

COST STRUCTURE AND EFFICIENCY AT PT BERSAMA LEMINDO ABADI: CASE STUDY

Helmy Ivan Taruna

Universitas Bina Sarana Informatika
Jl.Margonda Raya Depok
helmi.hva@bsi.ac.id

Abstract - Indonesia still considered as good market for this adhesive industry. This creates high competition among the players. The intensity of competition among the existing competitors in the market is high, because there are number of small, equal or even higher competitors. Industry is also growing, even though customer have low switching cost. However fixed cost are high. resulting huge production and reduction in prices. These situations make the reasons for advertising wars, price wars, modifications, ultimately costs increase and it is difficult to compete.

Keywords: adhesive, competition, cost structure, efficiency, effective

I. PRELIMINARY

The competition in the chemical manufacturing industry especially adhesive product for wood and paper is very high. In order to stay on top of the competition, from the operations management point of view, one company need to produce good quality product with low cost, good delivery time and more flexible on the product that will give value to the customer. PT Bersama Lemindo Abadi (the company) might not be able to meet all of those categories (Quality, Cost, Delivery and Flexibility), however, this doesn't mean that the company won't be able to compete nor sell their product to the customer at all.

Based on the interview and some data, there are issues that the company face:

1. Focus on sales and production, efficiency is not main concern.
2. Delivery time based on customer request, most of the time the company can't meet it.
3. Should there be a production delay, it's difficult to find out which process that causes the delay.

Based on identified problems above, we will find four objectives as follow:

1. To find the current issue in operation performance
2. To review and understand the current strategy operational performance

3. To establish the indicator and measurement for efficient performance
4. To provide necessary recommendation to support and strengthen current strategy

II. LITERATURE REVIEW

This chapter discusses basic theories and relevant concepts related to the identified problems founds at the Company :

1. Cost Efficiency
2. Operation Management
3. Production Strategy
4. Organizational Transformation

1. Cost Efficiency

Efficiency in general describes the extent to which time, effort or cost is well used for the intended task or purpose. It is often used with the specific purpose of relating the capability of a specific application of effort to produce a specific outcome effectively with a minimum amount or quantity of waste, expense, or unnecessary effort. "Efficiency" has widely varying meanings in different disciplines.

The term "efficient" is very much confused and misused with the term "effective". In general, efficiency is a measurable concept, quantitatively determined by the ratio of output to input. "[Effectiveness](#)", is a relatively vague, non-quantitative concept, mainly concerned with achieving objectives. In several of these cases, efficiency can be expressed as a result as percentage of what ideally could be expected, hence with 100% as ideal case. This does not always apply, not even in all cases where efficiency can be assigned a numerical value, e.g. not for specific impulse. A simple way of distinguishing between efficiency and effectiveness is the saying, "Efficiency is doing things right, while Effectiveness is doing the right things." This is based on the premise that selection of objectives of a process bare just as important as the quality of that process.

Efficiency can be measured through Financial Ratio. Financial ratios quantify many aspects of a business and are an integral part of the [financial statement analysis](#). Financial ratios are categorized according to the financial aspect of the business which the ratio measures.

- 1) **Liquidity Ratios** measure the availability of cash to pay debt.

- 2) **Activity Ratios** measure how quickly a firm converts non-cash assets to cash assets.
- 3) **Debt Ratios** measure the firm's ability to repay long-term debt.
- 4) **Profitability Ratios** measure the firm's use of its assets and control of its expenses to generate an acceptable rate of return.
- 5) **Market Ratios** measure investor response to owning a company's stock and also the cost of issuing stock. These are concerned with the return on investment for [shareholders](#), and with the relationship between return and the value of an investment in company's shares.

2. Operation Management

Operation management is an area of management concerned with overseeing, designing, and controlling the process of production and redesigning business operations in the production of goods or services. It involves the responsibility of ensuring that business operations are efficient in terms of using as few resources as needed, and effective in terms of meeting customer requirements. It is concerned with managing the process that converts inputs (in the forms of materials, labor, and energy) into outputs (in the form of goods and/or services). The relationship of operations management to senior management in commercial contexts can be compared to the relationship of line officers to highest-level senior officers in military science. The highest-level officers shape the strategy and revise it over time, while the line officers make tactical decisions in support of carrying out the strategy. In business as in military affairs, the boundaries between levels are not always distinct; tactical information dynamically informs strategy, and individual people often move between roles over time.

