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Implementation of green marketing, quality brand consumer behavior, and impact purchase decisions for precious metal products

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ABSTRACT

This study aims to analyze the effect of green marketing implementation, brand quality, and consumer behavior on purchasing decisions for precious metal products. The main focus is on how the environmental aspect, brand image, and consumer preferences and behavior affect the decision-making process. A quantitative approach was used with a survey method through a structured questionnaire distributed to precious metal consumers. Data were analyzed using the Structural Equation Modeling (SEM) method to test the relationship between variables with the target population consisting of consumers who actively purchase precious metal products. Green marketing has a significant positive impact on purchasing decisions because consumers are beginning to realize the importance of products that support environmental sustainability. Brand quality plays an important role in increasing consumer trust in precious metal products reflected in loyalty and positive recommendations. Consumer behavior includes environmental awareness, investment preferences, and attitudes toward risk significantly influencing purchasing decisions. The combination of green marketing strategies and strengthening brand quality increases the attractiveness of precious metal products in the market. Success in marketing precious metal products depends on the implementation of an effective green marketing strategy accompanied by improving brand quality relevant to modern consumers' needs. Precious metal producers need to strengthen sustainability-based marketing strategies by highlighting the ecological advantages of their products. Market education on the importance of choosing environmentally friendly products can increase consumer awareness and loyalty to precious metal products. Collaboration with environmental certification bodies provides additional credibility to green marketing claims.

Contribution/Originality: This study enriches the literature on the application of green marketing in the precious metal industry which is still relatively limited compared to other sectors. The analysis model can be used for green marketing on consumer behavior, purchasing decisions, and the role of brand quality as a moderating variable.

1. INTRODUCTION

There is a transformation in creating a sustainable economic ecosystem in the current modern trade period. Green marketing has become an important strategic approach for companies to create added value while maintaining ecological sustainability (Ketelsen, Janssen, & Hamm, 2020). Green marketing involves implementing

environmentally friendly business processes and reflects the company's commitment to social and environmental responsibility (Dutta, Bouri, Dutta, & Saeed, 2021). In this context, companies that market products such as precious metals which have high intrinsic value and are often associated with sustainability and long-term investment, face both challenges and opportunities to integrate green marketing elements into their strategies. In addition, brand quality is a significant factor in shaping consumer perceptions and loyalty to precious metal products (Moraes, Carrigan, Bosangit, Ferreira, & McGrath, 2017). Consumers choose brands that provide the best quality for high-value products such as gold and silver. A good brand reputation is often an indicator of investment reliability and security which are key factors in purchasing precious metal products (Ardente, Latunussa, & Blengini, 2019).

In Indonesia, many people still invest in the short- term or save in contrast to developed countries that focus more on long-term investment (Islammi, Pangestu, & Munawar, 2024). Awareness of the importance of good financial management has encouraged people to allocate part of their income for investment (Daga, Karim, Nawir, Lutfi, & Jumady, 2024).

Financial education is needed to encourage more strategic and long-term investments to ensure financial security in the future (Prayitno, 2021). Investment is a recommended activity because it can make assets productive and provide benefits to others. In addition, investment also helps distribute income more evenly in society. Gold is one form of investment that is in demand because of its stable and safe nature. Gold is known to be able to withstand economic fluctuations and inflation and has high liquidity making it easy to sell when needed. Gold is also considered a symbol of wealth and social status. In the long- term, gold investment provides stable and profitable returns making it an attractive option for those looking for a way to protect wealth from economic uncertainty (Lynch, Long, & Stretesky, 2022).

Gold jewelry is one of the prestigious fashions for women and is most popular from time to time with types of products such as necklaces, rings, and bracelets with various models following consumer developments and tastes. The Somba Opu area is a center for precious metal craftsmen in Makassar City which now tends to be a fashion for most young people who are used not only to parties, birthdays, and other activities. There are also valuable assets for investment as savings to prepare for family needs such as children's education costs, health and marrying their children which can be sold and or put into financing such as pawnshops which make it easier to obtain funds (Hasniati, Indriasari, Sirajuddini, & Karim, 2023).

The metal center starts in the Somba Opu area as a center for precious metal producers that is quite well-known for its quality and model so consumers who shop come from several regions including from abroad such as Malaysia and East Timor. Precious metals originating from Makassar are of course always faced with market competition, especially the use of women's ornaments which are substitutes for products imported from other countries. Competing with each other to get the market so that their products can be in demand by consumers (Suhesti & Samad, 2023).

Somba Opu is a center for precious metal craftsmen in the form of gold which is known to be popular in designing several types of women's ornaments in this area such as wedding ring models, gold engagement rings with unique design gemstones, gold necklaces, and gold bracelets with elegant designs.

Various marketing strategies carried out by the precious metal center Somba Opu in Makassar City have experienced sales yearly. The gold content is indeed one of the advantages of gold jewelry sold in Somba Opu. Generally, the gold sold is 916 gold with a gold content of 88 and 87.5 percent. The gold sold in Somba Opu is 22-23 carats. Honesty in the content or carat of gold in this shop is also the reason people hunt for gold in the Somba Opu precious metal center. Trends in precious metal sales volume in the Somba Opu area of Makassar City in 2022-2023 (Badan Pusat Statistik, 2024) are shown in Table 1.

Table 1. Sales volume of precious metals/ gold in Somba Opu.

Type of precious metal/ gold	Year 2022 (IDR)	Year 2023 (IDR)
Ring	268.650 billion	184.850 billion
Necklace	188.450 billion	91.150 billion
Bracelet	212.541 billion	76.009 billion

This study examines the relationship between the implementation of green marketing, brand quality, consumer behavior and its impact on purchasing decisions of precious metal products. This study is expected to be a reference for sellers in the Somba Opu precious metal center in Makassar City in designing more effective and sustainable marketing strategies.

