

DIGITAL AGRICULTURAL COMMUNICATION: A BIBLIOMETRIC AND SYSTEMATIC REVIEW OF SOCIAL MEDIA, MOBILE PLATFORMS, AND ICT IN AGRICULTURE

Joshika R V¹, Manimekalai R², Karthikeyan C³, Latha M R⁴, Sasikala R⁵

¹ Department of Agricultural Extension and Rural Sociology, Tamil Nadu Agricultural University, Coimbatore, India.
Email: joshikakutty31@gmail.com

² Department of Agricultural Extension and Rural Sociology, Tamil Nadu Agricultural University, Coimbatore, India.
Email: ramar.manimekalai@gmail.com

³ Department of Agricultural Extension and Rural Sociology, Tamil Nadu Agricultural University, Coimbatore, India.
Email: karthikeyanextn@yahoo.com

⁴ Department of Soil Science and Agricultural Chemistry, Tamil Nadu Agricultural University, Coimbatore, India.
Email: mrlatha@tnau.ac.in

⁵ Directorate of Planning and Monitoring, Tamil Nadu Agricultural University, Coimbatore, India.
Email: sasikala@tnau.ac.in

Note: No ORCID IDs were provided for these authors. If you have them, I can add them in the same format.

*Corresponding Author: Manimekalai R, Email Address: ramar.manimekalai@gmail.com

ABSTRACT

This study is a bibliometric analysis and systematic literature review of the development of digital agricultural communication from 2016 to 2025. ICT tools, mobile apps and social media are pervasive in agriculture and have caused a shift in communication from traditional extension methods to more interactive, farmer-centric approaches. However, the research in this field is dispersed among different disciplines and methods. We carefully selected and analyzed relevant studies through the PRISMA framework, and tracked research trends and patterns through tools, such as Bibliometrix and VOSviewer. This research employed bibliometric methods and systematic synthesis to investigate publication trends, research themes, methodological approaches, and emerging directions of digital agricultural communication. The findings reveal an increase in the number of studies focused on digital platforms for information sharing, engaging farmers and advisory support. The assessment also pointed out certain flaws, including shaky theoretical underpinnings, uneven worldwide representation, and inconsistent methodology. The results outline goals for future study and sustainable agricultural development while highlighting the expanding role of digital communication in agricultural extension.

KEYWORDS: Bibliometric analysis, Digital agricultural communication, Information and communication technologies (ICT), Mobile applications, Social media.

1. INTRODUCTION

The fast development of digital technologies has changed the communication systems across all sectors. One of the main areas it is undergoing a major change is agriculture. The traditional agricultural communication was based on the traditional extension systems which consisted of print media, radio and personal contact in order to disseminate information to the farmers. In this regard, agricultural journalism has long played a pivotal role in bridging the gap between scientific knowledge, policy making and farming communities through the timely and true dissemination of agricultural information (Njinma 2024). However, the increasing interconnectedness of information and communication technologies (ICT), mobile devices, and digital platforms has transformed the way knowledge is created, accessed, and shared in agriculture, leading to the emergence of digital agricultural communication as an interdisciplinary area.

The history of the development of agricultural communication is firmly connected to larger trends of digitalization in agriculture, identified as Agriculture 4.0. Digital technologies, notably artificial intelligence, big data and precision farming tools, have evolved agricultural systems to data-driven and knowledge-intensive ecosystems, which has led to enhancements in productivity, sustainability and decision-making procedures (Mohr and Höhler 2023). Additionally, this shift has made communication procedures speedier, more engaging, and decentralized among the agriculture sector's stakeholders. As a result, agricultural journalism and extension have expanded, and new opportunities for real-time, participative, and scalable information delivery have been made possible by the digital convergence of communication systems and digital technology.

Along with ICT and mobile technology, social media platforms have developed into powerful tools for agricultural connection and communication. These platforms speed up the dissemination of information, strengthen stakeholder networking, and enable knowledge sharing across national boundaries (Ramavhale, Zwane and Belete

2024) . Farmers are increasingly embracing social media sites like Facebook, Instagram , and YouTube to create content, interact with customers, and establish a digital persona in addition to accessing agricultural information. In addition to being utilitarian, the example of millennial farmers demonstrates how digital communication is socially, culturally, and emotionally situated, impacting identity formation, education, and involvement in cutting-edge agricultural systems. (Sulistiani 2025).

Digital communication includes engagement, influence, and perception-building in addition to information exchange. The media and online material have a significant impact on the social environment and how agricultural technology is seen, which in turn influences views toward innovation.(Mohr and Höhler 2023). By fostering openness and trust, the role of digital content producers and agricultural influencers helps close the gap between producers and consumers (Shank *et al.* 2025). In a similar vein, social media platforms influence users' opinions and knowledge of agriculture, particularly younger users (Bennett *et al.* 2024). Agricultural groups are also strategically using digital platforms to engage, communicate, and share agricultural information (Haller, Specht and Buck 2019).

The increasing integration of agricultural journalism and agricultural extension systems is one of the most significant features of this shift. Traditional print-based agricultural journalism has been replaced by integrated, multimedia-based platforms that combine journalistic and extension operations thanks to digital agricultural journalism. Farmers can obtain a range of information and resources through web portals, mobile applications, and social media platforms thanks to the convergence, which promotes more dynamic and interactive knowledge sharing (Pola *et al.* 2026). In the meantime, rural journalism continues to play a significant role in informing the local populace about agricultural and environmental issues, influencing the conversation and influencing local decision-making (Walsh *et al.* 2024).

