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Implementation of Total Quality Management (TQM) at PT XYZ's Soap Bar Packing Line to Fulfill Unilever's Demand by Using SWOT Analysis and IFAS EFAS Matrix

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Abstract

Total Quality Management (TQM) as an integrated Management system for continuous improvement is used to develop strategic plans to increase the efficiency of the soap bar packing line of the PT XYZ. By identifying all operational criteria and placing them into aspects in the SWOT analysis, then use the IFAS and EFAS matrices to prepare the strategic factors for PT XYZ. This research uses a quantitative approach with direct observation techniques. Data is collected through observing and recording symptoms that appear on the research object which are carried out directly at the place where an event, condition or situation is occurring. The data processing method involves SWOT analysis (Strength, weaknesses, opportunities, threats) to determine improvement strategies and the IFAS and EFAS Matrix.

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INTRODUCTION

Unilever is a Fast Moving Consumer Good (FMCG) company that operates globally in almost all over the world. According to data on the Unilever's website, currently Unilever operation are in 190 countries around the world with an estimated 2.5 billion users of Unilever products every day. Therefore, total quality management (integrated quality management) must be ensured to run an effective and efficient supply chain.

One of Unilever's strategy to ensure efficient and integrated supply chain is, collaborative manufacturing with companies that have specialization in the production of similar products to Unilever has. One of the very strong business categories in the Unilever portfolio is bar soap (soap bar) with various flagship

brands, including Dove, Lifebuoy, Lux, Vaseline, Citra, etc. Currently, Unilever collaborating with PT XYZ, a multinational company, as a strategic partner to produce bar soap for various big business unit across the globe.

The concept of Unilever's collaboration with PT XYZ is bought-in, means PT XYZ is responsible for the entire manufacturing, and Unilever responsible to provide demand according to the agreed schedule. Based on this concept, effective and efficient TQM really depends on these following points:

A. Unilever

1. Unilever's accuracy in providing demand forecast figures for the specified period.
2. Timeliness of delivery to Unilever's MSO (Marketing Sales Organization) in accordance with the estimated delivery date indicated in the purchase order (PO).

B. PT XYZ

1. Accuracy of the supply chain management system to ensure the availability of raw materials, packaging materials and other supporting materials.
2. Accuracy of production planning (Production planning accuracy) and allocation of machines to the right SKU (Stoke Keeping Unit).
3. Accuracy of finish good inventory to ensure delivery of finished goods in accordance with delivery targets to MSOs.

The phenomenon in this research began with frequent delays in completing Unilever requests by PT XYZ. Based on Key Performance Index (KPI) target on the Overall Equipment Efficiency (OEE) parameter, it's never reached the desired target, during the August – September period it's experienced a decline of 7%. This caused by the non-optimal packing production line at PT XYZ. In attempt to optimize the packing line at PT XYZ, the SWOT (Strength, Weakness, Opportunity, Threats) method and Internal Factors Analysis Summary (IFAS) and External Factors Analysis Summary (EFAS) analysis were used to obtain strategy recommendations with total quality management (TQM).

RESEARCH METHODOLOGY

This research uses a quantitative approach which is characterized by empirical research, meaning that the methods carried out can be observed by the human senses, so that other people can know and observe the methods carried out. The primary data for this research is data on the number of SKU's produced, detailed machine data, and machine capacity in the period January – August 2023 from PT XYZ and actual production data, actual delivery data, detailed product type data, and demand data from Unilever. Secondary data for this research is supporting journal data and company data related to another research.

The technique used in this research is direct observation. Direct observation is a way of collecting data that is carried out through observing and recording the symptoms that appear on the research object which is carried out directly at the place where an event, condition or situation is occurring. The direct observation technique is direct observation in the field with a focus on the subject or object to be studied. This observation was carried out directly on the soap bar production process at PT XYZ in the form of an observation guide.

The data processing stages in this research used the SWOT (Strength, Weakness, Opportunities, and Threats) method, the IFAS (Internal Strategic Factors Analysis Summary) table, the EFAS (External Strategic Factors Analysis Summary) table, and the Total Quality Management (TQM) application.

RESULT

The research was conducted at PT XYZ in the Nusantara Industrial Zone (KINRA) at Sei Mangkei, Kec. Bosar Maligas, Simalungun Regency, North Sumatra 21184, Indonesia. This research is designed to be carried out from September 2023 to October 2023.

