

Research Article

Pick Your Own Oranges, Agrotourism Recommendations in Karo Regency, Indonesia

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Abstract | Customers' decisions to visit Karo Regency's agritourism and purchase pick your own citrus fruits are influenced by the calibre of goods and services offered to them. This study investigates the impact of product quality on consumer decisions to visit pick-your-own citrus agritourism, as well as the relationship between service quality and consumer decisions to buy pick-your-own citrus fruit. Investigation was conducted in two subdistricts, Merek and Tiga Panah, which were specifically chosen for the purpose. This study's sampling approach, judgement sampling, produced a sample of 90 customers. This study made use of both primary and secondary data. The data analysis model for this study uses the Structural Equation Model, which is processed using Smart PLS software version 3.0, to assess the measurement model (outer model) and structural model (inner model). Based on the results of the validity, reliability, and structural model appropriateness tests, the study's conclusions about the measurement model (outer model) show that the model is suitable for model testing. The findings of the structural model (inner model) demonstrate that consumers' decisions to buy their own citrus fruits are positively and significantly influenced by the quality of the citrus fruit and the quality of the services provided. Therefore, it is recommended that community people be trained in product and service management and that the quality of local products and services be improved.

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Introduction

Together with the expansion of other industries including plantations, agriculture, trade, and industry, the tourist sector has the potential to boost the economy. Agritourism is one aspect of the tourism related agriculture industry that has not been fully used

(agritourism). The term agricultural tourism refers to travel that makes use of the agricultural industry's potential as a destination due to its unique farming practices and cultural norms (Palit and Rumangit, 2017). Barreto and Giantri (2015), tourism can create jobs and other opportunities, which will lower unemployment rates for locals and boost the economy.

Since ancient times, citrus fruits have been prized for their nutritional qualities and used as obay (Milah, 2019). Because of their high vitamin C content, fresh aroma, and capacity to slake thirst, citrus fruits are widely preferred by the general people (Putra, 2020). Fresh citrus fruit consumption is crucial due to its nutritional value and health-promoting properties, particularly its antioxidant content (Suryana, 2018).

Horticultural crops that are competitive enough to be grown through the establishment of business groups in Indonesia include lemon, keprok, puri, and siam (Prayuginingsih and Oktarina, 2014). The major centre for citrus production is Karo Regency, which is situated in North Sumatra Province. Table 1 shows the evolution of citrus fruit output in Karo Regency.

Table 1: Orange fruit production in Karo District based on census year 2020–2023 (Ton).

District	Years (Ton)		
	2021	2022	2023
Mardingding	15.881	12.861	11.789
Laubaleng	20.645	18.753	24.702
Tigabinaga	1.663	3.174	2.194
Juhar	788	1.091	782
Munte	80.505	85.336	98.353
Kutabuluh	1.650	3.138	3.379
Payung	7.315	11.363	10.380
Tiganderket	1.004	2.609	400
Simpang Empat	1.839	1.185	86
Naman Teran	2.273	2.520	2.858
Merdeka	840	776	267
Kabanjahe	174	396	453
Berastagi	369	156	125
Tigapanah	63.119	26.535	22.050
Dolat Rayat	8.492	3.782	4.692
Merek	32.393	23.013	59.244
Barusjahe	5.941	7.100	8.050
Total	244.890	203.786	249.809

Citrus fruit production in Karo Regency was 244,890 tonnes in 2021, 203,786 tonnes in 2022, and 249,809 tonnes in 2023, according to Table 1. If properly managed, Karo Regency's natural and cultural resources which are highly varied and fascinating could be transformed into a natural tourist destination, opening up new travel options in the area (Sitanggang and Sugianti, 2020).

