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ECONOMIC VALUATION AND THE DETERMINANTS OF DEMAND FACTORS OF BANDUNG STRAWBERRY AGROTOURISM, WEST JAVA, INDONESIA

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Abstract: Strawberry agrotourism is the most extensive strawberry farming in Bandung, West Java. This agrotourism has the potential for nature, tourism, conservation, and regional economic potential. This research aims to identify the characteristics and assessment of visitors, identify factors influencing tourism demand, and estimate the value of the agrotourism economy. The economic value is analyzed using the method of TCM (Travel Cost Method). This method is calculated based on total consumer surplus, travel cost coefficient, and respondent visits. The average travel cost incurred by 379 respondents during the trip is IDR. 413,699, and the total cost of the entire journey is IDR.156,792,000. The surplus of consumer visits is IDR. 12,670, and the individual consumer surplus visits are IDR.33. The economic value generated for one year is IDR. 237,600. The factors that influence the demand are income, distance, and time to know the location. At the same time, the factors that do not affect the market are travel cost, education, number of dependents in the family, gender, and age of visitors.

Key words: Agrotourism, Economic Value, Travel Cost Method (TCM)

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INTRODUCTION

Bandung Regency has high tourism potential. Bandung Regency has five key development priorities to boost regional economic growth. The six top sectors are determined by examining their current contribution and potential development opportunities. Bandung Regency's economic development priorities include, among others, agribusiness, tourism, household crafts, manufacturing industry, and trade in services (Bandung, 2021). The attraction is dominated by scenic beauty in the area and the culture in the city. The homogeneity has satisfied tourists to visit only one or two of them, for they have represented all of them. Another consequence is that they choose the relatively close ones to the city as a tourism gate from the northern Bandung. Bandung has recently developed many more tourist recreation areas, one of which is Strawberry Agrotourism. Strawberry Agrotourism is a strawberry picking tour in the Ciwidey area, Bandung, West Java, with about three hectares of garden area. This tourist spot provides an opportunity for consumers who want to pick strawberries and fresh vegetables directly in the garden, so this business is also known as a tourist spot that is a choice for many local and foreign tourists. Strawberry agrotourism also attracts tourism, research, conservation, and other interests.

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This agrotourism has a good impact as an innovation in agribusiness in creating added value for business and improving the economy in Indonesia. The situation follows the government's priority program in developing leading sectors in 2021, namely the tourism sector, which can be created from the agricultural industry. This agrotourism is right in the southern Bandung, Ciwidey Subdistrict, which becomes a challenge for this business development process. These challenges can be in the form of opportunities for land conversion, contamination of tourist sites due to community activities, and other impacts that can affect the surrounding environmental conditions. Based on these conditions, it is necessary to study how much people are willing to maintain the existence of agrotourism locations by looking at the economic value of their natural resources (Brundtland Commission, 1987; UNWTO, 2018). The formulation of this study's problem is how visitors' characteristics and assessment of Strawberry Agrotourism objects, what factors influence the demand for Strawberry Agrotourism recreation, and how the economic value generated by Strawberry Agrotourism with Travel Cost Methods approach. The purpose of the research is to identify the characteristics and assessments of visitors to the Strawberry Agrotourism object, find out what factors influence the demand for Strawberry Agrotourism recreation, and estimate the economic value generated by the Strawberry Agrotourism object with the Travel Cost Methods approach.

LITERATURE REVIEW AND METHODS

For many authors, the key distinguishing feature of agritourism is a working farm; tourism is an additional source of income for farm households (Gladstone and Morris, 2000; Iakovidou, 1997; Kizos and Iosifides, 2007; Sonnino, 2004). As a result, many definitions of 'nonworking farm' (NWF) agritourism could be identified as generic rural tourism, making it the most contentious type of agritourism in the proposed typology. Although much of the literature excludes tourism that is not based on a working farm, there are some examples where it has been suggested that tourists can participate in agritourism in which the connection to farming is made in some other way. Indeed, Fleischer and Tchetchik (2005) conclude that a working farm is unnecessary from a tourist's standpoint. According to Jaworski and Lawson's (2005) findings, new agritourism providers, such as "increasingly present sanitized depictions of farming, lapsed farmers and townies settling in the countryside". In most cases, NWF agritourism is realized through agricultural heritage or imagery (e.g., lodging in a converted farmhouse) or where agricultural practices, past or present, are incorporated into the tourist product (e.g., sheep shearing demonstrations located at a woolen mill). Farm heritage attractions and tourism activities based on converted farms are other examples of NWF agritourism (e.g., horse riding). They might be able to have farmers' markets and farmland access (e.g., walking where the working farm is not central to tourist activity). What distinguishes NWF agritourism from rural tourism is the connection to agriculture or agricultural heritage made in a way other than a working farm location. Several research explained that agricultural cultivation objects or attractions that have the potential and can be used for agrotourism include plantations, food crops, horticulture, livestock, and fisheries (Schlapfer et al., 2015; Santos et al., 2016; Rostika et al., 2018; Khan et al., 2020; Farkas et al., 2022).

Factors Affecting Agrotourism Demand

Luechinger (2008) and Rizal and Dewanti (2017) said that tourism demand factors are: (1) physical motivation, namely the interest in returning to fitness because of continuous work; (2) cultural motivation, namely the willingness to witness the level of cultural progress of a nation; (3) personal motivation, namely the desire to visit relatives who have not seen each other for a long time; (4) status and prestige motivation, namely people who think that traveling can improve the family status and show they have the ability than other people. Panduro and Veie (2013) said that those that affect tourism demand are price, income, socio-cultural, socio-political, family intensity, expenses of substitute goods, and costs of complementary goods. Shammin (1999) said that the aspects of tourism offerings are attraction, transportation, facilities, and institutions.

