

Analysis of farmers' intentions and behavior towards agritourism as a complementary activity to agriculture

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Abstract

Traditional farming faces significant challenges to sustainable development due to climate change, water scarcity, and environmental, social, and economic threats. Adopting complementary activities like agritourism can help address these challenges and promote sustainable village development. This study examines farmers' behavioral intentions and willingness to participate in agritourism as a supplementary activity. Data were collected through questionnaires using stratified random sampling with proportional assignment from farmers in five agriculturally diverse villages in Marvdasht County, Fars Province, Iran. The data were analyzed using the extended Theory of Planned Behavior (TPB), which explained 78.8% of farmers' behavioral intentions and 61.8% of their actual behavior. The results show that attitudes, subjective norms, and perceived behavioral control—traditional TPB constructs—significantly influence farmers' intentions to adopt agritourism. Additionally, self-identity, social capital, environmental values, and the perception of farmer's risks enhance the predictive power of farmers' behavioral intentions. However, perceived behavioral control did not significantly impact farmers' actual behavior, while their intentions had the strongest positive influence on agritourism adoption. These findings suggest that promoting farmers' attitudes, beliefs, and self-confidence through training and information campaigns can increase their engagement in agritourism. Policymakers should implement cultural programs, incentives, and social networks to enhance agritourism's occupational value and encourage collaboration within the agricultural sector. Furthermore, measures should ensure agritourism aligns with environmental goals and educate farmers about the risks of traditional farming practices. Such efforts can foster sustainable development and strengthen the role of agritourism as a complementary activity to traditional farming.

Keywords: Agritourism, Perceived behavioral control, Social capital, Theory of Planned Behavior (TPB).

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INTRODUCTION

The contraction of the agricultural sector, spurred by limited resources and entrenched traditional practices, has significant economic, social, and environmental consequences for rural communities. These impacts have been extensively documented in academic research (Van der Ploeg, 2018). Modern approaches to rural development now emphasize the importance of engaging rural communities in various supportive activities. These endeavors provide additional revenue and enhance the villagers' overall well-being (Dinis et al., 2019). Among such initiatives, agritourism is emerging globally as a vibrant and expanding industry (Zhao et al., 2022).

Agritourism's global rise in popularity stems from its potential to diversify farmers' incomes (Zhao et al., 2022). This innovative tourism model forges a connection between agriculture and tourism, creating avenues for enhanced income and rural development (Bhatta et al., 2024). In 2019, agritourism's contribution as an alternative income stream for rural areas was valued at an impressive \$69.24 billion. It has gained traction in developed nations like the United States, Italy, Germany, the United Kingdom, France, and Spain, as well as in developing countries, including Indonesia and Malaysia (Bhatta et al., 2019; Togaymurodov et al., 2023). Agritourism thrives on the concept that farmsteads, nestled within the tranquility of nature, offer more than just lodging to travelers. These village farms provide a genuine and immersive rural experience, allowing guests to delve into the daily life of a working farm. Visitors can partake in agricultural activities, forge a bond with the natural world and its fauna, and savor farm-fresh produce alongside traditional local cuisine (Ammirato et al., 2020). Essentially, agritourism farms form a vibrant tapestry of rural stakeholders—including non-profits, local enterprises, and governmental bodies—and the tourists who seek authentic rural engagements (Jamshidi et al., 2017; Ammirato et al., 2020).

The results of studies have shown that in recent years the relationship between tourism and agriculture has not been clearly defined (Fleischer and Tchetchik, 2005). The results of studies in some regions show that tourism is known as an additional and separate economic activity, and its development in villages can lead to the strengthening of infrastructure and the improvement of economic conditions of the agricultural sector in villages. On the other hand, study by Fleischer and Tchetchik (2005) found that the two sectors of tourism and agriculture compete for resources and infrastructure and that these two sectors cannot help each other to develop. Today, however, the phenomenon of agritourism has attracted the attention of agricultural experts and researchers

around the world (Togaymurodov et al., 2023). Agritourism has been visualized by linking the two sectors of agriculture and tourism as a solution for agricultural diversification, economic development, environmental protection and also rural infrastructure development (Susan and Kyunda; 2018; Togaymurodov et al., 2023). Research in agritourism has predominantly focused on regions such as Europe, North America, and Canada, exploring various facets of the field (Dimitrovski et al., 2019; Bhatta and Ohe, 2020). Attention has been given to identifying prime agritourism destinations (Sidali et al., 2019), and extensive literature reviews have shed light on the sector's development (Dimitrovski et al., 2019; Ammirato et al., 2020; Bhatta and Ohe, 2020). Moreover, studies have delved into the determinants of agritourism's growth, revealing that factors such as farmers' income, employment, education, and proximity to urban centers significantly influence the adoption of agritourism practices (Togaymurodov et al., 2023). Notably, there appears to be a gap in the research concerning farmers' intentions and behaviors toward embracing agritourism as a strategy.

The Theory of Planned Behavior (TPB) posits that behavior is a product of both intention and perceived behavioral control. Generally, TPB utilizes an individual's behavioral intention to predict their desired behavior, which in turn is influenced by attitudes, subjective norms, and perceived behavioral control. TPB stands as a prevalent and robust framework for forecasting human social behavior and is renowned in psychology for illustrating positive behavior (Yazdanpanah & Forouzani, 2015). Its applications span various domains, including environmental concerns (Savari and Khaleghi, 2024), food choice and consumer behavior (Yazdanpanah & Frouzani, 2015), innovation and technology (Waheed et al., 2022), entrepreneurship (Anwar & Herayono, 2024), health (Xu et al., 2024), and tourism (Zheng et al., 2023).