Customers want items that are free of flaws, therefore product quality plays a significant role in their decision. As a result, the products that are given must undergo thorough testing. Better quality products will be preferred by customers over inferior ones. When assessing and enhancing skill, product quality is crucial (Kao, 2017). Product excellence, according to Kotler and Keller (2016), is the product's capacity to satisfy customer needs. Product quality includes skill, durability, precision, ease of use, and operation, but it also refers to a product's strength versus its role. (Rahman, 2018). According to Arinawaty (2021), a product needs to be produced with the appropriate degree of accuracy using a productive and successful method. According to Moko (2021), a product's quality is an intrinsic feature that determines the extent or level of product excellence.

The goal of service quality control is to satisfy customer needs and expectations for excellence. To ensure that clients continue to choose it, service quality must be taken into account and optimised. The gap between the actual experience and the expectations of the customer is a measure of the quality of the service (Lupiyoadi, 2013). Timeliness to meet clients or consumers and service quality to satisfy needs (Arianto, 2018). Kotler and Keller (2016) define service quality as the sum of a product's attributes that are able to satisfy the needs of the customer. Service quality, according to (Kasmir, 2017), is an endeavour to provide clients with greater value.

Consumer choice is the process by which customers choose which products and services to purchase based on their needs (Kotler and Armstrong, 2014). To put it another way, people need to have a variety of options when making decisions, and they should think about alternatives to a product and be able to pay attention to new products. They also believe that well-known brands are safer than less well known ones. As a result, this choice has the power to influence both the product's brand image and the individual making it. Customers that are professional, logical, and have a favourable opinion of a product or brand are more likely to buy it (Setiadi and Nugroho, 2013).

Problems with product quality in citrus picking agrotourism can impact both the sustainability of the business and the customer experience. The taste, size, freshness, and appearance of the citrus fruits that guests personally select are all considered aspects of

product quality in this context. Customers may become dissatisfied, be less inclined to return, and even have their opinion of the agrotourism industry negatively impacted if the citrus fruits are of subpar quality.

Citrus picking agrotourism quality problems can take many different forms. The orchard's lack of auxiliary facilities, the area's poor hygiene, and the absence of information or direction for guests are a few frequent issues. In addition, issues such as unfriendly staff, long queues, or an unsatisfactory citrus picking experience can also be highlighted.

For a number of reasons, such as poor management, a lack of promotion, worries about the time and expense involved, and ignorance of the advantages of agrotourism, people may be hesitant to engage in citrus harvesting agrotourism. Inadequate infrastructure, a lack of public knowledge, and problems with safety and hygiene might also be obstacles.

This study aims to ascertain how consumers' decisions to visit citrus harvesting agrotourism destinations are significantly influenced by the calibre of the products and services provided. Citrus harvesting agrotourism in Karo Regency, Indonesia, depends heavily on the quality of the product in this case, the oranges produced and the services offered by agrotourism management, such as the friendliness of the staff and the facilities that are accessible.

Materials and Methods

Karo Regency was chosen as the study's purposeful

location, taking into account that it is one of the province of North Sumatra's major citrus production hubs. Chief Tanda and Chief Tiga Panah were the two tribal leaders selected.

Sugiyono (2017) asserts that the population is the study's primary focus. Population includes the sample. Suryani and Hendrayadi (2015), a population is a collection of individuals or items under study that share particular traits. The entire study object that can serve as a source of research data is referred to as the population. Visitors to the pick your own orange agritourism in Karo district, the exact number of whom is unknown, comprise the study's population.

The sample in research is a subset of the complete population that is the subject of an observation, claim Sugiyono (2017) and Harinaldi (2015). The sample size in this study was 90 respondents.

The operational definition of a variable is a detailed explanation of how to measure or observe a variable in research, which includes concrete instructions on what researchers should do, the measuring instruments used, and the applicable measurement scales, to ensure that the data collected is accurate, focused, and consistent, as described in Table 2.

Primary data was gathered directly from farmers, while secondary data was gathered from the Department of Tourism, Central Bureau of Statistics, and other organisations. The latter was gathered through customer and visitor surveys and interviews using questionnaires pertaining to agrotourism orange picking.

