UNVEILING BARRIERS TO EXPORT AND INTERNATIONALIZATION IN AGRO-FOOD SMES: INSIGHTS FROM A BIBLIOMETRIC PERSPECTIVE

Siti Nor Diana Razali [1*], Raja Nerina Raja Yusof [2], Anuar Shah Bali Mahomed [3], Mass Hareeza Ali @ Hamid [4]

[1] School of Business and Economics, Universiti Putra Malaysia, Malaysia
     Email: sitinordianarazali@gmail.com
[2] School of Business and Economics, Universiti Putra Malaysia, Malaysia
     Email: nerina@upm.edu.my
[3] School of Business and Economics, Universiti Putra Malaysia, Malaysia
     Email: anuar@upm.edu.my
[4] School of Business and Economics, Universiti Putra Malaysia, Malaysia
     Email: mass@upm.edu.my
*   Corresponding Author

Article Info:

Abstract:

The growing importance of Small and Medium-sized Enterprises (SMEs) in the agro-food sector highlights the need to understand export barriers that hinder their internationalization and global competitiveness. Despite their significant contribution to employment, food security, and national economies, agro-food SMEs face persistent constraints both internally and externally, limiting their export performance. To map and synthesize the intellectual landscape of this research domain, this study employs a bibliometric approach. It systematically analyses the scientific literature on export barriers in agro-food SMEs using data collected from the Scopus database. An advanced search strategy with keywords such as "export," "export barriers," "export performance," "internal barriers," "external barriers," "agro-food," and "SMEs" yielded a final dataset of 1,217 documents published between 2010 and 2025. The data were refined and harmonized using OpenRefine, and descriptive statistics and graphical trends were generated with the Scopus Analyzer. VOSviewer software was then applied to visualize networks of co-authorship, keyword co-occurrence, and country collaborations. The analysis reveals a notable growth in scholarly attention to agro-food export barriers, with a consistent rise in publications after 2015. Developed economies such as the United States, China, and the United Kingdom have dominated

contributions. Co-occurrence mapping highlights recurring themes around financial limitations, institutional barriers, market entry challenges, and managerial capabilities, reflecting a strong theoretical anchoring in the Resource-Based View, Institution-Based View, and Network perspectives. These findings not only trace the evolution of the field but also uncover gaps in emerging markets and digital supply chain enablers, signaling directions for future research. Overall, this study enriches the understanding of export barriers in agro-food SMEs by offering a comprehensive bibliometric perspective that integrates methodological rigor, numerical insights, and conceptual contributions.

Keywords:

Export; Export Barriers; Export Performance; Internal Barriers; External Barriers; Agro-Food; SMEs

Introduction

The internationalization of Small and Medium-sized Enterprises (SMEs) in the agro-food sector is a crucial driver of economic growth and competitiveness. However, despite the potential benefits, SMEs often encounter significant barriers that hinder their ability to export and compete in global markets. These barriers can be internal, such as financial constraints and a lack of managerial expertise, or external, including regulatory challenges and market access issues. Hence, understanding these barriers is essential for developing strategies to support SMEs in overcoming them and enhancing their export performance. This paper aims to shed light on the export barriers faced by agro-food SMEs through a bibliometric perspective, providing insights into the challenges and potential solutions for these enterprises.

The literature on export barriers for SMEs highlights a range of challenges they encounter in their internationalization efforts. One of the primary internal barriers is financial constraints, which significantly impact SMEs' ability to export. Studies have shown that SMEs with less healthy financial positions are less likely to engage in export activities due to liquidity and leverage issues (Forte & Salomé Moreira, 2018). Furthermore, managerial competency barriers, such as a lack of knowledge and experience in international markets, further impede SMEs' export potential (Sannegadu et al., 2024). These internal barriers are often compounded by external challenges, including environmental and foreign market barriers, which create additional hurdles for SMEs attempting to enter and compete in global markets (Sannegadu et al., 2024).

The agro-food sector faces unique export barriers due to stringent quality standards and regulatory requirements imposed by international markets. Research suggests that achieving these standards is a significant challenge for agro-food SMEs, particularly in developing economies where financial, social, and human capital limitations are prevalent (Dhewanto et al., 2021). The high costs associated with complying with standards, technical regulations, and conformity assessment procedures can be prohibitive for SMEs, making it difficult for them to compete with larger firms (Trade Barriers That US Small and Medium-Sized Enterprises Perceive as Affecting Exports to the European Union, 2014).

On the other hand, procedural barriers, such as excessive documentation and payment delays, further complicate the export process for agro-food SMEs (Ismail et al., 2013). Government support and policy interventions play a crucial role in helping SMEs overcome these barriers. Consequently, studies have highlighted the importance of government policies aimed at supporting SMEs and facilitating their survival in the aftermath of crises, such as the COVID-19 pandemic (Sharma et al., 2024). Effective export promotion policies and support tools can significantly enhance SMEs' export performance by providing the necessary resources and assistance to navigate the complexities of international markets (Breckova, 2018). However, the effectiveness of these policies often varies, and there is a need for continuous evaluation and adaptation to address the evolving challenges faced by SMEs (Tan et al., 2018).