Tourism Economic Value

Economic valuation is a measurement method for transforming the value of non-market goods or services into monetary value. An economic valuation can be used for several purposes, including examining some of the contributions made by an ecosystem to human well-being, understanding the consequences that policymakers will face in managing ecosystems, and evaluating the implications of the actions taken (Ward and Beal, 2000; Lansdell and Gangadharan, 2003; Perman et al., 2003; Rizal, 2016; Farkas et al., 2022). The economic valuation method is also explained by Luechinger (2009) and Santos et al. (2016) that the valuation approach can use several methods, including: (1) market price method; (2) productivity methods; (3) hedonic price method; (4) method of travel expenses; (5) methods of avoiding the cost of damage; (6) uncertainty assessment method; (7) the method of choice of uncertainty; and (8) benefit transfer method.

Travel Cost Method (TCM)

The Travel Cost Method assesses a resource with no market value (non-market resources) and can model the demand for environmental services in recreational activities (Shammin, 1999; Ward and Beal, 2000; Lansdell and Gangadharan, 2003). According to Perman et al. (2003), Rizal (2016), and Rizal and Dewanti (2017), the travel cost method analyzes the market for outdoor recreation, such as fishing, hunting, hiking, and other events outdoor recreation. In simple terms, the above query function can be written as follows (Shammin, 1999; Ward and Beal, 2000; Lansdell and Gangadharan, 2003; Perman et al., 2003; Rizal, 2016): $Vij = f(Cij, Tij, Qij, Sij, Mi)$

Where: **Vij:** number of visits by individual-i to location-j; **Cij:** travel expenses incurred by individual-i to visit location; **Tij:** cost of time required by individual-i to visit location-j; **Qij:** respondent's perception of the environmental quality of the place visited; **Sij:** the characteristic of substitution that may exist elsewhere, and M*i* is the income of the individual-*i*.

Travel Expenses

The calculation of travel costs, as has been done by Ward and Beal (2000), Lansdell and Gangadharan (2003), Perman et al (2003), Rizal (2016) can be formulated as follows:

BPt = BTr + BDk + BK + BP + BSv + BTk + BL … (Ward and Beal, 2000; Rizal, 2016). Where: **BPt** = Travel Cost (IDR/person/visit); **BTr** = Transportation Cost (IDR/person/visit); **BDk** = Documentation Fee (IDR/person/visit);

BK = Consumption Cost During Recreation (IDR/person/visit); **BP** = Parking Fee (IDR/person/visit);

BSv = Souvenir Fee (IDR/person/visit); **BTk** = Entrance Fee (IDR/person/visit); **BL** = Other Costs (IDR/person/visit).

Travel Cost Approach Teknik

Shammin (1999), Ward and Beal (2000), Lansdell and Gangadharan (2003), Perman et al. (2003) and Rizal (2016) describe, in general, there are two simple techniques used to determine economic value based on the travel cost method. The methods are (1) the zone travel cost method (ZTCM) and (2) ITCM (individual travel expense method) that specify a recreation area, divide the surrounding area into concentric zones at wider intervals, and raise the rank of travel expenses. Similar to ZTCM, but uses survey data from individual visitors for statistical analysis of each zone. This method requires more data collection and more complex analysis but will give more precise results.

In this section, we will look at how ZTCM can be used to estimate demand and consumer surplus. The cost of travel, including any possible entry fees, and other independent relevant variables determine demand. A common approach is the procedure used and discussed by Shammin (1999), Ward and Beal (2000), Perman et al. (2003), and later by Prayaga et al (2006). OLS derives the "trip generation function" (TGF) from average zonal travel costs and other variables. Ward and Beal (2000) define it as a "demand function for the site's recreational experiences." Lansdell and Gangadharan (2003) propose the TGF specification $vi = f(TC_i, X1_i, \ldots, Xni)$. The dependent variable "visits per year from zone i (vi)" is regressed on the independent variables "average travel cost from zone i (TC_i)" and socio-economic variables ($X1_i$..., Xn_i) (averaged for zones, might be included). The "entry price (P)" variable would be added to the TC_i variable. After estimating the functional relationship using survey data, it is used to estimate other points on the demand curve.

Consumer Surplus Model

Turnovsky et al., (1980), Ward and Beal (2000) and Lansdell and Gangadharan (2003) explains that consumer surplus measures the excess value received by consumers from an item over what they pay for. Consumer surplus is a proxy of the value of WTP to recreational locations to estimate economic value. The consumer surplus can be measured through the formula (Ward and Beal, 2000; Lansdell and Gangadharan, 2003):

WTP the $\approx$ *Consumer Surplus* $(CS_1) \approx N^2/2b_1$, for the linear demand function, and

WTP $\approx$ *Consumer Surplus* $(CS_2) \approx N/\alpha_1$, for the log-linear demand function

The average consumer surplus can be calculated by dividing the linear TGF equation above by the number of visits, namely: $(CS/V) = (\beta_0/2\beta_1)$ (Ward and Beal, 2000; Lansdell and Gangadharan, 2003):

for the log-linear function of consumer surplus is:

$CS = V/2\beta_1 = (e^{(\beta 0 + \beta 1\, TC)})/2\beta_1$ (Ward and Beal, 2000; Lansdell and Gangadharan, 2003):

with an average consumer surplus of:

$(CS/V) = (1/2\beta_1)$ (Ward and Beal, 2000; Lansdell and Gangadharan, 2003):

while for the inverse log function, the consumer surplus is obtained by Ward and Beal (2000) and Lansdell and Gangadharan (2003): $CS = \beta_1 (e^{\beta 0/\beta 1} - TC) - \beta_0 TC + \beta_1 TC \ln TC$

or the average consumer surplus (Ward and Beal, 2000; Lansdell and Gangadharan, 2003):

