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Optimization of Internal Logistics by Using Different Parameters

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Abstract

This paper aims to propose strategic control parameters for internal logistics. The complexity of the current business context forces managers to resort to a variety of control and management tools to maintain high levels of operational performance and sustained corporate growth. Old management tools such as financial and internal process management techniques that are restricted to the control of tangible results have become inadequate. The complexity of operations demands the control of tangible and intangible results; increased information flows and the complexity of businesses and markets call for a more developed and comprehensive system for strategic control. The new parameters may be used to produce new strategic indicators for the area of internal logistics, a primary activity in the value chain, which demands a significant share of company resources. Strategic control of this activity is necessary to ensure future results, and not only to reflect upon past results. It is essential that the indicators are aligned with corporate strategy. It is concluded that the reformulation of the strategic indicators contributes for a better alignment between internal logistics and corporate strategy.

1. Introduction

Logistics plays a crucial role in companies' ability to sustain competitive on the market. In increasingly competitive markets, it is crucial to evaluate how companies are structuring their strategic indicators. Organized methods to measure results considering the various relevant perspectives can bring competitive advantages that are often overlooked by the organization. Hence the importance of studying and analyzing how organizations are using strategic control tools to achieve sustainable development and competitive advantages in relation to their main competitors. This article aims to analyze and to propose strategic control indicators for internal logistic processes by means of a case study. The analysis of current indicators was necessary to verify whether they actually expressed company strategy as well as their Adequateness to ensure good levels of control and performance for that set of activities. The proposal of new control parameters, aiming for a management model that is more comprehensive, up-to-date and coherent with corporate Strategy and with the contemporary competitive context.

Logistics

Logistics is regarded as the process that combines all the activities that are associated with the movement and positioning of the inventory to fulfill the customer requirements (Bowersox, 1999). Logistic includes plenty of functions among which the transportation, warehousing, and inventory management are considered important. The definitions of logistics involve the management of the inventory, with respect to materials and information (Goldsby, 2005; Harrison, 2002). Today companies are facing a severe competition in the recent global market and this is expressed in shorter Product life cycle, increased expectations of the customers, service level, customized products and various services (Simchi-Levi, 2003).

From the market value perspective the logistic effectiveness is measured by the customer satisfaction. The successful evaluation of the logistics is measured by the service performance goals with respect to on-time deliveries, availability and accessibility of the delivery (Bowersox, 1999). In today's market, which is becoming more customer-driven the measure of the customer satisfaction is more orienting towards the impression of the external services and the customer value (1)

The inbound logistics deals with the deliveries materials necessary for the production and the outbound logistics is managing with the physical distribution of finished goods

Porter (1987) characterizes logistics as an integral element of the enterprise value chain, relating both to primary and support activities. Moeller (1994) highlighted the importance of logistics as competitive advantage as a search to promote cost, quality and time differential advantages. Ballou (1996) classifies logistics as a strategic operational function with a high power to add competitive benefits for organizations, pointing out the need deliver the right product to the right customer, in the right quantity and conditions, at the right place and time, at the right cost. (2).Moura (1997) singles out some important concepts that define internal logistics. When focused on production, internal logistics is responsible for input of products, storage of raw materials, internal transportation, and storage of partly finished and finished products, preparation of orders and return of packaging to suppliers. In summary, all the management and movement of materials within industrial units corresponds to internal logistics. Expenditures with internal logistics account for a significant share of total costs. According to Moura (1997), costs of logistics represent 15 to 25 percent of total revenues for most companies. Within these costs, there are expenses related to flows of materials and transportation as well as internal movements of material and stocks. Each process of internal logistics must be controlled to achieve competitive advantage.(3)

2. Methodology

The point of departure for the study is the current situation of control indicators, from which a new proposal was designed. A case study was used as the method to obtain predominantly qualitative information. The data were obtained from internal logistics department of Tractor Engineers Limited. .The sources for data collection were company documents originated from the detailed objectives and action plans (D.O.P.A.) The strategic objectives and strategic maps for the internal logistics sector were extracted from D.O.P.A., as well as the strategic indicators and internal processes.(3)

3. Data analysis

3.1. Current situation of internal logistics in the company

Internal Logistics is responsible for all the movements of components, from their arrival to the industrial complex to their utilization by the manufacturing sector. It is structured to serve the two parts that are located within the industrial complex, and it employs 78 people. It uses a considerable share of the yearly budget of Logistics, as whole, reaching approximately 6 percent of the total in 2008. The main customers of Internal Logistics are the Manufacturing Department and the Department of Component Provision. Manufacturing is the main customer, since it depends on the parts to assemble the vehicles. Component Provision receives the inventories of parts prepared by Internal Logistics, which are needed to confirm the quantities of parts that are found in the management systems.

