

RESEARCH ARTICLE



Sustainable Marketing Strategy for Waste-Based Building Materials: Evidence from Clam Shell Ventilation Blocks in Coastal Surabaya

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Purpose	This research aims formulate a marketing strategy of ventilation block or ventilation block made from clam shell waste through the integration of 8P marketing mix and SWOT analysis utilizing Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) matrices.
Design/Methodology	Research utilizing quantitative descriptive approach. The data were collected through questionnaires to building and material entrepreneurs, households, and the community. Analysis was conducted using 8P marketing mix, IFAs and EFAS Matrix, and SWOT analysis to identify strategic positions and formulate alternative marketing strategies.
Findings	The findings indicate that strengths dominate over weaknesses, while opportunities outweigh potential threats. The product is in Quadrant I in the SWOT matrix, indicating a favourable strategic position and supports the implementation of an aggressive strategy (Growth Oriented Strategy). The recommended strategies include product development, optimization of digital marketing, expansion of partnerships, boosting production capacity, and enhancing the image as eco-friendly building material products.
Practical Implications	The results serve as a reference for business perpetrator in boosting digital marketing, production capacity, distribution, partnerships, and green branding to improve the competitiveness of the product.
Originality/Value	The novelty of the research lies in its focus on the marketing strategy for ventilation blocks made from clam shell waste, particularly within the context of coastal waste utilization in Kenjeran, Surabaya. The research provides insights into the internal and external factors influencing the marketing of these products and identifies marketing strategies that are relevant to their characteristics as products derived from locally available waste materials.

Keywords: Marketing Mix 8P; SWOT Analysis; IFAS-EFAS; Marketing Strategy; Ventilation Block.

JEL Classification: M31, Q01, Q53

SDG: SDG 12, SDG 11

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1. Introduction

The construction sector in Indonesia is experiencing a fairly rapid development. It is due to the improvement of construction of infrastructure, residential areas, commercial buildings and public facilities. It encourages an increase in the need related to various types of building materials that have good structural quality. In addition, the material must also have an aesthetic value and an economical price to support sustainable development. The concept of eco-friendly buildings provides solutions to minimize pollution from the use of cement-based materials (Rifkah, 2024). Consumers today care deeply about the environmental cost of how products are made. This change in mindset is driving companies to innovate, not just to stay competitive, but then again to deliver high-quality products that champion eco-friendly growth.

The approach taken to support sustainable development is by reusing waste to become products that have economic value. The potential of local resources that can be processed into eco-friendly raw materials is clam shell waste. The coastal area of Kenjeran Beach, Surabaya produces a lot of clam shell waste and has not been managed properly. It is estimated that clam shell waste produced as much as 3 tons and accumulate in the coastal area of Kenjeran Beach (Sari et al., 2021).

Based on the amount of waste, only 10% is processed and utilized (H. S. Wibowo & Rochmah, 2024). If the waste is not managed properly, it will create potentials for environmental pollution and reduces aesthetics in coastal areas. Clam shells are rich in calcium carbonate (CaCO_3), making them highly versatile for repurposing. Because they consist of 97.2% CaCO_3 , these shells hold substantial potential as a sustainable raw material for construction (Wicaksono et al., 2023). Utilization of shells can be a good step in dropping waste and produce products that have added value and support the concept of sustainable development (Setyoningrum et al., 2024; Simanjuntak et al., 2025).

The innovation produced from clam shell waste is a ventilation block product. Ventilation block is an element of the building that has a function as natural ventilation and decorative ornaments on the building. In recent years the use of the ventilation block has been growing due to the development of architectural concepts that are modern minimalist designs, tropical, green buildings that prioritize natural lighting and good air circulation. The use of shells as raw materials ventilation block will produce products with natural patterns, distinctive texture, as well as high aesthetic value compared with conventional ventilation block.

One product pioneering the use of shell waste in construction is NautiiVent, an eco-friendly ventilation block (ventilation block) manufactured in Surabaya. By repurposing discarded shells into raw materials, NautiiVent delivers functional airflow alongside a natural aesthetic derived from the shells' organic textures and patterns. This innovation champions sustainable building design by transforming local waste from the Kenjeran beach area into a high-value, functional product.

However, the development of clam shell ventilation block products still faces obstacles, especially in the marketing aspect. As a relatively new product, the level of public knowledge of this product is remain low due to consumers are more familiar with ventilation blocks made from cement, concrete, or ceramics. To overcome this, a strategic marketing approach is essential to boost brand awareness, build consumer trust, and expand market share. The development of digital marketing also needs to be utilized because consumers are increasingly looking for product information through digital media before making a purchase (Djong & Kusumawati, 2026).

The marketing mix supports the development of more effective marketing strategies and facilitates decision-making (Goldsmith, 1999). A correct marketing strategy requires to consider the internal and external conditions of the business. Internal factors include product quality, innovation, cost, Human Resources, production capacity, and promotion capabilities.

