-intention variance directly. Blockchain transaction influence on behaviour intention is insignificant in the Asia-Europe digital retail industry (Kumari & Devi, 2023). This outcome was consistent with the findings, which revealed that blockchain transactions do not impact a consumer's decision to use blockchain in retail (Chowdhury et al., 2023). Blockchain transactions are a method for reaching retail customers, but customers don't care about the medium as long as they can solve their problems (Quan, Moon, Kim, & Han, 2023). Other previous research backs up this claim, demonstrating the indirect influence of improved perception on the intention to support blockchain transactions (Giri & Manohar, 2023).

It was discovered that behavioural intention positively impacts blockchain functioning (H4). Many studies have anticipated a strong association between behavior intention and blockchain operation, and the findings of this study show a significant relationship between attitude and behavioural intention (Mukherjee et al., 2023). Similarly, the results are similar to a poll conducted by Kumari and Devi (2023). This implies that users' behaviour intention does not significantly impact blockchain operations in the Asia-Europe digital market (Singh et al., 2023). As a result, the current study's findings can generalise this behavior intention as the key factor in influencing blockchain operation

results in emerging countries (Tasnim, Shareef, Baabdullah, Hamid, & Dwivedi, 2023).

5.1. Practical Implications

The outcome of this research offers a valuable understanding of the topic of blockchain operation in developed and developing country settings. In addition to academic contributions, this paper's findings are significant for blockchain application companies, their distributors and suppliers, the Asian European government, and other countries globally. Additionally, Blockchain operations are beneficial to the Asia-Europe digital retail market. Hence, this study offers a significant foundation to comprehend the associations between Blockchain operations and the retail market.

6. CONCLUSION

This study refers to the mediating impacts of behaviour intention towards blockchain facility (BF), blockchain transparency, blockchain volatility (BV), and blockchain operation (BO). The debate ensured in the research framework describes how the factors (BF, BT, and BV) relate to the BO. The association is also incorporated into the variable mediator with behavior intention (BI). This study's findings give important new perspectives on reality. Aside from scholarly contributions, this research is crucial for blockchain users in companies, suppliers, and distributors in Asia, Europe, and other emerging countries. In addition to its practical ramifications, this study has numerous other implications. The operation of blockchain is also advantageous for the digital economy in Asia and Europe.

6.1. Limitation and Future Study

This study has a drawback: blockchain information requires enhanced customer awareness and an electronic gadget and is only relevant to savvy retail consumers. More factors need to be identified, like easy access, software visibility, and more public acceptance, to reduce the market acceptance of electronic devices in the retail sector. In addition, more research is needed to change this study in the retail industry more effectively. New technology is being developed to accompany the economic transformation as a statement that considers the excellent value of strengthening and enhancing blockchain capabilities for secure retail services.

REFERENCES

Assaf, A., Bilgin, M. H., & Demir, E. (2022). Using transfer entropy to measure information flows between cryptocurrencies. *Physica A: Statistical Mechanics and Its Applications, 586*, 126484. https://doi.org/10.1016/j.physa.2021.126484

Aste, T. (2019). Cryptocurrency market structure: Connecting emotions and economics. *Digital Finance, 1*(1-4), 5-21. https://doi.org/10.1007/s42521-019-00008-9

Benlagha, N., & Hemrit, W. (2023). Asymmetric determinants of bitcoin's wild price movements. *Managerial Finance, 49*(2), 227-247. https://doi.org/10.1108/mf-03-2022-0105

Chao, C.-M. (2019). Factors determining the behavioral intention to use mobile learning: An application and extension of the UTAUT model. *Frontiers in Psychology, 10*, 1-14. https://doi.org/10.3389/fpsyg.2019.01652

Chowdhury, S., Rodriguez-Espindola, O., Dey, P., & Budhwar, P. (2023). Blockchain technology adoption for managing risks in

operations and supply chain management: Evidence from the UK. *Annals of Operations Research*, *327*(1), 539-574. https://doi.org/10.1007/s10479-021-04487-1

Dwivedi, Y. K., Rana, N. P., Tamilmani, K., & Raman, R. (2020). A meta-analysis based modified unified theory of acceptance and use of technology (Meta-UTAUT): A review of emerging literature. *Current Opinion in Psychology*, *36*, 13-18.

