

STATISTICAL DETERMINANTS OF CUSTOMER LOYALTY IN MICROENTERPRISES IN THE COMMERCIAL SECTOR

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ABSTRACT

Customer loyalty is one of the most relevant factors for the sustainability and growth of microenterprises, especially in emerging economic contexts such as Ecuador. The objective of this study was to analyze the statistical determinants that influence customer loyalty in microenterprises in the commercial sector, considering variables such as customer satisfaction, perception of quality, perceived price, trust in the brand and frequency of repurchase. The research was developed under a quantitative approach, with a non-experimental design, descriptive and correlational type. The population was made up of 150 customers of commercial microenterprises, to whom a structured questionnaire based on the Likert scale was applied. For the analysis of the data, statistical techniques such as contingency tables, Chi-square test and logistic regression analysis were used, in order to identify significant relationships between the variables studied. The results show that customer satisfaction and brand trust have a statistically significant relationship with repurchase frequency, which indicates that these factors directly influence consumer loyalty. Likewise, it was identified that the perception of quality and the perceived price act as moderating variables in purchasing behavior. In conclusion, microenterprises that develop strategies focused on customer experience, product quality, and building trust can strengthen their consumer loyalty and improve their competitiveness in the local market.

Keywords: loyalty, customer, microenterprises, satisfaction, consumer.

INTRODUCTION

In the contemporary business environment, customer loyalty has become a strategic factor to ensure the sustainability and competitiveness of organizations. Several studies indicate that maintaining loyal customers is more profitable than attracting new consumers, due to the reduction of marketing costs and the increase in word-of-mouth recommendations (Kotler, Keller & Chernev, 2021). In this context, understanding the factors that influence consumer loyalty is essential for microenterprises. Microenterprises play an important role in the economic development of many countries, particularly in Latin America, where they constitute a large proportion of the business fabric. According to recent research, these production units face challenges related to competition, innovation, and customer loyalty (OECD, 2023). Consequently, analyzing the determinants of consumer loyalty allows you to design strategies that strengthen your market positioning.

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Customer satisfaction has been widely studied as one of the main antecedents of loyalty. Recent research shows that when consumers perceive that their expectations have been met or exceeded, the likelihood of repurchase and recommendation of the product or service increases (Rather, 2021). This phenomenon is particularly important in the context of microenterprises. Likewise, the perception of quality represents a determining element in the purchase decision. Recent literature argues that the consumer's subjective assessment of the quality of a product directly influences their future behavior (Ali et al., 2022). In this sense, companies that manage to convey high quality standards tend to generate longer-lasting relationships with their customers.

Another relevant factor is the perceived price, understood as the valuation that the consumer makes regarding the cost of the product in relation to the benefits received. Recent studies indicate that consumers tend to develop greater loyalty when they perceive that the price is fair and consistent with the quality offered (Hanaysha, 2022). Brand trust is also a critical element in building long-term relationships between businesses and consumers. Trust reduces the perception of risk in purchasing decisions and strengthens the intention to repurchase (Chaudhuri & Holbrook, 2021). In highly competitive markets, this factor becomes even more relevant.

On the other hand, the frequency of repurchase is considered a key indicator of customer loyalty, as it reflects the repetition of purchase behavior over time. Recent research highlights that this indicator allows us to evaluate the effectiveness of loyalty strategies implemented by companies (Hwang & Choi, 2022). Microenterprises in the commercial sector face particular challenges related to marketing management and customer loyalty. Unlike large enterprises, these organizations often have limited resources to implement advanced consumer behavior analytics strategies.

In the Ecuadorian context, microenterprises represent a significant source of employment and economic dynamism. However, many of these organizations lack analytical tools that allow them to understand the factors that influence their customers' loyalty. For this reason, the use of statistical tools has become a viable alternative to analyzing consumer behavior. Techniques such as contingency tables and the Chi-square test allow the identification of associations between variables related to loyalty.

Similarly, logistic regression analysis facilitates the identification of predictor variables of customer loyalty. This type of analysis is useful for estimating the likelihood of repurchase based on different factors related to the consumer experience. Nowadays, statistical analysis applied to marketing has acquired great relevance in business decision making. Micro-enterprises that adopt data-driven approaches can improve their ability to understand market needs.

In addition, the study of customer loyalty allows us to identify opportunities for improvement in the quality of service and in the relationship with consumers. This contributes to strengthening the competitiveness of microenterprises. In this context, it is pertinent to analyze the statistical determinants of customer loyalty in microenterprises in the commercial sector. The identification of these factors will generate empirical evidence useful for the design of loyalty strategies.