A critical aspect of the TPB is the discrepancy often observed between one's intentions and actual behaviors (Dinis et al., 2019). This divide may stem from tendencies like procrastination, doubts about the action, fear, or even an aversion to the action, all of which can obstruct the realization of one's intentions. Consequently, it's essential to consider exogenous variables that might influence the link between intentions and behaviors. In the context of farmers and farm owners, scrutinizing the gap between their intentions and behaviors is crucial, especially in identifying external factors that sway their willingness to adopt and develop agritourism. For instance, Dinis et al. (2019) explored the intentions and behaviors of rural hosts regarding the adoption of local development

92 strategies for rural tourism. Employing the TPB framework, the study acknowledged that while
93 intentions play a significant role in shaping the behaviors of local hosts, they are not solely
94 determinative. Additional elements such as the hosts' place of residence, educational background,
95 prior work experience, and business success are also imperative in understanding their propensity
96 to embrace rural tourism development strategies.

97 Acknowledging the intention-behavior gap within the TPB, researchers have incorporated
98 emotional and psychological factors into the TPB framework to better understand farmers'
99 behaviors across various domains (Cao et al., 2021). Enhancing TPB's predictive capability in
100 farmers' decision-making processes, social psychologists have effectively highlighted the
101 influence of self-identity. The impact of self-identity on behavioral intentions has been
102 substantiated in diverse research areas, including public health, consumer behavior, environmental
103 actions, and rural tourism (Zarbini et al., 2017; Cao et al., 2021).

104 Social capital serves as a pivotal element in bridging the gap between farmers' intentions and
105 behaviors within the TPB framework. It encompasses aspects of social organizations such as trust,
106 values, and networks, which can enhance the efficacy of communities by fostering collaborative
107 efforts (Cao et al., 2021). Studies across various settings have demonstrated that social capital
108 significantly shapes individuals' attitudes and intentions to act. Notably, Cao et al. (2021)
109 examined emotional connection and interpersonal trust as components of social capital that
110 influence tourists' waste segregation behaviors, applying the TPB model to their analysis.
111 Agritourism is recognized as an eco-friendly practice (Zhao et al., 2022). Consequently,
112 environmental values that reflect individuals' perspectives on the environment influence farmers'
113 intentions to engage in this sector. Zhao et al. (2022) have integrated these environmental values,
114 including the benefits to the environment and the principle of human-nature harmony, into the
115 conventional TPB to study behavioral intentions toward agritourism. Additionally, the perception
116 of risk is a significant factor that can bridge the gap between intention and action. The challenges
117 posed by climate change, water scarcity, and other environmental, social, and economic threats
118 have heightened concerns about the future of traditional agriculture. This sense of threat prompts
119 a heightened sense of responsibility and concern, leading to protective behaviors. To enhance the
120 predictive accuracy of TPB, researchers have incorporated this aspect of risk perception into the
121 model (Yazdanpanah et al., 2014; Rezaei et al., 2019; Savari & Gharechaei, 2020).

The Marvdasht region in Fars province, renowned for its geographical location, favorable climate, and rich agricultural heritage, holds significant potential for agritourism development. As a key agricultural hub in Iran, Marvdasht boasts diverse horticultural and agricultural products, including citrus fruits, pomegranates, grapes, wheat, and vegetables, offering unique experiences for tourists seeking farm activities and fresh produce. Its proximity to world-famous historical sites like Persepolis and Pasargadae, combined with stunning natural landscapes, modern farms, and a vibrant local culture enriched with traditions, further enhances its appeal as a premier agritourism destination (Fars Cultural Heritage and Tourism Organization, 2020). However, challenges such as limited awareness among farmers regarding the benefits of agritourism, insufficient accommodation and transportation infrastructure, and issues related to water scarcity underscore the need to address key determinants for developing agritourism as a complementary economic activity for farmers in the region.

According to the content described, in this study, alongside the traditional structure of the Theory of Planned Behavior (TPB), four additional constructs—personal identity, social capital, environmental values, and risk perception—were incorporated to evaluate farmers' behavioral intentions toward the acceptance of agritourism. This comprehensive and integrative framework has not been previously documented in any other study, thereby making a significant contribution to the enrichment of the existing literature in this field. The primary objective of this study is to investigate whether farmers operating active farms are aware of the risks associated with the scarcity of production resources, such as water, in agriculture, and whether they are inclined to adopt agritourism as a supplementary activity. This research focuses on five villages in Iran's Fars province, which are recognized for their strong agricultural output and diversity. Within this context, farmers' intentions and behaviors regarding engagement in agritourism are analyzed using an extended version of the Theory of Planned Behavior (TPB). This study is pioneering in its approach, as such a comprehensive analysis has not been previously documented in the existing literature.

Conceptual framework

The expanded Theory of Planned Behavior (TPB) model in this study is designed to examine farmers' behavioral shift from traditional agricultural practices to agritourism. This is depicted in Figure (1). Accordingly, the study tests the following hypotheses:

- 153 H1: Farmers' attitudes are directly and positively associated with their intentions to participate in
154 agritourism as an adjunct to traditional agriculture.
- 155 H2: Farmers' subjective norms are directly and positively associated with their intentions to
156 participate in agritourism as an adjunct to traditional agriculture.
- 157 H3: Farmers' perceived behavioral control is directly and positively associated with their intentions
158 to participate in agritourism as an adjunct to traditional agriculture.
- 159 H4: Farmers' perceived behavioral control is directly and positively associated with their actual
160 engagement in agritourism as an adjunct to traditional agriculture.
- 161 H5: Individual or personal identity is directly and positively associated with farmers' intentions to
162 participate in agritourism as an adjunct to traditional agriculture.
- 163 H6: Social capital is directly and positively associated with farmers' intentions to participate in
164 agritourism as an adjunct to traditional agriculture.
- 165 H7: Environmental values are directly and positively associated with farmers' intentions to
166 participate in agritourism as an adjunct to traditional agriculture.
- 167 H8: Farmers' risk perceptions regarding the current state of the agricultural sector are directly and
168 positively associated with their intentions to participate in agritourism as an adjunct to traditional
169 agriculture.
- 170 H9: Farmers' intentions are directly and positively associated with their actual engagement in
171 agritourism as an adjunct to traditional agriculture.

