SJEMEB Seascapeid Journal of Economics, Management, and Business
journal homepage: https://seascapeid.com/index.php/sjemeb
E-ISSN : 0000-0000

Analysis of Security and User Satisfaction in Using Digital Payment Methods in E-Commerce

[1]Novia Indah Lestari, [2]Kamsariaty, [3]Helena Louise Panggabean, [4]Edi Supardi, [5]Sri Dinarwati, [6]Hadi Purnomo
Coresponding authors : Novia Indah Lestari
Email: noviaindah122@gmail.com
[1]Universitas Serang Raya, Indonesia, [2]Akademi Maritim Nusantara Banjarmasin,Indonesia, [3]Universitas Mohammad Husni Thamrin,,Jakarta, Indonesia, [4]Universitas Logistik dan Bisnis Internasional, Indonesia, [5]Universitas Subang, Indonesia, [6]Universitas Trunojoyo,Madura, Indonesia

ARTICLE INFO

Security in Digital Payment, User Satisfaction, Digital Payment Methods, E-Commerce

ABSTRACT

This study investigates security and user satisfaction in e-commerce digital payment methods. With increasing online transactions, robust security and enhanced user satisfaction are vital for growth and consumer trust. Using a mixed-methods approach, it explores security aspects like encryption, authentication, and transactional safeguards, alongside user satisfaction metrics such as ease of use, reliability, and perceived value. Through surveys, interviews, and transactional data analysis, the research aims to understand the connection between security measures and user satisfaction, identifying key factors influencing consumer behavior and trust. The findings offer valuable insights for e-commerce stakeholders to improve security protocols and user experiences, fostering growth and innovation in digital payments.

1. INTRODUCTION

In the ever-evolving digital era, e-commerce has become one of the main pillars in global trade activities. This rapid growth is inseparable from advances in information and communication technology, which allows consumers to make purchases easily, quickly, and efficiently through online platforms (Yadav, 2021). Amidst this transformation, digital payment methods have become an increasingly important foundation, facilitating transactions between customers and merchants electronically (Sahi et al., 2022). However, along with the ease and convenience offered by digital payments come concerns over security and user satisfaction (Saong et al., 2023).

Security and user satisfaction are two crucial aspects that influence the adoption and use of digital payment methods in e-commerce (Tiewul, 2020). Security is a major concern given the potential risks associated with identity theft, fraud and data breaches that can occur in a vulnerable online environment (Hassan et al., 2020). On the other hand, user satisfaction plays an important role in building consumer trust and strengthening brand loyalty (Kedah, 2023). Positive user experiences, including transaction speed, ease of use, and system reliability, are key factors that influence consumers' perceptions of digital payment methods (Ndolu et al., 2022). Therefore, this study aims to conduct a thorough analysis of user safety and satisfaction in the use of digital payment methods in e-commerce (Sahi et al., 2022). Considering the complexity of the e-commerce ecosystem and the changing market dynamics, this research will explore critical aspects of security, including encryption protocols, authentication

mechanisms, and transaction protection measures (Ardiansah et al., 2020). In addition, it will also explore the dimensions of user satisfaction, covering factors such as ease of use, reliability, and perceived value (Li et al., 2023).

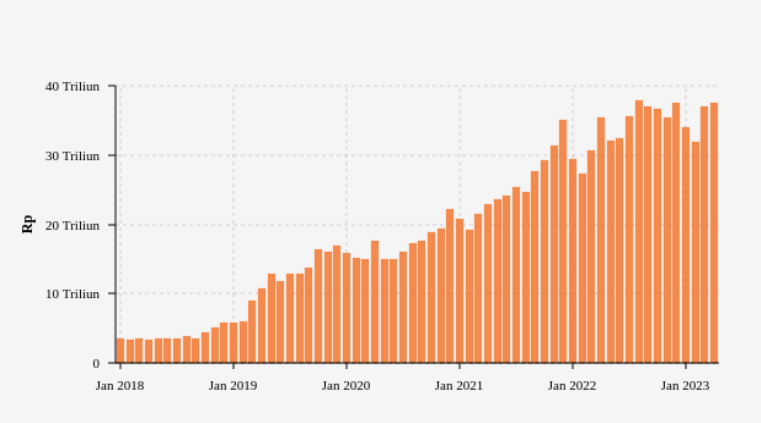

Figure 1: Digital Payment Growth of E-Commerce (2023)
Source: https://databoks.katadata.co.id/datapublish/2023/07/05/

The image above indicates an increase in digital payment methods in e-commerce shopping transactions. This illustrates that people are comfortable and trust that shopping with digital money is very safe, convenient, and easy to do anywhere and anytime. Through a combined approach of surveys, interviews, and transactional data analysis, this research aims to provide an in-depth understanding of the relationship between security and user satisfaction in the context of digital payments in e-commerce (Sarkam et al., 2022). The findings from this study are expected to provide valuable insights for e-commerce stakeholders, enabling them to optimize security protocols and improve user experience, thereby creating an environment conducive to continued growth and innovation in the digital payments landscape (Hassan et al., 2020; Kedah, 2023).