2. LITERATURE REVIEW

2.1. Green Marketing

Green marketing is a marketing concept that combines economic goals with a commitment to environmental sustainability. The application of the green marketing concept in a company is an important aspect because it means the company is considering the environment in all dimensions of its marketing activities (Paparoidamis, Tran, Leonidou, & Zeriti, 2019). Green marketing mechanisms are considered environmentally safe product marketing (Bernstein, 2019). Through the implementation of green marketing strategies that combine various more environmentally friendly activities, including product modifications, changes in production processes, changes in packaging, and modifications to advertising (Rosa, Sassanelli, & Terzi, 2019). Green marketing has become essential in the modern business environment since it aims to satisfy consumers' demands, wants, emotions, and preferences about environmental preservation (Islam et al., 2021).

This condition can be seen in companies that are increasingly competing to meet consumer desires for environmentally friendly products (Huynh, Knápková, & Bui, 2024). Various companies are slowly adopting green marketing activities in their projects as part of social awareness. They are required to reach consumers with green marketing messages (Chi, 2021). Green marketing can also influence consumer emotions and plans that have an impact on purchasing interest. Here the concept of green branding refers to fulfilling consumer needs by trying to minimize the impact of damage to the environment (Akaighe & Okon, 2021). The main components of green marketing include eco-labels, eco-brands, and environmental advertisements.

These three components are green branding tools that can make perception easier and increase awareness of eco-friendly product features and aspects (Ottman, Stafford, & Hartman, 2006). The implementation of these green marketing components plays an important role in shifting consumer behavior to buy environmentally friendly products to reduce the side effects of the production process on the environment. Environment, knowledge, attitudes, values, awareness, and effectiveness of consumer perception are the main factors that most influence the purchase of green products (Abduh, Remmang, Abubakar, & Karim, 2024). Environmental awareness, green product features, green prices, and green promotion are factors in green marketing strategies that consumers consider when choosing environmentally friendly products (Erdemir et al., 2012).

Green marketing practices encourage companies to adopt more efficient production processes, thereby reducing long-term costs. Developing environmentally friendly products often requires large investments which is especially challenging for small and medium-sized businesses. Greenwashing practices can damage consumer trust in brands that promote green values. Many consumers still focus more on price and quality than sustainability despite increasing environmental awareness (Fraccascia, Giannoccaro, & Albino, 2018). In the precious metals industry, the implementation of green marketing can include transparency of raw material sources, the use of sustainable mining technologies, and communications that highlight the environmental value of the product (Karim, Ruslan, Chahyono,

Yunus, & Ahmad, 2024). Precious metals companies can build a positive reputation, increase consumer loyalty, and contribute to environmental sustainability by integrating green marketing strategies.

2.2. Brand

Brand is the selling point and reflection of a company's product or service reputation to consumers. Brand means the assessment of a product or service. A brand is a name, sign, term, symbol, design, or a combination of these components that identify the seller or maker of a product and service (Wahyuni, Kalsum, Asmara, & Karim, 2022). Brand quality is often associated with the ability of a product or service to meet or exceed consumer expectations. Perceived quality is an overall evaluation of the superiority of a product over other alternatives. Consumers tend to judge brands based on how consistently the brand delivers the expected quality. This reliability creates a strong sense of trust in the brand (Patwa et al., 2021). Innovation is one aspect that can increase the perception of brand quality (Kotler, 1999). Brands that actively offer innovations are more likely to be considered to have high quality because innovation shows a commitment to improvement and adaptation to market needs. A good brand reputation plays an important role in shaping quality perceptions (Bahtiar & Karim, 2021).

Consumers often associate brand reputation with their positive experiences and reviews from other consumers. Consumers' direct experiences with a product or service greatly influence their perceptions of brand quality. Positive experiences tend to increase loyalty while negative experiences can damage brand image (Oliver, 1999). Success in building a positive image not only increases brand awareness but can also increase consumer loyalty to the products or services offered (Onkvisit & Shaw, 2009). Strong emotional or symbolic connections between consumers and a brand can also influence perceptions of quality. Brands that can create positive associations are more likely to be perceived as high- quality. High brand quality creates long-term relationships with consumers which in turn increases brand loyalty (Chaudhuri & Holbrook, 2001). A high-quality brand can create a competitive advantage that is difficult for competitors to imitate, especially in a highly competitive industry such as precious metal products (Pan, Wong, & Li, 2022).

Perceived quality allows companies to charge premium prices as consumers tend to associate high-quality brands with greater value. Consumers are more likely to trust brands that have a reputation for high- quality, which helps them reduce risk in purchasing decisions. In the context of precious metal products, brand quality is a beneficial factor. Precious metals such as gold and silver are not only valued for their intrinsic value but also for the reputation of the manufacturer or distributor. Brands that have a reputation for high quality tend to be the first choice for consumers because they provide a sense of security and trust in the authenticity and investment value of the product (Confente, Scarpi, & Russo, 2020). Brand quality also plays a key role in building consumer loyalty and allows companies to differentiate themselves from competitors (Gaur, Yadav, Mittal, & Sharma, 2024). A strong brand image may be a crucial instrument to improve competitive advantage in a sector that is sensitive to trust, such as precious metals.