$(CS/V) = [((\beta_1 (e^{\beta 0/\beta 1} - TC))/2\beta_1)/(\beta_0 - \beta_1 \ln TC)] - TC$

Where: CS = consumer surplus; $\beta_{0\text{-}1}$= Coefficient; V = number of visits; TC = travel expenses; In = inverse

Multiple Linear Regression

Analysis of the factors that influence the frequency of visits was carried out using multiple linear regression. Regression shows the relationship between two variables which shows the overall pattern of the dependent variable (Y) against an independent variable or explanatory variable (X). Multiple linear regression, according to Gujarati (2012), takes the form:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots + \beta_k X_{ki} + \varepsilon_k$ (Gujarati, 2012)

Where: Y = linear function of some independent variables X_1, X_2, …, X_k, and the error component;

i = observation number from 1 to N for population data, or up to n for sample data; X_{ki} = the i-th observation for the independent variable X_k; k = regression model intercept; ε = random confounding variable.

Method of Sampling

The population of this study was limited to local visitors who came to the Strawberry agrotourism site in the southern Bandung, Ciwidey Subdistrict, West Java Province. Meanwhile, sampling was carried out using a nonprobability sampling method with a quota sampling technique. Determination of the number of samples from the population is done using the slovin formula (Sevilla, 2007), namely: $n = N / (1 + N (e)^2)$ (Sevilla, 2007)

Where: n = sample size; N = population size; e = percent leeway by 5%;

Based on this formula, the number of samples was 379 respondents with an error limit of 5%. Data collection in the study was carried out using a survey method, namely through interviews, questionnaires, and observations. The data collected consists of two types, namely primary data and secondary data. Primary data include: 1) Characteristics of visitors such as age, gender, education, occupation, income, motivation to visit, and manner of arrival; 2) Place of origin; 3) The number of

recreational visits made; 4) Total recreation costs incurred by each individual; 5) Visitors' assessment of the area and services such as location, air cleanliness, environmental Hygiene, recreational facilities, security, as well as services and information from the manager. Secondary data needed include the characteristics of Strawberry Agrotourism such as history and status of the area, area, location, physical condition, tourism potential, supporting facilities, and so on obtained from literature studies.

DATA ANALYSIS

Variable Determination and Measurement

There are so many factors that influence the demand for tourism; therefore, in this analysis, only a few factors are selected that generally affect the demand for tourism (agrotourism). These factors include travel costs, income level, education level, family dependents, distance traveled, gender, length of time knowing the location, and age of visitors.

Identifying the Demand Factors for Strawberry Agrotourism

The demand function for Strawberry Agrotourism and the factors that influence it are modeled in the form of regression and are estimated as follows (Ward and Beal, 2000; Lansdell and Gangadharan, 2003):

$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + e$

Where: Y = Frequency of visits to Strawberry Agrotourism; X_1 = travel costs incurred by each individual to the location of Strawberry Agrotourism (IDR/person); X_2 = visitor income level (IDR/month); X_3 = education level (years); X_4 = dependents in the family (person); X_5 = distance traveled (km); X_6 = Gender (1 = male, 0 = female); X_7 = long time knowing Strawberry Agrotourism (years); X_8 = visitor age (years); B_0 - b_8 = regression coefficient; e = error term.

The best linear unbiased estimator Test Criteria

- **Normality test:** According to Lista (2014), the normality test is needed to test whether the error term of the observation data is close to the normal distribution so that the t statistic can be said to be valid.

- **Multicollinearity Test:** Multicollinearity means that there are multiple perfect linear relationships between the regression model's independent variables (X) (Lista, 2014).

- **Heteroscedasticity Test:** Lista (2014) says that the variation of the confounding factor is always the same from one observation data to another. If this characteristic is fulfilled, it means that the variation of the confounding factor in the data group is homoscedasticity or var $(\varepsilon_i^2) = \sigma^2$. The steps for testing heteroscedasticity with the Glejser test, namely by regressing the absolute value of the residual with the independent variable, as for the description as follows:

$|s_t| = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_n X_n + \varepsilon$ … (Lista, 2014) H_0: no heteroscedasticity; H_1: there is a heteroscedasticity problem

If F-count < F-table or by using P-value > α, then accept H_0 or there is no heteroscedasticity residual

- **Autocorrelation Test:** This test looks for temporal (time series) or spatial (cross-section) correlations between datasets. Autocorrelation detection is performed using the Durbin-Watson (DW) test with the following assumptions (Lista, 2014): H_0: there is no serial autocorrelation, either positive or negative; H_1: there is a serial autocorrelation;

H_0 is rejected if d < dL or d > 4 – dL and H0 is accepted if dU < d < 4 – dU;

Analysis of the Economic Value of Strawberry Agrotourism

The calculation of travel expenses was conducted by Shammin (1999), Ward and Beal, 2000; and Lansdell and Gangadharan, 2003 research can be formulated as follows (Ward and Beal, 2000; Lansdell and Gangadharan, 2003):

$BPt = BTr + BDk + BK + BP + BSv + BTk + BL$ - Where: BPt = Travel Cost (IDR/person/day); BTr = Transportation Cost (IDR/person/day); BDk = Documentation Fee (IDR); BK = Consumption Cost During Recreation (IDR/person/day); BP = Parking Fee (IDR); BSv = Souvenir Fee (IDR); BTk = Admission Fee (IDR); BL = Other Costs (IDR)

Meanwhile, the calculation of the average cost of a visitor's trip to Strawberry Agrotourism uses the following formula (Ward and Beal, 2000; Lansdell and Gangadharan, 2003; Rizal, 2016):

$ATC = \sum(BPT/n)$ (Ward and Beal, 2000; Lansdell and Gangadharan, 2003). Where: ATC = Average cost of a visitor's trip; BPT = Total amount of visitor's travel cost; n = Number of visitors interviewed.

