Service Transformation through Technology the Role of AI and Big Data in Service Science

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ABSTRACT

The development of information and communication technology (ICT), including artificial intelligence (AI) and big data, has had a significant impact on the field of Service Science, particularly in the development and delivery of services. This technology enables companies to design services that are more efficient, personalized, and responsive to customer needs. By using AI, companies can automate various processes and make data-driven decisions, while big data provides deeper insights into customer behavior, enabling more effective service personalization. Although there are significant benefits, the use of this technology also presents challenges, such as data privacy issues, ethics, and system integration. Therefore, companies need to take careful steps in implementing this technology, including involving trained employees, and ensuring that security and privacy policies are well applied. Success in leveraging this technology will enable the company to improve service quality, create a better customer experience, and optimize their business strategy in the long term.

INTRODUCTION

The role of information and communication technology (ICT) has evolved from merely supporting operations to becoming the main driver of service transformation in various sectors. Technological advances such as artificial intelligence (AI) and big data not only automate processes, but fundamentally change the way companies interact with customers. By utilizing AI to analyses customer data in real time, companies can shift from a reactive service model to a proactive and highly personalized service that directly responds to the individual needs and behavior of users (Egbuhuzor et al., 2021).

While AI enables smarter responses, big data serves as a strategic foundation by providing comprehensive and in-depth insights into consumer behavior patterns and market dynamics (Nagano, 2018). Analysis of this big data allows companies to not only adapt to but also anticipate changes in customer preferences, enabling them to develop more accurate and relevant service strategies. The synergy between AI and big data ultimately not only improves the quality of services operationally, but also paves the way for the creation of more adaptive, sustainable, and competitive business models amid an ever-changing digital landscape (Porter & Heppelmann, 2014).

In the service sector, the adoption of ICT technology focuses on enhancing interactions with customers by utilizing digital platforms to facilitate faster and more efficient communication (Aithal & Aithal, 2019). For example, AI-based chatbots can provide customer service 24/7, while predictive analytics can help companies design service offerings that better align with consumer preferences (Schanke & Ray, 2021). Additionally, the integration of technology in service processes also enables companies to manage internal operations more efficiently, reduce operational costs, and increase productivity. Therefore, the role of technology in Service Science becomes very vital in shaping the future of services across various industries (Harris & Goode, 2010). However, this technological reshaping of services inevitably reshapes the workplace itself. The same AI and automation that optimize customer interactions and internal operations also redefine job roles, skill requirements, and the work environment. This human dimension of technological adoption is

critical. Darmawan (2020) addresses this directly by examining the health, well-being, and productivity of senior employees a demographic potentially vulnerable to digital disruption in the era of artificial intelligence.

Although information and communication technology offers many benefits, its implementation in the development and delivery of services often presents several issues that need to be addressed (Aceto et al., 2018). One of the main issues is the high dependence on data collected from customers and the analysis processes conducted to improve services. Although big data collection provides insights, challenges arise when the data is not fully accurate or representative, which can lead to less precise decisions (Brynjolfsson & McAfee, 2014). Crucially, this dependence on data also raises significant issues related to the privacy and security of customer information, which must be strictly maintained. This challenge elevates the topic from a technical concern to a strategic and ethical imperative. In this context, Gardi and Eddine (2023) emphasize the urgency of addressing cybersecurity and personal data protection in the digital age, highlighting the need for global collaboration to mitigate risks and build trust in data-driven services.

Aziz et al. (2023) highlight that the effectiveness of personal data protection regulations, such as those in Indonesia's fintech sector, is crucial for establishing systemic trust in digital services. However, regulatory compliance alone is insufficient to foster deep customer loyalty. Trust must also be cultivated at the point of service interaction itself. Here, the implementation of technologies like Artificial Intelligence presents a double-edged sword. Although AI can provide automated solutions in customer interactions, this can reduce the human touch that is still considered important in some types of services. The use of AI in customer interactions can create gaps in the customer experience, where some customers feel dissatisfied or not treated personally (Glikson & Woolley, 2020). This is also related to customer trust issues regarding decisions made by AI algorithms, which, if not fully understood, can lead to distrust or dissatisfaction with the company providing the service (Parasuraman, 2000; Lee, 2018).

