# Mapping Agricultural Marketing Information Research in Tanzania: A Bibliometric Analysis and Systematic Literature Review

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***Abstract***
*This review maps the theoretical structure of Agricultural marketing information in Tanzania by analysing 47 Scopus publications (2008–2024). The study is motivated by the fact that, despite growing research on agricultural marketing information, limited evidence integrates its role in smallholder farmers' market participation, mobile phone-enabled information access, and agricultural supply chains and marketing channels. Harzing Publish or Perish and VOSviewer were used to explore publication trends, influential publications, and keyword co-occurrence to map the field's structure. Findings reveal that research output increases by 11.85% annually. Three overarching themes are uncovered in the review: (i) the roles played by marketing information in market participation among smallholder farmers; (ii) impacts of mobile phone access to marketing information for grape farmers in Dodoma; and (iii) food supply chains and marketing channels for rice smallholders in developing countries. Tanzania and Kenya were found to be the most influential and productive academic centres in agricultural marketing information. Emerging academic powers like China, Denmark and the US are potential partners for effective collaboration to enhance knowledge sharing and develop innovative studies. It is concluded that a core academic circle in agricultural marketing information has not yet formed and is likely to be influenced by researchers working in similar yet distinct fields. This study contributes to the body of knowledge by identifying trends in publications on agricultural marketing information, reflecting recent developments in the field. The study contributes theoretically by integrating Information Asymmetry Theory, the Technology Acceptance Model, Diffusion of Innovation Theory and Value Chain Theory to provide a multidimensional understanding of how agricultural marketing information and digital technology shape smallholder farmers' market engagement.*

***Keywords:*** *Marketing, Agricultural marketing information, Tanzania, Bibliometric analysis, Systematic literature review, and Scopus data*

## INTRODUCTION

Agricultural marketing information plays a critical role in enabling smallholder farmers to make informed production and marketing decisions, maximise resource utilisation, identify new market opportunities, negotiate with buyers and improve their participation in agricultural markets (Odo et al., 2025; Alhamdi & Al-Kahtani, 2025; Magakwe et al., 2025; Ismail, 2024; Ma et al., 2024; Nyagango et al., 2023a). Access to timely, accurate and relevant information on prices, demand, buyers, market channels and prevailing market conditions can reduce information asymmetries between farmers and other market actors and strengthen farmers' capacity to respond to changing market conditions (Abebe et al., 2026; Kusairi & Prasetyo, 2025; Magasi & Kimambo, 2024; Maleko & Ukpong, 2025; Nyagango et al., 2024). However, access to and effective use of agricultural marketing information remain important challenges for smallholder farmers, particularly in developing countries where information systems, digital connectivity and market linkages are often constrained (Mapiye et al., 2023; Abebe et al., 2019).

Producers in emerging economies like Tanzania, which typically have limited marketing budgets, face an array of challenges, including limited access to current market information, limited market access, and price and demand volatility (Marwa et al., 2025; Dorasamy & Kikasu, 2024). Without sufficient market information, they are forced to rely on intermediaries that exploit their lack of knowledge and cut their margins. Bridging this knowledge gap can enhance producers' livelihoods and overall economic growth. One of the means of doing so is investing in marketing communication and marketing infrastructure, which will enhance market access and eventually drive economic growth for producers (Maleko & Ukpong, 2025; Li & Zhang, 2024; Nyagango et al., 2023b).

To address the challenges of accessing agricultural marketing information in developing nations such as Tanzania, this study employed a systematic research approach. A detailed bibliometric review of publications from 2008 to 2024, based on Scopus data, identified trends, gaps, and emerging

issues in marketing information research. This research will use a systematic review of the existing literature to examine the evolution of marketing practices and procedures in the Tanzanian context. Quantifying research products, such as publications and citations, and inspecting collaborative networks will reveal the dynamics of marketing information. Ultimately, this research will empower producers, drive economic development, inform future studies, and assist policymakers and practitioners in decision-making.

The study provides a robust overview of how agricultural marketing information has been and utilised in Tanzania, with a focus on the relevance of existing data for business decision-making. The discussion highlights the contributions of various scholars and institutions to the body of knowledge, enabling a better understanding of the academic literature on marketing in the region. The scope of this research extends well beyond ordinary marketing theories; it also addresses the practical uses of market information in the Tanzanian case. In the same vein, as the economy continues to develop, demand for reliable marketing information will grow, affecting not only businesses but policymakers and scholars alike (Ma & Gu, 2024; Nyagango et al., 2023c). Discovering how agricultural marketing information is utilised in Tanzania will not only enrich scholarly discussion but also provide practical recommendations for practitioners working to improve market performance.

Although a few empirical studies (i.e., Maleko & Ukpong, 2025; Mubofu & Mbedule, 2025; Nyagango et al., 2023a; Nyagango et al., 2023c) examined agricultural marketing information, no study has systematically reviewed the literature on agricultural marketing information in developing countries such as Tanzania. Nonetheless, to the researchers' knowledge, no study has conducted a bibliometric analysis of agricultural marketing information in Tanzania. Limited attention has been given to systematically examining research productivity and the conceptual structure of agricultural marketing information literature, leaving publication trends, leading contributors, influential sources and emerging themes insufficiently consolidated. Bibliometric approaches address these gaps by quantitatively analysing research development, productivity, trending research topics, influence and intellectual structure (Changalima et al., 2025; Haghani, 2023; Hammouti et al., 2025).

Despite the practical importance of agricultural marketing information, its research productivity, conceptual development and application within Tanzania remain insufficiently synthesised. Empirically, limited consolidated evidence explains how marketing information influences farmers' market engagement; methodologically, the application of bibliometric and systematic review approaches remains underexplored; and contextually, the Tanzanian agricultural marketing information landscape lacks a dedicated bibliometric assessment. Addressing these gaps can provide a foundation for understanding research trends and informing stakeholders' decisions regarding agricultural marketing information and market development. Therefore, this paper bridges these gaps by conducting a bibliometric analysis of agricultural marketing information in Tanzania from 2008–2024 and exploring research gaps in this field. Therefore, the general objective of this study is to analyse the research landscape of agricultural marketing information in Tanzania. More specifically, the study seeks to:

i) To examine the publication trends in research focusing on agricultural marketing information in Tanzania.
ii) To identify the most active contributors to research on agricultural marketing information in Tanzania.
iii) To determine the most influential publications in research on agricultural marketing information in Tanzania.
iv) To identify emerging and trending research topics in agricultural marketing information in Tanzania.

