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Transformation of Small Batik Industry in Bakorwil II East Java Through Green Innovation to Improve Marketing Performance

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ABSTRACT
This study aims to analyze the transformation of small batik industries in Bakorwil II East Java through green innovation in improving marketing performance. This study uses a quantitative approach with the Partial Least Squares-Structural Equation Modeling (PLS-SEM) method. The results of the analysis show that brand image (X4) has a positive and significant effect on green innovation (Z) with an original sample value (O) of 0.337 and a p-value of 0.000. Green innovation (Z) also has a positive and significant effect on marketing performance (Y) with an O value of 0.880 and a p-value of 0.000. However, price (X2) does not have a significant effect on green innovation (Z) with an O value of 0.102 and a p-value of 0.151. On the other hand, product quality (X1) and partnership (X3) have a positive and significant effect on green innovation (Z), each with an O value of 0.232 and 0.311 and a p-value of 0.002 and 0.000. In addition, green innovation (Z) is proven to mediate the relationship between brand image (X4), product quality (X1), and partnership (X3) on marketing performance (Y) significantly. However, green innovation (Z) does not mediate the relationship between price (X2) and marketing performance (Y). The results of this study indicate that the implementation of green innovation can be an effective strategy for small batik industries in improving marketing performance, especially through strengthening brand image, product quality, and partnerships.

Keywords: *Brand image, Green innovation, Price, Marketing performance, Product quality, Partnership.*

1. INTRODUCTION

Batik has long been a symbol of Indonesian cultural identity, especially after UNESCO recognized batik as an Intangible Cultural Heritage of Indonesia on October 2, 2009.(Prabarukmi & Widajati, 2020). However, the art of batik is not only developed in Indonesia. Several other countries, including China, Africa, and Ukraine, also have batik traditions with different techniques and meanings.

The history of batik in China has been recorded since the 6th century, especially in the Guizhou and Yunnan regions, where ethnic groups such as the Miao, Bouyei, and Gejia have maintained this art from generation to generation.(Dawn Ningrum, 2019). Batik artisans from the Miao ethnic group, for example, use hot wax to draw traditional motifs on the cotton cloth they weave themselves.(Yudi Aprianingrum & Hayati Nufus, 2021). Motifs such as dragons, phoenixes, and buffalo horns have symbolic meanings that are closely related to the mythology and beliefs of their ancestors.(Wardhana, 2015). The basic difference between Chinese batik and Indonesian batik lies in the tools and the coloring process.(Nurainun et al., 2008). If in Indonesia craftsmen use canting to apply wax, in China they use more spatula-like tools to form motifs before the cloth is dipped in natural dyes.(Yulianto et al., 2023).

In Africa, the batik technique developed rapidly in Nigeria, especially among the Yoruba people. They have two main techniques in batik, namely adire eleso, which uses tie-dye techniques, and adire eleko, which applies paste from cassava and rice instead of wax to form motifs.(Daud et al., 2023). Nigerian batik motifs tend to feature abstract geometric patterns, with meanings that reflect social expression and cultural communication.(Jufriyanto & Yusron, 2019). The use of striking colors in Nigerian batik is one of the characteristics that distinguishes it from Indonesian batik.(Marganus, 2021). Unlike in Indonesia or Nigeria which apply batik techniques to cloth, Ukraine has a tradition of painting eggs with a technique similar to batik, called pysanky.*(Fauziah, 2018)*. In this tradition, hot wax is used to cover certain parts of the egg shell before being dipped in natural dyes.(Borshalina, 2015). This process is carried out repeatedly to create motifs that are rich in color and meaningful(Maulana Hakim, 2018).The motifs on pysanky have deep philosophy, such as the image of a bird symbolizing happiness, or an unbroken line as a symbol of eternity.(Wulan

Destriyani & Andriyani, 2020). Red and black colors dominate Ukrainian batik, but in some regions such as the Carpathian Mountains, green, yellow, and orange are more commonly used.

Although batik techniques have developed in various parts of the world, Indonesian batik still has a uniqueness that makes it special. In terms of technique, Indonesian batik has a high complexity, especially in making hand-drawn batik using canting to produce intricate and detailed motifs.(Wona et al., 2023). In addition, Indonesian batik has various cultural philosophies attached to each motif, such as the Parang motif which symbolizes strength, or the Kawung motif which reflects the balance of life.(Ihsan, 2023). With the diversity of batik techniques in various countries, it can be concluded that batik is not only an artistic process, but also part of the identity and cultural expression of each nation.(Iskandar & Kustiyah, 2017). Although several countries have their own batik traditions, Indonesian batik remains an icon that has been recognized globally and is an inseparable part of the world's cultural heritage.

According to data from the Ministry of Industry, the batik industry has absorbed more than 200 thousand workers in various production centers, such as Pekalongan, Solo, Yogyakarta, Lasem, and Cirebon.(Subekti et al., 2020). In addition, the batik industry also plays a role in increasing Indonesian exports, with main destination countries such as the United States, Japan, and Europe.(Triwiswara, 2019). In its development, the batik industry has experienced quite dynamic challenges and opportunities.(Sari et al., 2019). The main challenges faced include competition with modern textile products, protection of intellectual property rights for original Indonesian batik motifs, and the sustainability of raw materials and natural dyes.(Ihsan, 2023). On the other hand, innovation in production techniques, digitalization of marketing, and increasing public awareness of the importance of local products provide great opportunities for the batik industry to continue to grow.

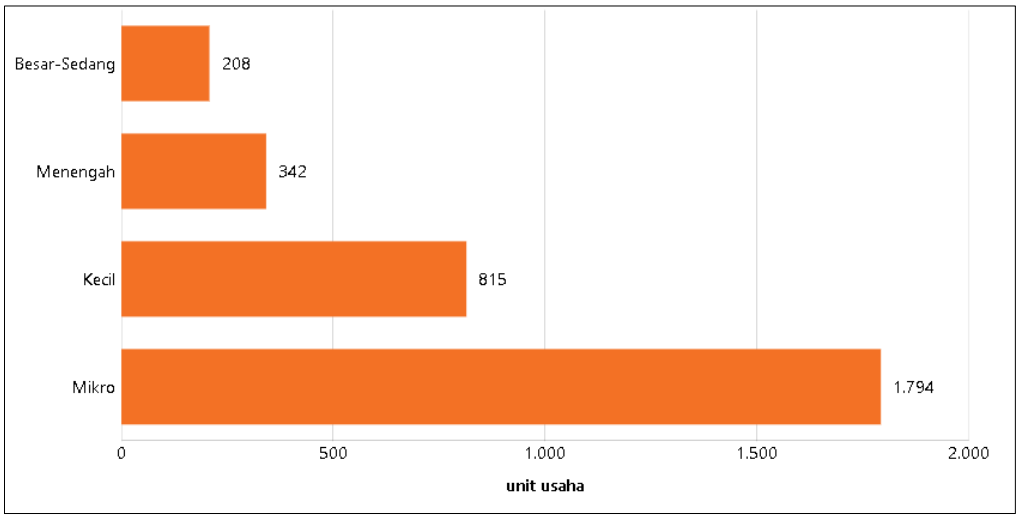

Figure1. Number of Batik Industries in Indonesia Based on Business Scale (2018-2021)

Apart from the economic aspect, the batik industry also has a role in maintaining cultural identity and local wisdom.(Prahmana & D'Ambrosio, 2020). Various regions in Indonesia have distinctive batik patterns that reflect the historical, social and philosophical values of the local community.(Kusumasari & Rahmi, 2020). Therefore, various conservation efforts continue to be carried out, both through education, training for the younger generation, and government support in the form of regulations and promotional facilitation.(Sakul et al., 2020). With the various potentials and challenges that exist, the Indonesian batik industry is expected to continue to develop with innovations that maintain the authenticity and cultural values contained within it.(Siregar et al., 2020). Through synergy between artisans, government, and society, batik can continue to be a national pride as well as a product that is competitive in the global market.

