

# Value Chain Analysis on the Logistics Management as the Basis for Strategy Formulation to Increase Customer Satisfaction (Case Study in PT.Coca-Cola Amatil Indonesia - Plant East Java)

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## **Abstract**

*PT. Coca-Cola Amatil Indonesia (PT. CCAI) - Plant East Java as a carbonated soft drinks manufacturer is experiencing a mismatch between planning and realization of product shipments shown by fulfillment and delivery mismatch among the company target at difotai (delivery in full on time accurately invoice). This thing was due to an incompatibility among logistics management activities, so it is necessary to do value chain analysis to find out which activity is the cause of nonconformities in order to do strategy formulation improvement to enhance customer satisfaction. The purpose of this study was to determine the advantages and disadvantages of logistics management in PT.CCAI - Plant East Java and make it as one of the basis for strategy formulation to improve customer satisfaction with value chain analysis approach. This research used descriptive analytical method. The data was obtained by distributing questionnaires to the Warehouse and Transportation in PT. CCAI - Plant East Java and analysed using fuzzy AHP method. The results showed that the overall weight of the main activities in a row from the top was the activity of supply management, information flow and order processing, demand planning and operations, and transportation. Some things on the transportation activities that needed to be improved as the basis for the strategy formulation, among others, operational procedure, the carrying capacity of the facility, as well as the socialization and communication of problems and changes handling.*

**Keywords:** Value chain analysis, strategy formulation, logistics management

## **1. INTRODUCTION**

Customer satisfaction have significance role for creating a defense in market competition (Patterson, Johnson and Spreng, 1997). As a result, customer satisfaction is widely developed as the basic idea to supervise and regulate the activity of the company. Hansemark and Albinson (2004) expressed that overall satisfaction is the consumer behavior of the difference between the expected and received with respect to fulfilling the needs or desires. One of which must be considered and applied appropriately to get the customer satisfaction is the delivery of products to the right people at the right time and right place effectively and efficiently. It required a focused company logistics management.

PT. Coca-Cola Amatil Indonesia - Plant East Java is one of carbonated soft drink

manufacturers that have a product range having 15 distribution centers and spread throughout East Java. In the case of delivery fulfillment, PT. Coca-Cola faced a mismatch between the planning and the realization of shipment delivery. On January 2011, there were shortages around 3600 bottles or 150 crates of delivery planning on 9 of 15 distribution centers owned by PT. Coca-Cola. In addition, the excess is also found around 132 crates or 3168 bottles at 4 distribution centers. Furthermore, in terms of compatibility between ordering and delivery of products or called Difotai (Delivery in full on time accurately invoice) performance in the first week of January stood at 94.54% with 582 POs (Purchase Order) were not implemented. In the second week, Difotai Performance was about 94.55% with 581 POs that did not happen. In the third week, there were 586 POs that did not take place with a percentage of

94.08% Difotai and in the fourth week there were 448 POs that were not done by a percentage of 95.41% Difotai (DRP Overview PT. Coca-Cola Amatil, 2011).

The condition was made possible as a result of mismatches that occur in logistics management activities of PT. CCAI – Plant East Java, and this left the company to continues seeking solution on how to eliminate the mismatch between delivery planning and its realization while increasing the percentage of realization Difotai Performance in accordance with the company's target of 100% (DRP Overview PT.Coca-Cola Amatil Indonesia, 2011). Porter (1998) recommends that every organization needs to identify the activity by conducting a value chain approach. The value chain describes the activities of the company to be strategically relevant for understanding the behavior of cost and potential and existing differentiation resources (Mirdah, 2000), so as to achieve the desired level of customer service at the lowest total cost needed to analyze the logistics activities and costs incurred on the company's activities (Bartolucci, 2004). Based on the facts of the company and reviews of literature, it is necessary to study the performance of logistics activities of PT. CCAI - Plant East Java in order to minimize the mismatch occurred and can increase the percentage of Difotai Performance in accordance with the target company, so it can be used as the basis for strategy formulation to achieve customer satisfaction. The purpose of this study was to determine the advantages and disadvantages of logistics management of PT. CCAI so as to make it as one of the basic of strategy formulation to improve customer satisfaction with value chain analysis approach.