To contribute to the body of knowledge, this study aims to answer the following research questions:

RQ1: What is the publication trend in research focusing on agricultural marketing information in Tanzania?
RQ2: Who are the most active contributors in research focusing on agricultural marketing information in Tanzania?
RQ3: Which publications are the most influential in research focusing on agricultural marketing information in Tanzania?
RQ4: What are the trending research topics on agricultural marketing information in Tanzania?

This paper bridges the gap between theory, methodology and practice by providing a strategic map for future applications and research on the topic (Mchopa et al., 2024; Farid et al., 2023; Kazungu & Kumburu, 2023). The products of this analysis will serve as an informative reference for

stakeholders interested in agricultural marketing information in the Tanzanian market. The study contributes to the theoretical understanding of agricultural marketing information by synthesising the dominant theories, themes and conceptual developments within the literature. In particular, the findings provide an integrated basis for understanding how information availability, technology adoption and value chain relationships shape agricultural market engagement in Tanzania. Methodologically, the study demonstrates the value of combining systematic literature review and bibliometric analysis to examine publication trends, research productivity, influential publications, major contributors and emerging research topics. This approach provides a structured overview of the development and intellectual structure of agricultural marketing information research in Tanzania and identifies areas requiring further empirical investigation. Practically, the findings provide evidence to support policymakers, extension officers, and agricultural marketing practitioners in strengthening agricultural market information systems and improving farmers' access to relevant, timely market information. Identifying major contributors, influential publications, and emerging research themes can also inform agricultural policy formulation, extension strategies, market information services, and evidence-based decision-making, while guiding future research on agricultural marketing information in Tanzania.

## METHODS

### Data Source and Search Strategy

This study employed a bibliometric approach using data retrieved from the Scopus database. The selection of this database was due to its extensive coverage of reliable, high-quality, peer-reviewed literature, its multidisciplinary scope, and its compatibility with bibliometric analysis software (Changalima and Mchopa, 2024; Rejeb et al., 2023). A structured search strategy was developed using relevant keywords and search strings related to the study topic. The search was limited to publications indexed in Scopus between 2008 and 2024. The earliest year in which relevant publications were identified in the Scopus search was 2008, while 2024 was selected as the final complete publication year available for the analysis. Scopus database was selected for its broad disciplinary coverage, high-quality peer-reviewed sources and suitability for mapping niche research domains. It indexes over 27,000 journals, books and conference proceedings across business, management and social sciences, providing comprehensive coverage (Koştı et al., 2026;

Tandon et al., 2021). Its rigorous inclusion criteria, citation tracking and advanced search functions support reliable data retrieval and bibliometric analysis of research productivity, impact and collaboration patterns (Kawishe et al., 2025).

**Study Selection**

The search was conducted in Scopus on 22nd March 2025. The study selection process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 framework. The Scopus search string used the keywords “marketing information”, “farmers”, “agricultural markets”, and “market access”, combined using the Boolean operator OR to retrieve publications addressing these concepts. The study considered three major sections of a published article: Article title, Abstract, and Keywords, using the Boolean search strategy: "market* information", "agricultural market* information", *and "Tanzania"*. The procedures in Figure 1 ensured a structured, transparent, and replicable process for obtaining and analysing articles on agricultural marketing information. Initially, 60 records were identified from the Scopus database. No duplicate records were detected during screening.

**Inclusion and exclusion criteria**

Subsequently, records were screened against predefined inclusion criteria, namely publications indexed in Scopus, written in English, published up to 2024, and classified as journal articles or review papers. A total of 13 records were excluded, comprising publications outside the specified time frame (n = 2), documents with ineligible document types (n = 10), and records from non-journal sources (n = 1). No records were excluded on the basis of language, and all identified records were successfully retrieved. Duplicate checking was conducted using Microsoft Excel by systematically comparing publication titles, authors, DOI numbers and other bibliographic details. This verification process found no potential duplicate records in the dataset

Following the eligibility assessment, 47 publications met the inclusion criteria and were retained for the final bibliometric analysis. Figure 1 summarises the selection process, presenting the identification, screening, and inclusion stages as key steps in systematic reviews (Page et al., 2021). Keyword normalisation was undertaken to standardise synonymous terms, spelling variations and equivalent keyword expressions before conducting the co-occurrence analysis. All word marks were converted to

lowercase, and plurals, hyphens, and periods were removed, excluding the end words from the initials and abbreviations (Máté et al., 2024). The analysis focused on author keywords, excluding indexed keywords to maintain consistency with the terminology explicitly assigned by the authors of the retrieved publications.