2. LITERATURE REVIEW

Security in Digital Payment

Security in digital payment refers to the set of measures, protocols, and practices implemented to protect financial transactions conducted through electronic channels from unauthorized access, fraud, and data breaches (Nwagu et al., 2021). It encompasses a comprehensive range of strategies aimed at safeguarding sensitive financial information, ensuring the integrity and confidentiality of transactions, and mitigating risks associated with online payments (Boutaher et al., 2020). Key components of security in digital payment include encryption, authentication, and transactional security (Nowroozi et al., 2023). Encryption involves encoding sensitive data such as credit card numbers, personal identification information, and transaction details into unreadable formats during transmission, ensuring that

even if intercepted, the data remains unintelligible and unusable to unauthorized parties (Chatterjee et al., 2023). Authentication mechanisms verify the identity of users and prevent unauthorized access to accounts or payment instruments through techniques such as passwords, biometric verification, and multifactor authentication (Khan, 2023). Transactional security measures employ real-time fraud detection algorithms to analyze transactional data and identify patterns indicative of suspicious or unauthorized behavior, thereby preventing fraudulent activities and protecting users from financial losses (Boutaher et al., 2020; Mary et al., 2021).

Regulatory compliance also plays a crucial role in ensuring security in digital payment, with frameworks such as the Payment Card Industry Data Security Standard (PCI DSS) and the General Data Protection Regulation (GDPR) imposing stringent requirements on organizations involved in processing, storing, or transmitting payment data (Hassan et al., 2020). These regulations mandate the implementation of robust security controls, regular audits, and compliance assessments to mitigate risks and protect consumer privacy (He et al., 2014). Overall, security in digital payment is a multifaceted concept that requires a comprehensive approach encompassing technological innovation (Sahi et al., 2022), regulatory compliance, and proactive risk management strategies to safeguard financial transactions, enhance trust and confidence among users, and foster a secure and resilient digital payment ecosystem (Hwang et al., 2021).

User Satisfaction

User satisfaction refers to the subjective evaluation of an individual's overall experience with a product, service, or system, based on their expectations, perceptions, and feelings (Surawijaya et al., 2021). It encompasses the extent to which users' needs, preferences, and objectives are met or exceeded, leading to a positive emotional response and a sense of fulfillment or contentment (Aguirre et al., 2019).

The simplicity, intuitiveness, and efficiency of interacting with a product or service. Users are more likely to be satisfied when they can easily navigate through interfaces, complete tasks without unnecessary complexity, and accomplish their goals with minimal effort (Man & Yang, 2023). The consistency, dependability, and performance stability of a product or service over time. Users expect reliable functionality and performance without frequent errors, glitches, or interruptions, which can undermine trust and satisfaction (Cheng et al., 2021). The extent to which a product or service fulfills its intended purpose and meets users' functional requirements. Users assess satisfaction based on the features, capabilities, and utility provided, as well as the extent to which they align with their specific needs and preferences (Ndolu et al., 2022).

The speed, responsiveness, and efficiency of a product or service in delivering desired outcomes (Alshurideh et al., 2021). Users expect responsive interfaces, fast loading times, and smooth performance, particularly in digital environments where delays or lags can lead to frustration and dissatisfaction (Zhou et al., 2016). The visual appeal, design aesthetics, and overall attractiveness of a product or service. Users are influenced by the aesthetic qualities of interfaces, graphics, and layouts, which can enhance engagement, enjoyment, and satisfaction

with the user experience (Xiaoxiao & Wenming, 2018). The perceived benefit, usefulness, and cost-effectiveness of a product or service relative to its price or effort required (Alkhalfan et al., 2020). Users evaluate satisfaction based on the perceived value proposition, weighing the benefits gained against the investment made, and assessing whether it aligns with their expectations and priorities (Zeng et al., 2017).