Escobar-Rodríguez, T., & Carvajal-Trujillo, E. (2014). Online purchasing tickets for low cost carriers: An application of the unified theory of acceptance and use of technology model. *Tourism Management*, *43*, 70-88. https://doi.org/10.1016/j.tourman.2014.01.017

Fang, F., Ventre, C., Basios, M., Kanthan, L., Martinez-Rego, D., Wu, F., & Li, L. (2022). Cryptocurrency trading: A comprehensive survey. *Financial Innovation*, *8*(1), 1-59. https://doi.org/10.1186/s40854-021-00321-6

Giannakas, K., & Yiannaka, A. (2023). Food fraud: Causes, consequences, and deterrence strategies. *Annual Review of Resource Economics*, *15*. https://doi.org/10.1146/annurev-resource-101422-013027

Giri, G., & Manohar, H. L. (2023). Factors influencing the acceptance of private and public blockchain-based collaboration among supply chain practitioners: A parallel mediation model. *Supply Chain Management: An International Journal*, *28*(1), 1-24. https://doi.org/10.1108/scm-02-2021-0057

Govindan, K., Nasr, A. K., Saeed Heidary, M., Nosrati-Abarghooee, S., & Mina, H. (2023). Prioritizing adoption barriers of platforms based on blockchain technology from balanced scorecard perspectives in healthcare industry: A structural approach. *International Journal of Production Research*, *61*(11), 3512-3526. https://doi.org/10.1080/00207543.2021.2013560

Hargrave, J. (2019). *Blockchain for everyone: How I learned the secrets of the new millionaire class and you can too!* New York: Gallery Books.

Hasan, S. Z., Ayub, H., Ellahi, A., & Saleem, M. (2022). A moderated mediation model of factors influencing intention to adopt cryptocurrency among university students. *Human Behavior and Emerging Technologies*, *2022*, 1-14. https://doi.org/10.1155/2022/9718920

Junnaidi, M. H. (2023). Role of smart logistics are powering the future of saudi arabia's trade under vision 2030. *Rivista Italiana di Filosofia Analitica Junior*, *14*(2), 757-777.

Kumari, A., & Devi, N. C. (2023). Blockchain technology acceptance by investment professionals: A decomposed TPB model. *Journal of Financial Reporting and Accounting*, *21*(1), 45-59. https://doi.org/10.1108/jfra-12-2021-0466

Li, D., Han, D., Zheng, Z., Weng, T.-H., Li, H., Liu, H., . . . Li, K.-C. (2022). MOOCsChain: A blockchain-based secure storage and sharing scheme for MOOCs learning. *Computer Standards & Interfaces*, *81*, 103597. https://doi.org/10.1016/j.csi.2021.103597

Li, G., & Fang, C.-C. (2022). Exploring factors that influence information resources sharing intention via the perspective of consensus perception of blockchain. *Information Technology and Management*, *23*(1), 23-38. https://doi.org/10.1007/s10799-021-00338-4

Ling, L., Masrom, M., & Din, S. (2013). *Facilitating conditions towards behavior intention to use E-filing system in Malaysia.* Paper presented at the Paper presented at the 22nd International Business Information Management Association Conference,(IBIMA 2013), Creating Global Competitive Economies: 2020 Vision Planning and Implementation, Rome, Italy, 13-14 November 2013.