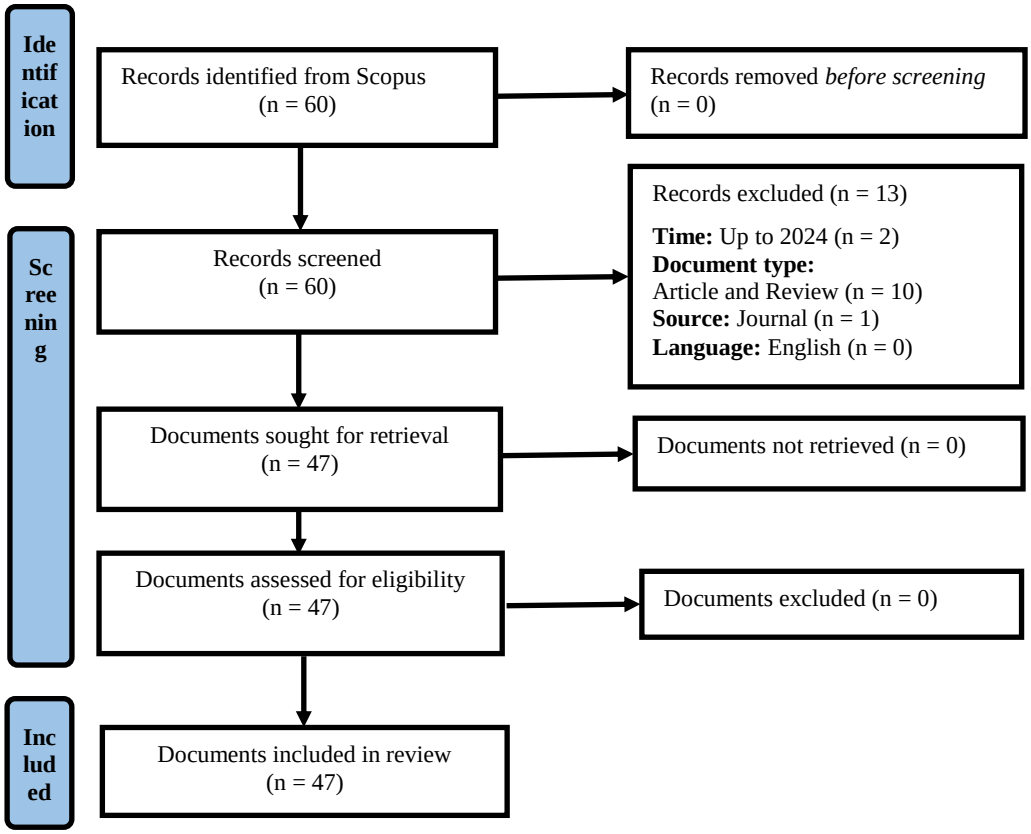
**Data Cleaning and Bibliometric Analysis Methods**

This involved verifying bibliographic information, removing irrelevant records identified during screening, and standardising author keywords, author names, and source titles where necessary. The cleaned dataset was subsequently subjected to bibliometric analysis to examine the intellectual structure, research trends, and thematic development. The analysis focused on keyword co-occurrence patterns, which enabled the identification of major research themes and their interrelationships. Network-based bibliometric techniques were employed to explore the conceptual structure of the literature and reveal dominant and emerging research areas.

**Analytical Tools and Visualisation**

Bibliometric analyses and visualisations were performed using Harzing Publish or Perish 8.17.863 and VOSviewer 1.6.20 to construct and visualise bibliometric networks (Harzing, 2007; van Eck & Waltman, 2010). VOSviewer was used to generate keyword co-occurrence networks based on author keywords extracted from the selected publications. All keywords were considered as the unit of analysis, aided by the full counting method, in which each occurrence of a keyword was given equal weight in the keyword co-occurrence analysis. A minimum of two (2) occurrences of a keyword was set as a limiting factor. The resulting network visualisations clustered related keywords into three thematic groups according to their co-occurrence frequencies, thereby highlighting the principal research domains within the literature. After clustering, each cluster was labelled using the log-likelihood clustering algorithm. Nodes in the network represented keywords, while links reflect co-occurrence relationships, with larger nodes signifying higher occurrence frequencies and stronger connections reflecting greater thematic association. The order of keywords within each cluster on the timeline reflects the period in which each keyword first appeared, and the connecting curves in the visualisation figure embody the keywords' relationships (Jin & Li, 2019). The visualisation outputs facilitated the interpretation of research patterns, thematic clusters, and the overall knowledge structure of the field.

**Figure 1:**
*The PRISMA flow diagram*




## RESULTS

### Main information of the retrieved dataset

The bibliometric analysis results in Table 1 show that the dataset spans from 2008 to 2024, enabling an in-depth examination of research patterns during this period. The analysis spans 40 different journals, which collectively comprise 47 articles. Surprisingly, the annual growth rate of publications is 11.85%, indicating a steady increase in intellectual work on the subject over the years. As for document types, articles are most prevalent, with 46 articles to 1 review.

This annual growth rate indicates that agricultural marketing information research is an expanding and increasingly established field, with sustained scholarly attention over the study period. Nevertheless, the dominance of

46 research articles suggests the field remains largely empirical and developmental, with limited synthesis of accumulated knowledge. This reflects the high priority placed on primary research within the dataset. Overall, these patterns indicate a growing but still maturing research domain, creating opportunities for more systematic reviews, theoretical integration and consolidation of emerging research themes. Furthermore, two articles classified in Table 1 as "articles in press" had completed the peer-review process at the time of data retrieval but had not yet been assigned final publication details; therefore, their inclusion does not compromise the reliability of the bibliometric analysis.

**Table 1:**
*Main information of the retrieved dataset*

| Description | Results |
|---|---|
| Timespan | 2008 - 2024 |
| Sources (Journals) | 40 |
| Number of publications | 47 |
| Annual Growth Rate % | 11.85 |
| **Document types** | |
| Article | 46 |
| Review | 1 |
| **Publication stage** | |
| Final | 45 |
| Article in press | 2 |

## The publication trend

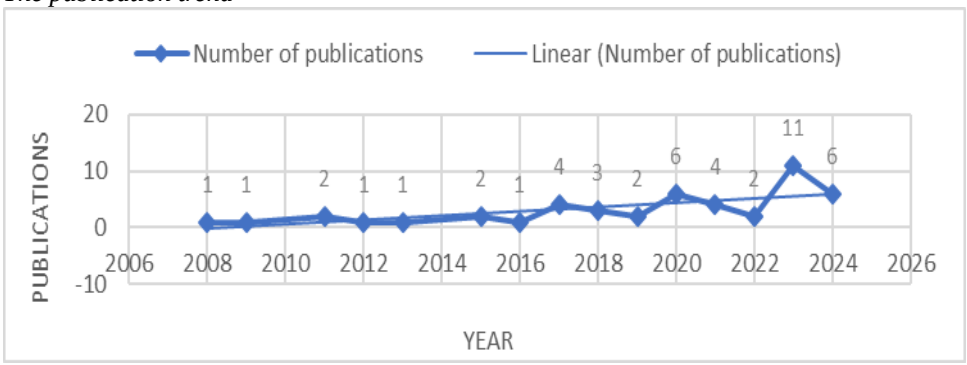
The dataset comprised 47 publications carried out between 2008 and 2024, retrieved from Scopus. The articles spanned a range of subject areas, with a predominance of "Market*information" and "Tanzania". Out of 47 publications, 46 (97.87%) were articles, and 1(2.13%) was a review from different journals. In addition, 45 (95.74%) were in the final publication form, and 2 (4.26%) were in press. Figure 2 illustrates the trend in publishing over 15 years (2008-2024) in the field of marketing information in Tanzania.

