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Rethinking The Relationship Between Agriculture and Entrepreneurship

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ABSTRACT

This study employs a bibliometric analysis to map the intellectual structure and evolving trends at the intersection of agriculture and entrepreneurship, together with a strategic perspective. This approach allows for a precise identification of the thematic relationships and interconnections between the two fields. For this purpose, a bibliometric analysis was made with the terms "agriculture" and "entrepreneurship" via the VOSviewer program on the Web of Science database system. Thereby, it was identified that the points where the two main fields intersect with each other. It becomes evident that there are trends and concentrations in related fields. Especially studies with a focus on sustainability and development have come to the forefront. Other elements that stand out in the studies are shared in the research results. The findings suggest a significant potential for growth in Türkiye's scholarly output and academic collaborations within this domain. The research findings indicate that there is potential for work in this field and that collaboration between the two fields will open the door to more comprehensive studies.

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ÖZET

Bu çalışma, bibliyometrik analiz kullanarak tarım ve girişimciliğin kesişim noktasında yer alan entelektüel yapıyı ve gelişen eğilimleri stratejik bir bakış açısıyla haritalandırmaktadır. Bu yaklaşım, iki alan arasındaki tematik ilişkileri ve bağlantıları kesin olarak belirlemeyi mümkün kılar. Bu maksatla Web of Science veri tabanı üzerinde ilgili kriterlendirmelerle "tarım" ve "girişimcilik" ifadeleri temelinde VOSviewer programıyla bibliyometrik bir sorgulama yapılmıştır. Bu sayede iki odağın birbiri ile temas ettiği noktalar tespit edilmiştir. İlgili alanlarda yoğunlaşmaların ve trendlerin olduğu aktarılmıştır. Özellikle sürdürülebilirlik ve gelişme temelli çalışmaların ön plana çıktığı görülmektedir. Çalışmalarda ön plana çıkan diğer unsurlar da araştırma neticelerinde paylaşılmıştır. Bulgular, Türkiye'nin bu alandaki bilimsel çıktıları ve akademik iş birliklerinde önemli bir büyüme potansiyeli olduğunu göstermektedir. Araştırma bulguları bu odak alanda çalışma potansiyelinin olduğunu, iki alanın iş birlikleri yaparak daha kapsamlı çalışmalara kapı aralayacağını işaret etmektedir.

Tarım Ekonomisi

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INTRODUCTION

Many basic needs for human survival are met through agriculture-based solutions (Kocira & Staniak, 2025). In this respect, the importance of agriculture-related activities is becoming increasingly controversial due to reasons such as an expanding and urbanizing population (Jiang et al., 2013; Husaini & Sohail, 2018). Agriculture is closely tied to the natural sciences and engineering due to its inherently natural characteristics. At this point, it is argued

that collaboration with entrepreneurship, one of the favored fields of social sciences, has the potential to advance the agricultural economy (Lorenz et al., 2024). For this purpose, it is believed that focusing on studies that combine agriculture and entrepreneurship will contribute to this momentum (De Wolf et al., 2004; Taragola et al., 2010). From this viewpoint, this study interrogates the relationship between the two fields through a bibliometric analysis method, based on a strategic perspective.

It is noted that agriculture has existed in various forms at different stages in the history of humanity (Merdan, 2024). Both meeting the need for nutrition and providing raw materials for industrial products have elevated agriculture to a crucial position, as it has assumed different roles in every era. Agricultural objectives prioritized for different purposes support this statement (Kowalczyk & Kwasek, 2020). Changing climate and geographical conditions also have an impact on agricultural production (Malhi et al., 2021). It is noted that the evolution of agriculture to an information and technology-based system has led to breaks in agricultural planning and execution (Sishodia et al., 2020; Khan et al., 2021; Meshram et al., 2021).

Before explaining the connection between the two fields, providing some informative explanation about entrepreneurship makes the link stronger. Although there is no universally agreed-upon definition of entrepreneurship, a consensus exists on the executive role of the entrepreneur (Kobia & Sikalieh, 2010). Some sources emphasise the aspect of gathering and coordinating the elements necessary for value creation, while others highlight the aspects of dealing with uncertainty and managing risk (Williams et al., 2021). Innovative form within the process distinguishes them from the standard business profile (Duening et al., 2012). Furthermore, the insight and vision of entrepreneurs, which enables them to discover future opportunities, differentiates their status (Suddaby et al., 2015). The approach to interpreting and addressing complaints/problems is considered one of its most distinctive features compared to people not involved in the process (Pattinson & Cunningham, 2022). Awareness is among the most fundamental characteristics that support him in transforming problems into opportunities (Fretschner & Weber, 2013). Together with planning, their execution and leadership qualities enable them to play a role in enhancing environmental well-being (Antonakis & Autio, 2014). Although other characteristics may be more prominent in different types of entrepreneurship, the decision-action orientation and ability to think differently occupy an important place among the distinguishing features that set it apart from others (Chowdhury & Audretsch, 2021). To this end, the enterprise/entrepreneurship established by the entrepreneur serves as their stronghold and represents the environment in which their activities are grounded (Lowe & Marriott, 2012).