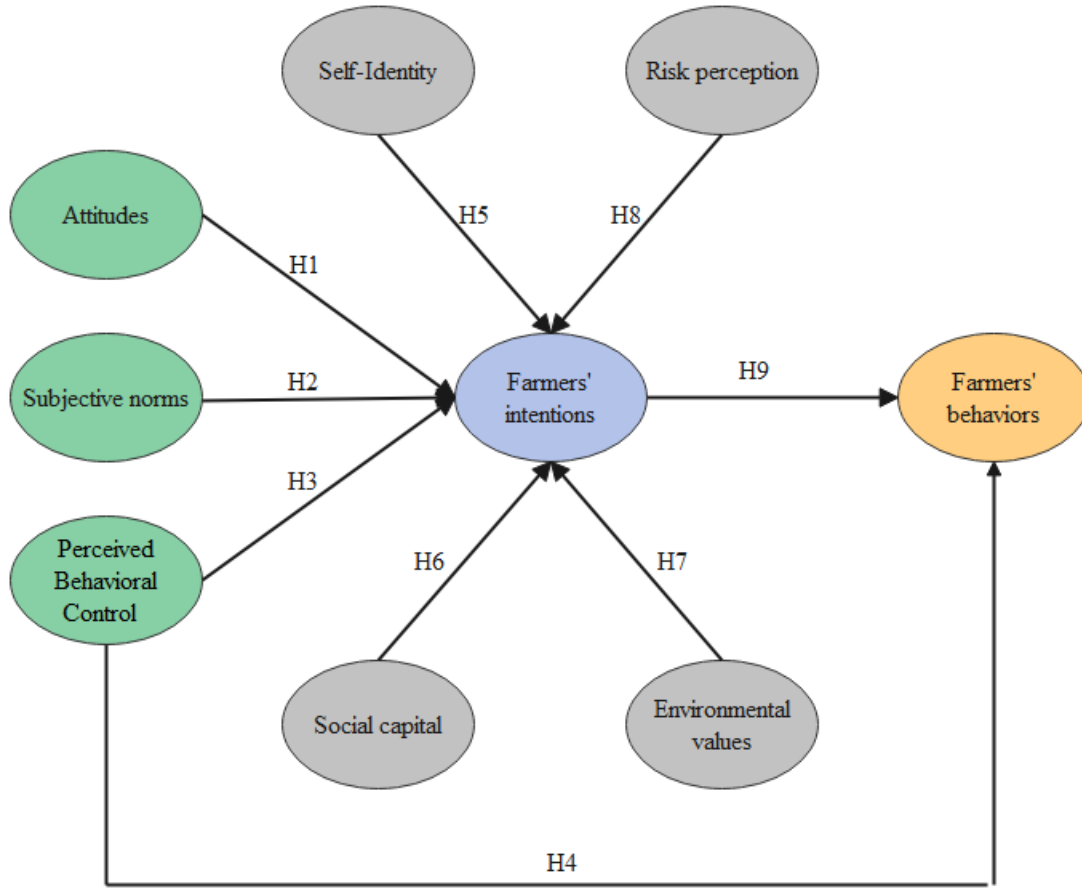


Figure 1. An integrated conceptual framework for predicting farmers' intentions and behavior to change from agricultural activities to agritourism activities.

MATERIALS AND METHODS

Study area

In this study, villages in the Marvdasht region were ranked based on the criteria essential for realizing agritourism, as defined by experts. These criteria included the diversity of agricultural, livestock, and horticultural products; natural scenery; cultural attractions; accommodation facilities; and man-made tourist attractions such as paved streets and bridges. The ranking was determined to assess each village's potential for developing agritourism effectively. The ranking was determined to assess each village's potential for developing agritourism effectively. Consequently, five villages with superior rankings— Qasemabad-e Sarui, Garmabad, Kenareh, Dorudzan and Eslamabad in Marvdasht County—were identified as having the highest potential for agritourism development and were selected as the study's statistical population. The location of these villages is presented in Figures 2 A to 2 C.

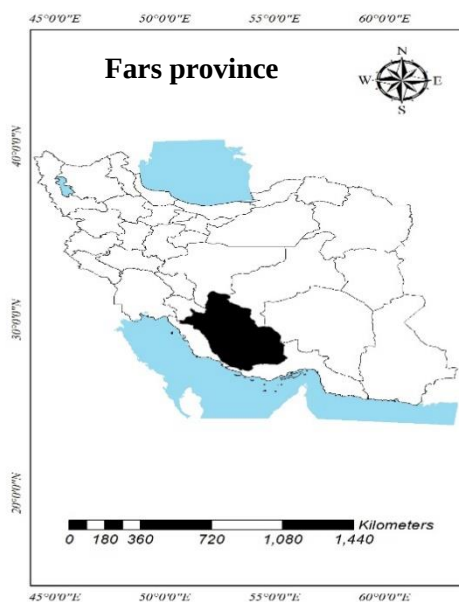


Figure 2 A. Map of Iran by province.

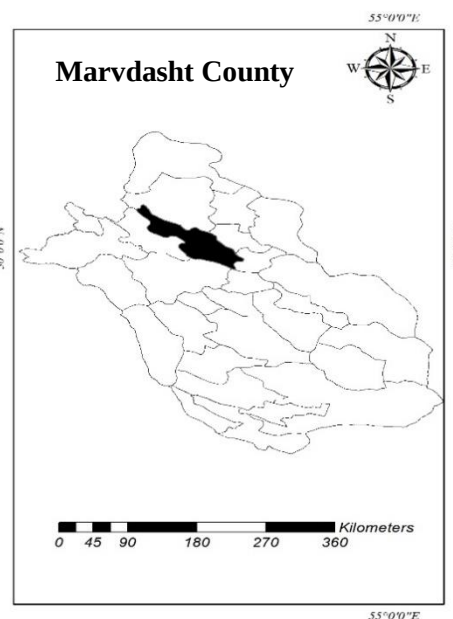


Figure 2 B. Map of Fars Province by county.