Operations strategy concerns policies and plans of use of the firm productive resources with the aim of supporting long term competitive strategy. Metrics in operations management can be broadly classified into efficiency metrics and effectiveness metrics. Effectiveness metrics involve:

1. **Price** (actually fixed by marketing, but lower bounded by production cost): purchase price, use costs, maintenance costs, upgrade costs, disposal costs
2. **Quality**: specification and compliance
3. **Time**: productive lead time, information lead time, punctuality

4. **Flexibility:** mix, volume, gamma

5. **Stock availability**

Operations management can improve and re-engineer the processes in business with the intent of adding value. This is done by analyzing the processes of all areas of the business. This process flow analysis can help identify a company's current business situation, as well as the status of departments within that business. Through the use of this process analyses companies can add value by:

- Identifying improvements in product production processes that can be converted into cost savings, and therefore allowing the company to pass-on these savings to their end customers; strengthening their competitive position.
- Streamlining of a company's infrastructure; making it more efficient.
- Streamlining of a company's inventory and supply chain issues; making it as lean and effective as possible.
- Identify and implement improvements in the company's administrative, accounting, purchasing, and other departments to modify or eliminate those that don't add value to the company.

There are two beneficiaries of good operations management: shareholders of the firm and the customers of the firm. Both parties enjoy the benefits of value being added through cost saving and effective and efficient processes. The former enjoys higher dividends and share prices and the latter gains through lower prices and better products/services.

Continuous operations management of products and services within a firm, if successful, should keep end customer/clients/users satisfied through the timely delivery of an ever improving, cost effective product or service, which is desirable to said customer/client/user.

3. Production System

A first possible distinction in production systems (technological classification) is between process production and part production.

- Process production means that the product undergoes physical -chemical transformations and lacks assembly operations, therefore raw materials can easily be obtained from the final product, examples include: paper, cement and nylon.

- Part production (ex:cars and ovens) comprises both manufacturing systems and assembly systems. In the first category we find job shops, manufacturing cells, flexible manufacturing systems and transfer lines, in the assembly category we have fixed position systems, assembly lines and assembly shops(both manual and/or automated operations).

Another possible classification is one based on Lead Time (manufacturing lead time vs delivery lead time): Engineer to Order, Purchase to Order, Make to Order, Assemble to Order and Make to Stock. According to this classification different kinds of systems will have different customer order decoupling points (CODP), meaning that Work in Progress cycle stock levels are practically nonexistent regarding operations located after the CODP (except for WIP due to queues).

The concept of production systems can be expanded to the service sector world keeping in mind that services have some fundamental differences in respect to material goods: intangibility, client always present during transformation processes, no stocks for "finished goods". Services can be classified according to a service process matrix: degree of labor intensity (volume) vs degree of customization (variety). For high degree of labor intensity we have Mass Services (ex: commercial banking bill payments and state schools) and Professional Services (ex: personal physicians and lawyers), while for low degree of labor intensity we have Service Factories (ex: airlines and hotels) and Service Shops (ex: hospitals and auto mechanics). The systems described above are ideal types, real systems may present themselves as hybrids of those categories.

4. Organizational Transformation

The leader's role is to turn separate initiatives into a balanced, integrated program of change. Many senior managers today are aggressively trying to transform their companies, seeking radically to improve performance by changing behaviour and capabilities throughout the organization. Unfortunately, most leadership groups lack a proven way of thinking about the challenge. Ask any management team what a good business plan looks like, and we will probably find close agreement. But ask them—especially in the middle of a major change effort—what a good change plan should include, and opinions will vary all over the map. A CFO will insist on creating new financial measures; an operations VP, on installing a quality program; an HR specialist, on revising compensation and training; a marketing executive, on getting everyone to be

more customer focused. And all these managers will have handfuls of articles to wave—and mantras of buzzwords to invoke—to defend their choices.

The chaos of opinion created by hype and buzzwords is doubly unfortunate. The CEO of a company facing transformational change must be, by definition, the driver and facilitator of just this sort of top-level “conversation”. Without it, no change program will stay focused, integrated, and in balance. And without balance, integration, and focus, no disjointed set of initiatives will lead to significant performance-enhancing change.