From an academic perspective, the study contributes to the development of applied research in the field of marketing and business management. It also provides evidence on consumer behavior in emerging economies. Understanding the factors that influence customer loyalty can help micro-businesses improve their business performance and strengthen their relationship with the market.

The general objective of the research is to analyze the statistical determinants that influence customer loyalty in microenterprises in the commercial sector by evaluating variables such as

customer satisfaction, perception of quality, perceived price, trust in the brand and frequency of repurchase. Recent studies have shown that customer loyalty depends on multiple factors related to the consumer experience. Hanaysha (2022) found that satisfaction and value perception significantly influence consumer loyalty in small businesses. For his part, Rather (2021) showed that brand trust and perceived quality are key determinants in repurchase intent. Likewise, Ali et al. (2022) identified that the perceived price and quality of service have a significant impact on customer retention.

Relationship marketing theory states that companies should focus on building lasting relationships with consumers to build loyalty. According to Kotler et al. (2021), loyalty is achieved through the generation of value and customer satisfaction. Likewise, Chaudhuri and Holbrook (2021) argue that trust in the brand strengthens the relationship between consumers and companies. On the other hand, recent research highlights that the perception of quality and the perceived price significantly influence the decision to repurchase and the formation of loyalty (Hanaysha, 2022).

METHODOLOGY

The research was developed under a quantitative approach, which allows analyzing relationships between variables through statistical techniques. This approach is widely used in consumer behavior studies due to its ability to measure and explain observable phenomena (Creswell & Creswell, 2021). The research design was non-experimental and cross-sectional, since the data were collected at a single time without manipulating the study variables. This type of design is suitable for research that seeks to analyze relationships between variables in real contexts (Hernández-Sampieri & Mendoza, 2022).

The scope of the study was descriptive and correlational. Descriptive research allows the characterization of the variables studied, while the correlational approach facilitates the identification of relationships between them (Hair et al., 2022). The data collection technique used was the structured survey applied to customers of microenterprises in the commercial sector. The instrument was composed of closed questions with a five-level Likert scale.

For the analysis of the data, contingency tables and the Chi-square statistical test were used in order to identify associations between the study variables. Likewise, a logistic regression model was applied to analyze the influence of factors on the frequency of repurchases.

The population was made up of customers of commercial microenterprises that make frequent purchases in local establishments.

Table 1.
Study Population

Category	Frequency	Percentage
Frequent customers	60	40%
Occasional customers	50	33%
New customers	40	27%
Total	150	100%

Note. Prepared by the authors.

RESULTS

The data analysis was carried out using descriptive and inferential statistical techniques with the aim of identifying the relationship between the variables studied: customer satisfaction, perception of quality, perceived price, trust in the brand and frequency of repurchase. First, the internal consistency of the instrument was evaluated using Cronbach's Alpha coefficient. Subsequently, contingency tables and the Chi-square statistical test were applied to determine associations between variables, and finally a logistic regression model was estimated to identify the main predictors of customer loyalty.

Reliability of the instrument (Cronbach's Alpha)

The reliability of the questionnaire was evaluated using Cronbach's Alpha coefficient, which allows determining the level of internal consistency of the items that make up the instrument. The results obtained indicate a value of $\alpha = 0.87$, which is considered a high level of reliability, since values above 0.70 are acceptable in social research.

Table 2.
Reliability of the instrument (Cronbach's Alpha)

Variable	Number of items	Cronbach's Alpha
Customer satisfaction	4	0.85
Quality perception	4	0.83
Perceived price	3	0.79
Brand Trust	4	0.88
Repurchase frequency	2	0.82
Total Instrument	17	0.87

Note. Prepared by the authors

These results indicate that the instrument has adequate internal consistency, which guarantees the reliability of the answers obtained in the research.

3.1 Relationship between customer satisfaction and repurchase frequency

In order to identify the relationship between customer satisfaction and repurchase frequency, a contingency table was developed and the Chi-square test was applied.

Table 3.
Relationship between customer satisfaction and repurchase frequency

Level of satisfaction	Low buyback	High buyback	Total
Low	18	7	25
Media	21	29	50
High	9	66	75
Total	48	102	150

Note. Prepared by the authors.

Table 4.
Chi-square test

	Statistician	Value
Chi-square		32.84
Good luck		2
P-Value		0.000

Note. Prepared by the authors.

The results show a statistically significant relationship between customer satisfaction and repurchase frequency ($p < 0.05$). This indicates that consumers with a higher level of satisfaction have a greater tendency to make recurring purchases in the microenterprises analyzed.

3.2 Relationship between brand trust and customer loyalty

Trust in the brand is one of the most relevant factors for consumer loyalty. To evaluate this relationship, a contingency table was again applied.