The value of consumer surplus can be calculated using the travel cost coefficient with the following formula (Turnovsky et al., 1980; Ward and Beal, 2000; Lansdell and Gangadharan, 2003): $SK = (\beta_0 - \beta_1 TC)^2/2\beta_1$

This equation can also be simplified to (Ward and Beal, 2000; Lansdell and Gangadharan, 2003):

$SK = N^2/2b_1$ - Where: SK = Visitor consumer surplus (IDR); N = Number of visits period; β_1 = Travel cost coefficient

Furthermore, to estimate the economic value of visits to Strawberry agrotourism activities, this value is obtained from the total consumer surplus of visitors (Ward and Beal, 2000; Lansdell and Gangadharan, 2003).

$NE = SK \times TP$ - Where: NE = Strawberry agrotourism economic value in one year; SK = Visitor consumer surplus IDR); TP = Total number of visitors in one year.

RESULTS DISCUSSIONS

Strawberry Agrotourism was founded in 2008 and is one of the tourist attractions in the Ciwidey area of Bandung that offers strawberry picking tours directly from the garden. In 2013 Strawberry Agrotourism added to its business by creating a new branch in the Ciwidey Resort area. The land located in Ciwidey Resort is also leased land. The vision of Strawberry Agrotourism is to become the widest strawberry agrotourism for the West Java region, especially the Ciwidey area and its

surroundings. Strawberry agrotourism also has a mission: to become an agrotourism that is mutually beneficial between stakeholders and can empower the surrounding community. This agrotourism location can be reached by using private vehicles or public transportation. The main object of the Strawberry agrotourism ride is strawberry picking and organic vegetables. Strawberry also provides a variety of play facilities, ranging from passages such as the All-Terrain Vehicle (ATV), wagons, and riding horses. Some Strawberry Agrotourism areas can also be used as minimalist outbound areas, such as a place to play stilts, sack races, tug of war, to fishing competitions in several spots in the form of ponds. Besides enjoying the natural atmosphere while picking strawberries and vegetables, the manager also offers educational packages about strawberries, ranging from learning to plant to processing techniques for strawberries into lunkhead or jam.

Characteristics of Strawberry Agrotourism Visitors

The number of visitors who were selected as respondents was 379 people. 192 people, or 50.7%, were men, and the remaining 187 people, or 49.3%, were women. In comparison, the percentage of visitors' age is shown in Table 1.

The average visitor comes from Jakarta, Bogor, Depok, Tangerang, and Bekasi (Jabodetabek). Figure 1 below illustrates the percentage of visitors (%). The town of Jakarta is the most significant region of beginning for Bandung agrotourism visitors. As the nation's capital, Jakarta, has an excessive depth for its citizens in sporting out their day by day lives, each work, school, and interactions among citizens, which is exacerbated with the aid of using the Covid 19 pandemic which limits the gap for citizens to move, this consequences in extended physical, mental, and emotional stress, this issue is what drives a person to tour to a visitor appeal which consistent with him will deliver an experience of love, pleasure, joy, and satisfaction, specifically in nature tourism activities (Chebli and Foued, 2020; Ioannides and Gyimóthy, 2020).

On the other hand, agritourism visitors coming from the city of Jakarta have relatively higher levels of education than visitors from other cities; visitors with a higher level of education tend to be more open-minded and have an academic motivation that can provide benefits and add value through their insight, experience, and knowledge of nature. In contrast, the characteristics of education can be seen in Table 2. Based on the type of work, the average visitor working as a private employee is 36.1% or 137 people, active as a student is 25.9%, entrepreneur (16.1%), Housewife (7, 9 %), not working (7.4% %), government employees (4.2 %), retirees (1.1 %), housemaids and teachers (0.5 %), and Tour Guides (0.3 %). Visitors who come to tourist sites on average have a purpose for refreshing with a percentage of 56.7%, picnics or gathering with family by 32.7%, education (10%), shooting and shooting each by 0.3%. The average visitor to this agrotourism location is a first-time tourist, as seen by the 176 people (46.6 percent) who visited once. The frequency of visits twice is 17.7%, three visits are 12.4%, four visits is 11.6%, five visits is 1.3%, and those who visit Strawberry agrotourism places more than five visits are 10. ,6%. Based on the means of transportation used, the average visitor uses a private car for recreation, 54.1%, motorbikes (37.0%), and rental cars (9.0%). Characteristics of the distance from which visitors live to tourist sites can be seen in Figure 2.

Table 1. Characteristics of respondents of strawberry agrotourism objects by age

Age (Year)	Number (person)	Percentage (%)
<= 20	64	16.9
21 – 30	202	53.3
31 – 40	58	15.3
41 – 50	35	9.2
51 – 60	16	4.2
61+	4	1.1
Total	**379**	**100**

Table 2. Characteristics of strawberry agrotourism visitors based on educational status

Education	Number (Person)	Percentage (%)
Elementary school	3	0.8
Junior high school	30	7.9
High school	153	40.4
Diploma	56	14.8
Bachelor	133	35.1
Master Degree/Postgraduate	4	1.1
Total	**379**	**100**

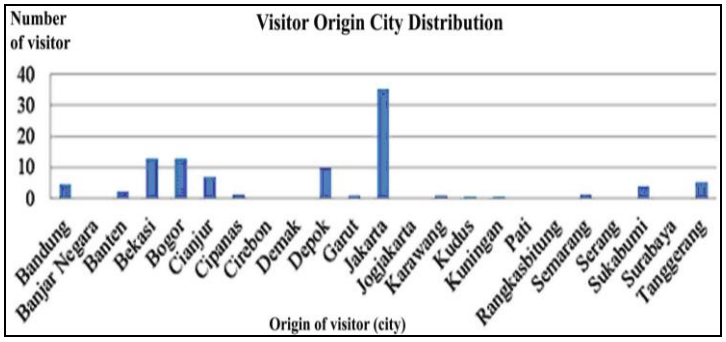

Figure 1. Place of origin of visitors

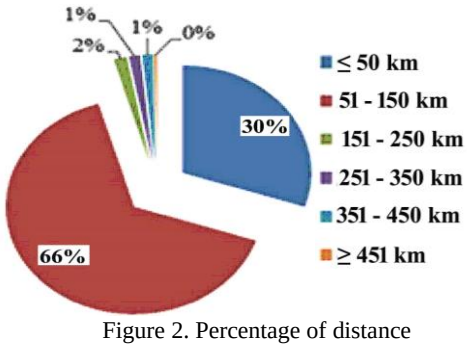

Figure 2. Percentage of distance from visitors' residence to agrotourism locations

