Research Article

Logistics Evaluation: a Case Study

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A b s t r a c t

Supply chain management and logistics are two common terms in modern business studies. One of duties of managers is to control the performance of logistics and supply chain management in their companies. In this paper we practice performance analysis for supply chain management in a real case. This paper used balanced approach to metrics of performance. This study selects a Malaysian public listed company and practice interview method of data collection. At the end authors have some recommendation for supply chain management of the selected company, which are based on the gathered data and analysis.

Keywords: supply chain logistics case study performance

1. Introduction

Terms Supply chain management and Logistics are gaining more and more prominence in today’s world. There are many definitions for these terms but no universally accepted one. According to Sweeney [1] the most broadly adopted view is unionist which regards logistics as part of SCM. The supply chain is the network of organizations that are involved, through upstream and downstream relations, in the different processes and activities which produce value in the form of products and services for the ultimate consumer [2]. SCM is the management across and within a network of upstream and downstream organizations of both relationships and flows of material, information and resources. Logistics is the process of planning, implementing, as well as controlling procedures for the efficient and effective transportation and storage of goods.

Every company wants to know whether its supply chain is performing well and is meeting set objectives. Therefore, it is important to measure supply chain performance and have a good set of measurements in place. There is a variety of measurement approaches which have been developed like the supply chain council’s SCOR model, logistics scoreboard, Activity-Based Costing (ABC), Economic Value Analysis (EVA), Balanced Scorecard. Balanced Scorecard created by Robert S.
Kaplan and David P. Norton is the best known among them [3]. In this approach there are four basic perspectives that managers should monitor which are financial, internal business process, customer and learning and innovation perspective. Managers can monitor the entire supply chain by measuring this 4 metrics. The Balances Scorecard approach provides a comprehensive picture of the enterprise performance at a glance [4]. These measurements can help not only improve financial performance of the company but also satisfy customer needs. The study by Klapper et al. [5] has found that logistics service performance engenders customer satisfaction, which has links with customer loyalty as well as market share. Customer satisfaction depends on the quality with which the flow of goods and services is managed. Order processing, billing and invoicing, and claims handling are all examples of customer service and by measuring and improving them company is addressing customer needs. Certain performance measures, like the percentage of orders delivered on time and complete and the number of orders processed within acceptable time limits show whether the customer is satisfied or not [6]. The firm must look at product and service quality, response time, flexibility and cost measures to ensure that its service efforts achieve actual customer satisfaction.

2. Supply Chain of the Company
The company this report is based on is Tele-Paper, founded in 1989 in Malaysia. In 23 years the company has grown into a full fledged thermal products manufacturer, operating from 2 factory sites and spanning across 40,000 square meters. Tele-Paper has its global brand presence in more than 94 countries worldwide. The success of Tele-Paper lies in the commitment towards quality and service which they have upheld for the last 23 years. Products of Tele-Paper includes; paper roll products, medical recording chart paper, lottery ticket, boarding pass, entertainment and parking ticket, scratch coupon, and ultrasound gel.

The supply chain of Tele-Paper consists of raw materials necessary for production, their transportation, and distribution of finished products to customers. Different paper grades have different properties and thus require different types of pulp and paper machine. Therefore, Tele-Paper has over 20 printing presses and over 40 high tech slitting machines [7]. Wood in the form of bulk is brought to the Tele-Paper from a number of wood suppliers. Wood is also purchased in the form of chips from sawmills. There are some variations in capacity between paper machines like speed and width. Due to the number of design differences some machines are not efficient at manufacturing certain types of paper than other machines. Therefore, it entails Tele-Paper to have a number of various machines for each type of paper. Finished paper is transported to customer either by truck, ship, or plane. The mode of transport depends on the location of customers. Tele-Paper is operating all
over the world and thus is using all types of transportation from van to plane in order to reach every customer [8].

As figure 1 shows supply chain of Tele-Paper can be divided into four main stages or processes. Acquisition involves the operations directed towards providing for the raw material and necessary resources for the production. In the case of Tele-Paper the most important material is wood. The next process in the chain is production. In this stage raw materials converted into intermediary and finished goods. After production the next stage is distribution. Distribution stage includes the logistics taking place to move products to retailers, and to customers. The fourth stage is sales which deal with all demand planning issues such as customer and market selection, pricing strategy, and forecasting.