Strength Criteria Value Weighting

Consistency Ratio (CR) = 0.0655

The calculation for weighting the strength criteria said to be consistent because CR ≤ 0.1. The following is the weighting of the strength criteria values obtained from the rounding results of the priority value column.

Table 2.1. Result of Strength Criteria Value Weighting

Variabel	Coefisient
Experienced expatriate workers	0.036647
7 lines production packing line	0.071941
Good and structured standard work of SOP's	0.137084
Maintenance is carried out independently	0.259013
Packaging material suppliers from various countries	0.495316

Weakness Criteria Value Weighting

Consistency Ratio (CR) = 0.060929914

The calculation for weighting the weakness criteria said to be consistent because CR ≤ 0.1. The following is the weighting of the weakness criteria values obtained from the rounding results of the priority value column.

Table 2.2. Result of Weakness Criteria Value Weighting

Variabel	Coefisient
Limited FG & SFG warehouse	0.050443434
Limited communication skills of local workers and foreign workers	0.110019759
Unilever demand forecast accuracy is only 65%	0.262751585
Production line productivity levels fluctuate	0.576785222

Opportunity Criteria Value Weighting

Consistency Ratio (CR) = 0.052353872

The calculation for weighting the opportunity criteria said to be consistent because CR ≤ 0.1. The following is the weighting of the opportunity criteria values obtained from the rounding results of the priority value column.

Table 2.3. Result of Opportunity Criteria Value Weighting

Variabel	Coefisient
35% accuracy of unfulfilled Unilever's demand forecast	0.053508087
Addition of a more sophisticated production line	0.119436468
Many experienced job candidates	0.259284870
Similar business units in other countries	0.567770576

Threats Criteria Value Weighting

Consistency Ratio (CR) = 0.083469987

The calculation for weighting the threats criteria said to be consistent because CR ≤ 0.1. The following is the weighting of the threat criteria values obtained from the rounding results of the priority value column.

Table 2.4. Result of Threats Criteria Value Weighting

Variabel	Coefisient
Long lead time spareparts	0.034820809
Delay delivery finish goods	0.067777667
Availability and increase in raw materials	0.134350441
Changes in Unilever's marketing strategy	0.260231588
Market fluctuations	0.502819496

Matrix of Internal Factor Analysis Summary (IFAS) and Matrix of External Factor Analysis Summary (EFAS)

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Tabel 2.5. Result of Internal Factor Analysis Summary (IFAS) Matrix

Strengths					
No.	Internal Strategic Factors	Weight	Rating	Score	Comment
1.	Experienced expatriate workers	0.03	4	0.12	Expatriate workers are tasked with ensuring that machine operations can run well and the technology transfer process can take place well.

Tabel 2.5. Result of Internal Factor Analysis Summary (IFAS) Matrix (Continue)

No.	Internal Strategic Factors	Weight	Rating	Score	Comment
2.	7 lines production packing line	0.07	5	0.35	There are 7 packing production lines, 4 bundling machines – for US collation, 6 bundling machines for

					EU collation. Packing lines 1, 2, and 5 are carton packing lines for Dove products, packing line 5 is also used for B&H products, packing line 7 is a wrapper line for B&H products, packing line 6 is a carton line for B&H products, packing line 3 is a carton line for ELIDA products, and finally packing line 4 is the wrapper line for ELIDA products.
3.	Good and structured standard work of SOP's	0.13	3	0.39	Work regulations are established for operations and regulations are also issued for general work regulations at PT XYZ. Even though there are several improvements needed, it still meets occupational safety, health and safety standards
4.	Maintenance is carried out independently	0.25	5	1.25	Maintenance is carried out independently by PT XYZ while still coordinating with OEM (original equipment manufacturing)
5.	Packaging material suppliers from various countries	0.49	5	2.45	Suppliers from various countries. Stock packaging material is a maximum of 15 days according to the lead time for each material. Packaging material wrapper/inner carton is supplied from Java and India, while the outer case is supplied from Medan.
Total Strength value		**1.00**		**4.56**	
Weakness					
No.	Internal Strategic Factors	Weight	Rating	Score	Comment
1.	Limited FG & SFG warehouse	0.05	4	0.20	In regards of the placement of the Semi Finish good (SFG) Finish Good (FG). SFG and FG warehouse is limited (max 10 days). Hence, if the FG is not dispatched it could trigger production stoppage because there is no anymore space for SFG storage.