Digital Payment Methods

Digital payment methods refer to electronic systems and technologies used to facilitate financial transactions and payments, typically conducted over digital platforms, networks, or devices (Mahesh & Bhat S, 2022). These methods enable individuals, businesses, and organizations to transfer funds, make purchases, and conduct financial transactions without the need for physical cash or traditional paper-based instruments (Sahi et al., 2022).

Digital payment methods rely on electronic communication channels, such as the internet, mobile networks, or electronic data interchange (EDI), to initiate, authorize, and process transactions between parties (Tounekti et al., 2022). Instead of physical currency or paper-based payment instruments, digital payment methods utilize digital representations of money, such as electronic funds transfers (EFT), virtual currencies, or digital wallets, to store and exchange monetary value (Fatonah et al., 2018).

Many digital payment methods offer real-time processing capabilities, allowing transactions to be completed instantaneously or within seconds, enhancing speed, convenience, and efficiency for users (Intal et al., 2020). These methods also provide enhanced security features, such as encryption and tokenization, to protect sensitive financial information and mitigate the risk of fraud or unauthorized access (Sumanjeet, 2019). Security is a paramount concern in digital payment methods, with various encryption, authentication, and fraud detection mechanisms implemented to safeguard sensitive financial information, prevent unauthorized access, and mitigate risks associated with online transactions (Ahmed et al., 2021). Digital payment methods are supported across a wide range of platforms, including websites, mobile applications, point-of-sale (POS) terminals, and automated teller machines (ATMs), digital wallet, providing users with flexibility and accessibility in conducting transactions (Alkhowaiter, 2020). Digital payment methods are integrated with existing financial infrastructure, such as banking systems, payment networks, and regulatory frameworks, enabling interoperability, compliance, and seamless integration with traditional financial services (Alkhowaiter, 2020).

E-Commerce

E-commerce, short for electronic commerce, refers to the buying and selling of goods, services, or information over the internet or other electronic networks (Aburaya, 2020). It involves the exchange of products or services between businesses, consumers, or individuals through online platforms, digital marketplaces, or electronic transactions (Amin et al., 2016). E-

commerce relies on digital platforms such as websites, mobile applications, or online marketplaces to showcase products or services, provide information, and facilitate transactions between buyers and sellers (Kano et al., 2022). E-commerce transactions are conducted electronically, typically using electronic payment methods such as credit cards, digital wallets, or online banking, eliminating the need for physical cash or paper-based instruments (Naeem et al., 2020). E-commerce transcends geographical boundaries, enabling businesses to reach customers and markets beyond their local or regional areas, expanding their customer base and market opportunities on a global scale (Khaskheli & Jun, 2016).

E-commerce platforms operate around the clock, providing users with the flexibility to browse, shop, and transact at any time and from any location with internet access, enhancing convenience and accessibility for both buyers and sellers (Lin, 2017). E-commerce platforms leverage data analytics, machine learning, and personalization algorithms to tailor product recommendations, promotions, and shopping experiences based on individual preferences, behavior, and demographics (Kharfan et al., 2021). E-commerce encompasses the entire supply chain process, including order processing, inventory management, shipping, and delivery, often involving third-party logistics providers or fulfillment services to handle warehousing and distribution (Dragomirov, 2020).

3. RESEARCH METHODS

Qualitative research methods can provide valuable insights into the analysis of security and user satisfaction in using digital payment methods in e-commerce. Qualitative methods focus on understanding the experiences, perceptions, and behaviors of individuals and can help uncover underlying reasons and motivations. One approach to qualitative research in this context could be conducting in-depth interviews with e-commerce users to explore their perceptions of security and satisfaction with digital payment methods. These interviews can delve into the factors that influence their trust in digital payments, their experiences with security measures, and their overall satisfaction with the payment process.

Another qualitative method is observation, where researchers observe users as they interact with digital payment systems. This can provide insights into user behaviors, such as their ease of use with the interface, their reactions to security prompts, and any challenges they encounter during the payment process. Additionally, qualitative research can involve focus groups, where a group of e-commerce users discuss their experiences and perceptions of digital payment security and satisfaction. This method allows researchers to observe group dynamics and explore shared experiences and opinions.

Overall, qualitative research methods can offer a deeper understanding of the factors that influence security and user satisfaction in digital payments, providing valuable insights for improving the design and implementation of digital payment systems in e-commerce.

