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Article

Sustainable Marketing Development Strategy of Bakery and Coffee Teaching Factory Politeknik Negeri Jember

Ridwan Iskandar [1*], Naning Retnowati [2], and Uyun Erma Malika [3]

[1] Politeknik Negeri Jember; ridwan.iskandar@polije.ac.id

[2] Politeknik Negeri Jember; naning_retnowati @polije.ac.id

[3] Politeknik Negeri Jember; uyun@polije.ac.id

* Correspondence: ridwan.iskandar@polije.ac.id

Abstract. Bakery and Coffee Teaching Factory faces challenges in developing their marketing strategy such as marketing range, quality standard with the producer of the same products, and ability to make a product as the customer desired precisely. These will threaten the sustainability dimensions of Tefa Bakery and Coffee Politeknik Negeri Jember. Thorough efforts shall be made to overcome those problems by identifying the sustainability attributes, especially on the social, economic, and environmental dimensions. Later, the efforts shall be synchronized to the policy of the institution to improve the main performance indicator of Politeknik Negeri Jember. The problems of this research include what attributes that become the leverage factors, how the leverage factors related to the strategy, and what policy that could improve the main performance indicator. This research aims to: formulate the marketing development sustainability dimensions and formulate performance improvement priority strategy in developing Tefa. Research method: analysing sustainability through multidimensional scaling technique; processing data by using application R that includes analysis of ordination, leverage, monte carlo, and kite diagram. The targeted output covers: levelled marketing development strategy based on the level of importance and Tefa development policy that combines the bottom-up development strategy and institutional policy. The results showed that the environmental dimension is less sustainable, the social dimension is less sustainable, and the economic dimension is quite sustainable.

Keywords: application R; ordination analysis; leverage factors; montecarlo; kite diagram

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1. Introduction

Teaching Factory (Tefa) is commonly implemented in the Vocational School and Vocational College [1][2]. However, there are still numerous challenges such as the challenges faced by the teachers [3], learning aspects, human resource, and facilities [4], challenges in marketing such as segmentation and distribution channel optimization [5], and the consumer behaviour [6]. One of the universities that uses vocational education is Politeknik Negeri Jember (POLIJE), which emphasizes real-world application throughout the course of the curriculum. Teaching factories made surrounding the POLIJE campus are aimed to promote the practical learning in an education and to provide a learning experience for the student in an environment built similar to the industrial world as well as serving as the production unit.

Tefa Bakery and Coffee is one of teaching factories that owns a representative environment as it is built within POLIJE campus and is located close to the Coffee and Cocoa Research Center. Besides, since academic year 2020, the first program study in coffee production was established which later strengthens its existence [7]. Tefa Bakery and Coffee has been long established under the management of Agriculture Engineering Department that was designed to produce and distribute food and beverage products.

Problems in Tefa can be categorized into three: production, education, and marketing. Tefa Bakery and Coffee is equipped with various production facilities that

there will not be any problems from the production side. The same goes with the education side where students state that there is no problems found and everything goes relatively well. However, the marketing performance requires some improvement. The teaching factory was established to enable the distribution of its products to the public that could widen its network in the market and be able to compete sustainably. Tefa itself has conducted numerous efforts to achieve their goal, such as improving the professional marketing staff quality, adjusting their market segmentation and distribution channel, and learning consumer's behaviour by making products that meet the consumer's desired quality and quantity. Failure in handling those matters above means a threat for the whole Tefa's activity.

The efforts to solve the problems above are still being executed partially. Therefore, the problems shall be solved holistically and sustainably by identifying the social, economic, and environmental dimensions. Later, the efforts shall be synchronized with the institutional policy, that it will both improve the Tefa's performance and institution's performance. Based on the description above, the problems scope covers attributes that affect the marketing performance. This research that belongs to the humanity field puts marketing strategy as its scope. Thus, it fits the Research Master Plan (RIR) priority issue in 2023 [8].

The urgency of the research based on its substance lies in the strategy that will be prepared, namely a sustainable marketing strategy taking into account the implementation of a quality system [9][10]. In addition, the research will consider urgent and important matters, namely long-term sustainability attributes ([11][12][13]). Urgency based on the method, the Multidimensional Scaling method and the R application are very effective in identifying recommended alternative strategies [14][15]. The Multipol method has the ability to combine institutional policies with development strategies [16][17].

2. Method

This research was conducted at Teaching Factories of Politeknik Negeri Jember especially the Teaching Factory Bakery and Coffee started from May to October 2023.

Research population, according to [18], is a complete group of element (unit) that is commonly in the form of people, object, transaction, or event where we found an attractiveness to learn further or take it as research object. The population of this research was the whole stakeholders consisted of Tefa, lecturers and students of Politeknik Negeri Jember. The sample was taken through purposive sampling consisted of 2-3 people from each stakeholder.

