International Journal of Economics, Commerce and Management
United Kingdom ISSN 2348 0386 Vol. 13, Issue 12, Dec 2025

https://ijecm.co.uk/

CHALLENGES AND BARRIERS TO INNOVATION ADOPTION BY AGRICULTURAL AND AGRITOURISM FARMS: EVIDENCE FROM ALBANIA

Adela Çulani
PhD(c), Faculty of Economy and Agribusiness, Agricultural University of Tirana, Albania
aculani@ubt.edu.al, ORCID: 0009-0005-0903-6186

Ilir Tomorri
Associate Professor, Faculty of Economy and Agribusiness,
Agricultural University of Tirana, Albania
itomorri@ubt.edu.al, ORCID: 0000-0002-2127-1323

Brunilda Baraku
PhD, Faculty of Economy and Agribusiness, Agricultural University of Tirana, Albania
bgjini@ubt.edu.al, ORCID: 0000-0002-8844-0400

Denisa Kurtaj
Associate Professor, Faculty of Economy and Agribusiness,
Agricultural University of Tirana, Albania
dpipero@ubt.edu.al, ORCID: 0009-0006-5896-1156

Fabjola Domi
PhD(c), Faculty of Economy and Agribusiness, Agricultural University of Tirana, Albania
fabjola.arapi@gmail.com, ORCID: 0000-0003-3090-7386

Nertila Filipi
MSc, Faculty of Economy and Agribusiness, Agricultural University of Tirana, Albania
nfilipi@ubt.edu.al

Abstract

The agricultural sector is a crucial component of the Albanian economy, both in terms of its contribution to the country's GDP and its significant employment levels. In recent years, this sector has become a strategic priority for national economic development in Albania. In the agricultural sector, agricultural farms and agritourism enterprises have played a primary role in its development. In our country, over 300,000 small and very small agricultural farms with an area of up to 2 hectares, and approximately 250 agritourism enterprises, engage in this sector. Innovation is considered an essential factor for the growth and improvement of their performance and sustainability, especially in developing economies like Albania. Purpose of this study was to analyse the challenges and barriers in implementing innovation in the performance of agricultural farms and agritourism enterprises, aiming at sustainable development in the economy of rural areas. The data collected were obtained from interviews conducted with 672 subjects (respondents) spread across 12 regions of Albania. The results show that agricultural farms and agritourism enterprises that adopt innovative practices in their activities and services have better productivity and performance. The level of implementation of innovation in agricultural and agritourism farms remains limited by factors and barriers such as the size of farms, limited access to finance, weak digital infrastructure, lack of technical skills and knowledge, investment risk and insufficient institutional support.

Keywords: Agricultural Innovation, Performance, Innovation Barriers, Innovation and Technology Adoption, Agricultural Policy, Sustainable Rural Development

INTRODUCTION

The agricultural sector constitutes one of the main priorities of economic development in countries with developing economies and favourable resources for rural development, such as Albania (Piot-Lepetit, 2023). According to FAO 2023, about 97% of farms in the United States of America are owned and managed by families to the reports of the US Department of Agriculture (USDA), where about 90% of them are small and very small. There are about 570 million farms in the world, of which about 85% are farms smaller than 2 ha, occupying about 9% of the agricultural land area. These agricultural farms face challenges similar to those of Albanian farms with low productivity, limited investment capacity, dependence on natural resources and exposure to climate change. Innovation in agriculture is used as a mechanism aiming and achieve increased efficiency, sustainability and competitiveness of agricultural production (OECD, 2022).

Innovation in agriculture is no longer treated solely as technological adoption, such as mechanisation, new seeds, irrigation systems, but as a multidimensional process that includes digitalisation, data management, organisational innovation, new business models, integration with rural tourism, and orientation towards value-added markets (FAO, 2021). As such, innovation in these subjects is seen as a potential factor in achieving the Sustainable Development Goals (SDG 2, SDG 8, SDG 12).

Analysing the challenges and barriers that affect the process of innovation adoption and identifying structural, technical or institutional obstacles takes a step towards designing effective mechanisms for their reduction or elimination. This approach allows the subjects involved to increase the level of applicability and improve the rate of application of innovative practices.

The structure of agricultural farms and agritourism enterprises in the Albanian context

Albania has observed a fragmentation of agricultural land in the agricultural family, which has also come as a result of various legal reforms, influenced by political systems, such as Law No. 7501, which has also influenced the fact that over 98% of farms are owned and managed by families and about 80% have an area of less than 2 hectares (INSTAT, 2024). In recent years, a new form of agritourism enterprises has been developing and gaining ground, presenting itself as a new form of agricultural activity that combines agricultural production with tourist, gastronomic and cultural services. Currently, over 300 thousand agricultural farms and around 250 agritourism enterprises operate in Albania, contributing to rural development, promoting self-employment and promoting indigenous products.

The development of these activities is supported by national programs, support schemes, projects, approaches, etc., such as the AREB Transparency Program or funding schemes such as IPARD II and III. Existing studies show that the rate of innovation application in this sector remains low compared to EU countries (European Network for Rural Development, 2022; Volk et al., 2019). This result dictates the need to identify the drivers and barriers that create this differentiation in the application of innovation in Albania compared to other European countries.

Agricultural farms and agritourism enterprises in Albania and the innovation implementation gap in them, in relation to entities in European Union countries

Referring to studies and data at the international level, Albania results in countries with a low level of innovative practices in the agrotourism and agricultural sectors, compared to European Union countries. According to the European Innovation Scoreboard (2023), Albania records a performance about 41.1% lower than the EU average, referring to developing

countries indexed as emerging innovators. This result comes as a result of relative weaknesses such as: people with above-average digital literacy, public sector R&D spending, private sector R&D spending, exports of medium and high-tech goods, public-private joint publications, etc. and from strong declines since 2022 such as: cooperation of innovative small and medium-sized enterprises, exports of deep-knowledge services with product innovators, etc. (right there, EIS, 2023).

The above situation may also be a result of AKIS (Agricultural Knowledge and Innovation Systems), which serves as a cooperation organisation for all EU countries, unlike Albania, where such a system is missing that brings together scientific research, farmers, Higher Education Institutions, consultancies and public policies. This creates a structural gap in both knowledge transfer and the promotion of innovation in practice (FAO, 2022). In the same vein, e.g., IPARD II&III offer financing opportunities for innovative investments, but the absorption rates of funds by Albanian farmers remain low due to the lack of technical capacities, complicated procedures and high co-financing requirements (ARDA, 2023).

Research gap and importance of the study

In Albania, there are many studies on the agricultural sector, and the literature is rich, but studies on barriers to agricultural innovation and agritourism enterprises remain low and limited, especially in terms of: the lack of empirical studies with large samples of primary data, comparative analysis between agricultural farms and agrotourism enterprises, the assessment of barriers to innovation through advanced statistical methods, the link between innovation, economic performance and sustainable rural development.

This article aims to fill this gap by analysing a sample of 672 agricultural farms and agritourism enterprises in 12 regions of Albania, representing one of the largest databases to date in this field.

RESEARCH QUESTIONS AND STUDY OBJECTIVES

In the process of rapid developments in the transformation of the Albanian economy towards a more sustainable and competitive model, the agricultural sector remains one of the least digitised and with a low diffusion of innovation. Despite government investments and support from various programs and projects, the pace of updating digitalisation, managerial practices and innovative business models is much slower than the average of European Union countries (OECD, 2023).