Lohmer, J., & Lasch, R. (2020). Blockchain in operations management and manufacturing: Potential and barriers. *Computers & Industrial Engineering*, *149*, 106789. https://doi.org/10.1016/j.cie.2020.106789

Marikyan, D., Papagiannidis, S., Rana, O. F., & Ranjan, R. (2022). Blockchain adoption: A study of cognitive factors underpinning decision making. *Computers in Human Behavior*, *131*, 107207. https://doi.org/10.1016/j.chb.2022.107207

Martin, B. A., Chrysochou, P., Strong, C., Wang, D., & Yao, J. (2022). Dark personalities and bitcoin®: The influence of the dark tetrad on cryptocurrency attitude and buying intention. *Personality and Individual Differences*, *188*, 111453. https://doi.org/10.1016/j.paid.2021.111453

Miles, D. (2017). A taxonomy of research gaps: Identifying and defining the seven research gaps in doctoral student workshop:

Finding research gaps-research methods and strategies. In (pp. 1-15). Dallas: Texas.

Miraz, M. H., Hasan, M. G., & Sharif, K. I. (2019). Blockchain technology implementation in Malaysian retail market. *Journal of Advanced Research in Dynamical & Control Systems, 11*(5), 991-994.

Miraz, M. H., Hasan, M. G., & Sharif, K. I. (2020). Factors affecting implementation of blockchain in retail market in Malaysia. *International Journal of Supply Chain Management, 9*(1), 385-391.

Miraz, M. H., Hasan, M. T., Sumi, F. R., Sarkar, S., & Majumder, M. I. (2020). Understanding, supervision, strategy and acceptance effect into the blockchain employment in Malaysia. *International Journal of Mechanical and Production Engineering Research and Development, 10*(3), 8339-8360. https://doi.org/10.24247/ijmperdjun2020793

Miraz, M. H., Hye, A. K. M., Alkurtehe, K. A. M., Habib, M. M., Ahmed, M. S., Molla, M. S., & Hasan, M. T. (2020). The effect of blockchain in transportation Malaysia. *International Supply Chain Technology Journal, 6*(1), 1-10. https://doi.org/10.20545/isctj/v06.i01.02

Miraz, M. H., Hye, A. K. M., & Habib, M. M. (2019). The impact of blockchain-bitcoin in Malaysian markets. *International Journal of Supply Chain Management, 8*(5), 136-141.

Miraz, M. H., Hye, A. K. M., Wahab, M. K., Alkurtehe, K. A. M., Majumder, M. I., Habib, M. M., & Alsabahi, M. A. (2020). Blockchain securities to construct inclusive, digital economy globally. *International Supply Chain Technology Journal, 6*(1), 1-11. https://doi.org/10.20545/isctj.v06.i01.03

Miraz, M. H., Kabir, A., Habib, M. M., & Alam, M. M. (2019). *Blockchain technology in transport industries in Malaysia*. Paper presented at the The 2nd International Conference on Business and Management.

Miraz, M. H., Sharif, K. I. M., & Hasan, M. G. (2020). Trust impact on blockchain & bitcoin monetary transaction. *Journal of Advanced Research in Dynamical and Control Systems, 12*(3), 155-162. https://doi.org/10.5373/jardcs/v12sp3/20201249

Mukherjee, S., Baral, M. M., Lavanya, B. L., Nagariya, R., Singh Patel, B., & Chittipaka, V. (2023). Intentions to adopt the blockchain: Investigation of the retail supply chain. *Management Decision, 61*(5), 1320-1351. https://doi.org/10.1108/md-03-2022-0369

Murimi, R., Bell, G., Rasheed, A. A., & Beldona, S. (2023). Blockchains: A review and research agenda for international business. *Research in International Business and Finance*, 102018. https://doi.org/10.1016/j.ribaf.2023.102018

Mustafa, M., Alshare, M., Bhargava, D., Neware, R., Singh, B., & Ngulube, P. (2022). Perceived security risk based on moderating factors for blockchain technology applications in cloud storage to achieve secure healthcare systems. *Computational and Mathematical Methods in Medicine, 2022*, 1-10. https://doi.org/10.1155/2022/6112815