Internal Logistics is responsible for the following processes:

a) Receiving: unloading of trucks and containers, movement of parts, checking of quantities of parts.

b) Storage: movements of materials, addressing of parts in stocks, and quality control over the operations (stock auditing).

c) Counting of parts or inventories: cyclical counting of parts.

d) Supply if consumption points: movement of materials from stocks to consumption points, addressing of parts in the production line, and quality control over the operations

N	**Name of indicator**	**Perspective**	**What does it measure?**	**What is the objective?**	**Who?**
1	Truck Reception	Internal process	Number of arriving trucks beyond scheduled arrivals	Identify extra workload in truck reception	Clerk
2	Container Reception	Internal process	Number of unloaded containers	Control arrival of imported materials	Clerk
3	Stock Auditing - Assembly	Internal process	Number of audited stock addresses in assembly and number of nonconformities	Ensure quality of stocks	Stock Auditor
4	Stock Auditing – Body shop	Internal process	Number of audited stock addresses in body shop and number of nonconformities	Ensure quality of production line	Production Line Auditor
5	Number of inventories concluded	Internal process	Number of inventories concluded in the week	Ensure minimal Number of inventories	Inventory clerk

3.2. Existing Parameters in internal logistics

The existing indicators seek to control only variables that are related to internal processes within internal logistics. There is not an updated, because the company's strategic objectives are revised yearly, and the indicators have not changed for the past four years. There is no apparent concern with financial results, the satisfaction of internal customers, or the continuity of learning in the sector and its long-term growth. There is no cause-effect relation among the indicators, and trend results are also absent. The existing indicators are shown in Table 1

3.3. Proposed Parameters for internal Logistics

The proposed system is developed on the basis of detailed strategic objectives, with a focus on the factors that really add value to the company and to internal logistics. The proposal follows the methodology of balancing indicators by means of cause and effect analysis, beginning with the financial perspective and finishing with the development of the learning and growth perspective.

The process began with meetings with managers of the sectors that are internal customers of the internal logistics sector. The "wish list" from the customers was then compared with documents from company headquarters that establish the scope of action of internal logistics. The analysis of both lists led to the development of a single list of the responsibilities of internal logistics and its mission, encompassing the visions of the company and of the internal customers.

The strategy provided the elements to produce strategic maps, considering for ten functions that had been previously established: reception of materials, stock auditing, line auditing, management of logistic incidents, inventory, forklift transportation, towing, transportation support, operations management and supervision of internal logistics. The resulting strategic parameters are shown in table 2

The unit value added of internal logistics is composed by adding a set of indicators of unit movement value, the value of expenditures with components per unit produced, the value added related to office materials, industrial and safety materials per produced unit, and the value of expenditures with nonconformities of internal logistics per unit produced.(4)

N	**Name of indicator**	**Perspective**	**What does it measure?**	**What is the Objective?**	**Who?**
1	Unit Value Added of Internal Logistics	Financial	Cost related to internal logistics per vehicle produced	Control operational costs of internal logistics	Supervisor
2	% of incomplete Undercarriage assembled and Average minutes line stopped for lack of	Customers	% of parts not delivered to clients as scheduled and time	Customer satisfaction: manufacturing	Supervisor

	parts (Internal Logistics)		production line stopped for lack of parts		
3	Nonconformity on the line and on assembly and body shop stock	Internal Process	Quality of line and stock audits	Ensure correct placement of materials	Supervisor
4	Forecast and realized inventories	Internal Process	Adherence to scheduled inventories – weekly control	Ensure that all parts are inventoried in scheduled week	Supervisor
5	Compliance with movement deployment	Internal Process	Time of internal line supply movement routes	Ensure cycle times of forklift and towing equipment to avoid supply delay	Supervisor
6	Accidents	Learning and Growth	Number of accidents	Bring plant accidents down to zero	Supervisor
7	Individual competence measures	Learning and Growth	How many employees underperform, meet expectations or exceed them	Identification of individual competences of each employee in sector	Supervisor

Table 2

4. Conclusion

The proposed system of indicators is certainly subject to further improvements, but it already represents a substantial improvement in relation to the current situation of the internal logistics sectors in this case study. The focus of the company in its internal processes only. Problems with control of financial aspects are ascribed to the difficulty to obtain data related to the costs of internal logistics. The proposal of parameters can certainly contribute to expand the company's ability to identify its shortcomings. The proposed indicators for the learning and growth perspective indicate a new approach within the company. Previously, the individual competences of employees had not been analyzed and measured. Using the measurements, it is possible to

verify whether up skilling training is being developed, whether they are bringing practical results to the company and their impact on sustainable development as well.

The customer-oriented vision helps to move away from an internal focus and to envision the broader external benefits of the work that is developed in the sector. A basic marketing lesson – to meet customer needs – appears to be lacking in the internal view of companies. The customer is often seen only as the final customer who buys the finished vehicle, but there are internal clients who also demand quality. A customer-oriented vision is a form to ensure in itself that a good part of the results will be achieved. This study may be extended and adapted to other organizational settings, given that every organization depends on internal logistics. The improvement of control parameters even though they depend for the most part on individual strategies of each company, could lead to a basic set of indicators, or guidelines, that any company could use.

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