While external factors include economic conditions, technological developments, consumer preferences, competition, government policies, and cooperation opportunities (Aulia, 2023). SWOT analysis is needed which is used to determine internal and external factors in the form of Strengths, Weaknesses, Opportunities and threats in a business (Syafa'at & Wahid, 2020). To identify these factors, the research utilizes Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS). IFAS is used to analyze strengths and weaknesses, while EFAS is used to analyze opportunities and threats as the basis for formulating marketing strategies. The results of the two matrices can provide an overview of the company's strategic position that can be used as a basis in developing an objective, targeted, and appropriate marketing strategy with actual conditions.

The application of IFAS and EFAS is essential because clam shell ventilation blocks have characteristics that differ from conventional building materials. Competition among such products does not depend on price alone. Innovation, aesthetic appeal, sustainability, and the utilization of waste as raw material also determine how well a product competes. Marketing strategies must therefore be accompanied by consumer education on the benefits of eco-friendly materials. IFAS and EFAS analysis is used here to identify strategic factors, so that opportunities can be exploited, weaknesses minimized, and threats anticipated (Natalia & Masahere, 2026).

A number of prior studies show how widely SWOT analysis supported by IFAS-EFAS has been applied. Syafa'at & Wahid (2020) used SWOT and IFAS-EFAS to formulate a marketing strategy for shoe products. Al Mughni et al (2024) applied the same combination of methods in a coastal resource context, developing a business strategy for seaweed cultivation. Anggraini & Maarif (2025) went a step further by adding QSPM to SWOT and IFAS-EFAS in formulating a business development strategy for honey bee farming at KTH Sadar Tani Muda. More recently, Djong & Kusumawati (2026) combined the 8P Marketing Mix with SWOT analysis supported by IFAS-EFAS to design a marketing strategy for Cafe Cleguk.

These studies confirm that SWOT analysis supported by IFAS-EFAS has been applied in many different sectors, yet none of them examines a product made from local waste, particularly a building material derived from marine biological waste. This points to a gap in the literature. Existing studies have mostly looked at conventional commodities, agricultural or fishery based livelihoods, and service businesses, while a marketing strategy for a waste based, sustainability oriented building material has not really been explored. The novelty of this study does not come from the analytical method itself, since SWOT and IFAS-EFAS, whether used alone or combined with tools such as QSPM or the Marketing Mix, is already well established in earlier research. The novelty instead comes from the research object and its context. This study looks specifically at the marketing strategy for roster (ventilation block) products made from clam shell waste collected along the coast of Kenjeran, Surabaya, a product and setting that has not previously been studied using this kind of analytical framework. Through this object, the study offers new empirical insight into how the particular characteristics of a locally sourced, waste based material shape its internal and external strategic factors, and how those factors should then inform the marketing strategy that is designed for it.

The research aims to identify the strengths, weaknesses, opportunities and threats that affect the development and marketing of clam shell ventilation blocks. The identification outcomes are subsequently utilized to determine the enterprise's strategic positioning and to formulate marketing strategies aligned with its internal and external operational conditions. The outcome is expected to grow product competitiveness, expand market share, and support the development of innovative and eco-friendly building materials.

2. Literature Review

2.1 Marketing Mix

Marketing mix is a set of marketing tools controlled by business perpetrators to influence consumer purchasing decisions and achieve marketing goals (Bahri & Rosandy, 2025). The concept of marketing mix Initially consists of 4P, namely product, price, place, and promotion. A comprehensive understanding of the marketing mix is essential for maximizing the effectiveness of marketing activities (Syafa'at & Wahid, 2020). The concept of the marketing mix is widely developed to be able to support the industrial world (Aulia, 2023). As business landscapes grow more complex and consumer habits change, the model has expanded into the 8P: product, price, place, promotion, people, process, physical evidence, and public relations (Djong & Kusumawati, 2026).

The eight elements are interrelated and inseparable in the preparation of marketing strategies. Product is related to the quality and benefits of the product, pricing, distribution, and promotion with marketing communication activities. Meanwhile, people are related to human resources, processes with service processes, physical evidence with physical evidence that supports consumer confidence, and public relations with efforts to build relationships and a positive image with the community (Djong & Kusumawati, 2026). Implementing the integrated 8Ps framework can help businesses boost customer satisfaction and loyalty, sharpen their competitive edge, and achieve long-term marketing success.

2.2 SWOT Analysis

SWOT analysis is a method utilized by management to plan strategies related to internal and external factors (Djong & Kusumawati, 2026; Rahmawati & Setiawan, 2022). In the SWOT analysis for internal business factors are analyzed using strengths and weaknesses. External factors by using opportunities and threats. Internal and external factors are then evaluated in full to design a business strategy (Raungku et al., 2025). SWOT analysis provides alternative business strategies to support business development (Al Mughni et al., 2024; Anggraini & Maarif, 2025; Putri et al., 2024).