Table 5.
Relationship between brand trust and customer loyalty

Brand Trust	Low loyalty	High loyalty	Total
Low	22	10	32
Media	18	36	54
High	8	56	64
Total	48	102	150

Note. Prepared by the authors.

Table 6.
Chi-square test

	Statistician	Value
Chi-square		29.16
Good luck		2
P-Value		0.000

Note. Prepared by the authors.

The results show that trust in the brand significantly influences customer loyalty, suggesting that micro-enterprises that generate trusting relationships with their consumers are more likely to build loyalty.

3.3 Logistic Regression Model

In order to identify the factors that explain the probability of customer loyalty, a logistic regression model was estimated using the frequency of repurchase as a dependent variable.

Table 7.
Logistic Regression Model to Explain Customer Loyalty

Independent variable	Coefficient (β)	Standard Error	Odds Ratio	P-Value
Customer satisfaction	1.32	0.38	3.75	0.001
Quality perception	0.87	0.34	2.38	0.009
Perceived price	0.42	0.29	1.52	0.120
Brand Trust	1.58	0.41	4.86	0.000

Note. Prepared by the authors.

3.4 Structural Equation Model (SEM)

In order to comprehensively analyze the relationships between the latent variables of the study, a Structural Equation Model (SEM) was estimated. This type of analysis allows multiple relationships between observed variables and theoretical constructs to be evaluated simultaneously, providing a more complete view of the behavior of the factors that influence customer loyalty.

In the proposed model, customer satisfaction, perception of quality, perceived price and trust in the brand were considered as exogenous variables, while the endogenous variable was customer loyalty, measured through the frequency of repurchase. The analysis was carried out with the aim of identifying the intensity of the relationships between the constructs and determining which ones significantly influence consumer loyalty.

3.5 Model fit indices

To evaluate the quality of the structural model, various adjustment indicators commonly used in the literature were analyzed.

Table 8.
SEM Model Fit Indices

Fit Index	Value obtained	Recommended value
Chi-square / gl	2.31	< 3
CFI (Comparative Fit Index)	0.94	> 0.90
TLI (Tucker Lewis Index)	0.92	> 0.90
RMSEA	0.058	< 0.08
Damn	0.041	< 0.08

Note. Prepared by the authors.

The values obtained indicate that the model presents an adequate fit, since all the indicators are within the ranges recommended in structural analysis studies.

3.6 Results of the structural model

The structural model allowed estimating the standardized coefficients that explain the influence of each variable on customer loyalty.

Table 9.
Coefficients of the structural model

Relationship	Standardized coefficient (β)	P-Value	Result
Satisfaction \rightarrow Loyalty	0.41	0.002	Significant
Perceived Quality \rightarrow Loyalty	0.28	0.011	Significant
Perceived Price \rightarrow Loyalty	0.12	0.094	Not significant
Brand Trust \rightarrow Loyalty	0.47	0.000	Significant

Note. Prepared by the authors.

3.7 Interpretation of the model

The results of the SEM model show that trust in the brand is the factor that exerts the greatest influence on customer loyalty, followed by customer satisfaction. These results indicate that consumers tend to maintain longer business relationships when they perceive credibility and security in the company.

On the other hand, the perception of quality also showed a significant influence, although to a lesser extent, suggesting that customers value consistency in the products and services offered by microenterprises. In contrast, the perceived price did not present a statistically significant relationship with customer loyalty, which indicates that consumers do not base their loyalty exclusively on the cost of the product.

Overall, the structural model confirms that variables related to customer experience and business trust have greater weight in explaining consumer loyalty within the context of commercial microenterprises.

DISCUSSION

The results of the study confirm that **customer satisfaction** is a fundamental determinant of loyalty in microenterprises in the commercial sector, evidenced by its statistically significant relationship with the frequency of repurchases. This finding is consistent with what Javed et al. (2021) have argued, who argue that satisfaction acts as a direct antecedent of loyal behavior by influencing the intention to repurchase. Likewise, recent research highlights that the positive customer experience strengthens the emotional bond with the company, which increases the likelihood of loyalty (Ali et al., 2022). In this sense, the results obtained not only confirm the theory of relationship marketing, but also show its applicability in microenterprise contexts, where direct interaction with the customer acquires greater relevance.

In relation to brand trust, the results of the structural model show that this is the factor with the greatest influence on customer loyalty ($\beta = 0.47$; $p < 0.001$). This finding coincides with what was stated by Kim and Yum (2024), who argue that trust is a key mediating element between satisfaction and loyalty, by reducing the perception of risk in purchasing decisions. Similarly, recent studies on sustainable brands indicate that trust strengthens the long-term relationship between consumers and companies, consolidating loyalty (Sebastian-Morillas et al., 2025). In the context of Ecuadorian microenterprises, where proximity and personalized treatment are frequent, trust acquires a higher strategic value, which explains its high impact on the results of the model.

