Research on World Agricultural Economy
https://journals.nasspublishing.com/index.php/rwae

ARTICLE

Farmers' Attitudes on Agritourism Activity Development in Uzbekistan: A Khorezm Region Case Study

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ABSTRACT

This paper aims to address a significant gap in international literature by assessing the multifaceted impacts of agritourism at the local level, incorporating farmers' attitudes and perceptions on various dimensions. The study focuses on the Khorezm region, drawing upon primary data collected through personal in-depth interviews conducted with local farmers. A semi-structured questionnaire was employed to ensure a comprehensive understanding of farmers' perspectives. Using a cluster approach method, the farmers were categorized into three distinct clusters based on their operational characteristics: Cluster 1 consists of small- and medium-sized animal husbandry farms, Cluster 2 includes large farms specialized in fish farming, and Cluster 3 comprises farms primarily engaged in growing commodity crops. The findings highlight that agritourism has the potential to diversify income sources and enhance rural livelihoods. However, significant gaps in knowledge and skills were identified among farmers, necessitating additional teaching and outreach initiatives. Enhanced dissemination of agritourism practices could equip farmers to effectively engage in this sector. Furthermore, the study underscores the critical role of public funding and financial support—both from national governments and local communities—in fostering the develop-

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ARTICLE INFO
Received: 14 November 2024 | Revised: 6 December 2024 | Accepted: 9 December 2024 | Published Online: 12 February 2025
DOI: https://doi.org/10.36956/rwae.v6i1.1474

CITATION
Ibadullaev, E., Pagliacci, F., Defrancesco, E., et al., 2025. Farmers' Attitudes on Agritourism Activity Development in Uzbekistan: A Khorezm Region Case Study. Research on World Agricultural Economy. 6(1): 435–451. DOI: https://doi.org/10.36956/rwae.v6i1.1474

ment of agritourism. These insights contribute to a deeper understanding of agritourism's potential as a driver of rural development while emphasizing the importance of targeted educational and financial interventions to maximize its impact.

Keywords: Agritourism; Farm Diversification; Cluster Analysis; Uzbekistan

1. Introduction

Agritourism serves as a catalyst for the growth of tourism in rural regions, supporting rural development by enabling the farmer's family to supplement farm revenue with money from tourism-related activities. Agritourism actually represents an important tool for farming diversification. In particular, it offers a singular chance to integrate elements of the tourism and agricultural sectors in order to offer visitors, producers, and communities a multitude of economic, educational, and social benefits. Being based on the interplay between landscape, local traditions and family-based farming, agritourism can make a competitive tourism product emerge at a local level, boosting the number of visitors and the length of their stays. Communities may be able to grow their local tax bases and create new jobs thanks to agritourism. Agritourism also helps to maintain agricultural lands, giving the general public educational opportunities, and enabling national governments to create commercial ventures. Currently, agritourism is expanding worldwide, also beyond the borders of its continent of origin, namely Europe. Central Asian countries are no exception from this.

In Uzbekistan, one of the largest countries in Central Asia, tourism shows great potential, even though agritourism activities are still at their infancy stage. To support these activities, several reforms have been carried out by the National Government for the last years. Currently, the developing tourism industry is also included in "New Uzbekistan development strategy for 2022–2026 years" [1] which was issued 2022 January 28 under PD №60. This decree consists of 100 goals and the goal №35 is devoted to developing the tourism sector in Uzbekistan and increasing the number of international tourists. In addition, "Travel around Uzbekistan!", namely a national program to develop domestic tourism, was implemented based on PD №3514 [2]. This program encourages people to travel by creating several opportunities, such as extra days off to holidays, cashback from travel expenses, and fully or partly covering travel costs by the state budget. Agritourism could really take advantage of this initiative, by also contributing to achieving this ambitious goal. Actually, Uzbekistan is rich in agricultural products and rural areas, hence it has relative advantages among Central Asian countries.

This paper takes the Khorezm region as a case study area. The region is located in the northern-west part of Uzbekistan along the Amu Daria River. In the region, the historical city of Khiva represents one of the worldwide known touristic destination, which is also included in the UNESCO World Heritage List [3] and attracts every year 137.4 thousand international and 1.4 million domestic visitors, although it mostly is a hit-and-run tourism [4]. In particular, to increase touristic arrivals and their stays in the region, there is the need to diversify the destination, given that there are natural, historical and religious places in the Khorezm region [5]. On the other side, also farming activities have been diversified for the last decades, after the decline of cotton production in the country, and they now have greater potential to diversify tourism products via agritourism activities.

There is a research gap in this field in the literature. The major novelty of this paper is that it is the first study which analyses the potential of agritourism in Uzbekistan, by exploring farmers' attitude on carrying out agritourism and their opinions on the main on-farm and off-farm drivers as well as the limiting factors. To reach this goal, a survey was administered to a sample of farmers in the Khorezm Region about their attitudes on agritourism. Then, a cluster analysis is performed to distinguish groups of similar farmers, and the main differences among them are tested. The rest of the paper is organized as follows. Section 2 provides a short literature review on agritourism activities and the main drivers behind its implementation. Section 3 shows the

case study area. Section 4 describes the adopted methods. Section 5 shows the results, discussing them, while Section 6 concludes, also providing some policy implications.

2. Literature Review

A rapidly expanding segment of the tourism business is agritourism, namely a combination of both agriculture and tourism. The name "agritourism" comes from the Italian experience, where in the 1970s and 1980s, staying on farms, or "agriturismos" became a common method to explore the countryside. In the 1990s, similar initiatives were developed in England, where nearly 20% of all farms in rural areas provided some form of tourism [6]. According to the National Agricultural Law Centre [7], the term "agritourism" is often used interchangeably with "farm tourism," "agricultural tourism" or "agritainment" and stated that no matter the precise vocabulary or concept, any definition of agritourism should incorporate the following four aspects:

a) integrating the key components of the tourist and agricultural industries;
b) encouraging the public to visit agricultural enterprises;
c) offering visitors opportunities for entertainment, education, and/or recreation;
d) being designed to increase farm income levels.

