

Digital Marketing Strategies for Agriculture: Indonesia and Ukraine

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Abstract. This review synthesizes research on digital marketing for agricultural products in Indonesia (one country in Asia) and Ukraine (one country in Europe) to address gaps in understanding the application, challenges, and impacts of digital marketing strategies within these distinct agricultural sectors. The review aimed to evaluate current digital marketing approaches, benchmark tools and platforms, identify implementation barriers and opportunities, compare intervention effectiveness, and assess the influence of digital literacy and infrastructure on adoption. A systematic analysis of over seventy studies employing qualitative, quantitative, and mixed methods was conducted, focusing on rural and MSME contexts in Indonesia and agribusiness digital transformation in Ukraine. Findings reveal diverse digital marketing strategies centered on social media, e-commerce, and integrated branding, which significantly enhance market reach and sales, with income increases reported up to 82%. Adoption barriers include limited digital literacy, infrastructural constraints, and traditional marketing dominance, mitigated partially by targeted training and mentoring programs that improve digital competencies. Platform effectiveness varies, with multi-channel approaches and emerging technologies like Artificial Intelligence (AI) and Internet of Things (IoT) showing promise but underutilized. These insights inform policymakers and practitioners on optimizing digital marketing to foster sustainable agricultural market integration in Indonesia and Ukraine.

1 Introduction

Research on digital marketing for agricultural products in Indonesia and Ukraine has emerged as a critical area of inquiry due to the increasing integration of digital technologies in agribusiness and the need to enhance market access and competitiveness. Over the past decade, the adoption of digital marketing tools such as social media, e-commerce platforms, and mobile applications has evolved from limited experimental use to widespread implementation among agricultural producers and cooperatives [1][2]. This evolution reflects broader trends in digital transformation within the agricultural sector, which is vital for food security and rural economic development. The practical significance of this research is underscored by the growing demand for efficient marketing channels that can reduce

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intermediaries, increase farmers' income, and expand consumer reach in both countries [3,4]. For instance, digital marketing has been linked to increased sales and improved brand awareness among Indonesian farmer groups and Ukrainian agribusinesses [5,6].

Despite these advances, challenges remain in effectively leveraging digital marketing for agricultural products. The problem lies in limited digital literacy among farmers, infrastructural constraints, and the underutilization of diverse digital platforms [7-9]. While some studies highlight successful digital marketing interventions that improve sales and market reach [10], others point to persistent barriers such as inadequate training, lack of tailored strategies, and uneven internet access [11-13]. Moreover, there is a debate regarding the relative impact of digital marketing on sustainable business performance, with some research emphasizing product innovation and diversification as more influential factors [14,15]. The consequences of these gaps include missed economic opportunities and continued reliance on traditional marketing channels that limit farmers' bargaining power [16-18].

This review adopts a conceptual framework that defines digital marketing as the use of online platforms and tools to promote agricultural products, integrating concepts of digital literacy, e-commerce adoption, and marketing strategy effectiveness [19-21]. The framework posits that enhancing digital competencies and infrastructure facilitates better market access and business sustainability, aligning with theories of marketing 4.0 and 5.0 [2,19]. This framework guides the systematic examination of digital marketing applications and outcomes in the agricultural sectors of Indonesia and Ukraine.

The purpose of this systematic review is to synthesize current knowledge on digital marketing strategies for agricultural products in Indonesia and Ukraine, identify critical success factors and barriers, and provide evidence-based recommendations for stakeholders. By addressing the identified knowledge gaps, this review contributes to optimizing digital marketing practices that support rural development and agribusiness competitiveness in these countries [6].

Specific Objectives: 1) To evaluate current knowledge on digital marketing strategies employed for agricultural products in Indonesia and Ukraine; 2) Benchmarking of existing digital marketing tools and platforms used by farmers and agribusinesses in both countries; and 3) Identification and synthesis of challenges and opportunities in implementing digital marketing within agricultural sectors.