Table 2: *Definition of operational research variables.*

Variabel	Operational definition	Indicators	Scale
Product quality (X1)	Product quality is the ability of a product to meet consumer needs and satisfy consumer requirements and desires.	Competitive Price (HBS1.1), Freshness of Orange (KSB1.1), Fulfillment of Expectations (MHA1.1), Orange Storage Time (MSBJ1.1), Change in Orange Flavor (PRBJ1.1), Orange Flavour (RBJ1.1), Standard of Orange Fruit (SBJ1.1), Texture of Orange Fruit (TBJ1.1), Size of Orange (UBJ1.1)	Likert
Service quality (X2)	Service quality is an effort made to fulfill consumer needs and desires and accurately deliver them in line with consumer expectations.	Environmental Clean (KBLI1.1), Responsible Employee (KBT1.1), Quick Reacting Employee (KCT1.1), Availablitiy of Physical Facilities (KFF1.1), Convenience of Visiting (KKU1.1), Friendly Employee (KRA1.1), Receiving Complaint From Visitors (MKPE1.1), Accompanying Guests (MPG1.1), Apperance of Neat Employee (PRK1.1)	Likert
Consumer decission (Y)	Consumer decision is a condition where the needs, desires, and expectations of consumers regarding a product have been fulfilled and are in line with their wishes.	Agrotourism Orange Priority Reserve (AJPC1.1), Agrotourism Primary priority (AJPU1.1), Agrotourism Orange Substitutions Option (AJS1.1), Education and Recreation (ERE1.1), Holiday Visits (KHL1.1), Family Needs (KKE1.1), Personal Enjoyment (KPI1.1), Unplanned Visit (KTD1.1), Regular Time Visits (KWB1.1)	Likert

Table 3: *Validity test results based on outer loading values.*

Variables	Indicators	Outer loading	Notes
Product quality (X_1)	Competitive Price (HBS1.1)	0.724	Acceptable
	Freshness of Orange (KSB1.1)	0.727	Acceptable
	Fulfillment of Expectations (MHA1.1)	0.794	Acceptable
	Orange Storage Time (MSBJ1.1)	0.768	Acceptable
	Change in Orange Flavor (PRBJ1.1)	0.779	Acceptable
	Orange Flavour (RBJ1.1)	0.791	Acceptable
	Standard of Orange Fruit (SBJ1.1)	0.748	Acceptable
	Texture of Orange Fruit (TBJ1.1)	0.720	Acceptable
	Size of Orange (UBJ1.1)	0.789	Acceptable
Service quality (X_2)	Environmental Clean (KBLI1.1)	0.760	Acceptable
	Responsible Employee (KBT1.1)	0.739	Acceptable
	Quick Reacting Employee (KCT1.1)	0.745	Acceptable
	Availablitiy of Physical Facilities (KFF1.1)	0.794	Acceptable
	Convenience of Visiting (KKU1.1)	0.725	Acceptable
	Friendly Employee (KRA1.1)	0.731	Acceptable
	Receiving Complaint From Visitors (MKPE1.1)	0.779	Acceptable
	Accompanying Guests (MPG1.1)	0.760	Acceptable
	Apperance of Neat Employee (PRK1.1)	0.785	Acceptable
Consumer decision (Y)	Agrotourism Orange Priority Reserve (AJPC1.1)	0.769	Acceptable
	Agrotourism Primary priority (AJPU1.1)	0.770	Acceptable
	Agrotourism Orange Substitutions Option (AJS1.1)	0.742	Acceptable
	Education and Recreation (ERE1.1)	0.812	Acceptable
	Holiday Visits (KHL1.1)	0.826	Acceptable
	Family Needs (KKE1.1)	0.771	Acceptable
	Personal Enjoyment (KPI1.1)	0.780	Acceptable
	Unplanned Visit (KTD1.1)	0.739	Acceptable
	Regular Time Visits (KWB1.1)	0.724	Acceptable

The Structural Equation Model (SEM) performs a number of tasks, including structural equation models and covariance structure analysis. In order to provide statistical efficiency, the relationship is analysed simultaneously using a structural equation model (Hair *et al.*, 2018). The analysis that was done for this study is as follows. Each indicator's relationship to its latent variable is explained by the outer model. The indicators of latent variables can be used to measure them.