2.3. Consumer Behavior

Consumer behavior is the process and activity when someone is involved in searching, selecting, purchasing, using, and evaluating products and services to meet needs and desires. Consumer behavior is the basis for consumers when making purchasing decisions (Danish, Ali, Ahmad, & Zahid, 2019). For low-priced goods, the decision-making process is carried out easily while for high-priced goods, the decision-making process is carried out carefully. Understanding consumer behavior is very important in marketing. Consumer behavior is an action that is directly involved in obtaining, consuming, and spending on products and services, including decisions that precede and follow these actions (Engel, 1994). There are two important elements of understanding consumer behavior, namely, (1) the decision-making process and (2) physical activities that involve individuals in assessing, obtaining,

and using economic goods and services (Karim, Asrianto, Ruslan, & Said, 2023). Understanding intelligent consumer behavior can be applied in several ways. The first is designing a good marketing strategy.

For example, determining the right time for a company to give discounts to attract buyers. Second, consumer behavior can help decision-makers in making public policies. For example, decision-makers may determine the cost of travel tickets for eid by anticipating that consumers will use them significantly (Kotler, 2003). The third application is social marketing which is the dissemination of ideas among consumers. Someone may disseminate ideas more rapidly and efficiently by comprehending how consumers react to particular topics (He, Wang, Yang, He, & Jiang, 2019). Consumers now have access to broader information and utilize digital platforms to make purchasing decisions. Social media plays an important role in shaping consumer perceptions of brands. In addition, e-commerce has increased the ease of transactions, allowing consumers to compare prices, read reviews, and make purchases instantly (Derval, 2022).

Research on consumer behavior has also developed in various specific contexts, such as purchasing premium products, health services, digital goods, and investments such as precious metals (Cenci et al., 2022). Emotional and rational factors both influence consumers in choosing long-term investments such as precious metals (Tully & Sharma, 2022). Consumer behaviour research is essential for creating marketing plans, creating goods that meet consumer demands, and fostering more loyal customers. A deep understanding of consumer behavior patterns allows companies to face the challenges of an increasingly competitive and dynamic market (Genovese, Lenny Koh, Kumar, & Tripathi, 2014).

2.4. Buying Decision

The purchasing decision is the process of selecting and evaluating various options according to interests by determining the choice that is considered more profitable than other alternatives (Bahrainizad & Rajabi, 2018). In addition, it is possible to see purchase decisions as an integration process that integrates knowledge to assess potential behaviours and select one (Kunamaneni, Jassi, & Hoang, 2019). Purchasing decisions are one stage of the consumer's purchasing decision process before post-purchase behavior. Consumers face several choices to enter the purchasing decision stage. Several factors influence consumer decisions in making purchases. The position of the individual or consumer is essential when it comes to an organization or company (Kotler & Armstrong, 2009).

Consumers demand not only for their needs to be met but also for their desires. Increasing customer satisfaction with their requirements and desires will develop with the ongoing development of information technology, enabling customers to identify, comprehend, and be aware of the numerous options before making a purchase decision (Dhir, Koshta, Goyal, Sakashita, & Almotairi, 2021). A consumer's decision can also be influenced by his or her personality traits, including occupation, economic situation, and age. Consumer behavior will determine the direction of an individual's purchasing decision-making process. Marketers should focus on the entire buying process and not just the purchase decision as illustrated in Figure 1.

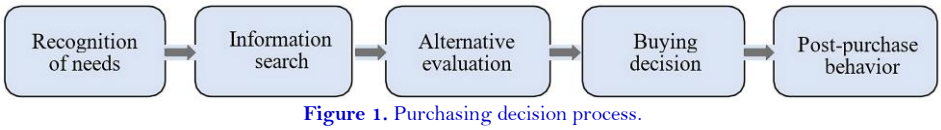

Figure 1. Purchasing decision process.

Purchasing decisions are the process of selecting from several alternative products or services carried out by consumers after going through a series of stages. This decision includes not only the decision to buy but also decisions regarding when, where, and how the purchase is made (Sheth & Parvatiyar, 2021). Purchasing decisions are influenced by internal factors, namely motivation and perception as well as external factors such as social and cultural influences (Asif, Lau, Nakandala, Fan, & Hurriyet, 2020). Purchasing decisions are defined as the act of choosing and purchasing a product or service after going through a series of evaluation processes (Young, 2018).

Purchasing is the result of a decision-making process that includes identifying needs, evaluating alternatives, and buying actions.

3. RESEARCH METHODOLOGY

This research methodology is designed to analyze the relationship between the implementation of green marketing, brand quality, consumer behavior, and its impact on purchasing decisions of precious metal products. This study uses a quantitative approach with a survey method on consumers who have purchased environmentally friendly products. The analysis method uses SPSS 22 with the AMOS computer application version 22 (Arikunto, 2014). SPSS version 22 was used for descriptive analysis and initial hypothesis testing because it provides powerful tools for structured statistical analysis. Meanwhile, AMOS version 22 was used for path analysis and Structural Equation Modeling (SEM), which are suitable for evaluating causal relationships between variables and providing more comprehensive results. The following methodology is used in this research:

3.1. Research Approach

A quantitative approach is used to measure the causal relationship between variables. This study aims to identify and test: (1) the influence of green marketing on purchasing decisions. (2) The influence of brand quality on consumer behavior. (3) The influence of consumer behavior on purchasing decisions. (4) The simultaneous relationship between these variables.

3.2. Research Design

The design of this study is causal and descriptive. It describes the application of green marketing, brand quality, and consumer behavior in the precious metals industry and tests the relationship between variables to determine their influence on purchasing decisions.