2 Methodology of Literature Selection

We take our original research question – “Digital marketing for agricultural products in Indonesia and Ukraine” – and expand it into multiple, more specific search statements. Below were the transformed queries we formed from the original query: 1) Digital marketing for agricultural products in Indonesia and Ukraine; 2) E-commerce strategies for agricultural product marketing in Indonesia and Ukraine, including case studies of successful digital transformations in agriculture; and 3) Exploring social commerce and mobile e-commerce strategies for marketing agricultural products in Indonesia and Ukraine. Next, we search journal articles on searching sources: scopus.com; mendeley.com; and scholar.google.com based on those queries.

We then run each of your transformed queries with the applied Inclusion & Exclusion Criteria to retrieve a focused set of candidate papers for our always expanding database of over 270 million research papers during this process we found 301 papers.

We identified additional relevant works as follow. For each of our core papers we examine its reference list to find earlier studies it draws upon. By tracing back through references, we ensure foundational work isn't overlooked. We also identified newer papers that have cited each core paper, tracking how the field has built on those results. This

uncovers emerging debates, replication studies, and recent methodological advances. A total of 72 additional papers are found during this process.

We take our assembled pool of 373 candidate papers (301 from search queries + 72 from citation chaining) and impose a relevance ranking so that the most pertinent studies rise to the top of our final papers table. We found 326 papers that were relevant to the research query. Out of 326 papers, 74 were highly relevant.

Additionally, within the framework of this study, a bibliometric analysis of scientific publications was conducted that highlight the issues of implementing digital marketing strategies in agriculture. For this purpose, an extended search in the international scientometric database Scopus was used, which allowed us to identify 87 relevant documents for 2006-2025.

As the analysis shows, the level of publication activity in this area remained insignificant for the period from 2006 to 2017. However, since 2018, there has been an increase in the number of publications, which indicates a growing awareness of the importance and necessity of using non-traditional methods and customer-oriented and managerial approaches to the formation of demand and promotion of agricultural products [22], digital channels [23], smart technologies and modern methods and tools of digital marketing in agrarian business.

Numerous researchers have made a significant contribution to the development of the topic, in particular G. Srivastava [24]; S. Bose & R. Kiran [25]; M. Konoplyannikova et al. [26] and others. In their research, they covered a wide range of problematic aspects: from analyzing the role of the workforce in the digital age for electronic marketing of agricultural products to studying the dynamic evolution of digital marketing strategies and communications in agricultural enterprises on various social media platforms in the context of constant industry transformation.

In particular, the scientific work of highlighted the issues of developing an electronic marketing platform (i.e. search engine optimization, affiliate marketing, social media marketing and email marketing), the functioning of which can help marketers track and analyze dynamic and complex consumer purchasing behaviour in the context of digital transformations [24]. Scientists S. Bose & R. Kiran [25] emphasize that in the context of constant changes that the development of agriculture faces due to globalization and the growth of demand for agricultural products, there is a need to reconsider marketing strategies using digital marketing tools.

From the point of view of the team of Ukrainian scientists M. Konoplyannikova et al. [26] it is advisable to identify key proposals for optimizing digital strategies in agriculture with an emphasis on adapted content, data analytics and the integration of innovative technologies. The authors concluded that the study can provide recommendations to stakeholders who seek to use the synergy between digital marketing and communication strategies, providing a holistic approach to overcoming the difficulties of the digital landscape in the agricultural sector [26].

The growth of interest in the selected topic in the period 2018-2025 is indicative, which is confirmed by the dynamics of publications. If in 2018 the number of documents was 2, in 2020 – 4, then in 2021 – already 14, in 2023 and 2024 – 18 works. This indicates a significant increase in scientific attention to the problem of strategizing the development of agriculture using a diverse arsenal of digital marketing.

Among the most cited scientific works, it is worth nothing the work of A. Pathak et al. [27], which has 79 citations and remains the basis for further research in the field of digital marketing strategy for agricultural development. Another important contribution is the study of the authors M. Smulders et al. and X. Ji et al. [28].

Analysis of keywords in scientific publications indicates the dominance of topics related to sustainable agricultural development, digital transformation, digital marketing, e-commerce, marketing strategy, strategic planning, sustainability, decision-making, consumer

behaviour, the use of social networks, information and communication technologies, blockchain, large databases, etc. This is also confirmed by the results of bibliometric analysis using Vos Viewer software.

