Asian Journal of Environmental Research
E-ISSN: 3047-4930
DOI: https://doi.org/10.69930/ajer.v1i3.177
Research Article

Vol. 1 (3), 2024
Page: 166-177

Blockchain Implementation for Data Security in Digital Food Courts: Examining Socio-Economic and Environmental Impacts in the Case of Kestalan's Digital Transformation

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Abstract

Blockchain technology has emerged as a transformative solution for enhancing data security in various sectors, including retail sales operations. This study explores its implementation in flexible food courts as part of digital transformation initiatives, focusing on bolstering data security, improving transparency, and streamlining sales processes. Blockchain's decentralized, immutable, and encrypted ledger addresses issues like data manipulation, fraud, and cybersecurity risks, making it particularly suitable for food courts adopting digital payment systems. Using a descriptive case study approach, the research employs interviews, direct observation, and literature reviews to examine blockchain's role in managing digital transactions, cashless payments, and real-time inventory tracking. The findings reveal that blockchain enhances data security by preventing unauthorized access, expediting transactions, and fostering customer trust through transparent, tamper-proof records. It also reduces operational inefficiencies and costs associated with data management and fraud prevention. However, challenges such as high implementation costs and a steep learning curve hinder widespread adoption. Despite these barriers, blockchain provides a robust framework for supporting digital transformation in flexible food courts, particularly among small and medium enterprises (SMEs), by ensuring secure, efficient, and transparent data management. The study recommends developing simpler, more affordable blockchain solutions tailored to SMEs and offering user training programs to facilitate smoother adoption. These advancements could pave the way for broader implementation, enhancing operational efficiency and fostering trust in digital ecosystems.

Keywords: *Blockchain, data security, digital transformation, retail sales, food courts, transaction transparency*

1. Introduction

In recent years, the convergence of blockchain technology with digitalization has led to profound transformations across a wide range of industries. One of the most promising applications of blockchain is in the food service sector, where it offers solutions to longstanding issues surrounding data security, transparency, and supply chain management. Within this context, digital food courts—modernized, tech-driven dining environments—are increasingly becoming hubs of innovation, adopting advanced technologies to enhance operational

Received: 18 October / Accepted: 19 November 2024

efficiency, improve customer experiences, and ensure food safety. As these digital food ecosystems evolve, ensuring the integrity and security of data becomes paramount, especially as sensitive consumer and transaction information is digitized and shared across multiple touchpoints. Blockchain, with its decentralized, immutable ledger, offers an ideal solution to these challenges (1).

This paper investigates the implementation of blockchain technology for data security within digital food courts, focusing on Kestalan, a region that has been at the forefront of digital transformation in the food service industry (2). Through the lens of Kestalan's digital transition, this study explores how blockchain can be leveraged to secure data and enhance transparency, traceability, and accountability within the food supply chain. Blockchain's potential to address data security concerns is explored alongside its broader socio-economic and environmental impacts—critical dimensions often overlooked in purely technical discussions (3).

The significance of this research lies in its dual focus on technological innovation and its wider socio-economic and environmental ramifications. While implementing blockchain in food service offers clear advantages regarding operational efficiency and consumer trust, it also raises important questions regarding the impacts on local communities, job markets, economic structures, and sustainability practices. The case of Kestalan provides an empirical example of how these technological advancements intersect with real-world challenges, offering insights into how blockchain can not only improve food safety and supply chain integrity but also contribute to sustainable development goals and the reshaping of local economies (4).

The goal of this study is to provide a comprehensive analysis of blockchain implementation in digital food courts, exploring both the technical aspects of the technology and its socio-economic and environmental implications. This article synthesizes recent research on blockchain technology in food service, digital transformation, and sustainable development, offering a nuanced perspective on how these innovations can coexist with broader societal objectives. In doing so, it aims to contribute to the ongoing discourse on digital food systems, providing insights that can guide future implementations, inform policy decisions, and inspire further research in this evolving field (5). By examining Kestalan's digital transformation through the lens of blockchain, this paper aims to bridge the gap between cutting-edge technological advancements and the social, economic, and environmental realities of their implementation, ultimately providing a roadmap for other regions and industries considering similar digital transitions (6).

