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Article

Agritourism as an Alternative On-Farm Enterprise for Small U.S. Farms: Examining Factors Influencing the Agritourism Decisions of Small Farms

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Abstract: This study examines the adoption of agritourism by small farms in the U.S. Using primary survey data collected from small farms in Tennessee in 2020, we assessed adopter characteristics and investigated the factors influencing the farmers' decision to adopt or add agritourism-related activities, including recreational, educational, and touristic attractions in the farm. We found that factors such as social media marketing, smartphone use in farm activities, and having farm insurance significantly increased the likelihood of agritourism adoption in addition to other demographic factors. Additionally, we found that a farmer's perceived survival risk positively influences small farms to adopt agritourism. Small farms with survival challenges in the U.S. could consider agritourism as an enterprise to enhance their economic sustainability by utilizing touristic aspects of farming, rural landscape, and agriculture.

Keywords: American farms; small farms; agriculture; agritourism; rural; recreational; survival



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1. Introduction

Agriculture is very important for the production and distribution of food. Agriculture can contribute to improving the health and well-being of rural communities and the sustainability of the environment. The U.S. Department of Agriculture (USDA) reports that agriculture is a trillion-dollar industry in the U.S. where agriculture, food, and related industries contributed \$1.055 trillion of gross domestic products and created 19.7 million full- and part-time jobs in 2020 [1]. The production from farms contributed around \$135 billion to this total. Family farms are an indispensable part of U.S. agriculture because these account for around 98 percent of the total farms and contribute around 86 percent of total farm production [2]. Farms vary by size. The United States Department of Agriculture (USDA) defines small farms based on their annual gross farm incomes. Farms that have a gross farm income of less than \$350,000 are categorized as small family farms [2]. The Gross farm income of a farm is the revenue that is gained from farm activities of the operation. It includes but is not limited to crop and livestock sales, government payments, and other types of farm-related incomes.

Larger farms have access to more resources for production and fetch higher incomes as compared to smaller farms. Smaller farms are disadvantaged by their limited access to capital, assets, and credit [3]. Furthermore, they face difficulties meeting their agricultural spending and expenses [4]. However, their difficulties do not diminish their importance. It is very important that farms of a smaller size remain in operation to cater to customers, feed populations, and provide support to local and surrounding communities.

Agritourism can be described as a broad set of activities that attracts tourists to a farm [5] and is considered as a form of commercial enterprise linking agriculture with tourism. The 2017 Census of Agriculture in the U.S. has collected data from farms, including those with agritourism and recreational services, defining agritourism and recreational

services as “hunting, fishing, farm or wine tours, hayrides, etc.”. Adopting agritourism activities on the farm can bring additional financial opportunities to a small farm, which include an increase in generated income and a greater return on farm assets [6]. Pick-your-own fruits and vegetables, festivals, and educational events are a few examples of the activities [5]. Furthermore, agritourism can complement traditional and organic farming with the enhancement of conservation and the environment [7]. Based on previous research, agritourism can help the longevity of farms in need of financial stability. [8] found that participation in agritourism could provide households greater earnings from their small farm. Buildings, excess land, etc., can potentially be utilized for diversifying a farm with agritourism [9]. Nevertheless, agritourism can be one of the most feasible strategies to enhance the survival rate for small farms. It is very important that small farms survive and succeed financially. Due to a lack of resources in comparison to large farms, operators of small farms must find ways to keep their farms in business.

Tennessee is one of the important states for agriculture where farming dominates the State’s landscape covering 10.8 million acres. Around 40% of the State’s land is occupied by farms and farming. The U.S. Census of Agriculture of 2017 reports that Tennessee farms earned around \$16 million from sales of value-added agricultural products. Cattle and calf, soybeans, broilers, nursery crops, and corn are the main commodities produced in Tennessee [10]. An estimate of agricultural cash receipts in 2020 in Tennessee is shown around \$3.7 billion [11]. Considering Tennessee’s focus, location, and agriculture and tourism industry perspectives, Tennessee has high scope for agritourism. Recent data and findings suggest that agritourism operations have increased in the U.S. and in Tennessee [8,12,13]. Khanal et al. (2020) conducted research on structural factors from county-level data and spatial analysis of agritourism in Tennessee. However, a micro-level analysis analyzing farm households’ adoption decisions has been scarce. Our study aims to contribute to this limited literature on agritourism research in Tennessee and in the US.