Based on the results of the analysis of the coincidences and closeness of the relationship between the keywords of the selected sample of publications, a network visualization map was constructed (*Fig. 1*), and 5 clusters were identified and characterized on the research topic – digital marketing strategy for agricultural development – in the evolutionary and temporal dimensions (*Fig. 2*).

Based on the bibliometric analysis of 87 publications placed in the international scientometric database Scopus, 3 clusters were identified using the VosViewer software. That is, 16 keywords were systematized into 3 clusters.

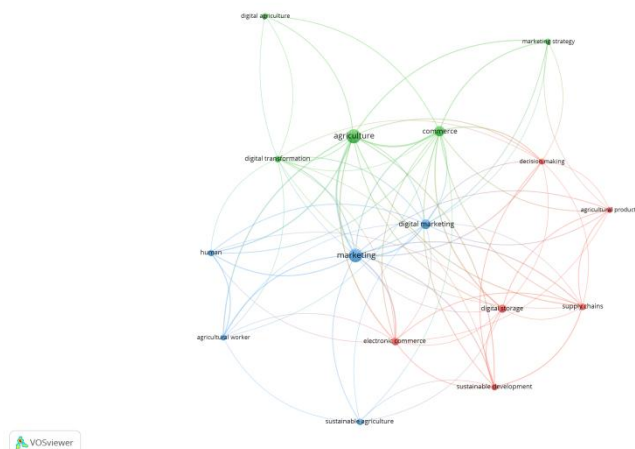


Fig. 1. Map visualization of bibliometric analysis of 87 publications, devoted to issues of digital marketing strategy for the sale of agricultural products (content aspect)

Source: built by the authors based on the international scientometric database Scopus using the VOS viewer program.

The first cluster (red) contains the largest number of terms (namely 6 items), among which the following can be mentioned: agricultural products, electronic commerce, supply chains, decision making, sustainable development. It is worth noting the keyword “digital storage”, the frequency of its joint use in the studied sample is 10, and the strength of the connection is 16. The second cluster (5 concepts, green) combines such terms as commerce, digital transformation, digital agriculture, marketing strategy. In this cluster, the keyword “agriculture” has the highest frequency – the ratio is 13, while the strength of the association is 50. The third cluster (5 elements, blue) describes the connection between digital marketing strategy and agriculture with the following terms: human, agricultural worker, digital marketing, sustainable agriculture. The main key term in this cluster is “marketing”, the frequency of its joint use in the studied sample of scientific publications is 15, and the strength of the association is 51.

Thus, based on the constructed terminological map of categories and the selected most significant keywords related to the issues of digital marketing strategy for the sale of agricultural products, it can be stated about the multidimensionality and cross-dependence of the studied areas, since there are numerous connections between the terms, as well as their high prevalence in research.

According to the results of bibliometric analysis in the evolutionary and temporal dimensions, it can be stated that in the development of scientific research related to the

implementation of digital marketing strategies in agriculture, five most significant stages can be distinguished (*Fig. 2*).

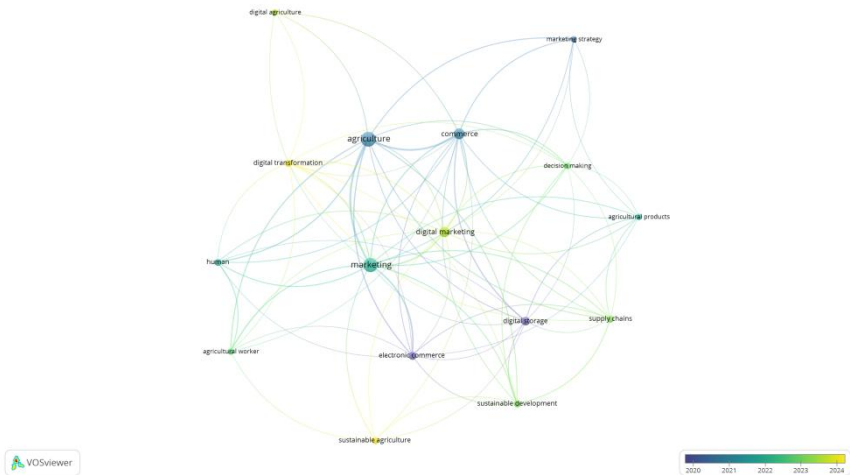


Figure 2. Map visualization of bibliometric analysis of 87 publications devoted to the issues of implementing a digital marketing strategy in agriculture (evolutionary and temporal aspects)
Source: built by the authors based on the international scientometric database Scopus using the VOS viewer program.