Collaborative networks and innovation are also crucial factors in helping agro-food SMEs overcome export barriers. Research has shown that business cooperation networks positively influence SMEs' decision to export and their export intensity. This suggests that collaboration can help SMEs overcome the limitations of their small size (Serrano et al., 2016). In addition, adopting digital tools and e-business practices can facilitate horizontal collaboration and create virtual alliances. This enables SMEs to access new and niche markets (Vlachos & Gutnik, 2016). Therefore, entrepreneurial resilience and innovation are essential for SMEs to adapt to changing market conditions and sustain their competitiveness in the global arena (Sharma et al., 2024).
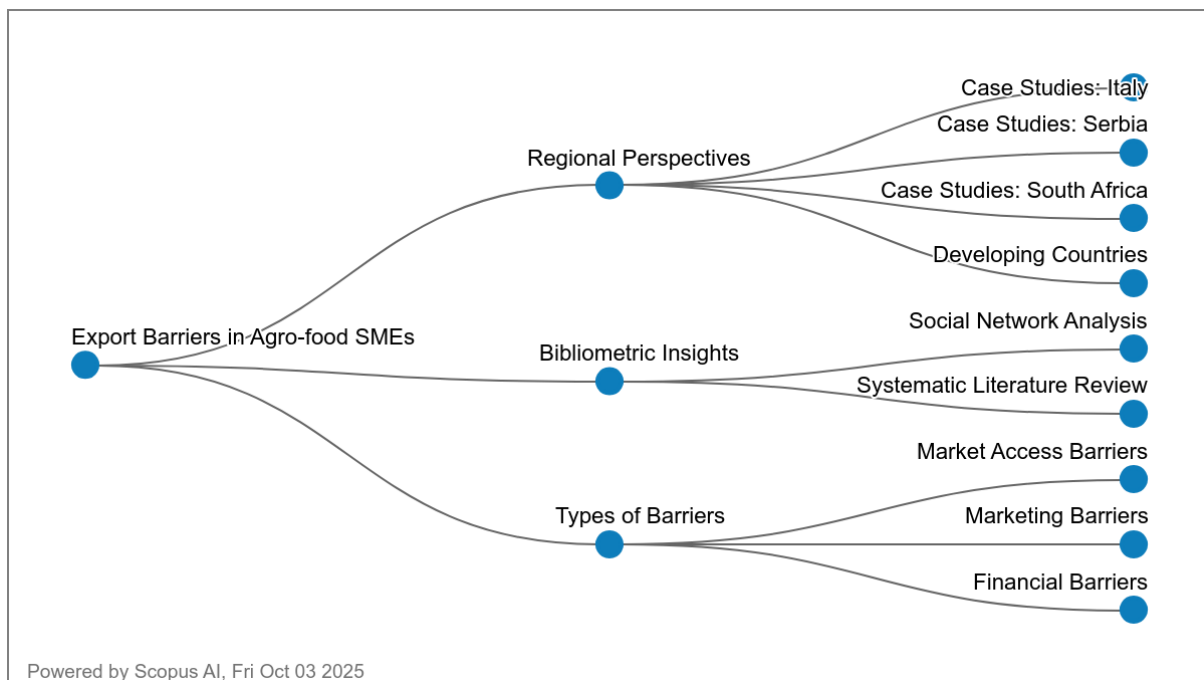

Figure 1: The Concept Map For Export Barriers In Agro-Food SME's

The concept map generated by Scopus AI highlights the multifaceted nature of research on export barriers in agro-food SMEs. It emphasizes three major strands of inquiry: regional perspectives, bibliometric insights, and types of barriers. From a regional perspective, case studies from countries like Italy, Serbia, and South Africa, along with broader analyses of developing countries, illustrate how local institutional, cultural, and market dynamics uniquely

shape the challenges faced by SMEs. This highlights the importance of considering regional differences in understanding export barriers. The bibliometric dimension of the research underscores methodological approaches such as systematic literature reviews and social network analysis. These approaches reflect the growing academic interest in mapping knowledge structures and collaboration patterns in this field. By analyzing bibliometric data, researchers can gain insights into the existing body of knowledge and identify gaps in the research. The categorization of barriers into market access, marketing, and financial obstacles provides a structured understanding of the internal and external constraints hampering internationalization efforts. This categorization helps researchers and policymakers identify specific areas where interventions can be targeted to reduce barriers and enhance competitiveness. Collectively, these themes reveal that export barriers in agro-food SMEs are context-dependent, multidimensional, and interconnected. This complexity necessitates both nuanced regional analyses and broader comparative insights. By integrating bibliometric evidence with thematic case studies, researchers can advance theoretical perspectives and offer practical guidance for policymakers and practitioners aiming to reduce barriers, enhance competitiveness, and support SMEs' integration into global markets.