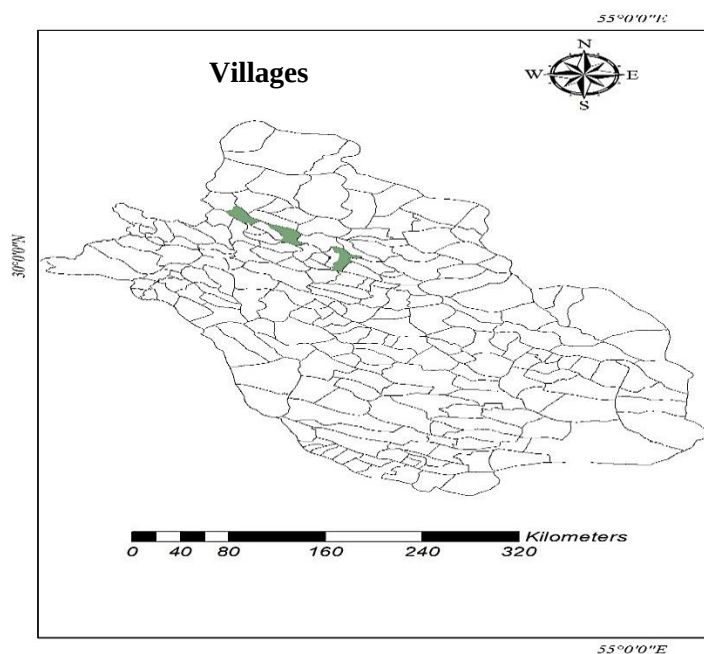


Figure 2 C. Map of Fars Province by villages

188 Study design

189 This study, in terms of its nature, was a quantitative research endeavor, and in terms of its goal, it
 190 was classified as practical research, aiming to provide actionable insights for promoting
 191 agritourism. In terms of data collection, it was a descriptive research study, specifically of the
 192 correlational type, as it sought to examine relationships between variables such as farmers'

behavioral intentions and their willingness to adopt agritourism. Additionally, it should be noted that this study was designed as a single cross-sectional study.

Statistical population and sampling method

The statistical population for this research included all individuals over the age of 15 in the villages of Qasemabad-e Sarui, Garmabad, Kenareh, Dorudzan and Eslamabad in Marvdasht, Fars Province. Using the Krejcie & Morgan (1970) table, the sample size was determined to be 351 people. The stratified random sampling method with proportional allocation was utilized for sampling. Following the determination of the required sample size, the sample was distributed across the five study areas in proportion to their respective populations. Data collection was carried out through questionnaires and field interviews with the selected sample.

Measurements

The current study's measurement items for the Theory of Planned Behavior (TPB) model components include attitudes (5 items), subjective norms (3 items), perceived behavioral control (4 items), self-identity (3 items), social capital (4 items), environmental values (3 items), and risk perception (5 items). These serve as independent variables, while intention is both an independent and dependent variable (3 items), detailed in Table 1 in the Appendix A1. A 5-point Likert scale ranging from "very little" to "very much" was employed to assess all questionnaire items. Notably, as the study's participants were all Persian speakers, the questionnaire was developed and administered in the Persian language.

Validity and reliability of instrument

To ascertain the validity of the variables and indicators, draft questionnaires were assessed by a panel of university experts prior to the interview phase with the sample farmers. This panel included professors specializing in rural development, agricultural extension and education, agricultural economics, environmental science, psychology, social sciences, and agricultural sciences. Additionally, the Average Variance Extracted (AVE) index, Cronbach's alpha coefficient, and Composite Reliability (CR) were employed to evaluate the reliability and validity of the indicators. These statistics are presented in Table 2.

Data analysis

For data analysis, both SPSS and Smart PLS software were utilized to perform descriptive and inferential statistical analyses. This research employed Structural Equation Modeling (SEM) for both modeling and statistical examination (Hair & Alamer, 2022). SEM techniques are employed to quantitatively evaluate the validation or refutation of theoretical constructs. The Partial Least Squares (PLS) approach, a third-generation SEM technique, is applied to explore the relationships between latent variables as measured by observable indicators. A key rationale for selecting this method is SEM's comprehensive capability to test theoretical frameworks within a study (Hair & Alamer, 2022).

RESULTS AND DISCUSSION**Descriptive Statistics of Variables**

The data presented in Table 1 indicates that the construct of risk perception is the only one above the average level (theoretical median of 3), with the highest mean score of 3.57 among the constructs evaluated. This suggests that farmers in the study areas are well aware of the potential risks and threats that traditional agricultural activities may face in the future. Conversely, the construct of perceived behavioral control has the lowest mean score of 1.74, highlighting the farmers' struggle due to inadequate facilities, knowledge, and resources to implement agritourism on their farms. Therefore, enhancing educational methods, as well as providing funding and financial resources, could facilitate the growth of agritourism. Overall, the descriptive statistics reveal that the farmers in the surveyed regions generally lack a favorable attitude and intention toward pursuing agritourism as a supplementary activity to traditional agriculture.

Table 1. Descriptive statistics of constructs.

Constructs	Average	Standard deviation
Attitudes	2.15	0.611
Subjective norms	2.58	0.724
Perceived behavior control	1.74	0.321
Self-identity	2.36	0.687
Social capital	2.04	0.463
Environmental values	2.85	0.715
Risk perception	3.57	0.882
Intentions	2.16	0.531
Behavior	2.93	0.623

Source: research findings.