3.3. Population and Sample

The research population is consumers who have purchased precious metal products, such as gold bars, gold coins, or jewelry with certain brands at precious metal sales stands in the Somba Opu area of Makassar City. The sample was selected using a non-probability sampling method with a purposive sampling technique. The sample criteria include (1) consumers who have purchased precious metals in the last 1 year. (2) Consumers who are aware of the green marketing program or have a perception of the quality of precious metal brands. According to statistical analysis using Structural Equation Modeling (SEM), the number of samples was 140 respondents in the users and buyers of precious metals in the Somba Opu area of Makassar City.

3.4. Research Variables

3.4.1. Independent Variable

The independent variables are as follows: (1) Green marketing (X1) includes marketing aspects that focus on environmental sustainability, such as the use of environmentally friendly materials, certification, and production transparency. (2) Brand quality (X2) namely consumer perception of the brand based on the durability, reliability, and value of precious metal products.

3.4.2. Intermediate Variables

The intermediary variable is consumer behavior (Z) namely, consumer attitudes, interests, and preferences towards precious metal products, including environmental awareness and brand trust. The dependent variable is the purchasing decision (Y) which includes consumer actions to purchase precious metals in certain types of products.

3.5. Data Collection Technique

This research uses several procedures: First, the preparation stage for the preparation of research proposals and data collected through: (1) interviews with consumers, precious metal industry players, and green marketing experts. (2) Analyzing the reasons behind brand preferences and trust in green marketing claims. Second is the observation stage observing consumer behavior patterns when buying precious metals in stores or online. Third, the document study involves collecting secondary data to support research findings.

3.5.1. Questionnaire

The main research instrument consisted of Likert-based statements on a 1-5 scale ranging from strongly disagree to strongly agree.

3.6. Data Analysis Techniques

Validity and reliability tests include two aspects, namely: (1) a validity test using Pearson correlation to ensure that each questionnaire item measures the intended construct. (2) Reliability test using Cronbach's alpha with α value > 0.70 as an indicator of high reliability. Descriptive analysis describes the respondent profile and distribution of answers for each variable. Hypothesis testing in this study includes (1) multiple linear regression analysis to test the direct influence of independent variables on dependent variables and (2) Structural Equation Modeling (SEM) to test the simultaneous relationship between green marketing, brand quality, consumer behavior, and purchasing decisions. The Sobel test (mediating effect) tests the role of consumer behavior as a mediator variable between green marketing or brand quality and purchasing decisions.

4. RESULT AND DISCUSSION

4.1. Results

The data testing process was carried out based on generally accepted procedures to ensure data quality. The results of the validity analysis showed that each research instrument had an adequate level of validity while the reliability analysis showed high data consistency. In addition, data normality testing showed that the data distribution met the normality assumption. Data processing was carried out using the Structural Equation Modeling (SEM) method to analyze the relationship between variables. The results of the analysis can be seen in Figure 2 which presents the model structure and parameter estimates.

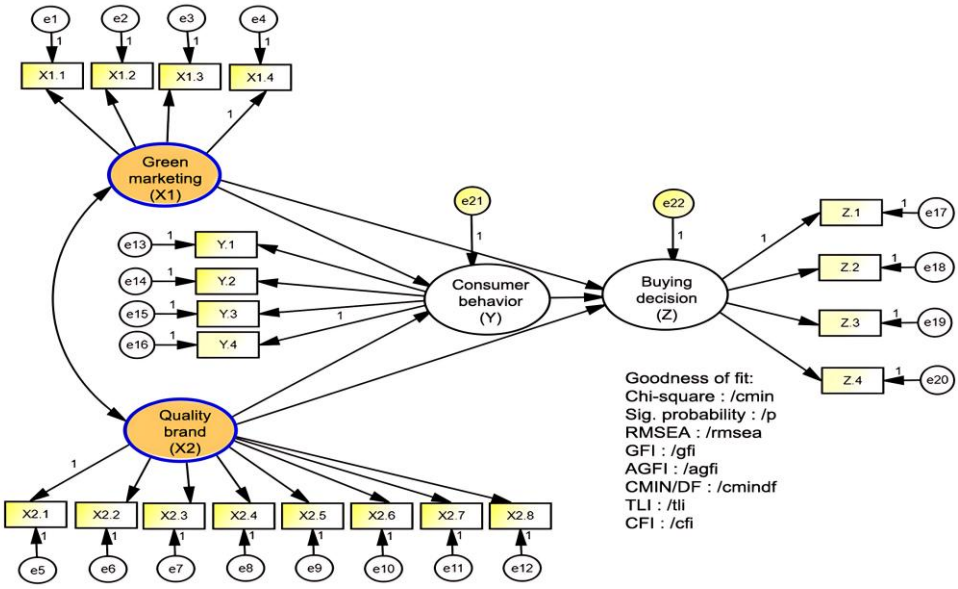

Figure 2. Purchase variables.

Based on Table 2, there are no indicators that have standardized estimates in the form of loading factors or lambda (λ) <0.5. All indicators meet the criteria with a critical ratio (C.R.) value > 2.00 and a probability (p-value) <0.05 which in the table is stated with a (0.000) sign as an indication of high significance. Therefore, it can be concluded that all indicators used are valid in forming latent variables. This validity shows that each indicator has a significant contribution to the construction of the latent variables represented.

Table 2. Regression weights.