The SWOT quadrant consists of four quadrants that describe the condition of the company (Djong & Kusumawati, 2026). Quadrant I describes favourable circumstances in which internal forces are supported by great external opportunities. In this situation, the recommended strategy is an aggressive strategy that utilizes strength to encourage business growth. Quadrant II shows that internal conditions have good strength but experience threats from external consequently it is suitable to apply diversification strategies. Quadrant III gives an idea that the business has considerable opportunities but then again faces various internal weaknesses so it is more suitable to use a strategy to minimize threats. Quadrant IV describes unfavourable conditions as it experiences weaknesses from the internal and external sides so that the survival strategy is a decent choice.

2.3 Internal Factor Analysis Summary (IFAS)

Internal Factor Analysis Summary (IFAS) is a matrix to identify and evaluate internal factors in the form of strengths and weaknesses that affect business success (Murniawaty et al., 2022; Natalia & Masahere, 2026). It helps businesses capitalize on strengths and minimize weaknesses (Wibowo et al., 2026). Internal factors, particularly strengths and weaknesses, can either support or hinder business development. Therefore, IFAS analysis is necessary to systematically identify and evaluate these internal factors (Al Mughni et al., 2024). IFAS also serves as an important analytical tool for assessing the strengths and weaknesses of a business as a basis for formulating appropriate strategies (Anggraini & Maarif, 2025; Putri et al., 2024).

Each factor is given a weight and rating, then a weighted score is calculated by multiplying the weight and rating. The Total score is obtained from the sum of all weighted scores. Based on the results of the IFAS analysis, the identified internal factors can be addressed through appropriate strategies to overcome existing business challenges ([Sholihah et al., 2025](#)).

2.4 External Factor Analysis Summary (EFAS)

External Factor Analysis Summary (EFAS) is a matrix to identify and evaluate external factors in the form of opportunities and threats that affect the business ([Aulia, 2023](#); [Murniawaty et al., 2022](#); [Natalia & Masahere, 2026](#)). It can be technological developments, market growth, changes in consumer preferences, competition, regulation, economic conditions, and product substitution. EFAS analysis is used as a key tool for identifying and evaluating the opportunities and threats that may affect business development ([Anggraini & Maarif, 2025](#); [Putri et al., 2024](#)). Each factor is given a weight and rating to obtain a weighted score as a basis for evaluating the external conditions of the business. EFAS analysis provides a basis for developing strategies to address external challenges affecting the business ([Sholihah et al., 2025](#)).

2.5 IFAS, EFAS and SWOT integration

The IFAs and EFAS matrices are the basis for compiling a SWOT analysis ([Eka Santi Agustina, 2024](#)). The results of the identification of Strengths, Weaknesses, Opportunities and threats are used to formulate four alternative strategies ([Iriando Wijaya et al., 2023](#); [Wibowo et al., 2026](#)). The strategy includes:

1. SO (Strength – Opportunities) strategy, which is a strategy that utilizes the entire strength of the organization to capture the opportunities available.
2. WO (Weaknesses-Opportunities) strategy, which is a strategy that aims to minimize weaknesses by utilizing external opportunities.
3. ST (Strength-Threats) strategy is a strategy that utilize an organization's strengths to address or mitigate the impact of threats.
4. WT (Weaknesses – Threats) strategy is a defensive approach aimed at mitigating internal weaknesses and minimizing external threats.

The strategies formulated through SWOT analysis are based on the internal and external conditions of the business ([Zulkarnain et al., 2020](#)). Consequently, the IFAS and EFAS matrices serve not only as tools to identify strategic factors but also as the foundation for formulating organizational development strategies that are highly systematic, objective, and data-driven ([Salim & Siswanto, 2019](#)).

3. Research Method

This research was prepared utilizing a descriptive quantitative approach. It is done as the research is to measure an individual's perception of the factors that affect a performance. It is also describing the phenomenon systematically, and accurately ([Sugiyono, 2019](#)).

3.1 Data Collection Techniques

This study used questionnaires and documentation for data collection. Primary data were obtained from 40 respondents selected through purposive sampling based on their knowledge of or involvement in building materials, including building-material retailers, households as potential consumers, members of the general public, residents of the Kenjeran coastal area, and construction business owners. The questionnaire comprised 28 statements covering the strengths, weaknesses, opportunities, and threats associated with the clam shell roster product, with responses measured using a five-point Likert scale (1–5). Secondary data were obtained

from books, scientific journals, websites, documents, and other relevant literature to support the analysis and discussion.

3.2 Data Analysis

Data analysis was conducted using SWOT analysis supported by the IFAS and EFAS matrices. The analysis involved validity and reliability testing, identification and classification of internal and external factors, determination of weights and ratings, preparation of the IFAS and EFAS matrices, determination of the strategic position, and formulation of SO, WO, ST, and WT strategies. In the IFAS and EFAS matrices, each factor is assigned a weight ranging from 0.00 to 1.00 according to its relative importance, with the total weight equal to 1.00. Each factor is then assigned a rating on a scale of 1–4 based on its condition. The rating is determined from the average response for each factor, following the approach applied (Marha & Yandri, 2026). (Al Mughni et al., 2024; Wijaya et al., 2023; Rayendra et al., 2023) similarly applied a 1–4 rating scale in the IFAS and EFAS matrices. The weighted score for each factor is calculated by multiplying the weight by the rating, and the resulting scores are used to assess the internal and external conditions of the business.