Today, however, generating and capturing such quantum leaps in performance lie at the heart of many CEO’s jobs. “To meet our performance goals- or to stay ahead of the competition-we need to reinvent ourselves, “ they acknowledge. “Virtually everything about the way we do business must change.” But if leaders are unable to translate these beliefs into a coherent basis for conversation and learning with their leadership group, then the chances of developing an effective, tangible, and manageable program of change are much reduced.

For that, the right kind of conversation is essential. All three of these- framework, road map, and guiding principles-are necessary for a successful conversation, because all three have a critical role to play in giving CEOs the practical means to shepherd through a balanced, integrated change program.

III. RESEARCH METHODS

In order to obtain a thorough and comprehensive data and information, I had conducted the following three methods:

- a. Interview with the management of the Company (Management System Representative, Plant Managers and President Director)
- b. Company visit to observe the actual operations activities
- c. Data and information gathering to support the quantitative analysis of the operations performance

IV. RESEARCH RESULT

A. Issue in Standard Operating Procedure for Ordering

Customer the Company majority is home industry therefore most of them do not have proper inventory stock and ordering system. It is as simple as they order and expecting product to be delivered on the next following day.

The Company has made Standard Operation Procedure for product ordering and sample request (refer to Appendix A). However there are few cases that comes out of standard operations procedur. The Company has recorded the cases and they catagorize them into 7 cases, there are:

1. Request product delivery outside SOP.
2. Delivery order has been made however due to production there is changes in quantity. Delivery Order Revision
3. Send the wrong product.
4. Product is rejected by customer.
5. There is no Purchase Order from customer, so verbal ordering from customer through sales people.
6. Products are exchanged due to any reason.
7. Product is mistaken labelled or labelled differently.

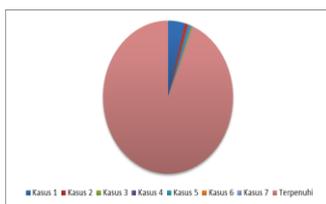


Figure 4.1 Cases in Product and Sample Order

The above graph has shown only 7% of order which have cases. Case number 1 is has the highest percentage compare to other cases. The consideration is made due to the company does not want to loose the order.

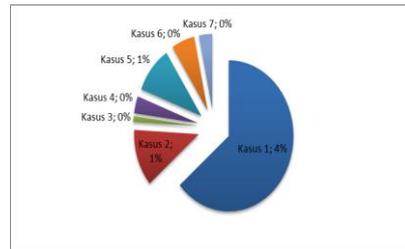


Figure 4.2 Weight Percentage of Each Cases.

The report has said how many cases has happened each month in 2012, and most of them are case of requesting product delivery outside standard procedure. It confirms that most of our customer is still home industry with simple process. However there is no history about how many Purchase Order is cancelled because we cannot deliver the product in order to follow our SOPs. Also there is no record that how many order that we still make even it is not in the SOPs. In case 4 about customer reject the product, there is no history the caused that made Customer has to reject the product, is it delivery time or quality or any other aspect.

Standard Operation Procedure in the Company is made based on the management current condition and target in 2012. To improve SOP, feedback or result of SOP has to be recorded otherwise we will not know whether the Current SOPs has brought any benefits to both company and customer. Based on the reports (see appendix A), the key indications to improve our strategy is not 100% suitable for it.

Based on the feedback from the sales, there are few opportunity that we had lost due to: Prices and Delivery time. It is not seldom that customer request a day before the delivery time and they don't have any ordering schedule. Therefore how are we going to handle with this type of customer. How many of these prospective customers that is missed.

B. Product Numbers and Order.

The company has 231 product type variance in this year. Some product is produced only once or twice. Most of them do not have any regular base. Below is the graph result of Product which has been ordered in a year.



Figure 4.3 Weight percentage product weight.

71% of product only ordered below 10 mTon per year, which averages below 1 m Ton per month. By looking at the sequence of order (refer to appendix), there are quite few that only have 3 or 4 times order in a year. There are 5.7% below 100 kg order per year. The problem with high product variance will lead to numerous of raw material, also product which produced below reactor capacity will lead to inefficient machine usage.