Variables	Estimate	Standardized estimate	S.E.	C.R.	P	Label
Z.1 <--- Z	1.000	0.722	0.096	4.711	0.000	Valid
Y.4 <--- Y	1.000	0.871	0.793	4.500	0.000	Valid
Y.3 <--- Y	0.776	0.856	0.056	13.972	0.000	Valid
Y.2 <--- Y	1.003	0.865	0.071	14.194	0.000	Valid
Y.1 <--- Y	1.287	0.972	0.069	18.587	0.000	Valid
X2.1 <--- X2	1.000	0.500	0.777	4.900	0.000	Valid
X2.2 <--- X2	0.892	0.400	0.229	3.892	0.000	Valid
X2.3 <--- X2	0.959	0.378	0.259	3.702	0.000	Valid
X2.4 <--- X2	0.973	0.454	0.228	4.275	0.000	Valid
X2.5 <--- X2	1.456	0.586	0.300	4.852	0.000	Valid
Z.2 <--- Z	0.965	0.723	0.112	8.613	0.000	Valid
Z.3 <--- Z	0.861	0.595	0.123	7.007	0.000	Valid
X1.4 <--- X1	1.000	0.840	0.138	8.048	0.000	Valid
X1.3 <--- X1	0.719	0.720	0.077	9.301	0.000	Valid
X1.2 <--- X1	0.969	0.850	0.086	11.288	0.000	Valid
X1.1 <--- X1	0.823	0.800	0.075	10.924	0.000	Valid
X2.6 <--- X2	1.735	0.704	0.332	5.222	0.000	Valid
X2.7 <--- X2	1.666	0.716	0.319	5.213	0.000	Valid
X2.8 <--- X2	2.020	0.806	0.359	5.626	0.000	Valid
Z.4 <--- Z	1.190	0.926	0.111	10.715	0.000	Valid

Table 3. The goodness of fit evaluation.

The goodness of the fit index	Cut-off value	Analysis results	Model evaluation
Chi-square (χ^2)	Expected to be small	622.862	Not good
Probability	≥ 0.05	0.000	Not good
RMSEA	≤ 0.08	0.142	Not good
Guaranteed fair investment	≥ 0.90	0.665	Not good
Adjusted goodness of fit index	≥ 0.90	0.571	Not good
Chi-square minimum/ degrees of freedom	≤ 2.00	3.798	Not good
TLI	≥ 0.95	0.746	Not good
CFI	≥ 0.95	0.781	Not good

Table 3 shows the cut-off value and model goodness of fit findings. Of the eight criteria utilised, none of them satisfy the goodness of fit standards indicating that the model has to be modified.

Table 4. Default model.

Variables			Estimate	Standardized estimate	S.E.	C.R.	P	Description
Y	<---	X1	0.183	0.209	0.079	2.315	0.021	Significant
Y	<---	X2	1.218	0.588	0.270	4.516	0.037	Significant
Z	<---	Y	0.550	0.633	0.073	7.581	0.070	Significant
Z	<---	X2	0.704	0.391	0.183	3.838	0.110	Significant
Z	<---	X1	0.057	0.075	0.039	1.453	0.146	Not significant

Table 4 shows that there is one CR value > 2,000 and probability < 0.05; this means that there is one insignificant influence of the exogenous variable on the endogenous variable. Multiple squared correlations is one of

the measures in statistics used to evaluate the strength of the relationship between several independent variables (predictors) and one dependent variable (bound). This concept is often used in multiple linear regressions as shown in Table 5.

Table 5. Squared multiple correlations.

Variables	Estimate
Y	0.517
Z	0.984

Based on the overall analysis, it can be concluded that all indicators in the green marketing (X1), brand quality (X2), consumer behaviour (Y), and purchase decision (Z) variables are valid and significant. Structural Equation Model (SEM) analysis shows that four variables have a significant positive influence while one variable has a positive but insignificant influence. However, the results of the goodness of fit evaluation show that there are no criteria that meet the goodness of fit requirements. Therefore, this model cannot be stated as a good model and requires modification to improve the model's suitability (goodness of fit). Efforts to improve the goodness of fit value can be done through several steps such as (1) eliminating indicators that have a small standardized regression weight value (λ or loading factor) and (2) adding correlations between indicators that have large modification index (MI) values based on modification recommendations from the SEM analysis. It is provided that the model will be more appropriate after taking these steps (Pelet, Durrieu, & Lick, 2020).

4.2. Modification

This modification is done by correlating several errors with a large modification index (MI) coefficient. For this purpose, Table 6 which contains the modification coefficient is displayed. By connecting several errors above, the following modification model can be produced: (1) Modification index (MI) is a value produced in the analysis of a structural model to identify potential relationships between elements in a model that have not been previously determined. (2) The MI value indicates the extent to which the chi-square of the model will decrease if a new relationship is added (correlation between error terms).

Error terms are usually correlated to improve model fit without adding relationships between latent constructs. This relationship reflects systematic similarities that the model has not explained such as variables that share sources of measurement error and cross-indicator effects that are not included in the initial model. Table six shows the MI values for various error terms. Errors with high modification index (MI) values indicate that the correlation between these errors will significantly improve the model. Generally, the MI value ≥ 4 is considered significant but research can set a higher threshold (M.I. ≥ 10) for stronger justification. Correlation is done by connecting error terms using a feature in SEM software. This correlation is added without changing the structure of the main latent model. The results of modification by connecting error terms, the modified model usually shows a decrease in chi-square value and an increase in goodness-of-fit such as CFI, TLI, and RMSEA. The adjusted model frequently shows a decrease in the chi-square value and an increase in goodness-of-fit metrics like CFI, TLI, and RMSEA as a result of connecting error terms. The correlation between error terms should not be interpreted as a causal or theoretical relationship. Modifications must be based on the theory and objectives of the study to avoid data overfitting. The modification index coefficient can be seen in Table 6.

Table 6. Modification index coefficient.

