International Journal of Current Engineering and Technology
E-ISSN 2277 – 4106, P-ISSN 2347 – 5161

Available at http://inpressco.com/category/ijcet

Review Article

A Review of Implementation & Execution of World Class Supplier Quality

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Accepted 01 July 2016, Available online 11 July 2016, **Vol.6, No.4 (Aug 2016)**

Abstract

In an increasingly consumer controlled market, it is imperative for any organization's success that it is able to deliver the best quality at a market defined price and manage to earn a profit. To adapt to these changes, Tata Motors Limited has launched an initiative called World Class Quality, rating its manufacturing facilities as per standards set as part of this initiative and continuously working towards achieving the next level. As approximately 80% of parts in a vehicle are outsourced, it is obvious that quality of these parts needs to be world class in order to build a world class vehicle. WCSQ, a logical extension of WCQ, aims to improve quality of the final product by building quality into the process. In order to achieve "Preferred Quality Supplier" certificate from Tata Motors Limited, a supplier must achieve System as well as Business Result compliance to WCSQ standards. This paper discusses the need for WCSQ, explains its principles and describes the implementation process. In order to compete effectively in world market, a company must have a network of competent suppliers. A supplier development program is designed to create & maintain such a network & to improve various supplier capabilities that are necessary for buying organization to meet its increasing competitive challenges.

Keywords: *WCQ, Pro-X, WCSQ, System Compliance, Business Result Compliance, World Class Quality Management, World Class Manufacturing.*

1. Introduction

The Tata Motors Limited is India's largest automobile manufacturer with a global footprint. The company was started as Tata Engineering and Locomotive Company (TELCO) in 1945 by J.R.D. Tata. WCSQ was developed by Supplier Quality Management Systems (SQMS) core team to establish standard practices across all suppliers and get consistent results from them. WCSQ is designed to derive performance from suppliers. Implementing WCSQ system will definitely improve business results for the supplier. This will lead to a supplier's rating increasing in Tata Motors Limited and this will lead to more business from Tata Motors Limited going to the supplier. This is beneficial to the supplier as profits will increase and Tata Motors Limited as they will get a good supplier in their supplier base and will make for a healthy long-term partnership.

For this study, supplier development was defined as any set of activities undertaken by a buying firm to identify measure and improve supplier performance and facilitate the continuous improvement of the overall value of goods and services supplied to the buying company's business unit. These activities include, but are not limited to, goal setting, plant visits, supplier audits, supplier training, performance measurement, supplier certification, supplier recognition and efforts to instill a philosophy of continuous improvement in the supplier.

2. Review of Literature

Daniel R. Krause *et al*. develop a process model for supplier Development. Using this process model as a framework, the authors then compare two approaches buying firms use in supplier development: 1.Reactive efforts to increase the performance of laggard suppliers, & 2. Strategic efforts to increase the capabilities of the supply base to enhance the buying firm's long-term competitive advantage. Chan k. Hahn, Charles A. Watts & Kee young Kim *et al*. proposed that a company must have a network of competent suppliers, a supplier development program is designed to create & maintain such a networks & to improve various supplier capabilities. A conceptual model that describes the organization decision process associated with a supplier development program. Muddassir Ahmed *et al.* develop a Supplier Development (SD) literature framework and identify the following Main areas of focus: Supplier Development Activities, Practices and Success Factors; Direct or Indirect

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Supplier Development; Supplier Development as a Reactive or Strategic Process. Amer Rajput *et al.* provided studies on supplier development. However, there was a lack a comprehensible study that encompasses supplier development practices, elements, benefits, outcomes, barriers, and issues across industries; therefore, this study was conducted. Barbara B. Flynn *et al.* determine the list of competitive priorities and examine whether they function as tradeoffs, as Hayes and Wheelwright suggested, or whether there are synergies between them. Ram Mudambi *et al.* suggested that no matter what type of relationship a buyer has with a particular supplier, the buyer faces the decision of whether to either stay with the supplier or to switch to another supplier. Lisa M. Ellram & Owen R.V.Edis *et al*.provides a detailed case study of successful buyer-supplier partnership development & maintained at the Eastman Kodak company.