So far, a number of researches have been conducted in this field. According to Arru et al. [8], who examined the economic performance of agritourism in a less developed region of Italy, diversification strategies, like direct selling and providing recreational services, can be crucial in integrating revenue streams and, as a result, raising farm profitability. By studying 15 agritourism farms, the authors concluded that their performance looks controversial. However, they highlight the difficulty experienced by almost all agritourist farmers in remunerating their work, when considering current market price levels. Mastronardi et al. [9] used the farm accountancy data network dataset to compare agritourism and other Italian farms, and they discovered that agritourism farms tend to use more sustainable practices that have a favorable influence on biodiversity, the landscape, and natural resources. In addition, according to the authors, the policies underlying agritourism in Italy are achieving their goals.

Abadi and Khakzand [10] investigated agritourism as a strategy for the sustainable development of rural areas and the diversification of its economy. Using a qualitative research approach, they examined it in the context of the Iranian village of Charqoli and discovered that agritourism is connected to six broad dimensions: sociocultural, economic, agricultural, environmental, physical, and planning dimensions. They lead to two distinct perspectives: first, agritourism's entrepreneurial function as a fresh approach to rural development; and second, agritourism from a protectionist angle with an "environment oriented preservation" stance. Hung et al. [11] analyzed determinants of performance for agritourism farms in the case of Taiwan and stated that key success factors of high and low performance could be different. According to the results, large farms perform well for those in the high-performance categories. Moreover, the human resources' quantity and quality represent crucial drivers to explain success for both the mid-performance and high-performance farms. In more general terms, agritourism business model plays a critical role in determining. In order to establish consistent agricultural development scenarios in the Iranian villages, Nematpour et al. [12] employed a three Phase Mixed-Method approach that takes into account Geographical Capacity Requirements and Impacting Factors in the case of Kandovan district, Iran. In the first phase, agricultural potential zones are identified, then eight factors which mostly contributed to agritourism development are identified and in the final phase three consistent scenarios for agritourism development in Kandovan are developed. Awan et al. [13] conducted research on the development prospects of agritourism in China. The authors maintain that, in the long run, agriculture tourism will lead to a reduction of redundancies, job creation in sectors exposed to agricultural tourism, increased revenues and reduced poverty as well as improved living standards for rural populations strongly involved. Therefore, it is possible to enhance the perception of a specific community in relation to sustainable development through agricultural tourism in China. In Malaysia, in order to

maximise the income of farmers, agritourism revolves around tourism activities offered by local farms in four agricultural sectors, namely agriculture, fisheries, livestock and the agroforestry sector[14]. Research on a systematic review of the agritourism research literature was done by Rauniyar et al.[15]. In the study, established and emergent research clusters have been found for epistemological analysis utilizing a systematic literature review process. Interpret motivations of tourists for agritourism in Fiji was studied in the paper by Shah et al.[16] by collecting through a paper-based face to face survey. According to the results although the majority of visitors appeared interested in agritourism, they were not yet aware that Fiji offered any such destinations. Additionally, research indicates that visitors preferred a brief stay at functioning farms that offered value for money.

Activities related to agritourism have grown in importance as a way for some farmers to diversify their sources of income[17]. In recent years, agritourism has grown in significance within the context of agriculture's multifunctionality, becoming a component of diversification that benefits the socioeconomics of small producers[18]. Agritourism presents a chance to engage in a combined activity that may enhance the well-being of both rural residents and the environment, as well as promote the sustainability of the rural environment[19]. In order to achieve the goal of combining tourism and agriculture, this type of tourism in rural areas emphasizes the development of a tourism product[20] and should be focused on activities exclusively carried out in rural areas[21].

The farmers' attitudes towards agritourism were studied by Chande[22] in the case of India by interviewing a hundred farmers and the study results indicated that agritourism creates employment opportunities in rural areas and educating the visitors and public about agriculture were the main importance for farmers. Involvement of capital for building infrastructure and marketing, less knowledge to handle promotion activities were considered as barriers of agritourism. In three elements based on Weber's theory, McGehee and Kim[23] have used an exploratory factor analysis to determine 11 reasons for the agricultural tourism business. Formal motivations, formal substantive mix motives and substantive formal blend motives were among these components. Moraru et al.[24] studied motivations for farmers for running agritourism business in the state of Montana (U.S.A.), by dividing them into two groups: "Push" factors, and "Pull" factors. They found out that additional income, utilizing the resources fully, fluctuations in agricultural income, employment for family members and losing government agriculture programs are considered as "Push" factors; conversely, hobby, companionship, tax incentives, educating the consumer meeting a need in tourism market, success of other farms in agritourism are "Pull" factors.

When implementing agritourism activities, the main challenges faced by the main involved actors are listed by literature from around the world: lack of management, skills and hospitality experience, a limited number of marketing channels and links, problems with health and safety regulations, and lack of support from the public sector[25].

The points of interest of agritourism for agriculturists are that it can be a little or primary portion of the farmer's by and large operation and include esteem to cultivate items through preparing and coordinate showcasing. In expansion, it gives an important instructive involvement to the open to assist make mindfulness, understanding and appreciation of ranches and horticulture. However, there are some drawbacks, such as the need to impose additional insurance or regulatory requirements, the challenge of striking a balance between expectations for a clean, safe, and always-ready product and the detracting effect of tourism from the primary source of income (agriculture production), particularly during crucial times like planting and harvest[26].