In conclusion, the literature on export barriers for agro-food SMEs highlights the multifaceted nature of the challenges these enterprises face. Financial constraints, managerial competency issues, regulatory requirements, and procedural barriers are significant impediments to their export activities. However, government support, collaborative networks, and innovation are crucial in helping SMEs overcome these barriers and enhance their export performance. By understanding and addressing these challenges, policymakers and business leaders can develop targeted strategies to support the internationalization of agro-food SMEs and promote sustainable economic growth.

Research Question
RQ1: What are the research trends in online learning based on the year of publication?
RQ2: What are the most highly cited articles in this field?
RQ3: Where are the top ten countries contributing the most publications?
RQ4: What are the most frequently used keywords related to online learning studies?
RQ5: What are the patterns of co-authorship and country-level collaboration in this research domain?

Methodology
Bibliometrics is a systematic approach to collecting, organizing, and critically analyzing bibliographic data from scientific sources (Alves et al., 2021; Assyakur & Rosa, 2022; Verbeek et al., 2002). Unlike descriptive statistics that focus on journal outlets, publication years, or prolific authors (Wu & Wu, 2017), bibliometric methods employ advanced analytical techniques such as co-citation and network analysis. Consequently, these techniques reveal the intellectual structure and knowledge evolution within a field. Conducting a rigorous literature review requires an iterative and carefully designed process. This begins with selecting precise keywords, followed by comprehensive literature searches and in-depth evaluation. This approach ensures a robust evidence base and reliable insights (Fahimnia et al., 2015). In this study, the researcher prioritized high-impact publications. These sources provide critical contributions to shaping theoretical foundations and guiding scholarly debate. To guarantee accuracy, we used Elsevier's Scopus database as the primary indexing source. Moreover, Scopus is recognized for its extensive coverage and reliability (Al-Khoury et al., 2022; di

Stefano et al., 2010; Khiste & Paithankar, 2017). To maintain scholarly rigor, this study included only peer-reviewed journal articles. The researcher excluded books, conference proceedings, and lecture notes to avoid variability in quality (Gu et al., 2019). Finally, the researcher systematically extracted publications from 2010 through December 2025 from Scopus to form the dataset for subsequent bibliometric analysis.

Data Search Strategy

The search strategy for this study employed the Scopus advanced search function, which is widely recognized for its comprehensive coverage of peer-reviewed academic publications. To capture a robust dataset relevant to the research scope, the following search string was applied: TITLE ((Export OR Internationalization OR Trade) AND (Barrier OR Constraint OR Limitation)) AND PUBYEAR > 2009 AND PUBYEAR < 2026 AND (LIMIT-TO (LANGUAGE, "English ")) executed in October 2025 (refer to Table 1). This syntax ensured that only articles with targeted keywords in their titles were retrieved, thereby enhancing the precision of the results and minimizing irrelevant records. Table 2 screening the inclusion and exclusion criteria was explicitly defined to maintain the rigor of the process: only publications in English were considered, with non-English works excluded, and the publication timeframe was restricted to 2010–2025, omitting studies published prior to 2010. These criteria were particularly important for ensuring accessibility, comparability, and relevance within the contemporary discourse on export barriers and internationalization. The search was last conducted on October 3, 2025, yielding a total of 1,217 publications that met the stipulated parameters. This sizeable dataset underscores the growing academic attention to export barriers, constraints, and limitations affecting international trade and SME internationalization over the last decade and a half. Importantly, the refinement of search strings and screening standards contributes to the transparency and replicability of the systematic review process, aligning with best practices in evidence synthesis. By applying these rigorous procedures, the study ensured that the resulting corpus of literature was both methodologically sound and theoretically meaningful, providing a credible foundation for subsequent screening, quality assessment, and thematic analysis.

Table 1: The Search String

Scopus	TITLE ((Export OR Internationalization OR Trade) AND (Barrier OR Constraint OR Limitation)) AND PUBYEAR > 2009 AND PUBYEAR < 2026 AND (LIMIT-TO (LANGUAGE , "English"))
	Access date: October 2025

Source: Scopus

Table 2: The Selection Criterion Is Searching

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	2010 – 2025	< 2010

Source: Scopus

Data Analysis

VOSviewer, a widely recognized bibliometric software, was designed by Nees Jan van Eck and Ludo Waltman at Leiden University, Netherlands (Kahiya, 2018; van Eck & Waltman, 2010a, 2017). Renowned for its user-friendly interface and advanced analytical capabilities, VOSviewer has become a cornerstone in the visualization and interpretation of scientific literature. Its strengths lie in generating intuitive network visualizations, clustering related items, and producing density maps that simplify the interpretation of complex bibliometric structures. VOSviewer's flexibility allows scholars to explore co-authorship, co-citation, and keyword co-occurrence networks, providing a comprehensive understanding of evolving research landscapes. The platform's interactive environment and continuous updates further enhance its functionality, ensuring dynamic and efficient handling of large bibliometric datasets. Additionally, its ability to compute diverse metrics, customize visualizations, and integrate with multiple bibliometric databases underscores its versatility as an indispensable tool for academic inquiry.