Despite all of these advancements, there are still a number of obstacles that prevent digital agricultural communication from being used effectively. The digital divide has been a significant issue, particularly in rural areas where low internet penetration, infrastructure limitations, and low digital literacy restrict technology use (Bowen and Morris 2019) . Due to gender disparities, access to digital technology also hinders inclusivity; yet, digital extension initiatives have the potential to improve rural women farmers' engagement and decision-making (Ragetlie, Najjar and Oueslati 2022). Additionally, social media influences the behavioural and psychological characteristics of rural populations, which could be improved by digital extension programs. Social media is a two-way tool that can help people learn, interact with others, and gather knowledge, according to study. However, it can also pose risks including anxiety, sadness, social comparison, and low self-esteem, particularly for young people living in rural areas (Anshida *et al.* 2025) . Furthermore, the use of digital platforms has accelerated the spread of information, increasing the likelihood of false information that could negatively impact agricultural practices and decision-making (Chowdhury *et al.* 2025) .

The literature is still relatively fragmented in terms of disciplines, technology, and study contexts, despite the increasing amount of research on digital agricultural communication. The majority of research is done on a single platform or technology without taking into account broader methodological, theoretical, and contextual insights. Furthermore, the development of a comprehensive understanding of the field is hampered by the restricted application of analytical frameworks. In order to fill these gaps, this paper will present an in-depth analysis of digital agricultural communication using bibliometric analysis and a systematic literature search of articles published in 2016-2025. This discontinuity highlights the necessity of synthesizing existing research in a methodical and thorough manner. By assessing publication trends, regional coverage, and source contributions in terms of bibliometrics, the report specifically attempts to analyze the research environment. It also discusses how digital platforms such as social media, mobile apps, and ICT technologies can be used to exchange agricultural information. The study looks at important application areas such knowledge sharing, advisory services, and information distribution, as well as research gaps, limitations, and future directions, in addition to assessing methodological trends and research approaches. Through this synthesis, the study provides a thorough and methodical understanding of digital agricultural communication and advances both theoretical and practical knowledge in this area. A conceptual framework that depicts the connection between digital communication tools, communication functions, farmer participation, and agricultural outcomes in the context of digital agricultural communication was developed based on the reviewed literature. Additionally, the framework highlights the moderating elements that impact digital communication system's efficacy in agriculture.(Fig. 1).

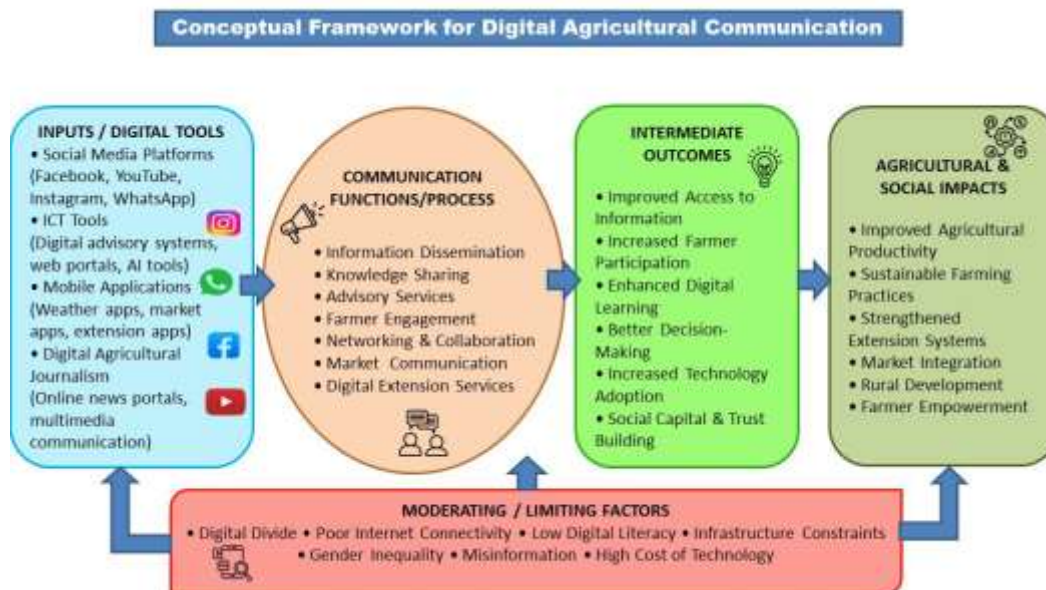


Fig. 1. Conceptual framework of digital agricultural communication

2. MATERIALS AND METHODS

In order to thoroughly identify, evaluate, and synthesize the existing research on digital agricultural communication, this work uses Systematic Literature Review (SLR) technique. The SLR approach is well-known for its automated, transparent, and repeatable procedure that makes it possible to combine the results of several investigations in a given field of study. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology, which guarantees scientific rigor and reduces bias in the selection and reporting of studies, was used to conduct the review process.

2.1. Document Search

The Scopus database was used in a methodical search to find pertinent research on digital agricultural communication. Scopus was chosen as a dependable resource for multidisciplinary systematic reviews because of its broad coverage of excellent, peer-reviewed papers in the fields of agriculture, communication, and information technology. The review included articles published between 2016 and 2025, a time when social media, mobile apps, and ICT-based advising systems were rapidly adopted, signifying the shift from traditional agricultural communication to digitally mediated communication.

Following the document search, a methodical screening process was carried out on the records that were found in order to ensure that pertinent and excellent research were found. The screening was guided by predetermined inclusion and exclusion criteria (Table 1).

1) Identification: After gathering every article from the Scopus database, duplicate articles were identified and removed to prevent overlap.

2) Title and Abstract Screening: The titles and abstracts of the remaining papers were carefully examined to ascertain their applicability to digital agricultural communication. Studies that did not support the research were now eliminated.

3) Full-Text Assessment: Articles that made it beyond the first screening underwent a thorough full-text screening. This stage was required to ensure that the selected studies had a direct connection to information dissemination, agricultural communication, and digital platforms.

4) Eligibility and Final Inclusion: Relevance, quality, and fit for the study's goals were taken into consideration when screening the remaining publications. The final analysis only included those that satisfied all inclusion requirements.