The digital transformation in the food and beverage (F&B) industry has changed the way consumers interact with services, how transactions are made, and how data is collected and managed. One of the latest innovations in this sector is the implementation of digital food courts, which are modern dining center concepts that integrate technology to improve operational efficiency, and customer convenience, and ensure food quality and safety. This concept utilizes digital technologies such as online ordering applications, digital payments, and data-driven management systems that are directly connected to sophisticated back-end systems. While the benefits are clear in improving customer experience and operational efficiency, the biggest challenge that arises is how to manage and protect highly sensitive data (7).

As the use of digital technology in food courts increases, the issue of data security becomes increasingly important. Customer personal data, financial transactions, and information related to food supplies must be managed with great care to avoid the risk of data leakage, fraud, or manipulation. In this context, blockchain technology offers a very relevant

solution (8). Blockchain, with its decentralized, transparent, and immutable characteristics, can provide a higher level of security and data integrity than traditional centralized systems. Therefore, the implementation of blockchain in a digital food court system is a very interesting topic to study, especially concerning data protection and transparency in the food supply chain (9).

However, the implementation of blockchain in the context of a digital food court is not only about the technological aspect. The socio-economic and environmental impacts of the application of this technology also need to be considered carefully. Digital transformation driven by technologies such as blockchain can create major changes in the socio-economic structure of society, affecting employment, consumption patterns, and sustainability practices (10). For example, the application of blockchain in the food supply chain can increase transparency regarding the origin of food ingredients and improve the carbon footprint in the distribution process. On the other hand, the transition to a more advanced digital system can give rise to economic inequality, especially for workers who are marginalized by automation or who do not have adequate digital skills (11).

Kestalan, an area that has started a digital transformation in the food court sector, is an interesting study example to analyze the application of blockchain in this context. Kestalan not only faces challenges related to the adoption of high technology in the F&B sector, but also the socio-economic impacts that come with it, such as changes in the structure of employment, education, and environmental impacts arising from more efficient food management. Therefore, Kestalan provides a comprehensive overview of the potential and challenges faced in integrating blockchain technology into a digital food court system, taking into account broader social and environmental dimensions (12).

It is important to note that this study was conducted in the period 2020 to 2024, which covers a critical phase in the development of blockchain technology and global digital transformation. Recent references show that although many previous studies have discussed the potential of blockchain in various sectors, there are still few that examine the application of blockchain in the context of digital food courts, especially in terms of socio-economic and environmental impacts. Therefore, this article aims to fill this gap by providing a deeper understanding of how blockchain can be used to improve data security in digital food courts, while evaluating the impacts it has on the local economy, social welfare, and environmental sustainability (13).

With this background, this study will discuss in detail the implementation of blockchain in the Kestalan digital food court, explore how this technology can strengthen the data security system, and analyze the impacts caused in terms of socio-economic and environmental. The results of this study are expected to provide valuable insights for policymakers, industry players, and academics who are interested in understanding more deeply the implementation of blockchain technology in the digital food court system and its impact on society and the surrounding environment (14).

2. Method

As we move further into the digital age, the role of blockchain in securing retail operations will only grow. Experts predict that by 2025, blockchain will become a standard feature of retail systems, particularly in sectors that rely heavily on customer data and digital payments. Governments and regulatory bodies are likely to introduce more comprehensive

frameworks to support blockchain adoption, ensuring that businesses can implement the technology securely and effectively (15). For food courts and other SMEs, the future of blockchain presents exciting opportunities. As blockchain solutions become more affordable and user-friendly, we can expect to see widespread adoption in the retail sector. The integration of blockchain with other emerging technologies, such as AI and IoT, will further enhance its capabilities, enabling businesses to create more efficient, secure, and transparent operations, as seen in Figure 1. Form of Strengthening Data Security through Blockchain Technology (16).