## 2. METHODOLOGY

The study was conducted in June-August 2011, located in PT. Coca-Cola Amatil Indonesia - Plant East Java and Computation and Systems Analysis Laboratory - Department of Agroindustrial Technology Brawijaya University - Malang. The instrument used for data collection was questionnaire. Survey respondents included WNT department manager, WNT department

supervisor, and a full good and empties control. Data processing was conduct using fuzzy AHP method with the following stages:

1. Weighting of criteria (sub-sub activity) in the main activity components and support activities with fuzzy AHP.
  - a. Data obtained from the questionnaire was compiled into pairwise comparison matrix, where respondents were denoted by the symbol  $A_i$ ,  $i = 1, 2, 3 \dots, n$ .
  - b. Calculated the pairwise comparison matrix element by the formula:
 
$$\tilde{a}_{in} = (\tilde{a}_{i1}^1 x \tilde{a}_{i2}^2 x \tilde{a}_{i3}^3 x \dots x \tilde{a}_{in}^n)^{1/n}$$
  - c. Determination of criteria weights of each group of respondents using the following equation:
 
$$\tilde{r}_i = (\tilde{a}_{i1} \otimes \tilde{a}_{i2} \otimes \dots \otimes \tilde{a}_{in})^{1/n}$$

$$\tilde{w}_i = \tilde{r}_i \otimes (\tilde{r}_1 \oplus \dots \oplus \tilde{r}_n)^{-1}$$
 so that the obtained values  $\tilde{r}_1, \tilde{r}_2, \tilde{r}_3, \dots, \tilde{r}_n$  and  $\tilde{w}_1, \tilde{w}_2, \tilde{w}_3, \dots, \tilde{w}_n$
  - d. Defuzzification process carried out by using the method of Best Nonfuzzy Performance Value (BNP) with the following equation:
 
$$BNP_{ij} = [(U_{ij} - L_{ij}) + (M_{ij} - L_{ij})] / 3 + L_{ij} \forall i$$
 thus obtained  $w_1$  BNP,  $w_2$  BNP,  $w_3$  BNP, ...,  $w_n$  BNP
2. BNP values obtained from the calculation of weighted assessment of the activities and sub activities to determine which activity had the highest weight and lowest weight.
3. Activities and sub activities were mapped in the value chain diagram with the value obtained by weighting.

Based on the assessment of the weight in the value chain of activities that already exist, the formulation of a strategy was made proposed only for activities that have the lowest weight. Step by step strategy formulation can be described in Fig. 1.

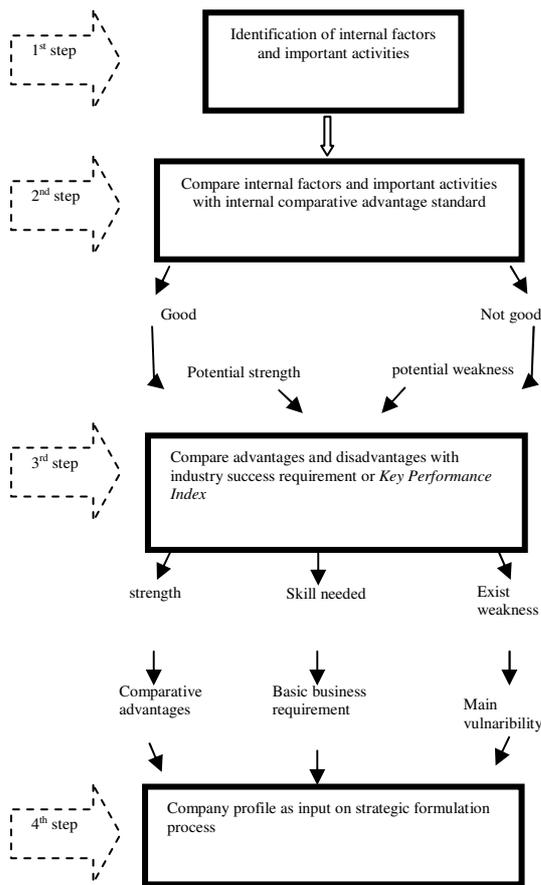


Figure 1. Strategy Formulation Steps

### 3. RESULTS AND DISCUSSION

PT CCAI - Plant East Java is one of carbonated soft drink manufacturers located in Gempol, Pasuruan. The company is led by a Manufacturing Manager in terms of production operations and a WNT manager in terms of warehouse and transportation. Manufacturing Manager oversees the RGB Production Department, PET Production Department, Quality Assurance, Mechanical Engineering, Quality Management System, and General Affair. WNT Manager oversees Warehousing and Transportation and the Direct Sales and Distribution Logistics management of PT. CCAI into the scope of the department of warehousing and transportation (WNT). PT. CCAI - Plant East Java has a regional marketing throughout East Java. Marketing is divided into multiple distribution channels, including through the Distribution

Center (DC), Area Marketing Contract (AMC), Modern Food Store (MFS), and delivery to Other Units.