Results of the Measurement Models

The validity of the model fit was evaluated using first-order confirmatory factor analysis (CFA), as shown in Table 2. The results indicated that all items had statistically significant factor loadings (above 0.6) with a 1% error level ($p < 0.01$), confirming the unidimensionality of the items. This suggests that the items selected to measure the model's components were appropriate and measured accurately. Furthermore, the Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach's alpha (α) values were calculated to be greater than 0.5, 0.6, and 0.7, respectively, indicating that all latent variables in the proposed model demonstrated sufficient validity and reliability. Lastly, Table 3 revealed that the square root of AVE for the research constructs ranged from 0.83 to 0.97, exceeding the correlation coefficients between the constructs ($0.37 < r < 0.62$), thereby confirming the discriminant validity of the model's constructs.

Table 2. The results of fit of measurement models.

Constructs	Measurement item	λ	t	Reliability and Validity statistics
Attitudes	Att1	0.538	5.421	AVE: 0.535 CR: 0.890 α : 0.859
	Att2	0.790	15.123	
	Att3	0.731	12.416	
	Att4	0.718	10.439	
	Att5	0.608	8.365	
Subjective norms	SN1	0.928	35.185	AVE: 0.741 CR: 0.894 α : 0.822
	SN2	0.701	6.346	
	SN3	0.933	41.420	
Perceived behavior control	PBC1	0.853	29.730	AVE: 0.783 CR: 0.915 α : 0.861
	PBC2	0.914	33.384	
	PBC3	0.886	31.726	
	PBC4	0.842	24.786	
Self-identity	SI1	0.843	25.095	AVE: 0.854 CR: 0.932 α : 0.901
	SI2	0.832	22.664	
	SI3	0.913	36.948	
Social capital	SC1	0.843	20.020	AVE: 0.741 CR: 0.920 α : 0.884
	SC2	0.873	28.729	
	SC3	0.847	22.663	
	SC4	0.879	31.741	
Environmental values	EV1	0.731	10.209	AVE: 0.605 CR: 0.892 α : 0.861
	EV2	0.798	12.618	
	EV3	0.734	10.661	
Risk perception	RP1	0.943	65.095	AVE: 0.871 CR: 0.950 α : 0.921
	RP2	0.932	62.664	
	RP3	0.913	36.948	
	RP4	0.868	20.628	
	RP5	0.859	16.542	
Intentions	Int1	0.865	26.797	AVE: 0.760 CR: 0.927 α : 0.895
	Int2	0.887	30.419	
	Int3	0.889	30.891	

SRMR=0.08; D_G1= 0.765; D_G2 =0.795; NFI =0.98; RMS_Theta =0.08.

Source: research findings.

Table 3. Discriminant validity of constructs.

Constructs	Intention	Attitude	SN	PBC	SI	SC	EV	RP
Intention	0.97 ^a							
Attitude	0.42**	0.95 ^a						
SN	0.52**	0.48**	0.94 ^a					
PBC	0.62**	0.39**	0.53**	0.83 ^a				
SI	0.51**	0.41**	0.55**	0.48**	0.85 ^a			
SC	0.38**	0.64**	0.54**	0.48**	0.42**	0.94 ^a		
EV	0.46**	0.42**	0.48**	0.41**	0.39**	0.37**	0.89 ^a	
RP	0.38**	0.54**	0.42**	0.44**	0.46**	0.52**	0.44**	0.96 ^a

^a The square roots of the AVE estimate.

** Correlation is significant at the <0.01 level

Source: research findings.

Results of the Structural Model

The structural model's fit was assessed using suitable indices, as detailed in Table 5. The findings presented in Table 4 indicate that the extended TPB model exhibits a good fit.

Table 4. Summary of goodness of fit indices for the structural model.

Fit index	SRMR	D-G1	D-G2	NFI	RMS-Theta
Suggested Value	<0.1	>0.05	>0.05	>0.90	≤0.11
Extended TPB	0.07	0.739	0.798	0.97	0.07

Source: research findings.

The outcomes detailing the final effect of variables on behavioral intentions are depicted in Figure 3. The bootstrapping method, with sample sizes of 100 and 300, was employed to assess the significance of the path coefficient or beta (Savari and Khaleghi, 2024). The analysis revealed consistent significance in the parameters across both sample sizes, with the only variation occurring in the t-statistic values. Consequently, the hypotheses can be examined using a regression model framework. According to Figure 3, the extended TPB model accounts for 78.8% of the variance in behavioral intentions and 61.8% of the variance in farmers' behaviors. Subsequent hypothesis testing results are presented in Table 5. These findings confirm all the study's hypotheses except for H4, indicating that the direct and positive impact of perceived behavioral control on farmers' actual engagement in agritourism is not supported. Despite this, the influence of this variable on farmers' intention to participate in agritourism is both positive and significant. This suggests that while resources, knowledge, time, and opportunities positively shape farmers' intentions towards agritourism, these factors alone do not directly translate into actual behavior in this domain.