The characteristics of the number of visitors' incomes vary according to the profession or type of work occupied. The highest percentage of total income ranges from IDR. 2,500,000 to IDR. 4,000,000, - with a percentage of 27.70%.

With a percentage of 22.70%, the second-largest income is between IDR.1,000,000 to IDR. 2,500,000, total income less than IDR.1.000.000 is 25.9%, IDR. 4,000,000 to IDR. 5,500,000 of 16.90 %, IDR. 5,500,000 to IDR.7,000,000 amounted to 3.20%, and income more than IDR.7,000,000 amounted to 12.10%. The assessment covers eight aspects, including (1) road access to the location; (2) information obtained from the media; (3) the level of environmental Hygiene, (4) facilities and infrastructure; (5) the beauty of agrotourism; (6) air cleanliness condition; (7) sound state (noise pollution); and (8) security level. The percentage of visitor ratings can be seen in Figure 3.

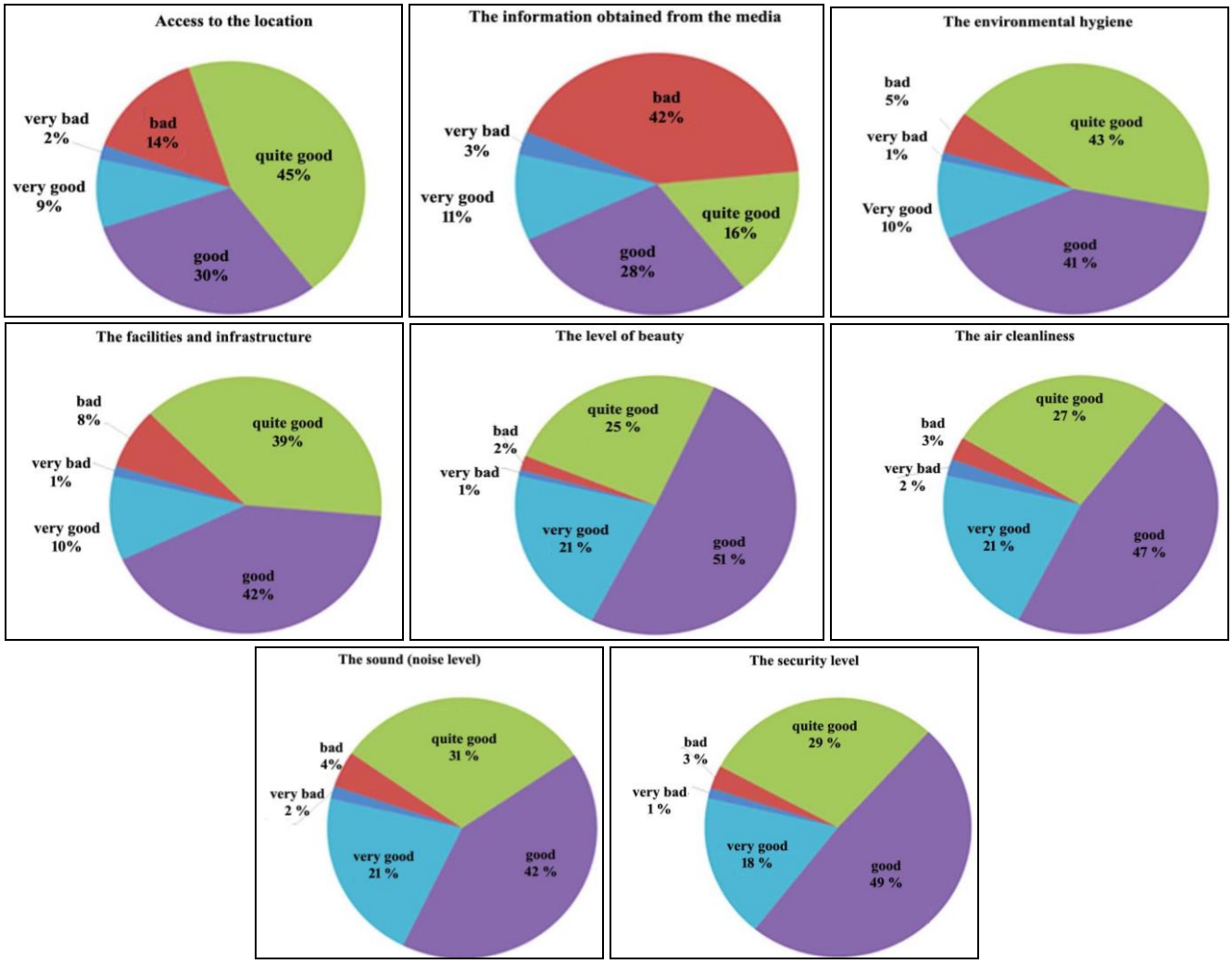

Figure 3. Percentage of visitors' rating of strawberry agrotourism

Factors Affecting Demand for Strawberry Agrotourism

1. Strawberry Agrotourism Demand Function

There are eight independent variables used to analyze their effect on the number of visits (dependent variables), namely: (1) travel costs; (2) income level; (3) education level; (4) dependents in the family; (5) mileage; (6) Gender; (7) long time knowing agrotourism; and (8) age of visitors. Based on the results of data processing using XLSTAT, the results of the regression analysis are as follows:

Table 3. Multiple linear regression analysis results

Source	Value	Standard error	T	Pr > |t|= P-count	Lower bound (95%)	Upper bound (95%)
Intercept	0.5531	0.4180	1.3233	0.1866	-0.2688	1.3751
X_1	0.0397	0.0291	1.3651	0.1730	-0.0175	0.0968
X_2	-0.0796	0.0259	-3.0714	0.0023	-0.1305	-0.0286
X_3	0.0039	0.0101	0.3847	0.7007	-0.0159	0.0236
X_4	0.0361	0.0283	1.2734	0.2037	-0.0196	0.0918
X_5	-0.0017	0.0004	-4.3675	< 0.0001	-0.0024	-0.0009
X_6	0.0903	0.0460	1.9641	0.0503	-0.0001	0.1807
X_7	0.2819	0.0117	24.1302	< 0.0001	0.2589	0.3049
X_8	0.0018	0.0033	0.5423	0.5880	-0.0046	0.0082

Based on Table 4, it can be seen that the recreational demand function for Swetberry agrotourism is as follows:

$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + e$; $LnY = 0.55311 + 0.03968*X_1 - 0.07955*X_2 + 0.00387*X_3 + 0.03608*X_4 - 0.00165*X_5 + 0.09030*X_6 + 0.28191*X_7 + 0.00176*X_8$

Data Normality Test

The Kolmogorov-Smirnov test is one of many methods for determining the normality of data, and it was utilized in this study. The test produces a P-Value of 0.0516, which is greater than the 5% significance level, then H0 is accepted, and it can be concluded that the error has spread normally.

Multicollinearity Test

According to Lista (2014), the existence or absence of multicollinearity in a model can be determined from the outcomes of data processing by looking at the Variance Inflation Factor (VIF); if the VIF is more than 10, the model is multicollinear.

Based on the results of the multicollinearity test in Table 5, there is no multicollinearity because the VIF value of each variable is less than 10. The X1 variable shows the VIF value of 1.2708, X_2 of 1.5391, and X_3, X_4, X_5, X_6, X_7, and X_8, respectively. of 1.1650, 2.2767, 1.1753, 1.0726, 1.0397, and 2.4138.

Heteroscedasticity Test

In this test, the researchers used the White Test method. These test results will not be much different from other tests. This test is considered the most suitable and easy to use with the type of data obtained. If F-count < F-table or using P-value > α, then accept H0 or no heteroscedasticity residual. The test results show that the P-value of 0.1471 is greater than the alpha (α), which is 0.05, or a real level of 5%, which means that the data meets the heteroscedasticity test criteria.

Table 4. Multicollinearity test results

Statistic	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8
Tolerance	0.7869	0.6497	0.8584	0.4392	0.8509	0.9323	0.9618	0.4143
VIF	1.2708	1.5391	1.1650	2.2767	1.1753	1.0726	1.0397	2.4138

Autocorrelation Test

Based on the DW value test, it produces a value of 1.8020, which shows the DW value is almost close to 2; this value already indicates that the data does not occur autocorrelation. Based on the type of data obtained from the field, theoretical DW analysis no longer needs to be carried out because the sequence of data/samples is human data that is not time-based (time series). According to Lista (2014), this test is used to examine if there is a correlation between a set of data organized by time (time series) or by space (space series) (cross-section).

Model Interpretation

The results of the regression analysis show that three variables have a significant effect on the number of Strawberry agrotourism visits, including income (X_2), distance (X_5), and time to know the location (X_7). In contrast, the variable that does not affect agrotourism demand is travel costs (X_1), education (X_3), family dependents (X_4), gender (X_6), and age (X_8). The effect of the variable or not depends on the P-count value. If the P-count is less than the 0.05 level of significance, the variable is declared to affect the independent variable significantly.

1. Travel Cost (X_1)

Based on the data processing results, it can be seen that travel costs do not affect the level of visits to Strawberry agrotourism. This can be seen from the regression probability value for the travel cost variable, 0.1866, which indicates that this variable has no significant effect on the visit rate at the 95% confidence level or greater than the 0.05 level of significance. The regression coefficient value of the travel cost variable is positive. This positive correlation indicates that an increase in travel costs by one percent will increase the frequency of visits by 0.0397%, and vice versa; if there is a decrease in travel costs, it will reduce the level of visits to tourist sites. Based on the study results, this happens because the average visitor who travels to the Strawberry agrotourism location is not the leading tourist destination of visitors.

2. Income (X_2)

Based on regression analysis, the income variable has a significant effect on the demand for Strawberry agrotourism; this is evidenced by the P-count value of 0.0023, which is smaller than the actual level of 0.05 with a coefficient of -0.0796. This value can indicate that a 1% increase in income will reduce the frequency of visits to Strawberry agrotourism by 0.0796 percent or that the higher the level of visitors' income, the lower the level of visits; if the income is high, visitors may be more interested in visiting other places that are better and more satisfying. This fact can happen because Strawberry agrotourism is a recreational area that is still newly developed, and the facilities are not yet complete, so it is natural that visitors still want other tourist locations to visit if they have higher income.

3. Education (X_3)

Based on the data processing results, it can be seen that the education variable does not affect the level of visits to Strawberry agrotourism. This can be seen from the P-count regression probability value for the education variable, 0.7007, which indicates that this variable has no significant effect on the visit rate at the 95% confidence level or greater than the 0.05 level of significance. The regression coefficient value of the education variable is positive. This positive correlation indicates that an increase in the length of education by one year will increase the frequency of visits by 0.0039%, and vice versa; if there is a decrease in the span of education, it will reduce the level of visits to tourist sites. The greater a person's education will influence the visit.