To initiate the change/impact mentioned and manage these shifts more stably, entrepreneurial thinking is demanded as a contributor (Korsgaard & Anderson, 2011). Entrepreneurship and agriculture intersect with the potential to generate value (Patoju & Swain, 2023). Thanks to the entrepreneurial perspective, idle resources gain added value (Karakeçe & Çemberci, 2019). Regarding the supply-demand positions, the entrepreneur makes an effort to reveal the needed solution. In this respect, it serves as the dynamo of the economic system thanks to its position as both buyer and seller in the market mechanism (Casson, 2003). On the one hand, it assumes a regulating role in market conditions and supports the provision of needs. Also, it performs a market-orienting task through the innovation activities it follows (Linna, 2013). For this reason, the necessity of entrepreneurial touches is felt in areas where solutions are required.

Value creation, the primary focus of entrepreneurial action, commences with identifying a business opportunity and continues with coordinating relevant human, raw material, and capital resources (Bygrave et al., 2024). For the entrepreneur at this stage, agricultural activities fill an important gap in meeting the need for raw materials (Boehlje & Broring, 2011). Since the entrepreneurial way of thinking is not only concerned with the production stage but also with all the processes required until it reaches the customer, it makes it necessary to design all the relevant stages. When this statement is enriched with Porter's value chain approach, it becomes clear that the investment to be made can be supported in various ways (Simatupang et al., 2017). From an entrepreneurial perspective, it represents the realization of various levels, from production to consumption (Mohammadi & Sakhteh, 2023). In this system, where each need requires a solution, it is shared that economic and social welfare will increase as the gaps are filled by entrepreneurs (Driver, 2012). By establishing both domestic and international activity chains within this succession, it is possible to deliver the resulting value to different geographies (De Marchi et al., 2018). In this way, the targeted added value is increased by identifying and activating different alternatives in inputs and outputs.

Furthermore, the inclusion of a strategic perspective, which is one of the areas from which entrepreneurship draws strength, leads to a much more valuable level of gains (Hitt et al., 2017). Factors such as irresponsibly spent water resources, barren soils, and changing climatic conditions can jeopardize the production and planning potentials of the following times (Bayramoğlu et al., 2018). To overcome the supply and demand troubles at this point, it is believed that this association will develop a strategic alternative (Gadanakis, 2024). Therefore, combining

entrepreneurship and agricultural activities at a common point, based on sustainability thinking, supports the stability of the current situation and can reduce the interruptions experienced (Zhu et al., 2019). In addition, the cooperation that comes from taking a long-term view of both fields helps the parties to remain in a more stable environment. There is a need to more clearly demonstrate that both areas support each other and the cycle of reciprocity they have (Dias, Rodrigues & Ferreira, 2019).

Based on the aforementioned, it is argued that adopting an entrepreneurial mindset to strengthen agricultural activities will support the improvement of current conditions (Sachitra & Padmini, 2021). On the one hand, fluctuations in agricultural activity requirements are influenced by environmental and climatic conditions; on the other hand, changes in supply and demand can challenge agricultural planning forecasts (Alpizar et al., 2011; Golmohammadi & Hassini, 2019). Addressing this problem with the entrepreneurial motto of "doing things differently or doing things differently" (Marangoz, 2020) is thought to make it possible to stabilize the earnings in agricultural activities (Pigford et al., 2018). Therefore, applying the entrepreneur's innovation ability to existing problems in the field of agriculture is expected to yield positive results for both producers and consumers (Klerkx et al., 2012; Husaini & Sohail, 2018).

Analysis of the publications unveils that investigators have executed analyses focusing on this familiar theme at various levels and using different approaches. For example, Türkmen (2016) suggested that agricultural activities should be approached with sustainability and resource awareness in order to achieve development goals, and presented vermiculture activities as an example of sustainable agricultural entrepreneurship. In his work, Demiryürek (2021) explains the process and importance of entrepreneurial activities in the agricultural sector, lists the qualities that define an agricultural enterprise and entrepreneur, and emphasises the requirements for successful agricultural enterprises.

In addition to these studies, entrepreneurial tendencies have been linked to entrepreneurial activities and have formed the focus of numerous research efforts. For example, Çınar et al. (2017) conducted a study on adapting an entrepreneurship scale for farmers and examined this scale in relation to agricultural performance. Bayramoğlu and Ağızan (2019) focused on determining the level of entrepreneurship in agricultural enterprises and proposed a model to increase entrepreneurial actions. In another study, the same authors highlighted the significance of entrepreneurship education for young farmers and proposed incentive mechanisms as a means to support agricultural development (Ağızan & Bayramoğlu, 2019). The same team, in yet another study, concentrated on agricultural enterprises and linked entrepreneurial skills with the concept of social capital (Ağızan & Bayramoğlu, 2020). Esmer and Gıdık (2020) examined entrepreneurial tendencies among students of organic farming and recommended that this group be supported in their entrepreneurial endeavors. Sayar and Tunalıoğlu (2021) examined entrepreneurial activities/outputs and managerial qualities in a sample of local agricultural cooperatives.

Some studies approach the issue at a more macro level. For example, Eren and Gülcubuk (2023) examined family farms engaged in agricultural production in terms of entrepreneurial activities and linked these to the issue of future food security. Yalçın and Sözüer (2024) examined entrepreneurial decisions in their work, with a specific focus on international agricultural trade.