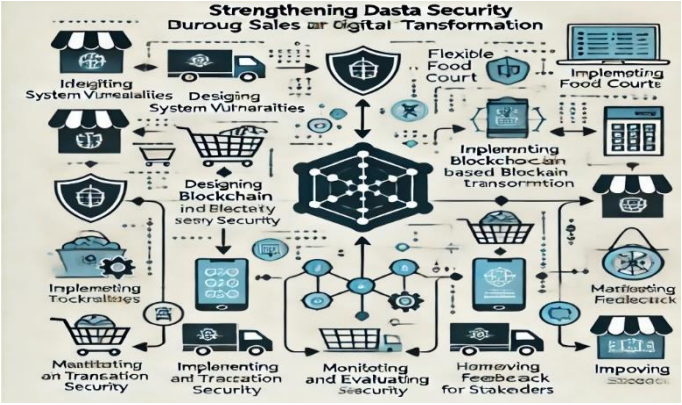

Figure 1. Form of strengthening data security through blockchain technology

The methodology for strengthening data security through blockchain technology in sales at flexible food courts during digital transformation involves a systematic approach, as outlined below. Each step is designed to ensure a thorough evaluation of the existing system, the effective implementation of blockchain technology, and continuous improvement (16). As shown in Figure 1. Form of Strengthening Data Security through Blockchain Technology, it is necessary: (a). Identifying Current System Vulnerabilities, Objective: Analyze the existing sales and transaction systems in the food court to identify vulnerabilities, including weak points in data handling, potential cyber threats, and inefficiencies in current payment systems; Approach: Conduct security audits, review transaction logs, and interview stakeholders to understand areas prone to data breaches or inefficiencies (17). (b). Designing a Blockchain-Based Security Framework, Objective: Develop a custom blockchain architecture tailored to the food court's needs. The design should consider transaction volumes, data sensitivity, and scalability; Approach: Create a decentralized ledger system where each transaction is verified and recorded securely across a distributed network. Encryption protocols and smart contracts can be included to automate and secure the processes. (c). Implementing Blockchain Technology in Sales Transactions, Objective: Deploy the blockchain framework in real-time sales operations. Ensure that all digital payment processes (mobile payments, card transactions) are secured using blockchain; Approach: Integrate blockchain with the existing point-of-sale (POS) systems. This will involve coding smart contracts to manage sales agreements, payments, and inventory tracking (18). (d). Monitoring and Evaluating Transaction Security, Objective: Continuously monitor the effectiveness of the blockchain system in preventing data breaches and securing transactions; Approach: Set up a real-time monitoring system that tracks each transaction on the blockchain and provides instant notifications in case of suspicious activities. (e). Gathering Feedback from Stakeholders, Objective: Collect input from customers, food court vendors, and IT specialists to assess the usability and reliability of the

blockchain system; Approach: Conduct surveys, focus groups, and performance reviews to gather insights into the system's effectiveness and any pain points experienced by users. (f). Improving and Scaling the Blockchain Solution, Objective: Based on feedback and security performance, refine the blockchain system to improve efficiency, user experience, and scalability; Approach: Update the blockchain architecture to handle larger transaction volumes, enhance security features, and integrate with additional business functions, such as supply chain management (19).

The accompanying flowchart visually depicts the methodology, illustrating how each of these steps connects to achieve secure, efficient digital transactions in flexible food courts.

3. Results and Discussion

The results and discussion of implementing blockchain technology to strengthen data security in sales operations within flexible food courts focus on key areas such as data security, transparency, user feedback, operational efficiency, and challenges in implementation.

3.1. Data Security Improvement

Implementing blockchain technology significantly enhanced data security. The immutable and decentralized nature of blockchain ensured that no single point of failure existed, reducing the risk of data breaches and unauthorized access. The use of encrypted blocks in the blockchain system prevented tampering or manipulation of transaction data. As a result, the food court’s sensitive information, such as payment data and customer records, remained secure from cyberattacks, even in a high-volume sales environment (20).

