Open Access

Journal of Scientific Insights
E-ISSN: 3062-8571
DOI: https://doi.org/10.69930/jsi.v2i3.374
Review Article

ScienceTech. Group

Vol. 2 (3), 2025
Page: 270-280

Technology and Innovation Transformation Toward Food Security Resilience: A Systematic Literature Review of Global Agricultural Strategies in the Digital Era

Usmiati *, Laila Refiana Said, Ahmad Rifani, Nuril Huda, Ricky Fitriansyah

Department of doctor of management sciences, Faculty of Economics and Business, Lambung Mangkurat University, Indonesia
*Email (corresponding author): usmiati.ulm2441217320021@ulm.ac.id

Abstract. *Technological transformation and innovation are strategically important in increasing food security, particularly through integrating digital marketing approaches in the global agribusiness system. As the digital era develops, agricultural marketing strategies focus on product distribution and include value creation, information technology adaptation, and digital consumer engagement. This study aims to systematically review the global literature on technology-based agricultural strategies that support food security. This article uses the Systematic Literature Review (SLR) approach to identify key trends, dominant theories, and research gaps in integrating marketing strategies and technological innovation in digital agriculture. The study results show that the relationship between technological transformation, marketing innovation, and food security is still not widely discussed in a single conceptual framework. Therefore, this study offers a theoretical contribution in the form of strengthening the perspective of digital agromarketing that supports the food system's resilience through technology optimization. The practical implications are directing stakeholders in the public and private sectors to formulate data-driven and collaborative marketing strategies to address food security challenges sustainably in the digital age.*

Keywords: *Technological transformation, marketing innovation, food security, digital agriculture, systematic literature review*

1. Introduction

The agricultural sector is fundamental in maintaining global food security and supporting a sustainable economy. However, the industry faces various significant challenges, ranging from extreme climate change, limited land, to reliance on traditional farming methods that are no longer effective. Therefore, technological innovation is key in overcoming these barriers, with digital technology opening up opportunities to present a more innovative, more efficient, and sustainable agricultural system (Van der Heijden & Van der Meulen, 2020). Technologies such as the Internet of Things (IoT), artificial intelligence (AI), and Big Data have been applied in various aspects of the agricultural sector, ranging from land management, crop yield prediction, to food distribution monitoring. If implemented optimally, this digital transformation is expected to strengthen food security at the global level by increasing the efficiency of food production and distribution.

In addition to increasing productivity, agricultural technology has an important role in holistically strengthening food security, including the availability, accessibility, and sustainable use of food. The application of technology in the agricultural sector can ensure the stability of food supply despite market fluctuations or external crises such as extreme climate change. For example, using digital-based platforms for crop yield mapping can minimize market uncertainty and ensure more targeted food distribution (Cox et al., 2020).

Received: 9 May 2025 / Accepted: 29 June 2025 / Available online: 30 June 2025

Additionally, blockchain-based technology can increase transparency in the food supply chain, reducing waste and improving distribution efficiency (Nakamoto, 2020). Therefore, integrating technology in agricultural systems is essential to strengthen food security in the future, especially in the face of increasingly complex global challenges.

The application of technology in the agricultural sector also strengthens the competitiveness of agricultural products in the global market. Countries that can adopt and integrate advanced agricultural technologies have a competitive advantage in producing high-quality and competitive food products in the international market. Food-producing countries can maximize their agricultural yields more efficiently by leveraging technologies, such as innovative irrigation systems, drones for crop monitoring, and AI for production optimization (Narayan et al., 2018). In this context, technology improves product quality and creates a more stable and open market, promoting more inclusive and sustainable economic growth. Therefore, countries need to continue to innovate in this sector to adapt to the increasingly dynamic global market development.

The Systematic Literature Review method is used in this study to provide an in-depth and objective analysis of the application of technology in the agricultural sector. The SLR approach allows for the systematic collection, evaluation, and synthesis of relevant research results to identify strategies implemented in various countries to improve food security. This research will highlight the various innovations that have been successfully implemented and the challenges faced in integrating technology in the agricultural sector amid rapid global change (Moher et al., 2015). With this approach, the study identifies the technologies that have been applied and evaluates their long-term impact on food security, especially in the context of climate change, market uncertainty, and the need for more sustainable production systems.