Multiple factors can influence a farm operator (farmer)’s decision to adopt agritourism. Examples of these factors consist of but are not limited to demographic, educational, cultural, and economic factors. Farms and farm operators vary in characteristics, and operators can succeed by putting their focus on the advantages of their specific operation. Agritourism could be one of the viable on-farm strategies for the stable income of small Tennessee farms. In this context, the purpose of our study is twofold. First, to assess the characteristics and attributes of agritourism adopting small farms in Tennessee. Comparative statistics of adopter farms and non-adopter farms provide an insight into research and outreach priorities for programs aiming to promote agritourism. Second, to estimate the decision model and analyze the factors that influence farm households’ decisions to adopt agritourism. With an appropriate econometric model and statistical tests, the farm operator’s adoption decision model identifies significant factors and their relationship with adoption. We used primary survey data collected from a sample of small farms in Tennessee to assess and estimate these aspects.

2. Literature Review

2.1. Resources among Small Farms

It is important for farmers to be aware of the resources in their agricultural enterprise. Some resources on these establishments consist of farm and field spaces, land, buildings, historical attractions, farm equipment and machinery, farmhouses, and pastures [9]. Bagi and Reeder (2012) acknowledged that the location of a farm, amidst additional factors, is important to attract tourists to the operation [9]. Bagi and Reeder (2012) also noted that an abundance of land could be capitalized and made use of for agritourism activities [9]. Barbieri and Tew (2012) noted that there are many organizations willing to build a partnership; with small farms, which has great potential providing an expansion to the farm within the community in which the establishment resides [14]. Capitalizing on the potential of tourism on the farm will give more individuals in the population an opportunity to be aware of the farm and become an agritourist on the establishment [14]. Khanal and Omobitan

(2020) used primary survey data of small farms in Tennessee by highlighting the need for farmers to have access to capital and resources to be able to receive an increased amount of gross farm income. Khanal and Omobitan (2020) acknowledged that a farmer's access to credit and capital could lead to improved performance and an increased income for small farmers [12]. Hoppe et al. (2010) noted that the lack of resources that are available for small farms causes them to struggle financially [15]. Therefore, many small farm operators are interested in diversifying their farm operations or gaining employment external to their farms to supersede their financial losses [15,16].

2.2. Income Generation Challenges and Opportunities for Small U.S. Farms

Financial opportunities can differ between businesses. Literature supports that smaller farms have challenges in finding ways to make additional profits and gain the viability of their agricultural operations [17]. Hoppe et al. (2010) noted that the instability of their finances and the aging of the farm operators have resulted in agricultural production being shifted to larger farms [15]. Many operators of small farms have off-farm employment due to the financial losses on their agricultural operation [15]. Greater financial gains can improve the stability and longevity of a small farm [6]. Kumar and Kumar (2018) expressed that a large amount of family labor on a farm has the potential to reduce the costs of cultivation, which can stabilize the operation [6]. Kumar and Kumar (2018) also noted that agritourism could increase the return on the assets on a farm [6]. Some farmers have off-farm obligations, and their farm is not their primary source of income [18]. Di Domenico and Miller (2012) noted that the farm operators who use their agricultural enterprise as a means of secondary income tend not to invest their money in agritourism activities [18]. However, those who used their farm as their primary source of income tend to invest their time and money into agritourism activities on their enterprise.

2.3. The Shift of Agricultural Production in the U.S.

Small and large farms differ from each other in terms of their characteristics and output rate of production. Hoppe et al. (2010) noted that throughout history, agricultural production has been shifting to larger agricultural operations [15]. The shift has caused larger farms to have a competitive advantage over small farms since the average cost of production lessens as an operation grows. Many of the elderly who operate small farms are retiring from the farming business as they continue to grow older, as noted by Hoppe and MacDonald (2016) [16]. Hoppe and MacDonald (2016) expressed that during 1961, small and non-family farms were responsible for 46 percent of agricultural production in the United States [16]. By the year 2015, small farm production decreased to under 25 percent, and 90 percent of United States farms were small, family operations with a gross farm income of below \$350,000 [16]. Only a small number of farms in the United States, approximately 2.9 percent, were considered large farms at that time, which had an annual gross farm income of \$1 million or greater. However, Hoppe and MacDonald (2016) acknowledged that those farms were only responsible for 42% of agricultural production in the country for that year [16]. Non-family-operated farms were responsible for approximately 22 percent of the total production. The production shift has significantly burdened small farms. Due to this comparative disadvantage, small farm operators may decide to incorporate agricultural innovations that enhance and diversify their operation by making additional investments on the land they have available on their farms.