As already stated, in Central Asia, the process of diversification of agricultural holdings into agritourism activities is still at the beginning, despite the efforts of some governments in supporting its introduction. For this reason, no similar academic studies have addressed agritourism activities in Central Asia before, to the authors' best knowledge. Matyakubov and Defrancesco[27] have only compared the Italian experience in agritourism activities and the Uzbek one, suggesting possible implementation strategies for the implementation of this activity in Uzbekistan.

3. The Case Study Area

3.1. Uzbekistan and Khorezm Region

Uzbekistan is a doubly landlocked country (i.e., a country surrounded by other landlocked countries) located in Central Asia. Its neighbouring countries are: Kazakhstan (North); Kyrgyzstan (Northeast); Tajikistan (Southeast); Afghanistan (South); and Turkmenistan (Southwest). Uzbekistan lies between latitudes 37° and 46° N, and longitudes 56° and 74° E, stretching 1,425 kilometres from west to east. As of 2023, Uzbekistan has a population of around 37 million citizens, being the largest country out of all the ones in Central Asia.

As far as the geographical conditions are concerned, Uzbekistan is primarily characterized by desert plains, while only 20% of the total area is covered by mountains [28]. Its climate is extremely continental, with hot dry summers, unstable weather in winter, and a wide variation in seasonal and daily temperatures. According to the Köppen–Geiger climate classification system [29] and subsequent updates [30], it is characterised by a cold desert climate (BWk) in the West, Cold semi-arid climate (BSk) in the East spotted with some areas with Warm continental climate (Dsa).

Due to these characteristics, Uzbekistan's arable land is just 10% of the total land area, with main agricultural areas being located in the Western part of the country, namely in the Aral Sea Region, which includes the basins of the Amu Darya and the Syr Darya rivers. Both rivers supply about 70% of irrigation water [31]. In the area, still today, cotton and winter wheat occupy 80% of the total irrigated area.

For the last decades, the economy of Uzbekistan has been one of the world's best performers. Economic growth has been largely driven by state-led investments, together with exports of raw materials and energy (e.g., natural gas, gold) as well as agricultural products (e.g., cotton, whose production started massively under the Soviet Union period [32].

The case study area for this study covers just one region of Uzbekistan, i.e., the region of Khorezm, whose capital is the city of Urgench. Located in the Western part of the country, the region covers 6.1 thousand square km and occupies 1.4% of the territory of Uzbekistan (**Figure 1**). As of January 1, 2022, the number of permanent residents of Khorezm region was 1,924,200 people. The region is located along the along the Amu Daria River, thus its area is mostly covered by irrigated arable land. Accordingly, agriculture has always played a key role in the region's economy. Today, the share of agriculture, forestry and fisheries in the region is 46,0%, industry is 21,3%, while the service sector is 32,7% [33]. As far as the agricultural sector in the Khorezm Region is concerned, it is mostly based on cotton, which is the main crop in the area, and on rice. In order to reduce the production of cotton, and to diversify the agricultural sector, in recent years, there has been a steady increase of the hectares devoted to orchards and vineyards, melon and gourd plantations, as well as to potato fields. Referring to the service sector, the Khorezm Region is also one of the most popular touristic destinations of Uzbekistan, due to the presence of the city of Khiva, listed in the UNESCO World Heritage List.

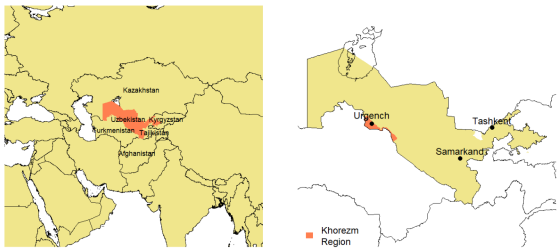

Figure 1. Geographical map of Uzbekistan in the context of Central Asia, and the Khorezm region in Uzbekistan.

3.2. Tourism in Uzbekistan and in the Khorezm Region

Since 2016, Uzbekistan has worked to rejuvenate and restructure a number of industries, including tourism. Creating jobs and new business possibilities, accelerating regional growth and diversification, raising living standards and quality of life, increasing foreign exchange revenues, and enhancing Uzbekistan's reputation and investment are all goals of its reform process [34]. With the exception of the Covid-19 epidemic years, the number of foreign visitors has grown dramatically in recent years (**Figure 2**). The chart shows that, even when compared to 2015, there was an amazing increase in 2022. Actually, like most other nations, Uzbekistan's tourism sector was severely hampered by the pan-

demic, but it is currently rapidly rebounding. In 2022, there were a projected 5.4 million foreign visitors, nearly tripling that of 2021.

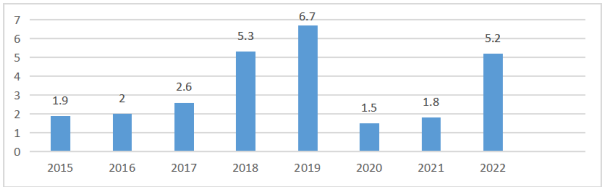

Figure 2. International tourist visiting Uzbekistan (2015–2022).
Source: authors' elaboration, based on the date of Ministry of Tourism and Cultural Heritage.

In Uzbekistan, the region of Khorezm is one of the most popular touristic destinations of the country. As of January 1, 2022, the number of permanent residents of Khorezm region was 1,924,200 people. Region's economy increased for 5.7% and the share of agriculture, forestry and fisheries is 46,0%, the industry was 21,3% and services 32,7% and 3.3% from net taxes on products [35]. Accordingly, tourism can be seen as a driver sector for the region's economy as almost all districts and cities of Khorezm have an opportunity to develop some types of tourism. As a result of the measures implemented tourism indicators are developing year by year (**Table 1**).

Table 1. The indicators of development of tourism sectors in Khorezm region (2006–2022).