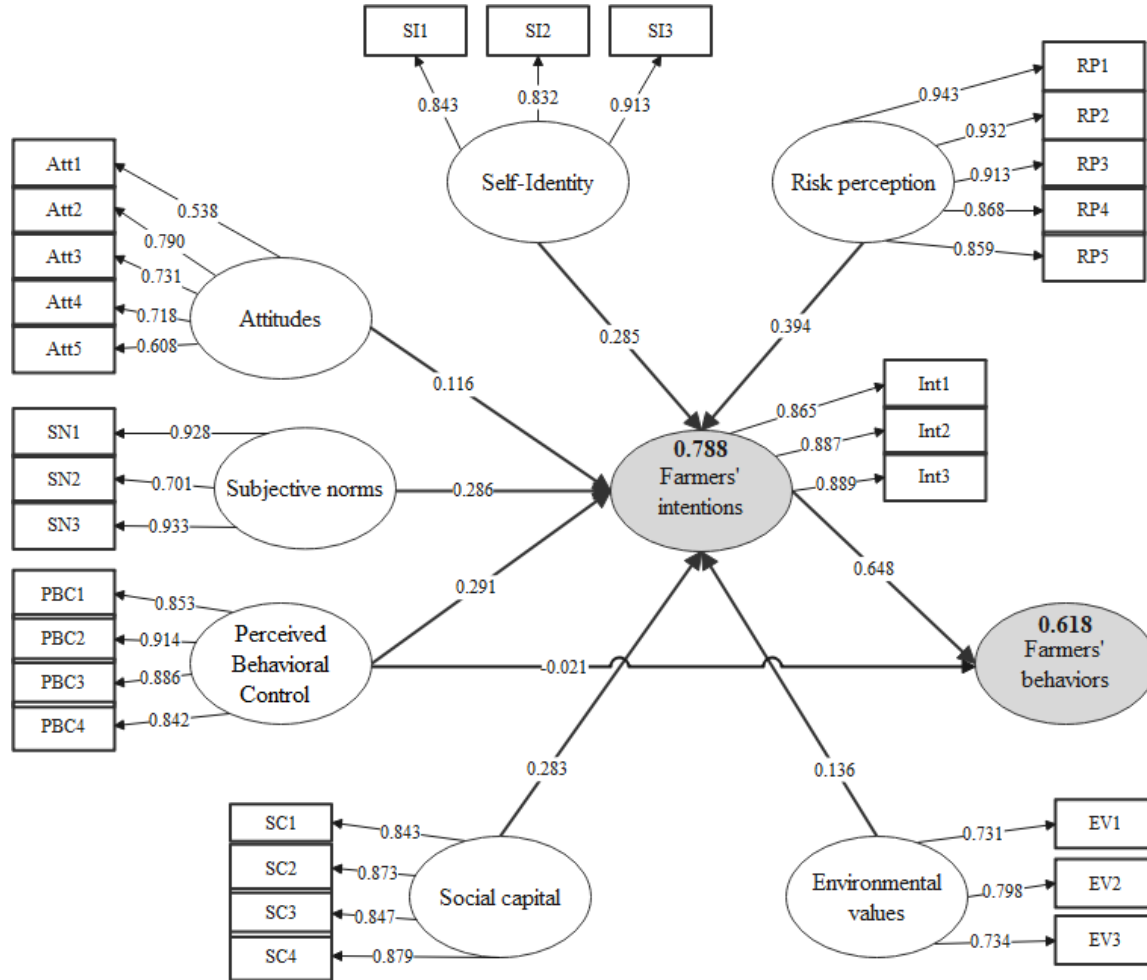


Figure 3. Results of the final effect of variables on behavioural intentions.

Table 5. Results of SEM.

Hypothesis	γ	t	Result
H1: Att $\longrightarrow$ Intention	0.116	2.093	Confirm
H2: SN $\longrightarrow$ Intention	0.286	2.884	Confirm
H3: PBC $\longrightarrow$ Intention	0.291	3.063	Confirm
H4: PBC $\longrightarrow$ Behavior	-0.021	---	Reject
H5: SI $\longrightarrow$ Intention	0.285	2.830	Confirm
H6: SC $\longrightarrow$ Intention	0.283	2.725	Confirm
H7: EV $\longrightarrow$ Intention	0.136	2.214	Confirm
H8: RP $\longrightarrow$ Intention	0.394	3.713	Confirm
H9: Int $\longrightarrow$ Behavior	0.648	8.392	Confirm

Source: research findings.

The results of this research indicate that the TPB was highly effective in analyzing farmers' intentions in adopting agritourism. This is evidenced by the substantial variance explained for both intention and behavior (0.788 and 0.618 respectively), demonstrating the success of the model in assessing agritourism as a complementary activity to traditional farming practices. The

comparative analysis of studies across diverse fields such as organic agriculture, forest conservation, and rural tourism indicates that the variance figures obtained for intention and behavior using the TPB are notably high. This underscores the robustness of TPB in capturing the nuances of farmers' intentions and behaviors within these sectors.

The results of the study affirm that within the traditional TPB framework, the three elements - attitudes, subjective norms, and perceived behavioral control - exert a positive and significant influence on farmers' intentions to adopt agritourism as an adjunct to their agricultural activities. The significant effect of attitudes on farmers' behavioral intentions suggests that farmers with positive attitudes towards agritourism activities are more likely to engage in them. In most TPB studies related to rural tourism, the importance of the effect of attitude on behavioral intention has been demonstrated (Zhang and Chen, 2020; Zhao et al., 2022; Chen et al., 2023). For example, the study by Joo et al. (2020) concluded that the attitude factor had no significant effect and the two factors of subjective norms and perceived behavioral control had a significant effect on people's intention to benefit from sustainable rural tourism. The concept of subjective norms is about how a person perceives the views of significant others - such as family and friends - about whether they should or shouldn't perform a certain action. This suggests that if key people in a farmer's rural community have a positive view of agritourism, this may increase the farmer's willingness to engage in such activities. The influence of this factor on intention has been consistently validated in studies related to the Theory of Planned Behavior in various fields, as seen in the works of Rezaei et al. (2019), Savari and Gharechae (2020), and Savari and Khaleghi (2024). Rural tourism studies have concluded that this factor has a significant impact on the behavioral intentions of tourists and local hosts (Zhao et al., 2022, Chen et al., 2023).

The importance of perceived behavioral control reflects the fact that people with greater self-confidence who believe they are capable of undertaking agritourism activities are more likely to do so. This finding is consistent with the results of studies conducted by Gao et al. (2017), Hu et al. (2018), and Savari et al. (2023) in different areas. In contrast, Zhao et al. (2022) reported a different result, where perceived behavioral control did not significantly affect tourists' intentions to engage in agritourism. Broadly speaking, the influence of the three core factors identified by the traditional TPB - attitudes, subjective norms and perceived behavioral control - has been confirmed in studies across multiple tourism sectors, including general tourism, mountain tourism

(Hu et al., 2019), cycling tourism (Han et al., 2017), volunteer tourism (Lee & Lina Kim, 2018), medical tourism (Boguszewicz-Kreft et al., 2020) and rural tourism (Chen et al., 2023).