2.4. Review of Factors Related to Agritourism in the U.S. and Roles in Community Development

Diversifying the revenue base is important for the longevity of the enterprise. Since small farms are disadvantaged by the shift in agricultural production, many small farm operations are interested in alternative on-farm enterprises on their farm. Khanal and Mishra (2014) acknowledged that small farms have a greater survival risk and suggested the adoption of risk management strategies to enhance the longevity of their enterprises [17]. However, there are numerous factors that affect the addition or adoption of enterprise,

such as agritourism. Characteristics of the farm and farm operator, situation, and location could affect the decision. Khanal et al. (2020) found that rural, demographic, educational, cultural, and economic-related factors affect the agritourism establishment and location decisions [12]. Joo et al. (2014) noted that farmers whose primary source of income came from their agricultural operation had a greater chance of diversifying their farm's income [8]. Khanal et al. (2019) found that the decision to adopt agritourism could be interlinked with other complementary or competitive production and strategic decisions such as organic farming and the adoption of agri-environmental practices [7]. The financial position of a farm, the number of acres, type of farm, and location plays a role in determining simultaneous decisions of diversification strategies [7]. Moreover, information access and exposure to quick communication and networks could be important for agritourism. In that, Bagi and Reeder (2012) found a significant positive effect of internet access on agritourism adoption [9].

Di Domenico and Miller (2012) noted that a well-known presence of agritourism could enhance the tourism market within communities [18]. An increase in agricultural tourism can help customers become educated on aspects of agriculture [18]. Pilar et al. (2012) noted that goods, services, and activities of agritourism could provide considerable benefit to a community, as it will also gain a customer's trust [19]. These types of activities and benefits can lead to numerous opportunities. Building a successful network within a community through the activities such as agritourism can increase the awareness of the agricultural enterprise in the area. Barberi and Mshenga (2008) noted that diversifying a farm can cause an increase in entrepreneurship, which has great potential to attract more visitors [20]. The community will be able to experience and appreciate the perks of the business [21]. Customers will benefit, and the farm will be a trusted area for tourism with activities for all ages of people [21].

2.5. Review of Agritourism Research Outside the US, Insight into Motivations for Agritourism

Agritourism development and research is relatively a recent addition to American agriculture, as compared to European countries. Scholars have noted a relatively long history of rural development contribution through agritourism and relevant policy discussions in European and other countries, including the United Kingdom, Belgium, Australia, Italy, and Japan [22–28]. Multifaceted aspects of agritourism have been discussed, including rural and mountain tourism [29] and in connection with the aspects of natural resources, cultural heritage, and diversity [30,31], culinary tourism [32], local food and wine marketing with farm tourism [33]. Overall, the studies have discussed behavioral and socio-psychological motivations [34], economic and social motivations including incentives with income streams and entrepreneurship [35], family-centered motivations for diversification [36], 'income inducing' and/or 'expense-reducing motives [37], farm continuation, family well-being, and market diversification motives [21] in agritourism. In addition to demographic and socio-economic factors, studies have also highlighted the significant roles of networks, use of social media and digital marketing, and mobile applications in tourism and agritourism in recent years [33,38].

3. Methodology

3.1. Sampling, Survey, and Data Collection

Tennessee was the area of study for this research. The leading agricultural commodities in the State of Tennessee are cattle/calves, broilers/milk, soybeans, corn, hay, wheat, cotton, tobacco, and various fruits and vegetables. Tennessee has three regions: east, middle, and west, holding a total of 69,500 farms with 1.7 million acres operated [39]. Around 41% of the land in Tennessee is farm land [40].

A structured questionnaire that consisted of 45 questions was developed to determine factors that influence the participation of agritourism in the State of Tennessee. It was constructed to capture the factors that influence agritourism adoption. It consisted of Tennessee farms that were categorized into three sections. Section 1 was Farm Production

and Agricultural Activities, Section 2 was Household Information and Farm Finances, and Section 3 consisted of Best Management Practices.