Further research has also been directed to examine agriculture and entrepreneurship from various perspectives. Alsos et al. (2011) examined entrepreneurial practices in agriculture in relation to rural development. Fitz-Koch et al. (2017) conducted a literature review on entrepreneurship studies in the agricultural sector and presented future projections. Condor (2020) again focused on the same topic, designing a literature review on entrepreneurship studies in agriculture, evaluating it through the lens of liberalisation and sustainability, and highlighting the concept of agro-entrepreneurship.

There is also an evident acceleration in the literature, indicating that the bibliometric method is preferred in the field of agriculture. Studies conducted on Google Scholar reveal that works have been produced in many fields. Again, due to the sensitivity and seriousness of the publication criteria, in a query focused on title, keywords, and abstract in Web of Science, it was observed that more than 1,500 studies were filtered using the search terms ‘agriculture*’ and ‘bibliometric’. However, when the term ‘entrepreneur’ is added to the search, the number of results decreases to only 7. In the relevant search, Biancone et al. (2022) based their research on ‘vertical farm entrepreneurs’. Vuciterna et al. (2024) researched women's entrepreneurship in agricultural activities.

It is also evident that there are studies that stand out in filtering, even if they do not directly align with the search focus. Rech et al. (2019) focused on competitiveness in the agribusiness sector. Priyadarshi et al. (2020) investigated post-harvest supply chain losses and correlated their findings with entrepreneurship. Giora et al. (2022) researched mulberry and silkworms, presenting their findings as a quantitative indicator for entrepreneurs. Chebo and Dhliwayo (2024) addressed the digitalization of social enterprises in developing country economies, concluding that the relevant focus was not sufficiently addressed, particularly in relation to agriculture. Ermawati

et al. (2024) employed bibliometric methods to examine microfinance applications and linked their findings to agricultural production.

This study aims to examine research that addresses both fields jointly, utilising a bibliometric analysis method to support these benefits and strengthen the academic synergy between the fields through the findings and contributions obtained. This analysis is based on the concepts of agriculture and entrepreneurship and has been prepared following a meticulously defined process to interpret the existing literature and lay the groundwork for future opportunities (Donthu et al., 2021; Öztürk et al., 2024). The absence of any work in the literature that relates these concepts in this manner is considered significant in demonstrating the gap that this study fills and its uniqueness.

MATERIAL and METHOD

To realize the intention mentioned in the first part, it is recommended to conduct a field survey with defined criteria (Donthu et al., 2021). In this way, the extent to which the fields interact with each other, in which direction they evolve, and their intellectual structures are revealed (Passas, 2024). In the literature, it is evident that the use of bibliometric analysis has been applied in various field studies (Merigó & Yang, 2017; Kumar et al., 2023; Pradana et al., 2023). With this bibliometric analysis, it becomes possible to obtain meaningful evaluations and trends from an ever-increasing and difficult-to-control mass of publications (Ragazou et al., 2022). Furthermore, the fact that there are no studies linking the concepts examined in the literature highlights the meaningful gap this study fills and its originality, making it valuable.

With bibliometric studies, the significant characteristics of the research are identified within the specified criteria by applying filters. By utilizing statistical models customized to the analysis's purpose, it becomes possible to gain a deeper understanding of the province (Karakeçe & Çemberci, 2024). In this way, many important criteria and key concepts, such as authors and collaborations, journals, schools, countries, number of publications, and citations by year, are clarified, and a more understandable mapped structure of the field is presented to researchers (Donthu et al., 2021).

A rigorous and methodological preparation process for conducting bibliometric studies is required (Mukherjee et al., 2022). Öztürk and his colleagues (2024) have developed a general framework in their study on conducting bibliometric studies. In this study, the stages of determining the research purpose, data collection and analysis, visualization, presentation, and interpretation of findings/results are mentioned. To obtain reproducible results by paying attention to the principles of systematicity and transparency, the criteria for each step should be clearly stated. It should also be explained in which database and with which concepts the research was conducted. The initial results should then be filtered. In this process, many irrelevant results can be excluded by criteria such as relevant years, indices, fields, languages, and types of publications. Then, the data set downloaded according to these criteria is subjected to the analysis process with the relevant program, and the results are interpreted (Öztürk et al., 2024).

This study aims to provide researchers who intend to conduct research in the field of agriculture and entrepreneurship with guidance on the focus area, including which areas or concepts are frequently preferred. In these studies, gaps and hints emerge that are apparent in terms of the prominence of authors in the field, as measured by journals, publications, and citations, as well as collaborations between individuals. In this way, it can be easier to understand the efforts that have been made so far and to make sense of the way forward (Donthu et al., 2021). In other words, it is possible to identify areas that have fallen off the agenda or are expected to gain popularity.