The first stage of development was observed until 2020, when most publications studied the impact of e-commerce on the functioning of business entities in agriculture. In the second stage, which lasted from 2020 to 2021, the focus of scientists' research shifted to the terms “agriculture”, “commerce”, “marketing strategy”. From 2021 to 2022, that is, in the third of the selected stages, the dominant key terms became human, agricultural products, marketing. The fourth stage (from 2022 to 2023) is characterized by the predominance of the terms – agricultural product, agricultural worker, decision making. The last, fifth stage began in the period from 2023 to 2024. According to the results of its analysis, it can be stated that the main terms in the scientists' research were: digital transformation, digital marketing, digital agriculture, sustainable agriculture.

So, summing up the above, it can be noted that the chosen topic in this article confirms the multidisciplinary nature of the research, which covers social, economic, marketing, logistical, technical, informational and environmental aspects. As the analysis shows, most scientific works on the problems of implementing a digital marketing strategy in agriculture are published in the following fields of knowledge: Business, Management and Accounting (26 documents), Social Sciences (22), Agricultural and Biological Sciences (20), Computer Science (20), Environmental Science (19), Engineering (18), Economics, Econometrics and Finance (17), Decision Sciences (6 documents) etc.

Regarding the geographical distribution of scientific activity, the leaders are India, China, Indonesia, Germany, Pakistan, United States, Italy, Thailand and others countries. Ukraine is currently represented by 4 publications, which indicates the existence of interest in the topic, but with some potential for its expansion.

Analysis by scientific institutions shows that the highest productivity is demonstrated by Universität Hohenheim, University of Western Macedonia, University of Leeds, Université Mohammed Premier Oujda, Universidad de Huelva, National University of Life and Environmental Sciences of Ukraine, Agricultural University of Athens, Czech University of Life Sciences Prague, Fayoum University, Huazhong Agricultural University etc. This

indicates the existence of an international network of research centers that coordinate efforts to develop effective digital marketing strategies in agriculture.

In the context of the types of scientific documents, articles (58.6% of the total number of publications) and works of an approbatory nature (20.7%) prevail, which reflects the desire of researchers not only to present empirical results, but also to form a systematic review of existing knowledge, identify gaps and determine directions for further research.

The main sponsors that finance scientific publications on the selected issues include the following: National Natural Science Foundation of China, Bundesministerium für Bildung und Forschung, Deutscher Akademischer Austauschdienst, CYTED Ciencia y Tecnología para el Desarrollo, Deutsche Forschungsgemeinschaft, Fundamental Research Funds for the Central Universities, Fundação de Amparo à Pesquisa do Estado de Minas Gerais, Major Project of Philosophy and Social Science Research in Colleges and Universities of Jiangsu Province, Ministerio de Ciencia e Innovación, National Planning Office of Philosophy and Social Science etc.

The results presented indicate the multifaceted and complex nature of the issues of strategic management of agricultural development using digital marketing, which requires coordination of interdisciplinary research and integration of various aspects – from information and economic to social and marketing. In further research, it is important to develop a methodological framework that will allow assessing the effectiveness of the implementation of various digital marketing tools in agriculture, as well as predicting their impact on economic growth, social stability, economic and food security.

3 Results and discussion

3.1 Descriptive Summary of the Studies

This section maps the research landscape of the literature on Digital marketing for agricultural products in Indonesia and Ukraine, encompassing a diverse range of studies focused on digital marketing strategies, adoption barriers, and impacts on agricultural sectors in both countries. The reviewed studies predominantly employ qualitative, quantitative, and mixed methods, including community service interventions, training programs, and case studies, with a strong emphasis on Indonesia's rural and MSME contexts and Ukraine's agribusiness digital transformation. This comparative analysis is crucial for understanding the differential application and effectiveness of digital marketing tools, the role of digital literacy, infrastructural challenges, and platform performance, thereby addressing the research questions on strategy types, market impact, barriers, and digital competencies in these two distinct agricultural economies.