A database of agricultural producers and agritourism operations in Tennessee were maintained in an Excel spreadsheet containing emails, phone numbers, and addresses using the farm/producer database maintained by Pick Tennessee and Tennessee Agritourism Association, in collaboration with Tennessee Department of Agriculture. An online survey questionnaire was created using Qualtrics software. A link to the survey was developed and sent through email that was targeted to the small farmers of Tennessee. The email with the survey link was sent to 1139 farmers without duplications, representing east, middle, and west regions of Tennessee. Regarding the regional division of Tennessee and counties, east region consists of 33 counties including Knoxville city, middle region consists of 41 counties including Nashville city, and west region consists of 21 counties including Memphis city. State-wide agricultural and co-operative extension programs have been targeted to counties covering all these three regions [41]. To enhance response rate to our survey, a reminder was emailed to the recipients after approximately two weeks after the initial email. Around 7–10 days after the first reminder, a second reminder was sent out. We received a total of 160 responses after initial email and reminder, which is around 14% response rate. However, avoiding missing and incomplete responses, only 130 observations were used in in-depth statistical analysis using regression models.

3.2. Conceptual Framework

Incorporating microeconomic theory helps conceptualize reasoning to why small farms would diversify their farm with agritourism activities. A small farm household derives the utility through on-farms and off-farms incomes generated [18]. As an alternative enterprise, agritourism contributes to on-farm incomes and generates additional income resources and stabilizes the farm incomes of the small farm households. Farm household aims to maximize this utility of stable income enabled by agritourism adoption. Financial satisfaction may vary between farmers. One's satisfaction level may lead them to decide to take part in agritourism. If a farmer prefers and highly values earning revenues from off-farm wages and salaries as opposed to on-farm activities, s/he may be less likely to participate in agritourism [18]. However, some farmers are dedicated to their on-farm operations and are interested in finding ways to maximize their income on their operations. Those individuals are more likely to add agritourism to their enterprise and find it as a motivating factor to remain and continue farming operations. They are aware that their small farm would have a greater opportunity to develop and remain financially stable [16]. Adding agritourism to their small farm could enhance the probability of greater revenues and incomes and could support continuation of the agricultural operation. With this conceptual framework and assumption, we are interested in testing a series of hypotheses (es) regarding the role of different factors in shaping the small farm operator's decisions to adopt agritourism in their farm operation. For example (H_0 denoting null hypothesis); H_0 : farm operator's off-farm work hours do not affect agritourism participation decisions, H_0 : farm operator's education level does not affect agritourism participation decision, H_0 : farm operator's perceived higher survival risk does not affect agritourism participation decision. Note that the significance of the indicated factor in statistical test would reject the respective null hypothesis and indicate the significant effect of that factor in decision model. In the next econometric method section, we have represented generic expression of this decision model defined as multiple regression.

3.3. Econometric Method

Econometric methods are utilized to analyze the factors that influence a small farmer's decision to participate in agritourism activities. In a multiple regression representation assuming multiple factors shaping the decision to adopt agritourism, we can show model

representing y (a decision to adopt agritourism) as a function of a set of explanatory variables ($X_1, X_2, X_3, \dots, X_n$).

$$y = f(X_1, X_2, X_3, \dots, X_n)$$

Decision to adopt agritourism in their farm operation is a “yes” or “no” decision, which is numerically represented as a binary 1 or 0 outcome. For this outcome, our interest is to find the probability of adoption decision (probability of 1 outcome over the base 0 outcome). We observed the outcome in non-linear 1 or 0 values but assume that this observed binary outcome has an underlying latent continuous variable y^* determined by a set of variables (factors) such that:

$$y = \begin{cases} 1 & \text{if } y^* > 0 \\ 0 & \text{if } y^* \leq 0 \end{cases}$$

In this set-up of non-linear binary outcome, a probit regression appropriately defines the decision model than estimating it through linear regression [42,43]. The probit regression estimates the likelihood that the value will fit into one of the binary outcomes by making use of the maximum likelihood method and assuming standard normal distribution of the error terms [3,42,43]. We have estimated marginal effect of each independent variable which shows how the value of dependent variable (probability of adoption) changes with one-unit change in the respective independent variable. We have discussed this relationship in detail in the results section.