5. ANALYSIS AND DISCUSSION

Analysis

THE RELEVANCE STUDY

No	Title & Author	Objectives	The Relevances
1	An efficient secure electronic payment system for e-commerce, (Hassan et al., 2020)	This article seeks to create a streamlined and secure electronic payment protocol for e-commerce, enabling consumers to quickly and securely connect with merchants.	The significance of security in electronic payment systems, especially in e-commerce, is underscored, emphasizing the necessity for effective and secure protocols to guarantee secure transactions. Additionally, it highlights the influence of e-commerce on diverse aspects of life and the role played by payment gateways in enabling secure transactions.
2	Why do people switch mobile payment service platforms? An empirical study in Taiwan, (Kuo, 2020)	The present research examines key factors influencing users' intention to switch from one MPS platform to another, using the push-pull-mooring framework as a theoretical perspective.	Both topics are relevant as they investigate user satisfaction and factors influencing behavior in digital payments. The study focuses on user switching in MPS platforms, while the proposed topic looks at security and satisfaction in e-commerce. Both explore what influences users' choices in using digital payments, with a focus on switching in MPS platforms in the study and on improving security and satisfaction in e-commerce in the proposed topic.
3	Examining actual consumer usage of E-wallet: A case study of	The study aims to identify and categorize various themes related to the use	Both the study and the paragraph discuss different facets of e-wallet usage and

	big data analytics, (Teng & Khong, 2021)	of e-wallets through the application of big data analytics.	mobile payment mechanisms. The study examines user adoption factors, effective strategies for e-wallet business models, competition between bank e-wallets and third-party e-wallets, and challenges like the limited adoption of e-wallets by merchants.
4	The Evolution of E-Commerce Payment, (Lin, 2017)	This study examines the model parameters to demonstrate the strategies and methods for achieving favorable market behavior.	The study is relevant because it also examines market behavior in e-commerce, especially concerning the creation of e-commerce payment markets. It emphasizes the necessity of introducing third-party payment systems to standardize e-commerce trading markets, which is crucial for ensuring the security and satisfaction of users in digital payment methods.
5	A Review of E-Payment System in E-Commerce, (Fatonah et al., 2018)	This study aims to review existing literature on e-payment systems in e-commerce to explore their scope and the methodologies used by previous researchers. This will help identify research gaps and suggest areas for future studies.	The research highlights e-payment systems' importance as an improved substitute for cash, which is in line with the proposed topic's emphasis on user satisfaction and security in digital payments. Both studies aim to examine literature on e-payment systems in e-commerce, with the proposed topic focusing specifically on security and user satisfaction.

Discussion

The analysis of security and user satisfaction in using digital payment methods in e-commerce provides valuable insights into the intricate relationship between these two critical aspects of online transactions (Mahesh & Bhat S, 2022). This discussion delves into the key findings, implications, and future directions derived from the research (Tounekti et al., 2022). The research reveals that security is a paramount concern for both consumers and businesses engaged in e-commerce (Pickering et al., 2022).

The proliferation of cyber threats, including data breaches, identity theft, and payment fraud, underscores the pressing need for robust security measures in digital payment systems (Hauer, 2018). Encryption protocols, authentication mechanisms, and fraud detection systems emerge as crucial components of a comprehensive security framework (Hassan et al., 2020). However, the study highlights the challenges posed by evolving cyber threats and the need for continuous monitoring, adaptation, and innovation in security technologies to stay ahead of malicious actors (Elluri et al., 2023)(Lavanya et al., 2023).

Moreover, compliance with industry standards such as PCI DSS and GDPR is essential for ensuring regulatory compliance and protecting user data privacy in digital payment environments (Hernandez et al., 2021). User satisfaction plays a pivotal role in shaping the success and sustainability of e-commerce platforms. The analysis reveals that user satisfaction is influenced by a myriad of factors, including ease of use, reliability, performance, and perceived value (Tzavlopoulos et al., 2019). Consumers expect seamless and intuitive payment experiences, with minimal friction and maximum convenience (Shin et al., 2020). Any disruptions, delays, or security concerns during the payment process can lead to frustration and dissatisfaction, ultimately impacting user retention and brand loyalty (Kuo, 2020). Therefore, e-commerce stakeholders must prioritize user-centric design principles, optimize transactional processes, and deliver personalized experiences to enhance user satisfaction and drive repeat business (Hellianto et al., 2019).

The research elucidates the complex interplay between security measures and user satisfaction in digital payment methods. While stringent security measures are essential for building trust and confidence among users, overly complex authentication processes or intrusive security checks may impede usability and diminish user satisfaction (Li et al., 2023). Therefore, e-commerce stakeholders must strike a delicate balance between security and user experience considerations. By implementing transparent security measures, educating users about security best practices, and soliciting feedback to iteratively improve user experiences, stakeholders can foster a harmonious relationship between security and user satisfaction in digital payment environments(Sahi et al., 2022).