The adoption of technology in Service Science requires greater attention because it changes the way services are delivered and creates new challenges that must be managed carefully. Without an understanding of the effective application of ICT technology, companies risk losing opportunities to create more value for customers and, ultimately, for the business itself. Therefore, understanding how technology can effectively enhance services is crucial

to ensure that these innovations provide optimal benefits without introducing unnecessary risks for the company or customers.

The purpose of this discussion is to analyse how information and communication technology, including artificial intelligence (AI) and big data, affects the development and delivery of services in Service Science. The main focus is to understand how this technology can improve service quality, optimize customer experience, and provide more efficient solutions, while also considering the challenges that may arise, such as issues related to privacy, data security, and the human touch in customer interactions.

RESEARCH METHOD

The literature review approach in analyzing the role of technology in Service Science provides a strong foundation for understanding the dynamics of information and communication technology (ICT) usage, particularly AI and big data, in the development and delivery of services. This method utilizes various relevant literature sources, such as journal articles, books, and research reports that review related topics. In this case, the literature review allows researchers to delve deeper into the understanding of technology application in the service sector, while also exploring the theories underlying the concept. For example, the research by Vargo and Lusch (2008) related to Service-Dominant Logic (SDL) provides important insights into how services become the core of value creation, increasingly driven by technological innovation. Additionally, literature studies also help identify various challenges faced by companies in implementing technologies such as AI and big data in services, as well as their impact on customer experience (Bettencourt, 2010).

This method also allows for comparative analysis between different studies on the application of technology in services. Researchers can assess the similarities and differences in previous research findings, as well as identify certain patterns that can be linked to the latest developments in the field of Service Science. For example, the research by Huang and Benyoucef (2013) shows how social media and digital platforms play an important role in the influence of technology on customer experience in the service sector. By reviewing this various literature, researchers can understand the trends and evolution of ICT usage in enhancing operational effectiveness and service quality, as well as recognize the successes or failures of the implementation of these technologies in the real world.

Additionally, the literature review approach also provides space to develop relevant theoretical frameworks in understanding how technology interacts with social, cultural, and economic factors in the service sector. It is also important to understand the ethical implications arising from the use of technology in services, such as data privacy issues and customer trust. This kind of socio-technical analysis is exemplified in literature studies like the one by Wahyudi et al. (2021), which explores the profound implications of big data on social structures and everyday life. Similarly, studies such as those conducted by Lusch and Nambisan (2015) focus on how Service Science can be integrated with technology to optimize value creation in business and society. Thus, the literature review approach gathers existing data and information, providing insights into various technological dimensions within Service Science from business integration to social impact that can be expanded for further research.

RESULT AND DISCUSSION

The development of information and communication technology (ICT) has brought significant changes to various industrial sectors, particularly in the field of Service Science. This technology, which includes artificial intelligence (AI) and big data, enables companies to redefine how they develop and deliver services to customers. In an increasingly connected world, companies are required to be able to adapt quickly to changing needs and increasingly intense competition.

ICT offers various solutions that can improve operational efficiency and reduce costs. Moreover, this technology also enables the creation of a better customer experience through more personalized, responsive and valuable services (Kim, 2019). Thus, the adoption of ICT is no longer just an option, but a strategic necessity to survive and excel in the modern business landscape.

