

Green Innovation and Brand Image Influences on Customer Satisfaction in Palu City MSMEs' Transformation

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Submitted: 04/12/2025; Accepted: 07/01/2026; Published: 22/01/2026

Abstract-This study aims to analyze the effect of green innovation and brand image on the satisfaction of MSME customers in Palu City. Changes in consumer preferences, which increasingly focus on sustainability practices and brand reputation, make these two factors important in shaping the consumption experience. This study was conducted in Palu City, involving 95 respondents who had purchased local MSME products. Data were collected using a Likert scale questionnaire and analyzed using descriptive statistics and multiple linear regression to test the partial and simultaneous effects between variables. The results show that green innovation and brand image simultaneously have a significant effect on customer satisfaction ($F = 64.183$; $p < 0.001$). Partially, green innovation has a positive and significant effect on customer satisfaction ($\beta = 0.206$; $p = 0.033$), although its effect is relatively lower than that of brand image. Brand image proved to be the most dominant variable in influencing customer satisfaction ($\beta = 0.603$; $p < 0.001$), indicating that consumers place more emphasis on aspects of reputation, trust, and positive perceptions of the brand. This research model is able to explain 58.3% of the variation in customer satisfaction among MSMEs in Palu City. The limitations of this study lie in the relatively small sample size and the dominance of respondents from the younger age group, so the results do not fully represent all segments of MSME consumers. This research model is able to explain 58.3% of the variation in customer satisfaction among MSMEs in Palu City. The limitations of this study lie in the relatively small sample size and the dominance of respondents from the younger age group, so the results do not fully represent all segments of MSME consumers. Therefore, further research is recommended to expand the number and characteristics of respondents and add other variables, such as service quality or digital experience, to gain a more comprehensive understanding of the factors that influence MSME customer satisfaction.

Keywords: Green Innovation; Brand Image; Costumer Satisfaction; MSMEs; Transformation; Consumers

1. INTRODUCTION

The shift in development orientation that increasingly emphasizes sustainability has influenced the way businesses operate, both globally and locally. Consumers now not only evaluate a product based on its function, but also consider how it is produced, what materials are used, and whether the business processes support environmental sustainability (Fitriani Fajar et al. 2024). This shift in preferences has made green innovation a strategic necessity for many businesses, especially MSMEs, which must be able to adapt to increasingly critical and selective market demands (Sari, Setiawan, and Purnamasari 2025). This situation has prompted MSMEs to begin evaluating their work methods and seeking more efficient, environmentally friendly, and sustainability-oriented approaches (Wati 2025).

This phenomenon is also evident in the development of MSMEs in Palu City. After going through a period of recovery following the 2018 disaster and the pandemic, MSMEs in Palu have grown quite well, as seen from the increasing number of new businesses, increased digital marketing activities, and the emergence of various creative business sectors. However, this development has not been fully matched by the consistent implementation of green innovation. Many MSMEs have improved their packaging or utilized digital media, but have not yet made sustainability a part of their business strategy (Ainiah and Pamungkas 2025). When local consumers pay attention to environmental friendliness, material quality, and brand narratives that reflect ethics and social responsibility. This change in preferences indicates that MSMEs in Palu need to transform in order to remain relevant and competitive, especially amid rising market expectations (Qin et al. 2025).

Green innovation refers to efforts to create products, technologies, or processes that can reduce negative impacts on the environment while still providing added value to users (Bratamanggala and Hendayana 2024). The application of green innovation can take the form of using environmentally friendly raw materials, better waste management, product design innovation, and the development of technologies that minimize the use of energy and other resources (Fauziah et al. 2025). MSMEs play an important role in the economic sector (Lutfi et al. 2020). In the context of MSMEs, green innovation has the potential to improve operational efficiency, reduce long-term costs, and strengthen the position of businesses in an increasingly competitive market (Utomo and Savitri 2025). In addition, these efforts can be an added value that is appreciated by consumers, thereby contributing to the formation of a positive impression of the business. On the other hand, brand image plays an important role in shaping customer perceptions of a business. Brand image is not only about logos or visual appearance, but also reflects the reputation, commitment, and identity of the business in the eyes of customers (Al Satria and Firmansyah 2024). A strong brand image usually stems from positive customer experiences, consistent product quality, and brand communication that is able to convey the values and character of the business (Afriany et al. 2024). In the context of MSMEs, brand image is often the main differentiator that determines whether customers will choose a product over a competitor's. Furthermore, when a brand is able to demonstrate its commitment to sustainability, consumers will see it as an added value that increases their trust and loyalty (Tarigan et al.