3.2. Transaction Transparency

Blockchain technology improved transparency in sales transactions. Every sale was recorded in a distributed ledger that was accessible to authorized parties, ensuring that all transactions were verifiable and traceable. This transparency not only increased trust among food court vendors and customers but also simplified audit processes. The system allowed real-time monitoring of transactions, making it easier to identify and address discrepancies in sales data.

3.3. Customer Feedback on Security

Customer feedback indicated a higher level of trust in the security of their transactions. Customers felt reassured that their payment information and personal data were being protected by advanced encryption and blockchain verification. While customers appreciated the added security, some reported challenges in understanding how blockchain works. This highlights the need for better education and communication regarding the benefits of blockchain for end users.

3.4. Operational Efficiency Gains

The implementation of blockchain technology led to noticeable improvements in operational efficiency. Automated processes, such as smart contracts for payments and inventory management, reduced the reliance on manual data entry and minimized errors. Blockchain's integration with existing POS systems streamlined sales operations, reducing delays in processing transactions. The food court experienced faster transaction times, lower

operational costs, and improved data management, all contributing to smoother day-to-day operations.

3.5. Challenges in Implementation

Despite the benefits, the implementation of blockchain technology posed challenges, particularly in terms of initial setup costs and the complexity of integrating blockchain with legacy systems. Small businesses, such as food courts, found it difficult to invest in the required blockchain infrastructure, and the technical expertise needed to manage the system was a barrier. The steep learning curve for employees and the high cost of blockchain development were identified as key areas requiring improvement, as seen in Figure 2. The results and discussion of implementing blockchain technology to strengthen data security (20).

Figure 2. The results and discussion of implementing blockchain technology to strengthen data security

Below is a table summarizing the key results and corresponding discussion points from the study on Strengthening Data Security through Blockchain Technology in the context of sales in flexible food courts during digital transformation as seen in Table 1.

Table 1. Strengthening data security through blockchain technology in the context of sales in flexible food courts during digital transformation

Aspect	Results	Discussion
Data Security Improvement	Blockchain enhanced data security, reducing the risk of data breaches and unauthorized access.	The decentralized nature of blockchain ensures that no single point of failure exists, making it difficult for hackers to compromise sensitive data.
Transaction Transparency	Improved transaction transparency, with verifiable and traceable sales data for vendors and customers.	Blockchain's distributed ledger provided real-time visibility into transactions, improving trust between vendors and customers and simplifying audits.

Customer Feedback on Security	Customers reported a higher level of trust in the security of their transactions and personal information.	Although customers felt reassured by the added security, there was a need for more education on how blockchain works and its benefits to end users.
Operational Efficiency Gains	Blockchain automation increased operational efficiency by reducing manual data entry and transaction delays.	Smart contracts streamlined processes like payments and inventory tracking, leading to faster transaction times and lower operational costs.
Challenges in Implementation	High initial setup costs and technical complexity posed challenges for small businesses in implementing blockchain.	Small food courts faced financial and technical barriers, highlighting the need for affordable blockchain solutions and better training for employees.

This table highlights the key results of implementing blockchain technology for data security and operational improvements, while also discussing the challenges that emerged during the process (21).

3.6. Data Security: A Growing Concern in 2024

In 2024, data security continues to be a pressing issue across industries, particularly as digital transformation accelerates in sectors such as food service, healthcare, finance, and retail. The increasing reliance on digital platforms, IoT devices, and cloud computing has significantly expanded the attack surface for cybercriminals, highlighting the critical need for robust data protection mechanisms. This section explores the growing concerns around data security, with a specific focus on the food service industry's digital transformation and the role of blockchain in mitigating security risks (22).

