INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN ECONOMICS & MANAGEMENT SCIENCES

OPEN ACCESS JOURNAL

Vol 15, Issue 1, (2026) E-ISSN: 2226-3624

Blockchain Technology Adoption and Supply Chain Performance in China's Automotive Industry: The Mediating Role of Trust and the Moderating Role of Transparency

Zhang Yuan
School of Management, Universiti Sains Malaysia, Malaysia
Email: zy188yz@gmail.com

Cheang Peck Yeng Sharon*
School of Management, Universiti Sains Malaysia, Malaysia
*Corresponding Author Email: sharon@usm.my

DOI Link: http://dx.doi.org/10.6007/IJAREMS/v15-i1/27905

Published Online: 11 March 2026

Abstract

Purpose: This paper aims to explore how blockchain technology influences supply chain performance in the Chinese automotive industry. Drawing on trust theory and information asymmetry theory, it investigates the mechanisms through which blockchain enhances performance via technological trust, supply chain trust, and institutional trust, and examines the moderating role of supply chain transparency. **Design/methodology/approach:** A conceptual model is developed based on existing theories. The study employs a quantitative research design and plans to use Partial Least Squares Structural Equation Modeling (PLS-SEM) to empirically test the proposed hypotheses using data from the Chinese automotive sector. **Findings:** Preliminary theoretical analysis suggests that blockchain technology adoption can improve supply chain performance by reducing information asymmetry and enhancing multiple dimensions of trust among supply chain partners. Transparency is expected to strengthen these trust-building effects. (As the study is ongoing) **Research limitations/implications:** Since the research is still in progress, empirical results are not yet available. Future studies can complement this work with longitudinal data and cross-industry comparisons to validate the model's broader applicability. **Practical implications:** The study provides guidance for firms and policymakers seeking to build blockchain-enabled trust mechanisms within complex industrial supply chains. It highlights how improving technological, relational, and institutional trust can enhance operational efficiency and coordination. **Originality/value:** This paper integrates trust theory and information asymmetry theory to conceptualize blockchain's governance role in supply chains. It offers a multi-dimensional trust framework and identifies transparency as a key moderating factor,

contributing new theoretical insight and practical relevance to blockchain-based supply chain research.
Key words: Blockchain Technology, Supply Chain Management, Automotive Industry, Trust, Transparency, Information Asymmetry

Introduction

The automotive industry, as one of the most globally connected and tech-heavy sectors, depends on multi-level supply networks that include hundreds of suppliers and service providers. In China, the world's largest automotive maker and market, these networks are growing fast as the industry shifts to electric cars and smart manufacturing. However, the increasing complexity of supplier relationships and rules has created big management challenges. Information asymmetry—when some parties have more accurate or complete information than others—causes inefficiencies, self-serving behavior, and a long-term lack of trust (Akerlof, 1970). Digital transformation has become a key strategic focus under national plans like Made in China 2025, but many companies still use disconnected information systems. Manual record-keeping and isolated databases get in the way of effective teamwork and quality checks. For example, car manufacturers may not be able to track where important parts come from or how eco-friendly their upstream suppliers are. This lack of clarity reduces responsibility and weakens trust, which ultimately hurts supply chain performance (Queiroz et al., 2019).

Blockchain technology could be a major breakthrough. By creating a shared, unchangeable record system, blockchain lets relevant parties share and check transactions right away. Its features of being decentralized, unalterable, and having automatic smart contracts can cut down on the need for middlemen, improve coordination, and make things more transparent (Saberi et al., 2019). In the automotive industry, blockchain has been tested for tracking parts, checking for counterfeits, monitoring warranties, and making logistics better (Francisco & Swanson, 2018).

However, despite its promise, we still do not fully understand how blockchain improves supply chain performance in real industrial settings. Many studies highlight technical strengths, but few look at the social side, especially the role of trust between partners. In addition, China's automotive industry is unique. It has a vast supplier network, strong regulatory pressure on traceability, and long-standing relationship-based practices. These features make trust building and information sharing especially important. At the same time, blockchain increases transparency, yet excessive transparency may expose sensitive information. These complex conditions create a strong need to examine why blockchain matters, how trust is built, and how transparency shapes outcomes. These questions form the core motivation of this study.