2023). This commitment, especially in the form of green innovation, is increasingly in line with current consumer expectations (Yuandira and Nawawi 2025).

Customer satisfaction is an important indicator of business success because it reflects the extent to which the products or services provided can meet consumer expectations (Andreas Andreas et al. 2025). Satisfied customers usually show stronger loyalty, give recommendations to others, and are more likely to make repeat purchases (Roynaldus A. K. Agung, Antonius Philipus Kurniawan, and Paulus Juru 2023). In an increasingly competitive market such as Palu City, customer satisfaction levels are a decisive factor in the survival of MSMEs. Product quality, ease of access, transaction experience, and brand consistency are factors that are often the main considerations in shaping this satisfaction (Maulidiah, Survival, and Budiantono 2023).

Previous studies have examined the relationship between green innovation, brand image, and customer satisfaction. (Haratua et al. 2024) asserts that product innovation and human resource development have an impact on increasing the satisfaction of MSME customers. Research (Fauziah et al. 2025) shows that digital transformation and sustainable innovation are important foundations for MSMEs that want to increase their competitiveness. (Surawan, Barasa, and Rachman 2025) found that managerial transformation and corporate image have a significant influence on customer satisfaction in the service sector. Research (Musleha, Pramitasari, and Soeliha 2025) also emphasizes that brand image can influence purchasing decisions and customer experience.

However, most previous studies still examine the influence of innovation and brand image separately or are conducted on large companies and major urban areas. Research that simultaneously examines the role of green innovation and brand image on customer satisfaction in the context of MSMEs in developing regions, particularly Palu City, is still relatively limited. In addition, the characteristics of MSMEs in Palu City, which are currently in the post-disaster and pandemic recovery phase, as well as the dominance of consumers from the younger age group, present a different dynamic compared to other regions. This condition indicates an academic need to conduct more contextual and region-specific studies on how green innovation and brand image shape the satisfaction of MSME customers.

Based on the above description, this research has clear urgency. Therefore, this study aims to analyze the effect of green innovation and brand image on customer satisfaction of MSMEs in Palu City. The results of this study are expected to not only contribute theoretically to the development of sustainable marketing literature, but also provide practical implications for MSME players in designing more effective, responsive, and sustainability-oriented business strategies. Ultimately, this study is expected to help MSMEs in Palu City strengthen their competitiveness, improve service quality, and face market challenges with a more adaptive and sustainable approach.

2. RESEARCH METHODS

2.1 Basic Research Framework

This research was conducted in Palu City, involving respondents who are members of the community who have purchased and used local MSME products. Palu City was chosen because it is one of the economic growth centers in Central Sulawesi, which has seen an increase in MSME activity in recent years. In addition, changes in consumer behavior, with increasing attention to quality, sustainability, and the experience of using local products, are an important basis for researching how green innovation and brand image affect customer satisfaction levels. The selection of this location was also based on the fact that Palu City has a diversity of MSME types, ranging from culinary, fashion, crafts, to environmentally-based processed products, making it a relevant context for research on green innovation. In the sampling process, this study used probability sampling, a sampling technique that gives each member of the population an equal chance of being selected (Khaidir Ali Fachreza et al. 2024). Of the various forms of probabilistic sampling, this study uses simple random sampling, in which respondents are selected at random without considering specific characteristics. This method was chosen to minimize bias in the sample selection process, so that the research results can accurately describe the actual conditions of the MSME customer population in Palu City. The use of simple random sampling is also appropriate for a heterogeneous population that does not require division into specific strata (Ulva Putri Ramadani et al. 2025).