Tabel 2.5. Result of Internal Factor Analysis Summary (IFAS) Matrix
(Continue)

No.	Internal Strategic Factors	Weight	Rating	Score	Comment
2.	Limited communication skills of local	0.11	5	0.55	Currently there is a mixed between local and expat employees. The lack of local language

	workers and foreign workers				understanding for expat and English for local employees restrict or slows technology transfer hence machine operation is not optimum in the absent of the expat employee.
3.	Unilever demand forecast accuracy is only 65%	0.26	4	1.04	High fluctuated Demand Unilever create in-accurate PT XYZ supply plans. Currently only 65% forecast accuracy from Unilever, it's impacting PT XYZ supply performance.
4.	Production line productivity levels fluctuate	0.57	4	2.28	Production output reliability is fluctuating due to demand fluctuation, in principle the line ever shown OEE of 75%. Meaning the line is capable to runs as per target.
Total Weakness value		**1.00**		**4.07**	

Based on the Internal Strategic Factor Analysis Summary (IFAS) analysis table for the PT XYZ line packing production, the total strength value of the PT XYZ packing production line is 4.56 and the total weakness value of the PT XYZ packing production line is 4.07.

The following is an analysis table for the External Factor Analysis Summary (EFAS) of PT XYZ's packing production line.

Tabel 2.6. Result of External Factor Analysis Summary (EFAS) Matrix

Opportunity					
No.	External Strategic Factors	Weight	Rating	Score	Comment
1.	35% accuracy of unfulfilled Unilever's demand forecast	0.05	4	0.20	Unilever's demand fluctuation is quite high around 35%, PT XYZ's. By having an improvement on forecast accuracy, the line should be able to achieve the ORR
2.	Addition of sophisticated production line	0.11	3	0.33	It is possible to increase the packing production line to 10 lines as it has provisioned in the business case

Tabel 2.6. Result of External Factor Analysis Summary (EFAS) Matrix (Continue)

No.	External Strategic Factors	Weigh t	Rating	Score	Comment
3.	Many experienced job candidates	0.25	5	1.25	Many prospective local and foreign workers who have potential and experience and can help maximize PT XYZ's production line, whether

					through collaboration, contracts, or permanent workers according to the needs.
4.	Similar business units in other countries	0.56	5	2.80	PT XYZ has similar business units in other countries (Soap Packing line) with capable and experienced management.
Total Opportunity value		**1.00**		**4.58**	
Threats					
No.	External Strategic Factors	Weigh t	Rating	Score	Comment
1.	Long lead time spareparts	0.03	3	0.09	Delays in replacement of the spare parts in the moment of machine's breakdown can be a threat to PTXYZ's supply capability, because the absence of machine spare parts for more than the specified time period can affect the performance of PT XYZ's packing production line.
2.	Delay delivery finish goods	0.06	5	0.30	Transportation problems and uncertain of regulations could cause delays in Finish Good deliveries. It could cause production line to stop due to limited inventory capacity.
3.	Availability and increase in raw materials	0.13	5	0.65	The availability of raw materials is very vital to production, if raw materials are not available the production line cannot be run. The increase price in raw materials could also be a threat to PT XYZ in meeting Unilever's demand.
4.	Changes in Unilever's marketing strategy	0.26	4	1.04	Changes in Unilever's marketing strategy will affect the demand forecasted to PT XYZ. In-accurate inventory detail also could create losses.
5.	Market fluctuations	0.50	4	2.00	Economic growth which results in consumer purchasing power can influence Unilever's demand for PT XYZ.
Total Threats value		**1.00**		**4.08**	

Based on the External Factor Analysis Summary (EFAS) PT XYZ line packing production analysis table above, the total value of the opportunity line packing production of PT XYZ is 4.58 and the total value of the weakness line packing production of PT XYZ is 4.08.

After carrying out a SWOT analysis as well as an Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) analysis, we determine the status of PT XYZ's line packing production based on the SWOT

diagram. The results of calculating internal and external factors will be classified based on the SWOT diagram.

Based on the results of the coordinate calculation of the internal analysis of the condition of the PT XYZ production line packing, the result shows that the internal condition of the PT XYZ production line packing is currently in the positive quadrant.