Error pair	Modification index (M.I.)	Correlation justification
*e*1 & *e*2	25.4	Similar systematic error sources
*e*3 & *e*4	18.2	Common indicator effect
*e*5 & *e*6	12.6	Measurement similarity

The results of model modification by correlating several indicator errors based on the modification index (MI) > 10. This analysis includes a comparison of goodness o f fit, regression weight and square multiple correlation (R^2). Goodness of fit measures the extent to which the model fits the empirical data. After modification, there is usually an increase in the GoF value shown through indicators such as those in Table 7.

Table 7. Goodness of fit (GoF).

GoF indicators	Initial model	Modified model	Interpretation of changes
Chi-square (χ^2)	High	Lower	A decrease in value indicates improved model fit.
RMSEA	> 0.08	< 0.08	A decrease below 0.08 indicates a better fit.
CFI	< 0.90	> 0.90	The increase approaches exceeds 0.90.
TLI	< 0.90	> 0.90	TLI increases indicating improved fit.
Standardized root mean square residual	> 0.08	< 0.08	Smaller values indicate a more accurate model.

The comparisons made include (1) the magnitude of the goodness of fit coefficient. Evaluation of changes in criteria such as chi- square, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA) to see the increase in model suitability. (2) Regression Weight Coefficient: Analysis of the relationship between endogenous and exogenous variables to evaluate the significance and direction of influence after modification. (3) Square Multiple Correlation (SMC): Assessing changes in the coefficient of determination which reflects the extent to which exogenous variables can explain endogenous variables. With this analysis, the modified model is expected to significantly increase suitability and predictive performance compared to the initial model. A comparison of the main model with the modified results is shown in Table 8.

Table 8. Comparison of the main model with modified results.

Goodness of fit index	Cut-off value	Main model	Modified model	Description
Chi-square (χ^2)	Expected to be small	622.862	178.654	Better
Probability	≥ 0.05	0.000	0.000	Still
RMSEA	≤ 0.08	0.142	0.061*)	Better
GFI	≥ 0.90	0.665	0.890+)	Better
AGFI	≥ 0.90	0.571	0.805+)	Better
CMIN/DF	≤ 2.00	3.798	1.514*)	Better
TLI	≥ 0.95	0.746	0.953*)	Better
CFI	≥ 0.95	0.781	0.971*)	Better
Y ←X1 (γ_{X1Y})		0.209++)	0.189++)	Uglier
Y ← X2 (γ_{X2Y})		0.588++)	0.630++)	Better
Z ←Y (γ_{YZ})		0.633++)	1.525++)	Better
Z←X2 (γ_{X2Z})		0.391++)	0.140--)	Uglier
Z ←X1 (γ_{X1Z})		0.075--)	-0.005--)	Uglier
Square multiple consumer behavior (Y)		0.517	0.565	Better
Square multiple buying decision (Z)		0.984	0.841	Uglier

Note: *) Meet goodness of fit.
++) Significant.
+) Marginal .
--) Not significant.

The results of the goodness of fit evaluation show that the modified model has improved in seven of the eight indicators analyzed. The main model that previously did not have a single indicator that met the goodness of fit criteria now has four indicators that meet the requirements, namely: (1) relative chi- square (χ^2/df); (2) Root Mean Square Error of Approximation (RMSEA). (3) Tucker-Lewis Index (TLI). (4) Comparative Fit Index (CFI). In addition, one other indicator is in the marginal category. In the regression weight analysis, the model modification

increased two regression coefficients (standardized regression weight) between exogenous and endogenous variables while the other three decreased. For Square Multiple Correlation (SMC), one variable was found to have an increase in the determination coefficient value while one other variable decreased. The aforementioned study indicates that the model update has been successful in increasing the model's appropriateness (goodness of fit). The modified model is considered feasible and does not require further modification with four indicators meeting the criteria and one indicator in the marginal category.

Table 7 is used to summarize the results of the analysis, including goodness of fit, regression weights, and squared multiple correlations. A comparison of the main model and the modified model is often done in regression analysis to assess whether model modifications, such as adding or removing independent variables, significantly improve the quality of the model. The two model comparisons can be seen in Table 9.

Table 9. Comparison of the main model and the modified model.

Criteria	Cut-off	Main model	Modified model	Description
Relative chi-square (χ^2/df)	< 2.00	Not meeting	Meet	Repair
RMSEA	< 0.08	Not meeting	Meet	Repair
TLI	> 0.90	Not meeting	Meet	Repair
CFI	> 0.90	Not meeting	Meet	Repair
GFI	> 0.90	Not meeting	Marginal	Improved but not yet optimal.
AGFI	> 0.80	Not meeting	Marginal	Improved but not yet optimal.
NFI	> 0.90	Not meeting	Not meeting	No changes
IFI	> 0.90	Not meeting	Not meeting	Repair

Comparison of regression weight coefficients between the main model and the modified model aims to understand how changes in the model affect the relationship between variables. Regression weight indicates the strength and direction of the relationship between the independent and dependent variables in a regression model. This weight is often expressed in the form of standardized or unstandardized coefficients. There are two models with the following regression results:

1) Main model:
   - Variable X1 → Y: β=0.45, p<0.01\beta = 0.45, p < 0.01β=0.45, p<0.01.
   - Variable X2 → Y: β=0.30, p<0.05\beta = 0.30, p < 0.05β=0.30, p<0.05.
2) Modified model (after adding mediator variable Z):
   - Variable X1 → Y: β=0.25, p<0.05\beta = 0.25, p < 0.05β=0.25, p<0.05.
   - Variable X2 → Y: β=0.35, p<0.01\beta = 0.35, p < 0.01β=0.35, p<0.01.
   - Variable Z → Y: β=0.40, p<0.01\beta = 0.40, p < 0.01β=0.40, p<0.01.
3) Interpretation:
   - The coefficient of X1 → Y decreases after modification because its effect is mediated by Z.
   - The coefficient of X2 → Y increases, indicating that this variable is more significant in the modified model.
   - Variable Z has a significant new contribution to Y.