Table 1. Validity Test Results

Statement Calculated - r Critical - r Conclusion			
S1	0,703	0,312	Valid
S2	0,855	0,312	Valid
S3	0,797	0,312	Valid
S4	0,833	0,312	Valid
S5	0,867	0,312	Valid
S6	0,815	0,312	Valid
S7	0,757	0,312	Valid
W1	0,871	0,312	Valid
W2	0,855	0,312	Valid
W3	0,522	0,312	Valid
W4	0,525	0,312	Valid
W5	0,894	0,312	Valid
W6	0,599	0,312	Valid
W7	0,770	0,312	Valid

Statement Calculated - r Critical - r Conclusion				
O1	0,664	0,312	Valid	
O2	0,626	0,312	Valid	
O3	0,667	0,312	Valid	
O4	0,871	0,312	Valid	
O5	0,932	0,312	Valid	
O6	0,689	0,312	Valid	
O7	0,658	0,312	Valid	
T1	0,664	0,312	Valid	
T2	0,626	0,312	Valid	
T3	0,452	0,312	Valid	
T4	0,420	0,312	Valid	
T5	0,843	0,312	Valid	
T6	0,843	0,312	Valid	
T7	0,606	0,312	Valid	

Source: Data processed by the author (2026)

The validity test was conducted using 40 respondents ($N = 40$). Based on the degree of freedom ($df = N - 2 = 38$) and a 5% significance level, the critical r value was 0.312. An item was considered valid when the calculated r value was greater than the critical r value. The validity test results show that all 28 statements representing the SWOT factors, consisting of seven strengths (S1–S7), seven weaknesses (W1–W7), seven opportunities (O1–O7), and seven threats (T1–T7), had calculated r values greater than 0.312. Therefore, all 28 questionnaire statements were declared valid and could be used for further analysis.

The instrument is considered reliable if the alpha coefficient is greater than or equal to 0.6 ($\text{Alpha} \geq 0.6$). The reliability test was conducted on 28 questionnaire items, resulting in an alpha value of $0.968 \geq 0.6$. This indicates that all indicators completed by the respondents are considered highly reliable.

4. Results and Discussion

4.1 Results

Based on the results of the analysis for the internal Factor Analysis Summary (IFAS) Matrix, it is known that there are several internal factors that affect the marketing of clam shell

ventilation block products. The internal factors consist of strengths and weaknesses aspects for clam shell ventilation block products. The identification is to be used as the basis of product marketing strategies. The results of identifying the strengths and weaknesses of clam shell ventilation block products are further presented in the following table.

Table 2. IFAS strength Matrix results of clam shell ventilation block products

Source: Data processed by the author (2026)

Table 3. IFAS Matrix results of Weakness of clam shell ventilation block products

No	Factor	Average	Weight	Rating	Score
1	Limited production capacity	3,60	0,143	3	0,430
2	Minimal Digital promotion	3,70	0,147	3	0,442
3	Limited distribution	3,50	0,139	3	0,418
4	Low public awareness	3,70	0,147	3	0,442
5	Relatively long production	3,70	0,147	3	0,442
6	Uncertified product	3,60	0,143	3	0,430
7	Incomplete product catalogue	3,30	0,131	3	0,394
Total Weakness Value					2,998
No	Factor	Average	Weight	Rating	Score
1	Clam shell waste utilization	4,20	0,146	4	0,583
2	Aesthetic value and unique pattern	4,00	0,139	4	0,556
3	Green building support	4,20	0,146	4	0,583
4	Value addition compared to the usual ventilation block	4,20	0,146	4	0,583
5	Raw material easy access	4,10	0,142	4	0,569
6	Increasing the economic value of waste	4,20	0,146	4	0,583
7	Ventilation and decorative function	3,90	0,135	3	0,406
Total Strength score					3,863

Source: Data Processed by the author (2026)

The IFAS matrix results indicate the internal strengths and weaknesses of the clam shell ventilation block. Four key strengths were identified: the utilization of clam shell waste, support for green building practices, added value compared with conventional ventilation blocks, and the enhancement of the economic value of waste. The primary strength of the product lies in its ability to utilize clam shell waste as a useful raw material for producing ventilation blocks. This represents an innovative approach to waste utilization, as the incorporation of clam shell waste into the product provides an alternative use for a material that would otherwise be discarded. The utilization of clam shell waste also supports the principles of green building and is aligned with sustainable development objectives, particularly through the valorization of locally available waste materials. Another strength is the added value offered by the product compared with conventional ventilation blocks available on the market, particularly in terms of its raw material characteristics and design. Furthermore, the product creates economic value from clam shell waste by transforming a material that previously had limited economic value into a useful material with potential commercial value.