Throughout the period, the findings reflect a rising trend in publications, with the number of journal articles and reviews in the marketing information field increasing each year from 2008 to 2024. The evidence shows a consistent number of publications between 2008 and 2013,

followed by a clear upward trend from 2008 to 2013 and then from 2013 to 2024, indicating a substantial increase over the period. Since 2013, when there was only one publication, the following years saw gradual increases. The growth trend increased in 2015, with two publications; subsequently, after some ups and downs, a massive rise was observed from 2020 onwards. There were six publications in 2020, twice the output of the preceding years. The trend continued with fluctuating annual figures, but 2023 had the highest figure at 11 publications, reflecting strong interest or capacity to produce that year. The year 2024 also follows the same trend, with six publications already registered. Overall, from 2013 to 2024, the number of articles increased from 1 to 6 (peaking at 11 in 2023), indicating an upward trend in research activity or output in the field. This increase could be due to several factors, such as increased research funding, collaboration among researchers, or greater interest in the issue. Generally, trends in Figure 1 reveal not only an increase in quantity but also, perhaps, a qualitative improvement in study quality and response rates for marketing information as a discipline over 2008-2024.

The upward trendline in Figure 2 indicates a positive long-term trajectory in research output. This suggests that, despite year-to-year fluctuations, scholarly attention to agricultural marketing information in Tanzania has generally increased between 2008 and2024. Therefore, this steady growth suggests that marketing information research has sparked scholars' interest in recent years by examining consumer behaviour, market trends, internet marketing techniques, the impacts of marketing information systems, and how cultural and economic conditions affect marketing practice.

**Figure 2:**
*The publication trend*



**The most active countries, institutions and journals**

Table 2 provides a relative picture of publication outputs across nations and highlights collaborative efforts. Tanzania leads with 39 publications, indicating an active research community. Kenya follows with 7 publications co-authored by Kenyan researchers. This reflects a growing interest in research outputs within the country. The other major contributors are China, Denmark, and the United States with 5, 3, and 3 publications, respectively. Collaborative publications across these countries reflect an active community of researchers engaged in joint research, underscoring the role of international collaboration in enhancing the quality and scope of research.

These publications show varying levels of research involvement and collaboration on the international stage. Tanzania's lead in publications reflects a robust research environment that can access exposure and funding from world players. Publications from Kenya, China, Denmark, and the United States speak volumes about the potential for effective collaboration to enhance knowledge sharing and develop innovative studies. These collaborations can increase academic connections and resources, which are critical for tackling global challenges, especially in agriculture and development areas where these nations have considerable interests.

Among the institutions observed, Moshi Co-operative University in Tanzania contributed 10 publications, the highest in this area of study, demonstrating its impactful role as a producer of knowledge for the academic world. The University of Dar es Salaam contributes 6 publications, making it another leading contributor to Tanzania's education industry. Sokoine University of Agriculture produces 6 publications, while China's Jilin Agricultural University and Mzumbe University each produce 4 publications. The outputs from specific institutions, the University of Dar es Salaam and Moshi Co-operative University, underscore their significant role in shaping research and agricultural and developmental policy priorities in Tanzania and beyond. Institutions with more publications are presumably seen as academic powerhouses, attracting students and researchers. This creates a virtuous cycle in which greater exposure leads to greater collaboration and resource allocation, strengthening the institution's ability. For institutions like Sokoine University of Agriculture, this shows that research

specialities can be heard and contribute to innovation in agricultural science for food security and regional economic development.

At the journal level, several publications have emerged as premier platforms for publishing research findings. Cogent Food & Agriculture leads with 3 publications, followed by the Electronic Journal of Information Systems in Developing Countries and Cogent Business & Management with 3 and 2 publications, respectively. Other journals, such as the Global Business Review and the International Journal of Agricultural Science Research and Technology, have 2 publications each, reflecting the range of discussion topics in their research articles. These publications underscore the importance of specialised platforms in facilitating research communication and information sharing in the academe.

The variety of journals and their respective publication levels suggests a vibrant academic publishing ecosystem capable of accommodating diverse research interests. Cogent Food & Agriculture is one of the journals that plays a critical role in disseminating research findings that can inform practice and policy in agriculture and food security. The presence of local and foreign journals aligns with the call for open spaces for researchers, which can translate into wider reading and impact. Increased publication in reputable journals can confirm the validity of the research by these institutions, hence attracting more research collaborations and investments. In addition, the range of journals suggests a healthy exchange of ideas across fields, essential to innovation and to tackling complex global issues.

**Table 2:**
*The most active countries, institutions and journals*

| Country | Publications | Institution | Publications | Journal | Publications |
|---|---|---|---|---|---|
| Tanzania | 39 | Moshi Co-operative University | 10 | Cogent Food & Agriculture | 3 |
| Kenya | 7 | University of Dar es Salaam | 6 | Electronic Journal of Information Systems in Developing Countries | 3 |
| China | 5 | Sokoine University of Agriculture | 6 | Cogent Business & Management | 2 |
| Denmark | 3 | Jilin Agricultural University | 4 | Global Business Review | 2 |
| United States | 3 | Mzumbe University | 4 | International Journal of Agricultural Science Research and Technology in Extension and Education Systems | 2 |

## Most active authors

The second research question aims to determine the number of publications by top contributors in the field. Research productivity is measured by the number of journal articles authored by authors, institutions, countries, and sources (journals). Authors with the highest number of publications on the topic of research are presented in Table 3. The findings show that Kazungu, I. (8 publications; h-index of 10) is the top author in the research field of marketing information in Tanzania, followed by Nyagango, A. I (5 publications; h-index of 3) and Sife, A. S. (5 publications, h-index of 10). Third are Afari-Sefa, V. (h-index of 24), Mgale, Y.J. (h-index of 4), and Yunxian, Y. (h-index of 6), each with 3 publications in marketing information. Therefore, the three most prolific authors in the field are Kazungu, I., Nyagango, A. I., and Sife, A. S. They are closely followed by five other authors with a total of 10 papers in the field. They are Baiyegunhi, L.J.S., Mmbando, F.E., Rajendran, S., Wale, E.Z., and Kilima, F.T.M., each having authored two documents.