4. Results and Discussion

4.1. Summary Statistics

Table 1 shows the summary statistics of the variables used in this study. Out of the sample of small farmers, 60% of them participated in agritourism, 60 years old was the average age of the sample, and 21% of them were female. On average, the farm household has around 76 acres of land. Among sampled farm households, 68% used social media to market their agricultural business, 82 percent of them had a smartphone with internet access, and 43% of them had off-farm employment. The average farm household consisted of three individuals. Additionally, 47% of the sampled farm households hired people to work on their enterprise, and 76% had farm insurance for their farm operation. Lastly, the risk variable we included is a farmer’s perceived risk related to survival and continuation of their farm operation on a scale of one to five. The risk variable averaged around three on the scale of one to five (5 riskiest) indicates that our sampled farmers, on average, perceived a moderate level of survival risk of their farm operation (Table 1).

Table 1. Summary statistics of the explanatory variables.

Variable	Variable Definition	Mean	Std. Dev
Agritourism (Dependent variable)	Dummy, = 1 if farmer participates in agritourism, else = 0	0.604	0.491
Age of operator	Continuous, in years	59.957	12.472
Education of operator	Continuous, in number of years in formal education	14.604	4.552
Female	Dummy, = 1 if farmer is female, else = 0	0.209	0.408
Land acreage holding	Continuous, in number of acres held by operator	76.374	61.439
Social media marketing	Dummy, = 1 if farmer uses social media for marketing, else = 0	0.676	0.470
Smartphone	Dummy, = 1 if farmer has a smartphone with internet access, else = 0	0.820	0.385
Off-farm work	Dummy, = 1 if farmer has additional employment external to the farm, else = 0	0.432	0.497
Household size	Continuous, in number of people in household	3.165	1.755
Hired labor	Dummy, = 1 if farmer has hired labor on the farm, else = 0	0.475	0.501
Farm insurance	Dummy, = 1 if farmer has farm insurance, else = 0	0.755	0.431
Perceived Risk	Farmer’s perception about how risky their farm operation is to survive/continue (scale of 1 to 5, 5 being riskiest)	2.898	0.974

4.2. Location and Gender-Based Comparatives of Agritourism Participating Farms

Table 2 shows the distribution of agritourism participant farms based on location and gender. The highest proportion (55.4%) of agritourism farms are located in middle Tennessee, followed by East Tennessee (28.9%) and West Tennessee (15.66%). This is plausible and consistent with our expectation because middle Tennessee has metropolitan city areas Nashville (Davidson County), Murfreesboro (Rutherford County), Franklin (Williamson County), and part of Chattanooga (part of Hamilton County), which are important for touristic purposes. Regarding gender, 77% of the farm operator of agritourism farms were male. This indicates that there is a scope for the support programs to encourage female entrepreneurs in agritourism.

Table 2. Location and gender-based description of agritourism participating farms.

Agritourism Participating Farms	
East Tennessee	28.9%
Middle Tennessee	55.4%
West Tennessee	15.66%
Principal Operator: Male	77.38%
Principal Operator: Female	22.62%

4.3. Assessing the Characteristics of Agritourism Participant Farms: Mean Comparison Test

We assess the characteristics of agritourism farms and farm operators in comparison with non-agritourism farm characteristics. Table 3 shows the characteristics (attributes) used for comparison, respective means of two groups across each of the characteristics and attributes, and *t*-test results. An independent *t*-test is used to compare the means of two groups—agritourism farms and non-agritourism farms. Results show that agritourism farms and operators have significantly higher computer use for farm-related activities and significantly higher social media use for farm activities. Furthermore, the agritourism farm operators had access to smartphones with the internet, were less involved in off-farm works, had insurance for the operation, and had hired laborers to work on their farm operations and activities (Table 3). Other interesting characteristics such as farm asset holdings, household income, and use of family labor were higher for agritourism farms, but the means were not statistically significantly different.

Table 3. Mean comparison and test of agritourism and non-agritourism farms.

Characteristics	Mean		<i>t</i> -Statistics
	Non-Agritourism Farms	Agritourism Farms	
Age of operator	60.31 ^a	59.73 ^a	0.28
Education of operator	14.04 ^a	14.98 ^a	0.66
Gender (Female)	0.19 ^a	0.23 ^a	0.72
Race (operator is White race)	0.81 ^a	0.91 ^a	1.53
Household income	160,000 ^a	263,095 ^a	0.99
Farm Assets	1,850,909 ^a	2,403,571 ^a	1.10
Land acreage holding	83.40 ^a	71.77 ^a	1.09
Computer use	0.75 ^a	0.86 ^b	1.67 *
Social media marketing	0.56 ^a	0.75 ^b	2.32 **
Smartphone	0.73 ^a	0.89 ^b	2.34 **
Off-farm work	0.51 ^a	0.37 ^b	1.66 *
Household size	3.35 ^a	3.05 ^a	0.97
Hired labor	0.27 ^a	0.61 ^b	4.06 **
Family labor	0.75 ^a	0.83 ^a	1.27
Farm insurance	0.582 ^a	0.869 ^b	4.05 **

Same alphabet notation in means (^a, ^a) denotes group means are not statistically significantly different, different alphabet notation in means (^a, ^b) denotes group means are not statistically significantly different; * significance at 10% or below, ** significance at 5% or higher level.