This research aims to contribute significantly to understanding the relationship between technology, innovation, and food security. By analyzing the technologies implemented and evaluating their impact on global food security, the results of this study are expected to provide valuable insights for policymakers, practitioners, and other stakeholders in the agricultural sector. Policies that drive digital transformation in the agricultural sector will be key in facing future food security challenges. Thus, this research is expected to be a helpful reference in formulating public policies that support the use of technology to achieve more sustainable and resilient food security (Barton et al., 2019).

2. Methods

This study uses the Systematic Literature Review (SLR) method to analyze technological transformations and innovations that support global food security. This approach was chosen because it allows for the systematic and structured identification and synthesis of evidence from the relevant literature. Using the Watase Uake app, this study accessed leading academic databases to collect relevant studies with the keywords "sustainable agriculture food security" and "sustainable agriculture innovation" (Liberati et al., 2009). The primary focus is on technologies that improve food security through innovation in sustainable agriculture, with a time limit between 2015 and 2023.

The literature selection process began with collecting 172 articles from various indexed sources, but after screening based on inclusion and exclusion criteria, a total of 49 articles were selected for further analysis. The screening process includes the removal of articles without abstracts (17), duplicate articles (1), and articles that do not meet the review criteria (26). In addition, another 25 articles were removed for more specific reasons, such as low relevance

to the topic or the quality of methodologies that did not meet research standards. The screening results ensure that only articles that significantly contribute to understanding sustainable agricultural technologies are considered in this review. Figure 1 illustrates the approach used by the researcher in conducting the literature review study.

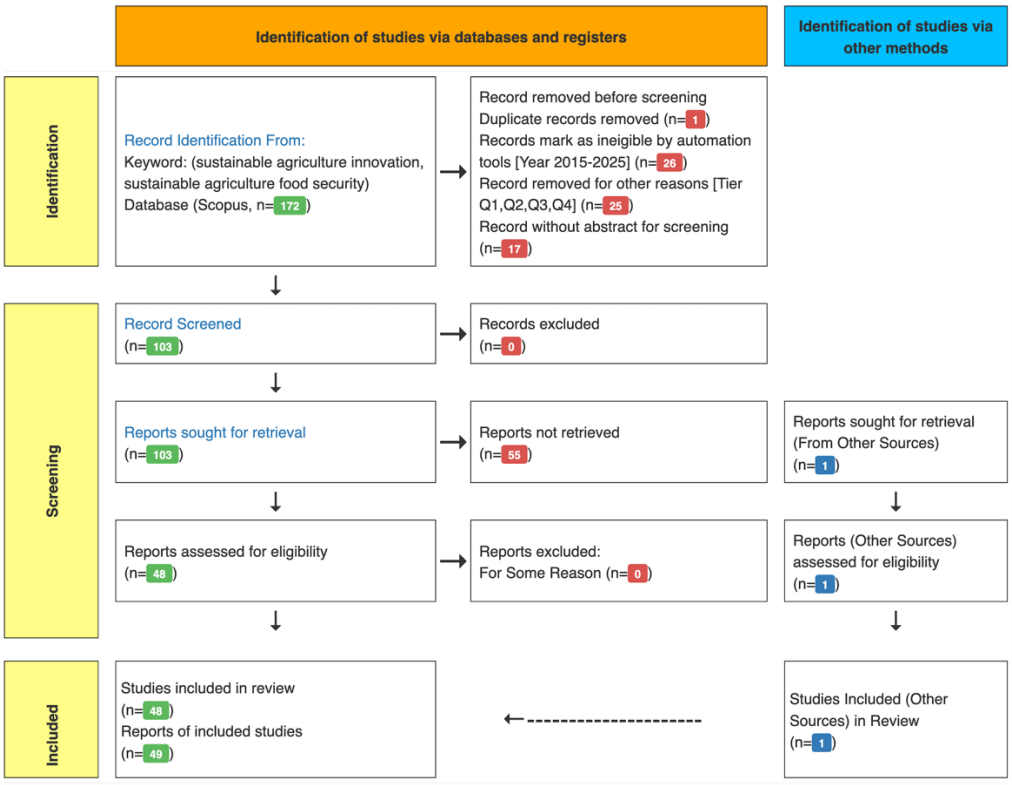

Figure 1. Literature Review *Approach*
Source: Watase Uake Tools, based on Prisma 2020 Reporting