Request of the AMC, DC and MFS will enter the WNT in the form of PO (Purchase Order) for further processed into summary needs of each SC, AMC and MFS. WNT parties subsequently communicate the needs of vehicles on the transporter. PT. CCAI - Plant East Java works with some of the transportation service providers in terms of delivery.

#### 3.1. Identification of activities in the value chain

Identification of these activities was based on field observations that the activities covered in the logistics management activities which were then arranged in a hierarchy of processes. Results of identification activities in the value chain logistics management of PT.CCAI can be seen in Table 1.

Table 1. Activities of Logistics Management Value Chain on PT.Coca-Cola Amatil Indonesia

Activities	Value creation potentials (activities component)	Sub-activities
Primer	Demand and operations planning	- Short-Term Sales Forecasting - purchasing - production scheduling
	Inventory Management	- storage policy of raw materials and finished goods - Inventories policy
	Transportation	- Selection of transportation service type - Delivery scheduling
	Information flow and Order Processing	- Processing of Claims / complaints - Information Collection, Storage and Manipulation - Data analysis - Sales / Demand Procedure

### 3.2. The main activity in the weight calculation of the value chain

The results of the overall weighting of the value-creating activities of 3 selected respondents using fuzzy AHP method can be seen in Table 2.

Table 2. Result of Weighting to The Overall Activity of The Value Creator in Logistics Management

Activity / Sub Activity	Local weights			overall weight			B NP
	a	b	c	a	b	c	
Demand and operations planning	0,097	0,222	0,773				0,364
Short-Term Sales Forecasting	0,016	0,086	0,367	0,002	0,019	0,284	0,102
Production scheduling	0,024	0,078	0,422	0,002	0,017	0,326	0,115
Purchasing	0,020	0,062	0,347	0,002	0,014	0,268	0,095
Inventory Management	0,116	0,395	0,990				0,500
Storage policy of raw materials and finished goods	0,013	0,112	0,529	0,002	0,044	0,524	0,190
Inventories policy	0,011	0,110	0,489	0,001	0,043	0,484	0,176
Transportation	0,035	0,115	0,682				0,277
Selection of transportation service type	0,020	0,072	0,361	0,001	0,008	0,246	0,085
Delivery scheduling	0,021	0,106	0,448	0,001	0,012	0,306	0,106
Information flow and Order Processing	0,062	0,268	0,785				0,372
Processing of Claims / complaints	0,018	0,105	0,395	0,001	0,008	0,310	0,113
Information Collection, Storage and Manipulation	0,020	0,099	0,429	0,001	0,006	0,233	0,121
Data analysis	0,021	0,094	0,441	0,001	0,005	0,347	0,124
Sales / Demand Procedure	0,030	0,077	0,464	0,002	0,012	0,364	0,129

Description:

- a = left point (the pessimists)
- b = midpoint (the most preferred)
- c = right point (the optimists)
- BNP = Best Nonfuzzy Performance Value

Based on the calculation of the overall weighting of the main activities in the logistics management of PT. CCAI, it was found that the highest to the lowest ratings in a row are inventory management activities (0.500), the flow of information and order processing

(0.372), demand planning and operations (0.364) and transportation (0.277). Inventory management activities had the highest weights indicating that the activities were the strengths of the company in carrying out activities with the efficient logistics management. Based on the value chain concept, it can be interpreted that the cost of the inventory management activities can be reduced without reducing the optimum performance with customer value can still be improved.

Inventory Management in PT. CCAI had the highest weight because the logistics management company was very concerned about the availability of. This is done because inventory management is a Main Key Performance Index company. So if there is a discrepancy in the inventory management activities, it will cause disruption to the delivery and stock accuracy and stock availability. In addition, there is good coordination and communication between production and warehouse, so as to minimize the deficiency or excess stock.