4.4. Model Estimation Results for Factors Influencing Agritourism Adoption

Table 4 shows the results of the agritourism adoption decision model estimated using a probit regression analysis. It shows factors influencing the decision. Our choice of these independent variables to test the relationship is based on our comprehensive literature review on previous studies and the availability of those in our data set. As shown in the literature review section, we particularly reviewed the variables and motivational factors discussed in previous agritourism-related studies in the U.S. and outside to define a set of independent variables that fit in our context. Significant symbols (* and **) represent a statistically significant relationship between the dependent and independent variables at 10% and 5% or higher levels of significance, respectively. Chi-square statistics of 43.61 and its p -value of 0.0000 represent our overall model significance. A Pseudo-R-Square value of 0.26, a relatively higher R-square for the non-linear model such as probit, displays that our variables chosen in the model have around 26% explanatory power for predicting decision and indicate a good model fit.

Table 4. Probit regression estimates of factors influencing agritourism decisions.

Variables	Coefficient	Std. Err.	p -Value	Marginal Effects (dy/dx)
Age of operator	−0.184	0.152	0.23	−0.007
Education of operator	0.017	0.040	0.66	0.007
Female	0.121	0.338	0.72	0.044
Land acreage holding	−0.004	0.002	0.13	−0.001
Social media marketing	0.586	0.297	0.06 *	0.224
Smartphone	0.910	0.080	0.04 **	0.351
Off-farm work	−0.484	0.297	0.10 *	−0.179
Household size	−0.084	0.080	0.30	−0.031
Hired labor	0.751	0.297	0.01 **	0.274
Farm insurance	0.56	0.359	0.02 **	0.329
Risk	0.298	0.153	0.05 **	0.112
Constant	−01.17	1.284	0.34	
Number of Obs = 127	Prob > chi ² = 0.0000			
LR chi ² (11) = 43.61	Psuedo R ² = 0.2575			

** $p > 0.05$, * $p < 0.10$.

The results show that social media marketing was significant at the 10% level, and it increases the chances of agritourism participation. A farm operator who uses social media platforms for marketing has a greater chance of adopting agritourism activities on their farm. This variable had a marginal effect of 0.22, and that suggests that farm operators who do their marketing using social media have approximately a 22% greater chance of adopting agritourism. This is understandable because social media user farm operators are expected to be aware of more recent farm and market-related information as well as recent marketing tactics as compared to non-users. It can be considered as a strong predictor of quick information share and marketing in now-a-day agricultural businesses. The use of social media helps to market and advertise the agritourism destination, perhaps allowing visitors to know and access information quickly. The use of social media such as Facebook, Instagram, Skype helps to communicate and advertise to a broader customer. Ingrassia et al. (2022) has documented a significant role of the use of the social media platform Instagram in influencer marketing of local food and wine tourism [33].

Smartphone use in agricultural activities is significant at a 5% level, which suggests that smartphone use with internet access increases the chances of agritourism participation. The marginal effect shows that farm operators with this variable have a 35% greater chance to adopt agritourism on their farms than those who do not. It is consistent with the findings of Bagi and Reeder (2012), who noted that internet access had a positive/significant relationship with agritourism participation [9]. Moreover, Ingrassia et al. (2022) have discussed the digital influencer roles in tourism. Farmers with a smartphone with internet

access can be considered as the ones with quick and firsthand access to market information, networking, and quickly attaining agricultural and policy-related news.

Farm operators who have off-farm employment have less chance of adopting agritourism on their agricultural enterprise. Our marginal effect results show that operators with off-farm works are 18% less likely to adopt agritourism as compared to their counterparts who do not have off-farm works. This is plausible because the operators with off-farm works are likely to dedicate more time for off-farm works and have less time dedicated to on-farm enterprises such as agritourism. In line with our findings, Joo et al. (2013) also found that the farms whose primary income is from their farms are more likely to adopt agritourism and other farm diversification activities [8].