4. Number of Family Dependents (X_4)

The variable number of family dependents does not affect the level of visits to Strawberry agrotourism, as evidenced by the P-count regression probability value of 0.2037, which indicates that this variable has no significant effect on visit rate at the 95 percent confidence level or greater than the 0.05 level of significance. The regression coefficient value for the number of dependents in the family is positive at 0.0361. This positive correlation indicates that an increase in the number of family dependents by one person will increase the frequency of visits by 0.0361%, and vice versa; if there is a decrease in the number of dependents, it will reduce the level of visits to tourist sites.

5. Distance (X_5)

From the regression test results of the distance, the variable has a significant effect on the demand for Strawberry agrotourism; this is indicated by the P-count value of 0.0001, which is smaller than the actual level of 0.05 with a coefficient of -0.0017. This value explains that if there is an increase of one km in the distance to the Strawberry

agrotourism location, it will reduce the frequency of visits by 0.0017%. Based on the field observations, it is evident that the average visitor comes from the Greater Jakarta area. From outside Jabodetabek, the frequency of visits is minor because the distance to the Strawberry agrotourism location is very far.

6. Gender (X_6)

The regression test results show that the gender variable does not affect the level of visits to Strawberry agrotourism. This can be seen from the P-count regression probability value for the sex variable, which is 0.0503, which indicates that the variable has no significant effect on the visit rate at the 95% confidence level or greater than the 0.05 level of significance. The value of the regression coefficient of the sex variable is positive at 0.0903. This positive correlation indicates that male visitors will have a greater chance of visiting 0.0903 times than female visitors.

7. Long Knowing Strawberry Agrotourism (X7)

The regression test results of the old variable, knowing that tourist sites have a significant effect on the demand for Strawberry agrotourism, are indicated by the P-count value of 0.0001, which is smaller than the actual level of 0.05 with a coefficient of 0.2819. This value explains that every increase in knowing Strawberry agrotourism for one year will increase the frequency of visits by 0.2819% to agrotourism locations. Based on the results of this research, it can be proven that the average visitor who comes to this Strawberry location is someone who has known agrotourism for a long time.

8. Age (X8)

Based on the regression results, it can be seen that the family age variable does not affect the level of visits to Strawberry agrotourism. This can be seen from the P-count regression probability value for the age variable, which is 0.5880, indicating that the variable has no significant effect on the visit rate at the 95% confidence level or greater than the 0.05 level of significance. The regression coefficient value of the age variable is positive at 0.0018. This positive correlation indicates that an increase in age of one year will increase the frequency of visits by 0.0018%.

The Economic Value or Benefits of Strawberry Agrotourism

There is a mutually beneficial relationship between agrotourism business on the one hand and the conservation of natural resources and the environment on the other hand. The development of agrotourism is based on the principles of sustainable environmental management and perspectives. Managing an agrotourism with ecological awareness is naturally similar to conserving natural resources and the environment itself while taking benefits from the tourism services and the agricultural products, which, in turn, can be helpful in the conservation of the natural resources and the environment. Agrotourism is a long-term undertaking; therefore, every step in the business should be scaled long-term. Once a consumer or a tourist gets a negative impression of the condition of the tourism resources and the local environment, it needs a very long time to repair. It can be said that agrotourism is a business that requires harmony with the environment in every aspect (Sonnino, 2004; Panduro and Veie, 2013; Poczta-Wajda and Poczta, 2016; Rizal et al., 2019).

Agriculture is the result of natural resource management activities for the needs of human life; in the world of agriculture (agribusiness), some values have market prices in the form of agricultural products such as vegetables, fruits, and so on, which can be processed directly. Agriculture also has non-market value; for example, the attractiveness of agricultural things, such as landscape, beauty, agricultural air, and so on, is always appreciated by humans but is gained for free and is undervalued; thus, it does not have a market price. The travel cost approach is one way that can be used to estimate or estimate the economic value of recreational services. The basis for choosing this method is obtaining actual data from the cost of visits made by someone to enjoy recreational benefits. The hypothesis is that travel costs will be strongly influenced by visits to tourist attractions and are assumed to be negatively correlated, so a demand curve with a negative slope is obtained (Shammin, 1999; Phillip et al., 2010; Bilbao-Terol et al., 2017; Rizal and Dewanti, 2017).

Tabel 5. Average travel cost

Total Travel Cost (IDR)	Number (Person)	Percentage (%)
< 150,000	67	17.7
150,000 – 543,000	207	54.6
544,000 – 937,000	85	22.4
938,000 – 1,331,000	11	2.9
1,332,000 – 1,725,000	8	2.1
1,726,000 +	1	0.3
Total	**379**	**100**
Total Travel Cost (IDR)		**156,792,000**
Average (IDR)		**413,699**

Table 6. TCM estimation on strawberry agrotourism

Subject	Value
Number of respondents (person) (a)	379
Estimated number of respondents in 2021 (person) (b)	7,200
Number of respondent visits (y) (c)	1,006
Travel cost coefficient (*b*) (d)	0.0397
Consumer surplus (IDR) (e) SK= $y^2/2b$	12,752,324
Average visitor surplus (IDR) (f) = e/c	12,670
Average visitor/individual consumer surplus (IDR) (g) = f/a	33
The economic value of Strawberry Agrotourism in 2021 (IDR) (h) = g x b	237,600

Source: the author's field data processing results

Based on Table 5, the total travel costs incurred by visitors to travel to Strawberry agrotourism is IDR. 156.792.000,-. The average price of each visitor to travel is IDR. 413,699; this shows that visitors want to spend money or are willing to pay (Willingness To Pay) for tourist attractions of IDR. 413,699 visits. Below is a graph of the relationship between the distance traveled and the total cost of travel to Strawberry agrotourism.

