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Digital Platforms in Agribusiness: A Literature Review

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Abstract. The rapid advancement of digital technologies has significantly transformed the agribusiness sector, particularly through the emergence of digital platforms that facilitate interactions among multiple stakeholders across agricultural value chains. This study aims to review and synthesize the existing literature on the role of digital platforms in agribusiness, with a specific focus on business model transformation, value creation, and market access for smallholder farmers. The study employs a literature review (LR) approach using data collected from the Scopus database through a structured Boolean search query. A total of 14 relevant publications were identified and analyzed using a qualitative thematic approach. The findings indicate that digital platforms play a crucial role in transforming traditional agribusiness models into more networked, data-driven, and platform-based systems. These transformations enable new forms of coordination, reduce transaction costs, and foster innovation through multi-sided market interactions. In terms of value creation, digital platforms contribute not only to economic benefits such as increased income and efficiency but also to social and environmental outcomes, including financial inclusion and sustainable farming practices. Furthermore, digital platforms significantly improve market access for smallholder farmers by connecting them directly with buyers, enhancing price transparency, and reducing dependence on intermediaries. However, the review also highlights several persistent challenges, including limited digital infrastructure, low levels of digital literacy, affordability constraints, and issues related to trust and regulatory frameworks. These barriers hinder the inclusive adoption and scalability of digital platforms, particularly in developing countries. The study concludes that while digital platforms hold substantial potential to enhance agribusiness performance and inclusivity, their effectiveness depends on supportive ecosystems, including infrastructure development, capacity building, and appropriate policy interventions. This review contributes to the growing body of knowledge by providing an integrated perspective on how digital platforms influence agribusiness systems and identifies key areas for future research.

Keywords: digital platforms, agribusiness, value creation, market access.

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1. Introduction

In recent years, the rapid advancement of digital technologies has significantly reshaped various sectors of the global economy, including agriculture. The emergence of digital platforms—defined as technology-enabled intermediaries that facilitate interactions between multiple stakeholders—has introduced new paradigms in agribusiness systems[1]. These platforms integrate information, services, and market functions, enabling more efficient coordination across agricultural value chains. For smallholder farmers, who constitute the majority of agricultural producers in developing countries, digital platforms offer unprecedented opportunities to overcome long-standing structural constraints such as limited market access, information asymmetry, and fragmented supply chains[2], [3]. Agribusiness, traditionally characterized by linear and often opaque value chains, is undergoing a transformation toward more networked and data-driven systems. Digital platforms play a central role in this transition by connecting farmers with input suppliers, financial institutions, logistics providers, and buyers in real time[4]. Through mobile applications, e-commerce marketplaces, and data analytics tools, these platforms facilitate access to critical resources such as weather forecasts, price information, extension services, and digital

payments. Consequently, they contribute to improved decision-making, enhanced productivity, and reduced transaction costs for smallholder farmers.

The concept of business model transformation is particularly relevant in understanding the impact of digital platforms in agribusiness. Traditional agribusiness models often rely on intermediaries and face inefficiencies due to lack of transparency and coordination[5], [6]. In contrast, platform-based business models leverage digital infrastructure to create multi-sided markets, where value is co-created among diverse participants. These models enable disintermediation or reintermediation, streamline supply chains, and foster innovation through data-driven insights. As a result, agribusiness firms and startups are increasingly adopting platform strategies to remain competitive and responsive to evolving market demands[7], [8]. Value creation within digital agribusiness platforms extends beyond economic gains to include social and environmental dimensions. For smallholder farmers, digital platforms can enhance income stability by providing better price discovery and access to broader markets[9]. They also facilitate financial inclusion through digital credit and insurance services tailored to agricultural cycles. Moreover, by promoting sustainable farming practices through information dissemination and monitoring tools, digital platforms contribute to environmental sustainability. However, the extent to which these benefits are realized depends on several factors, including digital literacy, infrastructure availability, and institutional support.

Market access remains one of the most critical challenges faced by smallholder farmers. Limited access to formal markets often forces farmers to rely on local traders, resulting in lower bargaining power and reduced income. Digital platforms address this issue by enabling direct connections between producers and consumers or institutional buyers[10]. E-commerce platforms, for instance, allow farmers to bypass traditional intermediaries and reach urban markets more efficiently. Additionally, digital traceability systems enhance product transparency and quality assurance, which are increasingly demanded in global supply chains. Despite these advantages, barriers such as inadequate internet connectivity, lack of trust, and regulatory constraints continue to hinder widespread adoption[11], [12]. The growing body of literature on digital platforms in agribusiness reflects the increasing academic and practical interest in this field. Existing studies have explored various aspects, including platform design, adoption drivers, impacts on productivity and income, and policy implications. However, the literature remains fragmented, with limited synthesis of how digital platforms simultaneously influence business model transformation, value creation, and market access. Furthermore, there is a need to critically examine the inclusivity of these platforms, particularly in relation to marginalized smallholder farmers who may face additional barriers to participation.