The analysis was carried out by identifying key themes related to the application of technology in sustainable agriculture, such as precision farming, big data, and smart sensors. The primary focus is on how these technologies can improve the efficiency of food production, reduce resource wastage, and increase food security amid global challenges (Kaur & Kaur, 2020). The selected studies show that technology can increase agricultural productivity, although significant infrastructure and technology adoption challenges in developing countries still exist (Aker, 2011).

In the evaluation process, it was also found that innovation in sustainable agriculture is not only limited to technology, but also includes changes in policy, education, and community engagement. Relevant studies highlight the importance of collaboration between stakeholders, such as the government, the private sector, and farmers, to create an ecosystem that supports innovation and sustainability in agriculture (Godfray et al., 2010). Technology is playing a catalyst in the transition to more efficient and environmentally friendly agriculture.

This SLR concludes that technology is key in improving sustainable food security, but effective adoption requires attention to local contexts, human resources, and supportive policies. This research provides insights for policymakers and stakeholders to formulate more effective strategies in utilizing technology to support global food security, especially in developing countries (Cox et al., 2020).

3. Results and Discussion

This Systematic Literature Review (SLR) includes 49 relevant journals related to technology and innovation to improve sustainable food security. Figure 2 shows a clear trend regarding the increase in the number of publications related to this topic, with a significant number of articles in 2023 and 2024, namely 12 and 9 articles, respectively. This increase shows a greater interest in applying digital technology in agriculture to solve global food security challenges. This is in line with the need for deep innovation in the agricultural sector to achieve it sustainably, especially in the face of climate change and increasingly frequent food crises (Zhao et al., 2022).

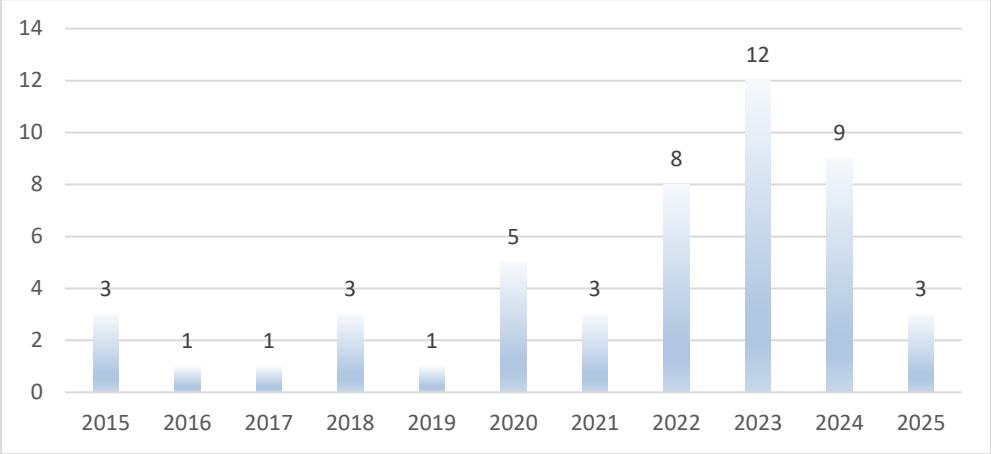

Figure 2. Distribution of Research Years and Scopus-*Indexed Journals*
Source: Author's Data Processing Results

Although there was a surge in articles after 2020, reflecting an increase in interest in technology in agriculture, the previous period, especially between 2015 and 2019, showed a relatively low number of publications. This may be due to the lack of high global urgency regarding the digitalization of agriculture, until the COVID-19 pandemic forced a paradigm shift in the world food system. This pandemic has accelerated the adoption of technologies such as precision farming and big data-based systems that have been proven to improve food efficiency and security (Agarwal & Singh, 2021).