The study offers practical implications for e-commerce stakeholders to enhance security and user satisfaction in digital payment methods. By investing in cutting-edge security technologies, conducting regular security audits, and fostering a culture of cybersecurity awareness, stakeholders can mitigate security risks and build trust with users (Ardiansah et al., 2020). Simultaneously, by prioritizing user-centric design principles, optimizing transactional processes, and providing responsive customer support, stakeholders can create positive and memorable user experiences that drive satisfaction and loyalty (Frank et al., 2020). Moreover,

proactive communication about security measures and privacy protections can further enhance transparency and trust in digital payment ecosystems (Teng & Khong, 2021).

While this study provides valuable insights into security and user satisfaction in digital payments, several avenues for future research exist (Hwang et al., 2021). Longitudinal studies tracking user behavior and satisfaction over time, cross-cultural comparisons of security perceptions and preferences, and experimental interventions to evaluate the impact of security enhancements on user satisfaction are potential areas for further investigation (Reuter et al., 2022). Additionally, exploring emerging technologies such as blockchain, biometrics, and artificial intelligence in enhancing security and user experiences in digital payments could offer new insights and opportunities for innovation in the e-commerce landscape.

6. CONCLUSION AND SUGGESTION

Conclusion

Research into digital payment security and user satisfaction in e-commerce has yielded valuable insights into factors critical to the success and sustainability of digital payment systems. It has been established that security is paramount in the development and implementation of these systems, given the escalating complexity of cyber threats. Effective security measures, such as data encryption, advanced authentication mechanisms, and real-time fraud detection systems, are essential to mitigate risks such as identity theft, financial information misuse, and financial loss to users. Moreover, user satisfaction plays a pivotal role in driving the adoption and utilization of digital payment methods. Factors such as user-friendly interfaces, seamless payment processes, and responsive customer service are instrumental in enhancing user satisfaction and fostering brand loyalty. A positive user experience not only enhances trust and satisfaction but also encourages users to revisit the e-commerce platform and recommend it to others.

However, it is crucial to strike a balance between security and user satisfaction. While stringent security measures are necessary to establish trust, excessive security measures or complex procedures can hinder user experience and diminish satisfaction. Therefore, e-commerce stakeholders should focus on integrating effective security measures with an intuitive and streamlined user experience.

Although this research has provided valuable insights, there is still room for innovation and improvement in the digital payments ecosystem. Further research is needed to explore emerging trends in cybersecurity, user preferences, and new technologies that can enhance security and user experience in digital payments. In conclusion, the analysis of security and user satisfaction in digital payment methods in e-commerce lays a solid foundation for the future development and enhancement of digital payment systems. By prioritizing security, user experience, and continuous innovation, e-commerce stakeholders can create a digital payment ecosystem that is secure, efficient, and satisfying for all parties involved.

Suggestion

Based on the research findings on digital payment security and user satisfaction in e-commerce, there are several suggestions to enhance the digital payment ecosystem. E-commerce stakeholders should invest more in advanced security infrastructure, such as stronger encryption and real-time fraud detection, to reduce the risk of cyber-attacks and increase user trust. Providing comprehensive cybersecurity education to users is also crucial to help them protect their personal information and recognize fraud signs. Simplifying the user interface, improving transaction speed, and enhancing customer service can enhance the user experience, leading to higher satisfaction and loyalty. Continued research in cybersecurity and digital payment technologies, including blockchain and biometrics, can further improve security and user satisfaction. Implementing these suggestions can create a more secure and efficient digital payment environment, supporting the long-term growth of e-commerce.

7. REFERENCE

Aburaya, R. (2020). Business Analytics of E-Commerce Policy and Practice: An Ethical Perspective. *2020 International Conference on Decision Aid Sciences and Application, DASA 2020*, 761–767. https://doi.org/10.1109/DASA51403.2020.9317117

Aguirre, A. F., Villareal-Freire, A., Diaz, J., Gil, R., & Collazos, C. A. (2019). Extending the Concept of User Satisfaction from Customer Experience. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, *11583 LNCS*, 397–407. https://doi.org/10.1007/978-3-030-23570-3_29

Ahmed, W., Rasool, A., Javed, A. R., Kumar, N., Gadekallu, T. R., Jalil, Z., & Kryvinska, N. (2021). Security in next generation mobile payment systems: A comprehensive survey. *IEEE Access*, *9*, 115932–115950. https://doi.org/10.1109/ACCESS.2021.3105450