This literature review aims to address these gaps by providing a comprehensive analysis of digital platforms in agribusiness, focusing on three key dimensions: business model transformation, value creation, and market access for smallholder farmers. By synthesizing findings from recent empirical and conceptual studies, this review seeks to identify common themes, emerging trends, and research gaps. It also aims to offer insights into how digital platforms can be designed and implemented to maximize their benefits for smallholder farmers while minimizing potential risks such as digital exclusion and dependency on platform providers. In addition, this review adopts a multidisciplinary perspective, drawing from fields such as agricultural economics, information systems, and development studies. This approach is essential given the complex and interconnected nature of digital agribusiness ecosystems. By integrating insights from multiple disciplines, the review provides a more holistic understanding of how digital platforms operate and evolve within different socio-economic contexts. Ultimately, the transformation of agribusiness through digital platforms represents both an opportunity and a challenge. While these platforms have the potential to enhance efficiency, inclusivity, and sustainability, their success depends on supportive policies, robust infrastructure, and the active participation of stakeholders across the value chain. Therefore, a systematic examination of the existing literature is crucial to inform future research, policy development, and practical interventions aimed at leveraging digital platforms for inclusive agricultural development.

2. Method

This study employs a literature review (LR) approach to examine and synthesize existing research on digital platforms in agribusiness, with a particular focus on business model transformation, value creation, and market access for smallholder farmers. Unlike a systematic literature review (SLR), which follows a highly rigid and protocol-driven procedure, the literature review approach adopted in this study is more flexible and interpretative,

allowing for a comprehensive and critical understanding of the topic while still maintaining methodological transparency and rigor. The data collection process was conducted using the Scopus database, which is widely recognized as a leading source of high-quality peer-reviewed academic publications across various disciplines. Scopus was selected due to its broad coverage, reliability, and advanced search features that enable precise retrieval of relevant literature. The search was carried out using a structured Boolean query applied to the title, abstract, and keywords (TITLE-ABS-KEY) fields to ensure that the identified publications were closely aligned with the research topic. The search string used in this study is as follows: ("digital platform" OR "e-commerce" OR "agri-platform") AND ("agribusiness" OR "smallholder farmers") AND ("business model" OR "value creation" OR "market access"). In this query, the Boolean operator “OR” was used to include synonymous and related terms within each conceptual category, thereby broadening the search scope. Meanwhile, the operator “AND” was used to combine different thematic dimensions, ensuring that the retrieved documents simultaneously address digital platforms, agribusiness or smallholder farmers, and at least one of the focal themes—business model, value creation, or market access.

The initial search results were then screened to identify relevant publications. The inclusion criteria were defined to ensure the relevance and academic quality of the selected literature. Specifically, this study includes peer-reviewed journal articles and conference papers written in English that explicitly discuss digital platforms within the context of agribusiness or smallholder farmers. Publications that did not address the core themes of this review or were outside the scope of the study were excluded. In addition, duplicate records were removed during the screening process. Following this selection process, a total of 14 documents were identified as relevant and included in the analysis. The relatively limited number of documents reflects the emerging and still-developing nature of research on digital platforms in agribusiness, particularly in relation to integrated discussions of business models, value creation, and market access.

For the data analysis, this study adopts a qualitative descriptive and thematic analysis approach. Each selected article was carefully reviewed to extract key information, including research objectives, methodological approaches, key findings, and theoretical contributions. The findings were then organized into three main analytical themes: (1) business model transformation, (2) value creation, and (3) market access. This thematic organization facilitates a structured discussion and enables the identification of patterns, convergences, and gaps within the existing literature. Although this study does not follow the strict procedural framework of a systematic literature review, efforts were made to ensure transparency and consistency in the research process. The use of a clearly defined search strategy, explicit inclusion criteria, and a systematic approach to data analysis enhances the credibility and reliability of the findings. This approach allows the study to provide meaningful insights while maintaining the flexibility needed to capture the complexity and multidimensionality of digital platforms in agribusiness. Overall, the literature review approach adopted in this study provides a solid foundation for understanding the current state of research and identifying key issues and opportunities related to the role of digital platforms in transforming agribusiness and improving market access for smallholder farmers.