Primary data in this study were collected through the distribution of questionnaires to 95 respondents. This number was determined based on methodological considerations and suitability with the research design. Referring to the sample size guidelines described by (Memon et al. 2020), research with multivariate analysis, including multiple linear regression, requires a minimum sample size of approximately 10 respondents for each predictor variable. With two independent variables tested, the minimum requirement was actually only about 20 respondents. Therefore, the use of 95 respondents was considered sufficient to produce stable parameter estimates, reduce potential statistical bias, and increase the validity of the research findings. The research instrument used a 1–5 Likert scale, which was considered appropriate for measuring respondents' level of agreement with various statements related to green innovation, brand image, and customer satisfaction. This scale allows researchers to capture respondents' perceptions, attitudes, and subjective evaluations quantitatively. With an adequate sample size and appropriate measurement instruments, the data obtained can be statistically analyzed to test the relationship between research variables more accurately and comprehensively. Each research variable is measured based on theoretical dimensions developed in the literature, then operationalized into indicators and questionnaire items tailored to the context of MSMEs in Palu City. A complete list of questionnaire items is presented in the research appendix as a form of academic rigor.

The Green Innovation Variable (X1) is analyzed through four main dimensions according to (Li et al. 2022), namely technological innovation, product innovation, institutional innovation, and environmental innovation. These dimensions reflect the concept of sustainability in MSME business operations. The indicators used include the use of environmentally friendly technology, production process efficiency, the use of environmentally friendly packaging, sustainable raw materials, compliance with regulations, as well as the awareness and involvement of MSME actors in maintaining cleanliness and disseminating information related to environmentally friendly products.

Brand Image Variable (X2) is measured through three dimensions according to (Rehansyah and Simatupang 2023), namely brand perception, brand recognition, and consumer trust or attitude towards the brand. These three dimensions reflect how consumers form perceptions of the reputation and identity of MSME brands. The indicators used include brand reputation, positive brand image, ease of brand recognition, brand popularity, trust in product quality, and consumer preference for the brand. Meanwhile, the Customer Satisfaction (Y) variable was analyzed through three dimensions according to (Ren et al. 2025), namely perceived value, usage experience, and product quality. These dimensions reflect the theoretical view that satisfaction is formed when a product is able to provide value, a comfortable consumption experience, and quality that meets expectations. The indicators used include product benefits, price-quality suitability, ease of use of the digital platform, transaction security, product quality suitability with expectations, and product durability.

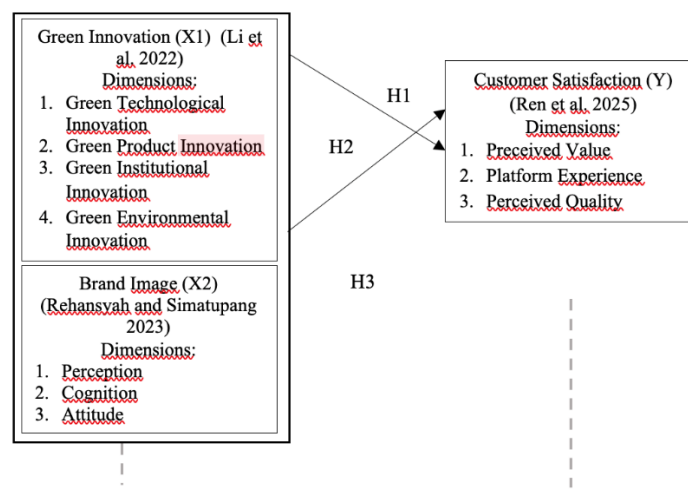


Figure 1. Research Model

The research framework is based on previous theories and empirical findings that show that green innovation has the potential to increase product value and strengthen customer loyalty. Today's consumers are increasingly environmentally conscious, so sustainable business practices can be an added value that affects their satisfaction. Therefore, this study assumes a positive relationship between green innovation and customer satisfaction. In addition, a strong brand image is often associated with higher trust, better quality perceptions, and positive emotional experiences. Thus, this study estimates that brand image also has a significant influence on customer satisfaction. Not only separately, green innovation and brand image are also predicted to have a simultaneous influence on customer satisfaction. Green innovation can strengthen brand reputation, while a positive brand image can improve customer assessment of the quality of innovations made by MSMEs. The combination of these two factors is expected to create a better customer experience and increase overall satisfaction levels.