Further activities in the value chain which had the lowest weight were the transport activity. PT. CCAI used the services of the transportation provided by transporter (transportations providers). The transporter was under different company management, the set up and control of the fleet could not be managed directly by the company. Conditions that must be met by the transporters were stated in the agreement between the transporters and the plant nationally. The result was a lack of communication between the transporters and WNT department, so that there were many shortcomings in the fleet, including vehicles that were not feasible and vehicle that were not equipped with supporting documents.

#### 3.2.1. Strategy formulation

##### 3.2.1.1. Identification of internal factors and important activities

Identification of internal factors was obtained by looking at supporting activities that affected the performance of transport activity. Such factors include (Warehousing and Transportation Overview of PT. Coca-Cola Amatil):

1. Organizational Structure
2. Operational Procedure
3. Labor Skill
4. Policy of maintaining the quality
5. HR support
6. Financial support
7. Support of the facilities and infrastructure
8. Spirit of togetherness, the comfortable and conducive working atmosphere
9. Socialization and communication of change and issue handling
10. Statistical Process Control
11. Use of information technology
12. Maintenance of data

while the important activities of the transport was taken from the work instruction document that has been adapted to the conditions in the field. Those activities are:

1. Cargo documentation
2. Delivery scheduling
3. Selection of transport services
4. Loading of finished products
5. Delivery to the DC, Other Unit, AMC and MFS

**3.3. Comparing the factors and activities with internal advantage standards**

The second step to compare the factors and activities with internal advantage standards in linguistic scale is as follows: SS (very appropriate), S (appropriate), CS (neutral), KS (inappropriate), SKS (very inappropriate). At this stage the activity is associated with each of the supporting factors were then compared with the desired standards of the company in achieving optimum work, in order to obtain any activity that assessed the strength shown on the assessment of 'very appropriate' and 'appropriate' as well as any activity which assessed the weakness shown in the assessment of 'fit enough', 'inappropriate' and 'very inappropriate' with company. Through questionnaires filled out by the respondent acquired the activities that can be classified into the strengths and weaknesses are as in Table 3.

**Table 3. Grouping of Activities That are Strengths and Weaknesses in the Transportation of PT. Coca-Cola Amatil**

Internal Factors	Assessment of the activity				
	potential strength		potential weakness		
	SS	S	CS	K S	S K S
1. Organizational Structure		1-5			
2. Operational Procedure		4	1, 3, 5	2	
3. Labor Skill			1, 4, 5	2, 3	
4. Policy of maintaining the quality		1,5	4	2, 3	
5. HR support		4,5	1, 3	2	
6. financial support		4,5	1, 2, 3		
7. Support of the facilities		1	2, 3, 5	4	
8. The spirit of togetherness, comfortable and conducive working atmosphere		1,4,5	3	2	
9. Socialization and communication of problems and changes handling		3	1, 4, 5	2	
10. Statistical process control			3, 4, 5	1, 2	
11. The use of information technology			3, 4, 5	1, 2	
12. Data maintenance		4,5	1, 3	2	

**Activity Description:**

1. Cargo documentation
2. Delivery scheduling
3. Selection of transport services
4. Loading of finished product
5. Delivery to the DC, Other Units, AMC and MFS

### **3.3.1. Comparing with the weakness of key performance index**

The third step of strategy formulation is to compare the weakness with Key Performance Index, while the four key elements used in the PT. CCAI to maintain and build consumer trust continuously among others:

1. Minimize warehouse cost
2. Suitability delivery fulfillment
3. Delivery on time
4. Full good stock accuracy and empties
5. Minimize the product losses

The comparison is done by providing advanced questionnaires completed by respondents in order to obtain the activities that can be said to vulnerabilities in the transportation deficiencies. Assessment of the activity shown by the respondent in which the linguistic scale is said to be the only deficiency is considered appropriate and reasonably fit. While the main vulnerability is said to be valued less in accordance with key performance index set by PT. CCAI. Then those activities should be improved.