3. Results and Discussion

The temporal distribution of publications on digital platforms in agribusiness—particularly focusing on business model transformation, value creation, and market access for smallholder farmers—demonstrates a gradual yet accelerating research trend over time. Figure 1 illustrates the evolution of scholarly output in this field from 2007 to 2025.

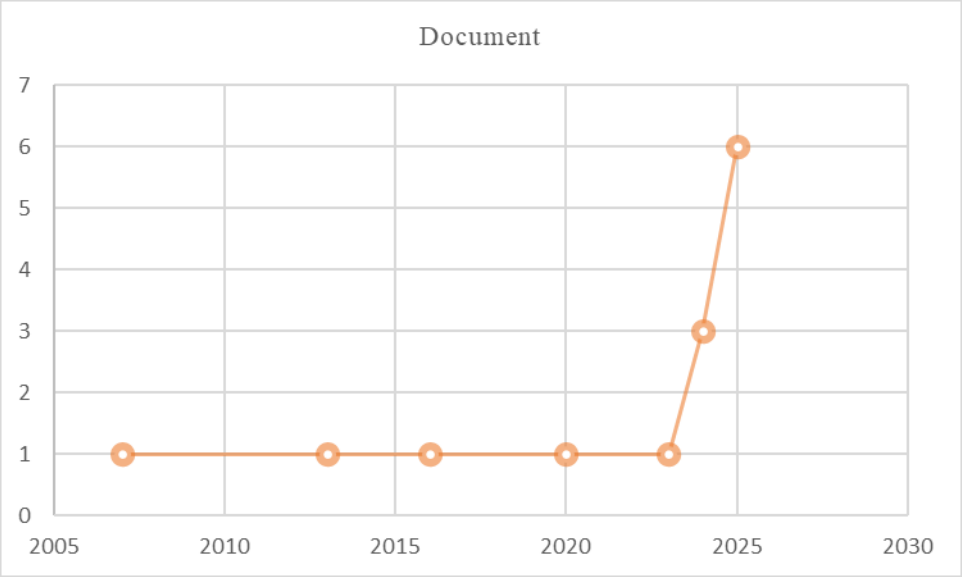

Figure 1. Evolution of Research on Digital Platforms in Agribusiness for Smallholder Farmers

As shown in Figure X, research on digital platforms in agribusiness remained relatively limited in its early stages, with only sporadic publications between 2007 and 2020. However, a notable increase is observed starting in 2023, followed by a significant surge in 2024 and a peak in 2025 with six publications. This upward trend indicates a growing academic interest and reflects the increasing relevance of digital transformation in agribusiness, particularly in enhancing business models, creating value, and improving market access for smallholder farmers.

Table 1. Selected Publications on Digital Platforms in Agribusiness and Related Topics

No.	Author(s)	Year	Title	Source	Citations
1	Montealegre et al.	2007	An empirical analysis of the determinants of success of food and agribusiness e-commerce firms	International Food and Agribusiness Management Review	25
2	Eric	2013	Making strategic decisions on B2B e-commerce models: An empirical study on Australian agribusinesses	International Journal of Electronic Commerce Studies	4
3	Ljutic et al.	2016	Serbian large agribusiness corporations knocking at the door of e-agribusiness revolution	Agris On-line Papers in Economics and Informatics	4
4	Levi et al.	2020	The impact of unifying agricultural wholesale markets on prices and farmers' profitability	Proceedings of the National Academy of Sciences of the USA	40
5	Gumbi et al.	2023	Towards sustainable digital agriculture for smallholder farmers: A systematic literature review	Sustainability (Switzerland)	85
6	Arun et al.	2024	The role of farmer producer organizations in raising smallholder farmers' income: A comprehensive review	Indian Journal of Economics and Development	4
7	Morepje et al.	2024	The influence of e-commerce platforms on sustainable agriculture practices among smallholder farmers in Sub-Saharan Africa	Sustainability (Switzerland)	50
8	Suzianti et al.	2024	Towards a sustainable coffee supply chain: The role of digital platform capability in increasing organisational agility	International Journal of Sustainable Engineering	5

