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USER SATISFACTION WITH THE CHAT GPT IN ATTAINING SUSTAINABLE DEVELOPMENT GOALS

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Abstract: The emergence of artificial intelligence, particularly with the popular tool Chat GPT, has had a profound impact on all aspects of human existence. At the same time, the concept of sustainable development has undergone significant evolution in recent decades, with deepened theoretical understanding and widespread application in academic, institutional, and practical contexts. This evolution has been driven by the fear of depleting resources for future generations. The concept of sustainability is rooted in the idea of balanced economic development, social well-being, and environmental preservation. In modern socio-economic processes, the concept of sustainable development plays a crucial role, as evidenced by the adoption of the Sustainable Development Goals (SDGs) as a fundamental framework for national economies and the planet as a whole. The 5.0 industrial revolution has further integrated the need for continued development of AI and sustainable practices.

The aim of this paper is to assess the level of satisfaction of ChatGPT users in achieving the SDGs. In order to consider both divergent and convergent interpretive directions, various methodological approaches to theoretical concepts were utilized. Empirical research was conducted using an adapted version of the SERQUAL model, with each dimension of the model being applied to the Chat GPT. The study collected primary data from a sample of 250 respondents. The results obtained were processed by calculating the difference between the average values of perceived and expected grades, and by conducting a t-test for dependent (paired) samples. The findings indicate that the respondents expressed a high level of satisfaction with the dimensions of reliability, responsiveness, assurance, and empathy. However, there was a lower level of satisfaction in the dimension of tangibility, suggesting a certain level of dissatisfaction. A statistically significant difference was found between the perceived and expected level of service in all dimensions, except for tangibles, where no significant difference was observed. Future research should examine this topic across at least five countries and enhance the sample size to 500 participants to provide a more comprehensive understanding of the user satisfaction with Ghat GTP in the achievement of the SDGs. Additionally, optimizing the user experience may be necessary to improve the values in the tangibles dimension.

Keywords: *Sustainable Development Goals, Ghat GTP, user satisfaction, SERQUAL model.*
Field: Social science and Humanities.

1. INTRODUCTION

The Fourth and Fifth Industrial Revolutions have brought AI through the doors as an inspirational guide for innovative solutions, making it a part of everyday private, scientific, and professional-business life. Previous industrial revolutions focused on efficiency and effectiveness, while Industry 5.0 prioritizes sustainability, resilience, and human-centric innovation. It strives for a regenerative economy, ethical technology, and localized production, with the goal of developing systems that contribute to climate responsibility, social justice, and human well-being (Musarat et al., 2023). One of the most significant AI tools in recent years is the development of generative models, with ChatGPT standing out as a large language model that communicates with users in a dialog format, creating text that resembles human language (Milmo, 2023; Lund & Wang, 2023).

Sustainable development and the achievement of its goals are becoming increasingly relevant, as suggested by the industry 5.0 revolution. The depletion of natural resources, environmental degradation, and the consequences of globalization and consumerism have created a serious imbalance between economic, ecological, and social aspects. These issues not only harm natural systems, but also create a resource deficit for future generations. In light of ChatGPT's potential applications in various fields, numerous papers have been published on its use in education, healthcare, social media, sustainability, and energy (4214, 1571, 494, 175, 151, 9) retrospectively (Hussein et al., 2025). Therefore, the goal of this paper is to answer the question: "How satisfied are users of ChatGPT in achieving the SDGs?"

Towards the end of the 20th century, the concept of sustainable development and the question of sustainability gained prominence, as the way of life had significantly changed compared to previous

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generations (Milanović & Erić, 2024). The literature contains numerous definitions of sustainable development, but one that is commonly referenced is the Brundtland definition, which states (WCED, 1987): "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). This definition stands out for its clarity, comprehensibility, and simplicity. The goal of sustainable development is to ensure that the natural resources and raw materials used by society today are not depleted, while also promoting the understanding that it is crucial to preserve these resources for future generations to use (Milanović & Erić, 2024).