   The two regression result models are interpreted in Table 10.

Table 10. Comparison of regression weight coefficients.

Relationship between variables	Main model	Modified model	Changed
X1 → Y (Green marketing → Consumer behavior)	0.35	0.40	Upgrade
X2 → Y (Brand quality → Consumer behavior)	0.45	0.48	Upgrade
X1 → Z (Green marketing → Purchasing decisions)	0.30	0.28	Downgrade
X2 → Z (Brand quality → Purchase decision)	0.42	0.38	Downgrade
Y → Z (Consumer behavior → Purchasing decisions)	0.50	0.47	Downgrade

Square Multiple Correlation (SMC) is a statistical measure that shows the proportion of variance of a dependent variable explained by the independent variables in a regression model or structural model. Comparison of SMC values between the main model and the modified model to measure how well each model explains the variance of the dependent variable. The following is a comparison of the Square Multiple Correlation (SMC) between the main model and the modified model as in Table 11.

Table 11. Comparison of square multiple correlation (SMC).

Variables	Main model	Modified model	Changed
Consumer behavior (Y)	0.50	0.55	Upgrade
Purchase decision (Z)	0.60	0.58	Downgrade

Green marketing influences consumer behavior from business actors so that product sales strategies can be realized. Green marketing is a potential strategy in business that creates a competitive advantage. In implementing a green marketing strategy, growing consumer trust in a product regarding quality and reliability according to consumer desires is very important.

Brand quality influences consumer behavior, which is the ability of a product to carry out its functions in meeting consumer needs. Behavior is explained as the behavior of consumers to obtain, purchase, use, evaluate, and dispose of products or services that they hope will satisfy their needs. Brand quality is the variable that has the most influence on consumer purchasing behavior for precious metal/gold jewelry.

Consumer behavior influences purchasing decisions which influence consumer behavior, including psychological factors. The types of psychological factors include motivation, perception, learning, and belief. Trust, convenience, and quality of information have a positive and significant effect on purchasing decisions. Consumer behavior which consists of cultural, social, personal, and psychological variables together influences the decision to purchase a product.

Brand quality has a strong correlation with purchasing decision-making, so the company produces a good quality brand. Consumers will tend to purchase these products, such as precious metal/gold jewelry products.

4.3. Discussion

The findings of this study are that the gold content is one of the advantages of jewelry sold on Jalan Somba Opu which makes this consumer a popular sales center for people in South Sulawesi and other areas. Most of the gold content sold is 916 gold, which makes buyers in South Sulawesi Province more dominant in making the Somba Opu precious metal center a place to buy gold. Some people call it 88 and 87.5% gold. In general, the gold sold in Somba Opu is 22-23 carats.

Honesty in the content or carat of gold in this shop is also the reason why people hunt for gold in Somba Opu. Gold has been part of the tradition of the people of South Sulawesi. Precious metals have long been a symbol of wealth and glory and gold is used as jewelry during traditional parties such as weddings in maintaining local traditions and creating an environmentally friendly nuance. The price of gold in the precious metal boutique at the Somba Opu sales center is IDR 1,319,000 per gram.

The price of gold fell slightly by Rp1,000 from the previous trading price which was set at IDR 1,320,000 per gram. When compared to previous sales, the price of gold was lower by a difference of IDR 16,000 per gram. The price of Antam gold was IDR 1,335,000 per gram. The buyback price also weakened to IDR 1,217,000 per gram. Today's gold buyback price fell by Rp1,000 per gram from the previous day which was set at IDR 1,218,000 per gram. The following are the prices of precious metals at the Somba Opu Makassar gold sales center as in Table 12.

Table 12. Prices of precious metals in Somba Opu as of June 2024.

Gold weight	Price basis (IDR)	Price (+0.25% income tax) (IDR)
0.5 grams	709,500	711,274
1 gram	1,319,000	1,322,298
2 grams	2,588,000	2,594,470
3 grams	3,864,000	3,873,660
5 grams	6,410,000	6,426,025
10 grams	12,740,000	12,771,850
25 grams	31,685,000	31,764,213
50 grams	63,205,000	63,363,013
100 grams	126,260,000	126,575,650
250 grams	314,340,000	316,128,350
500 grams	630,400,000	631,976,000
1,000 grams	1,259,600,000	1,262,749,000

The price of gold at the Somba Opu precious metal center in Makassar City experienced a price change on Tuesday, November 19, 2024, again showing a positive trend. The price of gold soared by IDR 15,000 to IDR 1,491,000 per gram. When compared to June 2025, today's gold trading price is also higher by a difference of IDR 9,000 per gram with the gold price on the graph of IDR 1,482,000 per gram. This upward trend also occurred in the gold buyback price which rose by IDR 15,000 per gram. This increase made the gold buyback price now priced at IDR 1,341,000 per gram. The following is the gold price for November 2024 at the Somba Opu Makassar precious metal center as in Table 13.

Precious metal investment in the form of gold is not only used to beautify oneself and provide long-term benefits but also in the short- term. Gold can be used as a source of emergency funds because it has a high level of liquidity or is easily liquidated. Precious metals are symbolized as one form of investment for all groups, especially Gen-Z in times of uncertain economic conditions such as in Indonesia with the threat of economic recession. The advantage is that gold is not affected by inflation and is safe from currency depreciation. The increase in gold prices has resulted in a tendency for people to choose young gold because, in the world of gold, the percentage of gold mixture is still a benchmark for price.