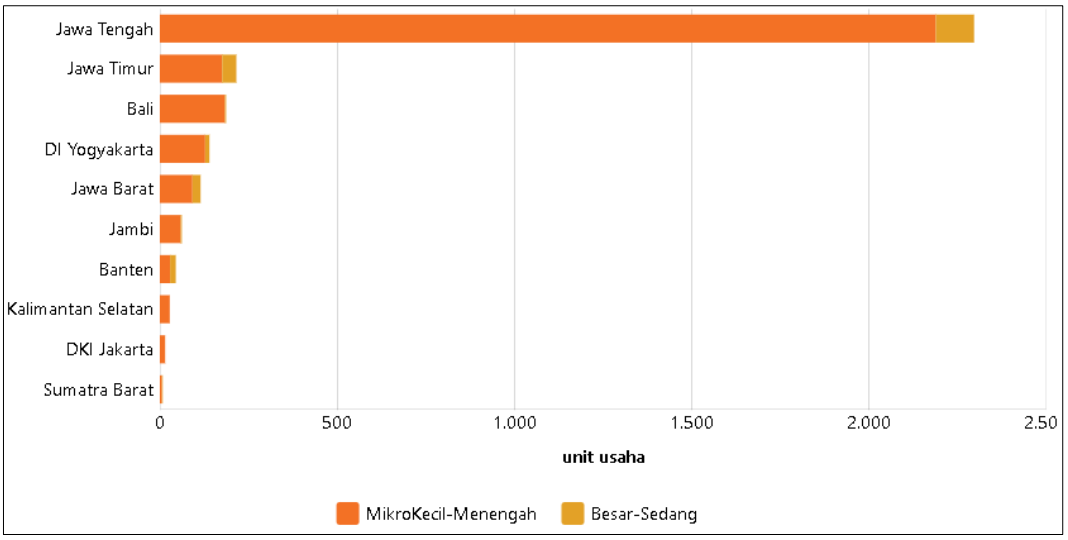

Figure2.10 Provinces with the Largest Number of Batik Industries (2018-2021)

In 2023, the small and medium industry sector shows diversity with a total of 17 business groups that cover 800 business units. The agricultural and forestry industry consists of eight business groups with a total of 309 units, where tofu and tempeh production dominates with 106 units, followed by furniture and wood lathes with 50 units, and bird cages reaching 153 units. Meanwhile, the metal, machinery, chemical, and miscellaneous industries include nine business groups with a total of 491 business units, including batik (105 units), patchwork (66 units), and souvenirs which are the largest sectors in this category with 184 business units. In addition, various other industries such as shoes (15 units), shuttlecocks (35 units), letters (55 units), steamers or stoves (19 units), and Solo souvenirs (12 units) also contribute to the dynamics of the industry in the region. All of these data reflect the development of diverse small and medium industries and play an important role in the local economy.(Ni Kadek Restini & Gde Agung Satria, 2023).

Table1. Number of Business Groups and Number of Business Units

Type of Industry	Number of Business Groups and Number of Business Units	
	Group	Business Unit
	2023	2023
A. Agricultural and Forestry Products Industry	8	309
1. Tofu and Tempeh	1	106
2. Furniture + Wood Lathe	1	50
3. Bird Cage	6	153
B. Metal, Machinery, Chemical/Miscellaneous Industry	9	491
1. Batik	2	105
2. Scraps of Fabric	1	66
3. Souvenirs	1	184
4. Shoes	1	15
5. Shuttlecock	1	35
6. Letter	1	55
7. Steamer/Stove	1	19
8. Typical Solo Souvenirs	1	12
Amount	17	800

The batik industry in Blitar Regency is spread across various sub-districts with a total of 66 business units, reflecting the diversity and potential of the creative economy in this region.(Trixie, 2020). Wlingi District is the main center with 28 business units, making it the area with the highest batik industry activity.(Rahadi et al., 2020). Kanigoro followed

with 8 units, while Gandusari had 7 business units. Kesamben and Srengat each recorded 4 units, followed by Sutojayan and Nglegok with 3 business units. Kademangan, Selorejo, and Garum sub-districts each had 2 units, while Talun, Doko, and Wonodadi had one batik business unit. This distribution shows that although the batik industry is more concentrated in several sub-districts, almost all areas of Blitar Regency have contributed to this industry, indicating its important role in the local economy.

Table2. East Java Area Batik Industry

Subdistrict	Batik Industry/
Sutojayan	3
The place of residence	2
Kanigoro	8
The Talun	1
The End	4
Selorejo	2
Doc	1
Wlingi	28
The Great Hall	7
Salt	2
Lying Down	3
Srengat	4
Wonodadi	1
Blitar Regency	66

In the Bakorwil II East Java region, which includes Bojonegoro, Tuban, Lamongan, Gresik, Jombang, Mojokerto, Mojokerto City, and Nganjuk Regency, batik has developed with motifs and characteristics typical of each region. These motifs not only reflect the richness of local culture but also become part of the identity of the local community.(Febriani et al., 2023). However, despite its great potential, the batik industry in this region still faces various challenges, such as market competition, limited product innovation, and low competitiveness due to suboptimal marketing strategies and business management.

The success of the batik industry is greatly influenced by various factors, including product quality, price, business partnerships, brand image, and green innovation.(Kirowati & Amir, 2019; Wang et al., 2019; Zhou et al., 2023). Product quality is the main factor that determines customer satisfaction and loyalty, including aspects of durability, design, motifs, and raw materials used. Price also plays an important role in influencing purchasing decisions, where consumers tend to consider the balance between costs and benefits obtained.(Musay, 2013; Roslina, 2010; Tanjung et al., 2024). In addition, business partnerships between batik entrepreneurs and suppliers, distributors, and other stakeholders are factors that can improve business sustainability. Brand image also plays a role in shaping customer perceptions of the batik produced, especially in terms of reputation, uniqueness, and brand appeal.(Hermawan, 2015; Purwanto & Soliha, 2017; Saputra & Dinalestari, 2017). Meanwhile, green innovation or environmentally friendly innovation is an aspect that is increasingly getting attention in the batik industry. The use of natural dyes, better waste management, and energy efficiency in the production process can increase the competitiveness of batik in a market that increasingly prioritizes environmental sustainability.

Based on this background, this study aims to analyze the influence of product quality, price, business partnerships, and brand image on the marketing performance of the batik industry in Bakorwil II East Java, with green innovation as a mediating variable. By understanding the factors that influence the success of batik marketing, it is hoped that the results of this study can provide strategic recommendations for business actors in increasing the competitiveness and sustainability of the batik industry in East Java. Efforts to increase the competitiveness of the batik industry in Bakorwil II East Java through an analysis of factors that influence marketing performance by considering the sustainability aspect. The batik industry in this region has great potential, considering the diversity of distinctive motifs and support from the local government. However, the challenges faced such as market competition, fluctuations in raw material prices, and increasing consumer awareness of environmentally friendly products require innovation in marketing strategies.

The product quality variable is the main factor because batik products must meet the standards of excellence that include durability, design, and raw materials that are in accordance with market trends. Without superior quality, the

competitiveness of local products will be difficult to survive, especially in the face of competition from printed batik and similar textile products. In addition, the price variable plays a role in determining customer purchasing decisions. Customer perceptions of the suitability of price with the benefits obtained are important factors in maintaining consumer loyalty, especially in an increasingly competitive market. Partnership in the batik industry in Bakorwil II East Java is a crucial strategy in maintaining business stability(Amerieska, 2014; Kirowati & Amir, 2019). Partnerships with raw material suppliers, distributors, and batik communities can strengthen business networks and support sustainable production continuity. In addition, brand image also has a significant impact on marketing performance. Batik brands that have a good reputation will more easily attract customers, increase loyalty, and build added value for local products.

In sustainability studies, the mediating variable green innovation plays an important role in answering the challenges of the modern batik industry. The application of environmentally friendly innovations, such as the use of natural dyes and energy efficiency, not only supports sustainability aspects but can also be a unique selling point for batik products from Bakorwil II East Java. This study will examine how green innovation can strengthen the relationship between product quality, price, partnership, and brand image on marketing performance. Thus, the results of this study are expected to provide strategic recommendations for batik industry players in increasing competitiveness in both domestic and global markets.