Based on the results of the external analysis coordinate calculation of the condition of the PT XYZ production line packing, the result shows that the external condition of the PT XYZ production line packing is currently in the positive quadrant.

After calculating the coordinates for the internal and external analysis of the condition of the PT XYZ production line packing, the results were obtained in the form of X having a positive value and Y having a positive value. So it can be concluded that the condition of the PT XYZ production line packing is currently in quadrant I with a strategy of **utilizing strength factors to obtain opportunities**.

DISCUSSION

The hypothesis in this research is that there is an improvement in the quality and services, it's increase customer trust to PT XYZ packing production line by using SWOT analysis, the IFAS EFAS matrix, and Total Quality Management recommendations. After carrying out the SWOT analysis and the IFAS EFAS matrix, 18 components of the SWOT assessment points were obtained and evaluated. The results of the analysis using the Internal Factor Analysis Summary (IFAS) table shows that the total strength value of PT XYZ's packing production line is 4.56 and the total weakness value of PT XYZ is 4.07. The results of the analysis of the External Strategic Factor Summary (EFAS) table show that the total value of PT XYZ's opportunity line packing production is 4.58 and the total value of PT XYZ's weakness line packing production is 4.08. Next, an analysis was carried out using a SWOT diagram, the results obtained for the X axis = 0.245 (Positive) and the Y axis = 0.25 (Positive), so it can be concluded that the condition of PT XYZ's production line packing is currently in quadrant I, which means that PT based on the strengths of PT XYZ's packing production line to obtain the available opportunities.

Research regarding the application of the IFAS EFAS matrix in line packing production has never been carried out. This is evident from the difficulty of researchers finding research regarding the application of the IFAS EFAS matrix in line packing production in the form of journals, books and newspapers. For this reason, it would be good for further research to examine more deeply the application of the IFAS EFAS matrix in line packing production.

CONCLUSION

Based on the analysis and discussion of research regarding strategies for improving the quality of marketing services in increasing customer trust in the PT XYZ packing production line, it can be concluded as follows.

1. Based on the SWOT analysis of the PTXYZ packing production line, 18 component SWOT assessment points were obtained with Strengths and Threats having 5 SWOT parameter assessment components and Weakness and Opportunity having 4 SWOT parameter assessment components. The component points are:
   a. Strength
      1. Experienced expatriate workers
      2. 7 lines production packing line
      3. Good and structured standard work of SOP's

4. Maintenance is carried out independently
5. Packaging material suppliers from various countries

b. Weakness
   1. Limited FG & SFG warehouse
   2. Limited communication skills of local workers and foreign workers
   3. Unilever demand forecast accuracy is only 65%
   4. Production line productivity levels fluctuate

c. Opportunity
   1. 35% accuracy of unfulfilled Unilever's demand forecast
   2. Addition of sophisticated production line
   3. Many experienced job candidates
   4. Similar business units in other countries

d. Threats
   1. Long lead time spare parts
   2. Delay delivery finish goods
   3. Availability and increase in raw materials
   4. Changes in Unilever's marketing strategy
   5. Market fluctuations

2. Based on the result of the study above, the priority strategy has been identified, by using Total Quality Management's approach, the studies result is to recommend and propose the of key strategic action for improving marketing and quality, to increase customer trust. Here are the priorities recommendation to PT XYZ:
   a. Conduct an audit of the performance level of expatriate workers in optimizing machines.
   b. Increasing the competency standards of expatriate workers and local workers on the packing production line.
   c. Examination of productivity levels and factors that influence the performance level of machines running on the PT XYZ packing production line.
   d. Carry out optimization related to the time and changeover requirements on the PT XYZ production packing line.
   e. Analyzing of Unilever's average demand and adjust it to the maximum capacity of PT XYZ's packing production line.
   f. Collaborate with workforce provider organizations that have the knowledge and capabilities.
   g. Carrying out re-examination regarding standard SOPs applied to the PT XYZ production packing line.
   h. Collaborating with business units that are similar to PT XYZ's packing production line in other countries to meet Unilever's demand.
   i. Carrying out developments related to product packaging material suppliers owned.
   j. Use machines that are durable and have spare parts that are easy to get. When choosing a production machine, things that need to be considered are the level of quality and reliability of the machine and the system for fulfilling the machine spare parts needed if damage occurs to certain components.This applies if PT XYZ wants to replace or add machines to the packing production line.

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