

Benchmarking supply chain with balanced scorecard: A conceptual framework

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Abstract- A supply chain is the network of facilities to perform set of operations from procuring Raw material, transforming the raw material in to finished goods, storing them, distribution to the final customers and render the quality services through a team work of internal staff and External partners like suppliers, supplier's suppliers and distribution channel members. The core supply chain we can describe as a relay game in which the participant or each players either the facility or an individual pass on the baton effectively from one to other until it reaches the final receiver- The customer. Supply chain has to be timely regulated or synchronized for optimizing business processes through understanding better working processes and evaluating self performances, this can be done by benchmarking a supply chain

Keywords- Supply chain, Benchmarking, Balance Scorecards

Benchmarking

Benchmarking is measuring performance against that of best-in-class organizations, determining how the best in class achieve those performance levels and using the information as the basis for goals, strategies and implementation[1, 2]. Following are the core steps in the process of benchmarking:

- 1) *Decide what to benchmark*- Starting with the mission and critical success factors
- 2) *Understand current performance* – and documenting it with a clear understanding of circumstances leading to exceptions from the normal routines.
- 3) *Plan* (to study others)-To decide the type of data to be collected and the methods to collect the same.
- 4) *Study the 'best in class'* – By way of questionnaires, site visits and focus groups.
- 5) *Learn from the data*-The gaps between the performance of the 'best in class ' and your organization / process.
- 6) *Use the findings*- To set the goals and objectives.

Benchmarking is needed to achieve the business and competitive objectives and essentially involves imitating the performance of best in class organizations/ processes. It is time and cost saving as there is no reinventing the wheel

Benchmarking Supply Chain

Benchmarking is the practice of being humble enough to admit that someone else is better at something, and being wise enough to learn how to match them and eve surpass them at it [4, 5]- (APQC – 1992). Benchmarking is the measurement of self, through comparison of performance levels in processes and practices. The basic need of benchmarking is to introspect for deciding a path, monitoring a track of right direction, shifting to the higher level of performance and improvement in all the aspects. The benchmarking can be made by comparing the other industry performances and

their processes in similar operations, activities or functionalities. The objective of benchmarking is to prefer best practices and suitability.

Some examples of benchmarking are

Problem Area	Compared With
Higher Inventories	Amazon.com
Fresh Deliveries of Products	McDonald's Pizza
Direct Marketing implementation	Dell computers
JIT system in production	Toyota Motors

Benchmarking shall be done with respect to the functionalities, the strength of the other internal and external firms, organizations are to be compared with, so as to improve the organization's business processes. One of the different models in benchmarking has explained by Andersen in 1995 is as below.

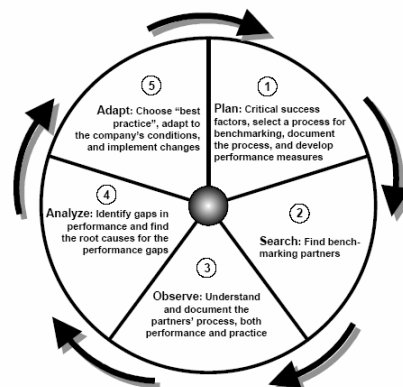


Fig. 1

The model presented by Andersen[5] is quite generic and can be applied to overall supply chain of any organization. However, when we compare the activities divisionally through various drivers and components of supply chain like delivery rates and delays in the deliveries, the benchmarking is to be made with the comparison to the other organizations having the expertise of it, for fast deliveries dell computers can be considered for the

comparison and for accuracy in deliveries a dabbawalas of Mumbai, while for a high inventory case - amazon.com or also a dell computers can be considered, here while benchmarking, the cross references of the higher maintained standards are to be preferred.

The benchmarking of supply chain can be done in four perspectives:

- Internal – process and operations
- External partners like suppliers and distributional channels.
- Financial Perspective and
- Customers

While choosing external partners for benchmarking, the organization shall focus on only those who are intensively participating its supply chain or if playing prominent role in it.

It is quite superficial stage when we identify gaps in performances or try to find a root cause of performance gaps indicatively or on primary observations, to be more clear results one has to measure the performances with an exhaustive exercise and this can be done by applying the balanced scorecards.

Balance Scorecards

Balanced scorecard is a strategic planning and management system that helps everyone in an organization to understand the role towards a shared vision. Robert Kaplan as below proposes the logic of Balanced Scorecard – Strategic Planning.



Fig.2

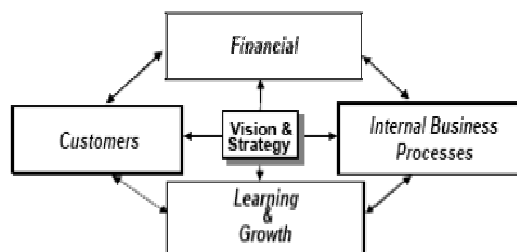


Fig. 3

Similarly Howard Rohm[3] proposed model of balanced score card for a Federal Government Logistics Centre (Fig.-4).