Data on the development of the batik industry in six regencies/cities in East Java, namely Bojonegoro, Lamongan, Tuban, Jombang, Mojokerto, and Kediri, shows a fluctuating trend from 2014 to 2016. Overall, the number of batik industries experienced a slight decline in 2015 from 234 to 232 units, before finally increasing significantly in 2016 to 276 units. Mojokerto Regency recorded the most rapid growth, from 50 units in 2014 to 64 units in 2016, indicating a strengthening of the batik industry sector in the area. Meanwhile, areas such as Lamongan and Jombang experienced a decline in 2015 before increasing again in 2016.

The urgency of research on the batik industry in this region is crucial considering its role in the local economy, cultural resilience, and workforce empowerment. First, this fluctuating trend indicates that there are external and internal factors that influence the development of the batik industry, such as government policies, product competitiveness, changes in market preferences, and access to raw materials and skilled labor. Further research can help identify factors that inhibit and drive the growth of this industry. Second, as a cultural heritage with high economic value, batik is not only a symbol of regional identity, but also has export potential that can improve people's welfare. However, challenges such as modernization of production techniques, competition with printed batik, and changes in people's consumption patterns can affect the sustainability of this industry. In-depth studies are needed to formulate sustainability strategies that can integrate traditional aspects with technological innovation to improve the competitiveness of the batik industry at the national and global levels. Third, from a policy perspective, these data show the need for targeted interventions to support the growth of the batik industry. Regencies that experience a decline in the number of industries need to get more attention, either in the form of training, capital assistance, or strengthening marketing networks. Further studies could also explore how regulations implemented in high-growth areas, such as Mojokerto, can be replicated or adapted in other areas to encourage more equitable development of the batik industry.(Andarini & Laely, 2019).

Thus, research on the batik industry in this region is very important to understand the dynamics of industry growth, identify obstacles and opportunities, and formulate appropriate strategies in maintaining the sustainability of the batik industry as one of the leading sectors of the creative economy in East Java.(Nurlaely et al., 2019).

Table3. Batik Industry Database Bakorwil II

No	Regency/City	Number of Batik Industries in 2018		
		2014	2015	2016
1	Bojonegoro	34	38	42
2	Lamongan	24	20	28
3	Tuban	52	48	54
4	Jombang	36	32	40
5	Mojokerto	50	54	64
6	The City	38	42	48
	Amount	234	232	276

Small batik industries in Bakorwil II East Java face major challenges in market competition, especially related to production efficiency and environmental sustainability. The main problems faced are the high use of chemicals in the

dyeing process and the low adoption of environmentally friendly innovations.(Arifin, 2017). This has an impact on product competitiveness, global market accessibility, and consumer awareness of sustainable products.

This study needs to analyze and efforts in the application of green innovation can transform the small batik industry, especially in improving marketing performance. With a data-based approach, this study will measure the impact of green innovation on production efficiency, customer perception, and increased access to national and international markets. It is hoped that the results of this study can provide strategic recommendations for small batik industry players to adapt to sustainability trends, increase competitiveness, and strengthen their position in the ecosystem of environmentally based creative industries.

2. RESEARCH METHODS

This study uses a quantitative approach with the Partial Least Square - Structural Equation Modeling (PLS-SEM) method which is analyzed using SmartPLS software. This approach was chosen because it is able to handle non-normally distributed data, relatively small sample sizes, and complex latent variables such as marketing performance and green innovation.(Chen et al., 2024; Chin & Lin, 2015; Nigatu et al., 2024; Prasad Panigrahy et al., 2021). This research model examines the influence of price, product quality, brand image, and partnership on marketing performance, both directly and through green innovation mediation.

The data analysis process is carried out in three main stages.(Salfore et al., 2023). First, descriptive analysis is used to describe the characteristics of respondents and research data. Second, outer model analysis is conducted to test convergent validity, discriminant validity, and construct reliability to ensure that the indicators used are able to measure variables appropriately. Third, inner model analysis is conducted to evaluate the structural relationships between variables in the model, including direct and indirect influences.

The population in this study consisted of 276 batik business units spread across the Bakorwil II East Java region, including Bojonegoro, Lamongan, Tuban, Jombang, Mojokerto, and Kediri. Sampling was carried out using the proportional stratified random sampling method, adjusted to the distribution of the number of batik businesses in each region, then continued with simple random sampling in each strata of the region to ensure even representation.

Sample size was determined using the Cochran Formula with correction for finite population.(Anderson et al., 2014). With a confidence level of 95%, a margin of error of 5%, and a population proportion of 0.5, the final sample size was 161 business units. The inclusion criteria in this study include batik businesses that are still actively operating and have at least one year of production and marketing experience. Meanwhile, businesses that are no longer active or do not have complete information related to the research variables are grouped as exclusion criteria. Data validation was carried out through verification to the East Java Industry and Trade Service (Disperindag), as well as direct confirmation to respondents to ensure the accuracy of the data used in the study.

2.1 Conceptual Framework

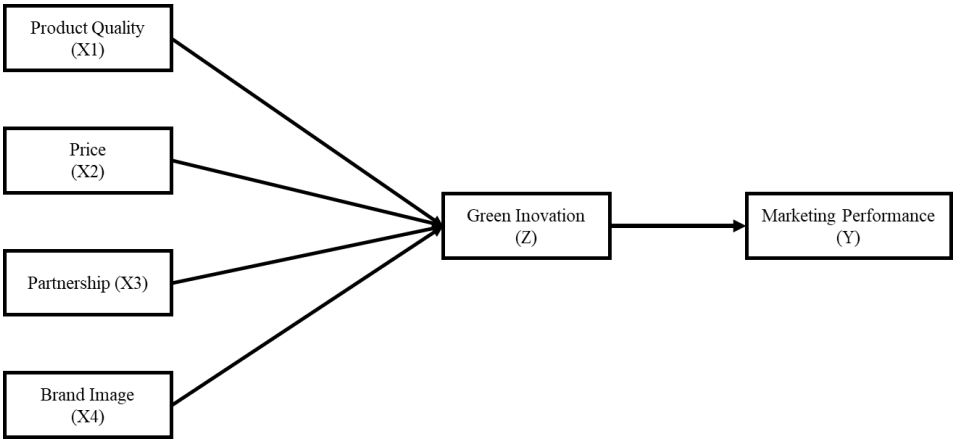

Figure3. Conceptual Framework

Table4. Hypothesis

Hypothesis	Direct/Indirect Hypothesis
H1	Brand Image (X4) -> Green Innovation (Z)
H2	Green Innovation (Z) -> Marketing Performance (Y)
H3	Price (X2) -> Green Innovation (Z)
H4	Product Quality (X1) -> Green Innovation (Z)
H5	Partnership (X3) -> Green Innovation (Z)
H6	Brand Image (X4) -> Green Innovation (Z) -> Marketing Performance (Y)
H7	Price (X2) -> Green Innovation (Z) -> Marketing Performance (Y)
H8	Product Quality (X1) -> Green Innovation (Z) -> Marketing Performance (Y)
H9	Partnership (X3) -> Green Innovation (Z) -> Marketing Performance (Y)

Hypothesis in research functions as a temporary statement that provides initial assumptions about research problems. This hypothesis will be tested for validity through data analysis obtained during the research. In this study, the hypothesis used is associative, which means highlighting the relationship and influence between two or more variables.(A et al., 2014).

In general, hypotheses are divided into two types, namely the null hypothesis (H_0) and the alternative hypothesis (H_a). The null hypothesis (H_0) assumes that there is no significant influence between the independent variable and the dependent variable, while the alternative hypothesis (H_a) states that there is an influence between the independent variable and the dependent variable. The hypothesis in this study is formulated as an answer to the formulation of the problem and the objectives of the study which will be analyzed further, as explained in the table above.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Reliability Testing of the Average Variance Extracted (AVE) Method

Reliability is the ability of an instrument to show stability and consistency in measuring a concept. This means: first, if measuring an object many times with the same instrument, the same results should be obtained; second, reliability also means that the respondent's score obtained is truly the respondent's actual score in terms of the characteristics or traits being measured; third, reliability is also interpreted as how much measurement error there is in the measurement instrument. Reliability is a measure of the internal consistency of the indicators of a construct that shows the degree to which each indicator indicates a common latent construct/factor with Cronbach's Alpha, rho_A, Composite Reliability and AVE values of > 0.6.