C. Financial statements analysis at PT Bersama Lemindo Abadi 2010 – 2012

Executive Summary

	Unit	2010	2011	2012
Revenue	IDR '000	26.970.636	33.068.233	40.634.662
Cost of Sales	IDR '000	20.540.610	25.678.456	29.192.214
Gross Profit	IDR '000	6.430.026	7.389.777	11.442.448
Gross Profit Margin		24%	22%	28%
Operating Expenses	IDR '000	5.652.999	7.350.119	9.044.142
Operating Income	IDR '000	777.027	39.657	2.398.306
EBITDA	IDR '000	1.409.977	959.935	3.552.967
EBITDA Margin		5%	3%	9%
Net Income	IDR '000	452.867	666.130	1.489.662
Net Income Margin		2%	2%	4%

Figure 4.4 Executive Summary

Financial Statements – Income Statements

<i>in thousand IDR</i>	2010	2011	2012
Revenue	26.970.636	33.068.233	40.634.662
Cost of Sales	20.540.610	25.678.456	29.192.214
Gross Profit	6.430.026	7.389.777	11.442.448
Operating Expenses	5.652.999	7.350.119	9.044.142
Net Income	452.867	666.130	1.489.662

Figure 4.5 Income Statement

Revenues

The Company recorded revenues at IDR 40 billion in 2012, reflecting a 23% increase from IDR 33 billion in 2011 and 23% increase from IDR 27 billion in 2010 to IDR 33 billion in 2011. The Company's revenues were derived from chemical sales. This was bolstered by higher volume sales increasing every year from year 2010 to 2012.

Cost of Goods Sold

The Company's cost of goods sold covers cost of goods manufactured, selling expenses, machine depreciation.

Cost of goods sold increased due to growth in higher sales volume, which increased 13% to IDR 29 billion in 2012 from IDR 26 billion in 2011 and increased 25% to IDR 26 billion in 2011 from IDR 21 billion in 2010. In line with the production growth, total overburden volume grew 3.1% to 94.9 million bank cubic meter (bcm) in 2012 from 92.1 million bcm in 2011, causing the Company's stripping ratio to fall to 10.3x in 2012 from 11.5x in 2011.

Gross Profit

Gross profit increased 55% to IDR 11 billion in 2012, from IDR 7 billion in 2011, primarily driven by lower average sales price in 2012. Meanwhile, the Company's gross profit margin in 2011 only increase to 15% to 7 billion in 2011, from IDR 6 billion in 2010.

Operating Expenses

The Company recorded operating expenses at IDR 9 billion in 2012, reflecting a 23% increase from IDR 7 billion in 2011 and 30% increase from IDR 6 billion in 2010 to IDR 7 billion in 2011. Mostly operating expenses were derived from salaries, utilities, transporations and maintenance expenses, in line with the increase in the Company's sales activities.

Financial Statements – Financial Positions

<i>in thousand IDR</i>	2010	2011	2012
Total Aset	15.892.044	19.627.056	27.246.863
Total Liabilities	12.297.350	15.566.230	21.796.425
Total Equity	3.594.693	4.060.826	5.450.438

Figure 4.6 Financial Position

The Company's recorded net income in 2012, which further strengthen its financial position at the end of year. The Company's total assets increased 39% to IDR 27 billion as at 31 December 2012 from IDR 20 billion as at 31 December 2011 and compared with increased only 24% from IDR 16 billion as at 31 December 2010 to IDR 20 billion as at 31 December 2011. The increase in assets was primarily driven by the increase in the Company's accounts receivables, due to more intensified sales activities throughout the year.

The Company's total liabilities increased 40% to IDR 22 billion as at 31 December 2012 from IDR 16 billion as at 31 December 2011, particularly due to the increase in accounts payable to IDR 6 billion as at 31 December 2012 from IDR 4 billion as at 31 December 2011.

Activity Ratio

	2010	2011	2012
Inventory Turn Over			
$\frac{\text{COGS}}{\text{Average inventory}}$	$\frac{20.540.610}{3.634.570}$	$\frac{25.678.456}{3.874.673}$	$\frac{29.192.214}{3.941.466}$
x times =	5,65	6,63	7,41
Days of inventory			
$\frac{360}{\text{Inventory Turn Over}}$	$\frac{360}{5,65}$	$\frac{360}{6,63}$	$\frac{360}{7,41}$
days =	63,70	54,32	48,61

Figure 4.7 Activity Ratio

The Company show the good improvement at Inventory Turn Over (5,65 times in 2010 to 6,63 times in 2011 to 7,41 times in 2012) and Days of Inventory (63,70 days in 2010 to 54,32 days in 2011 to 48,61 days in 2012).