Onaolapo, S., & Oyewole, O. (2018). Performance expectancy, effort expectancy, and facilitating conditions as factors influencing smart phones use for mobile learning by postgraduate students of the University of Ibadan, Nigeria. *Interdisciplinary Journal of e-Skills and Lifelong Learning, 14*(1), 95-115. https://doi.org/10.28945/4085

Özdemir, O. (2022). Cue the volatility spillover in the cryptocurrency markets during the COVID-19 pandemic: Evidence from DCC-GARCH and wavelet analysis. *Financial Innovation, 8*(1), 1-38. https://doi.org/10.1186/s40854-021-00319-0

Pagnotta, E. S. (2022). Decentralizing money: Bitcoin prices and blockchain security. *The Review of Financial Studies, 35*(2), 866-907. https://doi.org/10.1093/rfs/hhaa149

Quan, W., Moon, H., Kim, S. S., & Han, H. (2023). Mobile, traditional, and cryptocurrency payments influence consumer trust, attitude, and destination choice: Chinese versus Koreans. *International Journal of Hospitality Management, 108*, 103363. https://doi.org/10.1016/j.ijhm.2022.103363

Queiroz, M. M., & Wamba, S. F. (2019). Blockchain adoption challenges in supply chain: An empirical investigation of the main drivers in India and the USA. *International Journal of Information Management, 46*, 70-82. https://doi.org/10.1016/j.ijinfomgt.2018.11.021

Raimundo Júnior, G. d. S., Palazzi, R. B., Tavares, R. d. S., & Klotzle, M. C. (2022). Market stress and herding: A new approach to the cryptocurrency market. *Journal of Behavioral Finance, 23*(1), 43-57. https://doi.org/10.1080/15427560.2020.1821688

Reyna, A., Martín, C., Chen, J., Soler, E., & Díaz, M. (2018). On blockchain and its integration with IoT. Challenges and

opportunities. *Future Generation Computer Systems, 88*, 173-190. https://doi.org/10.1016/j.future.2018.05.046

Saputra, U. W. E., & Darma, G. S. (2022). The intention to use blockchain in Indonesia using extended approach technology acceptance model. *CommIT Communication and Information Technology Journal, 16*(1), 27-35. https://doi.org/10.21512/commit.v16i1.7609

Shao, Z., Zhang, L., Brown, S. A., & Zhao, T. (2022). Understanding users' trust transfer mechanism in a blockchain-enabled platform: A mixed methods study. *Decision Support Systems, 155*, 113716. https://doi.org/10.1016/j.dss.2021.113716

Sharif, K. I. M., Hassan, M. G., Miraz, M. H., Zulkifly, E., Udin, Z. M., & Omar, M. (2021). *Factors affecting blockchain in fruit retail market: An unveiling myth of blockchain.* Paper presented at the In Intelligent Manufacturing and Mechatronics: Proceedings of SympoSIMM 2020 (pp. 1095-1106). Springer Singapore.

Singh, A., Shahare, P., Vikram, P., Srivastava, V., & Maan, M. K. (2023). Financial sector and blockchain technology: Challenges And applications. *Journal of Pharmaceutical Negative Results, 14*(2), 1566-1575.

Smales, L. A. (2022). Investor attention in cryptocurrency markets. *International Review of Financial Analysis, 79*, 101972. https://doi.org/10.1201/9781003315049-2

Soomro, B. A., Shah, N., & Abdelwahed, N. A. A. (2022). Intention to adopt cryptocurrency: A robust contribution of trust and the theory of planned behavior. *Journal of Economic and Administrative Sciences*(ahead-of-print). https://doi.org/10.1108/JEAS-10-2021-0204

Sotelo, F., & Hamoud, N. (2020). *Blockchain in agribusiness supply Chain management: A traceability perspective.* Paper presented at the The Advances in Artificial Intelligence, Software and Systems Engineering: Proceedings of the AHFE 2020 Virtual Conferences on Software and Systems Engineering, and Artificial Intelligence and Social Computing, July 16-20, 2020, USA.