In addition to its strengths, the product exhibits several weaknesses that require further attention. The three most prominent weaknesses identified are suboptimal digital promotion,

limited public awareness of the clam shell ventilation block, and a relatively lengthy production process. These weaknesses may constrain the product's market reach and contribute to its relatively limited market recognition and sales performance. Therefore, further strategic improvements are required to strengthen the product's existing advantages while addressing its internal weaknesses, thereby enhancing the competitiveness and market recognition of the clam shell ventilation block.

Based on the results of the External Factor Analysis Summary (EFAS) matrix, several external factors were identified as influencing the marketing of the clam shell ventilation block. These factors comprise opportunities that can be leveraged and threats that need to be anticipated in formulating appropriate marketing strategies. The results of the EFAS analysis are presented in the following table.

Table 4. EFAS Matrix results of opportunities from clam shell ventilation block products

No	Factor	Average	Weight	Rating	Score
1	Eco-friendly raw materials trend	4,10	0,148	4	0,592
2	Construction Industrial growth	4,10	0,148	4	0,592
3	E-commerce growth	4,00	0,144	4	0,578
4	Government Support	3,60	0,130	3	0,390
5	Interest in decorative products	3,80	0,137	3	0,412
6	Developer cooperation	4,10	0,148	4	0,592
7	Sustainable development awareness	4,00	0,144	4	0,578
Total Opportunity Value					3,734

Source: Data Processed by the author (2026)

Table 6. EFAS Matrix results of threats of clam shell ventilation block products

No	Factor	Average	Weight	Rating	Score
1	Conventional ventilation block competition	4,10	0,158	4	0,631
2	Cement prices fluctuate	4,10	0,158	4	0,631
3	Product Substitution	3,80	0,146	3	0,438
4	Changes in design trends	3,30	0,127	3	0,381
5	Consumer Purchasing power	3,40	0,131	3	0,392
6	Perceptions regarding the quality of innovative products	3,40	0,131	3	0,392
7	Products easy to replicate	3,90	0,150	3	0,450
Total Threat Value					3,315

Source: Data Processed by the author (2026)

The EFAS matrix outlines the external opportunities and threats facing the shell-based ventilation blocks. Among the top three opportunities identified, the most important is the rising market trend toward utilizing eco-friendly building materials. The growth of the construction industry continues to increase. Many developments from various sectors be it housing, offices, and other public facilities. This also encourages the emergence of opportunities to cooperate with building developers so that they can become suppliers of clam shell ventilation blocks in built projects. There are also other opportunities that can also be continuously improved to expand the market including the development of e-commerce that makes it easier to sell products, starting from the emergence of public awareness to care about sustainable development with the purpose of eco-friendly material products can be recognized,

the development of trends to create buildings that have good aesthetics, and also support from the government to create eco-friendly products.

In addition to these opportunities, the product faces external threats that could disrupt its market entry. The three most critical threats centre on intense competition from conventional ventilation blocks. Conventional ventilation block products have certainly been widely circulated in the market and more people already know and have even used these products. The fluctuating price of cement raw materials is of course easier to process than clam shell. Ventilation block products are also relatively easy to imitate by competitors so it takes a lot of innovation in making the design. The other threats are the existence of substitute products, people's purchasing power, some layers of society still have perceptions regarding the quality of innovative products, and the rapid change in trends that require continuing to innovate so as not to be left behind.

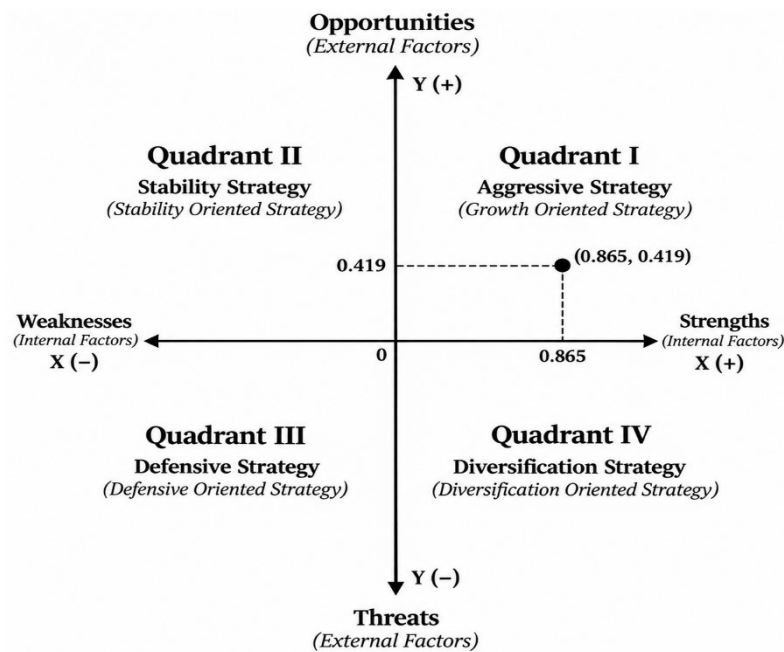


Figure 1. Quadrant of clam shell Ventilation block SWOT analysis

Source: Data Processed by the author (2026)

