

The Influence of Brand Awareness on Consumer Loyalty and the Visualization of a Business Analyst Dashboard for Product X in Malang Regency

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ABSTRACT

Competition in Indonesia's herbal medicine industry is becoming increasingly intense, requiring companies to maintain consumer loyalty through strengthening brand awareness. Product X from PT XYZ is one of the leading products dominating the market; however, market dynamics remain a challenge in sustaining consumer loyalty. This study aims to analyze the effect of brand awareness on consumer loyalty in Malang Regency. The research employed a quantitative approach with a survey of 100 respondents who had consumed Product X at least twice. Data were analyzed using simple linear regression with SPSS and further visualized through a business analyst dashboard in Microsoft Power BI to map consumer behavior and preferences. The findings reveal that brand awareness has a positive and significant effect on consumer loyalty. Brand recognition emerged as the most dominant dimension, while repurchase intention was the strongest indicator of consumer loyalty. The dashboard visualization provides strategic insights into their relationship.

Keywords: Brand Awareness; Consumer Loyalty; Data Visualization

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INTRODUCTION

The competition in the herbal-based FMCG (Fast-Moving Consumer Goods) industry has intensified, particularly in the post-COVID-19 period (Kusumawati et al., 2024). In Indonesia, the FMCG sector has experienced swift expansion, fueled by increasing consciousness regarding health-conscious practices, consumer preferences for natural-based products, the rise of the middle class, urbanization, and shifting consumption patterns. According to Kompas, the total sales value of Indonesia's FMCG sector through e-commerce platforms reached IDR 57.6 trillion in 2023, reflecting a 1.03% increase from the previous year (Antara, 2024). One of the FMCG categories that has recorded significant growth is herbal-based health products.

PT XYZ, established in 1951, is one of the largest herbal medicine companies in Indonesia. Its flagship, Product X, holds a market share of 72% in the herbal medicine segment (PT XYZ, 2024). Despite its strong dominance and brand awareness, PT XYZ continues to face challenges in sustaining consumer loyalty due to market dynamics and intensifying competition.

Table 1. Profitability of the Herbal Medicine and Supplement Segment

Description	2024	2023	2022	2021
Sales	2.488.082	2.348.203	2.633.471	2.693.471
Cost of Goods Sold	(754.886)	(741.368)	(842.756)	(877.266)
Gross Profit	1.733.196	1.606.835	1.790.715	1.816.501
Gross Profit Margin	69.7%	68.4%	68.0%	67.4%

Source: *Annual Report PT PT XYZ (2025)*

In this context, Business Intelligence (BI) and dashboard analytics serve as essential tools for data visualization and decision-making. Microsoft Power BI enables interactive visualizations that allow the identification of consumer consumption patterns and preferences (Nafiisa et al., 2022; Fauziah et al., 2024).

This study is guided by the Theory of Planned Behavior (TPB), which argues that consumer attitudes are influenced by intentions to act established from beliefs, social norms, and perceived behavioral control (Ajzen, 1991 in Rupianti et al., 2023). Within this framework, brand awareness contributes to the formation of positive attitudes and drives repurchase intentions, which serve as the foundation of consumer loyalty.

Based on Google Trends (2025), Malang Regency ranked third in search interest for Product X, making it a strategic location for the connection between brand awareness and consumer loyalty. Accordingly, this study aims to: (1) analyze effect regarding the impact of brand awareness on loyalty toward Product X in Malang Regency, and (2) visualize the relationship between the two variables through a Power BI-based business analyst dashboard.

METHODS OF RESEARCH

Employed a quantitative approach with an explanatory research design, aiming to investigate influence of brand awareness on consumer loyalty toward Product X PT XYZ in Malang Regency. The population of this research consisted of consumers of Product X residing in Malang Regency. The research applied purposive sampling, selecting participants according to these criteria: (1) respondents aged 18 years or older, (2) domiciled in Malang, and (3) had purchased Product X at least twice. Overall, 100 respondents were involved in this study.

The research instrument was an online questionnaire using a five-point Likert scale, where respondents expressed their level of agreement or disagreement with statements related to brand awareness and consumer loyalty. The independent variable, brand awareness, was measured through several sub-variables, namely *unaware of brand*, *brand recognition*, and *brand recall*. Indicators for these dimensions included whether respondents had never heard of Product X, could not recognize its logo, packaging, or visual elements, and were unaware that Product X was available in the herbal market. Brand recognition was captured through indicators such as familiarity with the existence of Product X, the ability to recognize its logo, packaging, or color scheme, and the frequency of encountering promotions in media. Meanwhile, brand recall was assessed through indicators such as the ability to mention Product X without any assistance, considering it as the first choice when seeking herbal products, and recalling the brand when the need for such products arises.

