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Chapter 10: Logistics Performance Indicators

Objectives

- Define and understand the concept of performance.
- Examine the function of performance indicators.
- Understand how performance indicators are created from organization's objectives.
- Examine examples of performance indicators.

1. Introduction

Management is defined as planning, organizing, controlling and monitoring of objective-directed activities. Control processes take place within the management process.

Control is considered as a necessary activity of operations and the aim of control is to detect deviations.

This chapter is concerned with a specific aspect of logistics – logistics performance. An analysis will result in identifying gaps between market practices and norms and the company which is benchmarked. The gaps will lead the firm to fine tune its performance. Hence, the analysis of the logistics performance can be the first step in moving logistics companies forward.

Three important developments are taking place:

- Transition from sellers to buyers' market which means that logistics have become an essential part of marketing function.
- PLC is getting shorter and lead time is become a competitive tool.
- Increasing competition due to globalization.

2. Concept of Performance Indicators

One of the main things to understand is that in terms of performance measures you need to:

- Monitor performance against the criteria that are important to your customers.
- Monitor performance against the criteria that are important to you (costs).

Different players have different ideas as to what is important in terms of performance measurement.

As discussed in the previous chapter, there is a cost to the service level provided. There is a need to balance the level of service with the cost of providing the service. The cost of providing a service is markedly higher the nearer it reaches the 100% service level.

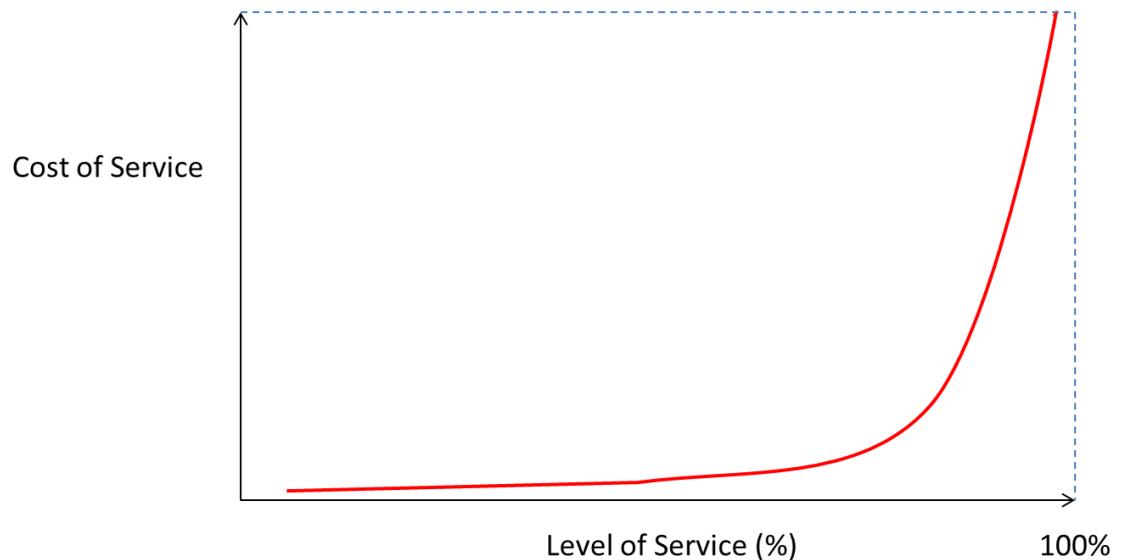


Figure 10-1: Balance of Cost of Service vs Service Level

For example, 100% next day on time in full may only be achieved by having sufficient inventory to satisfy every customer's needs and every order that leaves the warehouse would need to be double or triple checked for accuracy.

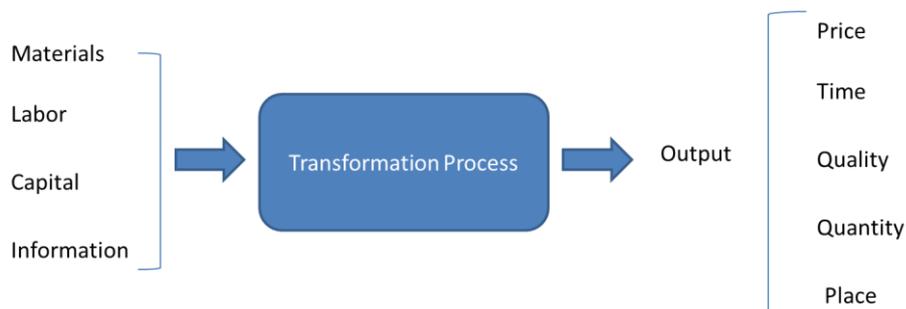


Figure 10-2: Transformation Model

Figure 10-2 illustrates a simple model of the transformation process. This model is used to demonstrate the use of performance indicators and may include the production processes, decision processes, control processes and so forth.