The concept of sustainable development is based on three pillars or domains: economic, environmental, and social (Wang et al., 2023:2179). The intention behind the implementation of this concept is to successfully encompass all three pillars and ensure that future generations are able to live with the same level of natural well-being as today. In September 2015, the United Nations defined 17 Sustainable Development Goals (SDGs) (UN, 2016) that align with the principles of sustainability and apply universally to future economic, social, and environmental development (Gudelj, 2019). These goals are accompanied by 169 specific targets, with the aim of achieving them by 2030 (Official website of the United Nations, 2018).

2. MATERIALS I METHODS

During the analysis of the theme, appropriate theoretical concepts and empirical analysis were utilized. The theoretical approach employed methods such as induction, deduction, the historical method, analysis and synthesis, as well as a comparative analysis of ChatGPT's impact on achieving the SDGs. The empirical analysis was conducted using an adapted SERQVAL model. In the following section of the paper, an academic literature review will be presented on ChatGPT's contributions to each of the 17 United Nations SDGs, organized according to the three main pillars of sustainable development.

The first pillar of sustainable development is the SOCIAL, which ChatGPT contributes to by helping achieve its SDGs in the following ways: SDG 1. No Poverty: ChatGPT promotes digital inclusion by providing access to information on employment, financial and digital literacy, job opportunities, and social programs for marginalized groups. It also assists non-governmental organizations and social workers in preparing reports and communication, and supports poverty reduction through digital education and micro-entrepreneurship (Dwivedi et al., 2023; IBM, 2021). SDG 2: Zero Hunger: ChatGPT facilitates the exchange of information on sustainable and smart agriculture, crop management, and food distribution chains in low-income areas. It also enables farmers to access up-to-date data on weather conditions, pest control, and environmentally responsible agricultural methods. Additionally, it contributes to educational campaigns on nutrition and the improvement of food safety policies (Sood et al., 2023). SDG 3. Good Health and Well-being: ChatGPT enhances healthcare by providing reliable health education, mental health support, and basic symptom assessment through AI-powered conversational tools. This contributes to better public health outcomes and facilitates access to health information and advisory services in resource-limited communities. It is also used in campaigns to raise health literacy and reduce health-related misinformation, while encouraging behavior change, early diagnosis, and efficient communication in the field of mental health (Singh, 2023). SDG 4. Quality Education: ChatGPT promotes equitable access to knowledge by providing personalized, real-time assistance and tailored learning, especially for students from remote or economically disadvantaged areas. It supports the development of literacy, numeracy, language skills, and STEM education, while also helping teachers create curricula and adapt instruction to diverse student needs (Holmes et al., 2022; Eric et al., 2024). SDG 5. Gender Equality: ChatGPT contributes to reducing the gender gap by providing women with easier access to digital services, education, and health information, particularly in marginalized or patriarchal settings. It supports gender equality by enabling safe information access and learning, while also assisting non-governmental organizations in creating advocacy campaigns, projects, and communication materials (Ilafi & Nurrohim, 2024). SDG 6. Clean Water and Sanitation: By creating educational materials and assisting in the use of water resource management tools, ChatGPT contributes to raising awareness about the importance of sanitation and water supply planning. Thereby, it supports information and education on hygiene standards, facilitates the communication of sanitation policies, and aids in the preparation of technical documentation (Egbemhenghe et al., 2023). SDG 7. Affordable and Clean Energy: ChatGPT facilitates the work of clean energy startups by assisting in the development of project proposals, the translation of energy policy documents, and access to funding for climate initiatives. It fundamentally supports innovation in renewable energy education, the preparation of technical reports, and the exchange of knowledge in the development of sustainable green energy technologies (Bhaskar & Seth, 2024). SDG

11. Sustainable Cities and Communities: ChatGPT strengthens community resilience by supporting local authorities, urban planners, and non-governmental organizations in communicating about sustainable development and engaging citizens in participatory planning (Rane, 2023). SDG 16. Peace, Justice and Strong Institutions: ChatGPT enhances access to justice and transparency by simplifying legal language, facilitating the understanding of rights, and strengthening civic education to foster understanding of personal rights (Shafik, 2025).