The fundamental issues addressed by this study are precisely related to the identification of factors that hinder the adoption of innovation by agricultural farms and agrotourism

enterprises in Albania, as well as the assessment of the impact of these factors on their economic performance and sustainability.

The study aims to address several essential issues such as: identifying structural, financial and institutional obstacles and barriers that limit the adoption of innovation in agricultural farms and agrotourism enterprises; identifying the impact of these barriers on the level of innovation application on the economic performance and sustainability of these units; recognizing and implementing policies and mechanisms that can overcome and further promote the application of innovation in this sector. While innovation is widely accepted as a key factor for improving productivity and rural development, the understanding of the concrete barriers that hinder this process in Albania remains unclear, but is present.

The adoption of innovation in agricultural farms and agrotourism enterprises constitutes one of the main directions that enables the increase in productivity, the diversification of economic activity and the strengthening of the competitiveness of the rural sector. The dynamics of this process in Albania continue to be influenced by numerous structural, technical and institutional factors. In this context, the study aims to investigate the forms and dimensions of innovation implemented by farmers and agritourism operators, to identify the challenges and obstacles that hinder their adoption, as well as to analyse the relationship between the level of innovation and the economic performance of these entities. It also assesses the role of institutional, financial and technological support in promoting innovation, focusing on strategic measures and policies that can contribute to improving the rate of its adoption. These goals are articulated through five research questions, which serve as the axis of this study in Table 1.

The formulation of five research questions (RQ1-RQ5) provides a comprehensive analytical framework for understanding the multidimensional nature of innovation in agricultural farms and agritourism enterprises in Albania. They enable an integrated assessment of innovative practices, barriers affecting the adoption process, the relationship between innovation and economic performance, and the role of external institutional and financial support. Through these questions, the study aims to produce and process empirically based evidence, which will guide the design of sustainable policies and strategies for increasing the level of innovation in the agricultural and agritourism sectors. In this way, the research questions create a solid basis for interpreting the results and for formulating recommendations aimed at strengthening innovative capacities and sustainable rural development.

The overall objective of the study is to analyse the challenges, barriers and factors that influence the adoption of innovation by agricultural farms and agrotourism enterprises in Albania, as well as to assess its role in increasing performance and sustainable rural development. In detail, the overall objective is detailed in five specific objectives (O1-O5). It is

presented in tabular form along with the research questions, with a focus on identifying barriers and eliminating them in the implementation of innovation in agrotourism enterprises and agricultural farms in Albania.

Table 1: Research Questions and Study Objectives

Research Questions		Study Objectives	
RQ1	What are the main forms and dimensions of innovation applied in agricultural farms and agritourism enterprises in Albania?	**O1**	Identify the main forms of innovation implemented in agricultural farms and agritourism enterprises.
RQ2	What are the challenges and obstacles that these entities face in adopting innovation?	**O2**	Classify the main challenges and barriers that limit the implementation of innovation according to their financial, technical, institutional, and managerial nature in agricultural farms and agrotourism enterprises.
RQ3	What is the relationship between the level of innovation adoption and the barriers to the economic performance of farms and agritourism enterprises?	**O3**	Analysing the relationship between innovation and barriers to the economic performance of agricultural farms and agritourism enterprises using statistical methods/analysis.
RQ4	How does institutional, financial and technological support affect the spread of innovation and overcoming barriers?	**O4**	Identifying the impact of institutional, financial and technological factors on the adoption of innovation by traditional farms and agritourism enterprises.
RQ5	What strategic and institutional measures can be taken to address the challenges and barriers to innovation in this sector?	**O5**	Suggesting policies and strategic interventions to improve the climate in overcoming challenges and obstacles in implementing innovation in agricultural farms and agritourism enterprises.

LITERATURE REVIEW

The development of the agricultural sector and the increase in its performance are significantly affected by developments in information technology and digitalisation (Parikoglou et al., 2024; ITU and FAO, 2021).

The main factors that influence the removal of barriers in order to implement innovation in achieving sustainable development objectives are precisely technological and digital (Prasetyo & Setyadharma, 2022).

The implementation of innovation in agriculture allows owners, managers or employees of agritourism enterprises and agricultural farms to become familiar with innovation in this sector by becoming part of training, qualifications or collaborations with community groups and stakeholders to recognise and overcome the challenges presented by various barriers (Bhuiyal & Joshi, 2024).

The development of these innovations in the agricultural sector as a whole has influenced and continues to have a fundamental impact on the modernisation of this sector, thus increasing the efficiency and effectiveness of the economic activities of the entire sector, not only agrotourism enterprises and agricultural farms (He, 2025; Kitole et al., 2024).

The implementation and application of innovation in agrotourism enterprises and agricultural farms is influenced by many factors identified in many scientific studies, in the form of barriers and obstacles such as, limitations in financing, lack of knowledge and technical skills of farmers, the size of these entities, the relationship of ownership with land, weak infrastructure, lack of institutional support, uncertainty of return on investments made, etc. (OECD, 2019; Mulliri et al., 2022; Tomorri et al., 2025).

The digital evolution in the agricultural economy can equip farmers, managers and owners with ideas and potential modalities to increase the income of their activities. Through technological innovation, the entire sector will increase production and service opportunities by significantly increasing quality. This approach will guarantee adaptation to market demands throughout the productivity of these entities (Šermukšnytė & Melnikienė, 2024; Ferrari et al., 2022; Finger, 2023; Zhang & Fan, 2023).

For medium and small farms as well as for agrotourism enterprises, these barriers become challenges to be avoided and faced, and to turn them into a favour and support for the activity exercised by them. Among the most effective instruments that these entities can use to facilitate and overcome barriers to the implementation of innovation, we can mention institutional support policies and programs, human resource training, cooperation with all stakeholders, knowledge transfer through the exchange of experiences, infrastructure improvement, promotion of activities and achievements of farms and agrotourism enterprises (Klerkx et al., 2019; Balayev and Mirzayev, 2022).

The factors that influence innovation in the agricultural sector are different from the factors that influence innovation in other fields, such as medicine, industry, technology, etc. (Apicella and Tarabella, 2024). Recent developments in innovative practices and applications of digital technology are helping agricultural entities to challenge performance growth, financing opportunities, market collaboration and better supply chain management (Sylvester et al., 2021). Human resources and farmers' skills in the efficient use of agricultural resources, their

managerial skills, as well as the ability to use technological tools and data sources, constitute an essential element for the adaptation of innovative practices (OECD-Eurostat, 2018; Baiyegunhi, 2024). Institutional support and technological modernisation should be prioritised in the strategies and projection of the agricultural sector, promoting the acceptance and use of innovation by farmers with environmental benefits (Frick et al., 2024).

The role of innovation and structural change in increasing productivity involves three components: technological progress, changes in technical efficiency, and economies of scale resulting from a change in firm size. The comparative analysis of barriers and drivers reveals that while structural constraints are significant, there are also substantial opportunities for policy intervention. By prioritising drivers that directly address the above barriers, such as access to finance and training, policymakers can create a reinforcing cycle of innovation adoption in both agriculture and agritourism (Tomorri et al., 2025).