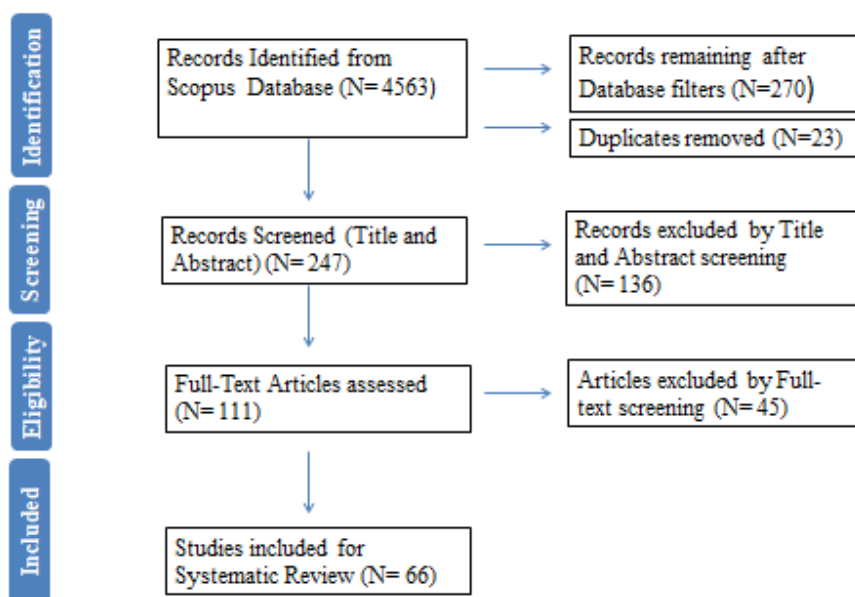


Fig. 2. PRISMA Flowchart

The PRISMA model (Fig. 2) served as the foundation for the overall selection process, which ensured methodological soundness and transparency via the identification, screening, eligibility, and inclusion of research.

2.2. Inclusion and Exclusion criteria

Parameter	Inclusion criteria	Exclusion Criteria
Publishing year	2016-2025	If published before 2016
Document type	Article	Review, Conference paper, Book chapter, Book
Subject Area	Social Sciences, Agricultural and Biological Science	
Language	English	French , Spanish , Japanese
Source type	Journal	Conference Proceedings, Book , Book Series
Publishing stage	Final	Article in press
Access type	Open Access	Restricted Access

Table 1. Inclusion and exclusion criteria

2.3. Method of analysis

Bibliometric analysis of publishing patterns, collaboration networks, and keyword correlations was carried out using the Bibliometrix package through Biblioshiny in R. While Microsoft Excel facilitated the descriptive analysis of study features, VOSviewer was utilized to show term co-occurrence networks and discover research clusters.(Aria and Cuccurullo 2017; Van Eck and Waltman 2010; Tranfield, Denyer, and Smart 2003).

3. Results

3.1. Bibliometric Analysis

3.1.1. Annual Scientific production on articles

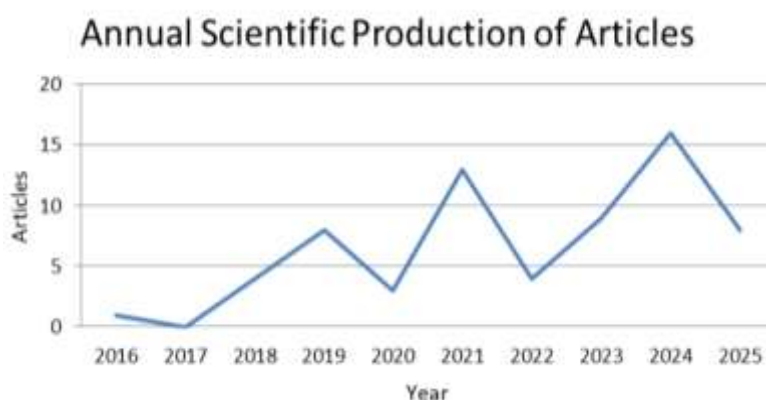


Fig. 3. Analysis of annual scientific production on articles for the period 2016-2025

Fig. 3. shows how research on digital agricultural communication is produced scientifically each year for the selected time frame. According to the findings, there was comparatively little research done in the early years, and the publishing tendency was erratic. The number of articles has steadily climbed since 2018, indicating the agricultural sector's interest in digital communication. The number of scientific publications has climbed dramatically after 2021, reaching a peak of more than fifteen articles published in 2024. This wave highlights the increasing scholarly focus on the use of digital platforms in agricultural communication, such as social media, mobile apps, and ICT tools. There is a little decline in publications in 2025, however this can be explained by the fact that the year was not fully covered at the time the data was gathered, so it might not accurately represent the year's output. Overall, the findings show a dynamic pattern of scientific activity that fluctuates according on how digital technologies are used in agriculture.