Table5. Reliability of the Average Variance Extracted (AVE) Method

Variables	Cronbach's Alpha	rho_A	Composite Reliability	AVE	Decision
Brand Image (X4)	0.908	0.909	0.927	0.645	Reliable
Green Innovation (Z)	0.939	0.940	0.949	0.701	Reliable
Price (X2)	0.879	0.880	0.912	0.674	Reliable
Marketing Performance (Y)	0.889	0.892	0.918	0.693	Reliable
Product Quality (X1)	0.879	0.879	0.912	0.675	Reliable
Partnership (X3)	0.924	0.926	0.938	0.654	Reliable

Based on the results of the reliability test using the Average Variance Extracted (AVE) method, all variables in this study were proven to be reliable with a Cronbach's Alpha value above 0.70, indicating good internal consistency. The Brand Image variable (X4) has a Cronbach's Alpha value of 0.908, Composite Reliability of 0.927, and AVE of 0.645, indicating that this variable has a high level of reliability. Green Innovation (Z) shows the highest reliability value with a Cronbach's Alpha of 0.939, Composite Reliability of 0.949, and AVE of 0.701, confirming that the indicators in this variable are very consistent in measuring its construct. Other variables such as Price (X2) (Cronbach's Alpha 0.879,

AVE 0.674), Marketing Performance (Y) (Cronbach's Alpha 0.889, AVE 0.693), Product Quality (X1) (Cronbach's Alpha 0.879, AVE 0.675), and Partnership (X3) (Cronbach's Alpha 0.924, AVE 0.654) also show strong reliability. With Composite Reliability values above 0.90 for most variables, it can be concluded that this research instrument has a very good level of reliability, so it can be used for further analysis.

3.1.2. Evaluation of Normality Results

The data distribution is analyzed to see whether the assumption of data normality is met or not so that it can be further processed in SEM modeling. The SEM data distribution is analyzed first. The normality of the data distribution is evaluated through the skewness and kurtosis values, variables that have a skewness or kurtosis coefficient with a critical ratio of no more than ± 2.58 indicate an abnormal distribution, and vice versa means normal.

Table6. Evaluation of Kurtosis and Skewness Normality

Item	Average	Median	Min	Max	Standard Deviation	Kurtosis	Skewness
Y1	3,665	4,000	1,000	5,000	1,051	0.425	-0.912
Y2	3.615	4,000	1,000	5,000	1.120	-0.411	-0.532
Y3	3.609	4,000	1,000	5,000	1.143	-0.198	-0.699
Y4	3.826	4,000	1,000	5,000	1,037	0.488	-0.960
Y5	3,758	4,000	1,000	5,000	1,056	-0.082	-0.747
Z1	3,702	4,000	1,000	5,000	1,014	0.928	-1.066
Z2	3,652	4,000	1,000	5,000	1,094	0.302	-0.884
Z3	3,857	4,000	1,000	5,000	1.136	0.793	-1.179
Z4	3,702	4,000	1,000	5,000	1,027	-0.222	-0.626
Z5	3,646	4,000	1,000	5,000	1,042	0.802	-1.076
Z6	3,789	4,000	1,000	5,000	1,089	0.315	-0.941
Z7	3,739	4,000	1,000	5,000	1.156	0.172	-0.913
Z8	3,789	4,000	1,000	5,000	1,030	0.202	-0.839
X11	3,671	4,000	1,000	5,000	1,050	0.077	-0.736
X12	3,720	4,000	1,000	5,000	1,047	0.095	-0.796
X13	3,652	4,000	1,000	5,000	1,099	-0.027	-0.747
X14	3,758	4,000	1,000	5,000	1,050	0.546	-0.962
X15	3,646	4,000	1,000	5,000	1,089	-0.082	-0.744
X21	3.472	4,000	1,000	5,000	1,040	-0.047	-0.544
X22	3,571	4,000	1,000	5,000	1,079	0.052	-0.755
X23	3.733	4,000	1,000	5,000	1.157	-0.279	-0.701
X24	3,708	4,000	1,000	5,000	1.101	-0.094	-0.835
X25	3,646	4,000	1,000	5,000	1,094	-0.144	-0.694
X31	3.472	4,000	1,000	5,000	1.120	-0.354	-0.531
X32	3,677	4,000	1,000	5,000	1,084	0.451	-0.922
X33	3,863	4,000	1,000	5,000	1,060	0.208	-0.923
X34	3,851	4,000	1,000	5,000	1.127	0.450	-1.017
X35	3.398	4,000	1,000	5,000	1,041	-0.020	-0.624
X36	3,702	4,000	1,000	5,000	1.130	-0.248	-0.720
X37	3,720	4,000	1,000	5,000	1.121	0.300	-0.951
X38	3,770	4,000	1,000	5,000	1,099	-0.048	-0.779
X41	3,739	4,000	1,000	5,000	1,078	0.099	-0.845
X42	3.733	4,000	1,000	5,000	1,056	0.357	-0.853

Item	Average	Median	Min	Max	Standard Deviation	Kurtosis	Skewness
X43	3,634	4,000	1,000	5,000	1,090	-0.176	-0.623
X44	3,528	4,000	1,000	5,000	1,034	-0.152	-0.552
X45	3,789	4,000	1,000	5,000	1,054	0.238	-0.885
X46	3,590	4,000	1,000	5,000	1.112	-0.166	-0.613
X47	3.466	4,000	1,000	5,000	1.003	0.050	-0.669

Based on the results of the normality evaluation using kurtosis and skewness values, all items in this study showed a data distribution that was close to normal. The kurtosis value ranged from -0.411 to 0.928, indicating that the data distribution was not too skewed or too high compared to the normal distribution. Meanwhile, the skewness value was in the range of -1.179 to -0.531, indicating a tendency for the data distribution to be slightly skewed to the left, but still within normal limits that were acceptable for further statistical analysis. The item with the highest kurtosis was Z1 (0.928), while the lowest was Y2 (-0.411). Meanwhile, the item with the highest (most negative) skewness was Z3 (-1.179), indicating a slight tendency for the distribution to the left, while the item with the lowest skewness was X31 (-0.531). Thus, these results indicate that the data can be used in further analysis without the need for significant transformation.

3.1.3. Evaluation of Variance of Factor (VIF) Results

VIF (Variance Inflation Factor) evaluation is conducted to determine whether there is multicollinearity in the regression model. VIF measures how much the variance of the estimated regression coefficient increases due to collinearity. How to evaluate VIF, if the VIF score is close to 1, but below 5 is good enough. VIF 10+ indicates high collinearity so that the variable may not be needed. If the VIF value exceeds 10, it indicates that multicollinearity is a definite problem between the independent variables.

Table7. Variance of Factor (VIF) Evaluation

Item	VIF	Item	VIF	Item	VIF	Item	VIF	Item	VIF	Item	VIF
X11	1,739	X21	1,806	X31	2.111	X41	2.244	Y1	2,565	Z1	3.127
X12	2,703	X22	2,089	X32	3.275	X42	2.446	Y2	1,891	Z2	2,801
X13	2.396	X23	2.139	X33	2.165	X43	2.477	Y3	2.388	Z3	3.102
X14	1,958	X24	2,065	X34	2,679	X44	2.254	Y4	2.435	Z4	2,497
X15	1,895	X25	2.199	X35	2,731	X45	2,540	Y5	2.147	Z5	2,822
				X36	2.614	X46	2,506			Z6	2,724
				X37	2.602	X47	2.119			Z7	2,541
				X38	2.280					Z8	2,619

Based on the evaluation of the Variance Inflation Factor (VIF), all items have VIF values below 10, indicating that there are no serious problems related to multicollinearity in the research model. The lowest VIF value is found in X11 (1.739), while the highest value is found in Z1 (3.127). In general, the variables in this study have a VIF range between 1.739 and 3.275, with the highest value at X32 (3.275), which is still within acceptable limits (<10). These results indicate that the relationship between independent variables in the model is not too strong so that there is no indication of distortion in the estimation of the regression parameters. Thus, the model used remains valid for further analysis.