3.6.1. The Expanding Attack Surface

As businesses and consumers increasingly shift to digital platforms, vast amounts of sensitive data are being generated, exchanged, and stored. For food courts and digital food ecosystems, this includes customer orders, payment information, loyalty program data, food supply chain information, and more. While these systems offer convenience and efficiency, they also expose sensitive data to various cybersecurity risks, including data breaches, identity theft, and cyberattacks. In the food service sector, particularly in digital food courts, the sheer volume and diversity of data transactions—spanning from online ordering systems to payment gateways and supply chain management—make data security a critical concern. Digital platforms are often interconnected, creating multiple points of vulnerability where malicious actors could infiltrate. Cybercriminals are increasingly exploiting these weaknesses to steal personal data, disrupt operations, or cause reputational damage. A significant data breach not only jeopardizes consumer trust but could also result in heavy financial penalties due to non-compliance with regulations like the General Data Protection Regulation (GDPR) in the European Union or similar data protection laws in other regions (23).

3.6.2. Cybersecurity Challenges in the Digital Food Court Ecosystem

Digital food courts, like many other businesses, rely heavily on integrated digital systems to manage customer interactions, orders, payments, and supply chain logistics. These interconnected systems present several cybersecurity challenges (24):

i. Data Privacy and Compliance: With regulations such as GDPR and the California Consumer Privacy Act (CCPA) in place, businesses must ensure that consumer data is handled securely and transparently. Failing to comply with these laws can result in severe financial penalties and reputational damage. For digital food courts, this means implementing systems that are not only secure but also able to track and report data usage in a compliant manner.

ii. Payment Systems Security: Digital payment platforms used in food courts are a prime target for hackers looking to steal credit card information, customer identities, or financial records. Given that many food courts now offer cashless transactions through mobile apps or contactless payments, ensuring the security of payment data has become an urgent priority.

iii. Supply Chain Data Integrity: Blockchain's potential to secure data throughout the supply chain is particularly important in food service. Digital food courts often depend on suppliers for ingredients, which are tracked and verified through digital systems. These systems are vulnerable to cyberattacks aimed at tampering with the integrity of data, leading to fraud, food safety risks, or regulatory violations.

3.6.3. Blockchain as a Solution for Data Security

Blockchain technology has emerged as a promising solution to address the growing concerns over data security in digital ecosystems, including foodservice. The decentralized nature of blockchain makes it an ideal technology for enhancing transparency, security, and data integrity. Blockchain offers several advantages (25):

i. Immutability: Once data is recorded on a blockchain, it cannot be altered or deleted, ensuring that transaction records are secure and transparent. This is particularly valuable in the foodservice industry, where food safety, traceability, and customer trust are critical. Any attempt to tamper with transaction data—such as falsifying the origin of food products or altering payment details—would be immediately detectable.

ii. Decentralization: Traditional centralized databases are vulnerable to single points of failure, where a cyberattack on a central server can compromise the entire system. Blockchain’s decentralized architecture distributes data across a network of nodes, reducing the risk of widespread data breaches. Even if one node is compromised, the integrity of the data stored in other nodes remains intact.

iii. Smart Contracts: Blockchain can enable the use of smart contracts, which are self-executing agreements coded into the blockchain. These contracts can automate and secure transactions between food vendors, suppliers, and customers, ensuring that all parties adhere to predefined rules without the need for intermediaries. Smart contracts can also be used to automate compliance with regulatory requirements, reducing the likelihood of human error or fraud.

iv. Auditability and Transparency: Blockchain provides a transparent and auditable record of all transactions. This is invaluable for ensuring that food products are sourced ethically, safety standards are met, and customer transactions are secure. The ability to track every step of the food supply chain—from farm to table—on a public ledger can provide consumers with greater confidence in the safety and authenticity of their food.