The study encompasses selected works published up to June 25, 2025. WoS, Scopus, and Dimensions databases are commonly used in similar studies in the literature (Singh et al., 2021). However, it is mentioned that WoS is more rigorous in terms of selectivity criteria, and it was selected as the sole database due to its rigorous journal selection process and high-quality metadata, which is crucial for accurate citation and co-citation analysis in bibliometric studies (Vera-Baceta et al., 2019; Koo & Lin, 2024). Although studies have utilized various databases (Faroq, 2023), it is reported that extracting overlapping publications poses a particular challenge to the study (Caputo & Kargina, 2022). In addition, since the analysis program and database outputs must function smoothly, this constitutes a key factor in selecting the WoS source. In addition, the WoS literature was preferred in this field, as only English-language publications would be focused on to increase the dominance of the research (Singh et al., 2021).

In the search criteria, the title “topic” was preferred to represent “title, abstract, keyword plus, and author keywords,” and the terms ‘agriculture’ and “entrepreneurship” were placed in this field. The 'topic' search field was chosen to capture a comprehensive overview of the literature, as the concepts of agriculture and entrepreneurship are often discussed in abstracts and keywords without necessarily being in the article title. Thus, a realistic

overview of the interaction of the fields was obtained. When there are no restrictions, 1174 works were included in the list. Considering the selectivity of the refereeing process, the proceeding paper and book chapter were excluded from the classification, and only works with titles in the article (and review articles), and only those written in English were preferred. Due to the inclusiveness of the concepts used in the related search, there is a possibility that unrelated sources may be included. For this reason, only the Social Science Citation Index, the Emerging Sources Citation Index, and the Science Citation Index Expanded indexes were selected; the other fields were excluded. A meaningful data set was reached through meticulous filtering from this wide scope, and thus, 865 works were selected. As a result of elimination, the remaining works were subjected to analysis using Web of Science Analyses Tools and VOSviewer (Version 1.6.20).

RESULTS and DISCUSSION

When the number of publications and citations is analyzed first, it is possible to interpret the development in the field as encouraging and notable. From 1992, when the first relevant publication was identified, until 2010, the number of publications remained in single digits. Over the following 10 years, the number of publications continued to increase, reaching double digits, and particularly in 2017, the interest in the field became evident. The acceleration in the number of publications reached 3-digit figures after 2021. Along with the number of publications in the field, it is evident that citations to relevant publications have shown a similar trend. As seen in Figure 1, it can be interpreted as the realization of potential in the field by the academic community, with its almost steady growth.

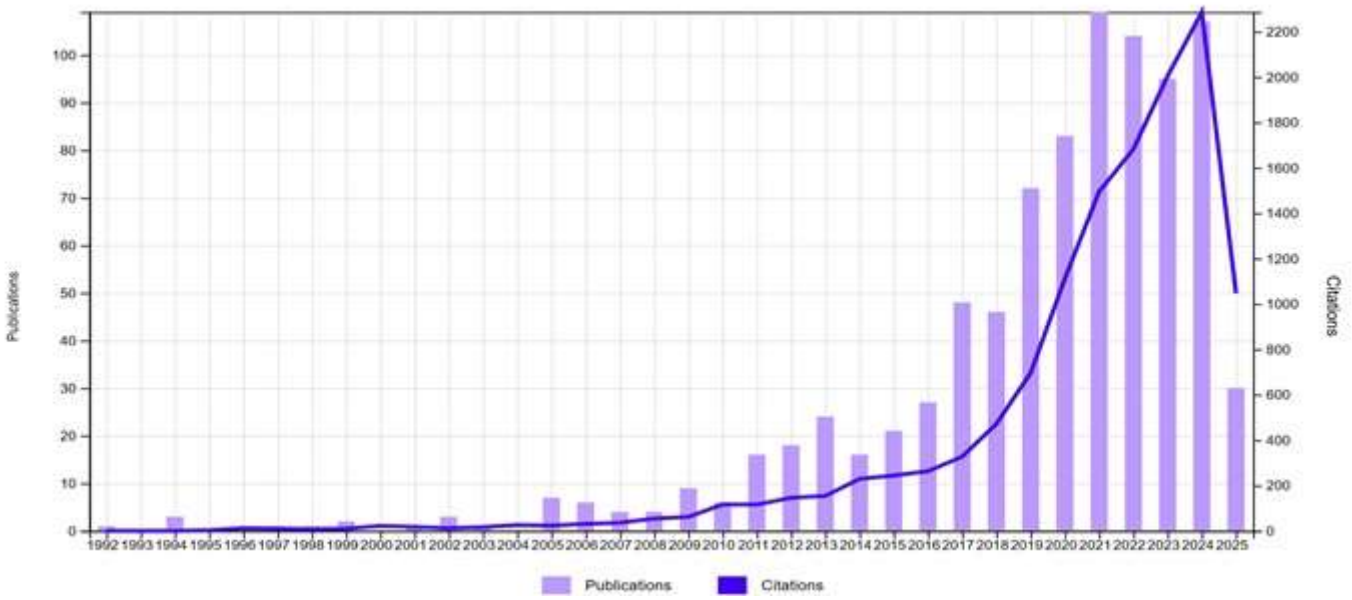

Figure 1. Number of publications and citations by year in bibliometric analysis
Şekil 1. Bibliyotmetik analizde yer alan yayın ve atıf sayıları

Based on Web of Science records, 865 publications have been cited 12742 times so far. According to VOSviewer outputs, the authors who contributed the most to this figure are Morris (n=361), Mcelwee (n=320), Ronatas (n=277), Barbieri (n=262), Mahoney (n=262), Ferreira (n=248), Rodrigues (n=248), Vesala (n=199), Lans (n=196), Van der Sluis (n=196). The authors with the most publications were Mcelwee (n=8), Ataei (n=6), Morris (n=6), Bozic (n=4), Dentoni (n=4), Ferreira (n=4), Gittins (n=4), Goetz (n=4), Karimi (n=4), Kiminami (n=4), Lans (n=4). When we examine the authors who collaborated the most, we see the same names in the list, except for Lans.