### **3.3.2. Strategy formulation**

After going through the value chain analysis, it was found that the main competitive advantage of PT. CCAI is the inventory management activity and the major weakness is the transport activity. After that, further analysis was done on the transport activity and acquired the main causes of vulnerability deficiencies in transport activity, so it may be possible to make strategy formulation scheme and can be described as follows:

1. Operational procedure prepared for cargo documentation activity, delivery scheduling, the selection of the transport and delivery services to the DC, AMC, MFS and Other Units were considered inappropriate or possible there is a shortage. According to Suzuki (1991), standardization is needed to determine the direction of improved performance. To improve the production performance of the standard procedures required standard operating procedures (SOP), thus the strategy formulation that appears ie. to re-

evaluate the implementation of each procedure on each of the activities that are inappropriate, by (Puspita, 2009):

- a. Check whether the implementation of operational procedures established in compliance with the conditions and resources in the field.
  - b. Identifying points on the operating procedures related to the above three activities, which are vulnerable to shipping the product to collect the data problems that arise during this time.
  - c. Drafting or improving operational procedures again.
2. Carrying capacity of the facilities at the delivery scheduling activities, the selection of transportation services, loading of finished products, and delivery were poorly judged. There are deviations of the use of loading and unloading at PT.CCAI warehouse. This is due to excess of production, so loading and unloading facilities also use as finished goods storage facilities. In addition, there were complaints about the transportation infrastructure that does not comply with company standards, so that the strategy formulation for improvement are:
    - a. Evaluation the effectiveness of the layout and parking of warehouse facilities.  
According to Haming and Murnajamudin (2007), the purpose of planning the layout include:
      - 1) Minimize material handling cost
      - 2) Effective use of factory space
      - 3) The use of the manufacturing workforce
      - 4) Reducing the smoothness constraints of the production process
      - 5) Facilitate communicationBesides the five objectives above, there are some other purpose or secondary purpose of a good layout, namely:
      - 1) Reduce the cycle time of processing or customer service time because of the distance between each workcenter relatively optimal.
      - 2) Reduce, even eliminate the scattering or excessive movement.

- 3) Facilitate the placement and the current load and unload the material, product or labor
  - 4) Support efforts to improve the quality of products and services
  - 5) Provide support for the flexibility to customize the arrangement of the system with changing conditions
- b. Maximizing the potential distribution center in terms of storage products. Thus it is possible hoarding of the product so there is no shortage of products in the distribution center at the time of rising demand and excess product in the factory warehouse. As a company policy instruments by Ferdinand (2000), the policy can be used for managing the distribution of competition under the assumption that the higher the intensity distribution is applied, the more solid and the power that the greater the likelihood that the goods or services offered can be sold on a specific target market.
  - c. Penalty provision for the transporter that does not comply with the standards set firm. Form of penalty customized with company policy.
3. Socialization and communication of change and issues management in cargo documentation activity, delivery scheduling, loading of finished products, delivery to the SC, AMC, MFS, Other Units rated less appropriate, so that the formulation of improvement strategies are:
    - a. The existence of two ways communication between transporter with the company in terms of timely delivery. Boorum, Goolsby and Ramsay (1998) said that good communication will influence the level of involvement and adaptability to both parties, which in turn will affect the sale.
    - b. Companies can set strategy incharge person / one-stop service in the handling of the problem with the transporter. So expect the collection of information at one point and it is hoped the problem can be resolved quickly. This is in accordance with the opinion of Schnaars (1991) which states that one of the strategies that

can be used to achieve and enhance customer satisfaction is an efficient complaint handling strategy.

## **CONCLUSION**

The results of the value chain analysis on Logistics Management in PT. Coca-Cola Amatil Indonesia showed that the inventory management with weights 0.500 as the main advantage of activity followed by the flow of information and order processing with weights 0.372, demand planning activities and operations with a weight of 0.364 and transport activity with weights 0.277 as the main weakness.

Improvement strategies to enhance the performance of logistics activities as well as the basis for the formulation of strategy to improve PT CCAI's customer satisfaction is composed of activities with a major drawback, namely the transport activity. The results of comparison of the major weaknesses with internal advantage standards and the Key Performance Index shows the activity of factors that need to be improved, among others, operational procedure, the carrying capacity of the facility as well as the factors of socialization and communication of change and issue management.

In the process of strategy formulation based only on one type of product, namely RGB package Coca-Cola, so it would be more accurate if the analysis done by involving the whole product in its calculations so as to describe fully the activities of the logistics management company.

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