VOSviewer stands out for its remarkable ability to transform complex bibliometric datasets into easily understandable and visually appealing structures. By focusing on network visualization, the software effectively identifies clusters of related items, uncovers patterns in keyword co-occurrence, and creates density maps that highlight areas of high scholarly activity. This makes VOSviewer a valuable resource for both novice and advanced users, catering to a diverse range of audiences engaged in mapping research domains. Continuous software development ensures its relevance, while customizable visualizations and robust analytical metrics position VOSviewer at the forefront of bibliometric innovation. Its adaptability across various bibliometric inputs, including co-authorship, citation, and keyword networks, has solidified its role as a versatile tool for uncovering new insights and advancing knowledge across disciplines.

For this study, datasets containing publication year, title, author, journal, citation counts, and keywords in PlainText format were retrieved from the Scopus database. These datasets spanned the period from 2010 to December 2025. Using VOSviewer software version 1.6.20, clustering and mapping techniques were applied to generate comprehensive bibliometric maps. Unlike traditional Multidimensional Scaling (MDS), VOSviewer positions items in low-dimensional spaces where spatial proximity accurately reflects their relatedness and similarity. While VOSviewer shares conceptual similarities with MDS (Appio et al., 2014), it distinguishes itself through its methodological innovation. Instead of relying primarily on similarity indices like cosine or Jaccard measures, VOSviewer employs a normalization approach based on

Association Strength (AS$_{ij}$). This measure is specifically designed to enhance the accuracy of co-occurrence frequency analysis (Van Eck & Waltman, 2007). This methodological refinement significantly improves the interpretive precision of bibliometric visualizations, making VOSviewer an indispensable platform for analyzing complex scientific networks.

$$AS_{ij} = \frac{C_{ij}}{w_i w_j}.$$

The association strength measure is defined as the ratio between the observed co-occurrences of items *i* and *j* and the expected co-occurrences if the items were statistically independent. Essentially, it quantifies how much the actual frequency of co-occurrence exceeds what would be expected if the items were unrelated. This robust normalization approach is particularly useful for bibliometric mapping (Van Eck & Waltman, 2007)

Findings and Discussion

What are The Research Trends in Online Learning Based on The Year Of Publication?
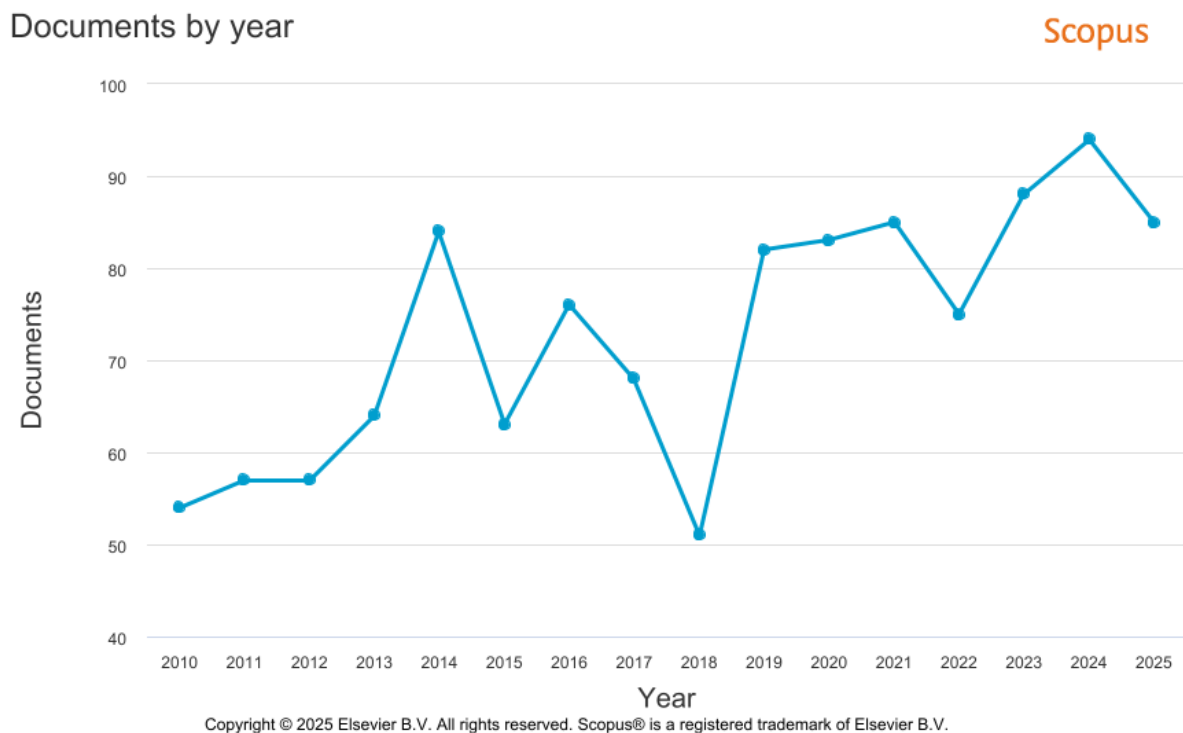
Figure 2: Number Of Documents Based On Year Of Publication
Sources: Scopus