D. Yield Ratio

Yield ratio or commonly known as throughput yield (YR) where measures of output/input function.

From the yield ratio shown in Appendix D, the Company has shown an improvement on the yield ratio range from 80% to 90%.The performance of yield ratios in general from 2010 to 2012 showed positive cost efficiency indicator.

E. Machine capacity efficiency

Currently, to measure the efficiency performance, the method as follows:

$$\frac{\sum \text{Monthly production}}{\sum (\text{Machine capacity} \times \text{no of machine running})} \times 100\%$$

Figure 4.8 Machine Efficiency Method

Based on the data in Appendix E, we could conclude that:

- a. During 2012, 6 of 15 machine or 40% is over capacity in average
- b. During 2013, 9 of 15 machine or 60% is over capacity in average

Machines have to run in over capacity due to after the amount of output product. It is often to happen that output product does not match with what have been formulated

in R and D. Therefore in order to handle this problem, the material which put into the reactor are more in kg and it is also more than machine capacity designed.

F. Operations Procedure and Health Safety

Process is undergoing manual process. Automatic control are not present and no process control room. Raw material is put manually to the opening mouth of reactor, and as well as opening the valve. There is inverter present to turn the motor and leave it running. There is one supervisor in charge to monitor the temperature and pressure for each running machine and noting them down to production form for each certain time.

Since it's a chemical company, hazard protection for health and safety is a must. Visitors who visit down to the factory are required to wear closed shoes and mask when entering to the plant. Worker there are mostly male due to physical work and they have uniform, closed shoes and mask. Each valve and machines are named clearly to make it easy to be identified. The company is starting to improve in health and safety issue on the field, and however there is no proper training or SOPs for any warning system for fire or any kind of accident

V. CONCLUSION

A. Process Flow to make Standard Operating Procedure for Ordering in Marketing.



Figure 6.1 Process Flow to make SOP for Ordering in Marketing



Figure 6.2 Keep vs Revised SOP

SOPs for ordering is created to make the process easy for customer, not only for internal. To know whether the result is suitable, we need to use key performance indicators as the result. Below are some key indicators which can be used to improve our service to customer:

1. Number of Orders that are cancelled due to our SOPs.
2. Number of Delivery Order is done even it has to break our SOPs.
3. Number of order is delivered not in within the SOPs timeline, late delivery
4. Number of changed or cancelled Purchase Order which use verbal or internal base.
5. Cancelled order due to late delivery.
6. Cancelled order due to Quality.
7. Number of problem occurred due to change label.
8. Total number of Order, Including the cancel and delivered.
9. Number of new customer.
10. Number of regular customer.

Table: Example of KPI table for Marketing.

	KPI	Target 2012	Actual 2012
Order	Cancelled Order		
	Push Order		
	Total Order		

Delivery	Reject		
	Late Delivery		
	Total Delivery		
Customer	Number of new customer		
	Number of Customer Loss		

Figure 6.3 Sample of KPI Table

Marketing in this Company is more about selling the products, instead of conception. There is strategy and positioning still needed. Few questions which are needed to be raised:

1. Who is the customer?
2. What is the nature of customers need? (ie: Payment Term, Price and Service)
3. Which customer that fit the company needs and ability?
4. How are we going to reach these type of customer?

Previously we have talked about the Standard Operation Procedure which are used for the internal process, after that how are we going to make Marketing can work together with us. Marketing is an important role as the front line of the company, therefore how do we know whether our Marketing team (sales) is in good performance. Below are the indicators that we recommend:

- Target achievement in Revenue.
Does the revenue achieve target, over or missed.
- Margin (gross Profit)
- Total New customer
- Total Lost Customer

Keeping customer is one of important role in marketing. Customer can go by any reason thus sales person has to be able to communicate and give problem solution to the customer.