2. Objectives of WCSQ

1. Achieve and exceed the global benchmark levels to manufacture and deliver highest quality products to the customer.
2. Quality to be built into the process.
3. Built in Quality to be made DNA of the organization.
4. Involve all people to strive for quality excellence.
5. Prompt actions for all abnormalities.
6. Search for alternative more capable suppliers.
7. Improving the performance of services and products or enhancing the supplier's capabilities.
8. Describe the process your business unit uses to select suppliers and commodities for supply base improvement and supplier development.
9. Provide a detailed description of the strategies, practices, tools, and activities used by your business unit for supplier development.
10. Selection of competent suppliers in terms of technological, quality, delivery & cost capabilities.
11. Systematic organizational efforts to create & maintain a network of competent suppliers.
12. It involves the creation of new sources of supply when there are no adequate suppliers to meet the firm's requirements.
13. It also involves activities designed to upgrade existing suppliers' capabilities to meet the changing competitive requirements.

3. Issues & Barriers in Supplier Development

Supplier development is mutually beneficial for buyer and supplier. The success of buying firm is associated to the capabilities and performance of its suppliers. There are some obstructing factors in the process of supplier development, they are:
1. Unproductive feedback and weak communication.
2. Self-satisfaction of the supplier is not obtained.
3. Misleading objectives to improve the supplier and wrong impression about the power of procurement, resulting in a slowdown to buyer-supplier performance improvement.
4. Supplier-specific barriers are deficiency of technical skill; absence of commitment; and dearth of human resource.
5. Lack of commitment occurs when buyers are unable to describe clear promising rewards for the suppliers.
6. Insufficiencies of resources for engineering, equipment, information systems, employee skills and training proliferate are supplier-specific hurdle during supplier development activities.

4. Supplier Development Process Model

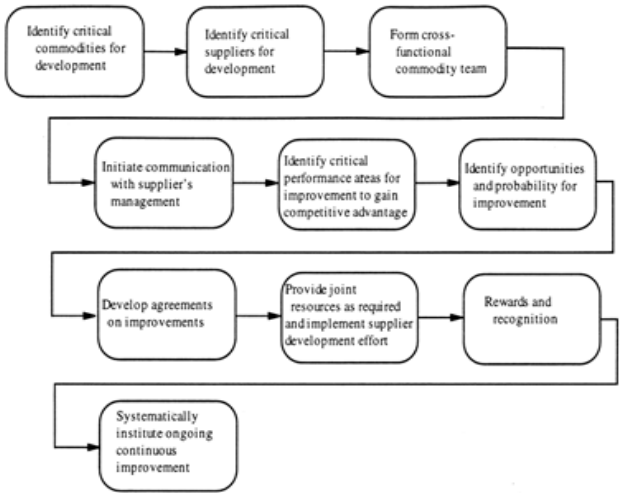

Fig.1 Supplier Development Process Model

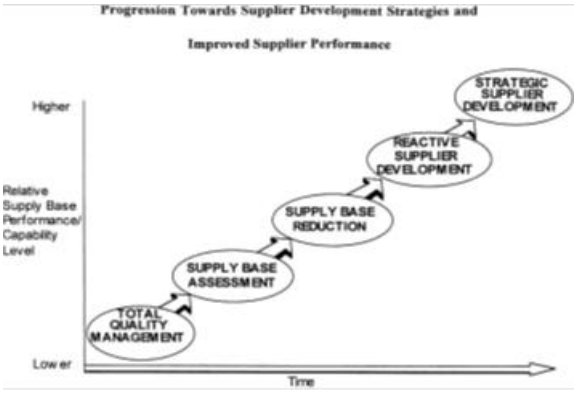

Fig.2 Progression towards supplier development strategies and improved supplier performance

5. Working Principles

The Implementation & Execution of World Class Supplier Quality (WCSQ) is made up of 10 working principles. These principles bring into practice the ideas that WCSQ is based upon. The following are the 10 principles of WCSQ:

5.1. Quick Response: The idea of this principle is to solve problems faster & earlier upstream through visual management. The purposes it serves are immediate addressing of quality failures (internal and external), applying discipline in responding to issues through a systematic approach.