According to Addorisio et al. (2025), they have concluded that cooperation between actors as part of the implementation of innovation leads to the construction of technological strategies that help avoid and overcome barriers, being closely linked to the generation and dissemination of ideas. In strengthening this cooperation, support and funding from public institutions facilitate the transfer of knowledge and the easier overcoming of barriers in implementing technology and innovation in agricultural farms and agrotourism enterprises (Fielke, 2020; Chmieliński and Wieliczko, 2022).

CONCEPTUAL FRAMEWORK AND RESEARCH HYPOTHESES

Innovation in the agricultural economy has evolved from classical technology to a more comprehensive and moderate approach known as the “Technology Transfer Model” and is known as the Agricultural Knowledge and Innovation System AKIS (EU SCAR, 2022). This model, known and accepted in the terminology of the European agricultural economy, focuses on the importance of interaction between different actors of subjects such as farmers, research institutions, universities, the private sector, policymakers and civil society organisations in the production and dissemination of innovative knowledge (Klerkx et al., 2019).

According to the Organisation for Economic Cooperation and Development, agricultural innovation includes any technological, organisational, institutional or social change that increases the efficiency and sustainability of agricultural production. At a practical level, this may include the use of intelligent machinery, digital applications for land and crop management, the use of ecological inputs, the creation of horizontal collaborations or new marketing models such as “short food supply chains” (OECD, 2022).

As for the focus of European Union policies, innovation in the agricultural sector is linked to the Common Agricultural Policy “CAP” and the objectives of the “Green Deal” and the “Farm to Fork Strategy”, which aim to transform this sector towards a stabilized, long-term model with as few consequences for the climate and environment as possible while using natural resources (European Commission, 2021).

The literature shows a direct and positive relationship between the degree of innovation and the performance of agricultural farms. Studies by the OECD (2021) and the European Network for Rural Development (2022) show that farms that adopt new digital technologies, advanced machinery and ecological practices have 20–30% higher productivity than traditional farms, which have greater economic stability against market crises and climate change. Organisational innovation, as well as inter-farmer cooperation, cooperatives, or joint centres, is as important as technological innovation, where for countries in transition, such as Albania, the development of integrated innovation models that link production, processing and marketing is essential for increasing competitiveness (Hollas, 2021).

In the Western Balkans, according to Wineman (2020), we observe that farms that apply innovations, whether in production technology, management, or marketing, achieve better results in yield, resource efficiency, and income diversification, turning it into an instrument of strategic management of agricultural performance.

In the Albanian context, according to data from FAO (2019), the link between innovation and performance is emphasised, which still remains limited due to the lack of capital, low level of cooperation, and insufficient knowledge on new agricultural technologies.

National studies, from European Union countries and other international institutions, have identified that the main factors with the highest impact on barriers to agricultural innovation presented in the conceptual framework, in figure no. 1, are (EIP-AGRI, 2021) as above.

In *structural factors,* we classify the size of farms, property fragmentation and lack of economies of scale, weak digital infrastructure and technology, lack of access to modern equipment, the possibility of securing inputs, the high age of farmers, low educational level, lack of training and innovative culture, etc.

In *institutional and political factors,* we highlighted the lack of coordination between agricultural and innovation policies, as well as complex procedures for obtaining funds and financial support.

In *financial factors*, we have classified the lack of monetary resources, the modalities of obtaining rural loans and the mechanisms for guaranteeing their activities;

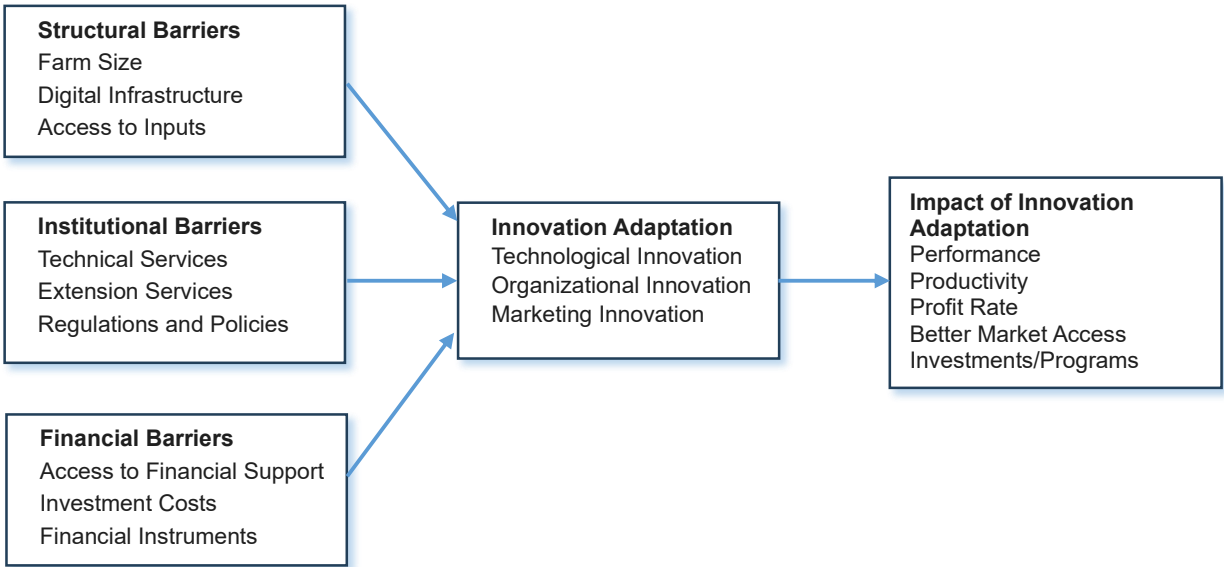


Figure 1: Conceptual Framework of the Study

In EU countries, these barriers are addressed through programs such as Horizon Europe, European Innovation Partnership EIP-AGRI, 2021. The CAP Strategic Plans 2023–2027, which finance collaborative innovations between farmers and universities (European Commission, 2023). In Albania, the analogue of the above programs is ARDA as an agency under the MARD and the support of the IPARD II and III programs. Currently, there is a lack of a truly integrated mechanism that connects scientific research with the real needs of the rural market, which also connects the activity of agritourism enterprises and agricultural farms.

Research hypotheses

Based on the indicators and variables found in the reference literature, we have formulated five hypotheses that aim to explain the main factors that influence the challenges and barriers to innovation adoption in agricultural farms and agrotourism enterprises in Albania. In summary, and from what was cited above in the literature review section, the literature has shown us that infrastructure, institutional support, human resources, property relations, costs and financial support highlight several modalities of innovation adoption in these enterprises.

The hypotheses aim to test the relationship between factors and the opportunities of entities to implement innovation by facing challenges and overcoming all barriers through some suggestions based on the findings of this study.

H1. The infrastructural and logistical capacities of agricultural farms and agritourism enterprises help in the level of innovation adoption.

H2. Institutional support and government programs promote and moderate the level of innovation adoption.

H3. The lack of professional knowledge and skills among farmers and agritourism entrepreneurs, and the lack of labour force, inhibit the level of innovation adoption.
H4. Problems with ownership/fragmentation of property and administrative barriers hinder the level of innovation implementation.
H5. High costs and difficulties in implementing innovation in the activities of agricultural farms and agritourism enterprises reduce the level of innovation application in these entities.