Using blockchain technology isn't just a technical problem—it needs organizations to trust each other when sharing data, investing resources, and changing the usual ways of doing things (Mayer et al., 1995). Blockchain can both build trust and rely on it: while its computer programs reduce the need for people to trust each other personally, the technology itself must be trusted to work properly. What's more, blockchain's focus on transparency creates a contradiction. While being able to see information clearly can make collaboration stronger and improve responsibility, too much transparency might reveal sensitive data or let people act in self-serving ways (Cao & Lumineau, 2015).

This paper deals with three key research questions:1. How does using blockchain technology affect technological trust, supply chain trust, and institutional trust?2.How do these trust methods act as a middle link between using blockchain technology and supply chain performance?3. How does transparency influence these relationships?

By creating a theoretical model based on trust theory and information asymmetry theory, this study helps both academic research and practical policy-making related to using blockchain technology in China's automotive industry.

This paper tries to create a basic framework that explains how using blockchain improves supply chain performance through different types of trust methods, with transparency having an influence on this process. The rest of the paper is organized like this: Section 2 covers the literature review; Section 3 presents the basic framework and research guesses; Section 4 describes the planned research methods, including the research design, ways to measure things, and analytical methods. Finally, Section 5 includes the discussion and conclusion, pointing out the theoretical and practical value, limitations, and future research directions.

Literature Review

The basic features of blockchain technology—decentralization, unchangeability, agreement, and transparency—create a shared digital record system that can't be altered. It securely keeps track of transactions among all the people or groups in the network (Kshetri, 2018). Each transaction is checked and approved using agreement-based computer programs, and they're connected in the order they happen. This makes sure the data is accurate and cuts down on the need for central middlemen. These traits make blockchain a good fit for supply chain uses, where multiple organizations (often competing with each other) need to work together (Saberi et al., 2019).In supply chain work, blockchain helps with several key tasks: (1) Tracking ability: it records where products go and their past across different stages; (2) Automatic operation: through smart contracts that carry out agreements without people checking them manually; (3) Transparency: letting authorized people or groups get real-time, checked data (Francisco & Swanson, 2018). For example, car companies like Toyota and BMW have set up blockchain-based platforms to check if parts are real and if suppliers are following the rules (da Silva et al., 2023). In China, blockchain has been used to track how long batteries last and monitor carbon emissions during electric car production (Zhou et al., 2023).

However, adding blockchain to supply chains has several problems. These include underdeveloped technology, high investment costs, difficulties in making different systems work together, and unclear rules from regulators (Kouhizadeh & Sarkis, 2018). What's more, the benefits of blockchain depend on whether organizations are ready for it and whether companies are willing to share sensitive data (Queiroz et al., 2019). So, successfully using blockchain isn't just about technical setup—it also relies on relationship and system-related factors like trust and transparency.

Trust plays a key role in how complex supply chains work. It helps with cooperation, reduces self-serving behavior, and cuts down on transaction costs (Mayer et al., 1995; Delbufalo, 2012). Traditional supply chains rely a lot on trust between people and trust in institutions to coordinate transactions. But digital systems bring in a new type of trust: technological trust. This means having confidence that technology-based systems are reliable, work well, and are secure (Kshetri, 2018). Blockchain changes the way trust works in two main ways. First, it replaces trust in individual partners with trust in the technology itself. Transactions are checked and approved through group agreement instead of depending on someone's reputation (Saberi et al., 2019). Second, it makes trust between partners stronger by making information more reliable and reducing uncertainty for everyone involved (Bachmann & Inkpen, 2011). In supply chains that use blockchain, every transaction is recorded forever. This makes it easier to find people who break agreements or spot inconsistencies.

Building on the above discussion, this study conceptualizes trust in three forms: technology trust, supply chain trust, and institutional trust. Technology trust refers to beliefs about the reliability of blockchain. Supply chain trust reflects partners' fairness and competence. Institutional trust relates to confidence in rules, regulations, and governance systems. Understanding how these three forms of trust interact offers a theoretical basis for explaining how blockchain shapes supply chain performance (Zhou et al., 2014).