Alkhalfan, A. S., Altheeb, Z. W., Alshamsi, N. A., Alothman, H. W., Almarashdeh, I., Alshabanah, M., Alrajhi, D., & Alsmadi, M. K. (2020). Designing and Developing of E-Commerce Website for Unused New Goods Shopping. *International Journal of Scientific Research in Science and Technology*, *7*(2), 215–225. https://doi.org/10.32628/ijsrst207233

Alkhowaiter, W. A. (2020). Digital payment and banking adoption research in Gulf countries: A systematic literature review. *International Journal of Information Management*, *53*(September 2019), 102102. https://doi.org/10.1016/j.ijinfomgt.2020.102102

Alshurideh, M. T., Al Kurdi, B., AlHamad, A. Q., Salloum, S. A., Alkurdi, S., Dehghan, A., Abuhashesh, M., & Masa'deh, R. (2021). Factors affecting the use of smart mobile examination platforms by universities' postgraduate students during the COVID-19 pandemic: An empirical study. *Informatics*, *8*(2). https://doi.org/10.3390/informatics8020032

Amin, M. R., Hussin, H., Suhaimi, M. A., Kartiwi, M., & Mohamed, M. J. (2016). E-Business Capability and Value among Retail SMEs: Some Empirical Evidence from Malaysia. *E-Learning, e-Management and e-Services (IC3e)*, 79–84.

Ardiansah, M. N., Chariri, A., Rahardja, S., & Udin. (2020). The effect of electronic payments security on e-commerce consumer perception: An extended model of technology acceptance. *Management Science Letters*, *10*(7), 1473–1480. https://doi.org/10.5267/j.msl.2019.12.020

Boutaher, N., Elomri, A., Abghour, N., Moussaid, K., & Rida, M. (2020). A Review of Credit Card Fraud Detection Using Machine Learning Techniques. *Proceedings of 2020 5th International*

Conference on Cloud Computing and Artificial Intelligence: Technologies and Applications, CloudTech 2020. https://doi.org/10.1109/CloudTech49835.2020.9365916

Chatterjee, P., Bose, R., Banerjee, S., & Roy, S. (2023). Enhancing Data Security of Cloud Based LMS. *Wireless Personal Communications*, *130*(2), 1123–1139. https://doi.org/10.1007/s11277-023-10323-5

Cheng, C. C., Chang, Y. Y., & Chen, C. T. (2021). Construction of a service quality scale for the online food delivery industry. *International Journal of Hospitality Management*, *95*(March), 102938. https://doi.org/10.1016/j.ijhm.2021.102938

Dragomirov, N. (2020). E-Commerce Platforms and Supply Chain Management – Functionalities Study. *Economic Alternatives*, *26*(2), 250–261. https://doi.org/10.37075/EA.2020.2.04

Elluri, L., Mandalapu, V., Vyas, P., & Roy, N. (2023). Recent Advancements in Machine Learning for Cybercrime Prediction. *Journal of Computer Information Systems*, *2020*, 1–21. https://doi.org/10.1080/08874417.2023.2270457

Fatonah, S., Yulandari, A., & Wibowo, F. W. (2018). A Review of E-Payment System in E-Commerce. *Journal of Physics: Conference Series*, *1140*(1). https://doi.org/10.1088/1742-6596/1140/1/012033

Frank, L., Poll, R., Röglinger, M., & Rupprecht, R. (2020). Design heuristics for customer-centric business processes. *Business Process Management Journal*, *26*(6), 1283–1305. https://doi.org/10.1108/BPMJ-06-2019-0257

Hassan, M. A., Shukur, Z., Hasan, M. K., & Al-Khaleefa, A. S. (2020). A review on electronic payments security. *Symmetry*, *12*(8), 1–24. https://doi.org/10.3390/sym12081344

Hauer, B. (2018). Data and information leakage prevention within the scope of information security. *IEEE Access*, *3*, 2554–2565. https://doi.org/10.1109/ACCESS.2015.2506185

Hellianto, G. R., Suzianti, A., & Komarudin. (2019). User experience modeling on consumer-to-consumer (c2c) e-commerce website. *IOP Conference Series: Materials Science and Engineering*, *505*(1). https://doi.org/10.1088/1757-899X/505/1/012080

Hernandez, N., Castro, L., Medina-Quero, J., Favela, J., Michan, L., & Mortenson, W. Ben. (2021). Scoping Review of Healthcare Literature on Mobile, Wearable, and Textile Sensing Technology for Continuous Monitoring. *Journal of Healthcare Informatics Research*, *5*(3), 270–299. https://doi.org/10.1007/s41666-020-00087-z