No.	Author(s)	Year	Title	Source	Citations
9	Abdullayev et al.	2025	Digital transformation in agricultural cluster management: Interrelated factors and model applicability	Journal of Global Innovations in Agricultural Sciences	5
10	Ahsan et al.	2025	Exploring opportunities for smallholder saline farmers: A case of moringa value chain in South Punjab, Pakistan	Journal of Global Innovations in Agricultural Sciences	0
11	Kansiime et al.	2025	Pathways and business models for sustainable youth employment in agriculture: A review of research and practice in Africa	CABI Agriculture and Bioscience	0
12	Lagunda et al.	2025	From farm to nowhere: The broken promise of organic agriculture for Philippine smallholders	Outlook on Agriculture	0
13	Nurhayati et al.	2025	Innovations in agricultural e-commerce: Analyzing purchase decisions and the role of consumer credibility	Journal of Global Innovations in Agricultural Sciences	3
14	Susandi et al.	2025	Strategies for reducing inequality in agricultural value chains: A systematic review on smallholder participation in developing countries	International Journal of Design and Nature and Ecodynamics	1

Table 1 presents a selection of key publications on digital platforms in agribusiness and related domains, highlighting their chronological development and citation impact. The findings indicate that earlier studies, such as those by Montealegre et al.[13] and Levi et al.[14], have accumulated relatively higher citation counts, suggesting their foundational role in shaping the discourse on agribusiness digitalization and market structures. In contrast, more recent publications—particularly those published between 2024 and 2025—demonstrate a rapid increase in research output but relatively low citation counts, which is expected given their recency. Notably, the study by Gumbi et al.[15] stands out with the highest number of citations, reflecting strong scholarly attention toward sustainable digital agriculture and its relevance for smallholder farmers. Furthermore, the table reveals a growing thematic emphasis on digital transformation, e-commerce platforms, and inclusive value chains, particularly in developing country contexts. This trend underscores an increasing academic and practical interest in leveraging digital platforms to enhance business model innovation, value creation, and market access for smallholder farmers. Overall, the distribution of publications and citations suggests a maturing research field that is transitioning from foundational studies toward more applied, context-specific, and impact-oriented research.

Table 2. Summary of Key Studies on Digital Platforms in Agribusiness

No.	Author(s)	Year	Title	Key Findings
1	Montealegre et al.[13]	2007	An empirical analysis of the determinants of success of food and agribusiness e-commerce firms	The success of agribusiness e-commerce depends on platform characteristics and the sustainability of business models across the supply chain.
2	Eric [16]	2013	Making strategic decisions on B2B e-commerce models: An empirical study on Australian agribusinesses	Identifies 14 key factors influencing the selection of e-commerce models, indicating that decisions are multidimensional.
3	Ljutic et al.[17]	2016	Serbian large agribusiness corporations knocking at the door of e-agribusiness revolution	Digital transformation drives changes in agribusiness models through IT integration and adaptation to the digital economy.
4	Levi et al.[14]	2020	The impact of unifying agricultural wholesale markets on prices and farmers' profitability	Integrated digital market platforms significantly improve commodity prices and farmers' profitability.
5	Gumbi et al.[15]	2023	Towards sustainable digital agriculture for smallholder farmers: A systematic literature review	Highlights key challenges including digital infrastructure, affordability, and literacy, with limited research on business model innovation.

No.	Author(s)	Year	Title	Key Findings
6	Arun et al.[18]	2024	The role of farmer producer organizations in raising smallholder farmers' income	Farmer Producer Organizations (FPOs) enhance farmers' income through improved market access but face infrastructural and capacity constraints.
7	Morepje et al.[19]	2024	The influence of e-commerce platforms on sustainable agriculture practices	E-commerce platforms improve market access, pricing outcomes, and promote sustainable agricultural practices.
8	Suzianti et al.[20]	2024	Towards a sustainable coffee supply chain: The role of digital platform capability in increasing organisational agility	Digital platform capabilities enhance organizational agility and competitiveness in agricultural supply chains.
9	Abdullayev et al.[21]	2025	Digital transformation in agricultural cluster management: Interrelated factors and model applicability	Digital platforms foster hybrid governance models combining vertical integration and horizontal collaboration in agricultural clusters.
10	Ahsan et al.[22]	2025	Exploring opportunities for smallholder saline farmers: A case of moringa value chain in South Punjab, Pakistan	Strengthening value chains and integrating e-commerce create opportunities for value addition and increased farmer income.
11	Kansiime et al.[23]	2025	Pathways and business models for sustainable youth employment in agriculture	Platform-based and network-driven business models enhance scalability and youth inclusion in agricultural value chains.
12	Lagunda et al.[24]	2025	From farm to nowhere: The broken promise of organic agriculture for Philippine smallholders	Despite increased production, smallholders capture limited value due to dependence on intermediaries and weak market access.
13	Nurhayati et al.[25]	2025	Innovations in agricultural e-commerce: Analyzing purchase decisions and the role of consumer credibility	Consumer credibility plays a crucial role in influencing purchase decisions and strengthening trust in e-commerce platforms.
14	Susandi et al.[26]	2025	Strategies for reducing inequality in agricultural value chains: A systematic review on smallholder participation in developing countries	Digitalization improves income and efficiency but is constrained by limited infrastructure, low digital literacy, and high adoption costs.