Sulaiman, M. Y., & Rahim, R. A. (2019). *Blockchain and distributed ledger technology report 2019 retrieved from Malaysia industry-government group for higher education.* Retrieved from https://www.might.org.my/malaysia-blockchain-distributed-ledger-dlt-outlook-2019/

Taherdoost, H. (2022). A critical review of blockchain acceptance models—blockchain technology adoption frameworks and applications. *Computers, 11*(2), 1-31. https://doi.org/10.3390/computers11020024

Talaei-Khoei, A. (2019). *Blockchain in supply chain management: Australian manufacturer case study.* Paper presented at the The Service Research and Innovation: 7th Australian Symposium, ASSRI 2018, Sydney, NSW, Australia, September 6, 2018, and Wollongong, NSW, Australia, December 14, 2018, Revised Selected Papers.

Tandon, A., Dhir, A., Islam, A. N., & Mäntymäki, M. (2020). Blockchain in healthcare: A systematic literature review, synthesizing framework and future research agenda. *Computers in Industry, 122*, 103290. https://doi.org/10.1016/j.compind.2020.103290

Tanwar, S., Kaneriya, S., Kumar, N., & Zeadally, S. (2020). Electro blocks: A blockchain-based energy trading scheme for smart grid systems. *International Journal of Communication Systems, 33*(15), e4547. https://doi.org/10.1002/dac.4547

Tasnim, Z., Shareef, M. A., Baabdullah, A. M., Hamid, A. B. A., & Dwivedi, Y. K. (2023). An empirical study on factors impacting the adoption of digital technologies in supply chain management and what blockchain technology could do for the manufacturing sector of Bangladesh. *Information Systems Management*, 1-23. https://doi.org/10.1080/10580530.2023.2172487

Trichilli, Y., & Boujelbéne, M. (2023). Regime specific spillover between dow Jones Islamic market world index, Islamic gold-backed crypto currencies and the blockchain halal index. *International Journal of Islamic and Middle Eastern Finance and Management, 16*(3), 464-481. https://doi.org/10.1108/imefm-09-2021-0395

Utz, M., Johanning, S., Roth, T., Bruckner, T., & Strüker, J. (2023). From ambivalence to trust: Using blockchain in customer loyalty programs. *International Journal of Information Management, 68*, 102496. https://doi.org/10.1016/j.ijinfomgt.2022.102496

Veerasingam, N., & Teoh, A. P. (2023). Modeling cryptocurrency investment decision: Evidence from Islamic emerging market. *Journal of Islamic Marketing, 14*(7), 1817-1835. https://doi.org/10.1108/jima-07-2021-0234

Wamba, S. F., & Queiroz, M. M. (2022). Industry 4.0 and the supply chain digitalisation: A blockchain diffusion perspective. *Production Planning & Control, 33*(2-3), 193-210. https://doi.org/10.1080/09537287.2020.1810756

Wu, R., Ishfaq, K., Hussain, S., Asmi, F., Siddiquei, A. N., & Anwar, M. A. (2022). Investigating e-retailers' intentions to adopt cryptocurrency considering the mediation of technostress and technology involvement. *Sustainability, 14*(2), 1-21. https://doi.org/10.3390/su14020641

Yan, L., Mirza, N., & Umar, M. (2022). The cryptocurrency uncertainties and investment transitions: Evidence from high and low carbon energy funds in China. *Technological Forecasting and Social Change, 175*, 121326. https://doi.org/10.1016/j.techfore.2021.121326

Yarovaya, L., & Zięba, D. (2022). Intraday volume-return nexus in cryptocurrency markets: Novel evidence from cryptocurrency classification. *Research in International Business and Finance, 60*(C), 101592.

Yeong, Y.-C., Kalid, K. S., Savita, K., Ahmad, M., & Zaffar, M. (2022). Sustainable cryptocurrency adoption assessment among IT enthusiasts and cryptocurrency social communities. *Sustainable Energy Technologies and Assessments, 52*, 102085. https://doi.org/10.1016/j.seta.2022.102085