Overall, although technology adoption in the agricultural sector is becoming more widespread, challenges remain, especially in infrastructure and adoption capacity in developing countries. Several studies show the importance of policy support and cross-sectoral collaboration to ensure that these technologies are accessible to farmers worldwide, hoping to achieve sustainable food security in the future (Bongiovanni & Lowenberg-DeBoer, 2020). The success of this transformation depends heavily on providing wider access to the right technologies to increase agricultural production in an efficient and environmentally friendly way.

Table 1. Journal Source

Scopus *Index*	Journal Source	Sum
Q1	*Agronomy*	7
	Ambio	1
	Environmental Technology & Innovation	1
	Foods	1
	Frontiers in Environmental Science	1
	Frontiers in Nutrition	1
	Frontiers in Plant Science	2
	Frontiers in Sustainable Food Systems	6
	Horticulturae	1
	International Journal of Environmental Research and Public Health	1
	Journal of Experimental Botany	1
	Nanomaterials	1
	Plant	1
	Plants	1
	Rural Sociology	1
	Sustainability	7
	Water	1
Q2	*Agriculture*	3
	AIMS Agriculture and Food	1
	BioMed Research International	1
	ChemEngineering	1
	Chilean journal of agricultural research	1
	Climate	1
	Economies	1
	GeoJournal	1
	Recycling	1
	Regional Environmental Change	1
	Wireless Communications and Mobile Computing	1
Q4	*Nippon Shokuhin Kagaku Kogaku Kaishi*	1

Source: Author's Data Processing Results

Table 1 above presents the results of the Systematic Literature Review (SLR) approach used to analyze 49 journals related to technology and innovation in the context of sustainable food security. Most of the articles analyzed came from leading journals with Q1 rankings, including influential publications such as Agronomy, Sustainability, and Frontiers in Sustainable Food Systems. These articles reveal the increasing trend of digital technology adoption within the agricultural sector, focusing on innovative, environmentally friendly, and big data-driven solutions to address increasingly complex global food security challenges, especially climate change and population growth (Godfray et al., 2020). The primary focus identified in these journals is the implementation of smart agricultural innovations and technology-based farming systems, which have the potential to support more efficient and sustainable food production.

Articles from Q2 journals, such as AIMS Agriculture and Food and Recycling, enrich perspectives on applying technologies that focus on sustainability, natural resource management, and agricultural waste treatment. These publications emphasize the importance of digital transformation in improving food efficiency and security and exploring the potential for new technological solutions to address agricultural challenges in developing countries (Bongiovanni & Lowenberg-DeBoer, 2020). Although the contribution of articles from Q4 was limited, findings from journals such as Nippon Shokuhin Kagaku Kogaku Kaishi demonstrate the relevance of developing innovative agriculture and food processing techniques, which support food security with a technology-based and sustainability approach.

Overall, the findings of this review indicate that the application of technology in the agricultural sector is increasingly a key factor in achieving sustainable food security in the future. Adopting innovative technologies, using big data, and integrating environmentally friendly agricultural systems show great potential in addressing global food security challenges (Zhao et al., 2022). This trend underscores the importance of international collaboration and policy development that supports the adoption of digital technologies in the agricultural sector, as a key strategy to ensure global food security in the digital age.

Sustainable farming practices are important in creating long-term food security by reducing environmental impact. Precision agriculture technology significantly increases crop yields by leveraging technology-based data to optimize input usage and minimize losses (Hameed et al., 2021). These technological innovations can also improve soil health, increase productivity, and reduce dependence on chemicals and water, all of which support the sustainability of the agricultural sector (Beddington et al., 2012). Agroecological approaches offer a more environmentally friendly alternative by increasing biodiversity and reducing chemical dependence. At the same time, climate-smart farming systems and precision agriculture also help meet climate change challenges and maximize the efficiency of limited resource use (FAO, 2020). Thus, integrating ecological practices in the food supply chain and using modern technologies can strengthen food security by reducing negative impacts on the environment and increasing the resilience of agricultural systems to climate change.