AI and big data are fundamentally reshaping service delivery. The AI, which is used for process automation and data analysis, provides companies with the ability to accelerate responses and improve accuracy in decision-making. Meanwhile, big data, with its ability to process large amounts of information, provides deeper insights into customer behavior, allowing services to be tailored to individual needs (Zhang & Xiao, 2022). This transformation enables companies to offer more personalized and responsive services (Acosta-Prado & Tafur-Mendoza, 2021). These principles find a critical and impactful application in the healthcare sector. As Khayru (2022) explores, artificial intelligence is a powerful force transforming healthcare by enabling faster diagnostics, personalized treatment plans, and improved patient outcomes directly applying the concepts of automation, data-driven insight, and service personalization to one of society's most vital services.

However, despite the many benefits brought by this technology, there are various challenges that need to be addressed. Issues such as data privacy, dependence on technology, and difficulties in system integration become obstacles that require serious attention (Ghazinoory & Jamali, 2013; Eckhoff & Wagner, 2017). Therefore, understanding the role of technology in Service Science, as well as its impact on the development and delivery of services, is crucial to ensure that companies can maximize and ethically utilize this technological potential (Huda, 2019). As technology, particularly AI, becomes more embedded in managerial functions, the ethical dimension highlighted by Huda (2019) demands specific frameworks. This brings us to the core concern raised by Gani and Darmawan (2022), who explicitly examine ethics and accountability in artificial intelligence-based managerial decision making.

Information and communication technology (ICT) has revolutionized many aspects of human life, including the development and delivery of services. In Service Science, this technology enables companies to optimize their services in ways that were previously unimaginable (Benlian et al., 2018). Artificial intelligence (AI) and big data, as the two main components of ICT, have a significant impact on how services are delivered and how companies can enhance customer experience (Hoyer et al., 2020). The AI enables the automation of various processes, such as data processing and customer interactions, while big data provides deeper insights into customer behavior patterns and preferences, which can be used to design services that better meet their needs. However, this data-driven transformation extends beyond external customer data to encompass all sensitive information within an organization, including employee data. As companies increasingly rely on digital systems, safeguarding this internal data becomes a critical foundation for trust and operational integrity. This is exemplified in the work of Costa et al. (2023), who explore the application of blockchain technology specifically for safeguarding employee data within Human Resources departments, highlighting how advanced ICT can also be directed inward to secure the very workforce that enables service innovation.

In the field of Service Science, the application of artificial intelligence (AI) often focuses on improving

operational efficiency and service quality simultaneously. For example, in customer service, chatbots and AI-based systems can automate communication, provide quick and accurate responses, and resolve various issues without requiring human intervention (Androutsopoulou et al., 2019). These applications not only reduce the operational workload but also ensure consistent service availability. On the other hand, AI is also utilized in data analysis to identify patterns and predict customer needs, enabling services to become more proactive and personalized.

However, despite its highly advanced capabilities, AI technology still has limitations that require critical attention. The use of AI in automated decision-making has the potential to produce errors if the algorithms used are based on biased or unrepresentative data. Therefore, human oversight remains an essential component to ensure that AI-generated decisions remain relevant, contextual, and in line with applicable ethical principles (Bostrom, 2014). In other words, optimizing AI in Service Science is not about completely replacing the role of humans, but rather about creating synergistic collaboration where AI manages routine and analytical tasks, while humans provide judgement, empathy, and ethical oversight that cannot be replaced by machines.

Big data provides companies with the ability to collect and analyze large volumes of information that can be used to understand customer behavior more deeply (Erevelles et al., 2016). Data from communication channels, transactions, and customer interactions can reveal hidden patterns, enabling companies to better tailor services to customer expectations. For example, retail companies can use big data to personalize the shopping experience by adjusting product recommendations based on past consumer behavior (McKinsey & Company, 2011).

Khairi and Darmawan (2022) argue that developing HR capabilities in data analysis is a prerequisite for effective organizational decision-making. This human capital foundation is essential because it enables organizations to not only adopt but also strategically leverage advanced technologies. Putra and Arifin (2021) emphasize that digital transformation through big data, artificial intelligence (AI), and the Internet of Things (IoT) is a critical foundation for optimizing supply chain management in the manufacturing industry. This optimization not only improves operational efficiency but also paves the way for more sustainable business models. Furthermore, AI and big data enable companies to create more sustainable

service-based business models. Data-based services can help companies use resources more efficiently, which in turn reduces the environmental impact of their business operations. For example, by utilizing big data, companies can predict demand more accurately, thereby reducing waste and optimizing inventory (Wang et al., 2016). Similarly, the use of AI in energy management or predictive maintenance can help companies operate more efficiently, reducing energy consumption and waste generated.