Data analysis was conducted using descriptive statistics to describe the respondent profile and answer distribution. Furthermore, multiple linear regression analysis was conducted to examine the effect of green innovation and brand image on customer satisfaction, both partially and simultaneously. As a prerequisite for regression analysis, this study also tested the validity and reliability of the instruments, as well as classical assumptions, including normality, multicollinearity, and heteroscedasticity. The results of the classical assumption test are presented in the results and discussion section to ensure that the regression model used meets the necessary statistical criteria. With this study, it is hoped that the results can provide empirical contributions to the development of sustainability-based MSME strategies, particularly in improving service quality and product value so as to strengthen customer satisfaction in Palu City.

3. RESULTS AND DISCUSSION

To understand the relationship between the variables studied, the data collected from respondents was processed and analyzed, resulting in a number of empirical findings that provide an overview of the actual conditions in the field. The results of this processing reflect how consumer perceptions of green innovation and the brand image of MSMEs contribute to their level of satisfaction. In this section, all findings are presented in the form of descriptive tables and inferential statistical test results, followed by interpretive explanations to show the value trends for each indicator. This presentation

is expected to provide a more comprehensive understanding of the role of each variable in supporting the transformation of MSMEs in Palu City.

3.1 Profile Responden

Table 1. Respondent Gender

Gender	Frequency	Percentage
Male	30	31,6%
Famale	65	68,4%
Total	95	100%

Table 2. Respondents' Age Distribution

Age Group (Years)	Frequency	Percentage
17-20	38	40.0%
21-25	52	54.7%
26-35	3	3.2%
36-45	3	3.2%
46-56	3	3.2%
Total	95	100%

Table 3. Respondents' Occupational Status

Occupational	Frequency	Percentage
Student	78	82.1%
Civil Servants	3	3.2%
Private Employees	4	4.2%
Entrepreneurs	5	5.3%
Lecturers	1	1.1%
Honorary Staff	1	1.1%
IRT	1	1.1%
Unemployed	1	1.1%
Total	95	100%

The profile of respondents in this study shows a diverse demographic distribution and provides a representative picture of MSME consumers in Palu City. The majority of respondents were women (68.4%) and the 17–25 age group dominated more than half of the sample. This composition is theoretically relevant because young and female consumers are known to be more active in consumption activities and more sensitive to aspects of quality, innovation, and brand image than other demographic groups. This is in line with the findings (James 2021), which state that demographic factors such as age, occupation, and income play a role in shaping consumer preferences and influencing purchasing decisions. In addition, the dominance of respondents with student status and the tendency to purchase food, fashion, and beauty products indicate a distinctive consumption pattern among young consumers.

These preferences are in line with research (Putri and Zargustin 2021) which confirms that age characteristics and environmental awareness influence consumer behavior, especially in the context of lifestyle-related products. Meanwhile, (Nibsaiya 2024) found that demographic variables such as gender and occupation also shape consumer perceptions of brand identity and reputation. With a respondent composition dominated by women and students, the results of this study reflect the perspective of young consumers in assessing green innovations and the brand image of MSMEs. This condition is important to note in interpreting the research results, as preferences and satisfaction levels are greatly influenced by the demographic characteristics of the respondents. Therefore, the respondent profile not only serves as a description of the sample but also as an interpretive basis for understanding the research findings related to SME customer satisfaction in Palu City.

3.2 Descriptive Variable of Green Innovation (X1)

A descriptive analysis of the Green Innovation variable (X1) was conducted to observe how respondents assessed the implementation of environmentally friendly practices by MSMEs, ranging from technological innovation, the use of environmentally friendly materials, to involvement in preserving the environment. The description of this trend is important because these indicators are theoretically and empirically believed to encourage increased customer satisfaction. By understanding the respondents' answers to each indicator, researchers can assess the extent to which green innovation by MSMEs has the potential to influence customer satisfaction levels, as tested in the first hypothesis of the study.

Table 4. Descriptive Variable of Green Innovation (X1)

Indicator	N	Min	Max	Mean	Std.Dev
Friendly technological innovation (XI.1)	95	1	5	3.88	0.849

Indicator	N	Min	Max	Mean	Std.Dev
Technological process efficiency (X1.2)	95	1	5	3.93	0.828
Environmentally friendly packaging (X1.3)	95	1	5	3.33	1.026
Environmentally friendly packaging (X1.4)	95	1	5	3.27	1.005
Environmentally friendly raw materials (X1.5)	95	1	5	3.66	0.930
Compliance with environmental regulations (X1.6)	95	1	5	3.55	0.987
MSME actors' environmental awareness (X1.7)	95	1	5	3.56	0.931
Involvement in maintaining environmental cleanliness (X1.8)	95	1	5	3.71	0.898
Dissemination of information on environmentally friendly products (X1.9)	95	1	5	3.64	0.910