The publication trend from 2010 to 2025 shows a steady increase in research interest on export barriers in agro-food SMEs, reflecting the growing recognition of this sector's strategic role in global trade. The early period (2010–2014) recorded moderate outputs, ranging from 54 to 84 publications, indicating that the topic was gaining scholarly momentum but had not yet matured. Between 2015 and 2019, the field expanded significantly, with annual publications consistently above 60 and peaking at 84 in 2014. This growth corresponds with the rising global attention to food security, trade liberalization, and the increasing participation of SMEs in international markets, which encouraged academic inquiry into the challenges and barriers they face. The dip in 2018 (51 publications) may reflect shifts in research funding or a redirection of focus toward related issues such as digitalization and sustainability. However, the rebound in subsequent years demonstrates resilience in scholarly interest.

The period from 2020 to 2025 reflects a consolidation and diversification of research themes, with publication counts consistently high, ranging from 75 to 94 annually, despite global disruptions such as the COVID-19 pandemic. The pandemic itself likely stimulated new discussions around supply chain resilience, institutional constraints, and the vulnerability of agro-food SMEs, explaining the surge from 2020 onwards. The peak in 2024 (94 documents) suggests heightened scholarly and policy attention, possibly driven by post-pandemic recovery initiatives, digital trade adoption, and sustainability imperatives that positioned agro-food SMEs as critical players in emerging markets. The slight decline in 2025 (85 documents, as of current data) could be due to publication lags or incomplete annual indexing, rather than a genuine downturn. Overall, the trend underscores the field's evolution from an emerging niche to a well-established research area, with global events and policy debates shaping the pace and focus of scholarly contributions.

What are The Most Highly Cited Articles in this Field?

The top 10 cited articles highlight two dominant strands of literature shaping the understanding of export barriers: financial constraints and institutional/network-related factors. The most heavily cited works, such as Manova (2013) with 636 citations and Feenstra et al. (2014) with 388 citations, underscore the centrality of credit constraints in international trade, particularly for SMEs. These articles gained influence because they provided robust empirical evidence, often using large-scale datasets linking access to finance with firms' ability to export. Similarly, studies by Minetti & Zhu (2011) and Casey & O'Toole (2014) emphasized micro-level evidence on how limited financing options during crises and structural credit restrictions directly hindered SMEs' global engagement. The strong citation counts reflect how finance and trade literature converged, especially post-global financial crisis, when scholars and policymakers urgently sought explanations for stalled internationalization among smaller firms.

Beyond finance, works such as Ellis (2011), focusing on social ties, and Hummels & Schaur (2013), examining time as a trade barrier, demonstrate the expansion of the discourse to include relational and logistical constraints. Ellis's article is particularly influential (414 citations) because it integrates entrepreneurship and network theory, showing how social and institutional ties can both enable and restrict SMEs' international expansion. Meanwhile, Kahiya's (2018) comprehensive review of five decades of export barrier research, though published later, quickly attracted 236 citations by consolidating fragmented insights into a structured research agenda. The prominence of these works stems from their theoretical contributions, empirical

rigor, and relevance to policy discussions on SME competitiveness, making them cornerstones in the intersection of international business, finance, and trade policy.

Table 3: Most Cited Author

No.	Authors	Title	Year	Source title	Cited by
1	Manova (2013)	Credit constraints, heterogeneous firms, and international trade	2013	Review of Economic Studies	636
2	Ellis (2011)	Social ties and international entrepreneurship: Opportunities and constraints affecting firm internationalization	2011	Journal of International Business Studies	414
3	Feenstra et al., 2014)	Exports and credit constraints under incomplete information: Theory and evidence from China	2014	Review of Economics and Statistics	388
4	(Hummels & Schaur, 2013)	Time as a trade barrier	2013	American Economic Review	316
5	Minetti & Zhu (2011)	Credit constraints and firm export: Microeconomic evidence from Italy	2011	Journal of International Economics	314
6	Casey & O'Toole, (2014)	Bank lending constraints, trade credit and alternative financing during the financial crisis: Evidence from European SMEs	2014	Journal of Corporate Finance	294
7	Manova et al. (2015)	Firm exports and multinational activity under credit constraints	2015	Review of Economics and Statistics	287
8	Bellone et al. (2010)	Financial constraints and firm export behavior	2010	World Economy	250
9	Kahiya (2018)	Five decades of research on export barriers: Review and future directions	2018	International Business Review	236
10	Fabbri & Menichini (2010)	Trade credit, collateral liquidation, and borrowing constraints	2010	Journal of Financial Economics	220