Year	Number of Organizations			Total Turnover of Services
	Total	Hotels	Travel Agencies	Dollar (in million)
2012	30	23	7	3.3
2013	36	26	10	18.8
2014	51	35	16	21.6
2015	59	42	17	19.7
2016	72	52	20	23.0
2017	56	34	22	17.6
2018	69	35	34	49.6
2019	152	94	58	69.3
2020	162	103	59	9.3
2021	178	117	61	29.5
2022	204	136	68	33.5

Source: authors' elaboration, based on the data of the Khorezm regional branch of the State Committee for Tourism Development.

According to **Table 2**, in 2012, there were only 23 hotels. However, up to 2022, this indicator has increased six times. The number of travel agencies reached to 68 from only 7 in 2021. As the number of tourists rising, service export also increased. The best year was before COVID-19 and tourism export estimated 69.3 million US dollars in that year. Likely other tourism destinations, the total turnover of tourist services declined dramatically in 2020 to only $ 9.3 million and then this sector is recovering fast and reached to 33.5 million total turnover of services in 2022.

For the last 11 years, both international and domestic tourists' number increased, except for the pandemic years. Domestic tourism boomed from 2016, as the country-established program called "Travel around Uzbekistan" and established extra day offs on national holidays, encouraging local people to travel. Also, the number of foreign tourists almost rose 10 times from 2012 to 2019 since the government gave visa for free for most world countries. After pandemics the number of international tourists reached 137.4 thousand, most of them coming from Russia, France, Turkey, Spain, and 2.855. **Figure 3** shows the trends in the number of both domestic and international tourists visiting the Khorezm region from 2012 to 2022.

As mentioned above, the most important tourist destinations of Uzbekistan are the following: Tashkent (i.e., the capital city), Samarkand, Bukhara, and Khiva. However, tourists' stays duration is different among them. Visitors usually spend 2 days in Tashkent, 3 days in Samarkand, 2.5 days in Bukhara and only 2 days in Khiva [36]. According to these data, it is clear that all these destinations suffer from hit-and-run tourism, in particular the city of Khiva (in the Region of Khorezm). One of the main causes for this is the geographic location of Khiva, placed 1.000 km from the capital city. Moreover, the long stretches of sand between Bukhara and Khiva takes quite a long time to travel. In this case, establish-

ing a good transport system could be a useful solution to fully exploit the tourism potential of the region. Also, not well diversification in tourism types may be another reason for tourists for not spending more time there. Thus, agritourism could represent one potential way to address tourism type, as the region is a leader in producing most agri-food products such as fish, meat, melons, and watermelons.

Figure 3. Number of domestic and foreign tourists who visited Khorezm region in 2012–2022 (thousands of people).
Source: author's elaboration on the information of the General Directorate of Tourism and Cultural Heritage of Khorezm Region.

3.3. Farming Characteristics in Uzbekistan and the Khorezm Region

For the last three decades, the agriculture of Uzbekistan has been changing year by year. New products and services have been established in order to diversify the field. For instance, under the Soviet Socialist Republics (SSR), Uzbekistan produced 70% of cotton of the Soviet Union. To ensure effective output at collective farms, the cotton sector was heavily regulated by the government. For instance, quotas were set, on yearly basis. Since its independence, Uzbekistan has been shifting its production away from cotton. Instead, the production of cereals was mostly favoured, due to the risks linked to agriculture monoculture (i.e., being a single-crop economy). Moreover, large concerns about population's food security also existed at that time. As a result, while the utilized agricultural area planted with grains climbed from 1.0 million to 1.6 million hectares, conversely the utilized agricultural area planted with cotton drastically decreased from 1.8 million hectares in 1990 to 1.4 million hectares in 2006.

A presidential decision in March 2020 eventually liberalized the cotton market in Uzbekistan. State management of cotton production, price, and mandated sales plans were eliminated, as of the harvest season of 2020. For the 2020–2021 marketing year, the cotton production area is projected to be 980.000 hectares, with a production of roughly 3.1 million bales (or 670.000 MT). At this point, it was anticipated that Uzbekistan's cotton exports would be maintained to a minimum due to the government's objective of boosting the production of high-value yarn and fabrics and growing the domestic textile sector.

Currently farmers are given opportunities to diversify their products, especially livestock, fish, poultry, beekeeping has developed a lot. In addition, delicious vegetables and fruits could be one main reason for evolving agritourism in the country.

In order to diversify tourism types, agritourism may be considered as a key activity, since Uzbekistan, and the Khorezm region in particular, show great potential for this. Currently, the total area of agricultural land in the Khorezm region is 408.749 hectares and the total cultivated area is 262.143 hectares. There are 3.917 farms in the region. 1.516 of them are cotton-grain growing, 728 are horticulture, 49 are viticulture, 80 are vegetable-fields, 19 are vegetable-grain, 44 are mulberry, 81 are poultry, 540 are fish-breeding, 22 are farming, 243 are other directions.

In 2020, 99 thousand tons of agricultural products were exported from the Khorezm region (Ministry of Agriculture of the Republic of Uzbekistan 2023b). In addition, in 2022, 174.600 tons of live weight were produced by farms of all categories in Khorezm region. Meat (104.8% compared to January-December 2021), 1.097.4 thousand tons of milk (102.4%), 478.9 mln. Eggs - (104.3%) were grown. Especially fish farming is well developed in the Khorezm region, and its importance is increasing, also due to the increase of fish consumption in Uzbekistan and the introduction of some policies supporting this production in the country. In 2022, around 1300 tons of fish were produced, and the region represents the largest producer in Uzbekistan [36].

4. Methods

This study aims to assess farmers' attitudes towards the implementation of new agritourism activities

in the Khorezm region of Uzbekistan. To achieve this, a comprehensive survey was administered to a carefully selected sample of farmers. The analysis focuses on two main objectives: first, examining the structural heterogeneity of the farmers in the sample through cluster analysis, and second, comparing the average perceptions regarding the importance, impact, drivers, and challenges of agritourism across different clusters.