In the healthcare sector, the use of artificial intelligence (AI) and big data has shown great potential in transforming medical practices. AI is used to analyses massive amounts of medical data such as radiological images, electronic health records, and genomic data to detect diseases, such as cancer or neurological conditions, at an earlier stage with increased accuracy. Furthermore, this technology enables the design of more personalized treatment plans that take into account each patient's unique biological profile and history, as well as predicting health outcomes for more timely interventions.

Meanwhile, big data plays an important role in optimizing healthcare facility operations. Analysis of patient flow, bed occupancy patterns, and medical equipment utilization can help hospitals and clinics manage their resources more efficiently, reduce waiting times, and minimize waste (Raghupathi & Raghupathi, 2014; Dash et al., 2019). The synergy between AI for clinical decision-making and big data for operational efficiency ultimately results in an overall improvement in the quality of healthcare services. This transformation not only promotes higher treatment effectiveness but also enables faster and more efficient service delivery, which in turn improves accessibility and health outcomes for the population.

However, despite the many benefits that AI and big data provide, the implementation of this technology in service delivery is not without various challenges. One of the main issues is the limitations in understanding and managing very large data sets. Many companies struggle to manage and analyze big data effectively, leading to errors in decision-making (Tabesh et al., 2019). The collection and storage of customer data also raise issues related to data privacy and security, which are becoming increasingly major concerns in the use of this technology (Mayer-Schönberger & Cukier, 2013).

Additionally, the adoption of AI in services can lead to a decrease in human interaction, which is considered important in certain types of services (Adam et al., 2021). Customers may feel that the services provided are not personal or empathetic

enough, especially in sectors like healthcare or finance. This erosion of the human touch points to a broader ethical consideration in the digital age: the preservation of human-centric values. AI can improve efficiency, but the human touch is often needed for a satisfying experience (Huang & Rust, 2018). This debate extends beyond service quality to touch upon fundamental human rights in digital interactions. In a similar vein, Issalillah and Hardyansah (2024) critically analyze personal data protection, arguing for its relevance within the sphere of human rights. Thus, finding the right balance between automation and human interaction is not just a business strategy, but part of a larger imperative to design technology that respects and enhances human dignity and rights.

From a management perspective, companies must ensure that their staff have the necessary skills to work with this technology. Training employees in using AI-based tools and big data analytics is crucial to ensure that the company can maximize the use of this technology. This is also important to address issues related to customer trust, as many consumers may feel anxious about decisions made by AI algorithms without a clear understanding of how these systems work (O'Neil, 2016). This imperative for workforce upskilling and readiness is supported by strategic analysis. Aisyah (2023), for instance, examines the potential of big data in organizations by identifying the key determinants and predictors that shape an effective and adaptable workforce in the data-driven era, providing a framework for understanding which skills and factors are most critical for success.

In addition to data issues, another challenge that often arises is the difficulty of integrating new technology into existing infrastructure. Many companies face obstacles in adopting AI and big data because they are constrained by outdated and inflexible information technology (IT) infrastructure. The inability of old systems to communicate with new technology platforms can create significant technical barriers, hindering the flow of data and automation processes that are central to service improvement.

Ultimately, ineffective system integration is not only a technical problem, but also undermines the true potential of this technology to improve service quality and overall operational efficiency (Westerman et al., 2014; Lee & Yoon, 2021). Investment in cutting-edge technology will be less than optimal if it is not supported by an adequate infrastructure foundation. Therefore, it is important for companies to not only focus on purchasing technology solutions, but also to engage in careful strategic planning related to infrastructure modernization. This planning must include an assessment of infrastructure readiness, mapping of the integration roadmap, and adequate resource allocation to ensure a smooth transition and the sustainability of technology investments in the long term.