Where Are The Top Ten Countries Contributing The Most Publications?
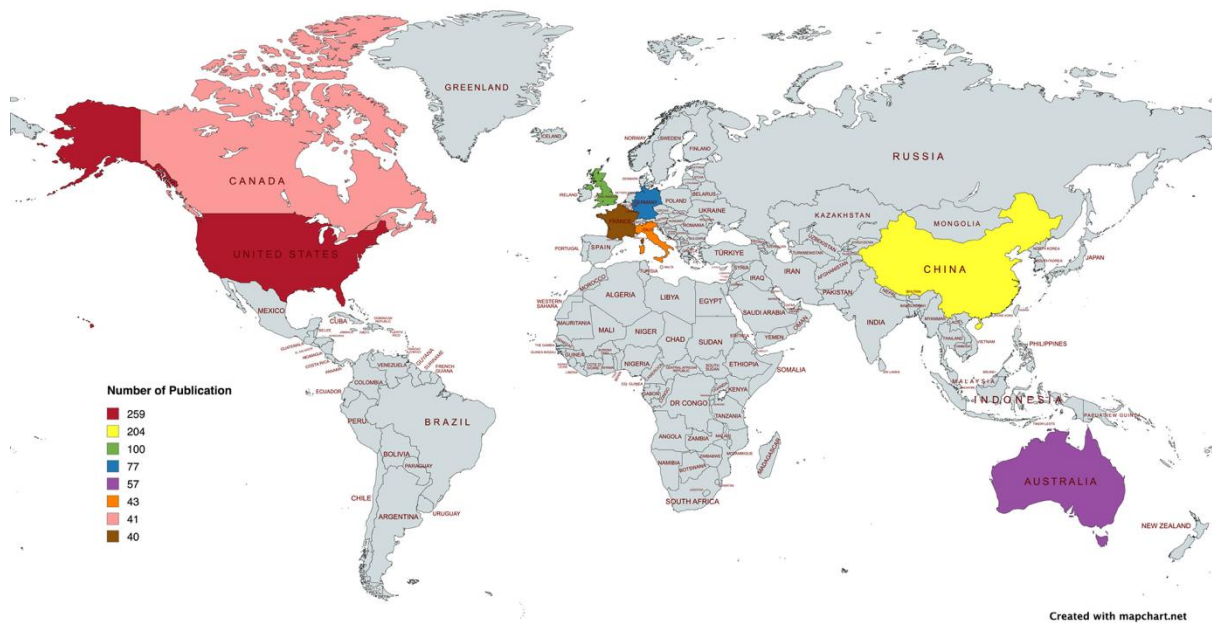
Figure 3: Country Mapping Based On The Number Of Publications

The distribution of publications across countries highlights the dominance of advanced economies and major research hubs in shaping the discourse on export barriers. The United States leads substantially with 259 publications, followed by China (204) and the United Kingdom (100), reflecting their strong academic infrastructure, funding capabilities, and global influence in international business research. European countries such as Germany, Italy, France, and the Netherlands also rank highly, underlining the region's active role in international trade scholarship, supported by EU policies that encourage cross-border research collaborations. Similarly, Australia and Canada's significant contributions reflect their integration into global supply chains and strong higher-education systems that prioritize internationalization studies.

Emerging economies, including India (46), Malaysia (15), Vietnam (15), and Brazil (17), demonstrate growing engagement, which can be attributed to their expanding roles in global agro-food trade and increasing academic interest in addressing domestic export challenges. However, their lower outputs compared to developed economies may stem from limited research funding, fewer specialized journals, and restricted international collaborations. Countries with only one to three publications, such as Sri Lanka, Romania, or Azerbaijan, reflect either nascent research activity or less prioritization of export barrier studies within their national academic agendas. Overall, the uneven distribution illustrates how research output is closely tied to economic development, institutional capacity, and global trade participation, with developed economies setting the research agenda while emerging economies gradually expand their scholarly contributions.