3.1.2. Analysis of most relevant sources

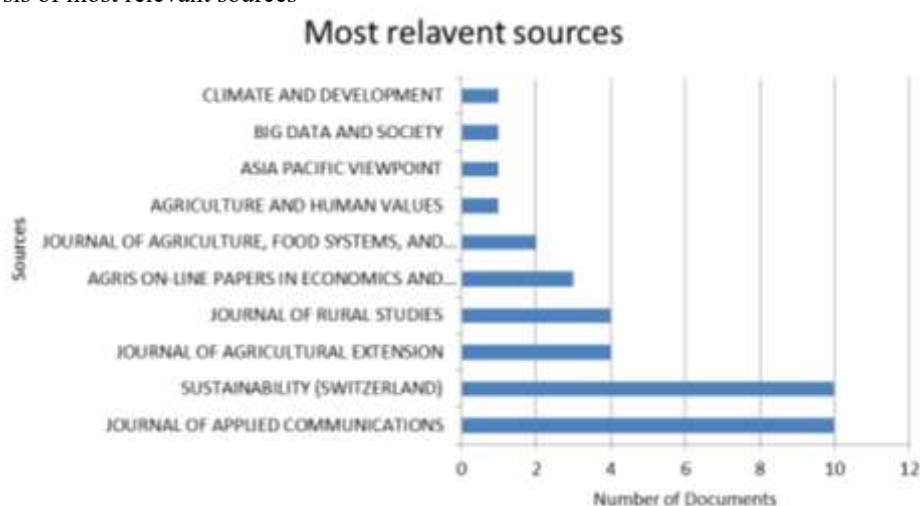


Fig. 4. Analysis of most relevant sources for the period 2016-2025

Fig. 4. A small number of major journals, particularly the Journal of Applied Communications and Sustainability (Switzerland), which act as major centre of scholarly discourse in digital agricultural communication, are concentrated in the research, as demonstrated by the publication distribution of sources. There is a strong connection between the field of rural development and extension systems, as evidenced by the support provided by journals such as the Journal of Agricultural Extension and the Journal of Rural Studies. Comparable contributions from interdisciplinary sources, such Big Data and Society and AGRIS Online Papers in Economics and Informatics, suggest that the field extends beyond traditional agricultural domains into technical and socioeconomic domains. A vast but dispersed study terrain is further proposed by a range of low-frequency publications. Generally speaking, the pattern is core-periphery, with a variety of peripheral sources demonstrating the field's interdisciplinary and evolving nature and a limited number of important publications establishing it.

3.1.3. Analysis of Country scientific production

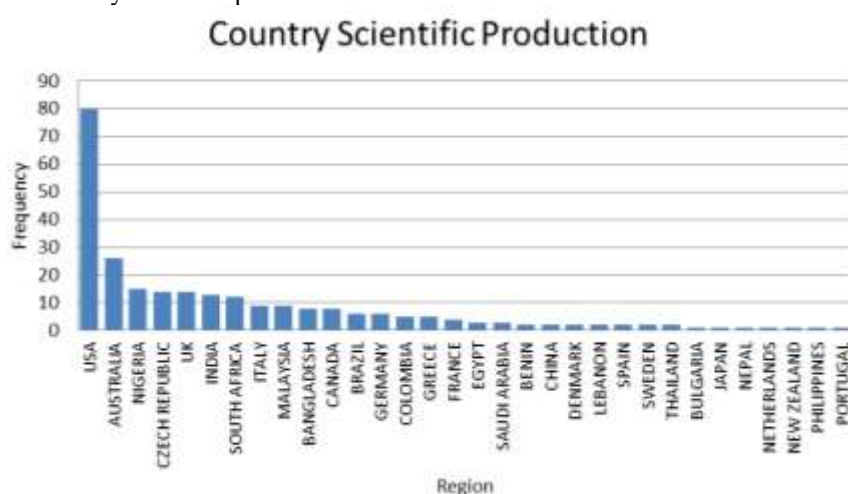


Fig. 5. Analysis of Country scientific production for the period 2016-2025

According to Fig. 5, the distribution of scientific output among nations reveals a glaring disparity in research efforts, with a small number of nations leading the way and many others making considerably smaller contributions. Because of its robust research infrastructure and active participation in this subject, the United States stands apart. Significant contributions are being made by nations including the United Kingdom, Australia, Nigeria, and the Czech Republic, indicating that interest in digital agricultural communication is growing throughout the world. Their productivity is still much lower than that of the top nation, though. However, the fact

that many nations have made little contribution shows that the field is both internationally significant and unevenly developed. Even while participation is broad, the level of research effort varies greatly, suggesting that many areas are still in the early phases of investigating this field.

3.1.4 Analysis of Most Global cited documents

Paper	Total Citations	TC per Year
BOWEN, 2019, J RURAL STUDY	140	17.50
KRELL, 2021, CLIM DEV	133	22.17
BOS, 2016, J RURAL STUD	113	10.27
HASHEM, 2021, SUSTAINABILITY	44	7.33
BELLO-BRAVO, 2018, INF TECHNOL DEV	42	4.67
STEUP, 2018, PROC ACM HUM COMPUT INTERACT	36	4.00
VALLIANT, 2019, LAND USE POLICY	28	3.50
RILEY, 2022, SOCIOL RURALIS	26	5.20
NIDUMOLU, 2020, WEATHER CLIM EXTREMES	24	3.43
BASTOS, 2018, SOC NETW	21	2.33

Table 2. Most Global cited documents

Table 2. explains the analysis of globally cited documents reveals a high concentration of influence among a few key studies, with Bowen (2019) receiving the highest number of citations (140), followed closely by Krell (2021) with 133 citations, and Bos (2016) with 113 citations. This suggests that the field has been shaped by a small number of publications. Sustainability, climate change, and rural development are significant fields of research, as evidenced by the fact that these highly cited articles are primarily published in publications like the Journal of Rural articles and Climatic Development. This demonstrates the interdisciplinary nature of the field by showing how agricultural communication interacts with socioeconomic and environmental challenges. Another sign of the temporal influence is the variation in citation intensity. The variation in citation intensity is another indication of the temporal impact. While earlier research like Bos (2016) have accumulated considerable total citations over time, more contemporary works like Krell (2021) exhibit a higher citations per year (22.17) compared to Bowen (2019) (17.50), reflecting their quick and expanding reputation in recent years. Furthermore, a few mid-range papers with citations between 40 and 44, such Hashem (2021) and Bello-Bravo (2018), advance the discipline by bolstering and broadening current study avenues. Overall, the citation pattern highlights the field's dynamic evolution as well as its established body of knowledge by combining very significant foundational studies with recently emerging high-impact research.