**Table 3:**
*The most active contributors (authors)*

| Author | Publications |
|---|---|
| Kazungu, I. | 8 |
| Nyagango, A.I. | 5 |
| Sife, A.S. | 5 |
| Afari-Sefa, V. | 3 |
| Mgale, Y.J. | 3 |
| Yunxian, Y. | 3 |
| Baiyegunhi, L.J.S. | 2 |
| Mmbando, F.E. | 2 |
| Rajendran, S. | 2 |
| Wale, E.Z. | 2 |
| Kilima, F.T.M. | 2 |

## The most influential publications

The third research question concerns the most cited publications relevant to marketing data. Beginning with the number of citations reported in Harzing's Publish or Perish, 47 publications released between 2008 and 2024 have received 370 citations, with a mean of 7.804 citations per paper and 75.04 citations annually. In spite of this, the findings in Table 4 are only for impactful papers that have at least 24 citations per article.

Table 4 therefore lists only 10 papers ranked as impactful for the research field. The findings (Table 4) also show that the most impactful papers are drawn from various journals, with Cogent Food & Agriculture and the Electronic Journal of Information Systems in Developing Countries each featuring 3 papers. Masters et al. (2018), with 71 total citations and 10.14 citations per year, lead the list of the most-cited works in this area, followed very closely by Magesa et al. (2020), with 47 citations and 9.4 total citations per year, and Mmbando et al. (2015a), with 40 citations and 4 total citations per year. These three works lead in the context of market information and smallholder farmers' engagement.

Master et al. (2018) present a new cost-of-diet-diversity index that measures the affordability of a healthy diet and is compared with the Cost of Nutrient Adequacy. The study highlights the role of agricultural market information systems in monitoring price variability and measuring the affordability of nutrient-dense, diverse diets over time. At the same time, Magesa et al. (2020) stress the need to expand farmers' access to market information, which can improve marketing satisfaction and enable them to bypass middlemen, thereby increasing their share of crop profits. The research contributes an approach to measuring farmer capability, an understanding of the multidimensionality of life satisfaction with agricultural marketing, and evidence for targeted interventions for smallholder farmers. In addition, Mmbando et al. (2015b) examine how participation in maize and pigeonpea markets enhances rural household welfare in Tanzania through consumption expenditures. The findings emphasise that better marketing information and market access can significantly improve household welfare by reducing transaction costs and encouraging wider participation in agriculture. Collectively, these studies highlight the key role of marketing information in improving farmers' market access, diet affordability and diversity, and overall household welfare. Table 4 presents additional key publications on marketing information in smallholder farming in Africa, specifically Tanzania, and its effects on market access, diet affordability, and the effects of digitalisation and support on farmers' income and production choices.

**The trending research topics**

To address the fourth research question, the study conducted a keyword co-occurrence analysis. This approach creates networks in which keywords are nodes, and keyword connections in publications represent

links. The network formed by frequent co-occurring keyword combinations reveals shared knowledge and areas of interest in a specific field. This approach is helpful for uncovering knowledge structures and trends in a particular area of study, helping identify current research trends and dynamics. The study employed VOSviewer software to perform keyword co-occurrence analysis. Keyword frequency matters because it suggests relevance and importance in research. Thus, the analysis identified 13 keywords with a minimum of 2 occurrences per keyword, which were then organised into three clusters (Fig. 3; Table 5). The identified clusters mirror the diversity of research problems in marketing information. This keyword co-occurrence analysis was deemed pertinent to the current study because it shows the over- or under-representation of specific problems in the publications obtained.