![Fig 1. Supply chain of the company](image)

The management of Tele-Paper knows that improved trucking logistic operations can save costs, like transportation, material handling and storage, loss from wastes. It also helps shorten lead time and enhance service quality [9]. Therefore, based on the interview, we understood their current logistics practices are in the process of modification because of the effects of government regulations.

Production planning refers to the management and design of the entire manufacturing process including raw material scheduling and acquisition, material handling, manufacturing process design, and design and control. Inventory control refers to the design and management of the storage policies and procedures for raw materials, work-in-process inventories, and the end products. The Distribution and Logistics Process determines how products are retrieved and transported from the warehouse to retailers. The final products of Tele-Paper are transported directly to retailers [8]. These processes interact with one another to produce an integrated supply chain. The design and management of all these processes determine to what extent the supply chain works as a unit to meet required performance objectives.
3. Analysis

It is important to distinguish performance measurement from performance management. Performance measurement is about the use of right metrics in the right place in order to know supply chain vitality. Whereas, managing performance is the usage of metrics to support organization strategic goals [6]. In this part we will discuss supply chain performance of Tele-Paper. The biggest challenge of companies is the need to answer to increasing levels of uncertainty from customers. Reduced technology and product lifecycles, and competitive pressures are causing continuous changes in products in an even more constant way, along with customers demanding as much innovation as possible. Rising energy and raw materials costs, price competition, and declining customer demand, in addition to the continuously changing environmental requirements put a lot of pressure on the paper industry where Tele-Paper is operating.

Today managers have recognized that new strategies and competitive realities demand new measurement systems. Therefore, measuring financial figures as the foundation for performance measurement is not enough instead company has to treat them as one among a broader set of measures. Balanced Scorecard (BSC) is an excellent tool to measure the performance. Thus, in order to analyze performance of Tele-Paper, BSC will be used. The metrics form a multi-dimensional set and include financial, internal business process, customer and learning and innovation aspects.

3.1 Financial Perspective

The financial perspective was developed to evaluate costs and profits of Tele-Paper. These measures due to its importance upon strategic goals are accessible to all organization, allow constant monitoring and control in Tele-Paper. The activities to measure include: manufacturing and operations; storing; logistics and accounting processes. Production and quality costs are associated to manufacturing and operations. Associated with operations, logistics cost represents a considerable part of the final product cost in Tele-Paper thus its monitoring and follow up is representing a competitive advantage. From the interview with Tan, Tele-Paper performs well and has a profit from year to year. Measures like return on investment, return on asset and equity are being practiced by the company. Finally measuring accounting processes allows Tele-Paper a rigorous tracking of the financial evolution of the company, this measures are related to the top management of organizations.

3.2 Customer Perspective

In this set of metrics we look for the interface of Tele-Paper with customers and evaluating the following: sales and customer support and logistics since these are the activities that directly interact with customer in the sale and delivery processes. For the company like Tele-Paper customer
satisfaction is critical, in terms of delivering on schedule within the prescribed time frame. Based on our survey, Tele-paper’s logistics is performing satisfactory as according to response from customers who answered our questionnaire. Activities of Sales and Customer Support are measured by product quality and market share. Quality relates to the good condition and good manufacturing that is what customer need and want. Tele-Paper has received high response on the quality of products. Market share means the position that the company occupies along with is competition and shows how well the market receives their products. According to TradeMart, Tele-Paper has the largest amount of market share in Malaysia [12]. Logistics is associated to product delivery, which is connected with lead time and service level. Here, Tele-Paper’s score is average because of the fact that service is not on high-level. According to customers the service of delivery could be improved as some employees have communication problems. This can be explained by the fact that a lot of employees are from third world countries with low levels of education. Beyond cost, service level and quality are the cornerstones of customer satisfaction and Tele-Paper shows that quality is the main objective for the company. In the survey, customers showed that they are completely satisfied with quality of Tele-Paper’s products.