3.1.5 Co-Occurrences of Keywords

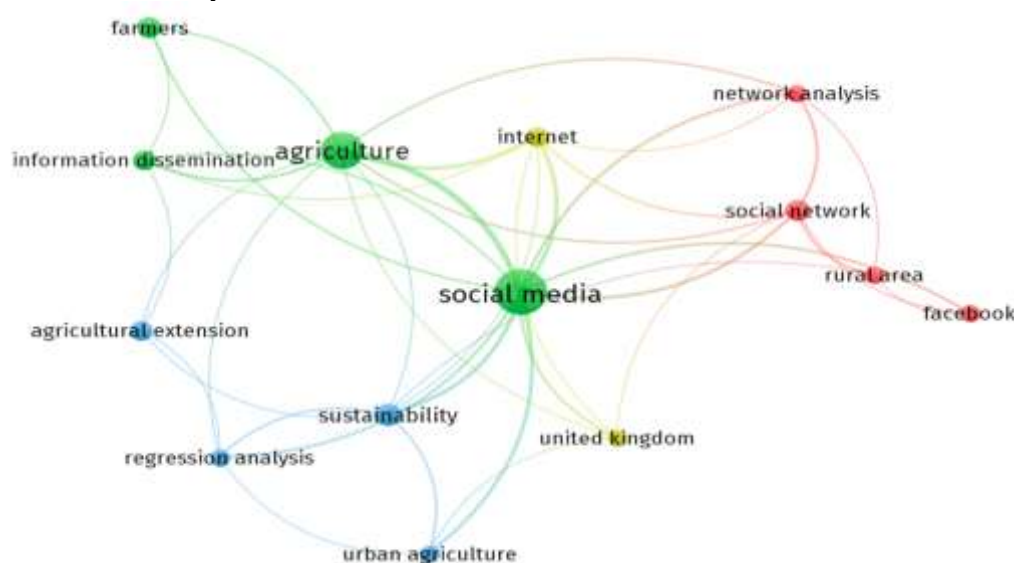


Fig. 6. Co-occurrences of Keywords

The co-occurrence network in Fig. 6 illustrates the field's structure and the connections between important ideas in research on digital agricultural communication. The two most significant and interconnected themes at the core of the network are "social media" and their intimate connection suggests that a significant amount of the research focuses on the use of digital platforms in agriculture. These significant subjects are closely associated with terms like "internet," "information dissemination," and "farmers." They demonstrate how digital tools facilitate

knowledge sharing and communication among agricultural stakeholders. This demonstrates that the field seeks to increase farmer engagement and information availability. The terms "social network," "network analysis," "rural area," and "facebook" form a separate cluster. This cluster demonstrates how social network analysis is being used more frequently to examine communication patterns in rural and agricultural contexts. It implies an increasing trend toward analytical and data-driven approaches to comprehending digital interactions. Another cluster that includes "sustainability," "regression analysis," "urban agriculture," and "agricultural extension" demonstrates how the field is incorporating quantitative techniques and sustainability considerations. This suggests that research is becoming more and more concerned with measuring impact and assessing results in addition to being descriptive.

4. DISCUSSION

By integrating bibliometric analysis with a systematic examination of 66 scientific publications, this study provides a thorough investigation of digital agricultural communication. This part offers insights that help understand the state of the art and evolution, research techniques, the roles of digital communication, and potential applications of this instrument in agriculture based on the interpretation of findings. Several issues will be brought to light during this procedure.

4.1. Research Landscape and Evolution of Digital Agricultural Communication

The results show that, since 2018, there have been an increasing number of publications in the relatively new and dynamic field of digital agricultural communication. The expanding significance of digital technology, social media, and ICT tools in terms of their application to agriculture explains the topic's rising appeal. However, there are several anomalies in the existing research environment, such as the lack of study in some areas and the uneven participation of nations like Nigeria, India, and the United States. With the predominance of important journals like the Journal of Applied Communications and Sustainability, a source analysis verifies the existence of core-periphery distribution. Scientific knowledge is exchanged in a number of core publications. These platforms facilitate information sharing, peer learning, and stakeholder involvement (Ashikuzzaman *et al.* 2025; Iwuchukwu, Eke, and Nwobodo 2019; Prost, Gross, and Prost 2024). Simultaneously, they facilitate wider involvement in agricultural discourse, such as consumer engagement and consumer interaction (Mazzocchi *et al.* 2024) (Eiseman and Stevenson Won 2023). The results do, however, also highlight significant limits. Due to obstacles like a lack of digital literacy, high costs, and infrastructure limitations, farmers' use of social media is still uneven and frequently restricted to informal purposes (Abuta, Agumagu, and Adesope 2021; Bowen and Morris 2019; Mulaudzi, Olorunfemi, and Agholor 2024). Furthermore, the dissemination of false information and subpar content puts well-informed decision-making at danger (Chowdhury *et al.* 2025).

4.2. Methodological Trends in Digital Agricultural Communication Research

Quantitative methodology, which comprises surveys, regression models, SEM, and statistical analysis, is the main approach utilized in the field (Ahmad *et al.* 2024; Khan *et al.* 2022; Rai *et al.* 2024). They have mostly been used to look into patterns in technology adoption, information behaviours, and digital engagement. Meanwhile, in order to better comprehend farmer's experiences, social relationships, and communication, qualitative methods such as ethnography, case studies, and interviews are essential (Akter and Tan 2023; Shank *et al.* 2025; Steup *et al.* 2018). The process of analyzing the problem at hand is further improved by combining quantitative and qualitative techniques (Bowen and Morris 2019; Prost, Gross, and Prost 2024). Additionally, data-driven approaches that use sentiment analysis, social network analysis, and big data analytics are becoming more and more popular (Bastos *et al.* 2018; Drescher, Grebitus, and Roosen 2023; Mazzocchi *et al.* 2024). However, longitudinal dynamics research is still hindered by the widespread use of cross-sectional research designs.