5.2. Control of Non-Conforming product: Non-conforming products can cause great confusion in a workplace and they need to be identified and segregated. The guidelines in this principle ensure that non-conforming products are prevented from unintended use, contained, segregated and disposed.

5.3. Quality Gates: The system of building quality in station through prevention, detection, and containment of abnormalities is called Quality Gates. A quality gate is an example of in-process control and verification.

5.4. Standardized Operations: Standardized operation consists of three focus areas: Workplace Organization, Standard Operating Procedure & Gage Control. Its purpose is to establish a repeatable predictable baseline for continuous improvement involving the operator in both initial & ongoing improvements to achieve of safety, quality & productivity.

5.5. Standardized Operator Training: Standardized Operator Training shall be used to define the minimum training content for each operation, identify who in the organization will conduct training and establish required documentation and tracking methods.

5.6. Error-Proofing Verification: Assures error proofing/detection devices are working as intended to prevent non-conforming product from being made or transferred. Error Proofing Devices (cannot make) are devices which prevent the manufacture or assembly of nonconforming product. Error Detection Devices (cannot pass) are those which prevent the transfer of nonconforming product (e.g. 100% in-line inspection equipment).

5.7. Layered Process Audits: Layered process audits means different layers of management will conduct audits at varying frequencies. This provides a system to verify compliance to the documented process, instill discipline, improve communication and improve overall quality. They are an industry standard and must be owned by manufacturing leadership.

5.8. Risk Reduction Process: Risk reduction can be done via two approaches, proactive and reactive. When one is proactive, one identifies potential quality failures through failure mode effect analysis (FMEA) and reverse-FMEA and takes action to reduce chances of it occurring before it occurs. As a reaction, a reactive may introduce error-proofing devices against quality failures that have occurred in the past and are well known. The purpose of this principle is to reduce the risk of an initial quality failure, error-proof past quality failures and ensure that failure modes have proper controls (prevention/detection) and work properly.

5.9. Contamination Control: The goal is to improve part cleanliness over time via measurement, control and process /handling improvements. Also, to utilize a standardized systematic and a structured approach to monitor and control contamination sources such as sediment, extra parts in assemblies, paint and painted parts contamination. Contamination in WCSQ context is defined as sediment (i.e. dirt, foreign materials), extra parts (i.e. extra fasteners), and dirt in paint and retained material in castings. It is important to study the contamination applicable to a particular plant and work towards controlling it. Awareness should be created among the employees as we humans are the highest source of contamination as we go from place to place. The four main areas of focus to control contamination are people, process, facilities and material. It should be a continuous process and reviewed in layered process audits.

5.10. Supply Chain Management: The purpose of this principle is to provide a standard process for managing all of the supplier tiers in the supply chain and ensure all tiers of the supply chain have systems and processes to evaluate, select, communicate expectations and requirements, measure performance, and develop their suppliers. Suppliers are expected to deploy similar systems in their suppliers and monitor their performance. They should then use this to make sourcing decisions. Supplier Chain shall develop a system to measure performance of all their suppliers.

6. Benefits of Supplier Development

1. Cost Reduction & Productivity improvement
2. Buyer performance improvement
3. on time delivery
4. Improvement in quality
5. Just-in-time capability improvement
6. Reduction in cycle time
7. Operations improvement
8. Reduction in defective products
9. Collaboration between buyer and supplier
10. Learning and knowledge transfer
11. Optimal resource utilization
12. Supplier performance

Conclusions

In this paper we had basically gone through the details of what is World Class Supplier Quality (WCSQ), its Objectives, Issues & barriers in suppliers' development, Supplier Development process model & its benefits. Along with this all, we had gone through the basic working principles of WCSQ, with the help of these principles; a supplier can implement & execute WCSQ in his company or firm for achieving world top Class quality level. So far I conclude that WCSQ can be applied to a wide range of industries, even outside the manufacturing sector. I would recommend that some of the principles of WCSQ, particularly Quick Response and Standardized Operations shall be adapted in functions other than manufacturing.

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