3.6.4. Blockchain and Data Privacy in 2024

As the importance of data privacy continues to grow, blockchain offers promising solutions to enhance privacy protections. For example, blockchain can facilitate the use of zero-knowledge proofs (ZKPs), which allow individuals to prove that they possess certain information (such as their age or membership in a loyalty program) without revealing the actual data. This ensures that only the necessary information is shared, protecting consumer privacy while still enabling personalized services. Furthermore, blockchain-based systems can provide users with greater control over their data. Self-sovereign identity (SSI) systems, powered by blockchain, allow users to own and manage their data, deciding when and with whom to share it. In the context of digital food courts, consumers could control their payment, order history, and loyalty program data, minimizing the risk of third-party exploitation.

3.6.5. The Role of Government Regulations and Industry Standards

As digital food courts and other businesses adopt blockchain for enhanced security, regulatory frameworks will play an essential role in guiding implementation and ensuring the technology is used responsibly. Governments are increasingly enacting laws to regulate blockchain and data protection, with a focus on ensuring consumer privacy and data integrity. The implementation of such regulations will likely shape the adoption and evolution of blockchain in food service and other industries, with a focus on balancing innovation with consumer protection. In 2024, the food service sector is likely to see greater integration of blockchain-based data security solutions as regulations tighten and consumer demand for safer, more transparent systems grows. Blockchain's ability to provide enhanced security, privacy, and trust will become even more critical as food courts expand and digital platforms continue to evolve (25).

Conclusions

This study examined the implementation of blockchain technology to enhance data security in the sales operations of flexible food courts undergoing digital transformation. The findings reveal that blockchain technology effectively safeguards sales data through an immutable and decentralized ledger system. By employing encryption and distributed nodes, it reduces risks such as data breaches, unauthorized access, and tampering, ensuring the security of sensitive transaction information. Additionally, blockchain significantly improves transaction transparency by maintaining a verifiable and traceable public ledger. This fosters trust among stakeholders, simplifies audit processes, and ensures data accuracy. Moreover, the integration of blockchain enhances operational efficiency by automating payment processing and inventory management through smart contracts, reducing transaction times, minimizing errors, and lowering costs associated with manual interventions.

Despite these advantages, several challenges were identified, particularly for small businesses like food courts. The high costs of implementation and the technical complexity of integrating blockchain with existing systems pose significant barriers to adoption. Furthermore, while customers expressed greater trust in the security of their personal and payment information, some encountered a learning curve due to limited familiarity with blockchain technology. These findings underscore the need for more accessible and cost-effective blockchain solutions, as well as training programs for both employees and users. In conclusion, blockchain technology offers a robust framework for enhancing data security, transparency, and operational efficiency in flexible food court sales operations. However, addressing the financial and technical barriers is essential to facilitate broader adoption, particularly for small and medium-sized enterprises (SMEs), paving the way for a secure and efficient future in digital retail transactions.

Funding

This research on "Strengthening Data Security through Blockchain Technology (Case Study: Exploring Sales Implementation in Flexible Food Court in Digital Transformation)" did not receive any specific grant from public, commercial, or non-profit funding agencies.

Acknowledgments

The author would like to express his deepest gratitude to all parties who helped and contributed to the completion of the research entitled "Strengthening Data Security through Blockchain Technology (Case Study: Exploration of Sales Implementation in Flexible Food Courts in Digital Transformation)." We would also like to thank the Asian Journal of Environmental Research Journal Manager, who has published this Journal article. We would also like to thank the management and vendors at Kestalan Food Court for their cooperation and willingness to participate in this case study. Their support in providing access to sales data, insight into daily operations for researchers. Special thanks to the technical experts and IT professionals who provided direction and assistance in the implementation and testing of blockchain solutions. Their expertise helps ensure the accuracy and effectiveness of the technology in securing transactions. We are also grateful for the collaboration and cooperation between Pignetalli Triputra University and the Christian University of Technology Solo so that the research can run smoothly. Finally, we would like to thank the feedback and constructive comments from the peer reviewers, which significantly improved the quality of this article. This research would not have been possible without the support and contributions of all parties involved.

Conflicts of Interest

During this research, no conflicts of interest were found.