In this study, in addition to the traditional TPB structures, four new structures were added to this model, including self-identity, social capital, environmental values and risk perception, as well as positive and significant effects on farmers' behavioral intentions to adopt agritourism as a complementary activity. The significant role of self-identity in farmers' behavioral intentions to adopt rural tourism was demonstrated in the study by Cao et al. (2021). This finding indicates that if agritourism is not valued and is perceived as a low-status profession, it can deter farmers from engaging in agritourism activities. Given that the intention to adopt agritourism as a complementary activity to agriculture is collectivist in nature, the social capital factor should be assessed to gain a comprehensive understanding of farmers' decision-making processes (Cao et al., 2021).

The results indicate that interaction and social trust, including interpersonal relationships between farmers (farm owners) and between farmers and tourists, may significantly influence farmers' behavioral intentions to adopt agritourism. The effectiveness of social capital in explaining behavioral intentions related to the adoption of environmental activities has been demonstrated in various studies (Cao et al., 2021). According to the obtained results, the importance of environmental values in influencing farmers' intentions to engage in agritourism activities can be confirmed. This finding suggests that farmers' belief in agritourism as an environmentally friendly activity can lead to the expansion of agritourism, as demonstrated in the study by Zhao et al. (2022). Additionally, the results indicated that the most significant factor influencing farmers' behavioral intentions to adopt agritourism activities is the fear of the future of agricultural activities or the perception of future risk. The importance of the risk perception variable in enhancing the predictive power of the TPB model has also been demonstrated in the studies by Yazdanpanah et al. (2014) and Savari & Gharechae (2020).

CONCLUSIONS

Farmers often seek additional and sustainable income sources due to agriculture's heavy reliance on water resources and weather conditions. Agritourism offers a solution by providing tourists with authentic agricultural experiences, creating employment opportunities, improving local infrastructure, and generating sustainable income for farmers. This study utilizes the Theory of

Planned Behavior (TPB), enhanced by incorporating four new constructs—self-identity, social capital, environmental values, and risk perception—to analyze farmers' intentions and behaviors in adopting agritourism as a complementary activity to traditional farming. The results revealed that all examined factors significantly influenced farmers' behavioral intentions. Traditional TPB factors—attitudes, subjective norms, and perceived behavioral control—were found to increase the likelihood of agritourism adoption. Therefore, implementing effective promotional policies to foster positive attitudes among farmers and key agricultural stakeholders is essential. Additionally, information and educational programs are crucial to boosting farmers' self-confidence in undertaking rural tourism activities.

The study also highlighted the importance of self-identity, emphasizing the need for acculturation to position agritourism as a professional and valuable activity. Social capital was identified as vital for expanding agritourism, with social networks, media, conferences, and rural cooperatives playing key roles in fostering farmer-tourist interactions. Environmental values were another critical factor, underscoring the role of environmental institutions in helping farmers appreciate these values. Finally, the study found that farmers' awareness of agricultural risks—such as water scarcity, climate change, price fluctuations, and pests—was the most significant factor driving agritourism adoption. Policymakers should recognize these risks and create conditions to expand complementary activities like agritourism through appropriate incentives and support tools.

Despite its important contributions, this research has several limitations that should be considered: (i) The study was conducted in five villages in Marvdasht County, Fars Province. The findings may not be generalizable to other regions with different cultural, economic, or environmental contexts. Future studies should expand the geographical scope to include diverse regions to confirm the findings. (ii) The sample size may not fully reflect the diversity of farmers in the region, especially farmers with different levels of agricultural potential, types of production, and socioeconomic backgrounds. A larger and more diverse sample could provide stronger insights. (iii) While the expanded TPB model included additional variables such as personal identity, social capital, and environmental values, other potentially influential factors such as financial constraints, market access, or government policies were not explored. Future research should consider combining these variables to provide a more comprehensive understanding. (IV) This study used a cross-sectional design, which limits the ability to infer causality or observe changes in farmers'

intentions and behavior over time. Longitudinal studies could provide deeper insights into the dynamics of behavioral change. (V) The study is strongly influenced by the cultural and social norms of the region, which may not apply in other cultural settings. Comparative studies in different cultural contexts can help identify global versus context-specific factors influencing the acceptance of agritourism.

Future research should replicate this study in diverse regions, both within Iran and internationally, to assess the generalizability of the findings and identify region-specific factors influencing agritourism adoption. Additionally, exploring variables such as financial incentives, market access, government policies, and technological advancements could deepen the understanding of their role in shaping farmers' intentions and behaviors. Combining quantitative methods with qualitative approaches, such as interviews and focus groups, would offer richer insights into farmers' motivations, challenges, and perceptions regarding agritourism. Furthermore, comparing farmers' intentions and behaviors across different cultural, economic, and environmental contexts could help identify universal drivers and barriers to adoption. Future studies could also evaluate the effectiveness of specific policies, incentives, and training programs in promoting agritourism, providing evidence-based recommendations for policymakers. While the study emphasizes environmental values, further research could specifically examine the environmental impacts of agritourism activities and their alignment with sustainable development goals. Exploring how farmers perceive risks associated with traditional farming versus agritourism could also yield valuable insights into decision-making processes and barriers to adoption. Moreover, investigating the role of collaboration among farmers, local communities, and government agencies could enhance efforts to promote and sustain agritourism. Finally, examining the role of digital tools and platforms, such as online marketing and virtual tours, could provide innovative strategies for engaging farmers and attracting tourists. By addressing these limitations and pursuing these research directions, scholars can contribute to a more comprehensive understanding of agritourism as a sustainable complement to traditional farming.

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Appendix

Table A1. Research measurement concepts and variables.