The second pillar, the ECONOMIC, also utilizes ChatGPT to achieve its SDGs. SDG 8. Decent Work and Economic Growth: By automating administrative processes, creating various types of content, and improving user support, ChatGPT contributes to increased work efficiency and creates opportunities for new forms of digital employment and entrepreneurial activities (Rahmat et al., 2025). SDG 9. Industry, Innovation, and Infrastructure: large language models support the digital transformation of industries by aiding in research and development, process improvement, and the creation of technical documentation (Musarat et al., 2023). SDG 10: Reduced Inequalities: ChatGPT promotes inclusion by providing access to educational, legal, and health information in multiple languages for persons with disabilities and marginalized communities (Tan, 2024). SDG 12. Responsible Consumption and Production: ChatGPT promotes sustainable consumption by educating about environmental practices, the circular economy, and corporate social responsibility. It also facilitates sustainability reporting and analysis to reduce overconsumption (Rahmat et al., 2025). SDG 17. Partnerships for the Goals: ChatGPT fosters global cooperation by enabling multilingual communication, knowledge exchange among partners, and the creation of international development reports (Dwivedi et al., 2023).

Finally, the third pillar of sustainable development, the ENVIRONMENTAL, applies ChatGPT in achieving its SDGs. SDG 14. Life Below Water: ChatGPT contributes to marine conservation by facilitating the translation and dissemination of oceanology knowledge, supporting educational campaigns, and creating documentation for NGO and UN projects (Egbemhenghe et al., 2023). SDG 15. Life on Land: Nature protection organizations use ChatGPT to prepare grant applications, biodiversity reports, sustainability analyses, and to conduct educational campaigns (Khanifar, 2025).

An empirical study was conducted using an adapted SERQVAL model. The original SERVQUAL model was first introduced in 1988 (Parasuraman et al., 1988) and later refined by numerous authors (Shi & Shang, 2020), remains an essential tool for assessing service quality. Specifically, the model compares users' expectations to their perceptions across five fundamental dimensions. The authors developed an adapted SERQVAL model to examine how users assess the quality of the ChatGPT service in the context of activities related to achieving sustainable development goals.

Picture 1. Adapted SERVQUAL Model for Assessing User Perceptions of ChatGPT's Service Quality

Dimension	Definition	Application to ChatGPT
Tangibles	Physical facilities, equipment, and appearance of personnel.	The construct encompasses the aesthetic and functional aspects of the user interface, including ease of navigation, visual design and element composition, and compatibility with other digital platforms. Users perceive certain "tangible" dimensions of interaction through the interface, such as clarity of graphical organization, coherence of visual design, and the user-friendly nature of the chat platform.
Reliability	Ability to perform the promised service dependably and accurately.	Reliability and consistency of responses, emphasizing ChatGPT's ability to provide accurate, coherent, and stable answers across all interactions.
Responsiveness	Willingness to help customers and provide prompt service.	Measures the promptness, accessibility, and readiness of ChatGPT in providing assistance during information or query retrieval.
Assurance	Knowledge and courtesy of employees and their ability to inspire trust and confidence.	Reliability and well-explained responses, along with OpenAI's transparency. Particular attention is given to users' trust in ChatGPT's expertise, ethical conduct, and professional integrity during interactions.
Empathy	Caring, individualized attention provided to customers.	Flexibility to individual user needs, effective adjustment of communication style, and recognition of interaction context; adaptability in tone and content of responses to meet specific user requirements.

Source: Authors creation based on Parasuraman et al., 1988, p. 23.; Young et al., 2024; Nguyen et al., 2025.