Hwang, Y., Park, S., & Shin, N. (2021). Sustainable development of a mobile payment security environment using fintech solutions. *Sustainability (Switzerland)*, *13*(15), 1–15. https://doi.org/10.3390/su13158375

Intal, G. L., Payas, J. D., Fernandez, L. M., & Domingo, B. M. (2020). Restaurant Information System (RIS) with QR Code to Improve Service Operations of Casual Fine Dining Restaurant. *2020 IEEE 7th International Conference on Industrial Engineering and Applications, ICIEA 2020*, 1054–1059. https://doi.org/10.1109/ICIEA49774.2020.9102036

Kano, K., Choi, L. K., Riza, B. subhan, & Dinda octavyra, R. (2022). Implications of Digital Marketing Strategy The Competitive Advantages of Small Businesses in Indonesia. *Startupreneur Business Digital (SABDA Journal)*, *1*(1), 44–62. https://doi.org/10.34306/sabda.v1i1.72

Kedah, Z. (2023). Use of E-Commerce in The World of Business. *Startupreneur Business Digital (SABDA Journal)*, *2*(1), 51–60. https://doi.org/10.33050/sabda.v2i1.273

Khan, M. J. (2023). Zero trust architecture: Redefining network security paradigms in the digital

age. *World Journal of Advanced Research and Reviews*, *19*(3), 105–116. https://doi.org/10.30574/wjarr.2023.19.3.1785

Kharfan, M., Chan, V. W. K., & Firdolas Efendigil, T. (2021). A data-driven forecasting approach for newly launched seasonal products by leveraging machine-learning approaches. *Annals of Operations Research*, *303*(1–2), 159–174. https://doi.org/10.1007/s10479-020-03666-w

Khaskheli, A., & Jun, Y. (2016). A Review on the Importance of E-Commerce for SMEs in Pakistan. *Journal on Innovation and Sustainability. RISUS ISSN 2179-3565*, *7*(1), 11. https://doi.org/10.24212/2179-3565.2016v7i1p11-17

Kuo, R. Z. (2020). Why do people switch mobile payment service platforms? An empirical study in Taiwan. *Technology in Society*, *62*(June 2020), 101312. https://doi.org/10.1016/j.techsoc.2020.101312

Li, J., Arora, S. S., Fawaz, K., Kim, Y., Liu, C., Meiser, S., Minaei, M., Shirvanian, M., & Wagner, K. (2023). *How Interactions Influence Users' Security Perception of Virtual Reality Authentication? 3*(5). http://arxiv.org/abs/2303.11575

Lin, C. (2017). The Evolution of E-Commerce Payment. *Technology and Investment*, *08*(01), 56–66. https://doi.org/10.4236/ti.2017.81005

Mahesh, A., & Bhat S, G. (2022). A Systematic Review and Research Agenda of Digital Payment System with reference to Unified Payment Interface. In *International Journal of Management, Technology, and Social Sciences* (Vol. 7, Issue 2). https://doi.org/10.47992/ijmts.2581.6012.0245

Man, M. M. K., & Yang, L. R. (2023). Factors Affecting Customer Satisfaction in Purchasing Car. *International Journal of Marketing Studies*, *15*(1), 12. https://doi.org/10.5539/ijms.v15n1p12

Mary, M., Priyadharsini, M., Karuppasamy, K., & Sharmila, M. F. (2021). *Online Transaction Fraud Detection System*. *7*(9), 15–17.

Naeem, M., Hameed, M., & Taha, M. S. (2020). A study of electronic payment system. *IOP Conference Series: Materials Science and Engineering*, *767*(1). https://doi.org/10.1088/1757-899X/767/1/012008

Ndolu, N., Dandira, T., & Chimbindi, F. (2022). Exploring Factors Leading to Customer Loyalty to Fashion Brands: A Case Study of Harare, Zimbabwe. *Chitrolekha Journal on Art and Design*, *5*(1), 1–21. https://doi.org/10.21659/cjad.51.v5n105

Nowroozi, E., Seyedshoari, S., Mekdad, Y., Savaş, E., & Conti, M. (2023). Cryptocurrency Wallets: Assessment and Security. *Advances in Information Security*, *102*(March 2022), 1–19. https://doi.org/10.1007/978-3-031-25506-9_1

Nwagu, K., Okanya, O. C., & Okafor, M. C. (2021). Impact of Digital Finance Technologies on Agricbusiness Development in Nigeria. *Revista Gestão Inovação e Tecnologias*, *11*(4), 1729–1750. https://doi.org/10.47059/revistageintec.v11i4.2232