Looking at the journals where the citations are made, the Journal of Rural Studies tops the list with 1630 citations. It is followed by Sustainability, with 906 citations, and the Journal of Cleaner Production, with 388 citations. It is followed by Land Use Policy (n=266), the Journal of Small Business and Enterprises (n=246), the British Food Journal (n=180), Agriculture and Human Values (n=178), and European Countryside (n=91).

The journals with the highest number of publications are Sustainability (n=63), the Journal of Rural Studies (n=36), Scientific Papers Series Management Economic Engineering in Agriculture and Rural Development (n=17), Ekonomia Poljoprivreda Economics of Agriculture (n=14), the Journal of Agricultural Food Systems and Community Development (n=13), European Countryside (n=13), Agriculture Basel (n=12), Journal of Enterprising Communities People and Places in the Global Economy (n=12), the Journal of Cleaner Production (n=10). It is

noted that the journals reached double-digit figures.

When the number of publications is listed based on affiliation, it is seen that Wageningen University [Research] (n=33), Ministry of Education Science of Ukraine (n=20), Islamic Azad University (n=14), Indian Council of Agriculture Research ICAR (n=13), University of Tehran (n=13), CGIAR (n=13), Swedish University of Agricultural Sciences (n=11), Pennsylvania Commonwealth System of Higher Education PCSHE (n=10), University of California System (n=10) have published in double digits.

When the institutions are ranked according to the citations they have received, the table is shaped as follows: Wageningen University [Research] (n=794), University Helsinki (n=460), Aberystwyth University (n=361), University of Amsterdam (n=317), Michigan State University (n=287), University of Missouri (n=285), National Renewable Energy Lab (n=267), Riso National Laboratory (n=267), Tata Energy Research Institute (n=267), University of Beira Interior (n=248), Utrecht University (n=248), Swedish University of Agricultural Sciences (n=247).

When the number of publications is evaluated by country, the top ten are listed as USA (n=114), China (n=76), India (n=67), England (n=52), Netherlands (n=52), Iran (n=45), Italy (n=43), Germany (n=35), South Africa (n=30), Australia (n=28). Türkiye has only 20 publications in the field. [Searches were conducted for both Türkiye (old term) and Türkiye (new term)]. When the collaborations made are taken into account, the same countries are included in the list.

According to Web of Science metrics, the top three research fields published are business economics (n=289), agriculture (n=191), and environmental sciences ecology (n=157). In meso topic citations, management (n=297) and agricultural policy (n=265) are at the top of the list. In micro topic citations, entrepreneurship (n=233) and sustainable agriculture (n=233) are at the top of the list.