4.1. Data Collection

A structured questionnaire was designed to capture key aspects of farmers' attitudes toward agritourism. The survey was divided into three main sections:

(1) General Farm Characteristics: This section collected basic information about the farmers' operations, including farm location, total hectares of agricultural land, and product specialization (e.g., crop types, livestock).

(2) Farmer Attitudes toward Agritourism: Respondents were asked about their knowledge of agritourism, as well as their perceptions regarding its importance for their own farm businesses. This section aimed to assess both awareness and attitudes towards the potential of agritourism in the region.

(3) Infrastructure, Drivers, and Challenges: The final section focused on the role of infrastructure (e.g., transport, accommodations) and the perceived drivers and challenges that farmers face in either considering or already operating agritourism activities.

The survey was administered through a face-to-face interview method by a team of trained researchers, who visited farms directly to collect data. This approach was chosen to ensure accurate responses and to facilitate a deeper understanding of the local context. The data was collected during March and April 2023, ensuring that the timing aligned with the agricultural cycle of the region. A purposive sampling method was employed to select farmers who were either already involved in agritourism or expressed interest in exploring it. The sample consisted of 20 farmers located across the Khorezm Region, representing a diverse set of farm sizes, types, and business models. The sample included both experienced and novice farmers in terms of agritourism, providing a well-rounded view of the region's potential for such activities. The data collected through the survey was analyzed using cluster analysis to identify subgroups of farmers with similar attitudes towards agritourism. This approach allowed for the identification of structural heterogeneity within the sample and the categorization of farmers into distinct clusters based on their attitudes and perceptions.

Following the cluster analysis, the average perceptions of each cluster were examined across several key dimensions: importance, impact, drivers, and challenges related to agritourism. Descriptive statistics were used to summarize the findings, while comparative analysis was conducted to explore differences in perceptions across the identified clusters.

4.2. Cluster Analysis

Cluster analysis has been implemented on the results of the survey. **Table 2** describes the main variables used as inputs for cluster analysis. Selected variables refer to structural characteristics of the farms, e.g., their size and their location (expressed as remoteness from the closest paved highway and the closest population centre). Moreover, also the main production activities of the farms are included, by adding a series of dummy variables to distinguish those farms growing annual crops (e.g., wheat, rice, cotton), raising horses, raising cattle, sheep, goats, raising poultry or other small animals (e.g., chicken, rabbits), raising farmed fish, and producing other agricultural products (e.g., eggs, honey, milk, furs), respectively. Each farm shows at least one production activity. Lastly, some tourist-related variables were added as well. They refer to touristic potential of each district in which a farm is located. Actually, three dummy variables are added, to identify whether the district shows: i) an environmental-related tourism potential, ii) a historic/cultural-related tourism potential, and/or iii) a religious-related tourism potential. Each district could have more than one potential, as well as no potentials at all. This piece of information was not directly asked to the farmers. Instead, it was elaborated by the authors, according to their previous knowledge.

Table 2. Input variables for the cluster analysis.

Label	Descriptions	Type of Variable	Unit/Level
Hectare	Hectare of Utilised Agricultural area	Continuous	ha
Distance_paved_highway	Distance of the farm from the closest paved highway	Ordered	1. <2 km; 2. 2–5 km; 3. 6–10 km; 4. >10 km
Distance_centres	Distance of the farm from the closest population centres	Ordered	1. <5 km; 2. >5 km
Production_annual crops	Farm growing annual crops (e.g., wheat, rice, cotton)	Dummy	1. Yes
Production_horses	Farm raising horses	Dummy	1. Yes
Production_livestocks	Farm raising cattle, sheep, goats	Dummy	1. Yes
Production_small animals	Farm raising poultry or other small animals (e.g., chicken, rabbits)	Dummy	1. Yes
Production_farmed fish	Farm raising farmed fish	Dummy	1. Yes
Production_other	Farm producing other agricultural products (e.g., eggs, honey, milk, furs)	Dummy	1. Yes
Tourism_environment	Farm located in a district with an environmental-related tourism potential	Dummy	1. Yes
Tourism_historic	Farm located in a district with a historic/cultural-related tourism potential	Dummy	1. Yes
Tourism_religious	Farm located in a district with a religious-related tourism potential	Dummy	1. Yes

Source: author's elaboration.

Cluster analysis is done using the Gower[37] distance since the inputs are of multiple sorts, such as continuous, nominal (i.e., dummy), and sorted variables. It uses the Dice coefficient for nominal data, which are first transformed into k distinct binary columns; the Manhattan distance with a particular adjustment for ties for ordinal variables (previously ranked); and the range-normalized Manhattan distance for continuous variables. The cluster analysis, which is based on a hierarchical approach and uses Ward's method to calculate between-cluster distances, is based on the resulting dissimilarity matrix. The "Stats" R package is used to carry out the cluster analysis.

5. Results and Discussion

5.1. Descriptive Statistics

In total, 20 farms located in the Khorezm region took part in the survey. On average, their size is 70.5 hectares, and their locations suffer from a quite large degree of remoteness: indeed, 50% of them locate at a distance of 6 km or more from the closest paved highway, while 35% of them locate at a distance of 5 km or more from the closest population centre. With regards to their main productions, most of them show multiple production. Taking each production individually, it is possible to notice that, in total, 45% of them are involved in the production of annual crops (e.g., wheat, rice, cotton), while 25% of them raise small animals (namely, poultry chicken and/or rabbits) and an additional 25% grow fish. Other important productions for the surveyed farms are animal husbandry (cattle, sheep and/or goats), observed in 20% of the farms in the sample, and production of eggs, honey, milk or fur (15% of cases). These numbers are somehow in line with the overall farm numbers in the Region (see section 3.3). In the region, 57% of farms produce annual crops, while 15% grow fish.