- Total order quantity, which have increased from existing customers. Most of the customers in company are line production type. Sometimes the company only can get 1 or 2 lines out of total.
- Customer satisfaction in: Delivery, Service and Product
- Total Good and Bad Customer in Account Receivables. It is no use of increasing sales but most of them are bad customer in term of payment, neither bad debt nor late more than its promised. In sales definitely there are good customer and the

more the better it is. Therefore it would be better if sales team not only targeted in Revenue but number of good customer they can bring into the customer as well.

- Total Case which has broken the Ordering SOPs.

B. Product Segmentation

Segmentation product is important guidance in order to reduce waste, product buffering and keep the cash performance healthy. By categorizing it, we will know more how to treat and place the product whether its worth and safe to keep them in stock in amount, placing the product on easy access or maybe use Just In Time method.

Product Movement

The data which has been made can be used to make a category product into segmented. The purpose of segmentation is to make a buffer for each product thus lead time to delivery can be cut down. Category can be made into 4 categories; (1) Fast Moving, (2) Normal, (3) Slow Moving, and (4) Dead Stock.

The calculation is based on the sequences product is produced and the weight kg of each time the product is produced in a month. The more sequences will define whether the product has to buffered or not. The weight of each sequence defines the number of kg that we must keep in stock, *Stock Level* (Kg).

Shelf Life

Besides from the product movement, there is another consideration need to be taken. It is the shelf life and value of product. Normally product has 6 months of shelf life however there are some products that only have 1 month shelf life and separation might happen. This type of product cannot be stored too long.

Product Value

Product value means that what is the product priced can be sold into the market. It is not based on the cost of production only. It is not based on the cost of production only. If we are making the product value only in three condition: Cheap, moderate and Expensive then product which has high value is expensive, better to be kept in small volume or even Just In Time (Please refer to Appendix F for the table product category).

There will be 36 categories in total for the product, and it would be treated differently for each category. The rule of thumb is: Stock will be kept less if More expensive, Shorter Shelf life and Slower Movement.

C. Key Indicator of efficiency

There are three indicators that can be used to define the efficient in production:

- Yield Product
- Unit Cost
- Deliver Lead time

Yield

By based on the production form that has been made, recording of how much the input and output each product type are taken. After that try to average them how many percentage of the yield product.

Unit Cost

Unit cost means that how many dollar is needed to produce each kg of product.

Below are the key points to calculate the unit cost:

- Cooking hours; Electricity, Fuel and Water consumption
- Packaging; Materials and Lengths
- Raw Material used
- Man Power

Above are the components which used for calculating the total cost. Then the formula that going to be used:

$$\frac{\text{Sum of Cost (USD)}}{\text{Sum of Product Produced (kg)}} = \$ \dots / \text{kg} ; \text{Ie YP S504} = \$5/\text{kg}$$

Sum of Product Produced (kg)

It means the company has to spend \$5 for each kg of YP S504. Therefore the lower the dollar amount is the more efficient the production in company is.

Delivery Lead Time

Delivery lead time means that how long it takes for one order to be produced and send to customer. Steps which have to be taken to track delivery lead time:

1. Note down the time of order come from customers or sales representative.
2. Trace when the order already in production and when it's finished.
3. Track and record the delivery order has been made for the order.

D. Operational Procedure

Some recommendation for the future improvement:

1. Make a SOP for operation each Machine. Also there is proper training for new employee as well as frequent training as reminder.
2. Checklist for each procedure done by supervisors.
3. Digital recording and measuring installation for crucial instruments such as temperature, pressure and motor speed.
4. Put deadline for each reporting.
5. Create a simulation when there is accident on the field and the simulation need to be run for each time period thus it becomes culture in the company

BIBLIOGRAPHY

- Adam, E. and Ebert, R., (1982). *Production and Operations Management*, 2nd ed., Prentice-Hall, London
- Bruns, William. “*Introduction to Financial Ratios and Financial Statement Analysis.*” Harvard Business School: 9-193-029, September 13, 2004.
- Keown, A, et all. 2002. *Basic Financial Management*, 9th ed., Prentice Hall, London
- Indranila A,Widiantoro E,Setiady F,Taruna H.(2013). *Cost Structure and Efficiency at PT.Bersama Lemindo Abadi.GFP (not published).Jakarta. IPMI*