4.3. Applications of Digital Communication in Agriculture

The core elements of modern agricultural extension systems include digital communication technology, which is widely used for information sharing, advisory services, and information distribution. Farmers can better manage their fields, market their produce, and acquire essential agricultural information by using ICT and mobile applications (Hashem *et al.* 2021; Kumar 2023; Udisha and Ambily Philomina 2024). Multimedia approaches, through mobile-based video content, are found to be highly effective in improving learning outcomes and knowledge acquisition (Bello-Bravo *et al.* 2018). While digital advisory services and extension programs enable the dissemination of climate information and best practices (Khan *et al.* 2022; Nidumolu *et al.* 2020). Additionally, agri-food products can be marketed and promoted using social media (Kanellos *et al.* 2024; Kánská *et al.* 2021). Digital communication serves greater functional roles in agricultural systems beyond applications. It makes it easier for farmers, extension agents, researchers, and consumers to collaborate, communicate, and co-create knowledge. Social media platforms facilitate the development of relationships, transparency, and trust, particularly through influencer communication and storytelling (Bennett *et al.* 2024; Shank *et al.* 2025). Digital platforms also support the growth of social capital and identity by allowing farmers to share their practices, convictions, and experiences with broader audiences (Riley and Robertson 2022). They also promote resilience, emotional connection, and community building, especially among vulnerable groups like women farmers and those experiencing climate stress (Daigle and Heiss 2021; Samson, Fielding, and Collie 2025). Farmers may advertise their goods, reach customers, and take part in digital economies thanks to digital communication, which also facilitates market integration and economic potential (Kánská *et al.* 2021; Valliant *et al.* 2019). However,

because differences in infrastructure, skills, and access continue to influence the results of digital interaction, these functional advantages are not consistently realized.

5. Limitations and future directions

Nonetheless, the current corpus of literature has numerous shortcomings. First, because of context-dependence and small sample sizes, most studies have a limited scope (Akter and Tan 2023; Samson, Fielding, and Collie 2025; Shank *et al.* 2025). Second, the use of self-reports and mostly cross-sectional designs restricts the ability to draw inferences about causality (Abuta, Agumagu, and Adesope 2021; Hashem *et al.* 2021; Shank *et al.* 2025). Thirdly, many studies ignore the entire digital communication system in favour of focusing on a single platform and specific technologies (Bastos *et al.* 2018; Hersherberger *et al.* 2024; Drescher, Grebitus, and Roosen 2023). Furthermore, a number of challenges persist, including infrastructural problems, digital illiteracy, and unequal access to ICT (Bowen and Morris 2019; Krell *et al.* 2021; Mulaudzi, Olorunfemi, and Agholor 2024). Longitudinal and experimental analysis are needed for future research to investigate causal relationships. Furthermore, contextual issues can be resolved with the aid of cross-regional analysis. Multi-platform systems and technologies require further attention in future study. Furthermore, new issues like false information should not be disregarded (Chowdhury *et al.* 2025).

6. CONCLUSION

In conclusion, by integrating the results of a bibliometric analysis and a systematic assessment of the literature a total of 66 articles the current study provides a comprehensive viewpoint on digital agricultural communication. The results of the bibliometric analysis, in particular, show that the sector is developing quickly due to the growing usage of social media, mobile phones, and other ICTs in agriculture. The findings of a systematic assessment of the literature indicate how crucial digital technologies are to the process of sharing information, offering guidance, and advancing farmers' expertise. In addition, digital platforms allow farmers to interact with each other and create identities in addition to their direct application. Overall, by enhancing information sharing, advisory services, and farmer participation, digital agricultural communication has grown to be a crucial part of contemporary agricultural extension. In order to promote sustainable agricultural growth, especially in tropical regions, future research should concentrate on bolstering theoretical underpinnings, broadening geographical representation, and implementing longitudinal and multidisciplinary techniques.

Declarations

The author declares no conflict of interest and no external funding for this study. This research is based solely on secondary data from publicly available sources, and no ethical approval was required. The author is solely responsible for the design, analysis, and writing of this manuscript.

Acknowledgements

The authors are grateful for Tamil Nadu Agricultural University and for providing the library sources for the collection of literature.

Compliance with ethical standards

Conflict of interest: Authors do not have any conflict of interests to declare.

Ethical issues: None

REFERENCES

1. Abuta, Chigozie Mark-Anthony, Anthony Chukwuemeka Agumagu, and Olufemi Martins Adesope. 2021. "Social Media Used by Arable Crop Farmers for Communicating Climate Change Adaptation Strategies in Imo State, Nigeria." *Journal of Agricultural Extension* 25 (1): 73–82. doi:10.4314/jae.v25i1.8.
2. Ahmad, Babor, Md Abdur Rouf Sarkar, Fahima Khanom, Rozina Yeasmin Lucky, Mou Rani Sarker, Md Golam Rabbani, Shraboni Rani Rani Ray, Md Naimur Rahman, and Md Nazirul Islam Sarker. 2024. "Experience of Farmers Using Mobile Phone for Farming Information Flow in Boro Rice Production: A Case of Eastern Gangetic Plain." *Social Sciences & Humanities Open* 9: 100811. doi:10.1016/j.ssaho.2024.100811.
3. Akter, Afruza, and Kim Hua Tan. 2023. "Agro-Based Mobile Apps Adoption among Bangladeshi Farmers at the 'Hamlet' of Bangladesh – A Case Study of Chandpura Village of Barisal." *Jurnal Komunikasi: Malaysian Journal of Communication* 39 (4): 324–39. doi:10.17576/JKMJC-2023-3904-17.
4. Anshida, M., P.P. Murugan, M. Senthilkumar, M. Chandrakumar, and G. Vanitha. 2025. "Impact of Social Media on the Psychological Well-Being of Rural Youth- A Systematic Literature Review and Bibliometric Analysis." *Entertainment Computing* 55 (September): 101012. doi:10.1016/j.entcom.2025.101012.
5. Aria, Massimo, and Corrado Cuccurullo. 2017. "Bibliometrix: An R-Tool for Comprehensive Science Mapping Analysis." *Journal of Informetrics* 11 (4): 959–75. doi:https://doi.org/10.1016/j.joi.2017.08.007.