3.1.4. Measurement of Research Model Method PLS Algorithm

Regarding Green Innovation and Marketing Performance, discriminant validity analysis is important to ensure that the variables Product Quality, Price, Brand Image, Partnership, Green Innovation, and Marketing Performance truly have unique concepts and do not overlap. Discriminant validity testing using the Fornell-Larcker Criterion, Cross Loadings, and HTMT will ensure that each variable in the model has a clear role in explaining the causal relationship between variables in the SEM-PLS model.

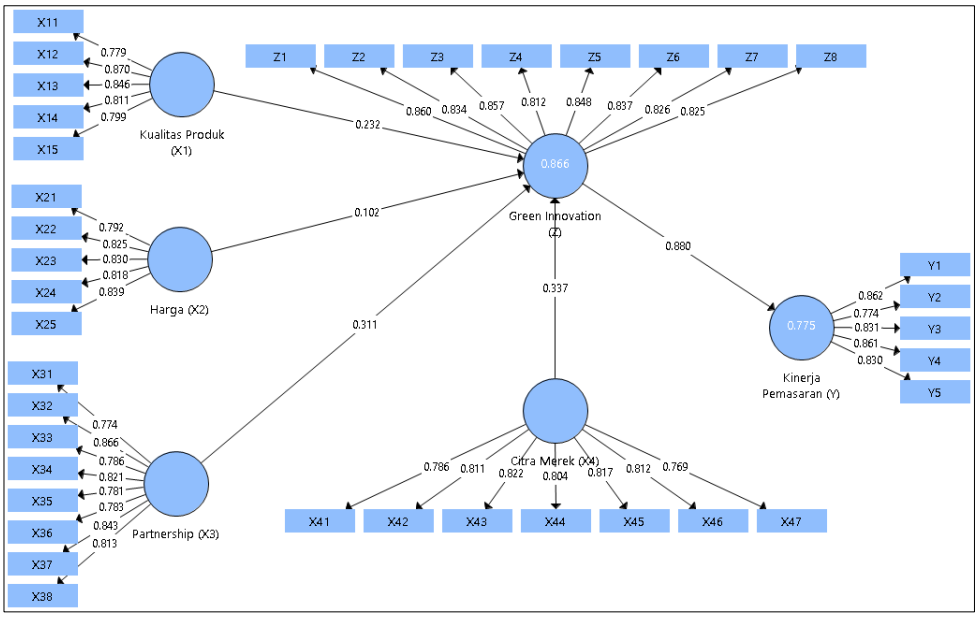

Figure4.PLS Algorithm Method

The figure above is the result of Structural Equation Modeling (SEM) analysis using AMOS, which describes the relationship between latent variables and their indicators in the research model. The latent variables studied include Product Quality (X1), Price (X2), Partnership (X3), Brand Image (X4), Green Innovation (Z), and Marketing Performance (Y). The loading factor value of each indicator on the latent variable shows a value above 0.7, which indicates good construct validity. The relationship between latent variables is shown by the path coefficient, such as the effect of Product Quality (X1) on Green Innovation (Z) of 0.232, Brand Image (X4) on Green Innovation (Z) of 0.337, and Green Innovation (Z) on Marketing Performance (Y) of 0.880. The R^2 value on Green Innovation (0.866) and Marketing Performance (0.775) shows that the model has good predictive ability. Thus, this model provides empirical evidence that Green Innovation acts as a mediator in improving marketing performance through the influence of product quality, price, partnership, and brand image.

Table8. Discriminant Value Model

Discriminant	Brand Image (X4)	Green Innovation (Z)	Price (X2)	Marketing Performance (Y)	Product Quality (X1)	Partnership (X3)
Brand Image (X4)	0.803					
Green Innovation (Z)	0.886	0.837				
Price (X2)	0.803	0.844	0.821			
Marketing Performance (Y)	0.829	0.880	0.767	0.832		
Product Quality (X1)	0.847	0.875	0.846	0.845	0.821	
Partnership (X3)	0.872	0.898	0.888	0.825	0.876	0.809

Table 8 shows the results of the discriminant value test to measure the discriminant validity between latent variables in the research model. The diagonal values in the table represent the square root of the Average Variance Extracted (AVE) for each variable, while the values outside the diagonal indicate the correlation between latent variables. The analysis results show that the AVE root value for each variable is greater than its correlation with other variables, such as Brand Image (0.803), Green Innovation (0.837), Price (0.821), Marketing Performance (0.832), Product Quality (0.821), and Partnership (0.809). However, there are several high correlations between variables, such as Green Innovation with Partnership (0.898) and Product Quality with Partnership (0.876), which indicate a strong relationship

between constructs. Overall, these results indicate that the model has good discriminant validity, because each variable is better able to explain its own variance compared to other variables in the model.

Table9. Path Coefficient

Path Coefficient	Green Innovation (Z)	Marketing Performance (Y)
Brand Image (X4)	0.337	
Green Innovation (Z)		0.880
Price (X2)	0.102	
Marketing Performance (Y)		
Product Quality (X1)	0.232	
Partnership (X3)	0.311	

Table 9 presents the path coefficients that show the relationship between variables in the research model. The results of the analysis show that Brand Image (X4) has a positive effect on Green Innovation (Z) with a coefficient of 0.337, indicating that improving brand image can encourage Green Innovation. Price (X2) has a positive effect on Green Innovation (Z) with a coefficient of 0.102, although this relationship is weaker than other variables. Product Quality (X1) also contributes to Green Innovation (Z) with a coefficient of 0.232, indicating that quality products encourage companies to be more environmentally friendly innovative. Partnership (X3) has a positive effect of 0.311 on Green Innovation (Z), indicating that cooperation with business partners supports the implementation of green innovation. In addition, Green Innovation (Z) has a significant effect on Marketing Performance (Y) with the highest coefficient, namely 0.880, indicating that the implementation of Green Innovation contributes greatly to improving marketing performance. Overall, these results indicate that Green Innovation is a strong mediating factor between the independent variables and marketing performance.

Table10. Outer Weight Measurement

Statement Item Code	Brand Image (X4)	Green Innovation (Z)	Price (X2)	Marketing Performance (Y)	Product Quality (X1)	Partnership (X3)
X11					0.250	
X12					0.238	
X13					0.241	
X14					0.250	
X15					0.240	
X21			0.247			
X22			0.242			
X23			0.244			
X24			0.229			
X25			0.257			
X31						0.145
X32						0.166
X33						0.154
X34						0.163
X35						0.143
X36						0.138
X37						0.165
X38						0.160
X41	0.181					
X42	0.183					

Statement Item Code	Brand Image (X4)	Green Innovation (Z)	Price (X2)	Marketing Performance (Y)	Product Quality (X1)	Partnership (X3)
X43	0.181					
X44	0.170					
X45	0.183					
X46	0.180					
X47	0.166					
Y1				0.245		
Y2				0.218		
Y3				0.232		
Y4				0.261		
Y5				0.243		
Z1		0.154				
Z2		0.151				
Z3		0.163				
Z4		0.136				
Z5		0.152				
Z6		0.146				
Z7		0.150				
Z8		0.142				

Table 10 shows the outer weight measurements that represent the contribution of each indicator to the latent variables in the research model. For the Product Quality variable (X1), the indicator with the largest contribution is X14 (0.250), followed by X11 (0.250), while X12 (0.238) has a smaller weight. In the Price variable (X2), indicator X25 has the highest weight (0.257), indicating that the price that matches the quality has a greater influence than other indicators, such as X24 (0.229) which has the lowest weight. Meanwhile, in the Partnership variable (X3), indicators X32 (0.166) and X37 (0.165) show a greater contribution than X36 (0.138), which has the lowest weight. For the Brand Image variable (X4), the indicators with the highest contributions are X42 and X45 (0.183), while X47 has the lowest weight (0.166). In the Marketing Performance variable (Y), indicator Y4 (0.261) has the largest weight, indicating that customer satisfaction has a more significant impact than other indicators, such as Y2 (0.218). Finally, for the Green Innovation variable (Z), the indicator with the highest weight is Z3 (0.163), indicating that ownership of green certification is the most influential aspect, while Z4 (0.136) has the lowest weight. These results indicate that some indicators have a more dominant contribution to the measured latent variables, which needs to be considered in further analysis.