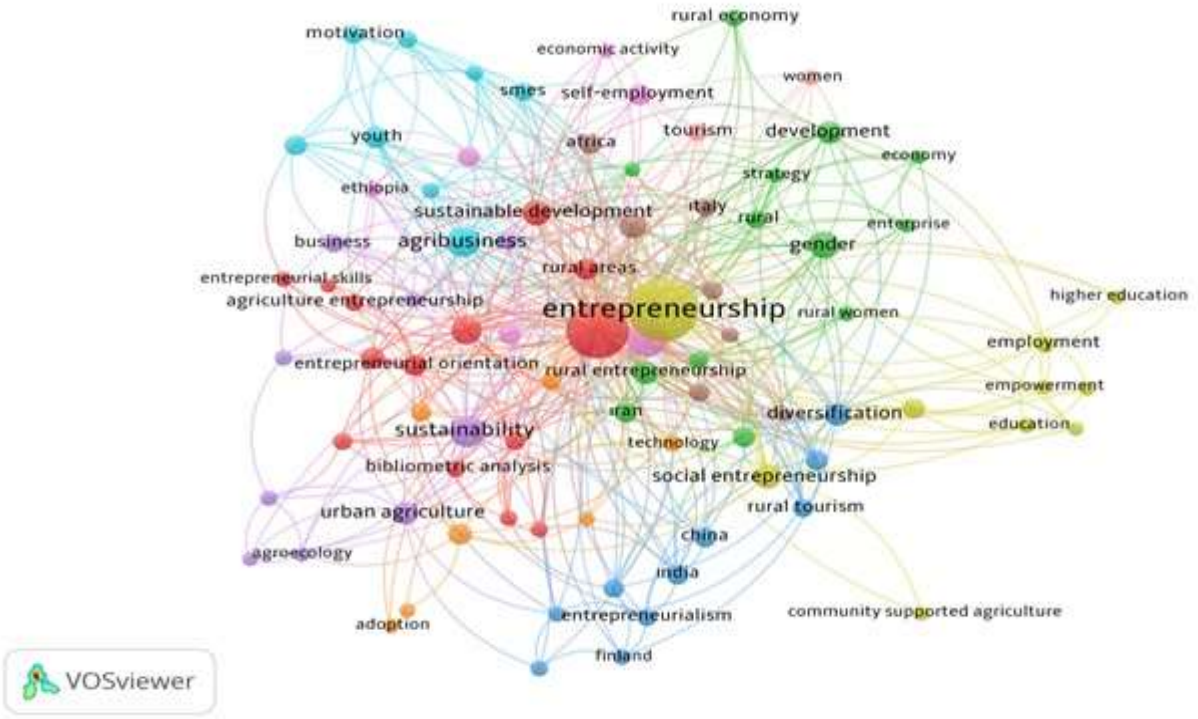

Figure 2. Keywords intensity map in VOSViewer
Şekil 2. VosViewer'daki anahtar kavramlar yoğunluk haritası

In the co-occurrence keyword analysis conducted with the help of the VOSviewer program, it is evident that certain areas stand out clearly according to the minimum 5-repetition criteria. The keyword co-occurrence map in Figure 2 reveals ten distinct thematic clusters, with sustainability, rural development, and entrepreneurial orientation emerging as central themes. The prominent expressions in the first (red) group include agriculture, agricultural entrepreneurship, circular economy, economic development, entrepreneurial orientation, skills and education, as well as performance, rural areas, sustainable development, and entrepreneurship, along with bibliometric analysis and systematic literature review. The effects of the macro problems and the effort to comprehend are felt within the group. The second (green) group includes expressions starting with climate change, (sustainable) development,

gender, expressions starting with rural, economy, enterprise, strategy, and Iran. It can be thought that this group prioritizes environmental and social factors. The third (blue) group consists of the words agritourism, rural tourism, (farm) diversification, multifunctionality, China, India, and Finland. It can be seen that more specific areas are being studied with this group. The fourth (yellow) cluster consists of the words (higher) education, (un)employment, empowerment, and social entrepreneurship/farming. Again, it is noticed that the field attaches importance to sociological issues. The fifth (purple) group stands out with the words agroecology, ecosystem, food, resilience, business, cooperatives, urban agriculture, sustainability, and social innovation. It brings social structures, the system approach, and management emphasis in the studies to the fore. The sixth (cyan) group includes the words agribusiness, agricultural entrepreneurship, developing countries, green entrepreneurship, motivation, SMEs, Nigeria, and youth. With these expressions, it is seen that agriculture and entrepreneurship are converging. The seventh (orange) group includes the words adoption, entrepreneurial intention, family business, farmer entrepreneurship, sustainable agriculture, and technology. It is evident that this group is focusing on more specific topics within the field of entrepreneurship. The eighth (brown) group includes farmers, innovation, organic agriculture, social capital, Africa, Greece, and Italy. The ninth (pink) cluster includes the words rural development, economic activity, food security, self-employment, and Ethiopia. The last (pink shell) and the smallest cluster consists of expressions related to tourism and women. When the last three small groups are examined in general, it becomes clear that a wide range of concepts will be studied in the field, and that it can also encompass microtopics.

When the same analysis is based on the distribution by years, the change in the subjects studied is revealed. The temporal overlay of keywords in Figure 3 shows a clear evolution from broader themes like 'development' to more specific and contemporary issues such as 'climate change', 'family business', and 'adoption' in recent years. According to this figure, while subjects such as development, employment, and diversification were studied 8-10 years ago, it is seen that more subjects related to entrepreneurship were studied in the next 2-3 years and shifted to areas such as sustainable development. In recent years, it is evident that sustainability-based studies continue to be ongoing, with a focus on climate change, gender, motivation, family business, food, and adoption. Studies aimed at understanding these areas are also being carried out.