The descriptive analysis results show that the Green Innovation variable has a mean value range of 3.27 to 3.93, indicating that MSME green innovation practices are considered quite good by respondents. The indicator with the highest value is technological process efficiency (X1.2), which shows that consumers feel the direct benefits of using more efficient technology. Conversely, the indicator with the lowest value is X1.4, namely the use of environmentally friendly materials or packaging. The low average value of indicator X1.4 indicates that consumers have not fully felt or identified the real application of green innovation in terms of raw materials and packaging. This condition contributes to a lower Green Innovation Beta coefficient in the regression analysis, so that even though it has a significant effect, this variable is not a dominant factor in increasing customer satisfaction. This shows that green innovation in MSMEs in Palu City is still partial and has not been fully integrated into business strategies.

3.3 Descriptive Variable of Brand Image (X2)

Descriptive analysis of the Brand Image variable (X2) aims to identify how respondents assess the reputation, brand recognition, credibility, and their level of preference for MSME products. Empirical trends in this indicator are important because a positive brand image will theoretically strengthen customer perceptions and increase their satisfaction levels. Thus, this descriptive presentation serves as a basis for understanding how brand image plays a role in influencing customer satisfaction, in accordance with the second hypothesis which states that brand image has a significant influence on customer satisfaction.

Table 5. Descriptive Variable of Brand Image (X2)

Indicator	N	Min	Max	Mean	Std.Dev
Good brand reputation (X2.1)	95	1	5	3.98	0.699
Positive brand image (X2.2)	95	1	5	4.08	0.694
Ease of brand recognition (X2.3)	95	1	5	3.85	0.850
Brand popularity (X2.4)	95	1	5	3.82	0.875
Trust in brand quality (X2.5)	95	1	5	3.93	0.747
Brand preference (X2.6)	95	1	5	3.61	0.903

The Brand Image variable has a relatively high mean value, ranging from 3.61 to 4.08. The positive brand image indicator (X2.2) obtained the highest value, indicating that consumers have a good perception of the reputation and identity of MSMEs. Meanwhile, the brand preference indicator (X2.6) has the lowest value, indicating that customer emotional loyalty can still be improved. The high average values of almost all brand image indicators explain why this variable has the largest Beta coefficient in the regression model. Consistent positive perceptions of the brand directly strengthen customer trust and satisfaction, especially among young consumers who are highly influenced by a brand's reputation and social image.

3.4 Descriptive Variable of Customer Satisfaction (Y)

A descriptive analysis of the Customer Satisfaction (Y) variable was conducted to illustrate the patterns of respondents' assessments of product benefits, price and quality suitability, experience using the MSME digital platform, transaction security, and product quality and durability. This description not only shows customer perception trends but also provides an initial picture of the extent to which their satisfaction is formed as a result of their consumption experience with MSME products. These findings then became the basis for testing the influence of Green Innovation (X1) and Brand Image (X2) on Customer Satisfaction (Y), as formulated in the research model.

Table 6. Descriptive Variable of Customer Satisfaction (Y)

Indicator	N	Min	Max	Mean	Std.Dev
Product benefits (Y1)	95	1	5	4.05	0.658
Price and quality suitability (Y2)	95	1	5	3.98	0.743
Ease of use of the platform (Y3)	95	1	5	4.03	0.844
Online transaction security (Y4)	95	1	5	3.92	0.753
Product quality meets expectations (Y5)	95	1	5	3.92	0.739
Product durability (Y6)	95	1	5	3.66	0.807

The analysis results show that customer satisfaction is in the good category with a mean value range of 3.66-4.05. The product benefit indicator (Y1) obtained the highest average value, indicating that customers feel the direct benefits of MSME products, both in terms of function, ease of use, and suitability for daily needs. Conversely, the product durability indicator (Y6) had the lowest average score, indicating that durability is not yet a major strength of MSME products. These findings indicate that customer satisfaction is currently driven more by short-term benefits and user experience than by long-term quality considerations. This condition also reflects that consumers, especially in the younger age segment, tend to focus more on practical value and direct experience, while product durability still has room for improvement in order to strengthen customer satisfaction and loyalty in the long term.