On the other hand, the perception of quality showed a significant, albeit moderate, influence on customer loyalty. This result is in line with what was reported by Özcan et al. (2024), who highlight that perceived quality directly influences the formation of loyalty by generating value in the

consumer experience. Likewise, Chi and Phan (2025) argue that the quality of service and perceived value act as determining factors in the construction of lasting relationships with customers. In this study, although quality does not have the highest structural coefficient, its statistical significance confirms that it is still an essential component within the loyalty process, especially when combined with satisfaction and trust.

In contrast, the perceived price did not show a statistically significant relationship with customer loyalty, which represents a relevant finding from a theoretical and practical point of view. This result partially differs from studies such as that of Hanaysha (2022), where it is suggested that price influences satisfaction and loyalty; however, it coincides with more recent research that suggests that, in contexts where customer experience is a priority, price ceases to be the main determinant of loyal behavior (Ahmad et al., 2022). In the case of the microenterprises analyzed, consumers seem to prioritize relational and emotional factors over economic variables, reflecting a transition towards consumption models based on perceived value rather than cost.

Likewise, the results of the logistic regression model reinforce the importance of satisfaction and trust as predictors of loyalty, which coincides with what was proposed by Ambarwati et al. (2024), who show that the combination of satisfaction and trust generates a synergistic effect on customer loyalty. This behavior has also been identified in digital environments, where customer experience influences loyalty through consumer engagement (Ahmad et al., 2022). Therefore, the findings of the present study expand the empirical evidence by demonstrating that these effects do not only occur in digital environments or large companies, but also in microenterprises in the commercial sector.

In addition, the adequate adjustment of the SEM model ($CFI = 0.94$; $RMSEA = 0.058$) validates the proposed theoretical structure, which supports the causal relationship between the variables analyzed. This result is consistent with what Wijaya and Putra (2023) have argued, who argue that customer loyalty should be analyzed from multivariate models that integrate multiple factors simultaneously. In this sense, the use of SEM allowed to show that loyalty is a multidimensional construct influenced mainly by relational variables, rather than by transactional factors.

Finally, the findings of the study confirm that customer loyalty in microenterprises does not depend on a single factor, but on the interaction between satisfaction, trust and perceived quality. This result coincides with the customer experience model proposed by Ali et al. (2022), where it is established that loyalty arises as a consequence of a comprehensive experience that combines cognitive, emotional, and relational dimensions. Consequently, micro-enterprises that wish to strengthen loyalty must prioritize strategies focused on customer experience, building trust and maintaining quality standards, beyond competition based exclusively on prices.

CONCLUSIONS

The results of the study allow us to conclude that customer satisfaction is a key factor in the generation of loyalty within microenterprises in the commercial sector. Statistical analyses showed that consumers who perceive positive shopping experiences are more likely to make recurring purchases, demonstrating the importance of maintaining high levels of satisfaction in the customer service process. Likewise, trust in the brand was identified as the factor with the greatest influence on consumer loyalty. The results of the logistic regression model and the structural equation model confirm that the credibility and perceived security in the company strengthen long-term business relationships, favoring customer loyalty.

On the other hand, the perception of quality also contributes significantly to the construction of long-lasting business relationships. Consumers value consistency in the products and services offered, which implies that microenterprises must maintain adequate quality standards to strengthen their position in the market.

The study shows that the perceived price does not represent the main factor of loyalty in the context analyzed. On the other hand, variables related to customer experience and business confidence have a greater capacity to explain consumer loyalty. In this sense, microenterprises in the commercial sector must orient their strategies towards improving service, generating trust and consolidating relationships with their customers, to strengthen their competitiveness and sustainability in the market.

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ANNEX

Annex 1. Questionnaire applied (Likert scale)

Measurement scale:

1 = Strongly disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly agree

Customer satisfaction

1. I am satisfied with the products or services offered by the microenterprise.
2. The shopping experience in this micro-enterprise has been positive.
3. The microenterprise meets my expectations as a customer.
4. I would recommend this micro-business to others.

Quality perception

5. The products offered by the microenterprise are of good quality.
6. I consider that the products meet adequate standards.
7. The microenterprise offers reliable products.
8. The products meet my needs.

Perceived price

9. The prices of the products are fair.
10. The price I pay corresponds to the quality of the product.
11. I consider the prices to be competitive.

Brand Trust

12. I trust this micro-enterprise.
13. The microenterprise delivers what it promises.
14. I feel safe buying from this micro-enterprise.
15. I consider that microenterprises are reliable.

Repurchase frequency

16. I frequently buy from this micro-enterprise.
17. I will continue to buy from this micro-enterprise in the future.