Further, Robert Kaplan also proposed using scorecards in Collaborative Planning, Forecasting and Replenishment (CPFR) by focusing the Key Performance Indicators (KPIs) [table-1][4,-6].

Now, we shall benchmark these KPIs comparing with the other organization's expertise in one or more KPIs For e.g., Inventory(flow chart -1).

Inventory being a major driver of supply chain and KPI of business, the strategy can be derived further to such components that is to optimize inventory while the objectives are set to achieve the strategy, subsequently the initiative measures are set, these measures or tasks are to be compared by fixing the standards or benchmarking it with a 100 points balanced score card or placing the spectrum of Low, Medium and High, and then the tasks are to be measured and accordingly the further initiatives for best practices can be planned and align with the strategy(table-2). The exercise has to be repeated with all major drivers and KPIs, for Internal Business Process – Warehousing, Transportation, Plant and machinery or Production process etc. also for the External partners of SCM and ultimately for Customers these perspectives altogether to be framed in a below Balanced scorecard [7]. In the External Partners assessment supplier's scorecard can be used with more strategically and construct as a Supplier Balanced Scorecard, especially when a company considers its suppliers in a product innovation. In overall the benchmarking for supply chain with balanced scorecard the Human Resources altogether is involved in all the perspectives and has to be measured as a unique separate activity however the resemblance with the supply chain tasks and measurers are to be verified at each stage.

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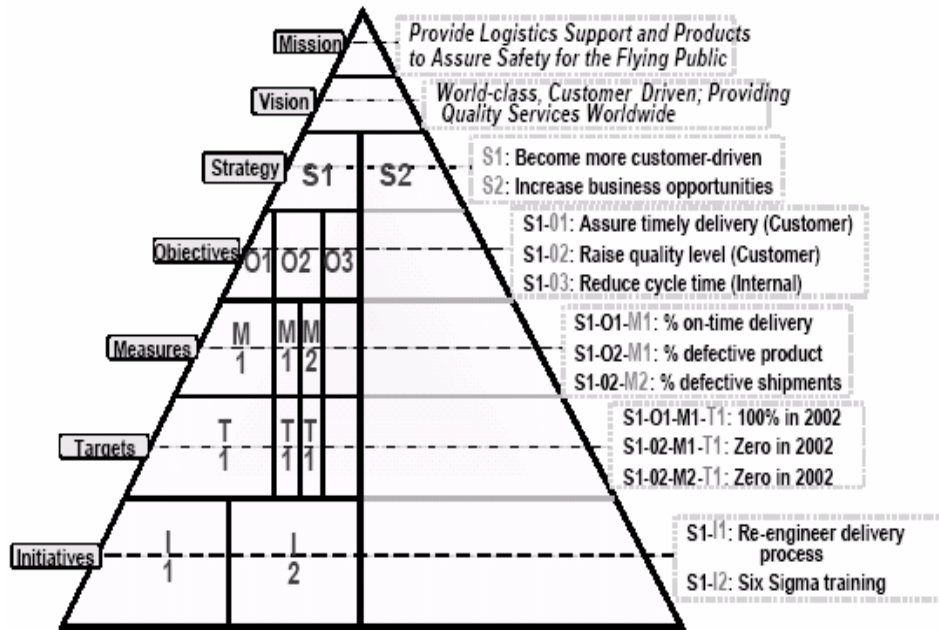
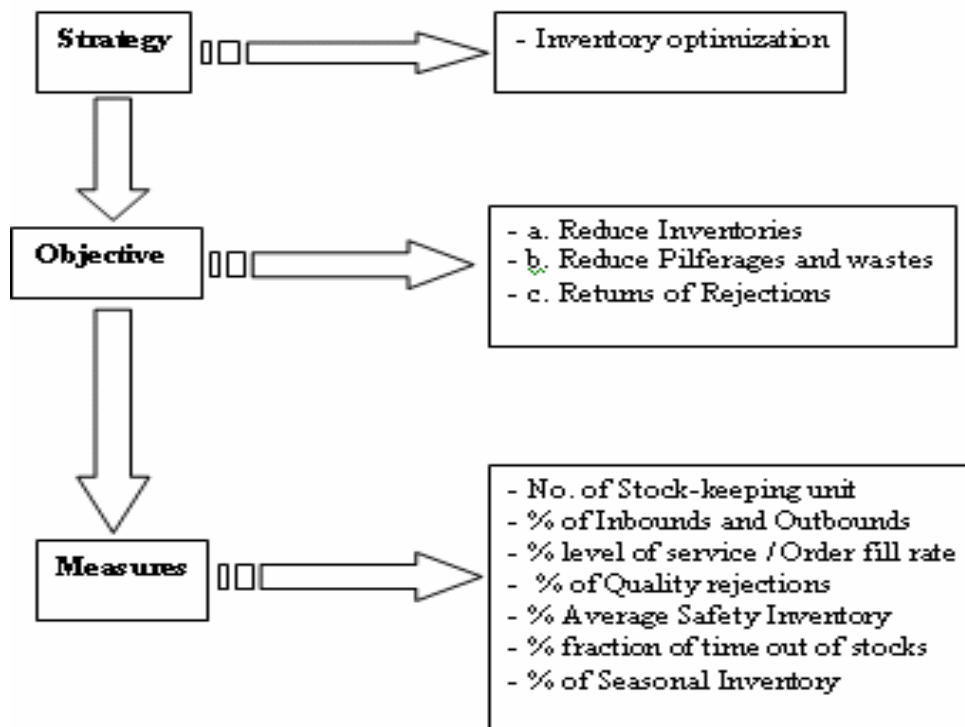