Values for internal factors obtained from the total value of strength minus weakness and for the value of external factors obtained from the value of opportunities minus threats. The value of internal factors is $3.863 - 2.998 = 0.865$, while the value of external factors is $3.734 - 3.315 = 0.419$. The results for SWOT analysis show that the value of external factors is greater when compared with the value of internal factors. Quadrant image of SWOT analysis for clam shell ventilation block shows that both values lead to a positive area with the value for the X-axis of 0.865 and the value of the Y-axis is 0.419. The result of this value shows that the ventilation block product with clam shell waste material is in Quadrant I. Quadrant I shows the state of business is in a favourable state because it has internal forces that can support the opportunities of external factors. The correct strategy to utilize in developing a clam ventilation block business is an aggressive strategy (Growth Oriented Strategy) that utilizes the power to manage market opportunities to the fullest. This strategy is carried out by developing innovative, eco-friendly ventilation block products, continuously improved product quality, expanding marketing reach, strengthening cooperation with various parties such as: government, developers, entrepreneurs in the construction industry sector to improve competitiveness and sustainable business growth.

4.2 Strategy of SWOT Matrix results

The SO, WO, ST, and WT strategies were formulated by systematically matching the internal and external factors identified through the IFAS and EFAS matrices. The formulation of these strategies represents the researchers' interpretation based on the weighted factors, strategic position, and specific characteristics of the clam shell ventilation block and direct discussion with business actors. The SWOT matrix was used to link relevant internal and external factors and formulate four strategic alternatives: SO (Strength–Opportunity), WO (Weakness–Opportunity), ST (Strength–Threat), and WT (Weakness–Threat).

The SO (Strength–Opportunity) strategy was formulated by leveraging key strengths, including the use of clam shell waste, support for green building, added value compared with conventional ventilation blocks, and waste valorization, to capitalize on opportunities such as growing demand for eco-friendly building materials, construction industry growth, e-commerce development, and collaboration with developers.

Table 7. SO (Strength – Opportunity) Strategy

Code	Strategy
SO1	Developing innovative and eco-friendly clamshell ventilation block products to meet the increasing trend of sustainable use of building materials
SO2	Creating more aesthetic ventilation block design variations to meet the increasing market interest in decorative products
SO3	Utilizing government support to increase production capacity and business development based on circular economy.
SO4	Establishing partnerships with developers, contractors, and construction industry perpetrators as an eco-friendly ventilation block supplier
SO5	Expanding the marketing network carried out through e-commerce and digital media by highlighting the advantages of eco-friendly products, and have high aesthetic value.

Source: Data processed by the author (2026)

The WO (Weakness–Opportunity) strategy focuses on addressing key internal weaknesses, including limited digital promotion, production capacity and distribution, lengthy production processes, low public awareness, and the lack of product certification, by leveraging opportunities such as e-commerce development, government support, construction industry growth, sustainable development awareness, and collaboration with developers and other construction stakeholders.

Table. 8 WO (Weakness – Opportunities) Strategy

Code	Strategy
WO1	Optimizing digital promotions through social media, marketplaces, and websites with the aim of increasing public awareness of eco-friendly ventilation block products
WO2	Increasing production capacity through government support, training, and equipment assistance to be able to meet increasing market demand.
WO3	Expanding the distribution network through cooperation with developers, building stores, and distributors of construction materials.
WO4	Taking care of quality certification to increase consumer confidence and product competitiveness.
WO5	Performing efficiency in the production process so that production costs can be reduced and product prices are more competitive in the market.

Source: Data processed by the author (2026)

The ST (Strength–Threat) strategy leverages the product's environmental value, distinctive design, ventilation and decorative functions, and use of clam shell waste to address threats such as competition from conventional ventilation blocks, substitute products, changing design trends, and product imitation. The strategy focuses on strengthening product

differentiation, promoting design innovation, improving product quality, and developing a distinctive brand identity to maintain the competitiveness of the clam shell ventilation block.

Table. 9 ST (Strength – Threat) Strategy

Code	Strategy
ST1	Demonstrating the advantages of clam shell ventilation blocks as eco-friendly products and have added value compared to conventional ventilation blocks.
ST2	Developing innovative designs periodically so as to follow the changing trends in building design.
ST3	Utilizing local raw materials and increasing cooperation with suppliers to maintain production sustainability.
ST4	Improving product quality and differentiation so that it is not easily displaced by substitution products.
ST5	Developing brand identity and innovate on an ongoing basis so that products are not easily copied by competitors.

Source: Data Processed by the author (2026)

The WT (Weakness–Threat) strategy focuses on addressing key internal weaknesses, including limited production capacity and distribution, suboptimal digital promotion, the lack of product certification, and incomplete product catalogs, while responding to threats such as competition from conventional ventilation blocks, substitute products, changing design trends, fluctuations in consumer purchasing power, and product imitation. The strategy emphasizes improving production efficiency, strengthening distribution and digital marketing, increasing consumer awareness, pursuing product certification, and developing a more comprehensive product catalog.

