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Understanding the Adoption of Blockchain Technology in the Halal Food Supply Chain: A Conceptual Framework

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Abstract

The adoption of blockchain technology in the Halal food supply chain has implications for various aspects of the supply chain, including certification, transparency, and traceability. This study aims to identify the antecedents and consequences of adopting blockchain technology in Halal supply chain. Blockchain as a disruptive technology used in the food supply chain is expected to be a solution in the industrial challenges. However, the blockchain concept need to be clearly understand for the firm to adopt blockchain in its traditional supply chain. To promote the adoption of blockchain technology in Halal food supply chain, exploring the determinants and influence mechanisms of blockchain adoption has become the focus in this study. Based on the previous study related to this topic, this paper proposes a research model to integrate TOE framework and RBV theory to discover the factors influencing the Halal food producer to use blockchain in its supply chain, and the performance in term of effectiveness will be measured.



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Relevance Previous Studies

No.	Title	Author(s), Year	Variables	Summary
1	Configurational Analysis of the Driving Paths of Chinese Digital Economy Based on the Technology–Organization–Environment Framework	Chen, et al. (2021)	(X) Technology (X) Organization (X) Environment () Capabilities () Adoption () Effectiveness	High levels of firm digital competence and tech-innovation capability, digital infrastructure, government policy support, and digital consumption readiness have a positive relation towards digital economic development.
2	Applying the TOE framework in the Halal warehouse adoption study	Ngah, et al. (2017)	(X) Technology (X) Organization (X) Environment () Capabilities (X) Adoption () Effectiveness	Perceived benefits, cost, customer pressure and organizational readiness were found to have a significant relationship with Halal manufacturers’ intention to adopt Halal warehousing services.
3	Mediating effect of innovation capability between entrepreneurial resources and micro business performance	Taleb, et al. (2023)	() Technology () Organization (X) Environment (X) Capabilities () Adoption (X) Effectiveness	The entrepreneurial resources, particularly technical resources, positively and significantly affect innovation capability and enhance business performance. Furthermore, innovation capability mediates the relationship between entrepreneurial resources and microbusiness performance.
4	Halal standard implementation	Giyanti, et al. (2021)	() Technology (X) Organization	Internal motivation and organization commitment



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No.	Title	Author(s), Year	Variables	Summary
	in food manufacturing SMEs: its drivers and impact on performance		(X) Environment (X) Capabilities () Adoption (X) Effectiveness	positively affect halal standard implementation, while external pressures do not. The external pressures influence the depth of halal standard implementation through internal motivation as a mediating variable. Additionally, the depth of halal standard implementation leads to the improvement of operational performance. The findings suggest the notion that success of halal standard implementation depends on the capabilities of SMEs to convert the external pressures into internal motivation.
5	Adoption of Mobile Government Cloud from the Perspective of Public Sector	Liang, et al. (2021)	(X) Technology (X) Organization (X) Environment () Capabilities (X) Adoption () Effectiveness	The results show that provider competence, organizational readiness, external pressure, and trust of m-Gov cloud have significant effects on m-Gov cloud adoption.
6	Examining the link between Halal supply chain management and sustainability	Khan, et al. (2021)	(X) Technology (X) Organization (X) Environment () Capabilities () Adoption (X) Effectiveness	Halal resources, Halal production systems, competitive pressure, management commitment and support, government support, role of Halal certifying bodies, integration of supply chain partners, integration and support through ICT systems and demand for the Halal products are



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No.	Title	Author(s), Year	Variables	Summary
				positive significant effect to the management of HSC

Underpinning Theory

The research model in this study is based on Technology, Organization and Environment (TOE) framework and Resource Based View (RBV) theory. Initially described by Tornatzky and Fleischer, the TOE framework outlines the main factors, technological, organizational, and environmental, influencing the adoption of emerging technologies (Chen, et al., 2021) as shown in the Figure 1. On the other hand, the firm’s capabilities will act as a mediating variable that mediate the relationship between TOE and Blockchain technology adoption in Halal food supply chain. Besides, the effectiveness will be the outcome variable to this study.

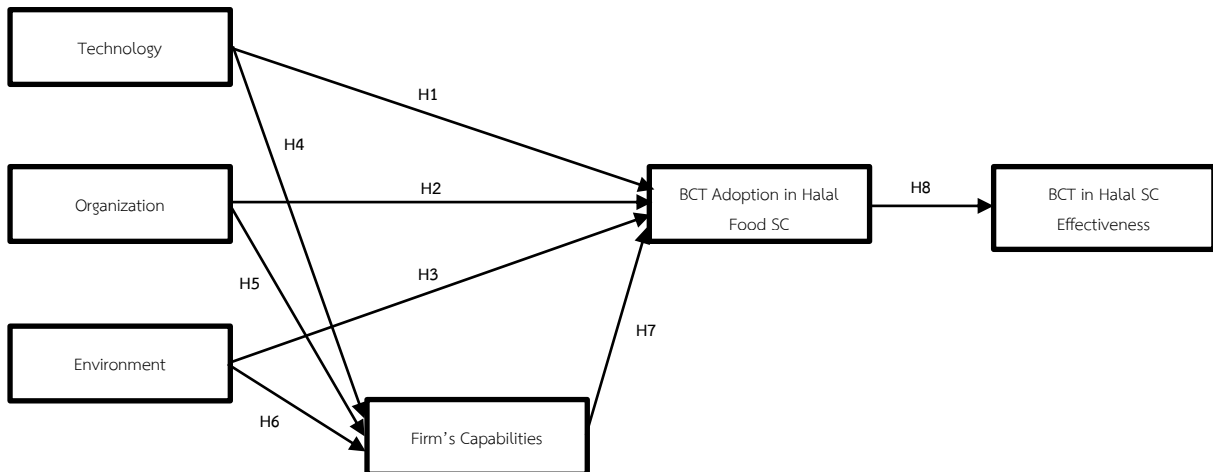


Figure 1: The Conceptual Framework

Hypotheses

To achieve the objective of this study, the following hypotheses have been developed:

H₁: There will be a positive effect between technology and blockchain technology adoption in Halal food supply chain.



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Additionally, the RBV theory has shed light on how organizations can leverage their unique resources and capabilities to gain a sustainable competitive advantage in the Halal sector through blockchain adoption. The strategic deployment of blockchain, viewed as a valuable resource, has the potential to enhance transparency, traceability, and trust in the production and distribution of Halal products.

The combination of TOE and RBV perspectives has offered a comprehensive understanding of the intricate dynamics involved in adopting blockchain technology within the Halal context. As Halal industries continue to navigate the challenges of globalization, consumer demands for transparency, and regulatory compliance, the application of blockchain, informed by both TOE and RBV considerations, stands as a promising solution for fostering integrity and efficiency across the Halal supply chain. This research not only contributes to the academic discourse surrounding technology adoption and strategic management but also provides practical implications for Halal industry stakeholders seeking to harness the full potential of blockchain for sustainable growth and ethical business practices.

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