Transparency is another key management method closely linked to trust and performance. It means how well relevant information is made visible, accurate, and timely for supply chain participants (Mol, 2015). Blockchain technology naturally boosts transparency by letting people get real-time access to checkable records of material flows, transactions, and compliance activities (Saberi et al., 2019). Practical studies show both the advantages and dangers of transparency. On the good side, transparency makes information more visible, helps with better coordination, and encourages responsibility. This can lead to better performance and lower risks (Queiroz et al., 2019). However, too much transparency might put companies at a competitive disadvantage or risk leaking confidential information (Cao & Lumineau, 2015). For example, suppliers may be unwilling to share data about production costs or sourcing strategies because they're afraid of being taken advantage of.In China's automotive industry, finding the right balance between transparency and keeping information secret is especially important. The government's policies require companies to track products and report on environmental issues, but companies also have to protect trade secrets and intellectual property. So, depending on how the management system is designed, blockchain technology can either help build trust or increase risks (Jing et al., 2024).

The studies we looked at show that blockchain technology has great potential to solve long-standing problems in supply chain management. This is especially true in situations where supply chains are complex and information is uneven. However, there are still three important gaps.First, although many studies have looked at the technical advantages of blockchain, few have explored the social ways—especially trust—that connect blockchain use to supply chain performance. Second, the way trust and transparency work together hasn't been studied enough in theory. This is particularly true in emerging economies like China, where digital systems and traditional relationship-based rules exist at the same time. Third, even though the automotive industry is important and a good fit for using blockchain, there aren't many practical studies about it.

To fill these gaps, this study combines trust theory and information asymmetry theory to build a framework. This framework explains how using blockchain affects supply chain performance through different types of trust, and how this process changes with different levels of transparency.Trust theory explains how trust works as a management method in unstable environments (Simmel, 1950; Luhmann, 1979; Mayer et al., 1995). In cooperation between companies, trust reduces transaction costs and promotes collaborative behavior. Blockchain aligns with this theory by reducing uncertainty through verifiable transactions. It also provides consistent and checkable information, helping to build technological trust and relational trust between enterprises (Delbufalo, 2012). Information asymmetry theory (Akerlof, 1970; Stiglitz, 2002) holds that unequal access to information leads to inefficiency, self-serving behavior, and market failure. In supply chains, upstream and downstream companies often cannot equally understand production processes or demand forecasts, which in turn leads to uncoordinated decisions. Blockchain mitigates this information inequality by ensuring that all parties can access verified data, thereby improving supply chain performance.

Combining these two theories provides a comprehensive explanation of how blockchain influences supply chain outcomes. Blockchain not only reduces information asymmetry through technical means but also builds trust through social-level effects, and these two aspects together drive the improvement of supply chain performance. Transparency affects how people understand and use information, thereby regulating the effects of the above-mentioned roles.

In automotive supply chains, where quality control, compliance, and supplier reliability are crucial, information asymmetry can lead to serious consequences. Studies have shown that blockchain-based traceability systems can improve data accuracy, thereby reducing product defect rates and the number of warranty claims (Wu et al., 2023). In addition, the transparency brought by blockchain can improve the supply chain's response speed and risk management capabilities, helping to achieve better performance (Zhou et al., 2023).However, simply implementing blockchain technology cannot guarantee improved outcomes. Corporate culture, regulatory systems, and data management methods all have a significant impact on final performance (Han et al., 2018). Therefore, in practical applications, trust is the key relational link connecting the use of blockchain technology and performance improvement.

Hypotheses Development

Based on the above review, the research model (Figure 1) proposes that blockchain technology adoption enhances supply chain performance through trust, with transparency moderating these relationships.

Empirical research has confirmed that blockchain technology helps improve supply chain performance. For instance, Centobelli et al. (2022) found through actual analysis that blockchain can make supply chains more responsive by improving information sharing and making processes more transparent. Similarly, research by Zhang et al. (2020) shows that companies using blockchain do better in fulfilling orders and cutting costs. Also, in studies about the automotive supply chain in China, the use of blockchain has greatly improved data visibility and tracking ability in the supply chain, which enhances overall performance (Mollenkopf et al., 2022).