Referring to tourism potential, we have considered the districts in which each farm is located. In 15 cases, farms locate in a district that shows environmental related touristic potential (either as a single potential or in combination with others). Six farms locate in a district with historic/cultural-related touristic potential, while only three of them are in a district with religious touristic potential. In five cases, farms are located in a district with no touristic potential at all.

5.2. Heterogeneity of Farms in a Khorezm Region

Through cluster analysis, grounded on the characteristics of farms surveyed in the Khorezm Region, three different clusters of farms have been extracted (**Figure 4**). **Table 3** shows the main statistics for each of each extracted cluster, according to the adopted input variables.

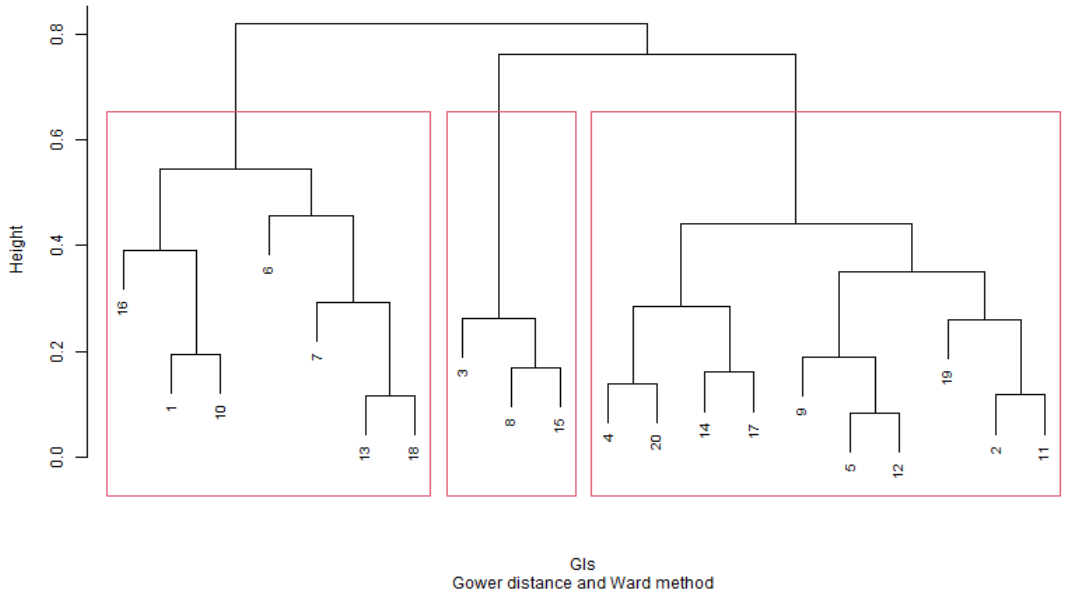

Figure 4. Dendrogram the clusters of farms.

Source: author's elaboration.

Table 3. Cluster characteristics according to the input variables.

	No. of Farms	Hectares	Distance_paved_highway				Distance_centres		Production _annual _crops	Production _horses	Production _livestocks	Production _small animals	Production _farmed fish	Production _other	Tourism _environment	Tourism _historic	Tourism _religious
			<2	2–5	6–10	>10	<5	>5									
#1 - Small-medium sized animal husbandry farms	7	52.3	1	3	2	1	3	4	0	1	1	4	1	1	7	4	3
#2 - Large farms, specialized in fish farming.	3	107.9	1	0	1	1	3	0	0	0	1	1	3	0	0	0	0
#3 - Farms growing annual crops	10	72.1	2	3	4	1	7	3	9	0	2	0	1	2	8	2	0

Source: author's elaboration.

Cluster #1 includes "Small-medium sized animal husbandry farms". They are seven farms, with small-to-medium size (52.3 hectares, on average), and all of them are involved in animal husbandry (including, cattle, horse, poultry…). Each of these farms is located in a district which shows at least an environmental-related touristic potential (in most cases also in combination with other types of tourist potential).

Cluster #2 includes "Large farms, specialized in fish farming". The cluster includes three farms raising fishes, also in combination with animal husbandry, whose average size is very large on average (107.9 hectare). These farms are located relatively close to population centres, and they locate in some districts of the Khorezm Region with no tourism potential at all.

Cluster #3 encompasses 10 "Farms growing annual crops" (e.g., wheat, rice, cotton), combining in some cases other animal-based productions. Their size is large (72.1 hectares, on average), and they are mostly located in districts with environmental-related touristic potential, rather close to population centres.

5.3. Farmers' Attitude toward Agritourism Activities

For the farmers surveyed in the analysis, agritourism could represent a valuable contribution to their on-farm and off-farm diversification strategies. However, when asked about the direct importance of agritourism for their own holdings (to this regard, a scale from 1 = not important to 5 = very important was used), on average they perceive it as almost neutral. Among the clusters, the average values range from 2.86 (in cluster #1) to 3.3 (in cluster #3) and 3.33 (in cluster #2).

A first main issue, which might explain the reason for such reduced appreciation of agritourism activities importance, is general knowledge about them. On average, 70% of surveyed farms have knowledge about agritourism or agricultural tourism, and this percentage is almost equally distributed across three extracted clusters: it ranges from 66.7% in the cluster of *Small-medium sized animal husbandry farms* to 71.4% in the cluster of *Farms growing annual crops*. This means that about 30% of farmers still do not exactly know what agritourism is about. This is to say that, in the survey and in order to continue it, additional pieces of information were given to those respondents knowing nothing about agritourism activities.