Test of validity

According to (Widoyoko, 2015), a measuring device's validity is determined by its precision. Convergent and discriminant validity are two types of validity testing. If the load factor number falls between 0.5 and 0.6, the indicator is deemed acceptable.

Reliability test

The composite reliability value is less than 0.7 and greater than 0.6 when the reliability test is conducted

using the Cronbach's Alpha model (Hartono, 2022). The inner model is tested using the path coefficient and R Square (R^2).

R squared (R^2)

The endogenous structure's coefficient of determination is the R-Square value. According to (Hair *et al.*, 2018), an R^2 value of 0.75 indicates strong, 0.50 indicates moderate, and 0.25 indicates low.

Testing hypotheses

Hypothesis testing explains the direction of the relationship between the independent and dependent variables. To test a hypothesis, the probability value is analysed to determine whether it is more than or less than 0.05.

The study's hypotheses are as follows:

- Customers' decisions to engage in citrus picking agrotourism are positively and significantly influenced by the quality of the products.

- Customers' decisions to engage in citrus picking agrotourism are positively and significantly impacted by service quality.

Results and Discussion

Analysing the measurement model (outer model)

In structural equation modelling (SEM) or partial least squares (PLS), the measuring model (outer model) explains the relationship between latent variables (constructs) and their indicators (manifest variables). In order to evaluate the hidden variables being studied, this method seeks to evaluate the validity and reliability of indicators. Figure 1 displays the study's validity test results.

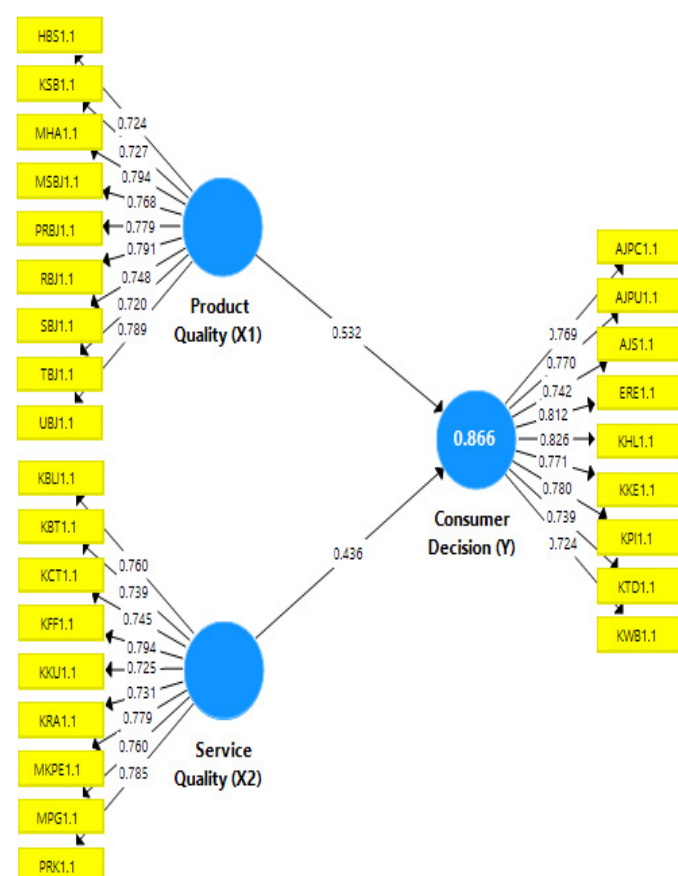


Figure 1: Validity test results based on outer loading values.