Testing the hypotheses with the data collected from the empirical study aims to identify the factors and mechanisms that promote or limit the adoption of innovation in agricultural farms and agrotourism enterprises. The factors extracted from the literature review clarify the identification of strategic policies in the implementation of innovation and thus will also serve to suggest effective policies to increase the performance and competitiveness of the sector, ensuring the sustainability of the development of the agricultural and agrotourism sector.

STUDY METHODOLOGY

This paper is based on a qualitative and quantitative approach with the aim of analysing the factors that appear as barriers to the implementation of innovation by agricultural farms and agrotourism enterprises in Albania. The data and information used were obtained from primary sources collected through a structured questionnaire, processed with the SPSS program for statistical analysis and secondary data provided by national and international organisations.

This paper follows the methodology of European research in the agricultural sector and the development of rural areas of international organizations (ENRD, 2022; OECD, 2022) and scientific articles (Klerkx et al., 2019) by combining descriptive analysis with inferential analysis by concluding interested subjects towards the group, to identify the impact of challenges and barriers in the implementation of innovation in agricultural farms and agrotourism enterprises and to assess the institutional and other structural obstacles.

The study area was 12 regions of Albania, including high, medium and low intensity geographic areas with 672 respondents, consisting of: Agricultural farms (micro, small and medium); Certified and non-certified agritourism enterprises.

The sampling was carried out through stratified random selection according to: type of activity (farm/agritourism), farm size, geographical region and activity and service profile, such as (viticulture, orchards, fruit and vegetables, field crops, livestock, accommodation in farmhouses, hotels, accommodation in guesthouses, camping, restaurants, tasting of farm products). This ensures a good statistical representation of the agricultural and agritourism reality in Albania.

The questionnaire includes sections on: Demographic data (age, education, agricultural experience, farm size), Structural data (type of activities and services offered by agritourism and

agricultural farms), Adoption of innovation (technological, organizational, marketing), Barriers to innovation (financial, institutional, technical, social), Farm/agritourism performance (yield, income, diversification, resource efficiency). The relevant indicators were measured with a 5-point Likert scale, from 1 “very little important” to 5 “maximally important”, to enable a more in-depth statistical analysis.

Data collection was carried out during the period March-May 2025, through direct face-to-face interviews with farmers and agritourism entrepreneurs. Through the collected data from 672 respondents in 12 regions of Albania, the table below shows characteristics of respondents grouped by gender, age, education and position.

Table 2: Characteristics of respondents

No	Characteristics	Frequency	Percentage
I	**Gender**		
a	Female	84	12.5%
b	Male	588	87.5%
*	**Total**	**672**	**100.0%**
II	**Age**		
a	18-30	42	6.3%
b	31-40	117	17.4%
c	41-50	129	19.2%
d	51-60	176	26.2%
e	Over 60	208	31.0%
*	**Total**	**672**	**100%**
III	**Education**		
a	Basic Education	131	19.5%
b	Secondary Education	231	34.4%
c	Vocational Education	103	15.3%
d	Higher Education (Master, PhD)	207	30.8%
*	**Total**	**672**	**100%**
IV	**Position**		
a	Owner	177	26.3%
b	Manager	49	7.3%
c	Owner and manager	419	62.4%
d	Other	27	4.0%
*	**Total**	**672**	**100%**

The above data show that (87.5%) of interviewed farmers are male and only (12.5%) of them are female. In terms of their age, most interviewees (31%) are over 60 years old, (26.2%) are aged 51-60, (19.2%) are aged 41-50, (17.4%) are aged 31-40 years old, and (6.3%) are aged 18-30 years old. Regarding the education level, it turns out that (19.5%) of the farm managers interviewed have basic education, (34.4%) have secondary education, (15.3%) have vocational education, and (30.8%) have higher education. Regarding their positions, most respondents (62.4 %) are owners and managers, (26.3 %) are owners, (7.3 %) managers and (4 %) others.

Figure 2: Profile of business/farms.

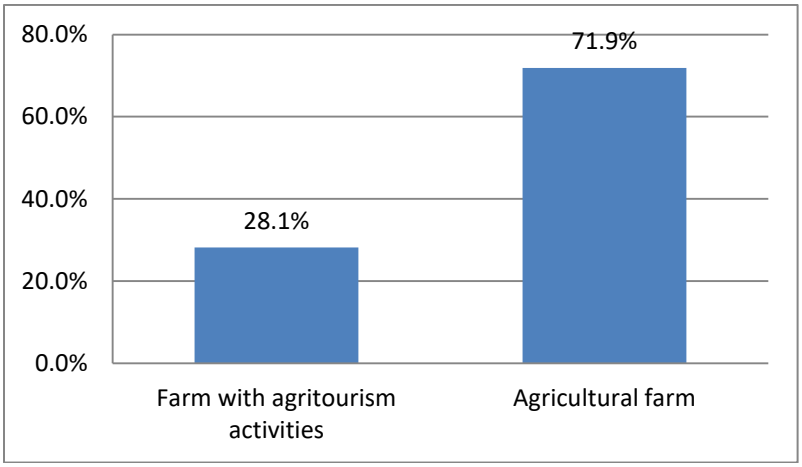


Figure 2 provides data and information regarding the business profile, which shows that (28.1%) are farms with agritourism activities, and (71.9%) agricultural farms.

The questions formulated in section D.11 of the questionnaire were translated into measurable indicators, such as: Lack of necessary infrastructure and logistics; Lack of professional knowledge and skills in implementing innovation; High costs for implementing innovative ideas and technologies; Problems with land ownership and fragmentation; Access to financing and crediting activities from financial institutions; Limitations on accessing and implementing new innovative ideas; Support from public institutions and agencies, through government programs such as grants, subsidies.

These indicators were also used in the inferential analysis. Data analysis was carried out in the SPSS program using descriptive analysis, where first the frequencies, averages and distribution of variables by area and typology were calculated.

Secondly, a reliability analysis was performed. Cronbach's Alpha 0.8 was considered a high level of reliability for the innovation index and for the barriers, and the stability of the instrument was assessed.

Thirdly, in the inferential analysis, we tested the hypotheses through Pearson correlation analysis, multiple linear regression and ANOVA comparative analysis for the differences between agricultural farms and agritourism enterprises.

RESULTS AND DISCUSSIONS

Empirical studies have confirmed a positive correlation between innovation and agricultural farm productivity. Innovation is increasingly becoming a key driver for agricultural transformation and rural development, especially in the context of developing countries, such as Albania (Tomorri et al., 2025).

This section presents the results of the analysis of data collected, combining descriptive analysis, Cronbach's Alpha reliability tests, index construction and correlations between the main study variables. The data were processed in SPSS and followed standard quantitative analysis procedures.

Referring to the importance of innovation (section D.1), the reliability of the scale resulted very high Cronbach's Alpha 0.80, the average of the overall index was 3.34, which indicates that agricultural and agritourism farms attach importance to innovation, from an average to high level, respectively 44% of them have a high assessment, while 37% have an average approach.

Regarding the role and impact of innovation on the efficiency of activities and performance of agricultural farms and agritourism enterprises (section D.9&10), the reliability of the scale was very high Cronbach's Alpha 0.93, making the index comparable and methodologically stable and the average 3.3 showed that innovation is perceived as a factor with an average to high impact on the performance of their activities.