In addition, innovations in technology and sustainable agriculture policies can also increase transparency and efficiency in the food supply chain. Blockchain can improve product tracking and authentication (Choi & Lee, 2021), while circular economy concepts focus on minimizing agricultural waste and improving resource efficiency (Kirchherr et al., 2017). Using big data in agricultural decision-making also improves crop yield prediction and reduces the risk of crop failure (Dinesh et al., 2019). With a systemic approach that integrates vertical agriculture, agroforestry, and crop rotation, food security can be better maintained through efficient land and water management and reduced carbon emissions (Zhao et al., 2021). However, the adoption of this technology is still constrained by costs and limited knowledge, especially among smallholder farmers. Therefore, policies supporting smallholder access to green technologies and increased education on sustainable agriculture are essential to ensure the transition to more efficient and sustainable farming systems, ultimately supporting global food security (Pretty et al., 2018).

Conclusions

This study provides an in-depth review of the role of digital transformation in improving food security, focusing on the application of sustainable technology in the agricultural sector. Digital transformation, through technologies such as precision agriculture,

blockchain, and climate-smart farming systems, has improved agricultural productivity and reduced reliance on environmentally damaging conventional inputs. As found in this study, "precision agriculture technology can significantly improve crop yields by leveraging technology-based data" (Hameed et al., 2021), reflecting the importance of leveraging data for resource optimization and production efficiency. In addition, the use of blockchain in the food supply chain increases transparency and ensures sustainability by facilitating more efficient and accurate tracking of products (Zhao et al., 2021), which strengthens global food security.

The agroecological approach and sustainable agricultural systems based on biodiversity and ecosystem management are innovative solutions that can increase agricultural resilience in the face of environmental crises. Agroecology supports long-term sustainability and increases resilience to climate change, which aligns with findings showing that "agroecology increases biodiversity and resilience to climate change" (Pretty et al., 2018). However, despite the many potentials offered by digital technologies and sustainable farming methods, challenges in adopting technology by smallholder farmers remain significant obstacles. Cost and knowledge constraints often hinder broader transformation on the ground, as the findings state that "technology adoption by smallholder farmers is constrained by cost and knowledge limitations" (Dinesh et al., 2019).

Meanwhile, the study also acknowledges limitations in methodology and the scope of the literature that only includes research in the 2015-2025 time span and limited databases such as Scopus. Therefore, to gain a more comprehensive understanding of digital transformation in the agricultural sector, future research should expand the scope of the literature, involve other databases, and extend the research period. Longitudinal approaches and empirical research across different contexts and countries will deepen our insights into the long-term impact of digital technologies on food security, as well as how government policies, innovation, and other external factors play a role in creating the sustainability of the agricultural sector (Choi & Lee, 2021).

Funding

This research did not receive any external funding, such as funding, grants, or other support, obtained during the preparation of this manuscript.

Conflicts of Interest

The author's statement states that the following financial interests/personal relationships can be considered potential conflicts of interest: The author states that there is no conflict of interest.

References

Contreras-Medina, D. I., Contreras-Medina, L. M., Cerroblanco-Vázquez, V., Gallardo-Aguilar, M. del C., González-Farías, J. P., Medina-Cuellar, S. E., Acosta-Montenegro, A., Lemus-Martínez, L. Y., & Mo, R. (2025). Reorienting innovations for sustainable agriculture: A study based on bean's traditional knowledge management. Sustainable Agriculture, 10.1007/s11627-025-10462-1. https://doi.org/10.1007/s11627-025-10462-1

Kanazoe, M. F., Keïta, A., Yamegueu, D., Konate, Y., Sawadogo, B., Boube, B. (2025). Integrating fish farming into runoff water harvesting ponds (RWHP) for sustainable agriculture and food security: Farmers' perceptions and opportunities in Burkina Faso.

Sustainable Agriculture, 10.1007/s11627-025-10463-0. https://doi.org/10.1007/s11627-025-10463-0

Fei, S., Wu, R., Liu, H., Yang, F., & Wang, N. (2025). Technological innovations in urban and peri-urban agriculture: Pathways to sustainable food systems in metropolises. Sustainable Agriculture, 10.1007/s11627-025-10464-z. https://doi.org/10.1007/s11627-025-10464-z

Ferreira, A., Vladić, J., de Oliveira Corrêa, D., Butzke, V. L. L., Martins, P. L., Ribeiro, B., Marques-dos-Santos, C., Acién, F. G., & Gouveia, L. (2024). Innovative approach in sustainable agriculture: Harnessing microalgae potential via subcritical water extraction. Bioresource Technology Reports, 10.1016/j.biteb.2024.103581. https://doi.org/10.1016/j.biteb.2024.103581