**Figure 3:**
*Network visualisation based on keyword co-occurrence analysis*

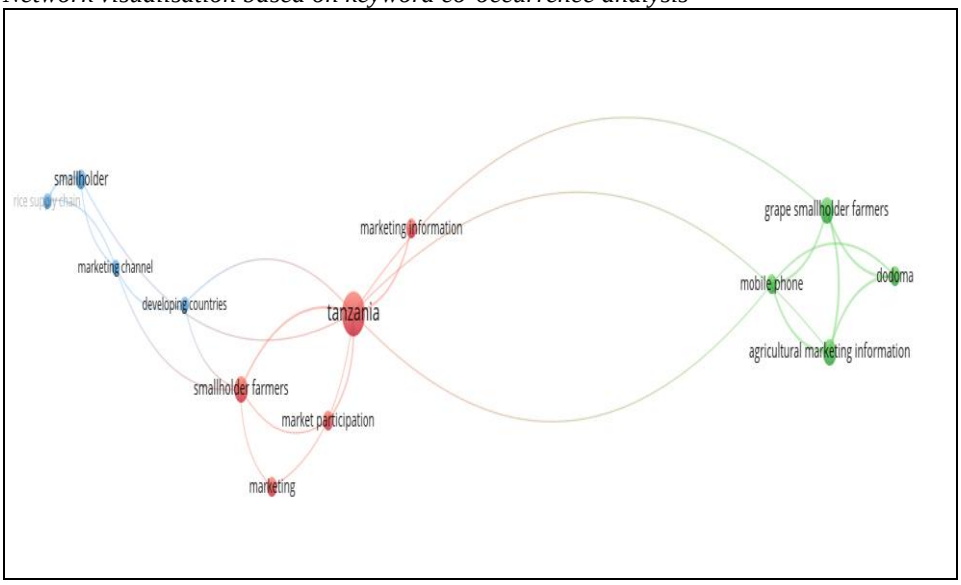


**Table 4:**
*The Top 10 most influential publications*

| S/N | Authors | Title | Year | Journal | Age (Y) | TC | TC/Y |
|---|---|---|---|---|---|---|---|
| 1 | W.A. Masters, Y. Bai, A. Herforth, D.B. Sarpong, F. Mishili, J. Kinabo, J.C. Coates | Measuring the affordability of nutritious diets in Africa: Price indexes for diet diversity and the cost of nutrient adequacy | 2018 | American Journal of Agricultural Economics | 7 | 71 | 10.14 |
| 2 | M.M. Magesa, K. Michael, J. Ko | Access and use of agricultural market information by smallholder farmers: Measuring informational capabilities | 2020 | Electronic Journal of Information Systems in Developing Countries | 5 | 47 | 9.4 |
| 3 | F.E. Mmbando, E.Z. Wale, L.J.S. Baiyegunhi | Welfare impacts of smallholder farmers' participation in maise and pigeonpea markets in Tanzania | 2015 | Food Security | 10 | 40 | 4 |
| 4 | Y.J. Mgale, Y. Yunxian | Marketing efficiency and determinants of marketing channel choice by rice farmers in rural Tanzania: Evidence from Mbeya region, Tanzania | 2020 | Australian Journal of Agricultural and Resource Economics | 5 | 37 | 7.4 |
| 5 | F.E. Mmbando, E.Z. Wale, L.J.S. Baiyegunhi | Determinants of smallholder farmers' participation in maise and pigeonpea markets in Tanzania | 2015 | Agrekon | 10 | 36 | 3.6 |

| S/N | Authors | Title | Year | Journal | Age (Y) | TC | TC/Y |
|---|---|---|---|---|---|---|---|
| 6 | W. Anderson | Internationalisation opportunities and challenges for small and medium-sized enterprises from developing countries | 2011 | Journal of African Business | 14 | 32 | 2.29 |
| 7 | A. Aku, P. Mshenga, V. Afari-Sefa, J. Ochieng | Effect of market access provided by farmer organisations on smallholder vegetable farmer's income in Tanzania | 2018 | Cogent Food and Agriculture | 7 | 31 | 4.43 |
| 8 | F.A. Kitole, E. Mkuna, J.K. Sesabo | Digitalisation and agricultural transformation in developing countries: Empirical evidence from Tanzania agriculture sector | 2024 | Smart Agricultural Technology | 1 | 27 | 27 |
| 9 | V. Afari-Sefa, S. Rajendran, R.F. Kessy, D.K. Karanja, R. Musebe, S. Samali, M. Makaranga | Impact of nutritional perceptions of traditional African vegetables on farm household production decisions: a case study of smallholders in Tanzania | 2016 | Experimental Agriculture | 9 | 25 | 2.78 |
| 10 | A.F. Kapinga, C. Suero Montero, E.R. Mbise | Mobile marketing application for entrepreneurship development: Codesign with women entrepreneurs in Iringa, Tanzania | 2019 | Electronic Journal of Information Systems in Developing Countries | 6 | 24 | 4 |
| | | **Total** | | | | **370** | **75.04** |

**A keyword co-occurrence analysis**

Table 5 and Fig. 3 provide critical information about the clusters obtained from the keyword co-occurrence investigation. The research identified themes from the co-word analysis, conducted in VOSviewer, with a minimum keyword occurrence of 2. Analysis identified 14 author keywords, which were classified into 3 main clusters. The co-occurrence results also reveal a high concentration of research themes on agricultural marketing information among smallholder farmers. The 10 most frequently occurring keywords are smallholder farmers, agricultural marketing information, Grape smallholder farmers and Tanzania. These keywords appear at least five times in the research landscape. They determine the main research theme of marketing information among smallholder farmers in Tanzania. Specifically, author keywords such as "Tanzania" (15 counts), "Smallholder farmers," and "Agricultural marketing information" (5 counts each), as in Table 5, highlight smallholder farmers' main concern with agricultural marketing information, illustrating extensive exploration across contexts.

From the clusters created in Table 5, the Red cluster contains the most keywords (5), all under the theme "Marketing information and market participation for smallholder farmers in Tanzania." The Red cluster focuses on how access to marketing information affects smallholder farmers' ability to participate meaningfully in agricultural markets, especially in Tanzania. The paper's subject is also closely related to the broader discourse on agricultural market access, rural development, and information dissemination in developing economies. The most-searched keyword, appearing 15 times, is "Tanzania," indicating that most studies in this thematic category focus on Tanzanian smallholder farmers. This high prevalence reflects growing academic and policy interest in understanding the challenges and potential of market participation among Tanzania's agricultural smallholders. Information Asymmetry Theory can capture this cluster, as both frameworks explain how information and access to resources shape farmers' participation and performance in markets. The frequency of the keyword "Tanzania" suggests that research in the region focuses on developing better market information systems and market linkages for smallholder farmers, closely aligning with the marketing information theme.

Cluster 2 (Green) comprises four keywords and is titled "Mobile phone use and access to agricultural marketing information among grape smallholders in Dodoma." The cluster focuses on the growing role of

mobile technologies in improving access to agricultural marketing information and enhancing decision-making among smallholder farmers, particularly those who grow grapes in Tanzania's Dodoma region. The subject is highly relevant to the research arena, as it falls within global and regional discussions on digital inclusion, ICT for development, and smart agriculture, specifically, enhancing smallholders' market participation and competitiveness. The most common keyword is "Agricultural marketing information," which occurs 5 times, indicating a specific focus on the informational component of agricultural marketing systems. This frequency suggests researchers are increasingly focusing on mobile phones as central tools for bridging information gaps in agricultural markets. This cluster may be explained by the Technology Acceptance Model (TAM) and the Diffusion of Innovation Theory (Rogers, 2003), as both theories explain the adoption and use of technology by users, in this case, market information users. The significance of "agricultural marketing information" underscores the central role of ICT-based communication channels in advancing marketing information research and fostering inclusive agricultural market systems.