Figure 1 shows that all research variable indicators are suitable for use in studies and can be used for further analysis, with no outside loading values below 0.7. Table 3 also displays the validity test results for each variable from each indication.

Since all indicators of each study variable from each questionnaire statement provided to respondents had values greater than 0.07, as shown in Table 3, the validity test findings can be considered valid. This

implies every statement instrument in the survey is in line with the opinions of the respondents and the circumstances of the field.

The consistency and dependability of the respondents' responses were then assessed using a reliability test. The composite reliability score served as the criterion for this test. When a variable's composite reliability score is greater than 0.70, it can be regarded as reliable. Table 4 displays the reliability test results.

Table 4: Composite reliability test results.

Research variables	Composite reliability	Note
Product quality variable	0.925	Reliabel
Service quality variable	0.924	Reliabel
Consumer decision	0.929	Reliabel

Since each research variable's composite validity value is more than 0.7, indicating that it has passed testing requirements, Table 4 demonstrates that each one can be regarded as dependable.

Each research variable indication can be identified using the outer loading values that were acquired via the Calculate Algorithm testing process. Table 5 displays the four indications for each variable that most strongly shape the variables in this study.

Table 5 provides an explanation of each research variable indication that most significantly influences consumer decisions (Y), service quality (X₂), and product quality (X₁).

Testing structural models (inner model)

One component of structural equation modelling that explains the causal linkages between latent variables that are impossible to evaluate directly is the structural model, also known as the inner model in partial least squares (PLS). This model, which is based on contemporary ideas, attempts to explain how latent variables influence one another.

The degree of variance in the independent variable with respect to the dependent variable is measured by the R-Square value. The R-Square analysis findings are shown in Figure 2.

The calculate algorithm test results for these variables are displayed in Figure 2. With a value of 0.866, it demonstrates that characteristics associated with service quality (X₂) and product quality (X₁) influence consumer choices (Y). This implies a strong influence.

Table 5: The strongest indicators forming research variables.

Variables	Indicators	Outer loading
Product quality (X_1)	Fulfillment of Expectations (MHA1.1)	0.794
	Orange Flavour (RBJ1.1)	0.791
	Size of Orange (UBJ1.1)	0.789
	Change in Orange Flavor (PRBJ1.1)	0.779
	Orange Storage Time (MSBJ1.1)	0.768
	Standard of Orange Fruit (SBJ1.1)	0.748
	Freshness of Orange (KSB1.1)	0.727
	Competitive Price (HBS1.1)	0.724
	Texture of Orange Fruit (TBJ1.1)	0.720
Service Quality (X_2)	Availablitiy of Physical Facilities (KFF1.1)	0.794
	Apperance of Neat Employee (PRK1.1)	0.785
	Receiving Complaint From Visitors (MKPE1.1)	0.779
	Environmental Clean (KBLI1.1)	0.760
	Accompanying Guests (MPG1.1)	0.760
	Quick Reacting Employee (KCT1.1)	0.745
	Responsible Employee (KBT1.1)	0.739
	Friendly Employee (KRA1.1)	0.731
	Convenience of Visiting (KKU1.1)	0.725
	Holiday Visits (KHL1.1)	0.826
	Education and Recreation (ERE1.1)	0.812
	Personal Enjoyment (KPI1.1)	0.780
	Family Needs (KKE1.1)	0.771
	Agrotourism Primary priority (AJPU1.1)	0.770
Con-sumer decision (Y)	Agrotourism Orange Priority Reserve (AJPC1.1)	0.769
	Agrotourism Orange Subtitutions Option (AJS1.1)	0.742
	Unplanned Visit (KTD1.1)	0.739
	Regular Time Visits (KWB1.1)	0.724

Table 6 shows how the qualities of service quality (X_2) and product quality (X_1) influence customer decisions (Y) based on the compute algorithm test findings.