Constructs	Measurement items	Sources
Attitudes	- Engaging in agritourism as a complementary activity to agriculture increases my income. - Engaging in agritourism as a complementary activity to agriculture increases my employment opportunities. - Engaging in agritourism as a complementary activity to agriculture increases my life skill. - Engaging in agritourism as a complementary activity to agriculture improves rural infrastructure - Engaging in agritourism as a complementary activity to agriculture improves the variety of products	Wang et al. (2022) Togaymurodov et al. (2023)
Subjective norms	- If I engaging in agritourism as a complementary activity to agriculture, my friends, relatives and neighbors will approve my work. - If I engaging in agritourism as a complementary activity to agriculture, the people who are important to me will approve my work. - If I engaging in agritourism as a complementary activity to agriculture, the society will approve my work.	Han et al. (2010) Azarm et al. (2022) Zhao et al. (2022) Savari and Khaleghi (2024)
Perceived behavior control	- My farm has the necessary facilities for agritourism. - I have the time, opportunity and financial resources to engage in agritourism. - I have the knowledge, and ability to engage in agritourism. - If I want, I can engage in agritourism.	Han et al. (2010) Wang et al. (2022) Zhao et al. (2022) Savari and Khaleghi (2024)
Self-identity	- I think of myself as a person interested in tourism. - To practice new activities such as agritourism is an important part of who I am. - I think of myself as a person who cares about agritourism.	Yazdanpanah and Forouzani (2015) Cao et al. (2021)
Social capital	- I am very attached to visitors from my farm (Emotional bonding). - I feel visiting my farm is part of my life (Emotional bonding). - I trust visitors from my farm (Interpersonal trust). - I believe that my involvement in agritourism will encourage other residents to do the same (Interpersonal trust).	Li and Wu (2020) Cao et al. (2022)
Environmental values	- I believe that agritourism will have positive impacts on the environment. - I believe that agritourism will play a significant role in preserving the natural environment. - I believe that agritourism will increase green and organic products.	Zhao et al. (2022)
Risk perception	- The persistence of traditional farming practices without generating supplementary income amplifies the strain on resources, particularly water. - The absence of additional income from traditional agricultural activities jeopardizes the livelihoods and economy of farmers. - Continuation of traditional agricultural practices without generating extra income leads to an increase in farmer migration. - The absence of supplementary income from traditional agricultural activities poses a threat to food security. - The agricultural sector faces a dual threat from climate change and impending drought.	Bozorgparvar et al. (2018) Savari and Khaleghi (2024)
Intentions	- I'd like to undertake agritourism as a complementary activity to agriculture. - I'd like to engage in agritourism as a complementary activity to agriculture with my family. - I plan to engage in agritourism as a complementary activity to agriculture.	Yazdanpanah and Forouzani (2015) Zhao et al. (2022)
Behavior	I participate in agritourism activities to adapt to the current conditions.	de Araújo et al. (2024)

Source: research findings.

تحلیل نیات و رفتار کشاورزان نسبت به گردشگری کشاورزی به عنوان یک فعالیت مکمل کشاورزی

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چکیده

کشاورزی سنتی به دلیل تغییرات اقلیمی، کمبود آب و تهدیدات زیست محیطی، اجتماعی و اقتصادی با چالش‌های قابل توجهی برای دستیابی به توسعه پایدار مواجه است. اتخاذ فعالیت‌های تکمیلی مانند گردشگری کشاورزی می‌تواند به رفع این چالش‌ها و ارتقای توسعه پایدار روستا کمک کند. این مطالعه به بررسی نیات رفتاری کشاورزان و تمایل آنها به مشارکت در گردشگری کشاورزی به عنوان یک فعالیت تکمیلی می‌پردازد. داده‌ها از طریق پرسشنامه با استفاده از نمونه‌گیری تصادفی طبقه‌ای با انتساب متناسب از کشاورزان پنج روستای متنوع کشاورزی شهرستان مرودشت استان فارس جمع‌آوری شد. داده‌ها با استفاده از تئوری توسعه یافته رفتار برنامه‌ریزی شده (TPB)، که 78/8 درصد از نیات رفتاری کشاورزان و 61/8 درصد از رفتار واقعی آنها را توضیح می‌دهد، تجزیه و تحلیل شد. نتایج نشان می‌دهد که نگرش‌ها، هنجارهای ذهنی و کنترل رفتاری درک شده به عنوان سازه‌های سنتی TPB، به طور قابل توجهی بر قصد کشاورزان برای پذیرش گردشگری کشاورزی تأثیر می‌گذارند. علاوه بر این، هویت شخصی، سرمایه اجتماعی، ارزش‌های محیطی و درک ریسک کشاورز، قدرت پیش‌بینی نیات رفتاری کشاورزان را افزایش می‌دهد. با این حال، کنترل رفتاری درک شده به طور قابل توجهی بر رفتار واقعی کشاورزان تأثیر نمی‌گذارد، در حالی که نیات آنها قوی‌ترین تأثیر مثبت را بر پذیرش گردشگری کشاورزی داشت. این یافته‌ها نشان می‌دهد که ارتقای نگرش، باورها و اعتماد به نفس کشاورزان از طریق برنامه‌های آموزشی و اطلاع‌رسانی می‌تواند مشارکت آنها را در گردشگری کشاورزی افزایش دهد. سیاست‌گذاران باید برنامه‌های فرهنگی، مشوق‌ها و شبکه‌های اجتماعی را برای افزایش ارزش شغلی گردشگری کشاورزی و تشویق همکاری در بخش کشاورزی اجرا کنند. علاوه بر این، اقدامات باید تضمین کند که گردشگری کشاورزی با اهداف زیست محیطی همسو است و کشاورزان را در مورد خطرات شیوه‌های کشاورزی سنتی آموزش دهد. چنین تلاش‌هایی می‌تواند توسعه پایدار را تقویت کند و نقش گردشگری کشاورزی را به عنوان یک فعالیت مکمل کشاورزی سنتی تقویت کند.