Cluster 3 (Blue) has four keywords and addresses the subject "Marketing channels and food supply chain: A focus on rice smallholders in developing countries." Cluster 3 emphasises agricultural marketing channel structure and effectiveness, supply chain integration, and smallholder farmers' issues in connecting with extended markets. The keyword is directly relevant to the research context, as it addresses critical concerns in value chain development, market access, and trade efficiency that are central to improving smallholder livelihoods and ensuring food security in emerging economies. The most dominant keyword, "Smallholder", occurs three times, emphasising the chronic research interest in the involvement and empowerment of smallholder farmers within agricultural marketing systems. Value Chain Theory can explain this cluster, as both theories show how market structure, coordination, and costs influence farmers' participation in supply chains. The frequency of "smallholder" is so high that the research issue is most keen on marketing channels and reducing inefficiencies that limit smallholders' access to profitable markets, thereby substantiating the marketing information theme from a supply chain perspective.

Collectivelly, the three thematic clusters demonstrate the evolution of agricultural marketing information research from information access to

the technological mechanisms that facilitate such access. They further show how information contributes to market participation, channel efficiency and supply chain integration. Cluster 1 establishes the foundational role of marketing information in reducing information asymmetry and enabling smallholder farmers to participate more effectively in agricultural markets. Cluster 2 complements this perspective by highlighting mobile phones and other digital technologies as mechanisms for improving the availability, accessibility, and use of such information. Cluster 3 extends the analysis beyond information access to consider how improved information can support more efficient marketing channels, value-chain coordination, and connections to wider markets. Therefore, these three thematic clusters are interconnected: effective agricultural marketing information requires accessible information channels, appropriate technologies to facilitate its dissemination and use, and functional market and supply-chain structures through which information can translate into meaningful market participation and improved outcomes for smallholder farmers. This thematic convergence provides a broader understanding of agricultural marketing information as an informational resource and enabler of digitally supported, better-integrated agricultural markets.

**Table 5:**
*Keyword co-occurrence analysis*

| Cluster | Item | Occurrence | Sample studies |
|---|---|---|---|
| Cluster 1 (Red with 5 items): Marketing information and market participation for smallholder farmers in Tanzania | Market participation | 3 | Anderson (2011) |
| | Marketing | 3 | Mgale & Yunxian (2020) |
| | Marketing information | 3 | Nyagango et al. (2023b) |
| | Smallholder farmers | 5 | Nyagango et al. (2024), Mgale & Yunxian (2020), Mgale & Yunxian (2021),Nyagango et al. (2023b), Nyagango et al. (2023c). Nyagango et al. (2023d). |
| | Tanzania | 15 | Kazungu (2024), Kazungu (2023), Kapinga et al. (2019), Nyagango et al. (2023b), Kitole et al. (2024), Aku et al. (2018), Mbando et al.(2015b), Mgale & Yunxian (2020). |
| Cluster 2 (Green with 4 items): Mobile phone usage and access to agricultural marketing information among grape smallholders in Dodoma | Agricultural marketing information | 5 | Nyagango et al. (2024), Nyagango et al. (2023a), Nyagango et al. (2023b). Nyagango et al. (2023c). |
| | Dodoma | 3 | Nyagango et al. (2024), Tende et al. (2018), Nyagango et al. (2023a), Nyagango et al. (2023b). |
| | Grape smallholder farmers | 5 | Nyagango et al. (2024), Nyagango et al. (2023a), Nyagango et al. (2023b). Nyagango et al. (2023c). |
| | Mobile phone | 3 | Babyenda, P. (2023), Kitole et al. (2023), Tende et al. (2018). |
| Cluster 3 (Blue with 4 items): Marketing channels and food supply chain: A Focus on rice smallholders in Developing Countries | Developing countries | 2 | Hillbom, (2012), Ishengoma & Igangula, (2021). |
| | Marketing channel | 2 | Mwinyiheri, et al. (2023), Sambuo, et al. (2021). |
| | Rice supply chain | 2 | Mgale & Yunxian (2020) |
| | Smallholder | 3 | Hillbom, (2012), Kazungu (2024), Mmasa, (2023) |

## Proposed future research directions

The three thematic clusters in Table 6 provide a basis for identifying future research directions that extend beyond the descriptive mapping of agricultural marketing information research. In Cluster 1, future studies should examine how digital marketing tools, co-operatives and targeted training programmes influence smallholder farmers' access to information, marketing skills and market participation. Cluster 2 suggests investigating technology-enabled training, mobile-phone adoption barriers, and the effects of digital information on grape production and marketing outcomes. Cluster 3 is on opportunities to examine digital marketing platforms, sustainable agricultural practices and financial access within rice supply chains. These research priorities in Table 6 collectively inspire more context-specific, empirical, and interdisciplinary research, particularly using comparative and longitudinal approaches to examine how information technologies and institutional mechanisms shape farmers' market outcomes.

**Table 6:**
*Proposed future research areas based on thematic clusters*

| Thematic clusters | Proposed future research areas |
|---|---|
| Cluster 1 (Red with 5 items): Marketing information and market participation for smallholder farmers in Tanzania | Exploring the impact of digital marketing tools on smallholder farmers' market participation in Tanzania.<br>Investigating the role of local cooperatives in enhancing access to market information for smallholder farmers.<br>Assessing the effectiveness of training programs aimed at improving marketing skills among smallholder farmers. |
| Cluster 2 (Green with 4 items): Mobile phone usage and access to agricultural marketing information among grape smallholders in Dodoma | Impact of mobile phone technology on grape yield and quality among smallholders<br>Adoption barriers of digital agricultural marketing tools in rural communities<br>Effectiveness of mobile-based training programs on agricultural practices for smallholders |
| Cluster 3 (Blue with 4 items): Marketing channels and food supply chain: A Focus on rice smallholders in Developing Countries | Investigating how digital marketing platforms can enhance the visibility and sales of rice produced by smallholder farmers in developing countries.<br>Exploring sustainable agricultural practices and their influence on the efficiency and profitability of rice smallholders within the supply chain.<br>Examining the role of microfinance and credit facilities in improving smallholder access to markets and resources within the rice supply chain |