The dependent variable, consumer loyalty, was operationalized as emotional and behavioral attachment to the brand. Its measurement covered indicators such as repeat purchases, recommending the brand to others through positive word-of-mouth, resistance to switching despite alternatives, and maintaining preference even when facing price changes or negative information. These dimensions reflect loyalty stages ranging from cognitive and affective commitment to conative and action loyalty.

Analysis of the data was performed using simple SPSS-25 based linear regression analysis to examine the impact of brand awareness on consumer loyalty. In addition, business intelligence techniques were applied to visualize the findings. The process included Extract, Transform, and Load (ETL), data modeling, and interactive dashboards developed using Microsoft Power BI. These dashboards provided a systematic and comprehensive visualization of consumer insights, supporting more effective data-driven decision-making and strategic marketing implications.

RESULT AND DISCUSSION

Prior to conducting the analysis, respondent screening was carried out to ensure conformity with the research criteria. This was done through two main questions: whether respondents had consumed Product X of PT XYZ at least twice and whether they had ever seen or been exposed to its promotional activities (Sugiyono, 2020). All 100 respondents met these requirements, enabling the analysis to proceed.

From the demographic profile, the majority of respondents were female, predominantly aged 18–24 years. Most were students, followed by private employees and other occupations. This illustrates that young, digitally active women constitute the dominant consumer segment of Product X in Malang Regency. Such characteristics are strategically important, as this segment has the potential for long-term loyalty (Indrayani et al., 2023).

Before testing the hypothesis, classical assumption tests were performed to validate the regression model (Ghozali, 2021). Normality tests using Kolmogorov-Smirnov and Shapiro-Wilk yielded significance values of 0.157 and 0.425, respectively, both greater than 0.05, indicating normally distributed data. This finding was further supported by the bell-shaped histogram and the Q-Q plot aligned with the diagonal line.

Table 2. Normality Test

Test	Statistic	df	Sig
Kolmogorov-Smirnov	0.077	100	0.157
Shapiro-Wilk	0.987	100	0.425

Source: Output SPSS

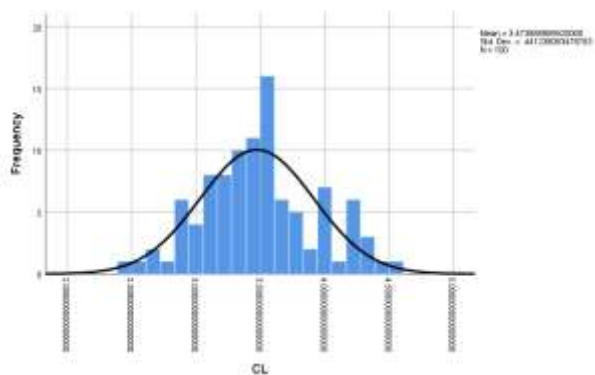


Fig 1. Histogram of Consumer Loyalty

Source: Output SPSS

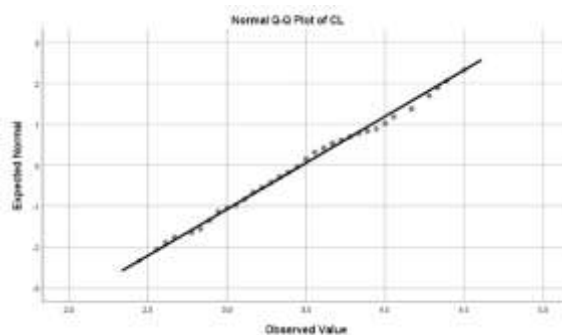


Fig 2. Q-Q Plot of Consumer Loyalty

Source: Output SPSS

The Durbin-Watson test produced a value of 1.917, lying in the permissible range of 1.5–2.5, suggesting the absence of autocorrelation. Heteroskedasticity testing through scatterplot analysis revealed randomly distributed residuals without discernible patterns, suggesting that the model is free from heteroskedasticity. The linearity test also demonstrated a significant linear link between brand awareness and consumer loyalty (Sig. Linearity = 0.001 < 0.05; Sig. Deviation = 0.403 > 0.05).

Table 3. Autocorrelation Test

R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
.110	12.057	1	98	.001	1.917

Source: Output SPSS

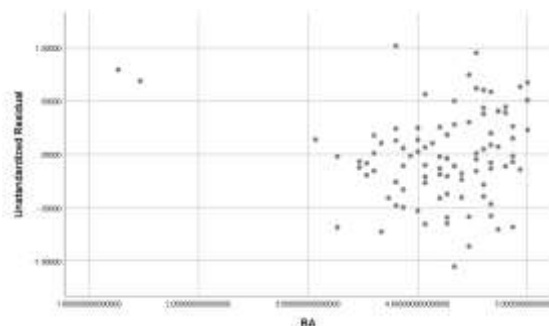


Fig 3. Uji Heteroskedasitas
Source: Output SPSS

Table 4. Liniearity Test

	Sum of Squares	df	Mean Square	F	Sig.
(Combined)	6.880	27	.255	1.480	.096
Linearity	2.112	1	2.112	12.267	.001
Deviation from Linearity	4.768	26	.183	1.065	.403

Source: Output SPSS

The R-squared value (R^2) was 0.110, meaning brand awareness explains 11% of the variation in consumer loyalty, and the remaining 89% is influenced by other factors outside the model. The t-test results indicated that brand awareness positively and significantly influences consumer loyalty, with a regression coefficient of 0.240 and significance at 0.001 (< 0.05). Thus, a one-unit increase in brand awareness leads to a 0.240 increase in consumer loyalty.