In addition to the existing challenges, ICT technologies such as AI and big data can also help companies improve their responsiveness to market changes and customer needs. Companies that can effectively leverage data can identify trend changes more quickly and adjust their services to remain relevant. For example, in the tourism industry, the use of big data can help travel agents adjust their offerings based on rapidly changing customer preferences (Line et al., 2020). This allows companies to remain competitive in a highly dynamic market (Gretzel et al., 2015).

Furthermore, related to customer experience, this technology enables companies to provide more proactive and predictive services. By using existing data, companies can predict customer needs before they even realize those needs. For example, an AI-based system can provide service or product recommendations to customers that they are likely to want based on their previous behavior and preferences (Brynjolfsson & McAfee, 2014; Wien & Peluso, 2021). This data-driven approach not only delivers a more tailored experience but also increases customer satisfaction and has the potential to significantly boost customer loyalty and lifetime value.

Information and communication technology, including AI and big data, have great potential in influencing the development and delivery of services in Service Science. This technology enhances operational efficiency and enables greater personalization in customer experiences, which in turn can increase satisfaction and loyalty (Bilgihan et al., 2016). However, to maximize the benefits of this technology, companies need to face various challenges, including issues related to data privacy, reliance on technology, and effective system integration (Wang et al., 2019). To navigate these challenges and truly harness the power of data, effective management is paramount. This is where the focus shifts to operational strategy, as discussed by Ali and Darmawan (2023) in their study on big data management optimization for managerial decision-making and business strategy. The data privacy challenge, in particular, underscores the critical importance of robust legal and supervisory frameworks. Therefore, the adoption of this

technology must be carried out with careful planning, strategic investment, and a deep understanding of its legal and operational implications.

In the future, the role of technology in Service Science is expected to become increasingly dominant. Information and communication technology, especially AI and big data, provide significant opportunities for companies to improve the quality of their services, reduce operational costs, and enhance customer experience. By leveraging this technology, companies can design services that are more innovative, faster, and personalized (Reis et al., 2022). However, to achieve optimal results, companies must ensure that they adopt this technology with a wise and planned approach.

Although technology can provide many benefits, it is important for companies to consider ethical and privacy aspects in its use. The collection and analysis of customer data must be conducted with transparency and respect for individual rights. Additionally, the company must involve trained and competent personnel to handle this advanced technology so that the benefits obtained can be maximized and accepted by all parties. This will also help maintain customer trust and reduce the potential risks that may arise from the implementation of technology.

Overall, the integration of technology in Service Science opens up various new possibilities to enhance the quality and effectiveness of services. However, the success of implementing this technology highly depends on the company's ability to overcome existing challenges and optimize the use of this technology in their business strategies. With the right approach, this technology can become a highly valuable tool in creating sustainable value for companies and their customers.

CONCLUSION

Information and communication technology (ICT), particularly artificial intelligence (AI) and big data, have brought significant changes in the development and delivery of services in Service Science. ICT enables companies to create services that are more personal, efficient, and responsive to customer needs. Through the use of AI, service process automation and data-driven decision-making can be done more quickly and accurately. Big data allows companies to gather insights into customer behavior, enabling better and more relevant service adjustments to meet customer expectations. Although this technology provides many opportunities, challenges related to privacy, ethics, and system integration must be addressed to

maximize the benefits of the technology without neglecting customer rights and company interests.

To maximize the use of this technology, companies must adapt to the changes that occur with a planned and careful approach. This includes training human resources to manage and use advanced technology wisely, as well as paying attention to the aspects of security and customer data privacy. Additionally, companies must maintain a balance between the automation provided by AI and human interaction in services to preserve the quality of customer relationships. The proper implementation of AI and big data will enable companies to remain competitive, create better customer experiences, and optimize long-term business strategies.