3.1.1 Digital Marketing Strategies

Over 50 studies identified diverse digital marketing tools including social media platforms (Instagram, Facebook, WhatsApp), e-commerce marketplaces, websites, and mobile applications as primary strategies for agricultural marketing [1,22,23]. Several studies emphasized integrated approaches combining branding, content creation, and participatory training to enhance digital marketing effectiveness [24,25]. Emerging technologies such as AI and IoT were incorporated in some studies to optimize marketing and production monitoring [20,26].

3.1.2 Market Reach and Sales Impact

Approximately 40 studies reported measurable increases in market access and sales volume following digital marketing interventions, with some noting income increases up to 82% [16,23,27]. Studies highlighted expanded consumer reach both locally and internationally,

facilitated by e-commerce and social media platforms [6,28]. Positive return on investment and improved brand awareness were common outcomes linked to digital marketing adoption [6].

3.1.3 Adoption Barriers

Around 30 studies identified barriers including limited digital literacy, infrastructural challenges (internet access, electricity), and traditional marketing dominance [7,29,30]. Cultural adaptation, regulatory issues, and lack of financial management skills were noted as obstacles in international and local contexts [6]. Engagement gaps between producers and consumers and limited mastery of digital tools hindered full adoption [11][23].

3.1.4 Digital Literacy Levels

Digital literacy levels varied widely, with many studies reporting moderate to good competency after training interventions [9,10,30]. Millennial and younger farmers generally exhibited higher digital literacy and adoption rates compared to older farmers [5][9][31]. Training and mentoring programs were effective in improving digital marketing skills and confidence among farmers and MSMEs [5,10,32].

3.1.5 Platform Effectiveness

Instagram, Facebook, WhatsApp, and e-commerce marketplaces were consistently identified as effective platforms for engagement, conversion, and sales [1][22]. Multi-platform strategies combining social media and e-commerce yielded broader market reach and higher consumer interaction [22][33]. AI-enhanced tools and digital trust systems showed promise in improving marketing precision and customer confidence [20][34].

3.2 Critical Analysis and Synthesis

The rapid development of digital marketing, the growth of e-commerce, the increase in the level of personalization of services, the acceleration of the integration of new users into the global Internet, as well as the emergence of modern challenges and the growth of consumer demands necessitate the search for innovative approaches and mechanisms for the digitalization of marketing activities. The theoretical analysis [23] made it possible to generalize scientific approaches to determining the essence and content of the concept of “digital marketing”. It was established that in scientific works and professional practice this definition is interpreted, in particular, as: 1) a communication tool; 2) a type of marketing activity implemented using digital channels for product promotion; 3) a form of digital communication carried out both in the online and offline environment; 4) complex promotion using multiple channels; 5) the use of all possible digital tools for brand promotion; 6) a way of developing a business based on digital technologies; 7) a holistic approach to product promotion in the digital environment; 8) brand promotion and customer attraction through all available digital channels (social networks, Internet, e-mail newsletters, contextual advertising, content marketing, etc.); 9) integrated promotion of products or services using various types of marketing; 10) combination of a wide range of technologies (social, mobile, web, CRM systems) with sales and customer service; 11) a set of tools for attracting consumers from both online and offline spaces; 12) multi-channel strategy for business promotion in the information space; 13) a form of marketing that ensures interaction with customers and business partners through digital information and communication technologies and electronic devices; 14) implementation of marketing activities using digital information and communication technologies.

Table 1. Critical Analysis and Synthesis Results.