Pickering, D., Serafimovska, A., Cho, S. J., Blaszczynski, A., & Gainsbury, S. M. (2022). Online self-exclusion from multiple gambling venues: Stakeholder co-design of a usable and acceptable self-directed website. *Internet Interventions*, *27*, 100491. https://doi.org/10.1016/j.invent.2021.100491

Reuter, C., Iacono, L. Lo, & Benlian, A. (2022). A quarter century of usable security and privacy research: transparency, tailorability, and the road ahead. *Behaviour and Information Technology*. https://doi.org/10.1080/0144929X.2022.2080908

Sahi, A. M., Khalid, H., Abbas, A. F., Zedan, K., Khatib, S. F. A., & Amosh, H. Al. (2022). The

Research Trend of Security and Privacy in Digital Payment. *Informatics*, *9*(2). https://doi.org/10.3390/informatics9020032

Saong, M., Zuñiga, E., & Palmares, K. (2023). Satisfaction with and Challenges of Bank Remittance in Student Payments in the Philippines. *International Journal of Academe and Industry Research*, *4*(3), 20–36. https://doi.org/10.53378/353001

Sarkam, N. A., Mohamad Razi, N. F., Mohammad, N. H., Jamil, N. I., & Kurniawati, L. (2022). Attitudes, Security, and Perceived Ease of Use Influence The Consumers' Decision to Use An E-payment System. *International Journal of Academic Research in Business and Social Sciences*, *12*(3), 357–368. https://doi.org/10.6007/ijarbss/v12-i3/12884

Shin, N., Park, S., & Kim, H. (2020). Consumer satisfaction–based social commerce service quality management. *BRQ Business Research Quarterly*, *24*(1), 34–52. https://doi.org/10.1177/2340944420916098

Sumanjeet, S. (2019). Emergence of payment systems in the age of electronic commerce: The state of art. *1st South Central Asian Himalayas Regional IEEE/IFIP International Conference on Internet, AH-ICI 2009*, 1–18. https://doi.org/10.1109/AHICI.2009.5340318

Surawijaya, A. A., Muljono, P., & Najib, M. (2021). Valuation of Service Quality and Innovation of Bogor City Public Service Mall. *Jurnal Aplikasi Manajemen*, *19*(1), 44–54. https://doi.org/10.21776/ub.jam.2021.019.01.05

Teng, S., & Khong, K. W. (2021). Examining actual consumer usage of E-wallet: A case study of big data analytics. *Computers in Human Behavior*, *121*(October 2020), 106778. https://doi.org/10.1016/j.chb.2021.106778

Tiewul, M. (2020). Factors Influencing Digital Marketing and Digital Payment on Consumer Purchase Behaviour. *International Journal of Applied Research in Management and Economics*, *3*(3), 39–45.

Tounekti, O., Ruiz-Martínez, A., & Skarmeta Gomez, A. F. (2022). Research in Electronic and Mobile Payment Systems: A Bibliometric Analysis. *Sustainability (Switzerland)*, *14*(13). https://doi.org/10.3390/su14137661

Tzavlopoulos, I., Gotzamani, K., Andronikidis, A., & Vassiliadis, C. (2019). Determining the impact of e-commerce quality on customers' perceived risk, satisfaction, value and loyalty. *International Journal of Quality and Service Sciences*, *11*(4), 576–587. https://doi.org/10.1108/IJQSS-03-2019-0047

Xiaoxiao, B., & Wenming, L. (2018). Research on the application of color semantics in the human-computer interaction design of smartphones. *MATEC Web of Conferences*, *176*, 4–6. https://doi.org/10.1051/matecconf/201817604001

Yadav, P. D. (2021). Attracting Small Businesses to Come Online and Promoting Them to Increase Their Business Growth During the COVID-19 Pandemic. *International Journal for Research in Applied Science and Engineering Technology*, *9*(VI), 3422–3426. https://doi.org/10.22214/ijraset.2021.35760

Zeng, F., Tao, R., Yang, Y., & Xie, T. (2017). How social communications influence advertising perception and response in online communities? *Frontiers in Psychology*, *8*(AUG), 1–12. https://doi.org/10.3389/fpsyg.2017.01349

Zhou, R., Shao, S., Li, W., & Zhou, L. (2016). How to define the user's tolerance of response time in using mobile applications. *IEEE International Conference on Industrial Engineering and Engineering Management*, *2016-December*, 281–285.

https://doi.org/10.1109/IEEM.2016.7797881