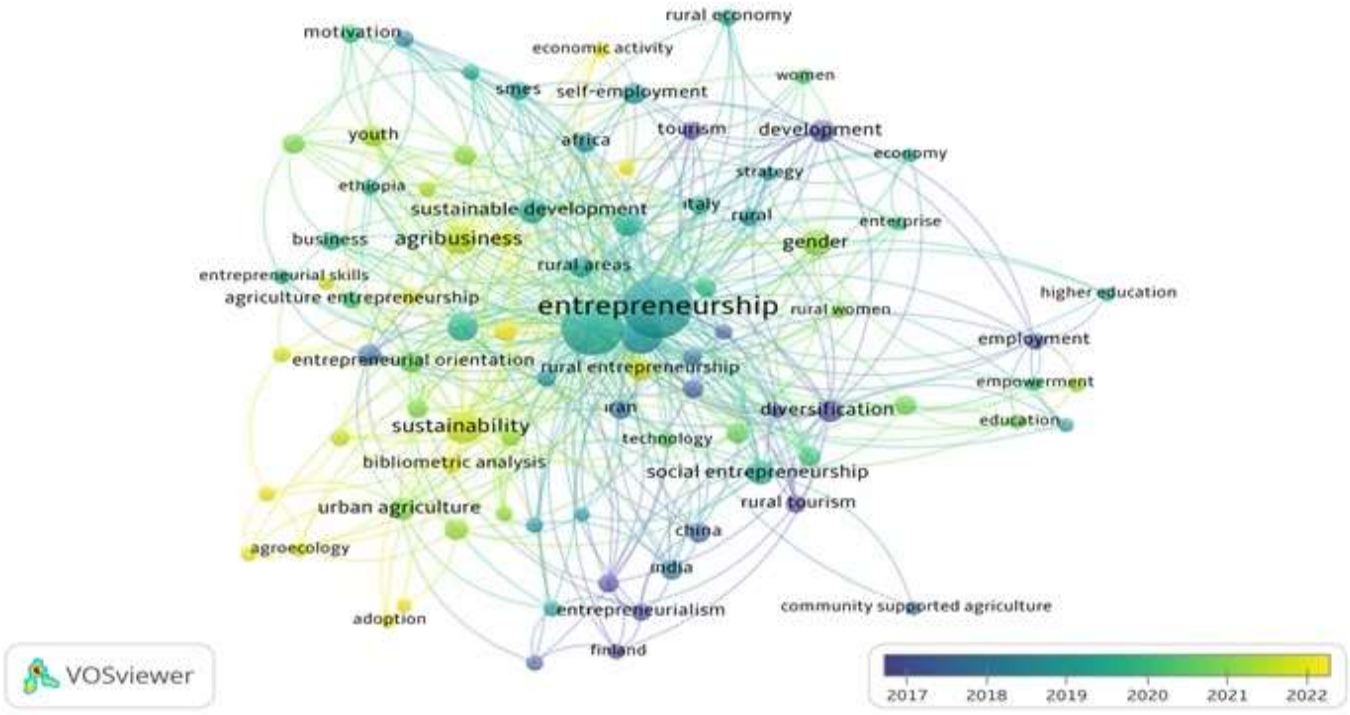

Figure 3. Intensity change in keywords by year
Şekil 3. Anahtar kavramların yıllara göre yoğunluk değişimi

DISCUSSION

Due to the academic rigour of the WoS database, this study was conducted solely using this source (Dönbak, 2020). Different databases can offer researchers new opportunities. It is possible to broaden the scope of this study by including new publications indexed in other data sources such as Scopus, Dimensions, or Google Scholar. In

subsequent studies, it may be advisable to increase the depth of the field through integrated source searches and comparative studies.

When examined in terms of its methodology, the study may be criticised for being superficial/not going into detail due to the concepts it questions. In fact, this is precisely what the study aims to do. Thus, in studies that focus on/address both concepts, efforts have been made to identify the relationship under investigation. It enables the creation of a conceptual mapping of how concepts are addressed/questioned across different literatures (Passas, 2024). Leaving the concepts at the macro level raises the risk of including many irrelevant studies in the inquiry at the initial stage. However, a meticulous screening process is carried out in bibliometric studies precisely for this purpose (Kurutkan, 2024). In the analysis phase of the study, a criterion-based search was conducted in the first stage, reaching 1,174 studies. The pool was reduced to 865 publications through the elimination processes.

For future research, it is possible to conduct the same analysis using more specific keyword selections. For example, studies on more narrowly defined terms such as 'agricultural entrepreneurship', 'social entrepreneurship', 'women's entrepreneurship', 'rural tourism', and 'rural entrepreneurship', focusing on bibliometric analysis outputs, may provide more refined results rather than a general overview. It can lead to the acquisition of recommendations that reinforce the sub-theme in question within studies focused on sub-themes. On the other hand, this study may fill the role of triggering the discovery of a gap that has so far escaped the attention of academics and industry representatives familiar with the field. It will pave the way for works that appeal to both practitioners and the academic world.

When examining the analysis findings, it is useful to discuss some of the key results. Although agricultural activities held a significant place in human life before industrialization, the fact that the first publication focusing on entrepreneurship and agriculture was written in the 1990s suggests that interest in the field began relatively late and is considered notable. Although Figure 1 shows a visible increase in publications and citations after 2010, especially after 2017, indicating a rapid increase in academic interest in the field, the fact that the number of publications meeting the specified criteria has remained in double digits over the last 10 years can be interpreted as a sign that this field has been neglected from the attention it deserves. It appears that such a crucial unity, centered on basic needs, was neglected until 2010, and then resurfaced with sustainability-themed studies. This delayed academic interest may reflect a broader societal undervaluation of agriculture's strategic role until food security and sustainability concerns became pressing global issues.

If we focus on Türkiye, it is seen that although agricultural activities are prioritized on the agenda, the same situation does not attract enough attention in the academic field. According to the news of the International Trade Agency (ITA) (Anonymous, 2024) and Anadolu Agency (AA) (Çalkaya & Gönültaş, 2025), Türkiye, which ranks first in Europe and eighth in the world in agricultural production, is unfortunately not among the top 25 countries when considering the number of publications and academic collaborations. Regarding the ongoing and competitive structure of the educational community, Türkiye needs to increase the number of publications by almost 50% to be among the top ten countries in this selected field. Furthermore, despite its potential and its importance on the agenda, the need for a more strategic approach to the issue is one of the elements this study seeks to question. It is considered important that this questioning should be considered not only by academics serving different disciplines but also by the private sector and public authorities.