The research method used is a multidimensional scaling method with the scope of data analysis including: the ordination analysis, leverage analysis, Monte Carlo analysis, and kite diagram analysis.

2.1. Ordination analysis

Ordination analysis is an assessment of each attribute in ordinal scale (scoring) based on the sustainability criteria of each dimension. Based on the score later an analysis is made by using statistics ordination known as Multidimensional Scaling (MDS). The range of the sustainability index value is 0%–100%, with the bad and good points serving as reference points [19] as shown in Figure 1. This index value reflects the sustainability status on the research object based on the actual condition and ordination of each dimension.

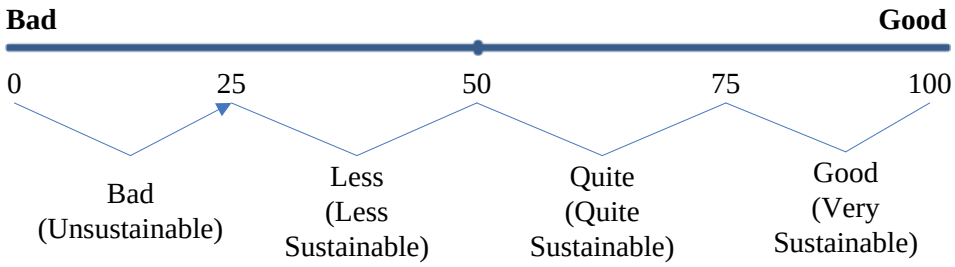

Figure 1. The Bad and Good Reference Points

The Good Category indicates excellent condition with maximum attribute values overall, while the Bad Category indicates very poor condition of its attribute values. While the Quite and Less Categories are conditions that occur between the Bad and Good Categories.

2.2. Leverage analysis

Leverage analysis is conducted to find out the sensitive attribute and required intervention to take. The leverage analysis result is stated in the form of percentage (%) of the root mean square (RMS) change of each attribute after being removed in ordination. If the leverage result is positive, it means the attribute is sensitive or dominantly affects the dimension sustainability, while the negative result means does not sensitively affect the dimension [20][21].

2.3. Monte Carlo analysis

This analysis uses a statistics simulation method to determine how random error affects the forecasting process. It is necessary to understand the uncertainty impact of multiple factors, including: (1) attribute scoring error; (2) scoring variance from various assessments; (3) MDS stability during running; and (4) S-stress value from the PASCAL algorithm. The system under examination is pretty good or suits the real condition if the difference between the MDS calculation result and the Monte Carlo result is less than one [22]. The confidence interval of the Monte Carlo analysis results is 95% [23].

2.4. Kite diagram analysis

The kite diagram shows the sustainability rate of a dimension that has the best value and the worst value of <50 [24].

3. Result and Discussion

3.1. Sustainability index

The secondary data from 5 expert respondents were analysed regarding its relation to the determined attributes and resulted on the sustainability performance status of the Tefa marketing development based on the economic, social, and environmental dimensions (Figure 2). The sustainability performance was visualized in the form of dots for each dimension. The eight analysis units referred to 2 consumer expert respondents and 3 marketing expert respondents. The sustainability status for the eight units can be seen on Table 1.