Table 6: R-Square test results.

Notes	R Square
Consumer Decission (Y)	0.866

Table 6 shows that the R-Square value, which quantifies the degree to which customer decisions (Y) are influenced by the quality of the product (X_1) and the service (X_2), is 0.866. This graph shows that customer decisions (Y) are strongly influenced by the

quality of the product (X_1) and service (X_2). Other factors that are not part of this study model account for the remaining 13.40%. According to the author's premise, the remaining 13.6% of factors impacting consumer decisions in the context of self-picking orange agrotourism include responsiveness, concrete proof, affordability, brand image, and employee friendliness (Y).

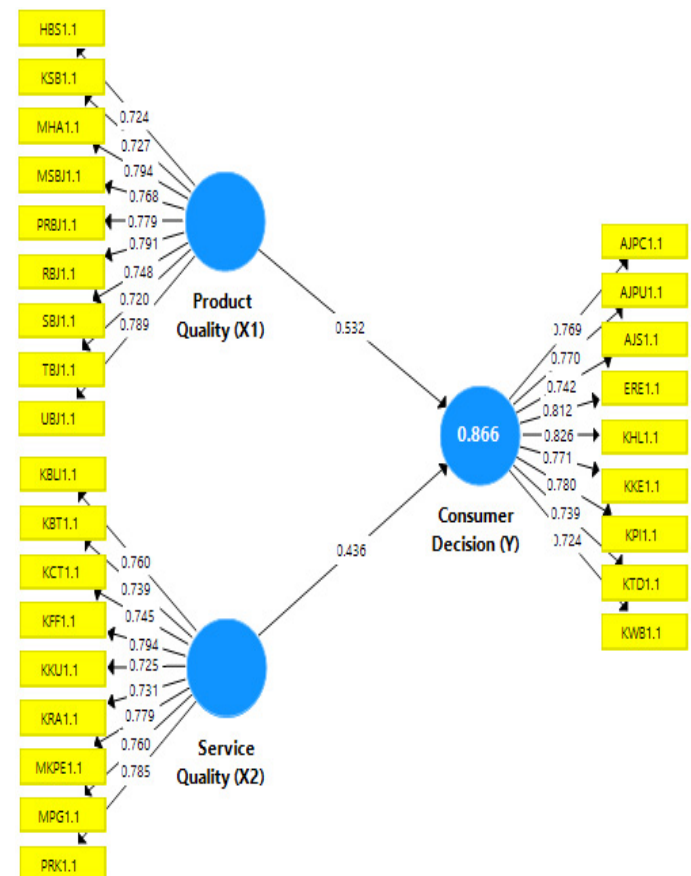


Figure 2: Results of the R Square analysis

Causal connections among latent variables

In the analysis of structural equation modelling, or SEM the causal link between latent variables describes the cause and effect relationship or influence of unobserved (abstract) latent variables on one another. Figure 3 displays the findings of the causal link between latent variables.

Furthermore, the causal relationships between latent variables in SEM (Structural Equation Modelling) analysis are shown in Table 7.

Table 7: Analysis of coefficients between latent variables (Inner Model).

Notes	T-Statistics	P values
Product quality → Consumer decission	5,991	0,000
Service quality → Consumer decission	5,795	0,000