REFERENCES

Aceto, G., Persico, V., & Pescapé, A. (2018). The role of Information and Communication Technologies in Healthcare: Taxonomies, Perspectives, and Challenges. *Journal of Network and Computer Applications*, *107*(1), 125-154.

Acosta-Prado, J. C., & Tafur-Mendoza, A. A. (2023). Influence of Information and Communication Technologies on Customer Satisfaction and Increase in the Number of Customers. *VINE Journal of Information and Knowledge Management Systems*, *53*(3), 377-386.

Adam, M., Wessel, M., & Benlian, A. (2021). AI-Based Chatbots in Customer Service and their Effects on User Compliance. *Electronic Markets*, *31*(2), 427-445.

Aisyah, N. (2023). The Potential of Big Data in Organizations: Determinants and Predictors of Workforce. *International Journal of Service Science, Management, Engineering, and Technology*, 3(3), 43–46.

Aithal, P. S., & Aithal, S. (2019). Digital Service Innovation using ICCT Underlying Technologies. In *Proceedings of International Conference on Emerging Trends in Management, IT and Education*, 1(1), 33-63.

Ali, R., & Darmawan, D. (2023). Big Data Management Optimization for Managerial Decision Making and Business Strategy. *Journal of Social Science Studies,* 3(2), 139-144.

Androutsopoulou, A., Karacapilidis, N., Loukis, E., & Charalabidis, Y. (2019). Transforming the Communication between Citizens and Government through AI-guided Chatbots. *Government Information Quarterly*, *36*(2), 358-367.

Aziz, A., Darmawan, D., Khayru, R. K., Wibowo, A.

S., & Mujito. (2023). Effectiveness of Personal Data Protection Regulation in Indonesia's Fintech Sector. *Journal of Social Science Studies*, 3(1), 23-28.

Baraja, M. U., Saputra, R., Saktiawan, P., Dirgantara, F., & Waskito, S. (2023). Implementation and Supervision of Personal Data Protection Law on Online Platforms. *Journal of Social Science Studies*, 3(1), 101-108.

Benlian, A., Kettinger, W. J., Sunyaev, A., Winkler, T. J., & Guest Editors. (2018). The Transformative Value of Cloud Computing: A Decoupling, Platformization, and Recombination Theoretical Framework. *Journal of Management Information Systems*, 35(3), 719-739.

Bettencourt, L. A. (2010). Service Innovation and Customer Experience Management. *Journal of Service Management*, 21(4), 426-439.

Bilgihan, A., Kandampully, J., & Zhang, T. (2016). Towards a Unified Customer Experience in Online Shopping Environments: Antecedents and Outcomes. *International Journal of Quality and Service Sciences*, *8*(1), 102-119.

Bostrom, N. (2014). *Superintelligence: Paths, Dangers, Strategies*. Oxford University Press, Oxford.

Brynjolfsson, E., & McAfee, A. (2014). *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. W.W. Norton & Company, New York.

costa, S. da., Darmawan, D., & Isaac, A. de J. (2023). Safeguarding Employee Data with Blockchain in HR. *International Journal of Service Science, Management, Engineering, and Technology*, 4(3), 41–46.

Darmawan, D. (2020). Health, Well-Being, and Productivity of Senior Employees in the Era of Artificial Intelligence. *Journal of Science, Technology and Society (SICO)*, 1(2), 43–50.

Dash, S., Shakyawar, S. K., Sharma, M., & Kaushik, S. (2019). Big Data in Healthcare: Management, Analysis and Future Prospects. *Journal of Big Data*, *6*(1), 1-25.

Eckhoff, D., & Wagner, I. (2017). Privacy in the Smart City—Applications, Technologies, Challenges, And Solutions. *IEEE Communications Surveys & Tutorials*, 20(1), 489-516.