CONCLUSION

WoS metrics and VOSviewer outputs can be a guide for researchers who intend to operate in this focus area (Öztürk et al., 2024). These outputs indicate which journals prioritize this field and reflect which ones are willing to publish relevant types of publications (Donthu et al., 2021). Accordingly, the Sustainability and Journal of Rural Studies journals offer important opportunities in this field. The topics that have been explored in the past and those that are currently popular are also included in the outputs of the bibliometric analysis (Ellegaard & Wallin, 2015). It is apparent in Figure 3 that publications focused on agricultural development and entrepreneurship, grounded in sustainability and development, are positively influenced by this trend.

The authors who were initially cited as primary references in the research are also among the study's outputs (Donthu et al., 2021). This information not only makes it easier to understand which names have influenced the field but also has the potential to guide productive partnership decisions in academic collaborations. It is seen that the pioneering Morris and McElwee are driving the studies in this field.

Another outcome is that it indicates which countries are concerned about the relevant common field (Passas, 2024). This output facilitates the identification of relevant countries and institutions and provides guidance that encourages collaboration between institutions (Öztürk et al., 2024). In the co-authorship title on a country basis, it is observed that the USA, China, India, the Netherlands, and the UK compete in the number of publications criterion. The USA, the Netherlands, China, Germany, and the UK also compete in the citation criterion.

Figure 1 illustrates that particularly after 2010, research drawing on common foundations in agriculture and entrepreneurship has begun to emerge as a distinct trend in the academic community. The steady increase in both the number of studies and the citations to these publications can be considered a sign of the academic world's adoption of this cooperation. This acceleration, which started especially in 2017, continues to increase today and is interpreted as a promising development.

This study serves to highlight the existing situation and development in the field, supporting the effort to create references for subsequent studies. The analysis results show that the two fields focused on value production will create a synergy that supports each other. It is believed that studying specific concepts related to the two fields by linking them together will increase the diversity of publications in the field and enhance the quality of the outputs. The studies will be local, and they also have the potential to be prepared with collaborations that will contribute at an international level. The fact that both fields have supportive roles in both economic and social fields is seen as a source of motivation that encourages researchers devoted to this selected field to focus on the desired publications. Literature also suggests that more studies be conducted in the field of agricultural entrepreneurship in order to achieve sustainability and development-based goals (Demiryürek, 2021). Based on these findings, it is argued that more multidisciplinary studies should be conducted in this common field in the years to come.

The synergy resulting from these efforts is expected to yield positive, practical contributions to agricultural policy. From this perspective, the awareness of the need for producers to focus on other value chain activities enhances as agricultural production increases. It can be interpreted as inviting entrepreneurial thinking into agricultural activities. In this way, both value-added production and the perception of value in production activities will be strengthened, and the foundation of initiatives that propose solutions to the problems encountered in the production chain will be supported.

In addition, it is possible that the studies emerging from this focus can become steps that encourage cooperation in the field of education and training, as well as their contribution to economic activities. While supporting the emphasis on production in agricultural activities, it may be easier to increase the weight of young people who have been raised with an entrepreneurial awareness/mindset, which can be instilled in this direction. For this reason, in addition to the academic studies to be prepared, a reminder is presented among the study's outputs that education curricula can be designed to foster a character that strengthens this potential cooperation. In this direction, the creation of incentive mechanisms between relevant public institutions and educational institutions is also suggested as a practical conclusion, aiming to overcome the highlighted deficiency. In this way, it will become more possible to produce micro and macro solutions that adopt an agriculture-entrepreneurship partnership focusing on meeting the identified need.

It is possible to expand the scope of the study for developing countries, such as Türkiye, that are heavily dependent on agriculture. Türkiye's position, despite its agricultural prominence, highlights a critical gap between its practical economic capacity and its academic influence in this field. This disparity underscores an urgent need for targeted policies to incentivize research and international collaboration in agricultural entrepreneurship is believed that there are lessons to be learned for policymakers and field actors. For example, organisations involved in education and development planning should focus on developing solutions that contribute to this area, thereby strengthening the term of focus – entrepreneurial interaction. This area can be implemented by either providing entrepreneurship training to young or female farmers, or by offering financing and incentives to priority development regions. On the other hand, it can be implemented by enhancing agricultural activities with digital solutions to enrich value chains or by supporting the entrepreneurial spirit through cooperatives. For this reason, the inertia of resources, which is important in both agriculture and entrepreneurship, is prevented, and profit opportunities are seized. Due to its contributions that increase social welfare as well as economic gains, it is expected to have an impact that develops both the market and the public.

Factors such as food corridors damaged by ongoing wars, potential difficulties arising from global warming, and the sustainability of water resources facilitate an understanding of the value attributed to agricultural entrepreneurship. As healthy and sustainable food security has become increasingly indispensable for humankind, it closely concerns every sector that interacts with agricultural production. It also means that entrepreneurial solutions have the potential to be a significant factor in addressing problems in the agricultural sector and identifying new opportunities. In an era of climate change, geopolitical instability, and food security challenges, the synergy between agriculture and entrepreneurship, as mapped in this study, is not merely an academic interest but a critical pathway toward building more resilient and sustainable agri-food systems for the future.

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