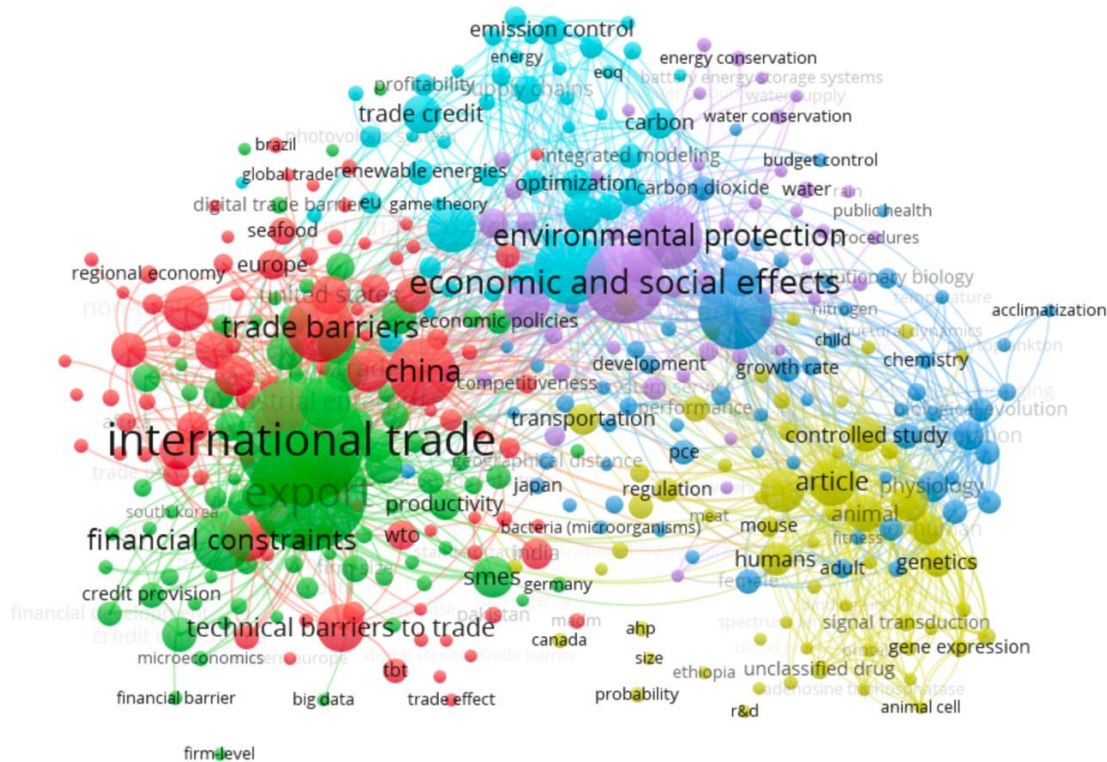*What are the Most Frequently Used Keywords Related to Online Learning Studies?*

Figure 4: Network Visualization Map Of Keywords' Co-Occurrence

Co-occurrence analysis of author keywords in VOSviewer is a bibliometric technique that identifies how frequently specific keywords appear together within the same set of publications. This approach helps uncover the intellectual structure of a research field by showing thematic linkages and research trends. When keywords co-occur often, it indicates a strong conceptual relationship, suggesting that scholars tend to explore these topics together. The visualization map translates these connections into clusters, where keywords are grouped by similarity and relevance, highlighting dominant research streams and their interdependencies. In this case, the analysis applied the full counting method with a minimum occurrence threshold of 5, meaning each keyword was counted in full regardless of how often it appeared in an article. Out of 4,104 keywords, 391 met the threshold. With a minimum cluster size of 5, the software generated six meaningful clusters that collectively represent the intellectual structure of the domain.

Consequently, the resulting clusters contribute to knowledge by revealing both core and emerging themes in the field. Strongly linked terms such as *international trade*, *export*, *trade barriers*, *financial constraints*, *sustainable development*, and *environmental protection* illustrate how the literature has evolved to capture both traditional barriers (e.g., tariffs, credit constraints) and contemporary challenges (e.g., digital trade barriers, sustainability, climate change). The appearance of high-frequency keywords such as *China*, *commerce*, and *economic and social effects* points to the central role of global markets and policy debates in shaping

export research. Moreover, the presence of related themes like *SMEs*, *entrepreneurship*, and *supply chains* highlights the growing interest in firm-level strategies and network enablers to overcome export constraints. Thus, the co-occurrence analysis synthesizes prior research and maps out intersections where new research opportunities can emerge, strengthening the body of knowledge on trade, barriers, as well as global market participation.

What are the Patterns of Co-Authorship and Country-Level Collaboration in this Research Domain?
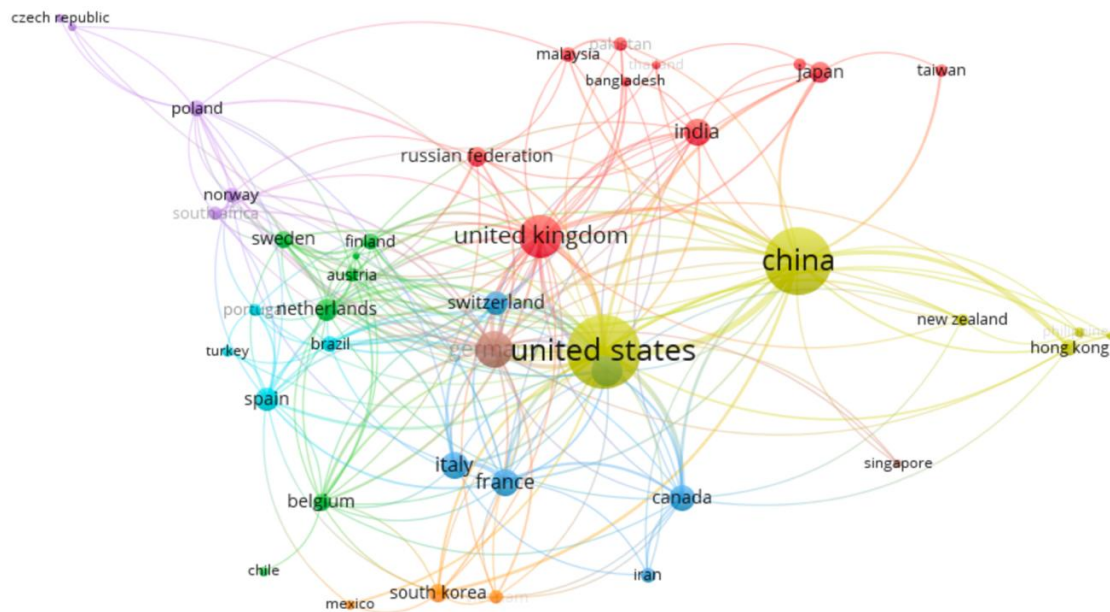