H1: Blockchain technology has a significant positive impact on supply chain performance.
Blockchain technology makes data more reliable and harder to manipulate, which builds trust in the technology itself (Kshetri, 2018). Because records can't be changed, supply chain partners become more confident in each other, helping to build trust across the supply chain (Delbufalo, 2012). In addition, blockchain's ability to track products and follow rules fits well with official supervision, which strengthens trust in the system (Bachmann & Inkpen, 2011).
H2a–c: Blockchain technology adoption positively influences technological, supply chain, and institutional trust.

Trust improves coordination, reduces self-interested actions, and strengthens the ability to adapt to market changes. It supports resource sharing, innovation, and joint problem-solving among partners (Mayer et al., 1995). Research consistently shows that higher levels of trust lead to better operational and financial outcomes (Delbufalo, 2012).
H4a–c: Technological, supply chain, and institutional trust positively influence supply chain performance.

Trust plays a key role in turning blockchain’s technical features into real performance improvements. Without trust, companies may not fully use blockchain’s capabilities or may limit how much data they share.
H3a–c: The three forms of trust mediate the relationship between blockchain technology adoption and supply chain performance.

Transparency enhances trust by providing visibility but may also expose competitive vulnerabilities (Mol, 2015; Cao & Lumineau, 2015).
H4a–d: Transparency moderates the relationships between blockchain technology and trust, and between trust and performance.

Methods
This study is based on an empiricist philosophy, which holds that reality can be observed and measured through scientific approaches (Saunders et al., 2019). Therefore, we use a quantitative research design to objectively examine the proposed relationships between blockchain technology, different forms of trust (technological, supply chain, and institutional), supply chain transparency, and supply chain performance (Babbie, 2020; Zikmund et al., 2013).

This study focuses on companies within the Chinese automotive supply chain (including suppliers, manufacturers, and distributors) that use blockchain technology. To ensure the sample was representative and the data relevant, we used a combination of stratified sampling and purposive sampling (Bryman, 2016; Etikan et al., 2016).

Stratified Sampling: The sample was divided into groups based on supply chain roles (40% suppliers, 40% manufacturers, 20% distributors).
Purposive Sampling: Within each group, we selected key staff (such as supply chain managers and IT specialists) who had direct experience with blockchain technology projects.
The sample size was determined using G*Power software and common standards for Structural Equation Modeling (SEM). With an expected effect size of 0.15, a significance level of 0.05, and statistical power of 0.80, the minimum required sample size was 114. Considering

the complexity of the model and to ensure reliable results, we aimed to collect 400 valid responses (Hair et al., 2017; Kline, 2015).

We collected data using a structured questionnaire distributed through the "Wenjuanxing" platform in China. The survey was sent to mid-level and senior managers with more than three years of experience in supply chain operations related to blockchain technology.

All constructs were measured using established scales on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The questionnaire underwent a rigorous back-translation process to ensure conceptual equivalence in Chinese (Brislin, 1970). A pilot test was conducted to refine item clarity. The specific measures are:
Blockchain technology: Measured using a 5-item scale from Khan et al. (2022), focusing on traceability and data security (Cronbach's $\alpha = 0.764$).
Technological Trust: Adapted from Lippert (2007), assessing reliability and predictability of blockchain technology ($\alpha = 0.95$).
Supply Chain Trust: Measured with a 9-item scale from Wang & Yang (2022), capturing integrity and collaboration among partners ($\alpha = 0.942$).
Institutional Trust: Adapted from Sitinjak et al. (2022) to measure trust in local government's capability regarding blockchain technology governance ($\alpha = 0.896$).
Supply Chain Transparency: Used a 4-item scale from Liu et al. (2023), evaluating information sharing ($\alpha = 0.88$).
Supply Chain Performance: Assessed with a scale from Kim et al. (2020), covering cost, quality, and customer satisfaction ($\alpha = 0.963$).
A marker variable was included to mitigate common method bias (Podsakoff et al., 2003).
Data analysis will employ Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4 software. PLS-SEM is suitable for complex, predictive models and does not require strict normality assumptions (Hair et al., 2019; Ringle et al., 2015). The analysis will proceed in two stages:

Measurement Model Assessment: We will evaluate internal consistency reliability (Composite Reliability > 0.7), convergent validity (Average Variance Extracted, AVE > 0.5), and discriminant validity using the Fornell-Larcker criterion and HTMT ratio (Henseler et al., 2015).
Structural Model Assessment: We will test the hypotheses by examining path coefficients and their significance using a bootstrap procedure with 5000 samples (Hair et al., 2017). The model's explanatory power will be assessed with the coefficient of determination (R^2), and its predictive relevance via the Stone-Geisser Q^2 value. The mediating effects of trust and the moderating effectof supply chain transparency will be tested using the bias-corrected bootstrap method for indirect effects and interaction term analysis, respectively (Preacher & Hayes, 2008).

The study adhered to strict ethical standards. Participants provided informed consent, data was anonymized, and confidentiality was maintained in compliance with China's Personal Information Protection Law and GDPR(General Data Protection Regulation).

Discussion and Conclusion
This study builds a model that explains how blockchain adoption influences supply chain performance in China's automotive industry through different forms of trust. The findings

show that blockchain enhances performance not only through its technical features but also by reducing information asymmetry and helping partners develop technology trust, supply chain trust, and institutional trust. These three forms of trust work together, improve coordination, and reduce uncertainty in supply chain operations.

The study also finds that transparency plays a dual role. When used appropriately, transparency strengthens trust and reduces misunderstandings. Yet too much transparency may reveal sensitive information and make firms hesitant to share data. This helps explain why blockchain, even with similar technology, does not provide the same benefits to all firms. Overall, this study contributes to the literature by linking blockchain adoption with a broader view of trust and by emphasizing transparency as a key influencing factor. It offers a clearer explanation of how blockchain operates in complex industrial settings, especially in China's automotive sector where digital technologies coexist with long-standing business relationships. For managers, the study suggests pairing blockchain with clear data-sharing rules and trust-building practices. For policymakers, the results highlight the importance of data standards and supportive regulations.
Future research can test this model using survey data or multi-period data to better understand cause-and-effect links and compare outcomes across industries or countries.

Theoretical Implications
Demonstrate how blockchain technology reduces information asymmetry and builds different forms of trust.Differentiate between technological, supply chain, and institutional trust in the blockchain technology context.Introduce transparency as a contextual moderator in blockchain technology-enabled supply chains.

Practical and Social Implications
Provide insights for Chinese automotive firms on blockchain technology adoption strategies.Highlight the importance of balancing transparency with confidentiality.
Offer recommendations for policymakers in creating supportive regulatory frameworks for blockchain technology integration.

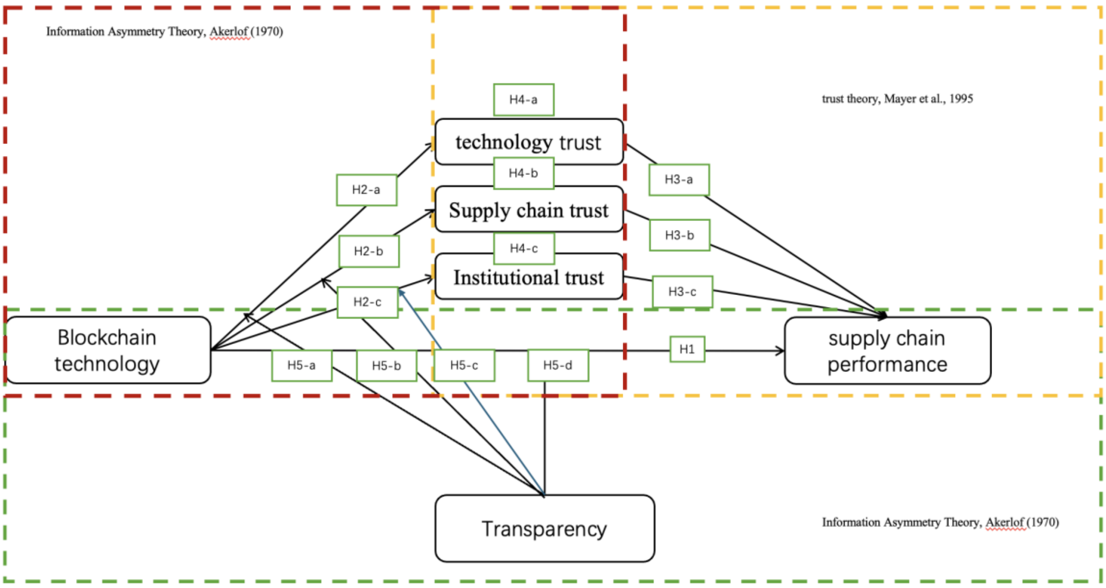
Limitations and Suggestions for Future Research
This study has some limitations that point to directions for future research. First, the data used in this study was collected at a single point in time, which shows connections between variables but cannot fully confirm cause-and-effect relationships. Future studies using long-term data collected before and after companies adopt blockchain would help establish clearer causal conclusions.