3.1.5. Measurement of Research Model Bootstrapping Method

In measuring the bootstrapping model related to partial bootstrapping, mediation bootstrapping, F bootstrapping and Fit Model testing to measure the extent to which this model is able to contribute to scientific practice.

Table11. Partial Bootstrapping

Partial Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Decision
Brand Image (X4) -> Green Innovation (Z)	0.337	0.336	0.055	6.149	0.000	Hypothesis accepted
Green Innovation (Z) -> Marketing Performance (Y)	0.880	0.879	0.024	36,015	0.000	Hypothesis accepted

Partial Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Decision
Price (X2) -> Green Innovation (Z)	0.102	0.108	0.071	1,438	0.151	Hypothesis rejected
Product Quality (X1) -> Green Innovation (Z)	0.232	0.233	0.074	3.129	0.002	Hypothesis accepted
Partnership (X3) -> Green Innovation (Z)	0.311	0.305	0.085	3.666	0.000	Hypothesis accepted

Table 11 shows the results of partial bootstrapping, which tests the significance of the relationship between variables in the research model. The results show that Brand Image (X4) has a significant effect on Green Innovation (Z) with a coefficient of 0.337 (T = 6.149, p = 0.000), so the hypothesis is accepted. In addition, Green Innovation (Z) has a very strong effect on Marketing Performance (Y) with a coefficient of 0.880 (T = 36.015, p = 0.000), indicating that green innovation has a major role in improving marketing performance. Furthermore, Product Quality (X1) also has a significant effect on Green Innovation (Z) with a coefficient of 0.232 (T = 3.129, p = 0.002), and Partnership (X3) on Green Innovation (Z) with a coefficient of 0.311 (T = 3.666, p = 0.000), which confirms that strong partnerships contribute to green innovation. However, Price (X2) does not have a significant effect on Green Innovation (Z) with a coefficient of 0.102 (T = 1.438, p = 0.151), so the hypothesis is rejected. These results indicate that product quality, partnership, and brand image factors have a greater influence in driving green innovation compared to price factors.

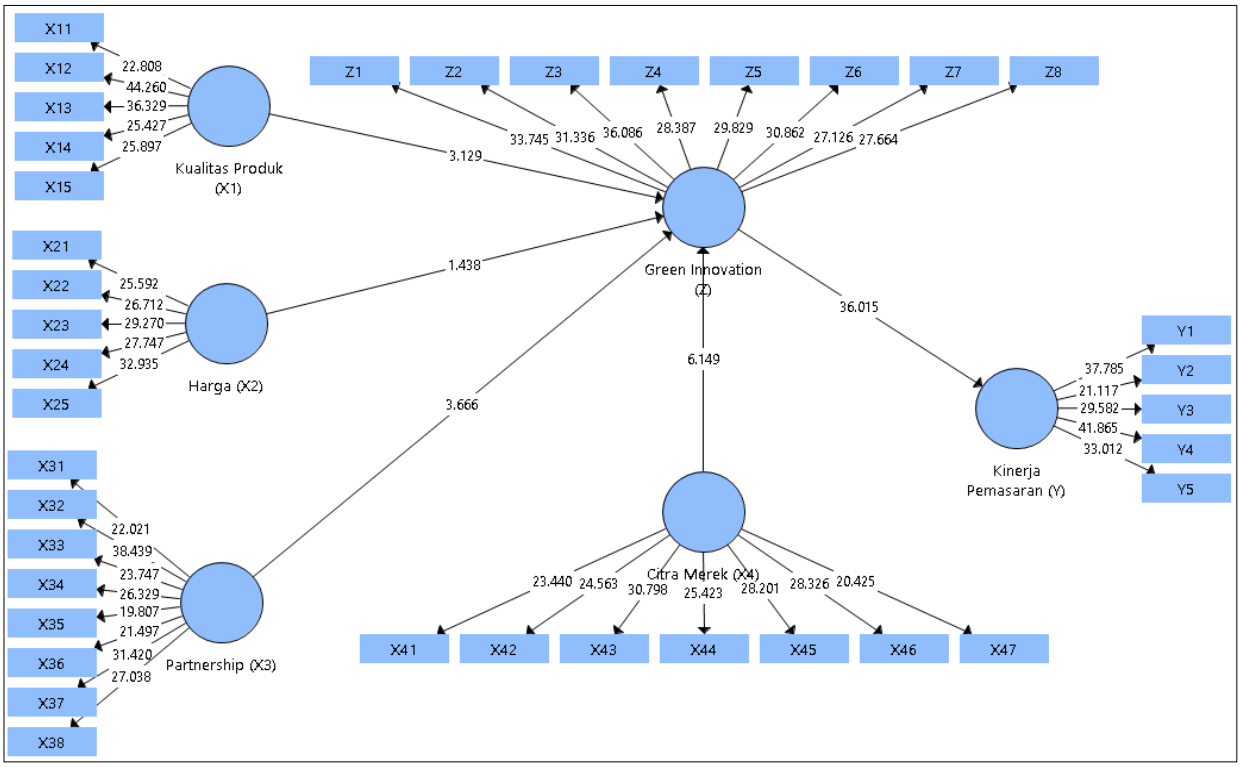

Figure5. Bootstrapping Method

Table12. Bootstrapping Mediation

Mediation Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Decision
Brand Image (X4) -> Green Innovation (Z) -> Marketing Performance (Y)	0.297	0.295	0.048	6.119	0.000	Hypothesis accepted
Price (X2) -> Green Innovation (Z) -> Marketing Performance (Y)	0.090	0.095	0.062	1,443	0.150	Hypothesis rejected
Product Quality (X1) -> Green Innovation (Z) -> Marketing Performance (Y)	0.204	0.205	0.066	3.110	0.002	Hypothesis accepted
Partnership (X3) -> Green Innovation (Z) -> Marketing Performance (Y)	0.273	0.268	0.075	3,631	0.000	Hypothesis accepted

Table 12 shows the results of mediation bootstrapping, which tests the role of Green Innovation (Z) as a mediator in the relationship between independent variables and Marketing Performance (Y). The results of the analysis show that Brand Image (X4) indirectly has a significant effect on Marketing Performance (Y) through Green Innovation (Z) with a coefficient of 0.297 (T = 6.119, p = 0.000), so the hypothesis is accepted. Likewise, Product Quality (X1) has a significant mediation effect with a coefficient of 0.204 (T = 3.110, p = 0.002), and Partnership (X3) also shows a significant mediation effect with a coefficient of 0.273 (T = 3.631, p = 0.000). This shows that Green Innovation plays an important role in bridging the influence of brand image, product quality, and partnership on improving marketing performance. However, Price (X2) does not show a significant mediation effect with a coefficient of 0.090 (T = 1.443, p = 0.150), so the hypothesis is rejected. This indicates that price is not the main factor in driving green innovation to improve marketing performance, while other factors such as brand image, product quality, and partnerships play a greater role in the innovation process.

3.1.6. Measurement of Research Model Blindfolding Method

The measurement of the Blindfolding method uses the selection criteria and Qsquare parameters with the following results.