Regarding the impact of innovation on their managerial, economic and technological processes, the analysis revealed a significant impact, where adding new customers 3.54, reducing costs and increasing revenues 3.50, finding more suitable markets 3.48, while human resource performance 3.10, has a relatively lower, but still positive, impact.

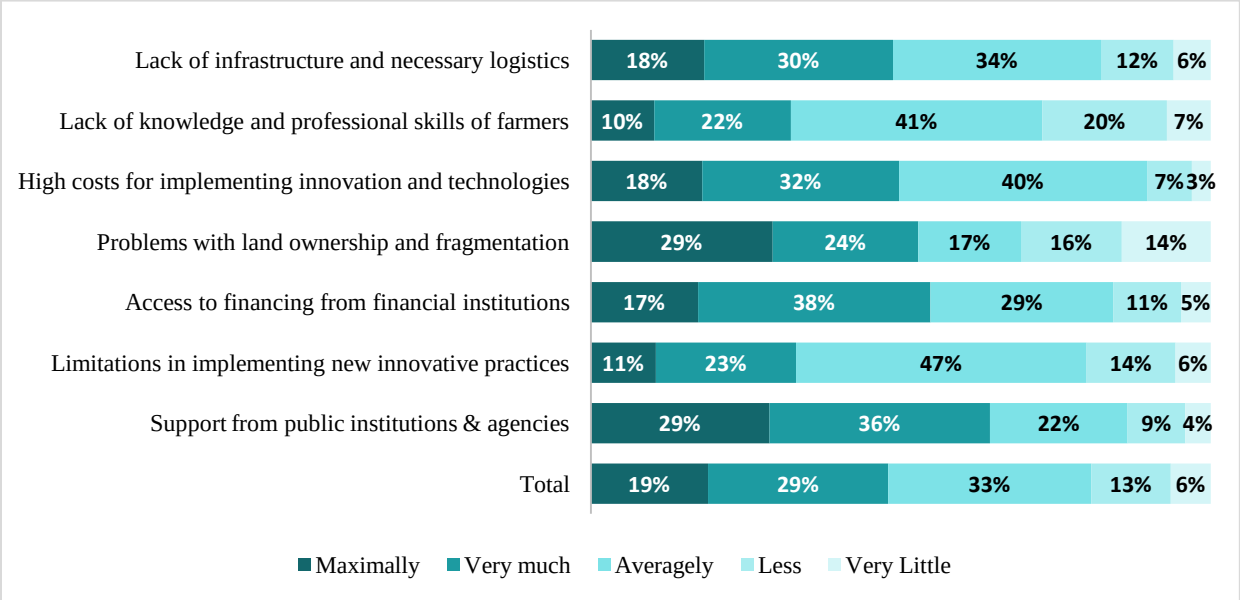
The analysis of the differences between agricultural farms and agritourism enterprises for the section D11 innovation barriers index shows that there is no statistically significant difference between the two groups. The t-test values of 0.282 and p-0.778 demonstrate that the means of the two categories of subjects are practically equal, suggesting that structural, technological, financial and institutional barriers are perceived similarly by both agricultural farms and agritourism enterprises.

Thus, the different natures of economic activity of these entities do not have significant differences in the level of difficulties they have to overcome to adopt innovative practices.

Consequently, innovation challenges in the agricultural sector appear to be systemic and comprehensive, reflecting more the structural characteristics of the market, limitations in institutional support and barriers to rural development, than the specific typology of the business.

These findings are in line with the literature on transition economies, where innovation challenges are common to agricultural farms, regardless of their activity profile (OECD, 2018; FAO, 2023). In this perspective, the results support the need for integrated and comprehensive policies, as the main barriers appear to be of a macro nature and not related to the specifics of the farm or agritourism.

Figure 3: Barriers to the adoption of innovation in Agricultural and Agritourism Farms.



Index of Barriers to Innovation Adoption**,** namely section D11 in the questionnaire, which presents the synthesis of the seven variables of this section, assesses the level of obstacles that agricultural farms and agrotourism enterprises encounter in adopting innovation. This index is based on a 5-point self-assessment that gives importance to indicators such as Lack of infrastructure and necessary logistics; Lack of knowledge and professional skills of farmers in implementing innovation; High costs for implementing innovative practices and technologies; Problems with land ownership and fragmentation; Limited access to financing from financial institutions; Limitations in implementing new innovative practices; Support from public institutions and agencies through government programs (such as grants, subsidies, etc.).

Section D.11 identifies seven categories of obstacles, with a reliability of α = 0.8, which is considered high. The average of the D.11 index is 3.42, which demonstrates the presence of significant barriers to the adoption of innovation in agricultural farms and agrotourism enterprises. The strongest barriers were identified, Table 2, Ranking of obstacles according to the total average with its respective values, from highest to lowest level, Table 2, below:
1) Insufficient Institutional and Financial Support 3.76; 2) Costs for implementing innovative practices and technologies 3.54; 3) Limited access to financing from financial institutions 3.52. 4) Lack of Infrastructure and Logistics 3.43, 5) Problems with Ownership and Fragmentation 3.37, 6) Limitations in Innovative Approaches and Ideas 3.17, 7) Lack of Professional Knowledge and Skills 3.08.

Table 2. Descriptive statistics for each subvariable_Section_D11

Descriptive Statistics for each Subvariable _Section_D11		
Variable_D.11	**Mean**	**Interpretation**
D11.1_Lack of infrastructure and logistics	3.43	High
D11.2_Lack of professional knowledge and skills	3.08	Average
D11.3_High cost for implementing innovative practices and technologies	3.54	Critical
D11.4_Problems with land ownership and fragmentation	3.37	Important
D11.5_Limited access to financing from financial institutions	3.52	Obstructive
D11.6_Limitations in new innovative practices and ideas	3.17	Moderate
D11.7_Insufficient institutional and financial support	3.76	Dominant

Regarding the correlation between barriers to innovation and the possibilities of its implementation, the links showed significant relationships between the main variables, indicating that agricultural farms that implement innovation are more sensitive to barriers.

On the other hand, the benefits of innovation for agricultural farms and agritourism enterprises and the barriers present a weak positive correlation, indicating that innovation brings benefits, but farms face barriers during the implementation and adaptation of innovation.

This correlation confirms the dynamic that high benefits lead to high barriers, characteristic of the agricultural sectors of countries in transition, such as the Albanian economy.

The main conclusions from the descriptive analysis of the variables show that at the national level, an above-average assessment, regarding business performance, readiness to implement innovation, the impact of innovation on the efficiency and performance of activities, as well as the importance of barriers to the implementation of innovation by agricultural farms and agrotourism enterprises.

The findings

The data presented in Figure 2 provides clear data on the intensity of barriers that inhibit the adoption of innovation in agricultural farms and agritourism enterprises. The results show that the obstacles with the highest impact are mainly related to financial capacities, infrastructure, human resources and structural aspects of the agricultural sector.

1. Insufficient institutional support, which is perceived as the highest obstacle, about 65% of respondents (29% maximally + 36% very much), this indicator maintains high importance because it signals gaps in public policies, subsidy mechanisms and institutional coordination.

2. *Limited access to financing from financial institutions* stands out as one of the strongest obstacles, with about 55% of respondents (17% maximally + 38% very much) considering financing as a serious barrier. This highlights the fact that investments in new technologies and ideas remain difficult to realise due to high costs and difficult procedures.