## CONCLUSIONS AND RECOMMENDATIONS

This study contributes to agricultural marketing information by systematically mapping the intellectual and thematic structure of research in Tanzania. Its originality lies in revealing the interconnectedness of information access, digital technologies, market participation and agricultural value-chain integration as an evolving research domain. The bibliometric analysis also identifies emerging research trajectories and underexplored linkages, providing a foundation for advancing theory and empirical inquiry. By consolidating fragmented literature into a coherent research landscape, the study offers a reference point for researchers to identify knowledge gaps, refine conceptual perspectives and develop context-specific research agendas. These insights extend understanding of how agricultural marketing information research is evolving within Tanzania and comparable developing-country contexts. Overall, the review concludes that agricultural marketing information is a vital component of agricultural development and rural transformation, and identifies opportunities to expand future research into underexplored regions, commodities, and emerging digital innovations. This article further concludes that a core academic circle in agricultural marketing information has not yet been formed and is likely to be influenced by researchers working in similar yet different fields. Tanzania and Kenya are the most influential and productive academic centres in agricultural marketing information. Emerging academic powers like China, Denmark and the US are potential partners for effective collaboration to enhance knowledge sharing and develop innovative studies.

Based on the findings, the study recommends that future research and policy interventions prioritise strengthening agricultural marketing information systems for smallholder farmers in Tanzania by improving market information dissemination, leveraging digital technologies, and enhancing efficient marketing channels. Particular attention should be given to expanding mobile phone-based information services, as these have demonstrated significant potential to address information asymmetries and enhance farmers' market participation and decision-making. Policymakers, development partners, and agricultural stakeholders should also invest in strengthening value chains and supply chain integration to reduce market inefficiencies and improve access to profitable markets. Furthermore, future studies should broaden their scope beyond dominant themes and regions to encompass diverse crops, geographic areas, and emerging digital platforms, thereby yielding a more comprehensive understanding of agricultural marketing information and

its contributions to smallholder livelihoods, market competitiveness, and food security in Tanzania.

**Policy implications**

This bibliometric study of marketing data is essential for identifying key areas of focus for policymakers and practitioners, particularly in Tanzania. It highlights the need to adopt marketing tools and methods to improve access to marketing data, which is critical for making informed business decisions. Cluster 1 results point to a compelling case for policy measures that facilitate smallholder farmers' access to marketing information. One key policy recommendation is to develop a central digital marketing platform that aggregates market information from multiple sources and helps farmers make rational market decisions. Collaborating with technology firms that work in agricultural software could ensure such a platform is accessible and easy to use. Moreover, seed training programs to enhance farmers' marketing skills should be prioritised, with funds earmarked to create these programs in collaboration with local cooperatives. In Cluster 2, policymakers should ramp up the adoption of mobile phones and digital technologies among rural smallholders. Subsidies for mobile phones or data bundles can be implemented as part of farm support schemes by eliminating adoption barriers.

Public campaigns that raise awareness of the benefits of mobile technology and user-friendly apps for grape smallholders can help upgrade farming systems and improve market access. Cluster 3 highlights the need for policy that allows digital marketing platforms for rice smallholders to enhance market exposure. Investment in digital infrastructure, along with microfinance opportunities tailored to rice farmers, is essential to support a better food supply chain that ultimately benefits smallholder farmers in developing countries. In addition, policymakers and relevant institutions should strengthen institutional capacity building by equipping agricultural agencies, extension services and farmer organisations with the skills, resources and systems required to collect, validate, manage and disseminate reliable marketing information. Effective agricultural information governance should also be promoted through clear standards for data quality, accessibility, privacy and interoperability, supported by public–private partnerships that bring together government agencies, technology firms, research institutions and farmer organisations to develop and sustain inclusive digital agricultural information services.

**Theoretical Implications**

The findings contribute to the theoretical understanding of agricultural marketing information by integrating Information Asymmetry Theory, the Technology Acceptance Model (TAM), Diffusion of Innovation Theory (Rogers, 2003), and Value Chain Theory to explain the role of information in smallholder farmers' market engagement. Information Asymmetry Theory provides a foundation for understanding how access to market information can reduce information gaps between farmers and other market actors, while TAM and Diffusion of Innovation Theory help explain farmers' acceptance and adoption of mobile technologies for accessing such information. Value Chain Theory extends this understanding by positioning marketing information as a resource that facilitates coordination, market participation, and linkages among actors within agricultural supply chains. Collectively, these theoretical perspectives offer an integrated lens for examining how information availability, technology adoption, and value chain relationships intersect in shaping smallholder farmers' market engagement, while highlighting the need for further empirical research to establish the mechanisms and contextual conditions underlying these relationships.

**Study Limitations and suggestions for future research directions**

Despite its valuable contributions, this study has certain limitations. They primarily stem from limitations imposed during data collection. The search was restricted to the Scopus database, which, although reputable, may not include all applicable publications contained in other databases. Furthermore, the results should be read in light of the search's limitation to literature published from 2008 to 2024. Language bias may also occur because the focus was on English-language articles, potentially overlooking valuable work in other languages. The study is subject to bibliometric limitations, including citation bias, database coverage bias and publication bias, which may affect the representativeness of the findings.

In the short term, future scholars should strengthen the bibliometric evidence by searching multiple reputable databases, including Web of Science, PubMed, and Google Scholar; incorporating grey literature; and applying citation-normalisation and sensitivity analyses. Extending the search beyond 2008–2024 and including non-English publications would also reduce database and language biases. In the long term, research should move beyond bibliometric mapping by integrating qualitative methods to better explain emerging themes and relationships. An

interdisciplinary perspective, cross-field comparisons and comparative analyses across databases, languages and periods could further enrich understanding of agricultural marketing information research. These priorities would progressively improve the coverage, validity, robustness and contextual depth of evidence available to researchers and practitioners.

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