More varied results emerge when investigating the most important channels that are used by farmers in order to retrieve information about the agritourism activities (in this question, each respondent could mention up to three different channels). Internet is mentioned as the most important channel across all the clusters: 86% of farmers in cluster #1 (*Small-medium sized animal husbandry farms*), 100% of farmers in cluster #2 (*Large farms, specialized in fish farming*), and 40% of farmers in cluster #3 (*Farms growing annual crops*) mentioned the importance of this channel, respectively. However, for farmers in cluster #1 (*Small-medium sized animal husbandry farms*), also farmers' association represent an important channel to obtain information on agritourism, being mentioned by 71% of the respondents in that cluster. This might suggest a stronger involvement of these farms in local networks, which necessarily play a role in information provision. Conversely, for farmers specialized in fish farming (cluster #2), also tour operators and guides (33% of respondents) and advice from family friends, or visitors (33% of respondents) are important. Conversely, only some of the farmers in cluster #3 have mentioned the important role played by media TV and radio programmes, as well as the one played by the official tourism website.

In one section of the carried survey, respondents have been asked about agritourism activities, both in general and with specific regard to their farms. This section incudes questions about importance of agritourism for their farms, about agritourism activities which they could offer or which already exist, about their knowledge on agritourism and about the sources where they get information about it. When considering possible activities that could be developed as a part of their agri-tourism activities, surveyed farmers think about activities which seem to be mostly in line with the structural characteristics of the farm (hence, the already existing business). As far as farms in cluster #1 are concerned, on average, they are willing to implement only more basic agritourism activities, namely those related to showing activities (e.g., petting and feeding animals, picking up fruits and vegeta-

bles, and hunting and fishing). These options are also in line with the poor relevance that is tributed to agritourism activities as a whole by this group of farmers. With regards to farmers belonging to cluster #2 (*Large farms, specialized in fish farming*), 100% of them are only willing to develop fishing activities. This is clearly connected with the fish farming that is already carried on in their business. Conversely, the farmers specialized in annual crops (cluster #3) are expecting the chance of developing some innovative activities, in order to diversify their business more. Actually, they state to be willing to implement a much broader set of activities, including both more demonstrative activities and more participatory ones, which requires the participation of specific farm workforce (e.g., among others, on farm markets) (**Table 4**).

Table 4. Types of agritourism activities, which can be offered by farm, per cluster (% values out of the total in each cluster).

	Cluster 1	**Cluster 2**	**Cluster 3**
Petting and feeding animals	43%	0%	10%
Picking up fruits and vegetables	29%	0%	20%
Garden tours	0%	0%	30%
Hunting and fishing	29%	100%	10%
On farm markets	0%	0%	20%
Riding horses	0%	0%	10%
Demonstration farms	0%	0%	10%

Across different clusters, farmers also show different motivations behind agritourism implementation, as well as different expected impacts. For example, farmers in cluster #2 tend to show weaker internal motivations in the implementation of agritourism than farmers in clusters #1 and #3. Actually, farmers in cluster #1 – whose hectares of agricultural land are less, on average – point out with great emphasis the impacts that agritourism activities could have in relation to their own business, namely, increasing farm tourism attraction (4.43, on a Likert scale from 1 to 5) and increasing farm revenues (4.14). Conversely, those farmers in cluster #3 point to the intrinsic value of the agritourism activity (4 out of 5). Even when considering impacts, they differ across clusters. In particular, *Large farms, specialized in fish farming* (cluster #2) and *Farms growing annual crops* (cluster #3) seem to have a different vision, being much more focused on the social impact of agritourism, rather than those in cluster #1: they evaluate more the impact in terms of creating new jobs and improving lives in the local communities. However, all the farmers believe that agritourism has a lower impact in reducing rural exodus (**Table 5**).

Moving to the main factors that might enhance implementation of agritourism activities, farmers in cluster #1 acknowledge a larger role coming from international tourists rather than from domestic ones (3.57 and 3.43, respectively). The opposite holds true for farmers in cluster #3 (3.8 and 4.5, respectively). These differences might arise due to the different types of activities that farmers in each cluster expect to develop – which can be more international tourist-oriented in one case, more domestic tourist-oriented in another one. Moreover, for the farmers in cluster #3 (*Farms growing annual crops*), also governmental support and support from local communities are mentioned as relevant factors supporting their activities. On the opposite, farmers in cluster #2 largely evaluate the role of external marketing (**Table 5**).

When the quality of external factors is considered, all the farmers are concerned about the quality of transport and hotel infrastructure. Farmers in cluster #3 evaluate transport quality 2.9 out of 5, while farmers in cluster #2 evaluate hotel quality 2.33 out of 5. Catering facilities are more appreciated, in particular by farmers in cluster #1 (4.29 out of 5). On average, also the availability of tour guides is appreciated (**Table 5**).

With regards to the most critical challenge for implementation of agricultural activities, farmers in all the extracted cluster stress the issues linked with internet availability (4.43 and 4.40, for farmers in cluster #1 and cluster #3, respectively). This element is mostly due to the remoteness that characterize most of those farms, being located in deeply rural areas and suffering from lack of infrastructures. For the farmers included in clus-

ter #1, also making a good business plan is perceived as a major challenge (4.14 out of 5). This is not surprisingly, given the small size of these farms, and the fact that agritourism in the region and in the country is still in its infancy stage. Thus, for *Small-medium sized animal husbandry farms* (cluster #1), communication with tourism is perceived as an obstacle more than for the farmers in other clusters. This should be linked to the more traditional attitudes of these farmers, not used to provide touristic services to customers (**Table 5**).

Table 5. Motivation, impact, factors, quality and challenges for agritourism activities. Average values on a Likert scale (from 1 to 5), by cluster type.