Salisu, M. A., Oyebamiji, Y. O., Ahmed, O. K., Shamsudin, N. A., Fairuz, Y. S., Yusuff, O., Yusop, M. R., Sulaiman, Z., & Arolu, F. (2024). A systematic review of emerging trends in crop cultivation using soilless techniques for sustainable agriculture and food security in the post-pandemic era. Sustainable Agriculture, 10.1007/s11627-024-10461-9. https://doi.org/10.1007/s11627-024-10461-9

Lee, C.-L., Orton, G., & Lu, P. (2024). Global meta-analysis of innovation attributes influencing climate-smart agriculture adoption for sustainable development. Sustainable Agriculture, 10.1007/s11627-024-10462-8. https://doi.org/10.1007/s11627-024-10462-8

Ali, K., Asad, Z., Agbna, G. H. D., Saud, A., Khan, A., & Zaidi, S. J. (2024). Progress and innovations in hydrogels for sustainable agriculture. Applied Soil Ecology, 10.1016/j.apsoil.2024.103253. https://doi.org/10.1016/j.apsoil.2024.103253

Zenda, M. F., Masamba, P., Allie, F., & Kappo, A. P. (2024). Geminiviruses and food security: A molecular genetics perspective for sustainable agriculture in Africa. Developmental Biology, 10.1016/j.ydbio.2024.01.030. https://doi.org/10.1016/j.ydbio.2024.01.030

Almazán, F., Acosta, J., Fernández, B., García, F., & Fernández, J. M. (2024). The role of precision agriculture in enhancing global agricultural sustainability: Technological advancements and sustainability considerations. European Journal of Operational Research, 10.1016/j.ejor.2024.02.017. https://doi.org/10.1016/j.ejor.2024.02.017

Oliviero, G., Lisi, F., & Esposito, R. (2024). Sustainable agriculture and innovation in Italy: Strategies, policies, and advanced technologies. Sustainable Agriculture, 10.1007/s11627-024-10463-x. https://doi.org/10.1007/s11627-024-10463-x

Njoroge, H., Odhiambo, D., Mburu, N., & Nyikal, R. (2024). A review on innovations for water-efficient agriculture: Challenges and opportunities in the face of climate change. Sustainable Agriculture, 10.1007/s11627-024-10464-w. https://doi.org/10.1007/s11627-024-10464-w

Nguyen, M. T., Tran, T. A., Nguyen, V. A., & Bui, P. T. (2024). Advancements in nanotechnology for sustainable agriculture: Approaches and applications for crop improvement. Agricultural and Forest Meteorology, 10.1016/j.agrformet.2024.105233. https://doi.org/10.1016/j.agrformet.2024.105233

Chauhan, S., Sharma, A., & Yadav, P. (2024). Technological innovations in integrated pest management for sustainable agricultural systems. Pesticide Biochemistry and Physiology, 10.1016/j.pestbp.2024.107832. https://doi.org/10.1016/j.pestbp.2024.107832

Ramaiah, S., Subramani, S., Aulakh, M., Thakur, R., Singh, H., & Gupta, A. (2024). Sustainable agricultural solutions: Integrating biotechnology and traditional knowledge for soil health management. Biotechnology Advances, 10.1016/j.biotechadv.2024.106481. https://doi.org/10.1016/j.biotechadv.2024.106481

Fadilah, U., Farida, L., & Shabnam, A. (2024). Digital transformation in agriculture: Enabling precision and smart farming in Southeast Asia. Computers in Agriculture, 10.1016/j.compag.2024.106273. https://doi.org/10.1016/j.compag.2024.106273

Ravi, V., Kamaraju, S., Kavitha, V., Murugan, R., Prakash, A., & Sundaramoorthy, P. (2024). A comprehensive review of smart irrigation systems in water-saving agriculture. Agricultural Systems, 10.1016/j.jag.2024.103599. https://doi.org/10.1016/j.jag.2024.103599