Table 5. Coefficient of Determination (R^2) Test

R	R Square	Adjusted R Square	Std. Error of the Estimate
.331 ^a	.110	.100	.418485841277691

Source: Output SPSS

Table 6. Result of Simple Linear Regression

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.
(Constant)	2.459	0.295	-	8.329	0.0000
X (Brand Awareness)	0.240	0.069	0.331	3.472	0.001

Source: Output SPSS

These findings reinforce the Theory of Planned Behavior (TPB), especially the *attitude toward behavior* dimension, suggesting that brand awareness fosters positive attitudes that enhance loyalty. From a descriptive perspective, brand awareness achieved a high mean score (4.214), with brand recognition as

the strongest indicator. In contrast, consumer loyalty averaged 3.00 (moderate), dominated by repurchase intention, while emotional attachment remained low (2.89). This implies that consumer loyalty is largely functional rather than emotional.

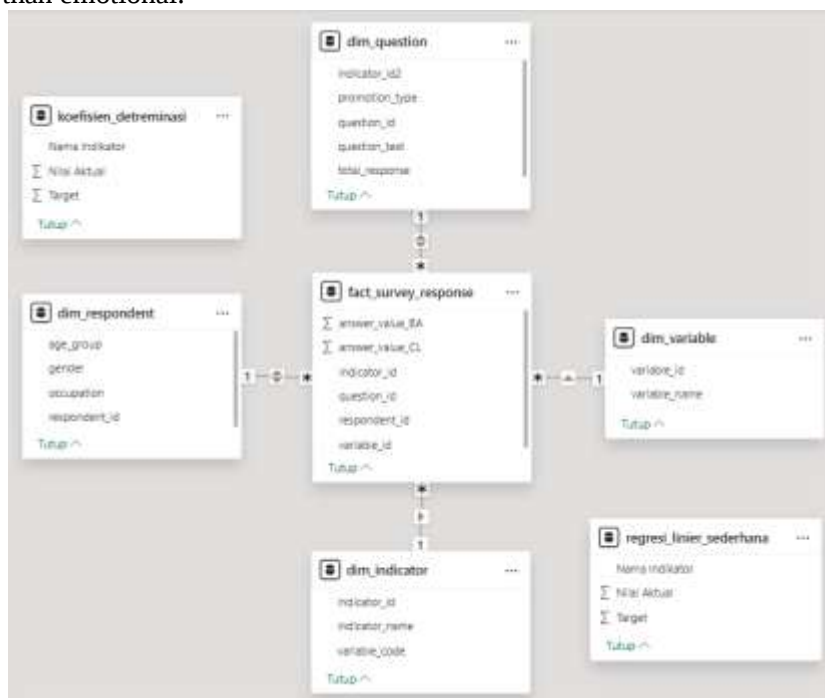


Figure 4. Relationshi Data "Star Schema"
Source: Researcher (2025)

Visualization through Microsoft Power BI further strengthened the quantitative analysis by presenting the gap between brand awareness (M = 4.20) and consumer loyalty (M = 3.29). The star schema data model facilitated efficient one-to-many relationships between fact tables (indicator scores) and dimension tables (respondent demographics), supporting interactive drill-down analysis. The dashboard revealed that loyalty is still functional and not strongly emotional, underscoring the need for strategies to enhance emotional attachment.



Figure 5. Dashboard Business Analyst
Source: Researcher (2025)

As a managerial implication, companies are advised to strengthen emotional attachment through community-based engagement, storytelling, and digital loyalty programs. For future research, incorporating variables such as brand trust and customer satisfaction is recommended to achieve a more comprehensive understanding of consumer loyalty (Adawiyah & Halida, 2024).

CONCLUSION

This study concludes that brand awareness has a positive yet limited influence on consumer loyalty toward Product X in Malang Regency, explaining only around 11% of loyalty, which suggests that other factors also contribute. The Power BI dashboard further reveals that most consumers remain at the brand recognition stage, while repurchase intention stands out as the strongest loyalty indicator, providing a potential pathway toward brand recall. Based on these findings, companies are recommended to strengthen loyalty through customer programs (e.g., points, membership, digital apps) and adapt marketing communication to young adult segments. Future research should incorporate additional variables such as brand trust or satisfaction and expand respondent scope with mixed methods, while consumers are encouraged to actively seek product information and build loyalty through consistent positive experiences..

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