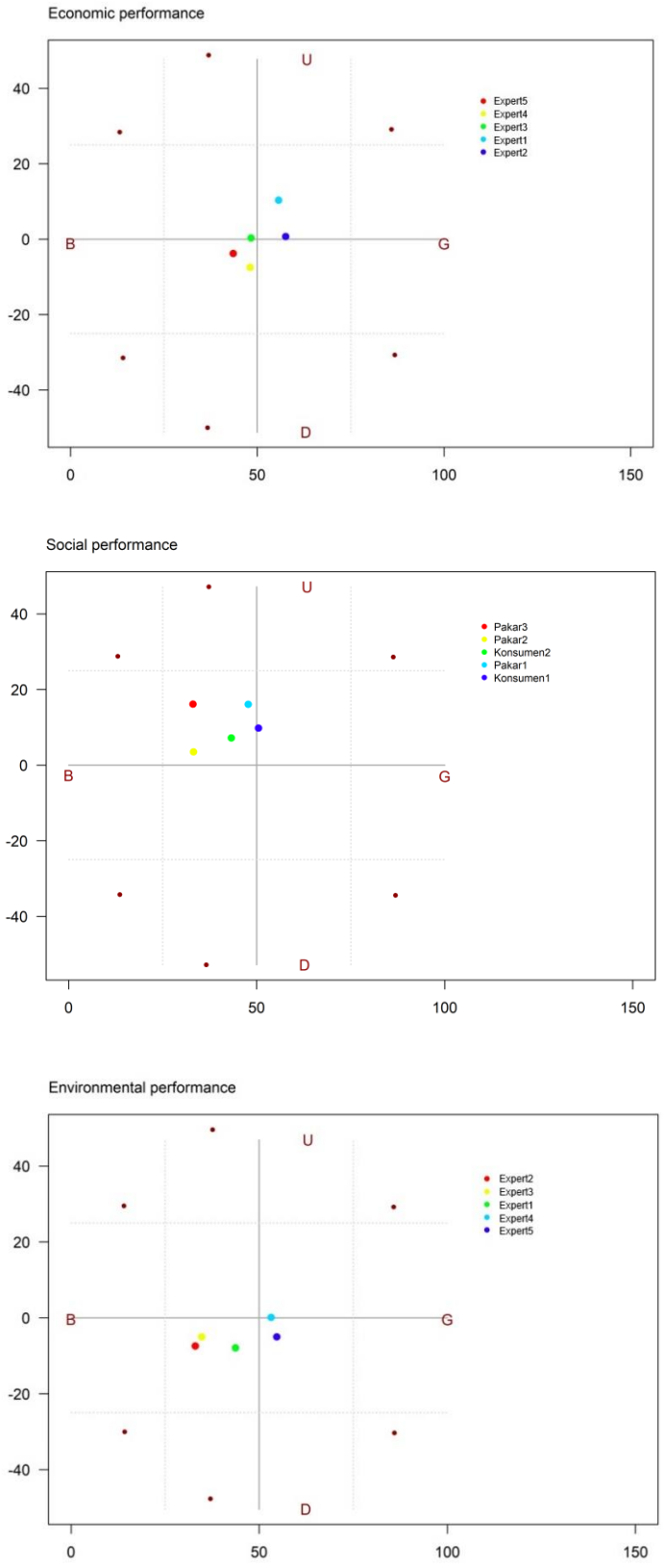

Figure 2. Analysis Unit Performance on the Social, Economic, and Environmental Dimensions

The economic performance on Tefa Bakery was considered as having the best performance rather than the social or environmental one. 2 experts considered economic performance as quite sustainable while 3 experts considered it as less sustainable. Overall,

the economic performance was regarded as quite sustainable with sustainability index 50.64. The amount of this index could easily decrease the sustainability status to less sustainable at any time if there is a stress on the economic category, such as, for example, when Tefa did not define their long-term market segmentation or they cannot respond to the customer complain excellently. This was based on the survey result that showed low score on those attributes.

Social performance became the worst performance than the other dimensions with sustainability index 41.53 that belongs to the less sustainable category. The survey result showed that the low sustainability index was caused by several things such as the customer was less involved in decision-making. In the other hand, Tefa needs to consider improving their social responsibility by integrating CSR activity into the marketing strategy. This may include charity program, contribution to the society, or any efforts to solve the social issues.

Likewise, the environmental performance belongs to the quite sustainable category with sustainability index 43.83. It was better than the social performance index. Still, several things such as the access to Tefa from the north entrance of POLIJE needs more attention as it is not as crowded as the south entrance despite it has easier access. Tefa has anticipated this by providing a mobile marketing vehicle that was parked nearby the south entrance.

The whole Tefa's sustainability index was lower than Tefa Agrimart (Agribusiness Center) with 57.93 sustainability index gained from the lecturers, students, and Tefa management [25].

3.2. Leverage attributes

Leverage attributes were gained from the diagnosis result of 15 attributes spread in the economic, social, and environmental dimensions. The diagnosis result from Rap+ application obtained 6 leverage attributes with the highest RMS index (Table 3.1). Those attributes were sensitive and having important roles in increasing or decreasing the marketing sustainability index of Tefa.

Table 1. Leverage Attributes of Tefa Bakery's Sustainable Marketing Development

Dimension	Attribute	RMS
Economic	Promotion	5.596
	Customer complain	4.444
Social	Public Training	5.328
	CSR/Tefa's social responsibility	2.463
Environmental	Price	1.297
	Customer's purchase intention	1.058

Based on Table 1, here are several interventions to take to improve the sustainable marketing performance:

1. Promotion is a marketing communication to influence, deliver something, persuade, and increase the target market. Therefore, if Tefa intends to increase its sales, they need to increase their promotion in any possible way, such as the physical promotion through exhibition, bazaar, etc; promotion through conventional media such as printed and electronic media, and online promotion. In the other hand, customer complains shall be responded or even prioritized.
2. Public training for people empowerment needs to be improved by adding training, education, and skill development that could significantly improve their whole life. Periodically, Tefa needs to conduct a public training for honing their skills. Besides, the sustainable marketing considers Tefa's social responsibility by integrating the CSR activity into marketing strategy. This can be realized through charity program, contribution to the society, or any efforts to solve the social issues.