Fig. 4



Flow Chart 1

Table 1- Key Performance Indicators (KPIs) for CPFR[4]

<p>1. Inventory</p> <ul style="list-style-type: none"> • Finished Goods and • Material 	<p>2. Forecast Accuracy</p> <ul style="list-style-type: none"> • Sales Forecast • Order forecast • Materials forecast
<p>3. Service Level</p> <ul style="list-style-type: none"> • Production • Delivery • Out of stocks frequency and • On shelf availability 	<p>4. Lead Time</p> <ul style="list-style-type: none"> • Order delivery and • Order production
<p>3. Unplanned Changeover</p> <ul style="list-style-type: none"> • Promotion plan • New product introduction • Production plan • Rush orders 	<p>4. Obsolete</p> <ul style="list-style-type: none"> • Obsoletes
<p>5. Sales</p> <ul style="list-style-type: none"> • Sales growth 	<p>6. Data Synchronization</p> <ul style="list-style-type: none"> • Invoice Accuracy
<p>7. Distribution</p> <ul style="list-style-type: none"> • Full truck • Vehicle fill • Empty Running • Distribution cost 	<p>8. Planning</p> <ul style="list-style-type: none"> • Promotion effectiveness • Material • Production • Capacity • Transportation

Table 2- Balanced Score Card for Benchmarking Supply Chain

Perspective	Strategic Objective	Performance Measures
Financial	Profitable Growth	<ul style="list-style-type: none"> • Turnover: Sales through Channels • Funds Allocations
Customers	Market Share	Channels Market Share of Customers' purchase
	Customer satisfaction	<ul style="list-style-type: none"> - Customer satisfaction Index___ (Survey) - Number of Complaints - Percentage of Orders with complaints
Internal Process SCM Drivers	Facilities	<ul style="list-style-type: none"> - Production Capacity_____ - % of Utilization – Under/ Over - Theoretical and Actual flow/cycle time of Production - % of Product Variety - No. of Top 20% SKUs contributing 80% of volume - Idle time - Average Production Batch Size
	Inventory Management	<ul style="list-style-type: none"> - No. of Stock-keeping unit ____ - % of Inbounds and Outbounds - % level of service / Order fill rate - % of Quality rejections - % Average Safety Inventory - % fraction of time out of stocks - % of Seasonal Inventory
	Transportation	No. of Vehicles operated <ul style="list-style-type: none"> - % of Outbound Shipments - Average Outbound Shipment Size - % of Inbound Shipments - % Average Inbound Shipment Size - Fraction of Transportation Mode - % on Timely Delivery - % of Accidents - Avgkms vehicles running Full Load and Empty per day
	Warehousing	No. of Warehouses__ <ul style="list-style-type: none"> - Avg cost of warehousing per SKU - Avg carpet area covered - Avg time reqd to access per SKU - % of SKUs placed in automated shelves - Avg variable cost of Mat. Handling Equipments
	Data Synchronization	No. of servers__ <ul style="list-style-type: none"> - % of break downs of servers - % of data damages - % of data not accessed or least accessed - % of internal & external complaints for data unavailability - % of software inaccuracy - % of inaccuracies in Invoices,
External SCM Partners	Suppliers Tier 1 & 2	No. of Suppliers in Tier 1 and 2 <ul style="list-style-type: none"> - % of suppliers involvement in Aligning Co's SCM - % of Supplier's contribution in R & D - % of Suppliers involved in VMI
	Distribution Channel Partners	No. of Channel Members at Level 1 & 2 <ul style="list-style-type: none"> - % of DC members involvement in Aligning Co's SCM - % of DC members contribution in Product Development - % % of DC Conflicts