Table.10 WT (Weakness – Threat) Strategy

Code	Strategy
WT1	Improving production efficiency to be able to reduce costs so that the products produced can compete with conventional ventilation blocks.
WT2	Expanding distribution channels and marketing that is done digitally in order to increase market share in the midst of increasingly fierce market competition.
WT3	Providing education to the public about the benefits of eco-friendly clam shell ventilation blocks to increase purchasing interest despite fluctuating purchasing power.
WT4	Handling product certification and also strengthen product branding to increase consumer confidence and reduce the risk of easily replicable products.
WT5	Compiling a product catalogue that lists various choices of motifs, sizes, and designs based on the trends.

Source: Data processed, by the author (2026)

The findings are consistent with previous studies showing that SWOT analysis can support strategy formulation by aligning internal capabilities with external opportunities and threats. [Al Mughni et al. \(2024\)](#), for example, identified the utilization of local coastal resources as a basis for business development. Similarly, the present study utilizes clam shell waste as a distinctive product advantage and an opportunity to develop an eco-friendly building material. However, the strategies formulated in this study are specifically adapted to the characteristics and actual conditions of the clam shell ventilation block business, including product aesthetics, limited production capacity, digital promotion, distribution, product certification, and competition with conventional ventilation blocks. The formulation of these strategies was based on the IFAS and EFAS results and further discussed with the business owner to ensure their relevance to the actual business conditions.

The four SWOT strategy groups are subsequently translated into specific marketing actions through the 8P marketing mix. SWOT analysis provides the strategic direction based on the product's internal and external conditions, while the 8P marketing mix serves as a framework for implementing these strategies. Product development and differentiation are

addressed through *product*, market expansion through *place* and *promotion*, and improvements in production capacity and operational efficiency through *people* and *process*. Consumer confidence is strengthened through *physical evidence*, while *public relations* supports collaboration with government institutions, local communities, environmental organizations, and other stakeholders. Thus, the 8P marketing mix functions as an implementation framework for the strategies formulated through SWOT analysis rather than as a separate analytical component.

4.3 Marketing Mix

The questionnaire results provide an overview of the current marketing conditions of the *clam shell ventilation block* and the marketing mix practices currently implemented. In this study, the marketing mix comprises eight elements: *product*, *price*, *place*, *promotion*, *people*, *process*, *physical evidence*, and *public relations*. The findings for each element of the 8P marketing mix are subsequently examined in relation to the strategies formulated through the SWOT analysis to determine their implications for marketing implementation. Accordingly, the discussion of each 8P element not only describes the current marketing practices but also illustrates how the SWOT strategies can be implemented to support the marketing development of the clam shell ventilation block.

Product

Product-related information can influence consumers in making purchases ([Djong & Kusumawati, 2026](#); [Karolin & Djong, 2025](#)). The products offered are ventilation blocks made from clam shells that utilize fishery waste as the main raw material so that they have added value and support an eco-friendly concept. The Ventilation block serves as a ventilation as well as a decorative element with an aesthetic, strong and durable design. Products can be used in homes, commercial buildings, and construction projects. The quality and strength of the product is supported by the processing of raw materials according to standards and concrete test results that show good strength. The main advantages of the product are its aesthetic value and waste utilization that distinguishes it from conventional ventilation blocks.

Price

The marketing plan involves pricing decisions related to allocating corporate resources to achieve sales and profit targets ([Goldsmith, 1999](#)) Price is an element that consumers consider in making purchases ([Djong & Kusumawati, 2026](#)). The price of the clam shell ventilation block is set taking into account the conformity between price, quality, production costs, labor, and added value of the product. The selling price of clam shell ventilation block products is worth Rp.15,000 while conventional ventilation blocks with a price range of Rp. 10,000-Rp 25,000. The affordable price allows the product to compete with conventional ventilation blocks, while offering benefits in the form of aesthetic value, material strength and waste utilization. The pricing strategy is expected to increase competitiveness and sales volume.

Place (Distribution)

Location is what influences consumers in making purchases ([Djong & Kusumawati, 2026](#)). Distribution of clam shell ventilation blocks is carried out through direct sales, cooperation with building stores and distributors of construction materials, as well as digital media. Production sites close to the source of raw materials provide efficiency in procurement and transportation costs. The production location of the clam shell ventilation block is in the Surabaya area, so it can still be reached. However, the distribution network is still limited because it has not reached building stores outside the region. Therefore, the expansion of

distribution channels is necessary to improve consumer access, expand markets, and strengthen product competitiveness.

Promotion

Promotion represents an important aspect of marketing strategy, as personalization can enhance the effectiveness of promotional strategies and influence consumers' purchasing decisions (Goldsmith, 1999). In addition to providing information, promotion is also a medium to build a good image (Cuba, 2025). Promotion of the clam shell ventilation block is carried out through word of mouth, exhibitions, bazaars, as well as cooperation with building stores and property developers. Product quality and customer satisfaction also support the formation of recommendations and positive reviews. Facebook Instagram, TikTok, and marketplace to increase brand awareness and expand market reach are still not optimal utilization of social media so it is necessary to strengthen digital marketing strategies through Instagram, Facebook, TikTok, and marketplace.