		Cluster 1	Cluster 2	Cluster 3
Motivation	Preserve rural heritage	3.43	2.00	3.30
	Intrinsic value	2.71	3.33	4.00
	increase farm tourism attractions	4.43	3.33	4.00
	increase farm revenues	4.14	3.67	4.10
Impact	Improve lives of local communities	3.71	4.33	4.20
	Create new jobs	3.57	4.00	3.90
	Preserve the environment	3.29	3.00	3.90
	Reduce rural exodus	2.57	2.67	3.00
Factors	Demand from international tourists	3.57	4.33	3.80
	Demand from domestic tourists	3.43	4.33	4.50
	Governmental support	3.71	3.67	4.40
	Support from local communities	3.57	3.33	4.10
	External marketing	3.57	5.00	4.20
Quality	Transport infrastructure	3.43	3.00	2.90
	Hotel infrastructure	3.86	2.33	2.90
	Catering facilities	4.29	4.00	4.10
	Availability of tour guides	3.86	2.33	3.30
Challenges	communication with tourist	3.57	3.33	3.20
	make good business plan	4.14	3.33	3.80
	internet availability	4.43	3.67	4.40

5.4. Discussions of the Results

From the results of the survey, it was found out that *Small-medium sized animal husbandry farms* (included in cluster #1) are mostly located in the districts where tourism is based on environmental assets, but also historical-cultural and religious assets. Conversely, farms that belong to cluster #2 (i.e., those specialized in fish farming) are not characterized by this kind of geographical resources around. These characteristics could really affect the provision of agritouristic services by farmers. For example, farms in cluster #3 (*Farms growing annual crops*) can deliver agritourism activities, which are highly diversified, while cluster #2 farms will only deliver hunting and fishing activities. This is also due to the farms' location: they show greater difficulties in integrating environmentally-based touristic activities in their own business.

Among the factors increasing farm tourism attractions and revenues are considered the most important ones in cluster 1 and 3. Among the impacts, reducing rural exodus is irrelevant one for all clusters. In addition, it was found out that the large-sized farms raising fishes (in cluster #2) stated 5 out of 5 for external marketing factor. On infrastructure all farmers of 3 clusters stated that transport infrastructure is very poor whereas catering facilities are quite good. Moreover, access to Internet also the main problem in agritourism entrepreneurship on farms.

These findings are in line with those by Ciri'c et al.[38], who examined the attitudes of the farmers in Serbia towards agritourism. They observed that those who own agricultural farms are more interested in the industry's development, and that their favorable perception of how agritourism affects the local community and economy plays a significant role in this. In addition, a positive

attitude was noted toward the importance of agrotourism for the local community and local people. Our result is consistent with that of Sharpley and Vass [39], who found that the development of farm tourism enterprises is an employment, as opposed to diversification, issue. Also, our results showed that most interviewed farms indicated that the government and local communities' support is needed in for starting agritourism business. The results are in line with those of Dinh et al. [40], who identified support for local government policies, membership in farmer associations, unions, and extension clubs, awareness of the advantages of agritourism, a variety of production models, Internet access, education level, and membership in tourism associations and travel organizations as crucial factors.

6. Conclusions and Policy Implications

In the countries of Central Asia, agritourism is still in its infancy, its knowledge among farmers being rather limited still. Despite that, it can represent an important tool for economic diversification, having positive spillover effects both in the agricultural and farming sector and in the tourist sector. For farmers and agricultural holdings activities, agritourism might represent a crucial source of additional income, which farmers can really benefit from. This is the case of both farmers involved in annual crops and farmers involved in animal husbandry activities. As expected more modern holdings are expected to take greater advantage from the implementation of agritourism activities. Moreover, agritourism also represents an important form of diversification for touristic activities, and in particular as a way to limit and counterbalance the rise of touristic flows towards highly specialized sites and towns, only (e.g., the site of Ichon-Qala, in Khiva). An excessive number of incoming tourists in those selected sites might actually turn into the risk of exceeding the carrying capacity, which can eventually put at risk the maintenance and the existence of the tourist destinations themselves (as in the case of other major destinations worldwide, e.g., the city of Venice, in Italy).

Conversely, a larger diversification of the touristic services, also encompassing rural areas in touristic flows, would be crucial also as a mean to expand average duration of tourist stays, in particular with regard to the domestic flows. This would be particularly helpful to reduce the phenomenon of the hit-and-run tourism in the Khorezm Region.

The policy implications of this study are significant, particularly for the agriculture and farming sectors. Based on our findings, it is recommended that policy interventions focus on supporting farmers' adoption of agritourism, especially targeting small, traditional farmers who stand to benefit the most from such initiatives. Our analysis highlights the importance of specific extension services tailored to these farmers, alongside targeted educational and dissemination activities aimed at increasing their awareness of agritourism and its potential benefits. Moreover, financial support through public funding, both from national governments and local communities, is crucial for fostering innovation and facilitating the adoption of agritourism practices. These recommendations are grounded in our analytical findings, emphasizing the need for a comprehensive approach that combines knowledge enhancement and financial support.

However, future research is needed to confirm the findings from this study, which eventually suffer from the limited number of surveyed farmers. Thus, future studies are needed to cover additional farmers in the whole Uzbekistan as well as in other Central Asia countries. Broadening the geographical scope of the analysis would actually return more insightful results to address the main motivations of farmers in the adoption of agritourism activities.

Author Contributions

Conceptualization, E.D. and U.M.; methodology, F.P.; software, F.P.; validation, E.D., F.P. and E.I.; formal analysis, F.P.; investigation, F.M.; resources, D.B.; data curation, U.M.; writing—original draft preparation, E.I.; writing—review and editing, E.I.; visualization, F.P.; supervision, E.D.; project administration, D.B.; funding acquisition, F.M. All authors have read and agreed to the

published version of the manuscript.

Funding

This research received no external funding. The APC was funded by authors.

Institutional Review Board Statement

Not applicable.

Informed Consent Statement

Not applicable.

Data Availability Statement

Data collected by interviewing the stakeholders.

Conflicts of Interest

The authors declare no conflict of interest.

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