6. Ashikuzzaman, Md, Mohammad Shahidul Hasan Swapan, Atiq Uz Zaman, and Yongze Song. 2025. "From Social Innovation to Institutional Governance: Unveiling Urban Rooftop Farming in Dhaka City Using YouTube Video Analysis." *Landscape and Urban Planning* 259 (July): 105366. doi:10.1016/j.landurbplan.2025.105366.
7. Bastos, Marco, Carlo Piccardi, Michael Levy, Neil McRoberts, and Mark Lubell. 2018. "Core-Periphery or Decentralized? Topological Shifts of Specialized Information on Twitter." *Social Networks* 52 (January): 282–93. doi:10.1016/j.socnet.2017.09.006.
8. Bello-Bravo, Julia, Manuele Tamò, Elie Ayitondji Dannon, and Barry Robert Pittendrigh. 2018. "An Assessment of Learning Gains from Educational Animated Videos versus Traditional Extension Presentations among Farmers in Benin." *Information Technology for Development* 24 (2): 224–44. doi:10.1080/02681102.2017.1298077.
9. Bennett, Samantha, David S Martin, Jason T. Sawyer, Soren P. Rodning, and Don Mulvaney. 2024. "Measuring Agricultural Means of Influence on Young Adults via Instagram in the United States." *Journal of Applied Communications* 108 (2). doi:10.4148/1051-0834.2521.
11. Bowen, Robert, and Wyn Morris. 2019. "The Digital Divide: Implications for Agribusiness and Entrepreneurship. Lessons from Wales." *Journal of Rural Studies* 72 (December): 75–84. doi:10.1016/j.jrurstud.2019.10.031.
12. Chowdhury, Ataharul, Khondokar H. Kabir, Nasir Abbas Khan, and Gordon Gow. 2025. "How Does Misinformation Influence the Digital Agri-Food Advisory Service? Multi-Stakeholder Perspectives from Sri Lanka." *Sustainable Futures* 10 (December): 101093. doi:10.1016/j.sftr.2025.101093.
13. Daigle, Kerry, and Sarah Noel Heiss. 2021. "Perceptions of Social Media Use Among U.S. Women Farmers." *Journal of Applied Communications* 105 (1). doi:10.4148/1051-0834.2346.
14. Drescher, Larissa S., Carola Grebitus, and Jutta Roosen. 2023. "Exploring Food Consumption Trends on Twitter with Social Media Analytics: The Example of #Veganuary." *EuroChoices* 22 (2): 45–52. doi:10.1111/1746-692X.12403.
15. Eiseman, Danielle L, and Andrea Stevenson Won. 2023. "Community Attitudes Toward Local Foods and Producers: The Role of Warmth Versus Competence Across Demographics for Social Media Engagement." *Journal of Applied Communications* 107 (1). doi:10.4148/1051-0834.2470.
16. Haller, Leigha, Annie R. Specht, and Emily B. Buck. 2019. "Exploring the Impact of Ohio Agricultural Organizations' Social Media Use on Traditional Media Coverage of Agriculture." *Journal of Applied Communications* 103 (4). doi:10.4148/1051-0834.2264.
17. Hashem, Nesrein M., Eman M. Hassanein, Jean-François Hocquette, Antonio Gonzalez-Bulnes, Fayrouz A. Ahmed, Youssef A. Attia, and Khalid A. Asiry. 2021. "Agro-Livestock Farming System Sustainability during the COVID-19 Era: A Cross-Sectional Study on the Role of Information and Communication Technologies." *Sustainability* 13 (12): 6521. doi:10.3390/su13126521.
18. Hershberger, Scott, Bret Shaw, Steven Moen, Tony Johnson, and Tricia Gorby. 2024. "Promoting Small-Scale Maple Syrup Production on Facebook: A Field Experiment Testing Emphasis Message Frames." *Journal of Agriculture, Food Systems, and Community Development*, September, 1–26. doi:10.5304/jafscd.2024.134.012.
19. Iwuchukwu, Juliana Chinasa, Okechukwu George Eke, and Cynthia Ebere Nwobodo. 2019. "Perception of Extension Personnel on Suitability and Benefits of Using Social Media in Communicating Agricultural Information in Enugu State, Nigeria." *Journal of Agricultural Extension* 23 (3): 172. doi:10.4314/jae.v23i3.15.
20. Kanellos, Nikos, Panagiotis Karountzos, Nikolaos T. Giannakopoulos, Marina C. Terzi, and Damianos P. Sakas. 2024. "Digital Marketing Strategies and Profitability in the Agri-Food Industry: Resource Efficiency and Value Chains." *Sustainability* 16 (14): 5889. doi:10.3390/su16145889.
21. Kánská, Eva, Michal Stočes, Department of Information Technology, Faculty of Economics and Management, Czech University of Life Sciences Prague, Czech Republic, Jan Masner, Department of Information Technology, Faculty of Economics and Management, Czech University of Life Sciences Prague, Czech Republic, Jan Jarolínek, Department of Information Technology, Faculty of Economics and Management, Czech University of Life Sciences Prague, Czech Republic, Pavel Šimek, Jiří Vaněk, and Department of Information Technology, Faculty of Economics and Management, Czech University of Life Sciences Prague, Czech Republic. 2021. "Possibilities of Using Social Networks as Tools for Integration of Czech Rural Areas - Survey 2021." *Agris On-Line Papers in Economics and Informatics* 13 (3): 59–66. doi:10.7160/aol.2021.130306.
22. Khan, Nasir Abbas, Ashfaq Ahmad Shah, Muhammad Atiq Ur Rehman Tariq, Ataharul Chowdhury, and Uttam Khanal. 2022. "Impact of Farmers' Climate Risk Perception and Socio-Economic Attributes on Their Choice of ICT-Based Agricultural Information Services: Empirical Evidence from Pakistan." *Sustainability* 14 (16): 10196. doi:10.3390/su141610196.
23. Krell, N. T., S. A. Giroux, Z. Guido, C. Hannah, S. E. Lopus, K. K. Caylor, and T. P. Evans. 2021. "Smallholder Farmers' Use of Mobile Phone Services in Central Kenya." *Climate and Development* 13 (3): 215–27. doi:10.1080/17565529.2020.1748847.
24. Kumar, Rajender. 2023. "Farmers' Use of the Mobile Phone for Accessing Agricultural Information in Haryana: An Analytical Study." *Open Information Science* 7 (1): 20220145. doi:10.1515/opis-2022-0145.