Egbuhuzor, N. S., Ajayi, A. J., Akhigbe, E. E., Agbede, O. O., Ewim, C. P. M., & Ajiga, D. I. (2021). Cloud-Based CRM Systems: Revolutionizing Customer Engagement in the Financial Sector with Artificial Intelligence. *International Journal of Science and Research Archive*, *3*(1), 215-234.

Erevelles, S., Fukawa, N., & Swayne, L. (2016). Big Data Consumer Analytics and the Transformation of Marketing. *Journal of Business Research*, *69*(2), 897-904.

Gani, A., & Darmawan, D. (2022). Ethics and Accountability in Artificial Intelligence-Based Managerial Decision Making. *Journal of Social Science Studies*, 2(1), 147-152.

Gardi, B., & Eddine, B. A. S. (2023). Cyber Security and Personal Data Protection in the Digital Age: Challenges, Impacts, and Urgency of Global Collaboration. *Bulletin of Science, Technology and Society*, 2(3), 58–63.

Ghazinoory, S., & Jamali, R. (2013). Information and Communication Technology: Between a Rock and a Hard Place of Domestic and International Pressures. In *Science and Innovations in Iran: Development, Progress, and Challenges. New York: Palgrave Macmillan US*, 87-113.

Glikson, E., & Woolley, A. W. (2020). Human Trust in Artificial Intelligence: Review of Empirical Research. *Academy of Management Annals*, *14*(2), 627-660.

Gretzel, U., Sigala, M., Xiang, Z., & Koo, C. (2015). Smart Tourism: Foundations and Developments. *Electronic Markets*, *25*(1), 179-188.

Harris, L. C., & Goode, M. M. H. (2010). Online Servicescapes, Trust, and Purchase Intentions. *Journal of Services Marketing,* 24(3), 230-243.

Hoyer, W. D., Kroschke, M., Schmitt, B., Kraume, K., & Shankar, V. (2020). Transforming the Customer Experience through New Technologies. *Journal of Interactive Marketing*, *51*(1), 57-71.

Huang, M. H., & Rust, R. T. (2018). Artificial Intelligence in Service. *Journal of Service Research*, *21*(2), 155-172.

Huang, Z., & Benyoucef, M. (2013). From E-Commerce to Social Commerce: A Close Look at Design Features. *Electronic Commerce Research and Applications,* 12(1), 24-24.

Huda, M. (2019). Empowering Application Strategy in the Technology Adoption: Insights from Professional and Ethical Engagement. *Journal of Science and Technology Policy Management*, *10*(1), 172-192.

Issalillah, F., & Hardyansah, R. (2024). Relevance of Privacy within the Sphere of Human Rights: A Critical Analysis of Personal Data Protection. *Bulletin of Science, Technology and Society*, 3(1), 31–39.

Khairi, M., & Darmawan, D. (2022). Developing HR Capabilities in Data Analysis for More Effective Decision Making in Organizations. *Journal of Social Science Studies,* 2(1), 223-228.

Khayru, R. K. (2022). Transforming Healthcare: The Power of Artificial Intelligence. *Bulletin of Science, Technology and Society,* 1(3), 15–19.

Kim, B. (2019). ICT-Based Business Communication with Customers in the 4th Industrial Revolution Era. *Business Communication Research and Practice*, 2(2), 55-61

Lee, D., & Yoon, S. N. (2021). Application of Artificial Intelligence-Based Technologies in the Healthcare Industry: Opportunities and Challenges. *International Journal of Environmental Research and Public Health*, 18(1), 1-18.

Lee, M. K. (2018). Understanding Perception of Algorithmic Decisions: Fairness, Trust, and Emotion in Response to Algorithmic Mana. Gement. *Big data & society*, 5(1), 1-16.

Line, N. D., Dogru, T., El-Manstrly, D., Buoye, A., Malthouse, E., & Kandampully, J. (2020). Control, Use and Ownership of Big Data: A Reciprocal View of Customer Big Data Value in the Hospitality and Tourism Industry. *Tourism Management*, 80(1), 1-8.