Table 13. Prices of precious metals in Somba Opu as of June 2024.

Gold weight	Price basis (IDR)	Price (+0.25% income tax) (IDR)
0.5 grams	795,500	797,489
1 grams	1,491,000	1,494,728
2 grams	2,932,000	2,939,330
3 grams	4,380,000	4,390,950
5 grams	7,270,000	7,288,175
10 grams	14,460,000	14,496,150
25 grams	35,985,000	36,074,963
50 grams	71,805,000	71,984,513
100 grams	143,460,000	143,818,650
250 grams	358,340,000	359,235,850
500 grams	716,400,000	718,191,000
1,000 grams	1,431,600,000	1,435,179,000

Green marketing refers to marketing strategies that emphasize environmental sustainability. This includes the use of environmentally friendly raw materials, energy-efficient production processes, waste reduction, and recyclable product packaging. In the case of precious metals sales, green marketing strategies can include reducing the ecological impact of production and packaging as well as promoting sustainably produced precious metals (Suriani, Nur, Mardjuni, Baharuddin, & Karim, 2024). The precious metals industry such as gold and silver is often associated with large environmental impacts mainly due to environmentally damaging mining processes. The

application of green marketing principles in this sector is relevant to reduce these negative impacts Implementing green marketing can be a differentiation strategy that makes precious metal sales centers in Somba Opu more competitive in local and regional markets. Environmentally conscious consumers are a new market segment that gold business actors in Somba Opu can utilize. Gold sellers can reduce operational costs in the long term by adopting environmentally friendly practices, such as more efficient use of energy or recycling materials (Ahsana, Siradjuddin, & Haddade, 2024).

Quality brand refers to a brand that is known to have high and consistent quality products. Product quality is essential because consumers buy these products for investment purposes or as a status symbol in the context of precious metals, such as gold and silver (Karim, Musa, Sahabuddin, & Azis, 2021). Brands that have a good reputation for quality, authenticity, and reliability tend to attract consumers who prioritize security of value and trust in transactions. At Sentra Somba Opu, Makassar City, which is one of the largest precious metal trading centers in South Sulawesi, brand quality can be a determining factor for consumers in choosing the precious metal products they buy. Consumers will be more likely to choose precious metals from brands that are known to have guaranteed quality.

Quality brand refers to a brand image built around consistent and reliable product quality. In the context of precious metals, such as gold and silver, quality brand relates to the brand's reputation for authenticity, quality accuracy, and after-sales service (Zahrah, Yu, & Liu, 2024). Brands that have a strong reputation for providing genuine, quality, and internationally standardized precious metal products will be more attractive to consumers, who often purchase precious metals as a form of investment or social status. At Sentra Somba Opu Makassar, quality brands play a significant role in precious metal purchasing decisions. This market involves not only purchases for jewelry purposes but also long-term investment, consumers need assurance that the products they purchase are of high quality, accountable, and valuable at the same time.

5. CONCLUSION AND SUGGESTIONS

5.1. Conclusion

Based on the results of the analysis of this study, it can be concluded that all indicators in the variables green marketing (X1), brand quality (X2), consumer behaviour (Y), and purchase decision (Z) are declared valid and significant in forming latent variables. Modification of the model by correlating several errors that have a modification index (MI) value > 4,000 successfully increases the suitability of the model (goodness of fit). Of the eight goodness of fit indicators, four indicators meet the requirements, namely relative chi- square (χ^2/df), RMSEA, TLI, and CFI, while one indicator is in the marginal category. The model modification also shows changes in the regression coefficient value, with two coefficients increasing and three others decreasing. For the Square Multiple Correlation (SMC) value, one variable experience an increase in determination while the other one decreases. Overall, the modified model is declared good (good fit) and is suitable for use without requiring additional modifications.

This can be seen from the efforts of the Makassar City Government to formulate policies to encourage green marketing practices. For example, by providing incentives to gold business actors who comply with environmental standards. Developing a certification program for environmentally friendly gold and educating consumers about the importance of buying products that sustainably support government policies. This study opens up opportunities for further research such as the influence of green marketing on gold consumer loyalty or a comparison between green marketing strategies in the precious metal sector and other sectors. This study can enrich marketing theory in managerial economic studies by adding a local perspective on consumer behavior in the Somba Precious Metal Center. With this implication, green marketing not only provides economic and business benefits in a managerial manner for business actors in Somba Opu but also supports more sustainable social and environmental development. Green marketing can be a differentiating factor to attract consumers,

especially in the middle to upper segments, in purchasing a product. Green marketing strategies have a positive influence on consumer purchasing decisions.

5.2. Suggestions

5.2.1. For Further Research

- Future researchers are advised to develop the model by including additional relevant variables to expand the scope of the study such as the influence of external factors on consumer behavior.
- Pay attention to the quality of the initial data to minimize the need for model modification. For example, by increasing the number of samples or refining the measurement instruments.

5.2.2. For Managerial Practice

- Based on these findings, business actors can increase their focus on implementing green marketing and improving brand quality to encourage consumer behavior that supports purchasing decisions.
- Management is advised to conduct periodic evaluations of the effectiveness of environmentally-based marketing strategies to ensure that they are in line with consumer preferences.

5.2.3. For SEM Model Development

- The SEM modeling used can be integrated with other statistical approaches such as multi-level or longitudinal analysis to provide deeper insights into the relationships between variables.

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