In accordance with the above mentioned, the following research hypothesis has been formulated:

H1. ChatGPT users are satisfied with its contribution to achieving the SDGs, considering tangibles, reliability, responsiveness, assurance and empathy.

An empirical investigation was conducted in Serbia between June 2025 and October 2025. Data was collected, processed, and analyzed from a random sample of 250 respondents from various organizations. A Likert-type survey was used to measure user satisfaction with the application of ChatGPT in achieving sustainable development goals, with responses ranging from 1 (totally disagree) to 5 (totally agree). Quantitative analysis of the obtained data was performed using the Statistical Package for the Social Sciences (SPSS).

The sample consisted of 250 respondents, with 165 being male and 85 being female. In terms of age, 59 respondents were under 30 years old, 105 were between 30-40 years old, and 86 were over 41 years old. Out of the total sample, 41 respondents had a secondary school education, 184 had a higher education degree, and 25 had completed master's or doctoral studies. In regards to employment sectors, 21 were from educational institutions, 46 from the trade sector, 45 from the manufacturing sector, 35 from waste management, 28 from financial institutions, 26 from agriculture, 39 from sustainability and energy, and 10 from social media. Finally, out of the total sample, 156 respondents were employed in state-owned organizations and 96 in privately-owned organizations.

3. RESULTS

The results of the empirical research conducted using a repeated measures t-test are shown in Picture 2.

Picture 2. T test of paired samples for testing significance of difference between perceived and expected service

Item		Standard error mean	*t*	df	p
TANGIBLES (PERCEPTION OF USEFULNESS AND INTERFACE QUALITY)	Perceived – expected	**-0.33**			
T1. ChatGPT's interface is easy to use when accessing SDG-related content.	1,02	0,02	43,9	249	0,00
T2. The visual outputs generated by ChatGPT help me better understand topics and save time and effort in research or SDG-related tasks.	- 1,35	0,01	1,28	249	0,06
RELIABILITY	Perceived – expected	**1,64**			
R1. ChatGPT provides consistent and reliable responses regarding SDG topics.	1,352	1,01	8,13	0,25	0,00
R2. The content generated by ChatGPT is accurate, useful, and helps me better understand the concepts of the SDGs.	1.932	0,05	17,42	249	0,00
RESPONSIVENESS	Perceived – expected	**1,075**			
RE1. ChatGPT responds quickly to my questions, and the answers are relevant and applicable to my SDG activities.	1,05	0,03	39,67	249	0,00
RE2. ChatGPT effectively adapts to follow-up questions and clarifications.	1,12	0,02	46,32	249	0,00
ASSURANCE (CONFIDENCE IN COMPETENCE)	Perceived – expected	**1,03**			
AS1. I feel safe and confident using ChatGPT for SDG-related tasks because the explanations are clear and trustworthy.	0.95	0,03	31,5	249	0,00
AS2. I would recommend ChatGPT for education or planning in the field of sustainable development.	1,11	0,02	46,75	249	0,00
EMPATHY	Perceived – expected	**1,02**			
E1. ChatGPT understands the context of my SDG-related needs and supports inclusive and ethical approaches to sustainability.	1,96	0,02	47,10	249	0,00
E2. I feel supported and encouraged in my sustainability work when using ChatGPT.	0,15	0,07	1,98	249	0,04

Source: Authors calculation

After analyzing the mean values of perceived and expected, it is evident that there is a significant difference between the two for all dimensions except tangibility. This indicates that the respondents are generally satisfied with Chat GPT's contribution to achieving the SDGs in terms of reliability, responsiveness, assurance, and empathy. The highest levels of satisfaction were found in the dimensions of reliability (1.64) and assurance (1.03). However, there is a notable dissatisfaction with tangibility (-0.33), particularly in regards to the visual representations generated by ChatGPT. These visual aids are meant to aid in understanding the topic and save time and effort in SDG-related tasks, but the respondents rated them poorly (-1.35). The t-test for dependent samples further confirmed the statistical significance of the differences between perceived and expected in all service dimensions ($p<0.05$ and $p<0.01$), except for tangibles ($p = 0.06$), specifically in regards to the question described by T2. ($p = 0.06$).