3.3 Internal Business Process Perspective

Internal business process perspective of Tele-Paper relies on primary activities of value chain, like sourcing, planning, operation as well as delivery. Sourcing activity should evaluate supplier’s quality and responsiveness, the metrics related to planning must quantify the downstream and upstream operations of productive process. Specific logistics functions have, in some cases, been outsourced to logistics service providers on the basis of vertical co-operative agreements. In general, this has reduced the logistics costs. From the interview we found out, Tele-Paper is outsourcing some delivery services to FedEx. This helps Tele-Paper to save around 10% of the cost. Warehousing uses space and storing capacities associated with time and product rotation. Tele-Paper is using almost have of 40,000 square meters it occupies for warehousing purposes. Therefore, it is evident that such practice is inefficient and management should address this issue. The metrics associated with manufacturing process we found a strong relation between quality and time; quality has a high impact on customer satisfaction, time is a degree of efficiency and effectiveness of resources. Thus, the management of Tele-Paper needs to pay close attention to time besides quality. This is very important in order to stay competitive in the paper market.

3.4 Innovation and learning perspective

The perspective of innovation and learning represents the human side of Tele-Paper Company and shows the integration of organization in society. To measure Innovation and learning perspective we
will define metrics to evaluate social responsibility, innovation, and human resources. Social responsibility and innovation are related with interactions between organizations and society. Here, Tele-Paper's activity is not convincing. The company is not practicing corporate social responsibility programs [13]. Human resources metrics are introduced to identify the employee satisfaction in their working environment. Human capital is actually a sustainable competitive advantage and it affects performance, therefore organizational culture must be aligned with business goals.

4. Conclusion

Based on the analysis performed in previous section there are some weaknesses which Tele-Paper possess. In terms of financial performance the company is performing well. However, it might be useful to use more metrics in order to measure financial performance. Therefore, Tele-Paper should consider using return on net assets, return on capital employed, stock turnover to have more precise picture of financial performance. The ratio like stock turnover will help Tele-Paper to improve supply chain performance.

Recently, many companies adopted "just-in-time" and "supplier managed inventory" techniques in their supply-chain management logistics operations. The paper industry is moving in this direction too. Besides, customer demand for "just-in-time" delivery created the needs for a new distribution system. Therefore, it is crucial for Tele-Paper to adopt such techniques in its operation in order to improve logistics and transportation operations for achieving higher performance.

Many European pulp and paper companies created third-party-like logistics companies to generate new coordination possibilities, reduce inventories, rationalize transport flows, and form a partnership with numerous distributors [9]. Thus, it might be beneficial for Tele-Paper to consider and create such company with firm of the same industry.

Tele-Paper's supply chain and logistics performance can be also improved by the usage of IT and related technology, like e-commerce and supplier relationship management software. In today's competitive environment, support for the full supply chain starting from customer inquiry to delivery and invoicing is critical. IT can help the business to compete successfully in this challenging business. Real time information and specializing in high tech products can give Tele-Paper a competitive edge. Going mobile can help gain further transparency regardless of time and place for Tele-Paper.

The other subject Tele-Paper has to consider to address is energy and environmental issues in transportation. The current interest has sought to extend the traditional supply chain to add “reverse logistics”, which includes product recovery for the purposes of recycling, re-manufacturing, and re-use. Therefore, it is highly advisable for Tele-Paper to use recycling as part of production. There are lots of benefits of using recycling paper like lower cost, reduced greenhouse gas emissions, saved trees, reduced energy and water consumption. Recycling one ton of paper can save approximately 17
trees, 7,000 gallons of water, 3.3 cubic yards of landfill space and around 4,500 kilowatts of energy [9]. Besides, in the paper industry, efficient production, order management as well as delivery processes are of greatest importance. Therefore, Tele-Paper has to pay attention to it in order to be competitive.

Acknowledgments and Conflict of interest

This study was a tutorial practice done by students; Dinara Tolgambayeva and Choon Tze Yin; and all responsibilities of data collection and presented information are with them. Research consultation and method teaching was with Dr Shahryar Sorooshian.

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References