Aspect	Strengths	Weaknesses
Digital Marketing Adoption and Impact	Numerous studies demonstrate that digital marketing significantly enhances market access and sales for agricultural products, with evidence of increased income and brand awareness among farmers and agribusinesses in Indonesia and Ukraine [1][5][6]. The use of social media platforms like Instagram, WhatsApp, and e-commerce marketplaces is well documented as effective channels for product promotion and consumer engagement [22][33].	Despite positive outcomes, adoption rates remain uneven, with many farmers still reliant on traditional marketing channels due to limited digital literacy and infrastructural barriers [7][11][35]. The literature often reports only short-term or localized impacts, lacking longitudinal data to confirm sustained benefits [24][29].
Digital Literacy and Capacity Building	Training and mentoring programs have been effective in improving farmers' digital skills, enabling better use of digital marketing tools and platforms [10][30][32]. These interventions often result in measurable increases in knowledge and sales performance, highlighting the critical role of education in digital marketing adoption [5][36].	Many studies rely on small sample sizes or community service models, which may not capture broader population dynamics or scalability challenges [10][37]. There is also a noted gap in addressing the digital literacy of older or less technologically adept farmers, limiting inclusivity [9].
Technological Infrastructure and Accessibility	Research acknowledges the importance of robust internet infrastructure and access to digital devices as foundational for successful digital marketing implementation [2][38]. Some studies identify innovative solutions such as IoT integration and smart farming technologies that complement digital marketing efforts [34].	Infrastructure limitations, especially in rural and remote areas, remain a significant barrier, constraining the reach and effectiveness of digital marketing strategies [7][27]. The uneven distribution of technological resources exacerbates disparities among farmers and regions [38].
Marketing Strategies and Platform Utilization	The literature highlights diverse digital marketing strategies, including social media marketing, e-commerce, branding, and integrated marketing communications, tailored to agricultural contexts [25][39][40]. Ukrainian studies emphasize the strategic use of marketplaces and international digital marketing for export-oriented agribusinesses [4][6].	There is a tendency toward platform-specific approaches without comprehensive integration across multiple digital channels, which may limit marketing effectiveness [41]. Additionally, some studies note insufficient use of advanced digital tools such as AI and data analytics, which could optimize marketing outcomes [20].
Challenges and Barriers to Digital Marketing	The research identifies key challenges such as limited digital skills, resistance to change, logistical issues, and the complexity of adapting marketing content to diverse consumer segments [12]. Studies also recognize socio- economic factors influencing digital marketing adoption, including age, education, and economic status [9].	Many papers focus on identifying challenges but offer limited empirical evidence on overcoming these barriers at scale. There is a lack of standardized frameworks or models to guide digital marketing adoption in agriculture, leading to fragmented efforts [2][19].
Comparative Insights between	Some Ukrainian studies provide valuable insights into the role of digital marketing in enhancing multifunctional farm competitiveness and international market penetration [4][6][42]. Indonesian research	Comparative analyses are limited, with few studies systematically contrasting digital marketing adoption, challenges, and outcomes between the two countries. This gap restricts

Indonesia and Ukraine	extensively documents grassroots digital marketing empowerment and community-based interventions [1][10][22].	understanding of contextual factors influencing digital marketing success [6][19].
Methodological Approaches and Research Quality	The literature employs a mix of qualitative, quantitative, and mixed methods, including surveys, case studies, training evaluations, and conceptual modeling, providing diverse perspectives on digital marketing in agriculture [28].	Many studies rely heavily on descriptive or community service-based methodologies with limited sample sizes and lack rigorous experimental or longitudinal designs, which affects the robustness and generalizability of findings [10][24][30]. There is also a scarcity of large-scale empirical studies assessing the economic impact of digital marketing interventions [14].

Source: compiled by the authors.

4 Conclusion

The literature on digital marketing for agricultural products in Indonesia and Ukraine reveals several prominent themes revolving around the adoption of digital tools, capacity building, and the impact on market access and economic outcomes. A major focus lies on digital marketing strategies and platforms, particularly social media and e-commerce, which have been widely employed to enhance farmers' market reach and branding. Capacity building through training and mentoring emerges as a critical facilitator for effective digital marketing adoption, addressing challenges such as digital literacy and infrastructure limitations. Additionally, studies emphasize the economic benefits and challenges of integrating digital marketing within traditional agricultural marketing systems, highlighting regional and contextual variations in implementation and outcomes.

This is also confirmed by the results of surveys of international consulting companies and think tanks. Thus, experts of the Digital Marketing Institute predict that by 2025, spending on digital transformation strategies worldwide will reach 2.8 trillion dollars. These investments will help agricultural businesses implement a holistic digital marketing strategy to interact with consumers and reduce the time required to bring agricultural products to global and national markets. Therefore, this aspect requires special attention in modern conditions and will be the subject of further scientific research.

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