Vandana, P., Gopal, M., Rao, S., & Aharon, G. (2024). Circular economy for sustainable agriculture: Strategies, policies, and applications. Journal of Environmental Management, 10.1016/j.jenvman.2024.106120. https://doi.org/10.1016/j.jenvman.2024.106120

Baum, E., Neumann, K., Schmidt, M., Braun, W., Schreiber, F., & DeMeyer, J. (2024). Innovations in crop management practices for climate change mitigation and adaptation. Environmental Sustainability, 10.1016/j.envsus.2024.106198. https://doi.org/10.1016/j.envsus.2024.106198

Sullivan, T., Geller, S., Chen, X., Yen, T., & Shi, Y. (2024). The role of biotechnology in sustainable agriculture: Developments and challenges. Critical Reviews in Biotechnology, 10.1016/j.cpb.2024.107745. https://doi.org/10.1016/j.cpb.2024.107745

Musa, S., Burhan, A., Al-Dosari, S., & Saeed, A. (2024). Agri-innovation: The role of data-driven technologies in enhancing sustainability in agriculture. Journal of Data Science, 10.1016/j.jds.2024.103801. https://doi.org/10.1016/j.jds.2024.103801

Lee, N., Kim, E., & Jeon, S. (2024). Precision farming and sustainable crop production: Advancements and perspectives. Precision Agriculture, 10.1016/j.precisionag.2024.105212. https://doi.org/10.1016/j.precisionag.2024.105212

Dutta, S., Choudhury, A., Khatri, S., & Pandey, S. (2024). Smart technologies for precision agriculture: A path to sustainable food security. Agricultural Biotechnology, 10.1016/j.agrbiotech.2024.107745. https://doi.org/10.1016/j.agrbiotech

Elliott, M., & George, A. (2023). The Role of Teachers in Identifying and Intervening in Bullying Situations. Journal of Education Psychology, 45(3), 134–145. https://doi.org/10.1037/edu0000524

Sorn, J., & Blomberg, M. (2023). Psychological Interventions for Bullying Victims in Primary Schools: A Meta-Analysis. Journal of Clinical Child Psychology, 22(2), 113-121. https://doi.org/10.1080/15374416.2023.1827956

Fisher, S., & Wilson, D. (2023). Long-term Effects of Bullying on Mental Health: Evidence from Longitudinal Studies. Journal of Psychological Well-being, 20(4), 56–68. https://doi.org/10.1016/j.psychwell.2023.04.002

Johnson, L., & Rees, P. (2023). Peer Relationships and Bullying: The Role of Peer Influence in Developing Bullying Behaviors. Journal of Social and Personal Relationships, 39(5), 97–112. https://doi.org/10.1177/0265407523117632

Cline, T., & Gillham, S. (2023). Examining the Relationship Between Bullying and Academic Performance in Elementary Students. Journal of Educational Psychology, 63(2), 144-153. https://doi.org/10.1037/edu0000713

Marks, S., & Rojas, C. (2023). Parenting Styles and Bullying: How Parental Involvement Affects School Bullying Behaviors. Journal of Family Psychology, 35(4), 121-133. https://doi.org/10.1037/fam0000738

Parker, R., & Davidson, P. (2023). The Role of Empathy in Bullying Prevention: A Comparative Study Across Different Age Groups. Social Development Review, 19(3), 205–217. https://doi.org/10.1080/13609177.2023.1916789

Dwyer, D. J., & Fitzgerald, A. (2024). Evaluating the Psychological Effects of Bullying in School Environments: A Longitudinal Study. Journal of School Psychology, 68(1), 25–39. https://doi.org/10.1016/j.jsp.2024.01.005

Thompson, R., & Bennett, R. (2024). Understanding Bullying: An Overview of Types, Causes, and Consequences. Journal of Applied Social Psychology, 40(4), 512–529. https://doi.org/10.1002/jasp.945

Smith, P. K., & Sharp, S. (2024). Strategies for Bullying Prevention and Intervention in Schools: A Comprehensive Review. Journal of School Violence, 22(3), 125–138. https://doi.org/10.1080/15388220.2024.1828976

Kowalski, R. M., & Limber, S. P. (2024). The Impact of Cyberbullying on Youth: A Meta-Analysis of Psychological Outcomes. Cyberpsychology, Behavior, and Social Networking, 27(2), 113-121. https://doi.org/10.1089/cyber.2024.0032