Based on the line graph in Figure 4, there is a decrease in costs at a certain distance; this shows that travel costs are also not always affected by distance. There are several reasons why distance does not affect travel costs, including: (1), not all visitors incur transportation costs because they come with their families (borne by the family), even though transportation costs are the

highest on average; (2) not all visitors incur transportation costs because they come with their families (borne by the family); (3) not all visitors incur transportation costs because they come with their families (run by the family); and (4) not all visitors incur transportation costs because (2) The difference in modes of transportation has an impact on the size of the trip's expense.

On average, visitors who far away use motorbikes to travel, it could be that visitors who are near are more expensive than those far away. Usually, motorbikes don't cost as much as a private car; (3) someone who visits Strawberry agrotourism locations can also see other tourist attractions, so traveling to Strawberry is calculated with costs to other tourist locations. This fact can lead to high travel costs. Consumer surplus in TCM shows how much a person values a recreation area based on their visits (Shammin, 1999; Freeman et al., 2014; Koetse et al., 2015). The following is a function of demand or visits to Strawberry agrotourism, assuming that only travel costs affect the level of visits to Strawberry agrotourism.

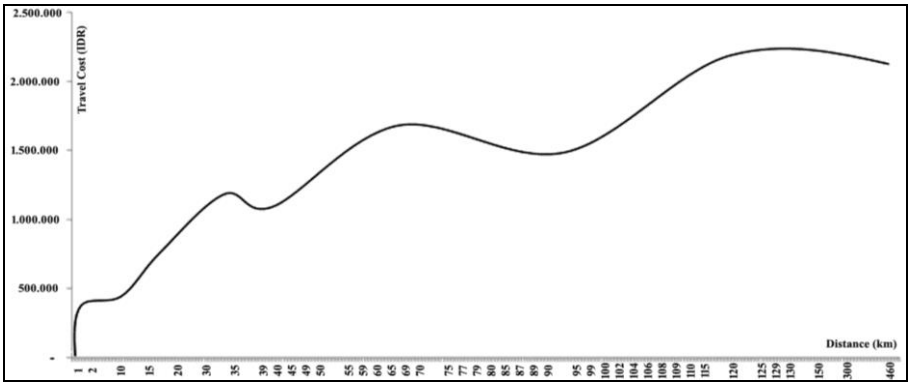

Figure 4. Relationship between mileage and total travel cost

$$Y = a + b X_1 + e; \qquad Y = 0.55311 + 0.03968X_1$$

The TCM value can be obtained by analyzing the number of respondents, the number of respondents' visits per year, the estimated number of visits per year, the TCM coefficient, and consumer surplus. Table 6 describes the calculation of the TCM estimation. The Average expenses during a visitor's tour are IDR. 413,699. The results of multiple regression analysis obtained a TCM coefficient of 0.0397. Based on Table 26, the total consumer surplus-value is IDR. 12,752,324. Visiting consumer surplus is IDR. 12,670, and the consumer surplus per individual visit is Rp. 33, so that in one year, Strawberry agrotourism produces a consumer surplus of IDR. 237,600. This value is generated from the multiplication of the consumer surplus per person visit with the estimated number of visitors for one year (population) of 7,200 people. Based on this value, it can be concluded that the economic value of agrotourism during 2017 is IDR. 237,600. This value is the economic value of natural resources and the agricultural environment (agribusiness) in Strawberry agrotourism, which the manager has not considered. Based on the value, it turns out that agrotourism has more value than the actual marketed value. The economic value also explains that visitors are still willing to pay more for Strawberry agrotourism places even though the value is minimal, namely IDR.33. Strawberry agrotourism has the opportunity to develop further because it still has a consumer surplus. Strawberry agrotourism can improve tourism services, facilities and infrastructure, tourist facilities, road access, promotions, and others, namely as an effort to increase consumer desire to visit (Delbecq et al., 2014; Czyzewski and Matuszczak, 2016).

CONCLUSION

Male dominates characteristics of visitors to Strawberry agrotourism, married visitors who come from the Greater Jakarta area with a mileage of 151 – 250 km by private car. The average education of visitors is high school, and they work as private employees with an average income of IDR. 2,500,000 to IDR. 4,000,000. Visitors who come to the Strawberry location are newcomers with an average purpose for refreshing. The access to the location is quite good, the information obtained from the media is not good, the environmental Hygiene is quite good, the facilities and infrastructure are good, the level of beauty is good, the air cleanliness condition is good, and the sound (noise level) and the security level are also good value, according to visitors' assessments of Strawberry agrotourism. The factors that influence the demand for Strawberry agrotourism are income, distance, and length of time knowing the location. In contrast, the factors that do not affect the demand are travel costs, education, number of dependents in the family, gender, and age of visitors. The consumer surplus describes the net benefits obtained by tourists from recreational activities in Strawberry agrotourism visits to this tourism demand model of IDR. 12,670 and the consumer surplus per individual visit is IDR.33. The consumer surplus in 2017, which describes the economic value of the Strawberry agrotourism object, is IDR. 237,600. Based on the economic value of agrotourism, which has not been calculated as a market value in business, companies must make efforts to improve the environment; this can be seen from the small economic value of IDR. 33, per individual per visit. Improvements can be preserving existing nature, adding tourist objects or the area of tourist sites, and improving existing facilities and infrastructure. These improvements are expected to increase the attractiveness of tourists to visit tourist sites and have a high willingness to pay so that managers can raise ticket prices and earn big profits. As an agrotourism development, the role of local government is very much needed in the aspect of increasing business capital, business training, and providing adequate facilities and infrastructure. This research should not be carried out yet sustainably because the economic value of tourism can change every year. The economic value can be compared with the current year, whether there is an increase or a decrease, so decision-making will be easier, then added by looking at visitor satisfaction with Strawberries agrotourism.

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