Hired labor factors are also positive and significant in our decision model. This indicates that farms having hired labor are more likely to participate in agritourism. The marginal effect of 0.27 suggests around 27% higher likelihood of agritourism adoption for farms with hired laborers than their counterparts. The hosting and handling of recreational activities on the farm demand some labor. Therefore, our significant positive effect of hired labor suggests that labor-abundant farms are more likely to adopt agritourism than labor constrained.

The result shows that farm operations having a farm or agricultural insurance are more likely to adopt agritourism. The farm insurance variable showed significance at 5%, and the marginal effect was 0.33. This indicates that farms having their farm insurance have around 33% higher likelihood to adopt agritourism activities than those who do not have farm insurance. It is plausible because insurance tends to increase one's feeling of safety, and it can protect a farm operator from numerous risks and uncertainties under different circumstances.

Finally, we found that the perceived risk of a farm operation significantly influences the agritourism decision. The likelihood of agritourism adoption increases with higher perceived risk. The risk variable that we used provides an indication of a farm operator's perception of the survival chances of their agricultural enterprise. With a higher survival challenge, our result suggests that the farm operator is likely to look for diversification options such as agritourism as a risk management strategy to continue their farm operations. As diversifying the income of a farm can provide financial stability to the small farm operation [17], farm operators are interested in income diversification tools for risk management. Farm operators have an interest in multiple risk management strategies [44], and perhaps they choose strategies such as agritourism to provide sustainability to the performance of their farms.

5. Conclusions

Small farms face many challenges, which have caused many farm operators to end their operation or become innovative in finding ways for longevity and success for their agricultural enterprise. Agritourism and farm diversification can financially enhance a farm operation by making additions to the business outside of standard farming practices. This study utilizes primary survey data from small farm operators in the State of Tennessee to examine the factors influencing the participation of agritourism and farm diversification. First, we use a mean comparison test to assess the characteristics of an agritourism farm as compared to a non-agritourism farm. We tested for a significant difference in group means across each attribute and characteristics of farm or farm operators. We assess the agritourism farm and farmers' characteristics that are significantly different from those of non-agritourism farms. Secondly, we estimated a decision model of agritourism participation using probit regression.

Our regression analysis tests for the significance of numerous socio-economic, demographic, and location factors influencing the agritourism decisions of small farm operations. The result shows that social media marketing, smartphone usage, off-farm work, hired labor, farm insurance, and perceived risk have a significant influence on the adoption of agritourism among small farms in Tennessee. Social media, smartphone usage, hired labor,

farm insurance, and perceived risk significantly positively influence small farm operators to adopt agritourism. On the other hand, farm operators' off-farm work negatively influenced the adoption of agritourism among small farm operations.

Our findings provide some insight into policy recommendations. Findings regarding the significance of social media marketing and smartphone usage in farm activities and farm insurance on agritourism adoption decisions indicate that these factors need to be specially considered in formulating policy aiming to promote alternative enterprises such as agritourism among small farmers. For instance, farmers using smartphones with internet access in farm-related activities tend to adopt agritourism more than those without. This suggests that enabling farmers on new tools of marketing, communication, and information access could enhance agritourism adoption. A positive effect of insurance participation on agritourism adoption suggests that programs that educate about insurance and enhance farm or agricultural insurance participation help to add agritourism activities to the farm. Additionally, the outreach and support programs should be targeted and prioritized to small farms facing survival challenges to enable them to adopt agritourism and enhance their economic sustainability.

Since the amount of research conducted on small farms and tourism interfaces in the U.S. and in Tennessee is still limited, there needs to be more research conducted on this interface. It is important for small farms to find ways to survive. This study puts the perspective of additions of agritourism in small farms to develop it as a feasible alternative profitable enterprise. This research study can be utilized as a part of a foundation for agricultural and tourism studies for small farms in the future, including research and outreach activities and deriving policy-level inferences. Finally, we want to acknowledge some limitations. First, our analysis is based on a sample of farms in Tennessee using a specific maintained database of farmers/growers. Data capturing multiple states or national levels could provide better inferences and estimates. Second, we looked at the adoption or non-adoption decision in this study but did not examine specifics of adoption, such as the extent of adoption, seasonality, and nature of the activity/business, and whether the adoption decision has impacts resulting in higher economic performance or sustained incomes. The impact of the adoption on a farm's performance could be the subject of future studies.

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