3. Problems with land ownership and fragmentation, related to structural barriers, are identified by about 53% of respondents (29% maximally + 24% very much). This problem limits operational efficiency, removes the possibility of investments in automated systems and reduces the scale of production economies, inhibiting innovation.

4. High costs for implementing innovative practices and technologies, where about 50% of participants estimate that investment costs constitute a major obstacle (18% maximally + 32% very much). This result is in line with international literature, which emphasises that innovative agricultural technologies often require high initial investments, unaffordable by small and very small farms.

5. Lack of necessary infrastructure, where the lack of appropriate infrastructure is also ranked among the most important barriers, as 48% of respondents perceive it as a significant problem (18% maximally + 30% very much). In rural areas, poor road infrastructure, storage, irrigation systems, or digital infrastructure translate into higher operating costs and limitations in the application of modern technologies.

6. Lack of knowledge and professional skills, with around 32% (10% maximally + 22% very much) stating that human capacities constitute a significant obstacle. This suggests that the adoption of innovations is strongly influenced by the technical and managerial competencies of farmers, enriching the argument that investment in training and improving knowledge is as important as financial support.

7. Limitations in implementing new innovative practices, with around 34% rating it as a major obstacle (11% maximally + 23% very much), this element is closely related to the lack of innovative culture, sufficient information, and the malfunctioning of knowledge transfer channels from research institutions to farmers.

Hypotheses Testing

The data analysis revealed a positive relationship between the index of barriers to innovation and the possibilities of its implementation. This implies that agricultural farms and agritourism enterprises that want to be exposed to innovative practices, i.e., that tend to implement them, also report a higher awareness of the obstacles that they must overcome. In this way, engagement in innovation is associated with increased sensitivity to barriers, a phenomenon that is characteristic of the agricultural sector in transition economies.

For the first hypothesis, H1, descriptive data show that the lack of infrastructure and necessary logistics constitutes one of the important barriers to innovation, with average values above the neutral level of around 3.4. The relatively high level of this variable indicates that improving infrastructure and logistics capacities is expected to have a facilitating effect on innovation processes. In this sense, the findings indirectly support this hypothesis since where infrastructure is insufficient, innovation is perceived as more difficult. Consequently, increasing logistics and infrastructure capacities is expected to influence innovation adoption.

For the second hypothesis, H2, "lack of support from public institutions and agencies through government programs", presents the highest average value among all barriers, 3.76, indicating that rural entrepreneurs perceive the lack of institutional support as the most critical obstacle. This finding is in line with theoretical arguments that in transition economies, where private capital and technical capacities are limited, public policies and financing schemes play a crucial role in reducing risk and promoting the adoption of innovations. The high level of this barrier is interpreted as an indication that, where institutional support is lacking, innovation is significantly hindered. Consequently, the hypothesis is clearly supported by descriptive evidence and strengthening government programs and support instruments is expected to have a stimulating and moderating effect on the adoption of innovation.

In the third hypothesis, H3, the indicator for the lack of knowledge and professional skills in implementing innovation, included in the index D.11, results in high average values, reflecting a significant gap in human capital. The positive correlation between barriers and opportunities for implementing innovation, $r \approx 0.22$, means that the more subjects engage in innovation, the more clearly they identify the lack of the necessary capacities to implement it effectively. This suggests that innovation is not only inhibited by financial factors, but also by limitations in knowledge, skills and qualified labour. In this context, the hypothesis finds empirical support that the lack of professional competencies makes the process of adopting innovation more difficult.

The fourth hypothesis, H4, highlights the problems with land ownership and fragmentation, reflected in the barriers index, showing average values above the neutral level of 3.37–3.43, indicating that the structure of property distribution in the Albanian agricultural sector

remains a real obstacle to long-term investments and innovative projects. Farm fragmentation reduces economies of scale, makes it more difficult to amortise the costs of new technologies and reduces interest in investing in innovation. Meanwhile, administrative barriers, although not among the elements with the absolute highest averages, contribute consistently to increasing transaction costs. Both of these factors, taken together, constitute a combination of barriers that makes the process of implementing innovation slower and more uncertain.

The high cost of implementing innovative ideas and technologies in the fifth hypothesis, H5, results in an average of 3.54, ranking this element among the most significant barriers of the index. The positive correlation between barriers and benefits of innovation of around 0.20 indicates that entities that have managed to implement innovations and benefit from them have done so while facing significant financial and operational obstacles. In this sense, the results show that high costs and difficulties in implementing innovation limit it to a smaller number of relatively more competitive farms. For most small farms, these obstacles translate into reluctance or inability to adopt innovative practices. Therefore, the hypothesis is supported by empirical findings that costs and difficulties in implementation constitute an important inhibitory mechanism for the adoption of innovation.

CONCLUSIONS

Through this study, we analysed the challenges and barriers that agricultural farms and agritourism enterprises face in implementing innovation in their managerial and operational activities.

The findings clearly show that the adoption of innovation shows us that the level of its implementation in these entities is the result of internal and external factors, although there is a strong correlation between the level of readiness for innovation, the implementation of new innovative practices and the impact on the performance of agricultural and agrotourism farm activities. But beyond the need for inclusion and adaptation of innovation, rural businesses face numerous structural, financial and institutional barriers.

An important finding of the study is that businesses that are more active in implementing innovation and innovative practices confirm a higher level of coping with the obstacles they encounter, highlighting that innovative processes expose them more to barriers. This shows that innovation is often limited by an environment that does not provide the conditions for the implementation of technological, structural and organisational innovations.

The impact and role of innovation on the performance of agricultural farms are consistent and multidimensional. Businesses that manage to integrate new innovative practices in production, marketing and services tend to have better economic and operational results.

However, when these businesses operate under significant conditions and obstacles, the efficiency and effectiveness of innovation are not tangible.

Research and development, professional skills, knowledge transfer and training of farmers are important in the implementation of new innovative technologies and practices.

A crucial role in knowledge transfer, training, education and advising farmers on the implementation of innovative practices and digital technologies in the agricultural sector is played by public institutions, agricultural extension agencies in cooperation with universities and other actors.

The study findings highlight the importance of an enabling environment, policy design and support mechanisms for the implementation of innovation as an important component for increasing the performance of agricultural and agritourism farms, as well as the sustainable development of the rural sector.

RECOMMENDATIONS

Strengthening effective systems in collaboration with universities, research centres and other stakeholders, by providing training and technical support in new innovative knowledge, techniques and practices.

Design and implementation of institutional and organisational instruments by highlighting the efficiency in adapting innovation by agricultural and agritourism farms.

These instruments are suggested to be part of development programs, projects and strategies by making financial resources available for the purpose of implementing technologies, innovative practices, digitalising processes and diversifying activities and services in the rural sector. The modalities of these programs and strategies should be structured in long-term plans and ensure the continuity of innovative processes.

Providing financial instruments adapted to the agricultural sector (grants, subsidies, specific programs such as IPARD, credit schemes and other mechanisms), to facilitate investments in digital technologies and innovative practices by agricultural farms and agritourism enterprises.

Regarding the above, it is necessary to adapt and develop the digital infrastructure and necessary logistics to facilitate the technical implementation of innovation in the agricultural sector.