a. Hypothesis Testing

Simultaneous Test (F-Test)

Table 7. ANOVA Simultaneous Effect of (X1) and (X2) on (Y)

ANOVA					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	604.317	2	302.158	64.183	<.001 ^b
1 Residual	433.115	92	4.708		
Total	1037.432	94			

a. Dependent Variable: Y
b. Predictors: (Constant), X2, X1

The F test results show an F value of 64.183 with a significance level of < 0.001, which is less than the significance threshold of 0.05. These findings indicate that the variables of Green Innovation (X1) and Brand Image (X2) simultaneously have a significant effect on Customer Satisfaction (Y). Thus, the hypothesis stating that green innovation and brand image together affect customer satisfaction can be accepted. In addition, the results of this simultaneous test also confirm that the regression model used has met the statistical validity to explain the relationship between variables. This means that the combination of implementing green innovation practices and establishing a strong brand image can make a meaningful contribution to shaping the customer satisfaction of MSMEs in Palu City. These findings reinforce the assumption that customer satisfaction is not only influenced by a single factor, but is the result of an interaction between functional and perceptual aspects as perceived by consumers.

b. Partial Test (t-Test)

Table 8. Coefficients Partial Effect of (X1) and (X2) on (Y)

Coefficients ^a					
Model	Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.
	B		Beta		
(Constant)	7.321	1.463		5.006	<.001
1 X1	.102	.047	.206	2.166	.033
X2	.555	.088	.603	6.332	<.001

a. Dependent Variable: Y

The partial test results show that the Green Innovation variable (X1) has a t-value of 2.166 with a significance level of 0.033, which is less than 0.05. This finding indicates that green innovation has a positive and significant effect on Customer Satisfaction. This means that the better the implementation of green innovation by MSMEs—whether through the use of environmentally friendly technology, production process efficiency, the use of sustainable raw materials, or concern for the environment the higher the level of satisfaction felt by customers. However, the Green Innovation Beta coefficient value of 0.206 shows that the influence of this variable is relatively smaller than that of the Brand Image variable. This indicates that although consumers appreciate environmentally friendly practices, their impact on satisfaction is not as strong as direct and easily recognizable perceptual factors. Meanwhile, the Brand Image variable (X2) obtained a t-value of 6.332 with a significance level of < 0.001, indicating a very significant positive influence on Customer Satisfaction. The Beta coefficient value of 0.603 makes Brand Image the most dominant variable in the regression model. These findings confirm that brand reputation, recognition levels, and positive perceptions associated with MSME brands contribute more to customer satisfaction than green innovations. Thus, strengthening brand image is a very important strategy for MSMEs in maintaining and improving customer satisfaction.

c. Model Summary

Table 9. Model Summary

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.763 ^a	.583	.573	2.170	

a. Predictors: (Constant), X2, X1

The R Square value of 0.583 indicates that 58.3% of the variation in Customer Satisfaction (Y) can be explained by the two independent variables in the model, namely Green Innovation (X1) and Brand Image (X2). This figure shows that the model has a fairly strong predictive ability, considering that more than half of the variation in customer satisfaction can be explained by these two variables. Meanwhile, the remaining 41.7% is influenced by other factors not included in this study, such as service quality, product price, promotional strategies, customer experience, emotional factors, and consumer characteristics. Thus, although the research model has good explanatory power, there is still an opportunity to include additional variables in future studies to gain a more comprehensive understanding of customer satisfaction.

3.5 Discussion

3.5.1 Discussion of Simultaneous Effect (F-Test)

The results of the simultaneous test (F-test) indicate that Green Innovation (X1) and Brand Image (X2) jointly have a significant effect on Customer Satisfaction (Y), as evidenced by an F-value of 64.183 with a significance level of < 0.001 . This finding confirms that the regression model is statistically appropriate and capable of explaining the relationship between the independent variables and customer satisfaction. It also suggests that Green Innovation and Brand Image do not operate independently, but rather complement each other in shaping customer satisfaction. This result is consistent with previous studies showing that green marketing practices and a strong green brand image enhance customer satisfaction by strengthening positive perceptions of a firm's commitment to sustainability. Similarly, (Susilowati, Djunaedi, and Marwanto 2023) found that green brand image and green brand innovation simultaneously contribute to consumer satisfaction through their influence on purchasing decisions.