Figure 10-3 shows some examples of the different performance measures for receiver and supplier of services.

<p>Retailer</p> <ul style="list-style-type: none"> • Cost as % of sales • Sales as % inventory • Freight as % of COGS • Costs as % of sales • YOY sales increase vs YOY increase of cost • Delivery reliability 	<p>3PL</p> <ul style="list-style-type: none"> • Logistics cost • Cost per line • Cost per order • % pick accuracy • Service level – delivery to schedule • Direct & indirect hours • Lost time / cost
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Figure 10-3: Performance Measures Examples of Retailer vs 3PL

These performance measures can be summarized in principle under the three categories. Measurements take place in three categories:

- Inputs
- Process
- Outputs

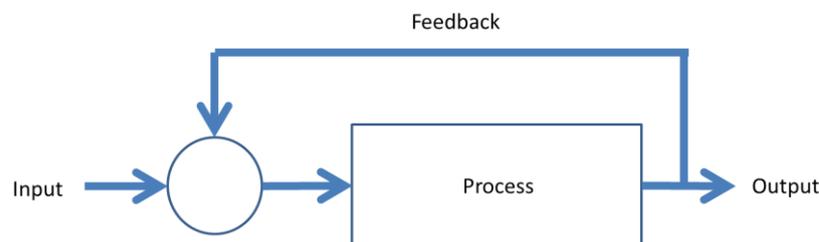


Figure 10-3 Feedback System

Generally, the three categories are expressed either in financial units or physical units.

In order to make sense of performance indicators, it is necessary to study the collected data to other norms or standards. Then, one may conclude whether the indicators show the firm is performing above or below industry standards.

3. Guidelines on Creating Performance Indicators

- Performance indicators must reflect the logistics objectives of the firm,
- The flow of materials from supplier to end user must be reflected through performance indicators
- Performance indicators must be able to show the responsibility area.
- Each performance indicator must be clearly defined using SMART objectives.

Within these guidelines in mind, we can now proceed to define the framework for creating performance indicators as shown below:

4. Framework for Performance Measures

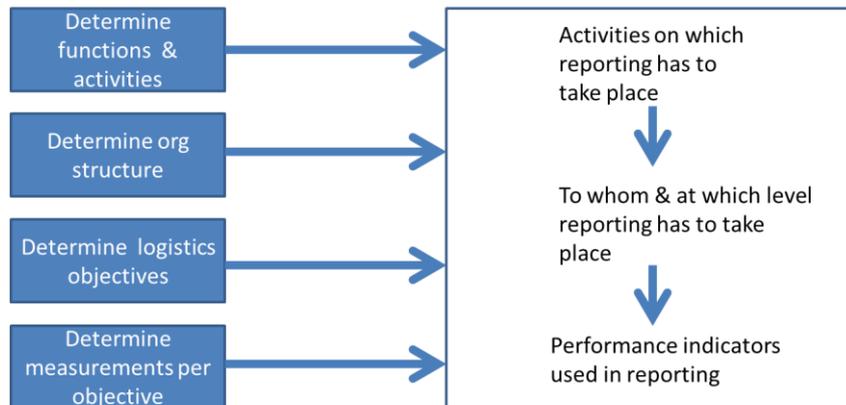


Figure 10-4: Framework for Performance Indicators

4.1 Determination of Functions / Responsibility Area

Using Figure 10-3, performance indicators are created for each functional area eg Purchasing, Warehousing and Shipping.

The indicators should measure the functional area clearly and should not have indicators which allow the functional areas to overlap.

For example, measuring the number of customer orders processed is a good overall indicator of the performance of logistics and rightly we should use the indicator.

But it becomes a problem when there is a problem and there is no other indicator to show which functional area suffers from order execution.

It could be the warehouse order picker or it could be customer service section which forgot to process it.

4.2 Determine Organizational Structure

The hierarchy will determine the reporting structure and the management level.

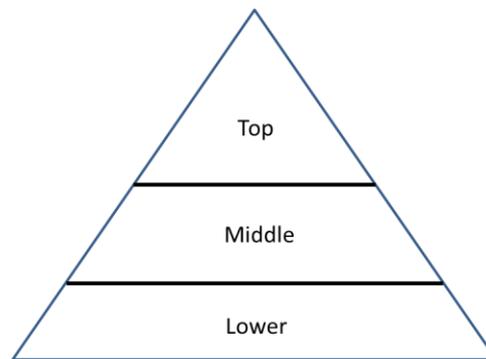


Figure 10-5: Hierarchy of Organization

The indicators should be classified as:

- Top management – big picture and infrequent reporting, highlighting trends and key indicators such as financial data.
- Middle management – reporting and highlighting functional performance of functional area's trends and key indicators such as finances, productivity indicators.
- Lower management – daily reporting, less concerned with big picture and trends. Indicators such as lead time, unloading time, delivery time.