Table13. Blindfolding Parameter Selection

Mediation and Dependent Constructs	AIC (Akaike's Information Criterion)	AICu (Unbiased Akaikes Information Criterion	AICc (Corrected Akaikes Information Criterion)	BIC (Bayesian Information Criteria)	HQ (Hannan Quinn Criterion)	HQc (Corrected Hannan-Quinn Criterion)
Green Innovation (Z)	-314,434	-309,354	-150,888	-299,027	-308,178	-307,439
Marketing Performance (Y)	-237.247	-235.235	-74,095	-231,085	-234,745	-234,579

Table 13 presents the results of Blindfolding Parameter Selection, which is used to evaluate the accuracy of the model in explaining the mediating variable (Green Innovation/Z) and the dependent variable (Marketing Performance/Y) based on various information criteria. For Green Innovation (Z), the Akaike's Information Criterion (AIC) value of -314.434, Unbiased AIC (AICu) of -309.354, and Corrected AIC (AICc) of -150.888 indicate that the model has a good fit in explaining this variable. In addition, the Bayesian Information Criteria (BIC) of -299.027, Hannan-Quinn Criterion (HQ) of -308.178, and Corrected Hannan-Quinn Criterion (HQc) of -307.439 further strengthen that the model has a high level of accuracy. Meanwhile, for Marketing Performance (Y), the AIC value of -237.247, AICu of -235.235, and AICc of -74.095, as well as the BIC value of -231.085, HQ of -234.745, and HQc of -234.579 also indicate that the model is quite good at explaining this variable. Overall, these results indicate that the research model has a good fit based on various statistical information criteria.

Table14. Blindfolding QSquare

Variables	SSO	SSE	Q^2 (=1-SSE/SSO)
Brand Image (X4)	1,127,000	1,127,000	
Green Innovation (Z)	1,288,000	518,506	0.597
Price (X2)	805,000	805,000	
Marketing Performance (Y)	805,000	379,112	0.529
Product Quality (X1)	805,000	805,000	
Partnership (X3)	1,288,000	1,288,000	

Table 14 presents the results of Blindfolding Q^2, which is used to assess the predictive relevance of the structural model to endogenous variables. The results show that Green Innovation (Z) has a Q^2 value of 0.597, which means the model is able to explain around 59.7% of the variability of Green Innovation, indicating strong predictive relevance. Meanwhile, Marketing Performance (Y) has a Q^2 value of 0.529, which means the model can explain 52.9% of the variability of this variable, also indicating quite good predictive relevance. Meanwhile, for exogenous variables such as Brand Image (X4), Price (X2), Product Quality (X1), and Partnership (X3), the Q^2 value is not calculated because these variables are independent variables in the model. Overall, the Q^2 value obtained indicates that the research model has good predictive ability against the endogenous variables in this study.

Table15.PLS Direct QSquare Predict

Mediation and Dependent Constructs Green Innovation (Z1 to Z8) Marketing Performance (Y1 to Y5)	RMSE	MAE	MAPE	Q^2_predict
Z1	0.633	0.480	15,948	0.615
Z2	0.694	0.563	18,550	0.601
Z3	0.688	0.572	18,170	0.637
Z4	0.737	0.579	18,091	0.491
Z5	0.606	0.472	16.163	0.665
Z6	0.719	0.588	18,742	0.569
Z7	0.729	0.608	19,356	0.607
Z8	0.657	0.523	16,229	0.598
Y1	0.714	0.543	18,869	0.545
Y2	0.813	0.673	22,408	0.479
Y3	0.826	0.669	23,281	0.485
Y4	0.673	0.515	16,406	0.584
Y5	0.757	0.568	18,412	0.493

Table 15 shows the results of PLS Direct Q^2 Predict, which evaluates the predictive ability of the model using RMSE, MAE, MAPE, and Q^2 Predict. The Green Innovation (Z) variable has the highest Q^2 Predict at Z5 (0.665), followed by Z3 (0.637), Z1 (0.615), and Z7 (0.607), indicating good predictive relevance. For Marketing Performance (Y), the

highest Q^2 Predict is at Y4 (0.584) and Y1 (0.545), while Y2 (0.479) and Y3 (0.485) show weaker predictions. Overall, the model has quite good predictive relevance, although some indicators show potential for improvement.

3.2. Discussion

3.2.1. Direct Influence of Research Variables

1. The Influence of Brand Image on Green Innovation

The results of the study indicate that brand image (X4) has a positive and significant influence on green innovation (Z) in the batik industry in Bakorwil II East Java, with a path coefficient of 0.337 and a T-statistic value of 6.149 (p-value = 0.000). This indicates that the stronger the brand image owned by batik industry players, the greater their tendency to adopt green innovation. In the Bakorwil II East Java area, the brand image of batik, known as a cultural heritage, is the main attraction for consumers. By strengthening the image as an environmentally friendly product through green innovation—such as the use of natural dyes or production technology that reduces waste—batik industry players can increase the added value of their products. This finding is in line with previous research which confirms that companies with a strong brand image tend to be more proactive in adopting sustainable innovation in order to maintain competitiveness and meet the demands of increasingly environmentally conscious consumers.

2. The Influence of Green Innovation on Marketing Performance

Green innovation (Z) is proven to have a very strong influence on marketing performance (Y) in the batik industry in Bakorwil II East Java, with a path coefficient of 0.880 and a T-statistic value of 36.015 (p-value = 0.000). These results indicate that the implementation of green innovation significantly improves marketing performance, including increased sales, customer loyalty, and market expansion. In this region, green innovations such as the use of environmentally friendly materials and sustainable production processes provide a competitive advantage for batik craftsmen. With increasing global awareness of environmental issues, batik produced through environmentally friendly processes has a greater chance of penetrating the premium and export markets. These findings support the view that companies that implement green innovation not only comply with environmental regulations but also build a positive reputation that has a direct impact on their marketing performance.

3. The Impact of Price on Green Innovation

Based on the analysis results, price (X2) does not have a significant effect on green innovation (Z) in the batik industry in Bakorwil II East Java, with a path coefficient of 0.102 and a T-statistic value of 1.438 (p-value = 0.151). These results indicate that the price factor is not the main driver for batik industry players to adopt green innovation. In this region, although green innovation requires higher production costs, such as the use of natural materials or environmentally friendly waste processing, the decision to implement it is more influenced by non-economic factors, such as global market demands and compliance with environmental regulations. Batik industry players tend to prioritize sustainability aspects to expand market share and increase long-term competitiveness, even though product prices become more expensive for end consumers.

4. The Influence of Product Quality on Green Innovation

Product quality (X1) is proven to have a positive and significant influence on green innovation (Z) in the batik industry in Bakorwil II East Java, with a path coefficient of 0.232 and a T-statistic value of 3.129 (p-value = 0.002). This finding indicates that the higher the quality of batik produced, the greater the tendency of craftsmen to adopt green innovation. In this region, batik craftsmen who focus on product quality often utilize environmentally friendly technology to maintain quality standards and production sustainability. For example, the use of natural dyes, in addition to providing unique characteristics to the product, also creates a positive image in the eyes of consumers who care about the environment. These results strengthen the view that efforts to improve product quality in the batik industry are in line with the implementation of green innovation as a differentiation strategy in the market.

5. The Influence of Partnership on Green Innovation

Partnership (X3) has a significant influence on green innovation (Z) in the batik industry in Bakorwil II, East Java, with a path coefficient of 0.311 and a T-statistic value of 3.666 (p-value = 0.000). These results indicate that strategic partnerships between batik craftsmen and various parties, such as research institutions, local governments, and environmental communities, play an important role in encouraging green innovation. In the Bakorwil II area, collaboration with external partners allows access to environmentally friendly technologies, sustainable production training, and marketing opportunities for innovative products. For example, collaborative programs with universities and environmental institutions support the development of natural dyeing techniques and more efficient waste

processing. These findings confirm that effective partnerships are a key factor for batik craftsmen in adopting green innovation to improve the competitiveness and sustainability of the industry.

This study is in line with the findings of research conducted by(Pratama et al., 2023)in Indonesian MSMEs highlights the influence of various factors on the Green Innovation Platform SDGs. Green marketing orientation is proven to have a significant effect with a p-value of 0.000 and a t-value of 3.835. In addition, government regulations and human resource management also have a significant effect on the Green Innovation Platform SDGs with p-values of 0.004 and 0.015, respectively. These findings indicate that the sustainability of green innovation in MSMEs is greatly influenced by effective regulations and human resource management.

(Dewi & Sudhiksa, 2022)examined the effect of green innovation on business sustainability at PT. Hatten Bali. The results showed that green innovation has a positive and significant effect on business sustainability with a regression coefficient value of 0.351, a t-value of 3.001, and a p-value of 0.004. This indicates that the implementation of green innovation can strengthen business sustainability, especially in industries that are oriented towards environmental sustainability.