Table 2 synthesizes key studies on digital platforms in agribusiness, highlighting the evolution of research themes, methodological focus, and empirical findings over time. The evidence suggests that early studies, such as Montealegre et al.[13] and Eric [16], primarily focused on the determinants and strategic selection of e-commerce business models, emphasizing firm-level characteristics and decision-making complexity. This foundational phase established the importance of platform design and business model sustainability in agribusiness contexts. Subsequent studies reflect a transition toward digital transformation and its systemic implications. For instance, Ljutic et al. [17] and Levi et al. [14] demonstrate how digital technologies and integrated market platforms reshape agribusiness structures and improve market efficiency, particularly in terms of price formation and farmer profitability. These studies highlight the growing role of digital platforms as enablers of market integration and performance enhancement.

More recent research (2023–2025) shows a significant shift toward inclusivity, sustainability, and value chain development, particularly for smallholder farmers. Studies such as Gumbi et al.[15] and Susandi et al. [26] identify persistent barriers, including limited digital infrastructure, low digital literacy, and high adoption costs, which constrain the effective utilization of digital platforms. At the same time, empirical evidence from Morepje et al.[19], Suzianti et al.[20], and Ahsan et al.[22] demonstrates that digital platforms can enhance market access, organizational agility, and value creation when supported by appropriate capabilities and institutional frameworks. Furthermore, the literature highlights the emergence of innovative and hybrid business models, as noted by Abdullayev et al.[21] and Kansiime et al.[23], which combine platform-based mechanisms with collaborative and network-driven approaches. However, critical challenges remain, particularly in ensuring equitable value capture for smallholders, as illustrated by Lagunda et al.[24], where dependence on intermediaries limits the benefits of increased production. Additionally, consumer-related factors, such as credibility and trust[25], are increasingly recognized as essential components of successful digital platform adoption. Overall, the table indicates that the

research field has evolved from a focus on e-commerce adoption and firm-level strategies toward a more comprehensive understanding of digital platforms as socio-technical systems. These systems not only transform business models but also influence value creation, market access, and inclusivity in agribusiness. Despite the promising potential, the literature consistently underscores the need for integrated approaches that address technological, institutional, and capability-related constraints to fully realize the benefits of digital platforms for smallholder farmers.

4. Conclusion

This literature review reveals that digital platforms have become a transformative force in agribusiness, particularly in reshaping business models, enhancing value creation, and expanding market access for smallholder farmers. The analysis shows a clear evolution of the research landscape—from early studies emphasizing e-commerce adoption and firm-level strategic decisions toward more recent investigations focusing on platform-enabled ecosystems, inclusivity, and sustainability. From a business model perspective, digital platforms facilitate the emergence of hybrid and network-based configurations that integrate producers, intermediaries, and consumers within more flexible and scalable systems. These models enable new forms of coordination, reduce transaction costs, and support innovation in service delivery. However, the findings also indicate that the effectiveness of such models depends heavily on complementary factors, including institutional support, digital capabilities, and governance structures.

In terms of value creation, the literature demonstrates that digital platforms can significantly improve efficiency, transparency, and responsiveness across agricultural value chains. They enable smallholder farmers to access real-time market information, adopt improved production and marketing practices, and participate in higher-value markets. Nevertheless, the distribution of value remains uneven, as smallholders often capture only a limited share due to persistent reliance on intermediaries and weak bargaining power. Regarding market access, digital platforms have shown strong potential to reduce traditional barriers by connecting farmers directly to buyers and enabling participation in broader and more dynamic markets. Despite these advantages, structural constraints—such as inadequate digital infrastructure, low levels of digital literacy, and affordability issues—continue to limit the inclusiveness and scalability of these platforms, particularly in developing country contexts.

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