4.3 Determination of Logistics Objectives

Mission

An organization's mission is actually the broadest and highest level of its objectives. Mission defines the basic purpose or purposes of the organization.

Basically, an organization's mission outlines why the organization exists.

A mission statement usually includes a description of the organization's basic products and/or services and a definition of its markets and/or sources of revenue.

Corporate Objectives

An objective is a statement of what is to be achieved. Objectives are normally stated in terms of a desired level of attainment within a specific time frame.

Eg: To increase sales revenue to S\$10 million by the end of this fiscal year.

Ideally, objectives are quantifiable, simply stated and measurable. Objectives can be classified as either short-range or long-range.

Normally, objectives which have a time-span of 1 year or less are classified as short term; objectives spanning more than a year are classified as long-range.

Objectives can also be classified according to their breadth of influence in the organization.

For example, objectives that apply to the entire organization are called corporate or organizational objectives.

Objectives which apply to the functional aspects of the organization are called functional objectives.

Logistics being one of the functional areas would also have objectives. The performance and fulfilment of these objectives mean that the company would be closer to achieving its organizational objectives and ultimately its mission.

4.4 Determination of Measurements per Objective

Let us use an example. Assuming the logistics objective is to reduce the lead time of delivery of the warehouse, the lead time should measure from the moment the order is received to the moment the order is delivered to the customer's site.

All sub-processes within the lead time process should be reviewed to see if there are opportunities to cut the lead time.

5. Measurement Tools

There are various tools used to collect data for the measuring performance. These are:

- Manual forms.
 - Slow
 - Prone to error
 - May require duplication of data entry which leads to more errors
 - Supposedly cheap but can be costly if there are mistakes
 - Limited data processing
- Automatic data collection (ADC) eg barcode, RFID.
 - Instantaneous
 - Very low in errors
 - Less manpower to collect data
 - Data can be processed quickly and in many ways
 - Expensive in acquisition of hardware and software
- Data entry using hand held devices or computers.
 - Faster than manual system
 - Less prone to errors because dependent on operators
 - Less manhours
 - Data can be processed quickly
 - Less expensive compared to ADC

6. Performance Indicators

One can create many performance indicators. If there are too many indicators, it would be difficult to use them appropriately and productively in logistics.

As a norm, a department should not have more than 5 indicators. These so-called indicators will provide a big picture view of the performance. If the indicators show that the department is not doing well, then the management of the functional area need to look into the details.

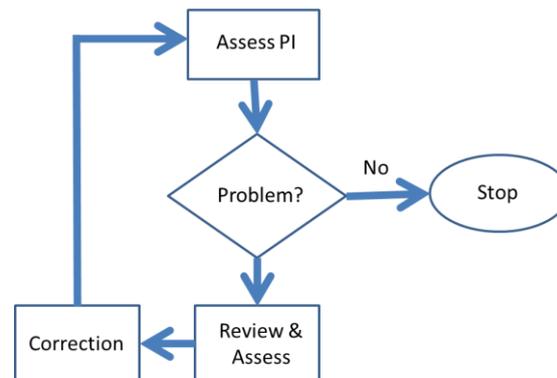


Figure 10-6: Feedback & Correction Flowchart

In logistics, the question is what should we be measuring?

Generally, the main areas cover:

- Reliability
 - This measurement includes on-time delivery, fill rates, accuracy and order cycle time.
- Flexibility
 - This covers all aspects of customer's orders and requests.
- Asset utilization
 - This measurement includes the use of material handling equipment and storage, transport equipment and IT systems.
- Cost
 - Cost measurements include cost as a percentage of sales, productivity and manhours.

Some examples of key indicators by functional areas are:

Materials Dept	
Inventory level	Inventory beginning of period; inventory issued in month
Lead time purchasing	Receipt order instruction until confirmation of supplier
lead time transport	Completion reported until receipt at gate
Lead time supplier	Confirmation until completion reported
Delivery reliability supplier	Real delivery date in relation to latest date agreed upon per PO
Materials Planning	
Delivery time	Receipt customer PO until delivery ex-works of all customer orders
Warehouse	
Order picking	Number of orders per warehouse staff per unit of time
Lead time	Receipt of order pick list to delivery of order ex-works warehouse

Table 10-1: Examples of Performance Measures

The management of logistics need to be very clear on the definition of the measurements.

Ambiguity can lead to rejection of the measurements and discredit the use of performance indicators.

7. Conclusion

Performance indicators are unpopular for the reason that they exert pressure on staff to perform better. No amount of convincing will help if logisticians do not buy in into the system.

Communicating the importance and relevance of performance indicators is necessary. For staff who do not perform, performance indicators may be used as a penalty. Top performers see the advantage of performance indicators as a reward for hard work.

Management need to inform staff that the performance indicators are achievable.

Constant feedback on performance is mandatory to allow staff to appreciate that their performance will ultimately decide whether customers will continue to use their logistics services.