25. Mazzocchi, Giampiero, Marco Vassallo, Giuliano Gabrieli, and Roberto Henke. 2024. “‘No Farmers, No Food’: A Sentiment Analysis of the 2024 Farmers’ Protests in Italy.” *Rivista Di Economia Agraria* 79 (2): 93–106. doi:10.36253/rea-15468.
26. Mohr, Svenja, and Julia Höhler. 2023. “Media Coverage of Digitalization in Agriculture - an Analysis of Media Content.” *Technological Forecasting and Social Change* 187 (February): 122238. doi:10.1016/j.techfore.2022.122238.
27. Mulaudzi, A.I., O.D. Olorunfemi, and A. I. Agholor. 2024. “Social Media Utilization Level among South African Smallholder Farmers: A Case Study of Mopani District, Limpopo Province.” *Cogent Social Sciences* 10 (1): 2356722. doi:10.1080/23311886.2024.2356722.
28. Nidumolu, Uday, Lilly Lim-Camacho, Estelle Gaillard, Peter Hayman, and Mark Howden. 2020. “Linking Climate Forecasts to Rural Livelihoods: Mapping Decisions, Information Networks and Value Chains.” *Weather and Climate Extremes* 27 (March): 100174. doi:10.1016/j.wace.2018.06.001.
29. Njinma, Nkemjika George. 2024. “JOURNALISM AND DISSEMINATION OF AGRICULTURAL RELATED NEWS: THE PROSPECT AND CHALLENGES.” . . Vol. 3 (1).
30. Pola, Anuhya, E. Priyankabai, G. Sabitha, and G. Snehalatha. 2026. “Digital Agricultural Journalism in India: A Review of Evolution, Integration with Extension, and Strategies for Strengthening.” *Journal of Scientific Research and Reports* 32 (4): 619–34. doi:10.9734/jsrr/2026/v32i44123.
31. Prost, Magali, Hélène Gross, and Lorène Prost. 2024. “How Could Social Media Support Farmers Concerned with Sustainability Issues?” *The Journal of Agricultural Education and Extension* 30 (1): 113–35. doi:10.1080/1389224X.2022.2153888.
32. Ragetlie, Rosalind, Dina Najjar, and Dorsaf Oueslati. 2022. “‘Dear Brother Farmer’: Gender-Responsive Digital Extension in Tunisia during the COVID-19 Pandemic.” *Sustainability* 14 (7): 4162. doi:10.3390/su14074162.
33. Rai, Santosh Kumar, Jyoti Prakash Singh, Kumod Kumar, and Khalid H. M. Alhamzi. 2024. “An Empirical Exploration of E-Agriculture System Acceptance, Satisfaction, and Usage.” *International Journal of Electronic Government Research* 20 (1): 1–26. doi:10.4018/IJEGR.344814.
34. Ramavhale, P.M., E.M. Zwane, and A. Belete. 2024. “The Benefits of Social Media Platforms Used in Agriculture for Information Dissemination.” *South African Journal of Agricultural Extension (SAJAE)* 52 (2): 77–90. doi:10.17159/2413-3221/2024/v52n2a15342.
35. Riley, Mark, and Bethany Robertson. 2022. “The Virtual Good Farmer: Farmers’ Use of Social Media and the (Re)Presentation of ‘Good Farming.’” *Sociologia Ruralis* 62 (3): 437–58. doi:10.1111/soru.12390.
36. Samson, Amy R., Kelly S. Fielding, and Natalie Collie. 2025. “Can Instagram Contribute to the Wellbeing and Flourishing of Australian Farming Women in the Midst of Climate Challenges?” *Journal of Rural Studies* 119 (October): 103742. doi:10.1016/j.jrurstud.2025.103742.
37. Shank, Shelby, Jason Headrick, Laura Fischer, and David Doerfert. 2025. “A Phenomenological Investigation of Transparency Among Agricultural Influencers on Instagram.” *Journal of Applied Communications* 108 (4). doi:10.4148/1051-0834.2567.
38. Steup, Rosemary, Arvind Santhanam, Marisa Logan, Lynn Dombrowski, and Norman Makoto Su. 2018. “Growing Tiny Publics: Small Farmers’ Social Movement Strategies.” *Proceedings of the ACM on Human-Computer Interaction* 2 (CSCW): 1–24. doi:10.1145/3274434.
39. Sulistiani, Indah. 2025. “Millennial Farmers’ Digital Communication Experiences in Smart” 1 (2).
40. Tranfield, David, David Denyer, and Palminder Smart. 2003. “Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review.” *British Journal of Management* 14 (3): 207–22. doi:10.1111/1467-8551.00375.
41. Udisha, Omanakuttan, and Illiparambil Gabriel Ambily Philomina. 2024. “Bridging the Digital Divide: Empowering Rural Women Farmers Through Mobile Technology in Kerala.” *Sustainability* 16 (21): 9188. doi:10.3390/su16219188.
42. Valliant, Julia C.D., Kathryn Z. Ruhf, Kevin D. Gibson, J.R. Brooks, and James R. Farmer. 2019. “Fostering Farm Transfers from Farm Owners to Unrelated, New Farmers: A Qualitative Assessment of Farm Link Services.” *Land Use Policy* 86 (July): 438–47. doi:10.1016/j.landusepol.2019.05.004.
43. Van Eck, Nees Jan, and Ludo Waltman. 2010. “Software Survey: VOSviewer, a Computer Program for Bibliometric Mapping.” *Scientometrics* 84 (2): 523–38. doi:10.1007/s11192-009-0146-3.
44. Walsh, Jessica, Mildred F. Perreault, Greg Perreault, and Ruth Moon. 2024. “Gleaning Rural Journalism: Rural Journalists’ Agricultural and Environmental Reporting Utilizing Community Storytelling Networks*.” *Rural Sociology* 89 (4): 815–34. doi:10.1111/ruso.12558.