4. DISCUSSIONS

Customer satisfaction is an essential requirement for the long-term sustainability and success of any service providing organization, including digital platforms like ChatGPT, as it directly influences loyalty, continued use, and perceived value. The literature review suggests that Chat GTP can be a successful tool in supporting the achievement of the SDGs, but it is not all-power. Authors adapted the traditional SERVQUAL model to the digital service context to assess the level of user satisfaction with ChatGPT in contributing to SDG outcomes in Serbia. More precisely, the hypothesis has been partially supported, according to which Chat GPT users are satisfied with the dimensions of reliability, responsiveness, assurance and empathy when achieving the SDGs, but it has been rejected in the dimension of tangibles. According the aforementioned, significant disparities exist in the perceived quality of service.

The highest degree of satisfaction is shown in the dimension of reliability, that is, the ability of Chat GTP to provide consistent, relevant and supported by explanations assistance when implementing the SDGs. It provides access to precise and structured information necessary for informed decision-making, which is important in education, health, sustainable agriculture and public administration (SDG 3, SDG 4, SDG 2, and SDG 16). Assurance is a second dimension that greatly contributes to satisfaction, as it strengthens the psychological aspect of trust. ChatGPT promotes citizen initiative and institutional transparency by offering precise and comprehensible instructions, simplifying complex terminology, interpreting SDG-related information, and providing administrative documentation to support it. Finally, users appreciated the responsiveness and empathy dimensions of the ChatGPT service. The tool's ability to quickly provide relevant answers and additional clarifications was highlighted, as well as its adaptability to individual communication needs (tone, communication style, and contextual matching). The aforementioned characteristics were highlighted as important for education (SDG 4), health (SDG 3), reducing inequality (SDG 10), and fostering partnerships to achieve goals (SDG 17).

There is a notable level of dissatisfaction among ChatGPT users when it comes to achieving the SDGs, particularly in regards to the tangibles dimension. A closer examination reveals that while users are generally satisfied with the simplicity of the interface, they express dissatisfaction with the visual aspects of the service. This is especially evident in difficulties encountered when generating visual representations and graphic outputs, such as issues with clarity, creativity, and professional design quality. As visual materials play a crucial role in practical education, reporting, and public awareness campaigns surrounding sustainable development and the SDGs, it is crucial to optimize the user experience in order to improve the tangibles dimension.

The study has both theoretical and practical implications, as it is the first of its kind in Serbia to examine the satisfaction of ChatGPT users in achieving the Sustainable Development Goals. This is achieved through the application of the adapted SERVQUAL model, filling a gap in both domestic and international academic literature. The empirical contribution is also significant, as the study focuses exclusively on Serbia and highlights disparities in comparison with similar international research (Wang et al., 2023; Dwivedi, 2023; Rahmat, 2025). However, the study is limited by its relatively small sample size and the potential subjectivity of respondents. This subjectivity may be due to the fact that most respondents primarily use ChatGPT, while overlooking other LLM models such as DeepSeek and others.

Future research should utilize comparative analysis by implementing the adapted SERVQUAL model to obtain more accurate results regarding the satisfaction of ChatGPT users in achieving the Sustainable Development Goals. It is important to note that the significance of individual Sustainable Development Goals varies across national economies due to economic, social, and environmental factors. Developed countries have different priorities compared to developing or underdeveloped countries. For instance, Serbia, which is classified as one of the ten poorest countries in Europe (https://worldpopulationreview.com/country-rankings/poorest-countries-in-europe), has distinct priority areas. According to UN data for 2024, Serbia ranks first in the region and 35th out of 166 countries in achieving the Sustainable Development Goals. Given its relative economic limitations, emphasis has understandably been placed on specific goals. Out of all 17 SDGs, Serbia has fully achieved only the goal related to the eradication of poverty (SDG 1) and is making progress towards reducing inequality (SDG 10) (Forbes Serbia, 2024).