Second, since this study focused only on China's automotive industry, the findings may not apply to other settings. Future research should test this model in different countries, cultures, and industries (such as pharmaceuticals or agriculture) to see how well it holds up.

Third, although we used established measurement methods, our data mainly came from managers' personal views. Future studies could include objective performance data to better support the findings.
Finally, although we used a careful sampling approach, it may not have included all types of companies using blockchain in the complex automotive supply chain.

Based on these limitations, we suggest the following directions for future research:
1.Use long-term case studies or repeated surveys to study how trust and performance change over time after companies adopt blockchain.
2.Test the model in different industries and countries to understand where and when it applies best.
3.Add new factors such as company culture, leadership support, or market instability to improve the model.
4.Study how different types of trust (for example, trust based on calculation versus shared values) work together in blockchain-supported supply chains.
5.Combine different research methods, such as following up statistical findings with interviews to better understand how and why the relationships found in this study occur.

Figure 1: Conceptual model



References

Akerlof, G. A. (1970). The market for "lemons": Quality, uncertainty and the market mechanism. *Quarterly Journal of Economics, 84*(3), 488–500.
Babbie, E. R. (2020). *The practice of social research* (15th ed.). Cengage Learning.
Bachmann, R., & Inkpen, A. C. (2011). Understanding institutional-based trust building processes in inter-organizational relationships. *Organization Studies, 32*(2), 281–301.
Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of cross-cultural psychology, 1*(3), 185-216.
Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.
China Association of Automobile Manufacturers (CAAM). (2023). *Annual report on automotive supply chain digitalization.* CAAM Press.
Cao, Z., & Lumineau, F. (2015). Revisiting the interplay between contractual and relational governance: A qualitative and meta-analytic investigation. *Journal of Operations Management, 33–34, 15–42.*
Centobelli, P., Cerchione, R., Del Vecchio, P., Oropallo, E., & Secundo, G. (2022). Blockchain technology for bridging trust, traceability and transparency in circular supply chain. *Information & Management, 59*(7), 103508.

da Silva, E. R., Lohmer, J., Rohla, M., & Angelis, J. (2023). Unleashing the circular economy in the electric vehicle battery supply chain: A case study on data sharing and blockchain technology potential. *Resources, Conservation and Recycling, 193*, 106969.

Delbufalo, E. (2012). Outcomes of inter-organizational trust in supply chain relationships: A systematic literature review and meta-analysis of empirical evidence. *Supply Chain Management: An International Journal, 17*(4), 377–402.

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics, 5*(1), 1-4.

Francisco, K., & Swanson, D. (2018). The supply chain has no clothes: Technology adoption of blockchain for supply chain transparency. *Logistics, 2*(1), 2.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*.

Han, W., Huang, Y., & Macbeth, D. (2018). Performance measurement of cross-culture supply chain partnership: A case study in the Chinese automotive industry. *International Journal of Production Research, 56*(7), 2437–2451.

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management & Data Systems, 116*(1), 2-20.

Jing, Y., Zhang, R., & Liu, L. (2024). Transparency and digital trust in blockchain-based industrial ecosystems. *Technological Forecasting and Social Change, 198*, 122421.