People (human resource)

People constitute a critical element of the marketing mix, as employees' competencies and capabilities influence service delivery and customer experiences. Consequently, talent development plays an important role in supporting effective marketing strategy implementation (Kaliannan et al., 2023), functioning as an indispensable catalyst for operational business processes (Djong & Kusumawati, 2026). In the clam shell ventilation block product business, the quality of Human Resources has a vital role in producing products that have strength, good aesthetic value, and material quality. The employees are equipped by training in producing a ventilation block of shells of good quality. They are also given an understanding in terms of safety in the production process, quality control, and cleanliness of the production environment. In working applied teamwork, discipline and good communication skills between employees so that productivity can be maintained.

Process (Service and operational process)

Process represents a series of activities, mechanisms, and procedures through which products or services are delivered to customers, including the procedures involved in ordering and using the offering. As an essential element of the marketing mix, an effective process contributes to efficient service delivery and a positive customer experience (Djong & Kusumawati, 2026). The production of clam shell ventilation blocks starts from collecting, washing, drying, and crushing the shells, then mixed with cement and sand according to the composition before moulding. The product is then dried and finished to ensure quality and appearance. Reservations can be made directly or through digital media with cash and non-cash payments.

Physical Evidence

Physical evidence is an important element of the marketing mix that refers to the tangible aspects supporting service delivery, including facilities, physical environments, and other supporting attributes (Djong & Kusumawati, 2026). These elements help shape customers' perceptions of the quality and value of the services offered. On the clam shell ventilation block, physical evidence is visible of the design, natural texture, and quality of the product. The neatness of the production area, catalogue, installation samples, brand identity, as well as participation in exhibitions and digital media can also increase consumer confidence and demonstrate the professionalism of the business.

Public Relations

Building a trusted brand image relies heavily on public relations ([Maharani & Teguh, 2025](#)). Activities are carried out through education to the community, especially in the coastal area of Kenjeran, regarding the utilization of clam shell waste into economically valuable products. Cooperation with the government, MSMEs, environmental communities, and construction perpetrators can be developed through training, exhibitions, and waste management. The activity is expected to strengthen the image of the ventilation block as a circular economy-based product and grow competitiveness in the market.

5. Implications

The SWOT findings provide practical directions for developing and marketing eco-friendly ventilation blocks made from clam shell waste. Key actions include improving product design and quality, strengthening its positioning as an eco-friendly building material, optimizing digital marketing, and expanding partnerships with government institutions, developers, contractors, and other construction stakeholders. Public education can also support market acceptance, while the WO, ST, and WT strategies address internal weaknesses and external threats.

From a research perspective, this study contributes to the application of an integrated marketing mix 8P and SWOT framework supported by IFAS-EFAS analysis in the context of eco-friendly building materials utilizing waste as a raw material. The integration of these approaches provides a structured framework for linking internal and external strategic factors with specific marketing dimensions in formulating context-specific marketing strategies. This approach may serve as a reference for future studies examining the application of the 8P marketing mix and SWOT analysis to other eco-friendly products or in different business contexts. Future research may also examine the effectiveness of digital marketing strategies in relation to brand awareness and consumer purchase decisions.

From a social and environmental perspective, utilizing clam shell waste as a raw material can support waste utilization and create economic value, particularly in the Kenjeran coastal area. The development of this product may also encourage the involvement of local communities, MSMEs, environmental organizations, and other stakeholders in waste management while promoting awareness of eco-friendly building materials and supporting broader circular economy principles.

6. Conclusion, Limitations, and Suggestions

The results showed the ventilation block business made from clam shell waste has a relatively favourable internal and external conditions. The value of the strengths is higher than the weaknesses, as well as opportunities are higher than the threats, as the product is in Quadrant I of the SWOT analysis. It demonstrates aggressive strategy (Strength-Opportunity) has become the main strategy by utilizing strength in order to optimize market opportunities. The research contributes in formulating strategy of waste-based ventilation block through the integration of 8p marketing mix and SWOT analysis based on IFAs and EFAs matrixes.

The research has limitations on the scope of respondents who are remain limited. Consequently, the results have not fully represented the preferences of the market. The research focused on the analysis of the marketing strategies using 8p marketing mix and SWOT. It has not examined in depth of effectiveness of implementing digital promotion strategies and consumer purchasing decisions.

Looking ahead, future studies should tap into a much broader and more diverse pool respondents to paint a more accurate picture of consumer preferences and buying behaviour. There is also a clear opportunity for upcoming research to dive deeper into how digital

marketing strategies actually perform in this space. For the business itself, keeping operations sustainable will come down to a few practical steps: expanding product designs, teaching communities the value of eco-friendly building materials, scaling up their online presence, and locking in strategic partnerships across the industry.

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