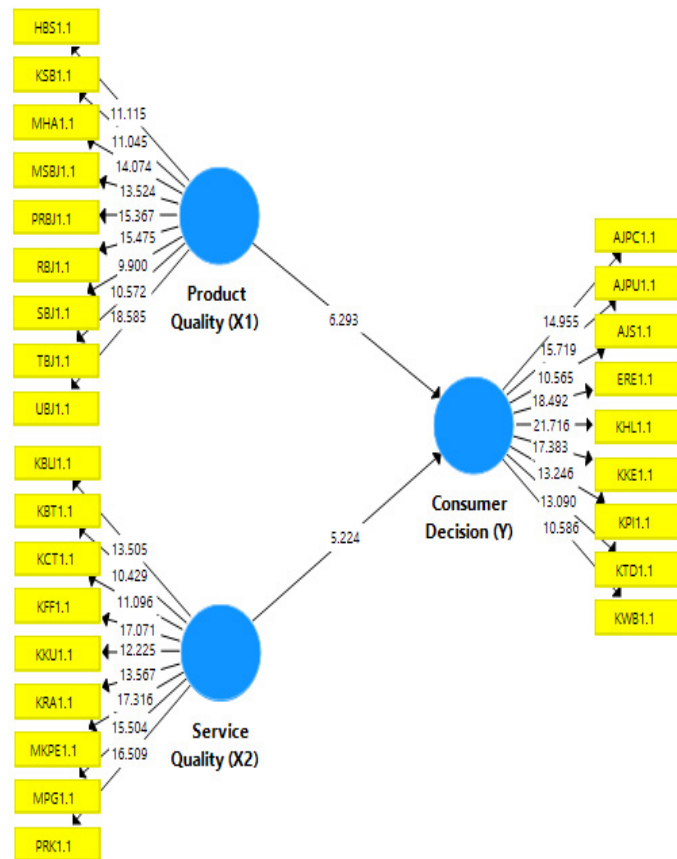


Figure 3: Results of the causal relationship between latent variables.

Table 7 bootstrapping results indicate that the product quality variable (X_1) has a higher influence on the consumer decision variable (Y) than the service quality variable (X_2), with a t-statistic value for the product quality variable (X_1) of $5.991 > t$ -table value of 1.988 and a p-value of $0.000 < 0.05$.

This is because, according to the findings of the respondent interviews, the citrus fruits from the citrus picking agrotourism already satisfy the client's expectations in terms of product quality.

Because the oranges are collected right away and may be eaten right away, their flavour is adequately sweet and reviving. Furthermore, the oranges size satisfies customer expectations. Furthermore, the longer the oranges are kept at the pick your own agrotourism location, the richer their flavour. As a result, respondents selected the variable impacting consumer decisions (Y) as product quality (X_1). On vacations, customers always choose to visit the self-picking citrus agrotourism, mostly for family fun and educational reasons. The self-picking citrus agrotourism location also attracts travellers who want to enjoy a vacation while choosing their own citrus fruits. The self picking citrus agrotourism site was also chosen as the destination by tourists in need of a

family vacation.

Discussion

The impact of product quality on client choices in agrotourism related to citrus picking

Because a positive path coefficient indicates that the latent variable of product quality positively influences customers' decisions to engage in this form of travel, we can conclude that consumers are more likely to participate in citrus picking agrotourism if the product quality is greater.

According to the study's findings, the product quality variable (X_1) has a P-value of $0.000 < 0.05$ and a t-statistic value of $5.991 > t$ -table value of 1.988. This implies that product quality (X_1) has a favourable and considerable impact on consumer selections (Y) in Karo Regency's self picking orange agrotourism.

Pick your own citrus agrotourism customers' decisions are heavily influenced by the quality of the products they purchase. Customers typically select high quality goods, and housewives in particular, who look for goods that satisfy their needs and are reasonably priced, give citrus items high marks for quality. This suggests that buyers of pick your own citrus agrotourism base their decisions in large part on the quality of the products.

This is consistent with the study, the development of orange picking agrotourism in enhancing community economy, by Ayati et al. (2023). According to the study's findings, orange picking agrotourism is a type of travel that is supported by auxiliary services and is mainly concentrated on the plantation or agricultural industry. The Segeran orange picking agrotourism has the ability to boost the local economy since it provides services from the object and the beauty of nature, in addition to profiting from the sale of goods cultivated there. Consequently, it makes money from the sale of orange goods as well as the service industry.