Khan, M., Parvaiz, G. S., Dedahanov, A. T., Abdurazzakov, O. S., & Rakhmonov, D. A. (2022). The impact of technologies of traceability and transparency in supply chains. *Sustainability, 14*(24), 16336.

Kim, S. T., Lee, H. H., & Hwang, T. (2020). Logistics integration in the supply chain: a resource dependence theory perspective. *International Journal of Quality Innovation, 6*(1), 5.

Kline, R. B. (2015). *Principles and practice of structural equation modeling* (4th ed.). Guilford Press.

Kouhizadeh, M., & Sarkis, J. (2018). Blockchain practices, potentials, and perspectives in sustainability: A review. *Sustainability, 10*(7), 2232.

Kshetri, N. (2018). 1 Blockchain's roles in strengthening cybersecurity and protecting privacy. *Telecommunications Policy, 42*(4), 327–339.

Lippert, S. K. (2007). Investigating postadoption utilization: An examination into the role of interorganizational and technology trust. *IEEE Transactions on Engineering Management, 54*(3), 468-483.

Liu, H., He, G., Ma, R., & Fu, S. (2023). The Impact of Social Capital on Socially Responsible Supply Chain Performance: The Moderating Role of Supply Chain Transparency. *Foods, 12*(19), 3624.

Luhmann, N. (1979). Trust and power: Two works by Niklas Luhmann. John Wiley & Sons.

Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of Management Review, 20*(3), 709–734.

Mollenkopf, D., Peinkofer, S. T., & Chu, Y. (2022). Supply chain transparency: Consumer reactions to incongruent signals. *Journal of Operations Management, 67*(3), 34-46.

Mol, A. P. J. (2015). Transparency and value chain sustainability. *Journal of Cleaner Production, 107*, 154–161.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology, 88*(5), 879.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40(3), 879–891*.

Queiroz, M. M., Telles, R., & Bonilla, S. H. (2019). Blockchain and supply chain management integration: A systematic review of the literature. *Supply Chain Management: An International Journal, 25*(2), 241–254.

Ringle, C. M., Wende, S., & Becker, J. M. (2015). *SmartPLS 3*. SmartPLS GmbH.

Saberi, S., Kouhizadeh, M., Sarkis, J., & Shen, L. (2019). Blockchain technology and its relationships to sustainable supply chain management. *International Journal of Production Research, 57*(7), 2117–2135.

Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students*. Pearson.

Simmel, G. (1950). The sociology of Georg Simmel (K. H. Wolff, Trans.). Free Press.(Original work published 1908)

Sitinjak, C., Ismail, R., Tahir, Z., Fajar, R., Simanullang, W. F., Bantu, E., . . . & Harun, Z. (2022). Acceptance of ELV management: The role of social influence, knowledge, attitude, institutional trust, and health issues. *Sustainability, 14*(16), 10201.

Stiglitz, J. E. (2002). Information and the change in the paradigm in economics. *American Economic Review, 92*(3), 460–501.

Wang, M., & Yang, Y. (2022). An empirical analysis of the supply chain flexibility using Blockchain technology. *Frontiers in Psychology, 13*, 1004007.

Wu, Q., Zhu, J., & Cheng, Y. (2023). The effect of cross-organizational governance on supply chain resilience: A mediating and moderating model. *Journal of Purchasing and Supply Management, 29*(1), 100817.

Zhang, X., Sun, P., Xu, J., Wang, X., Yu, J., Zhao, Z., & Dong, Y. (2020). Blockchain technology-based safety management system for the grain supply chain. *IEEE Access, 8*, 36398-36410.

Zhou, H., Wang, Q., Li, L., Teo, T. S., & Yang, S. (2023). Supply chain digitalization and performance improvement: A moderated mediation model. *Supply Chain Management: An International Journal, 28*(6), 993–1008.

Zhou, K. Z., Zhang, Q., Sheng, S., & Bao, Y. (2014). Are relational ties always good for knowledge acquisition? Buyer–supplier exchanges in China. *Journal of Operations Management, 32*(3), 88–98.

Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2013). *Business research methods*. Cengage Learning.