3. Uniform pricing is not necessarily implemented. Instead, variative price will be more suitable especially for the bakery products to evaluate price elasticity. Other things to jot down in notes are purchase intention and ability of Tefa products to find out the consumer's preference.

3.3. Goodness of fit

Goodness of fit test used the value of stress (S) and coefficient of determination (R). if S value is less than 0.25 percent and R^2 value is close to 1, the model stated fits or it means the data has normal distribution. The testing result showed in Table 3.2.

Table 2. Index Validation of Marketing Sustainability on Tefa Bakery

Dimensions	Difference of MDS Index and MDS Montecarlo (%)	S Stress Value	R^2 Value
Economic	0.30	0.1253669	0.9777367
Social	0.16	0.1187768	0.9795800
Ecological	0.23	0.1252473	0.9774484

Table 2 showed that the S values <0.25% and R^2 values were close to 1 that it means the model for all dimensions were good of fit. Hence, the addition of attributes to approach the real condition was not necessary. The Monte Carlo analysis result from 25 iterations with 95% confidence level on each dimension showed an average result that was not significantly different compared to the MDS ordination result. This showed an error in making the score for each attribute and the error of analysis method period was very small where the Monte Carlo analysis supported the determination of sustainability status ordination that has been analysed. The sustainability index is declared valid and accepted if the difference is not more than 5% [26].

3.4. Kite diagram

Sustainability index value of each analysis unit was depicted into a kite chart as in the following figure (Figure 3.2)

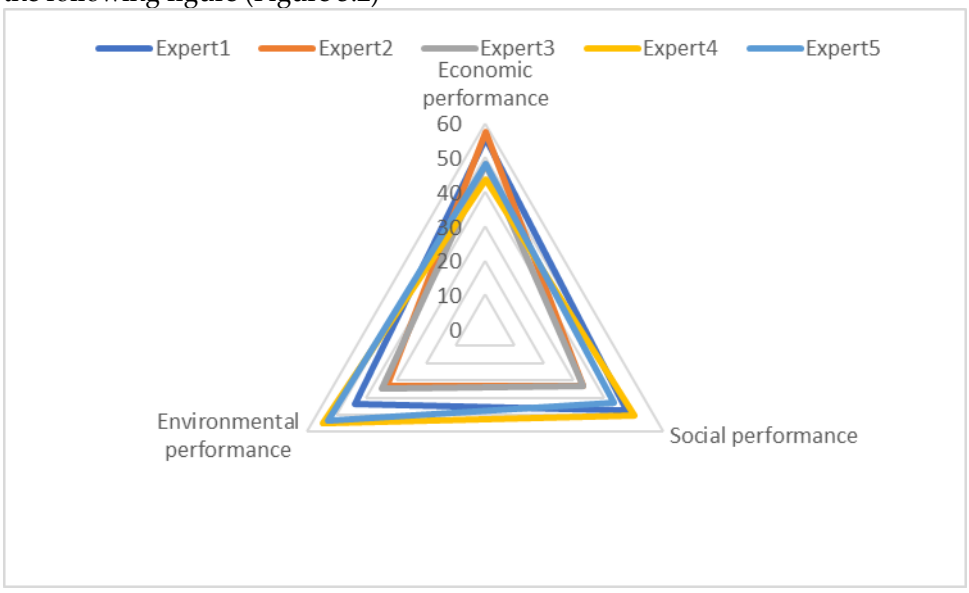

Figure 3. Kite Diagram of Sustainable Marketing Performance of Tefa Bakery

Based on Figure 3, according to Expert4, the environmental and social performance excelled the economic performance. Meanwhile, Expert2 considered that economic performance actually had the highest sustainability index compared to the other two

dimensions. Overall, based on the assessments of all experts, the economic dimension is the dimension that is best implemented by Tefa Bakery compared to other dimensions, because it has an average sustainability index value of 50.64%. A value of this size is actually risky because if there is no real effort to improve the performance of the economic dimension, the economic dimension will decline to <50%, which means it is less sustainable.

4. Conclusion

The following conclusions may be made about the sustainability of Tefa Bakery's product marketing: the environmental dimension is less sustainable, the social dimension is less sustainable, and the economic dimension is quite sustainable. Tefa's priority performance development strategy includes increasing social activities, especially training for the community and Tefa's social responsibility, improving promotion and handling of customer complaints, as well as adjusting product prices and paying attention to customer purchasing power.

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