Collaboration between public institutions, agricultural extension agencies, universities and farmers encourages and positively influences the implementation of innovative ideas and practices in agricultural farms and agritourism enterprises.

In conclusion, promoting and adapting innovation in the agricultural sector in Albania requires a systemic approach, reducing barriers, which may include increasing access to finance, investments in infrastructure and logistics, training programs and strengthening managerial capacities, structural reforms to promote and support innovative practices and technological processes.

LIMITATIONS AND FURTHER STUDIES

In the Albanian literature, studies focus more on the production of agricultural products, agricultural economics or rural policies, but not on the implementation of innovation as an important factor of sustainable development. Also, there is a lack of studies that use integrated methodologies where financial, digital, managerial and institutional factors are simultaneously analysed, part of the sections of the questionnaire developed in the optics of this study.

ACKNOWLEDGEMENTS

Authos would like to express our sincere gratitude to the generous support of National Agency for Scientific Research and Innovation (NASRI) in Albania and Agricultural University of Tirana, which enabled us to carry out this study. The financial support received for our project “Examining and Evaluating the Role of Innovation in the Performance of Agritourism Enterprises and Agricultural Farms”, based on Decision No. 7, date 10.06.2024, “On the approval of the financing Technology and Innovation Projects Coming as Cooperation between Universities and Business”, for the Year 2024-2025.

REFERENCES

Addorisio, R., Casolani, N., Maesano, G., Coderoni, S., Perito, M. A., Mattetti, M., Canavari, M. (2025). Barriers and drivers of digital agriculture adoption: Insights from Italian farming stakeholders. *International Journal on Food System Dynamics*, *16*(1), page 1-12. https://doi.org/10.18461/ijfsd.v16i1o1;

AKIS (2025). https://capnetworkireland.eu/understanding-agricultural-knowledge-and-innovation-systems-akis;

Apicella, A., & Tarabella, A. (2024). Innovation in farming: Drivers of adoption of Precision Agriculture amongst farmers. *International Journal of Food System Dynamics,* 15 (6), 2024, 671-683. https://dx.doi.org/10.18461/ijfsd.v15i6N7;

Balayev, A. R., Mirzayev, S. N. (2022). Digital agricultural technologies for sustainable rural development: opportunities and barriers. *International Scientific Conference, Engineering for Rural Development*, 2022, pp. 34-40, DOI: 10.22616/ERDev.. 2022.21.TF009;

Baiyegunhi, J. S. L. (2024). Examining the impact of human capital and innovation on farm productivity in the KwaZulu-Natal North Coast, South Africa. *Agrekon*, 63:1-2, 51-64. https://doi.org/10.1080/03031853.2024.2357072;

Bhujel, R. R., Joshi, H. G. (2024). Factors influencing the adoption of sustainable agricultural practices in rural regions of developing countries: a review. *Food Research*, 8 (4), 81 – 89. https://doi.org/10.26656/fr.2017.8(4).400;

Cervantes-Godoy D. (2022). “Aligning agricultural and rural development policies in the context of structural change”, *OECD Food, Agriculture and Fisheries Papers*, No. 187, OECD Publishing, Paris. https://doi.org/10.1787/1499398c-en;

Chmieliński, P., Wieliczko, B. (2022). Research and innovation challenges for better policies in food systems and bioeconomy transitions - evidence from Poland. *International Food and Agribusiness Management Review*, *25* (5), 789-802, https://doi.org/10.22434/IFAMR2021.0156;

EBRD, (2020). Financing Innovation in Agribusiness: Western Balkans. reviewhttps://www.google.com/search?q=EBRD+(2020).+Financing+Innovation+in+Agribusiness%3A+Western+Balkans+revi&rlz=1C1KNTJ_enAL1088AL1089&oq=EBRD+(2020).+Financing+Innovation+in+Agribusiness%3A+Western+Balkans+revi&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIHCAEQIRiPAjIHCAIQIRiPAtIBBzQxNGowajSoAgCwAgA&sourceid=chrome&ie=UTF-8;

EIP-AGRI, (2021). Agricultural Knowledge and Innovation Systems, Boosting innovation and knowledge flows across Europe. *Funded by European Commission*, https://ec.europa.eu/eip/agriculture/sites/default/files/eip-agri_agricultural_knowledge_and_innovation_systems_akis_2021_en_web.pdf; https://commission.europa.eu/system/files/2021-12/com_2021_566_1_en_act_part1_v8.pdf;

European Commission, (2022). https://enlargement.ec.europa.eu/document/download/0c8833e2-93f0-4ac2-a3e4-3dc095bd67da_en?filename=C_2024_5759_F1_ANNEX_EN_V2_P1_3546015.PDF; https://eu-cap-network.ec.europa.eu/countries_en; https://eu-cap-network.ec.europa.eu/support/innovation-knowledge-exchange-eip-agri/digitalisation_en;

European Innovation Scoreboard, (2023). European Commission: Directorate-General for Research and Innovation. (2023). *European Innovation Scoreboard 2023*, Publications Office of the European Union, https://data.europa.eu/doi/10.2777/119961, pg. 84-85; https://agriculture.ec.europa.eu/common-agricultural-policy/cap-overview/cap-2023-27-archived_en;

FAO, (2015). https://openknowledge.fao.org/server/api/core/bitstreams/3cd8e903-54f9-49a8-b1c3-27f1ca4e771e/content;

FAO, (2019). https://openknowledge.fao.org/server/api/core/bitstreams/7691dac9-fe06-4b8b-985e-9d1b8bc0d669/content;

FAO, (2021). *The State of Food and Agriculture 2021. Making agrifood systems more resilient to shocks and stresses*. Rome, FAO, https://doi.org/10.4060/cb4476en;

FAO, (2022). World Food and Agriculture – Statistical Yearbook 2022, Rome: https://doi.org/10.4060/cc2211en;

FAO, (2023). https://openknowledge.fao.org/server/api/core/bitstreams/94383693-fc35-4c93-8e71-87cfb7941916/content/state-of-food-and-agriculture-2025/food-supply-chains-transformation.html#gsc.tab=0; https://doi.org/10.4060/cc8165en; Rome.

Ferrari, A., Bacco, M., Gaber, K., Jedlitschka, A., Hess, S., Kaipainen, J., Koltsida, P., Toli, E., Brunori, G. (2022). Drivers, barriers and impacts of digitalisation in rural areas from the viewpoint of experts, https://doi.org/10.1016/j.infsof.2021.106816;

Fielke, S., Taylor, B., Jakku, E. (2020). Digitalisation of agricultural knowledge and advice networks: A state of the art review. *Agricultural Systems*, 180, 102763, https://doi.org/10.1016/j.agsy.2019.102763;

Finger, R. (2023). Digital innovations for sustainable and resilient agricultural systems. *European Review of Agricultural Economics*, Vol 50(4), pp. 1277–1309, doi:https://doi.org/10.1093/erae/jbad021;

Frick, V., Fülling, J., Harms, C., Grothmann, T., Marken, G. (2025), Environmental awareness in Germany in 2024, *Institute for Consumer Policy*, https://www.umweltbundesamt.de/presse/pressemitteilungen/studie-umweltbewusstsein-vielfaeltige-krisen;