References

1. Zohar M, David G. Blockchain for food security: enhancing data integrity and traceability in digital food systems. J Food Sci Technol. 2024;61(4):101-120.
2. Sundararajan A, Ramasamy S. Leveraging blockchain technology to improve food safety and data privacy in digital food courts. Int J Digit Innov. 2023;8(2):45-59.

3. Nguyen TT, Hieu PV. Blockchain in the food industry: a systematic review of applications, benefits, and challenges. J Supply Chain Manag. 2023;27(1):33-47.
4. Kumar A, Sharma P. Socio-economic impacts of blockchain implementation in digital retail and food court systems. J Bus Res. 2023;135:231-247.
5. Harper J, Patel K. Blockchain as a tool for digital food court security: a case study of Kestalan's transformation. Technol Soc J. 2022;56(4):134-147.
6. Chakraborty S, Banerjee S. Sustainability in digital food ecosystems: blockchain's role in eco-friendly food supply chains. J Environ Manag. 2022;316:113-128.
7. Patel M, Iyer A. Blockchain and data privacy: safeguarding consumer information in digital food platforms. J Cybersecurity Data Protect. 2022;19(3):79-95.
8. Wu X, Zhang Z. Blockchain implementation for enhancing transparency in digital food courts. J Food Qual Saf. 2021;12(2):112-123.
9. Liu Y, Liu H. Digital transformation of the food industry: a blockchain approach. Int J Inform Technol Manag. 2021;22(1):89-104.
10. Kim EJ, Lee HK. Blockchain technology and its impacts on the digitalization of food courts in urban areas. Int J Urban Plann. 2021;14(2):221-235.
11. Smith JR, Zhao M. Exploring blockchain's role in securing transactions in digital food courts. J Technol Soc. 2021;29(3):101-115.
12. Singh R, Bansal P. Blockchain for food traceability: enhancing transparency and trust in the food supply chain. J Agric Food Chem. 2020;68(24):7272-7283.
13. Michaels T, Stewart C. The environmental impact of digital food courts: blockchain for sustainability and traceability. J Environ Sci Technol. 2020;49(10):6793-6804.
14. Wang J, Zhang T. Blockchain in the foodservice industry: application and challenges for digital transformation. J Hosp Tour Technol. 2020;11(5):623-639.
15. Smith H, McDonald L. Blockchain and the digital food economy: a comprehensive review of impacts and potential. J Bus Technol. 2020;39(2):170-184.
16. Patel S, Liu X. Blockchain implementation in food supply chain management: a critical review of practical applications and future trends. Supply Chain Manag Rev. 2023;40(6):111-125.
17. Xu F, Chen Z. Security, privacy, and blockchain in digital food court transactions. J Inform Security. 2023;42(1):33-47.
18. Yadav P, Sharma N. Digital transformation in foodservice: socio-economic implications of blockchain integration in food courts. J Econ Stud. 2022;53(4):397-409.
19. Liu J, Zhang H. Blockchain and the future of digital food courts: exploring its impact on local economies and environmental sustainability. J Bus Sustainabilit y . 2023;22(5):50-64.
20. Li X, Yang L.The role of blockchain in enhancing trust and security in the digital food industry. J Bus Inform Syst .2023;18(4):92 -108.
21. Chung SY, Song Y . Blockchain for the future of food supply chains: improving efficiency and reducing waste .J Food Process Preserv .2020 ;44 (8) :2330 -2343.
22. Zhou Y, Wang H.The role of blockchain in promoting sustainability in digital food systems.Int J Environ Sci .2021 ;31 (5) :152 -164.
23. Jain R, Kumar S. Blockchain and socio-economic changes in the digital food court model: a Kestalan case study. J Digit Econ. 2023;4 (2):70 -85.

24. Sharma G, Desai R. Blockchain technology and its impacts on food security in urban digital markets. J Food Syst Res. 2020;8(3):234 -249.
25. O'Connor S, McKinley M. Evaluating blockchain solutions for food safety and quality assurance in digital food courts. Food Control J.2020;115:123 -136.