The consistency of these findings indicates that when environmentally oriented innovations are implemented and supported by effective brand image management, customer satisfaction tends to increase. From a practical perspective, these findings imply that MSMEs cannot rely solely on either green innovation or brand image. Environmental innovations that are not communicated effectively through a strong brand image may be undervalued by customers, whereas a positive brand image becomes more meaningful when it is supported by tangible sustainability practices.

3.5.2 Discussion of Partial Effect (t-Test)

The partial test results show that Green Innovation (X1) has a positive and significant effect on Customer Satisfaction, as indicated by a t-value of 2.166 and a p-value of 0.033. This finding suggests that customers respond positively to environmentally friendly practices implemented by MSMEs, such as the use of efficient technologies, environmentally friendly packaging, and sustainable raw materials. These practices are perceived to enhance customer comfort, perceived value, and trust in MSME products. However, the magnitude of the effect of Green Innovation is relatively smaller compared to Brand Image, as reflected in its lower standardized beta coefficient. This indicates that although green innovation is appreciated by customers, it has not yet become the primary determinant of customer satisfaction. This condition may be attributed to limited consumer awareness or understanding of sustainability practices, causing green innovation to be perceived more as an added value rather than a core consideration in consumption decisions.

In contrast, Brand Image (X2) is shown to have a much stronger and more dominant influence on Customer Satisfaction, with a t-value of 6.332, a significance level of < 0.001 , and the highest beta value of 0.603. This finding is consistent with the study by (Lie and Silintonga 2024) which emphasizes the crucial role of brand image in shaping customer satisfaction and fostering consumer loyalty. A strong brand image is capable of creating perceptions of quality, credibility, and emotional attachment, which significantly enhance the overall consumption experience. Therefore, although green innovation contributes positively to customer satisfaction, brand image remains the most dominant factor in building trust, emotional connections, and long-term customer preferences. For MSMEs, this implies that green innovation should serve as a value foundation, while brand image functions as the primary mechanism for effectively communicating that value to customers in a sustainable manner.

4. CONCLUSION

Based on the results of multiple linear regression analysis, this study proves that green innovation and brand image simultaneously have a significant effect on the satisfaction of MSME customers in Palu City. This is indicated by the F test results with an F value of 64.183 and a significance level of < 0.001 , which confirms that the research model is suitable for explaining the relationship between variables. Partially, green innovation has a positive and significant effect on customer satisfaction ($\beta = 0.206$; $p = 0.033$). This finding shows that the implementation of environmentally friendly practices by MSMEs, such as technological efficiency and environmental awareness, can increase customer satisfaction, although the contribution is relatively limited. Conversely, brand image was found to have the most dominant influence on customer satisfaction ($\beta = 0.603$; $p < 0.001$). This result confirms that brand reputation, trust levels, and positive consumer perceptions of MSME identity play a greater role in shaping customer satisfaction than aspects of green innovation that are not yet fully felt directly. The coefficient of determination (R^2) value of 0.583 indicates that 58.3% of customer satisfaction variation can be explained by green innovation and brand image, while the rest is influenced by other factors outside the research model. Thus, although both variables play an important role, MSME customer satisfaction remains multidimensional. The practical implications of this study are that MSMEs in Palu City need to

prioritize strengthening their brand image through consistency in quality, reputation, and communication of business values, as well as integrating green innovation as part of their brand strategy so that consumers can better appreciate the benefits of sustainability. The limitations of this study lie in the limited sample size and the dominance of young respondents, so further research is recommended to involve a more diverse sample, add other variables such as service quality and digital experience, and test mediation mechanisms to deepen understanding of MSME customer satisfaction.

ACKNOWLEDGMENT

The author would like to thank all respondents who participated and provided the necessary data so that this research could be carried out properly. The author would also like to express his gratitude to his supervisor who provided guidance, input, and support during the process of preparing this research. Thanks are also extended to all those who directly or indirectly assisted in the data collection, analysis, and completion of this research. The author hopes that the results of this research can contribute to the development of studies on green innovation, brand image, and customer satisfaction in MSMEs.

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