He, S. (2025). Digital Economy Transformation and Sustainable Development of Agricultural Enterprises: A Study on Supply Chain Finance Innovation and Environmental Governance in Rural Areas. *Research on World Agricultural Economy*, *6*(3), 170–187, https://doi.org/10.36956/rwae.v6i3.1684;

Hollas, Ch., Chase, L. (2021). Agritourism: Challenges and opportunities for the rural future, 2021 TTRA International Conference, https://hdl.handle.net/20.500.14394/49343; *Information and Software Technology*, 106816, https://doi.org/10.1016/j.infsof.2021.106816;

INSTAT, (2024). https://www.instat.gov.al/en/themes/censuses/agriculture-census/#tab2;

ITU & FAO, (2021). Digital Excellence in Agriculture in Europe and Central Asia - Call for good practices in the field of digital agriculture, *Food and Agriculture Organisation of the United Nations (FAO) or of the International Telecommunication Union (ITU),* Geneva, Switzerland, https://www.fao.org/3/cb6098en/cb6098en.pdf;

Klerkx, L., Jakku, E., Labarthe, P. (2019). A review of social science on digital agriculture, smart farming and agriculture 4.0: New contributions and a future research agenda. *NJAS - Wageningen Journal of Life Sciences*, 90-91, https://doi.org/10.1016/j.njas.2019.100315;

Kitole, A. F., Mkuna, E., Sesabo, K. J. (2024). Digitalisation and agricultural transformation in developing countries: Empirical evidence from Tanzania's agriculture sector, *Smart Agricultural Technology,* Vol. 7, 2024, 100379. https://doi.org/10.1016/j.atech.2023.100379;

Ministria e Bujqësisë dhe Zhvillimit Rural, (2021). https://www.bujqesia.gov.al/ipard-iii-2021-2027/;

Mulliri, J., Baraku, B., & Shahu, M. (2022). Digital technology - the case of Albanian agriculture. *International Journal of Economics, Commerce and Management,* United Kingdom, Vol. X, Issue 3, March 2022, pp. 106-112, http://ijecm.co.uk/;

Mustapha, M., Peter, M., Ayat, U., Zhllima, E., Imami, D., Miroslava, B. (2025). Towards organic agriculture in emerging economies: an empirical analysis of Albanian farmers' certification intentions drivers. Organic Agriculture, https://www.researchgate.net/publication/396528477_Towards_organic_agriculture_in_emerging_economies_an_empirical_analysis_of_albanian_farmers'_certification_intentions_drivers;

OECD/Eurostat, (2018), Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation, 4th Edition, The Measurement of Scientific, Technological and Innovation Activities. *OECD Publishing, Paris/Eurostat, Luxembourg*, https://doi.org/10.1787/9789264304604-en;

OECD (2019). Innovation, Productivity and Sustainability in Food and Agriculture: Main Findings from Country Reviews and Policy Lessons, OECD Food and Agricultural Reviews, *OECD Publishing, Paris.* https://doi.org/10.1787/c9c4ec1d-en;

OECD (2021). *OECD Science, Technology and Innovation Outlook 2021: Times of Crisis and Opportunity*, OECD Publishing, Paris, https://doi.org/10.1787/75f79015-en;

OECD (2023). https://www.oecd.org/en/publications/serials/oecd-economic-outlook_g1ghgh13.html;

Parikoglou, I., Emvalomatis, G., Läpple, D., Thorne, F., Wallace, M. (2024). The contribution of innovation to farm-level productivity. *Journal of Productivity Analysis*, 62, 239–255, https://doi.org/10.1007/s11123-024-00728-0;

Piot-Lepetit I. (2025). Editorial: Strategies of digitalisation and sustainability in agrifood value chains. *Front. Sustain. Food Syst.* 9:1565662, doi: 10.3389/fsufs.2025.1565662;

Prasetyo, P. E., & Setyadharma, A. (2022). Digitalisation Technology for Sustainable Rural Entrepreneurship and Inequality. *Journal of Human Resource and Sustainability Studies*, 10, pg. 464-484, https://doi.org/10.4236/jhrss.2022.103028;

Programmes Horizon, (2021). https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/programmes/horizon;

SCAR (2022). https://scar-europe.org/index.php/news-display/184-conference-humans-transitions;

Šermukšnyte-Alešiuniene, K., & Melnikiene, R. (2024). The Effects of Digitalisation on the Sustainability of Small Farms. *Sustainability 2024, 16, 4076*, https://doi.org/10.3390/su16104076;

Stojcheska, A. M., Kotevska, A., Stamenkovska, I. J., Dimitrievski, D., Zhllima, E., Vaško, Z., Bajramović, S., Mustafa, M. K., Spahić, M., Vlad. (2021). "Recent agricultural policy developments in the context of the EU approximation process in the pre-accession countries," *JRC Research Reports JRC124502*, *Joint Research Centre*; https://publications.jrc.ec.europa.eu/repository/handle/JRC124502;

Sylvester, G., Davis, K., Gammelgaard, J., Preissing, J. (2021). Smart farmers - Learning with digital technologies, *FAO and IFPRI*, report, doi.org/10.4060/cb7947en;

Tomorri, I., Kurtaj, D., Baraku, B., Çulani, A., Domi, F. (2025). Examining the role of innovation in enhancing the performance of agritourism enterprises and agricultural farms in Albania, *Edelweiss Applied Science and Technology, Vol. 9, No. 10, 956-980,* ISSN: 2576 8484, DOI: 10.55214/2576-8484.v9i10.10577, indexed by Scopus, citescore 0.2, quartile Q3;

United Nations, (2020). https://sdgs.un.org/topics/rural-development; https://sdgs.un.org/topics/sustainable-tourism; https://sdgs.un.org/topics/green-economy; https://sdgs.un.org/topics/sustainable-consumption-and-production;

USDA-USA, (2025). https://www.usda.gov/farming-and-ranching/resources-small-and-mid-sized-farmers;

Volk, T., Rednak, M., Erjavec, E., Rac, I., Zhllima, E., Gjeci, G., Bajramovic, S., Vasko, Z., Kerolli, M., Gjokaj, E., Hoxha, B., Dimitrievski, D. (2019). "Agricultural policy developments and EU approximation process in the Western Balkan countries," *JRC Research Reports JRC114163*, Joint Research Centre; https://publications.jrc.ec.europa.eu/repository/handle/JRC114163;

Wineman, A., Alia, D. Y., Anderson, C. L. (2020). Definitions of "rural" and "urban" and understandings of economic transformation: Evidence from Tanzania, *Journal of Rural Studies*, Volume 79, Pg. 254-268, ISSN 0743-0167, https://www.sciencedirect.com/science/article/pii/S0743016720300346;

Work Programme, European Commission, (2023). https://commission.europa.eu/strategy-and-policy/strategy-documents/commission-work-programme/commission-work-programme-2023_en;

Zhang, X., Fan, D. (2023). Can agricultural digital transformation help farmers increase income? An empirical study based on thousands of farmers in Hubei Province. *Environment, Development and Sustainability* (2024) 26:14405-14431. https://doi.org/10.1007/s10668-023-03200-5;

Zhllima, E., Imami, D., & Viaggi, D. (2015). Land market development and agricultural efficiency in Albania. Land Use Policy, https://www.researchgate.net/journal/Land-Use-Policy-0264-8377?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIiwicG9zaXRpb24iOiJwYWdlSGVhZGVyIn19.