The impact of service quality on customer choices in agrotourism related to citrus picking

Customers will prefer to participate in citrus harvesting agrotourism more frequently as service quality increases, according to a positive service quality path coefficient.

The results of the study show that the product quality variable (X_1) has a t-statistic value of $5.795 > t$ -table value of 1.988 and a p-value of $0.000 < 0.05$. This

implies that in Karo Regency's self-picking orange agrotourism, client decisions (Y) are positively and significantly impacted by service quality (X_2).

Visitors are more likely to return and suggest agrotourism to their friends and family if they are pleased with the welcoming staff, the spotless orange orchard, and the speed at which they can choose and pay.

This aligns with the research paper Agrotourism in Malang: The Impact of Service on Customer Contentment Levels by [Aran's \(2022\)](#). Results of the study demonstrate that citrus picking agrotourism provides clients with easy, high-quality services. the excitement of picking oranges directly from the tree, the contentment of obtaining premium oranges, and enjoying a plethora of oranges while visiting the orchard. [Fuadatinnisa \(2018\)](#) study, Customer satisfaction with orange product quality at the Citrus Picking Agrotourism Site in Selorejo Village, DAU District, Malang Regency, revealed that, according to the assessed attributes, tourists were happy with the way citrus picking agrotourism performed.

To find out how tourists react to enhancements in the performance of orange fruit product attributes, the citrus picking agrotourism will in the future conduct frequent surveys to gauge visitor satisfaction levels. [Clarisia \(2022\)](#) assessed the level of consumer satisfaction with citrus fruit agrotourism in Pematang Kuing Village, Sei Suka District, Batubara Regency, North Sumatra Province. The research findings, which are based on an analysis of customer satisfaction, indicate that the primary factors addressed for improving performance are employee neatness and the completeness of facilities and equipment. Availability and quality of citrus fruits, the agrotourism site's comfort and safety, the parking facilities, the staff's friendliness and honesty, the cleanliness of the environment, the infrastructure and facilities, the speed and accuracy of service, and the availability of citrus fruits are some of the attributes whose performance is also taken into account.

Conclusions and Recommendations

Consumers' choices to purchase pick your own oranges are greatly impacted by the calibre of the goods and services provided. High-quality products typically pique interest in making a purchase, but high-quality services can increase customer satisfaction

and brand loyalty. Both can have a favourable impact on decisions to buy at the same time. Maintaining a high standard of product quality and adopting a kind and accommodating attitude are among the repercussions for farmers and agrotourism managers. While additional study implications include first examining how other factors, such as pricing, brand image, or promotions, may interact with the quality of products and services to affect purchasing decisions, policy implications include training the human resources of agrotourism managers. Second, look into how different product or service types like digital products or consulting services are affected by product quality and service. Third, look into how different consumer groups, including Generation Z, are affected by product quality and service in order to analyse variations in tastes and buying patterns. Fourth, examine whether customer pleasure acts as a mediating factor, that is, whether service and product quality affect decisions to buy.

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Novelty Statement

This article's methodological features which include a number of indicators to observe consumer choices about pick your own citrus agritourism are unique and have never been examined by other academics. This is because they can be used in citrus farming and have an impact on consumer choices in pick your own citrus agritourism, which incentivises customers to buy citrus fruits on a regular basis.

Author's Contribution

Rahmanta, Indra Wahyudi, Elisabet Siahaan: Conceived study

Rahmanta and Indra Wahyudi: Created the initial draft of this report after tabulating and analysing data with Smart PLS software.

Elisabet Siahaan: Examining and adjusting study findings

Generative AI and AI-assisted technology statement

All research results, analysis, interpretation, and

conclusions are the original work of the authors. Artificial intelligence did not assist or influence in any way the research design, data collection, or even interpretation of the results.

Conflict of interest

The authors have declared no conflict of interest.

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