(Firmansyah & Rokhim, 2023)examines the role of green suppliers in mediating the relationship between green product innovation and marketing differentiation advantage in small-scale manufacturing industries in Surakarta City. Green product innovation is proven to have a significant effect on green suppliers with a path coefficient of 0.788 and a t-statistic of 14.075. In addition, green suppliers also have a significant effect on differentiation advantage with a path coefficient of 0.780 and a t-statistic of 12.752. These findings show that the green supply chain plays an important role in increasing product differentiation competitiveness.

3.2.2. The Influence of Research Variable Mediation

1. The Influence of Brand Image on Marketing Performance through Green Innovation

The results of the study indicate that brand image (X4) has a significant effect on marketing performance (Y) through green innovation (Z) in the batik industry in Bakorwil II, East Java, with a path coefficient of 0.297 and a T-statistic value of 6.119 (p-value = 0.000). This finding confirms that green innovation is a mediating factor that links a strong brand image with increased marketing performance. In the Bakorwil II area, batik craftsmen who have a strong brand image tend to be more innovative in adopting environmentally friendly technologies, such as the use of natural dyes and sustainable production methods. By implementing green innovation, batik is not only more in demand by local consumers, but also has higher competitiveness in the national and international markets. Therefore, a good brand image needs to be combined with a green innovation strategy to increase product appeal and strengthen the position of the batik industry in market competition.

2. The Influence of Price on Marketing Performance through Green Innovation

Based on the analysis results, price (X2) does not have a significant effect on marketing performance (Y) through green innovation (Z) in the batik industry in Bakorwil II East Java, with a path coefficient of 0.090 and a T-statistic value of 1.443 (p-value = 0.150). These results indicate that although price is often an important factor in marketing strategies, in the context of the batik industry in this region, price does not play a major role as a driver in the implementation of green innovation and improving marketing performance. This may be due to the perception of craftsmen who focus more on aspects of sustainability and long-term competitiveness compared to considering production costs. In addition, batik consumers who value artistic value and sustainability tend to be willing to pay more for environmentally friendly products, so price is not a major factor in the decision to adopt green innovation and improve marketing performance.

3. The Influence of Product Quality on Marketing Performance through Green Innovation

Product quality (X1) is proven to have a positive and significant influence on marketing performance (Y) through green innovation (Z) in the batik industry in Bakorwil II East Java, with a path coefficient of 0.204 and a T-statistic value of 3.110 (p-value = 0.002). These results indicate that green innovation acts as a mediator in the relationship between product quality and marketing performance. In the batik industry, craftsmen who are committed to improving product quality often invest in environmentally friendly production techniques, such as the use of organic raw materials, natural dyes, and more efficient production systems. The application of green innovation not only improves the quality of batik, but also provides added value in marketing, especially in meeting the demands of an increasingly environmentally conscious market. Therefore, efforts to improve product quality in the batik industry should be accompanied by green innovation to ensure sustainable competitive advantage.

4. The Influence of Partnership on Marketing Performance through Green Innovation

Partnership (X3) has a significant influence on marketing performance (Y) through green innovation (Z) in the batik industry in Bakorwil II East Java, with a path coefficient of 0.273 and a T-statistic value of 3.631 (p-value = 0.000). These results indicate that collaboration with various stakeholders, such as government, academics, environmental communities, and business partners, plays an important role in encouraging green innovation and improving marketing performance in the batik industry. In this region, various collaborative initiatives have helped batik artisans access environmentally friendly technologies, sustainable training, and wider market opportunities. Effective partnerships enable the exchange of knowledge and resources that support the development of more competitive green batik. Therefore, strategic partnerships are a key element in accelerating the adoption of green innovation and strengthening the competitiveness of the batik industry in both domestic and global markets.

Research conducted by Rachmawati et al. (2024) in Bandung City revealed that green branding has a significant influence on marketing performance. The results of the analysis showed a t-value of 3.358 with a p-value of 0.032, which means that an environmentally based branding strategy can increase brand appeal in the global market. In addition, competitive advantage also contributes significantly to increasing marketing performance with a t-value of 1.901 and a p-value of 0.007.

(Sihombing & Dr. Rudy P. Tobing, 2021)examined the influence of green products and service quality on purchasing decisions at Fore Coffee, Central Jakarta. The results showed that green products had a significant effect on purchase decisions with a p-value of 0.000 and a t-value of 9.387. In addition, service quality was also proven to have a significant effect with a p-value of 0.000 and a t-value of 6.392. Simultaneously, these two variables explained 88.9% of the variability in purchasing decisions.

(Yuliana & Pantawis, 2022)examined the impact of product quality on repeat purchases of skincare products in Semarang City. The results showed that product quality has a significant effect on customer satisfaction with a p-value of 0.023 and repeat purchases with a p-value of 0.010. In addition, customer satisfaction also has a significant effect on repeat purchases with a p-value of 0.010. This study indicates that good product quality can increase customer loyalty through higher satisfaction.

(Devi & Firmansyah, 2024)examined green marketing strategies, price, and brand equity on purchasing decisions for homecare products at PT. Unilever Indonesia. The findings showed that green marketing and price did not have a significant influence on purchasing decisions with p-values of 0.223 and 0.143, respectively. However, brand equity was shown to have a significant influence with a path coefficient of 0.664 and a p-value of 0.000, indicating that a strong brand image is a major factor in driving purchasing decisions.

Research on green innovation in various sectors shows that factors such as green marketing orientation, government regulation, and human resource management play a significant role in the sustainability of MSME green innovation. Green innovation has been shown to improve business sustainability, especially in environmentally-oriented industries, and strengthen the green supply chain to increase product differentiation competitiveness. In addition, green branding strategies contribute positively to marketing performance, while product and service quality have a significant impact on purchasing decisions and customer loyalty. In the context of green marketing, brand equity is the main factor influencing purchasing decisions, outperforming price variables and green marketing strategies. These findings emphasize the importance of green innovation in improving business competitiveness and sustainability in various industries.

3.2.3. Batik Industry Strategy in Bakorwil II East Java

Effective strategies to implement Green Innovation in industry can be done with several concrete steps. First, companies need to adopt Green Marketing Orientation by increasing awareness and commitment to green marketing principles, so that environmentally friendly products and services can be more accepted in the market. Second, government regulations must be supported by industry compliance and collaboration to ensure effective implementation of policies in green innovation. Third, optimization of human resource management is key, where training and education related to sustainability must be provided to employees so that they can contribute to the development of more environmentally friendly products and processes. Fourth, companies can strengthen relationships with Green Suppliers to improve supply chain efficiency and create sustainability-based marketing differentiation. Fifth, the implementation of Green Branding strategies must be optimized through marketing campaigns that highlight sustainability values, in order to improve brand image and product competitiveness in the market. Sixth, focusing on product and service quality is a major factor in building customer satisfaction, which directly impacts loyalty and repurchase decisions. Seventh, companies must also build strong Brand Equity, because a good brand image has been shown to have a significant

influence on consumer purchasing decisions. By implementing this strategy synergistically, Green Innovation can not only support business sustainability, but also increase industrial competitiveness in the long term.

4. CONCLUSION

This study provides empirical evidence on the relationship between price, product quality, brand image, and partnership variables on marketing performance mediated by green innovation in the batik industry in Bakorwil II East Java. The results of the analysis show that brand image, product quality, and partnership have a positive and significant effect on green innovation, while price does not show a significant effect. In addition, green innovation is proven to have a very strong influence on improving marketing performance. Green innovation mediation is also significant in the relationship between brand image, product quality, and partnership on marketing performance, but not significant in the relationship between price and marketing performance.

The implications of these findings indicate the importance of green innovation strategies in strengthening the competitiveness of the batik industry. By strengthening product quality, building strategic partnerships, and enhancing brand image as an environmentally friendly product, business actors can increase added value and market penetration. This study also encourages the need for collaboration between industry players, government, and educational institutions to support the implementation of environmentally friendly technologies and develop sustainable marketing strategies that are able to answer the challenges of the modern market and consumer environmental awareness.

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