In addition to these considerations, the authors stress the importance of expanding the sample size in future studies to a minimum of 800 respondents, preferably with a larger number being preferable as it would involve a wider range of countries. The aforementioned approach enables comparative analyses and cross-cultural validation of results. The contribution of such comparative research would be a more comprehensive understanding of how artificial intelligence technologies, such as ChatGPT, contribute to achieving global sustainability goals in different socioeconomic contexts.

5. CONCLUSIONS

Modern times require the integration of artificial intelligence and sustainable development. Artificial intelligence is significantly altering current business models and impacting personal lives. At the same time, the emphasis on sustainable development is driven by the need to preserve resources for future generations. ChatGPT, a prominent digital AI tool, plays a role in achieving the UN Sustainable Development Goals (SDGs). The research utilized an adapted SERVQUAL model to evaluate digital services, providing a structured understanding of ChatGPT users' satisfaction with regards to sustainability and technological innovation.

In this paper, it has been proven that reliability, responsiveness, assurance, and empathy are highly valued by Shat GPT users. However, there is dissatisfaction with the tangibility, which suggests that there

is a need for ongoing efforts to enhance this aspect in order to fully harness potential of the GTP as a tool of AI for sustainable development. It plays a key role in improving communication, expanding the availability of knowledge, and supporting the resolution of complex problems, representing a significant resource for government institutions, civil society organizations, educational institutions, and the business sector that aim to accelerate the achievement of the SDGs.

Despite the widespread use of the Chat GPT, it is important to not rely on it as the sole source of authenticity. Due to a lack of fact-checking and unreliable sources, information from the Chat GPT may not always be valid. Therefore, users should critically review all results, consult authoritative sources, and seek clarification and/or expert opinion. For example, they can cross-reference information with reputable websites or consult with experts in the field. Additionally, using multiple AI tools could provide a more comprehensive analysis of the possibilities for achieving sustainable development. This would allow for a more well-rounded and accurate understanding of the topic.

REFERENCES

Bhaskar, P., & Seth, N. (2024). Environment and sustainability development: A ChatGPT perspective. In Applied Data Science and Smart Systems (pp. 54-62). CRC Press.

Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., ... & Wright, R. (2023). "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. International Journal of Information Management, 71, 102642.

Egbemhenghe, A. U., Ojeyemi, T., Iwuozor, K. O., Emenike, E. C., Ogunsanya, T. I., Anidiobi, S. U., & Adeniyi, A. G. (2023). Revolutionizing water treatment, conservation, and management: Harnessing the power of AI-driven ChatGPT solutions. Environmental Challenges, 13, 100782.

Erić, I., Milanović, T., Petković, Z., & Jovanović, R. (2024). Innovations in education as the basis of sustainable development. KNOWLEDGE-International Journal, 66(2), 199-205.

FORBS Srbija. (2024). Retrieved from https://forbes.n1info.rs/vesti/srbija-prva-u-regionu-a-35-u-svetu-po-dostizanju-ciljeva-odrzivog-razvoja/ on 15.09.2025.

Gudelj, I. (2019). "Stručni prikaz: Ciljevi održivog razvoja-provedba na globalnoj razini i provedbeni status u Republici Hrvatskoj."Hrvatske vode 27.109: 245-0.

Holmes, W., Bialik, M., & Fadel, C. (2022). Artificial Intelligence in Education: Promises and Implications for Teaching and Learning. OECD Education Working Papers

Hussein, H., Gordon, M., Hodgkinson, C., Foreman, R., & Wagad, S. (2025). ChatGPT's Impact Across Sectors: A Systematic Review of Key Themes and Challenges. Big Data and Cognitive Computing, 9(3), 56.