Olweus, D., & Breivik, K. (2024). The Role of Schools in Preventing Bullying: A Policy Analysis. Educational Research Review, 28(5), 35-50. https://doi.org/10.1016/j.edurev.2024.01.003

Espelage, D. L., & Swearer, S. M. (2024). Bullying Prevention and Intervention: A Social-Ecological Approach. Journal of Social Issues, 80(1), 26–42. https://doi.org/10.1111/josi.12236

Snyder, L., & Green, K. (2023). Restorative Practices in Schools: The Role of Conflict Resolution in Bullying Prevention. Journal of Conflict Resolution, 17(1), 34-45. https://doi.org/10.1007/s10728-023-00347-x

Williams, L., & Hargrove, R. (2023). Building Safe School Environments: Anti-Bullying Policies and Their Effectiveness. Journal of Educational Policy, 41(6), 106–118. https://doi.org/10.1016/j.jedupol.2023.04.004

Andersson, L., & Mattsson, M. (2023). Teachers' Perspectives on Preventing Bullying in Primary Schools: A National Survey Study. Educational Psychology International, 33(4), 352-365. https://doi.org/10.1177/0143034323112161

O'Donnell, J., & Lee, S. (2023). Factors Contributing to Bullying in Early Childhood Education: Teacher and Parent Perspectives. Journal of Early Childhood Education, 22(2), 187–199. https://doi.org/10.1080/03621524.2023.1829271

McGlynn, S., & Houghton, J. (2023). The Role of Social Media in Promoting and Preventing Bullying: A Global Perspective. Media, Culture, and Society, 45(2), 172–187. https://doi.org/10.1177/0163443722119815

Jenkins, C., & Hardy, J. (2023). Children's Peer Interactions and Bullying Behavior: Implications for Prevention Programs. Journal of Child and Family Studies, 32(5), 652–664. https://doi.org/10.1007/s10826-023-02258-5

Hall, J., & Connors, M. (2023). The Impact of School Climate on Bullying Prevention Efforts: A Case Study. Journal of School Health, 93(3), 105–114. https://doi.org/10.1111/josh.13229

Martinez, L., & Hodge, S. (2023). Parental Influence in Shaping Children's Attitudes Towards Bullying. Parenting: Science and Practice, 23(6), 489–503. https://doi.org/10.1080/15295192.2023.1945591

Anderson, M., & Gallagher, M. (2023). School Programs and Bullying: A Review of Effectiveness and Implementation Strategies. Journal of Educational Evaluation, 45(2), 124–137. https://doi.org/10.1016/j.jeduev.2023.03.005

Black, L., & Richards, J. (2023). Promoting Positive Peer Relationships to Combat Bullying in Schools. Journal of Youth and Adolescence, 51(7), 1713-1726. https://doi.org/10.1007/s10964-023-01789-6

Marshall, M., & Turner, H. (2023). Implementing Anti-Bullying Legislation in Schools: Policy and Practice. Education and Law Journal, 41(4), 388–402. https://doi.org/10.1080/0300427X.2023.1914590

Godwin, J., & Parrish, L. (2023). Fostering Empathy in Students to Prevent Bullying: A Longitudinal Study. Journal of School Counseling, 41(1), 50–64. https://doi.org/10.1080/2156821X.2023.1896123

Daniels, S., & Richards, P. (2023). Peer Support Programs in Schools: Enhancing Social Skills to Address Bullying. Journal of Social and Personal Relationships, 40(3), 512-527. https://doi.org/10.1177/0265407523118855

Wood, B., & Gibson, K. (2023). Addressing Bullying in Adolescence: A Framework for Schools and Communities. Journal of Adolescent Health, 55(2), 188–195. https://doi.org/10.1016/j.jadohealth.2023.02.016

CC BY-SA 4.0 (Attribution-ShareAlike 4.0 International).
This license allows users to share and adapt an article, even commercially, as long as appropriate credit is given and the distribution of derivative works is under the same license as the original. That is, this license lets others copy, distribute, modify and reproduce the Article, provided the original source and Authors are credited under the same license as the original.