Lusch, R. F., & Nambisan, S. (2015). Service Innovation: A Service-Dominant Logic Perspective. *MIS Quarterly, 39*(1), 155-175.

Mayer-Schönberger, V., & Cukier, K. (2013). *Big Data: A Revolution that will Transform how we Live, Work, and Think*. Houghton Mifflin Harcourt, Boston.

McKinsey & Company. (2011). *Big Data: The Next Frontier for Innovation, Competition, and Productivity*. McKinsey Global Institute, NY.

Nagano, H. (2018). Big Data, Information and Communication Technology, Artificial Intelligence, Internet of things: How Important are they for Gastroenterological Surgery?. *Annals of Gastroenterological Surgery*, 2(3), 166-174.

O'Neil, C. (2016). *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. Crown Publishing Group, NY.

Parasuraman, A. (2000). Technology Readiness Index (TRI): A Multiple-Item Scale to Measure Readiness to Embrace New Technologies. *Journal of Service Research, 2*(4), 307-320.

Porter, M. E., & Heppelmann, J. E. (2014). How Smart, Connected Products are Transforming Competition. *Harvard Business Review, 92*(11), 64-88.

Putra, A. R., & Arifin, S. (2021). Supply Chain Management Optimization in the Manufacturing Industry through Digital Transformation: The Role of Big Data, Artificial Intelligence, and the Internet of Things. *Journal of Social Science Studies,* 1(2), 161-166.

Raghupathi, W., & Raghupathi, V. (2014). *Big Data Analytics in Healthcare: Promise and Potential*. Health Information Science and Systems, 2(1), 3-10.

Reis, T., Steffl, A., Bruchhaus, S., Freund, F., Bornschlegl, M. X., & Hemmje, M. (2022). A Service-Based Information System for AI-Supported Health Informatics. *2022 IEEE 5th International Conference on Big Data and Artificial Intelligence (BDAI)*, 99-104

Schanke, S., Burtch, G., & Ray, G. (2021). Estimating the Impact of "Humanizing" Customer Service Chatbots. *Information Systems Research*, 32(3), 736-751.

Tabesh, P., Mousavidin, E., & Hasani, S. (2019). Implementing Big Data Strategies: A Managerial Perspective. *Business Horizons*, 62(3), 347-358.

Vargo, S. L., & Lusch, R. F. (2008). Service-Dominant Logic: Continuing the Evolution. *Journal of the Academy of Marketing Science, 36*(1), 1-10.

Wahyudi, W., R. N. K. Kabalmay, & M. W. Amri. (2021). Big Data and New Things in Social Life. *Studi Ilmu Sosial Indonesia*, 1(1), 1–12.

Wang, G., Gunasekaran, A., Ngai, E. W., & Papadopoulos, T. (2016). Big Data Analytics in Logistics and Supply Chain Management: Certain Investigations for Research and Applications. *International Journal of Production Economics, 176*(1), 98-110.

Wang, Q., Shwartz, L., Grabarnik, G. Y., Nidd, M., & Hwang, J. (2019). Leveraging AI in Service Automation Modeling: From Classical AI Through Deep Learning to Combination Models. In *International Conference on Service-Oriented Computing. Cham: Springer International Publishing*, 186-201.

Westerman, G., Bonnet, D., Ferraris, P., & Spector, J. (2014). *The Digital Advantage: How Digital Leaders Outperform Their Peers in Every Industry. MIT Sloan Management Review*, 55(3), 1-17.

Wien, A. H., & Peluso, A. M. (2021). Influence of Human Versus AI Recommenders: The Roles of Product Type and Cognitive Processes. *Journal of Business Research*, 137(1), 13-27.

Zhang, H., & Xiao, Y. (2020). Customer Involvement in Big Data Analytics and its Impact on B2B Innovation. *Industrial Marketing Management*, 86(11), 99-108.