Ilafi, B. S., & Nurrohim, A. (2024). Gender Interpretation Based on Artificial Intelligence: Between Chat GPT and Meta AI. Proceeding ISETH (International Summit on Science, Technology, and Humanity), 858-870.

Khanifar, J. (2025). Evaluating AI-generated responses from different chatbots to soil science-related questions. Soil Advances, 3, 100034.

Lund, B. D., & Wang, T. (2023). Chatting about ChatGPT: how may AI and GPT impact academia and libraries? Library Hi Tech News, 40(3), 26-29

Milanović, T., & Erić, I. (2024) Potreba, značaj i važnost obrazovanja u oblasti održivog razvoja, Treća međunarodna naučno-stručna konferencija BELECON 2024, Beogradska akademija poslovnih i umetničkih strukovnih studija, Beograd, 2. jun 2024. ISBN 978-86-7169-654-0.

Milmo, D. (2023) ChatGPT reaches 100 million users two months after launch. Guardian 2023, 3, 1017–1054.

Musarat, M. A., Irfan, M., Alaloul, W. S., Maqsoom, A., & Ghufran, M. (2023). A review on the way forward in construction through industrial revolution 5.0. Sustainability, 15(18), 13862.

Nguyen, M. T., Thach, K. T. D., Nguyen, C. N. L., Nguyen, A. C., & Doan, H. K. (2025). The Influence of AI Chatbots on Green Satisfaction and Loyalty: Evidence from Sustainability-Driven Consumer Behavior. Journal of Global Marketing, 1-30.

Parasuraman, A. B. L. L., Zeithaml, V. A., & Berry, L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. Journal of Retailing, 64(1), 12-40.

Rahmat, S. R., Ann, L. C., & Carrillo, T. O. (2025). Transformative AI: Enhancing Economic and Social Sustainability in Emerging Economies. In Artificial Intelligence and SMEs in Developing Economies (pp. 54-64). Routledge.

Rane, N. (2023). Roles and challenges of ChatGPT and similar generative artificial intelligence for achieving the sustainable development goals (SDGs). Available at SSRN 4603244.

Shafik, W. (2025). SDG 16: Peace, Justice, and Strong Institutions—Digital Tools for Good Governance. In Factoring Technology in Global Sustainability: A Focus on the Sustainable Development

Shi, Z., & Shang, H. (2020, July). A review on quality of service and servqual model. In International Conference on Human-Computer Interaction (pp. 188-204). Cham: Springer International Publishing.

Singh, J., Sillerud, B., & Singh, A. (2023). Artificial intelligence, chatbots and ChatGPT in healthcare—narrative review of historical evolution, current application, and change management approach to increase adoption. Journal of Medical Artificial Intelligence, 6, 30-45.

Sood, A., Bhardwaj, A. K., & Sharma, R. K. (2023). Perceptions of facilitators towards adoption of AI-based solutions for sustainable agriculture. Journal of Decision Systems, 1-35.

Tan, Y. (2024). Challenges of ChatGPT in Achieving a Better Life for the People and the Coping Strategies. Journal of Southwest University Social Science Edition, 50(6), 155-165.

United Nations. (2016). Sustainable development goals. Retrieved from http://www.un.org/sustainabledevelopment/.

Wang, R., Li, C., Li, X., Deng, R., & Dong, Z. (2023). GenAI4Sustainability: GPT and its potentials for achieving UN's sustainable development goals. IEEE/CAA Journal of Automatica Sinica, 10(12), 2179-2182.

WCED, S. W. S. (1987). World commission on environment and development. Our common future, 17, 1-91.
World population Review. (2025). https://worldpopulationreview.com/country-rankings/poorest-countries-in-europe
Young, K. S., Lee, S. G., & Hong, G. Y. (2024). User satisfaction with the service quality of ChatGPT. Service Business, 18(3), 417-431.