Figure 5: Co-Authorship By Countries' Collaborations

Co-authorship analysis by countries in VOSviewer identifies patterns of international collaboration by mapping how often authors from different nations co-publish research together. The co-occurrence concept here refers to the frequency with which two or more countries appear jointly in the bylines of publications, reflecting the strength of research ties and knowledge exchange between nations. VOSviewer uses these linkages to construct a visual network where nodes represent countries, and the connections (links) denote the collaborative intensity. The size of each node typically corresponds to the number of documents or citations, while the thickness of the connecting lines represents the strength of co-authorship ties, measured through total link strength.

For this analysis, the full counting method was applied, meaning each co-authorship link between countries was fully counted, regardless of how many co-authors were involved. A minimum threshold of 5 documents was set, resulting in 43 countries out of 101 meeting the inclusion criteria. Furthermore, the map required a minimum cluster size of 5, which produced 8 clusters, each representing groups of countries with stronger internal collaboration networks. The findings highlight dominant players such as the United States, China, Germany, and the United Kingdom, which exhibit high document counts, citation impact, and strong link strengths, indicating their central role in shaping global knowledge exchange. The generation of these clusters contributes to the body of knowledge by highlighting the leading countries in

the field and the patterns of regional and transnational collaboration. This allows researchers and policymakers to better understand global research dynamics, identify gaps where international cooperation is weak, and strategically foster partnerships to enhance scholarly impact and innovation in the field.

Conclusion

The purpose of this study was to examine the intellectual and thematic landscape of research on export barriers in agro-food SMEs through a bibliometric perspective. By analyzing publication trends, citation patterns, keyword co-occurrence, and country collaborations, the study aimed to answer questions about how scholarly attention to this subject has evolved, which contributions have most significantly shaped the field, and what networks of collaboration and themes dominate the discourse.

The analysis revealed a steady increase in publications from 2010 onwards, with particularly strong growth after 2015, reflecting heightened recognition of the challenges agro-food SMEs face in internationalization. Citation analysis identified finance-related constraints, institutional factors, and relational networks as central themes, while keyword co-occurrence highlighted the integration of traditional trade issues with contemporary themes such as sustainability and digitalization. Note that country mapping showed the dominance of advanced economies in shaping the research agenda, though emerging markets are gradually expanding their contributions. Co-authorship patterns demonstrated clusters of strong collaborations, particularly among the United States, China, and European countries, underlining the global but uneven distribution of research capacity.

This study contributes to the field by consolidating fragmented insights into a systematic overview of how export barriers have been studied across time, geography, and themes. It extends the literature by revealing both the maturity of traditional strands, such as financial and institutional barriers, and the emergence of new research directions around digital trade and sustainable supply chains. The results offer a clearer understanding of the intellectual structure of the field and provide a reference point for scholars seeking to navigate and expand this area of inquiry. From a practical perspective, the findings emphasize that policymakers and industry stakeholders must address financial and institutional barriers and foster innovation, networks, and digital adoption to strengthen SME participation in global trade. Hence, recognizing how barriers intersect with broader themes such as sustainability and resilience is essential for shaping effective support mechanisms and export promotion policies.

Nevertheless, the study faces limitations tied to its reliance on a single database, language restrictions, and the exclusion of non-journal sources. Future research could build on these findings by incorporating multi-database searches, exploring regional comparisons in greater depth, and integrating qualitative insights to complement the quantitative bibliometric evidence. Additionally, investigating the role of digital technologies and supply chain innovations in mitigating export barriers represents a promising direction for advancing knowledge in this field.

In conclusion, the bibliometric approach employed here underscores the significance of export barriers research within the agro-food SME context, offering both theoretical consolidation and practical guidance. The insights enhance understanding of past and present trends, as well as

call for sustained scholarly and policy attention to address evolving challenges, ensuring that SMEs can fully harness opportunities in the global marketplace.

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