

# Total Quality Management (TQM) In Crane Service Company: Purchase Department

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**Abstract-** The study is carried out for analysis of Total Quality Management (TQM) implementation in ABC Crane Service Company. This origination is already an ISO 9001 certified origination and planning to implement the TQM philosophy and best follow the TQM tools and Techniques in Origination. Expected results after TQM implementation are improved quality of supplies, improved quality of processes, improved employee satisfaction and improved customer satisfaction. In this case study, it was found that need of TQM training and tools are very useful for the origination to get in to the TQM implementation process.

**Keywords-** Total Quality Management (TQM), Origination, Crane Service, Purchase, ISO

## I. INTRODUCTION

### A. Crane Industries:

A crane is a sort of machine, generally equipped with a hoist rope, cord ropes or chains, and sheaves, that can be used both to lift and lower materials and to move them horizontally. It is mainly used for lifting heavy things and transporting them to different places. The device make uses one or more simple machines to create mechanical advantage and thus move loads beyond the normal capability of a human. Cranes are commonly employed in the transport industry for the loading and unloading of freight, in the construction industry for the movement of materials, and in the manufacturing industry for the assembling of equipment. The numerous varieties of Crane are Truck-mounted crane, Rough terrain crane, all terrain Crane, Pick and carry crane, Crawler crane.

### B. Total Quality Management (TQM)

The industrial world is becoming competitive and competitive in multiple times. Therefore industries emerge as global by performing excellence in services. In these highly competitive markets the products and services produced are Delivered and sold. The industries should have the managerial and **advertising** philosophies to promote the goods and

services. The important philosophy is TQM and its principles such as quality, quality of products, quality of services, quality of processes, quality of suppliers, quality of maintenance, quality of employees and their involvement etc;. The overall management of quality in the industries starting from suppliers to customers or end users is known as Total Quality Management (TQM). Total Quality Management (TQM) is a idea created by W. Edwards Deming. It origin in Japan after World War II to assist the Japanese in restructure their economy. The aim of TQM is continuous quality improvement in the areas of product or service, customer to company relations and its Consumers.

### 14 Deming's Principles for TQM

1. Create constancy of purpose for improvement of product and service.
2. Adopt the new philosophy;
3. Cease dependence on mass inspection to achieve quality.
4. End the practice of awarding business on the basis of a price tag-instead, minimize the total cost.
5. Improve constantly and forever the system of production and service.
6. Institute training for all employees.
7. Adopt and institute leadership.
8. Drive out fear.
9. Break down barriers between staff areas.
10. Eliminate slogans, exhortations, and targets for the work force.
11. Eliminate numerical quotas for the work force and eliminate numerical goals for people in management.
12. Remove barriers that rob people of pride in their work.
13. Encourage education and self-improvement for everyone.
14. Take action to accomplish the transformation.

### C. Nature of Mobile crane service industry:-

Construction Business is always in need of heavy machinery and equipments. Not all construction businesses

can afford to have their own machines. Therefore they look for companies that offer heavy equipments like cranes for hire or on rent Basis.

The business of crane rentals is best option for the utilization. In today time, a bulk of the demand in India has been coming from oil refinery projects that were increasing production. With a slowdown in the sector, the focus has shifted towards Emerging opportunities in wind energy, urban construction and metro rail projects have lifted the need of crane rental providers and there are signs that demand will pick up well into the years and beyond in the business.

## II. LITERATURE REVIEW

### A. Total Quality Management

Total quality management (TQM) is common method to use in every industry for quality improvement. TQM has improved the business world. Especially over the two decades, TQM is one of the most popular and durable management concepts [6]. Due to the absence of a uniform definition of TQM, defining TQM is quite problematic [1]. Well accepted definitions of TQM in the literature based on “quality gurus” (such as Deming [7], Juran [8], Crosby [9], Feigenbaum [10]) views and prescriptions. For example, according to Rahman [6] TQM is a management approach for improving organizational performance that encompasses a variety of both technical and behavioral topics. Another definition of TQM is that of Kaynak [11]. Like having various definitions, TQM consists of several activities. Different researchers have adopted different TQM activities for testing its effect on financial or non-financial performance. These activities are management leadership, role of the quality department, training, employee relations, quality data and reporting, supplier quality management, product service design, process management, strategic planning, customer focus, information technology and analysis, people management [12, 13].

### B. The Relationship between TQM Activities and Quality Performance

The links between TQM and performance have been investigated by numerous scholars. While examining the relationship between TQM and performance scholars have used different performance types such as financial, innovative, operational and quality performance. Although the effects of TQM on various performance types are inconsistent, quality performance generally indicated strong and positive relations [13]. Expertise of TQM suggests that implement it well generate higher quality products. According to Deming, quality is the principal determinant of success in competitive

environments. Quality management is increasingly high-profile activities for all kinds of firms and is associated with gaining a competitive advantage [14]. After seeking the literature, Kaynak [11] revealed the indicators of quality performance which is relevant to TQM. TQM practices help to promote quality performance

### C. The Relationship between TQM Activities and Innovative Performance

In today’s business environment the basis of competitive advantage has shifted from quality to innovation [22]. Innovation allows companies adaption to changes quickly and helps for finding new products, markets, thanks to this protect themselves from unstable environment [23]. Numerous companies which have benefited from innovation increased their profits and market share. But the important point is that, a firm cannot be successful with innovation if it cannot produce products that meet acceptable quality standards [24] because of that TQM is a good way of improving quality while facilitating the innovation process [23].

#### Research Gap:

When the literature is examined, the findings are inconsistent and complex. Some scholars argue the positive link between TQM and innovation performance while others other link between them. The main reason for this complexity is both innovation and TQM are multidimensional in nature [14]. Scholars who support the negative relationship between TQM and innovation performance claim that TQM can lead organizations to be narrow-minded and hinder creativity due to the enforcement of standardization [23].

## III. METHODOLOGY

### A. Process Mapping

Process mapping first step towards processes and business improvements technique. Business process mapping refers to showcasing how business is Function, who is responsible, to what standard a business process should be followed and completed, how the success of a business process can be measured. The aim behind business process mapping is to assist organizations in becoming more productive in efficient manner. Detailed business process flow chart or diagram allows firms to come in and look at whether or not improvements can be made to the current process. Business process mapping takes a specific objective and helps to measure and compare that objective of entire organization's

to make sure that all processes are aligned with the capabilities and its values and organization.

### B. Need of Business Processes Mapping

- Enables everyone to see the process in the same way.
- Decreases errors of procedure.
- Builds understanding between areas that are cross-functional.
- Helps everyone to see the “current state.”
- Enables development of metrics.
- Decreases waste by identifying gaps and excess.

### C. Basic Principles in Business Process Mapping

- Define the scope of the project itself, with the boundaries, start, and end points.
- Look at the big picture
- Define each step clearly.
- Get feedback from everyone in your organization who is involved in the process.
- Strive to be complete in your accuracy, especially with the map of the “as-is” process.
- Strive to keep the sub-processes simple.
- Test the process with accepted metrics. Metrics should measure the time, volume, rates/costs, equipment, and any added value.
- Work from output to input, backward.
- Create ownership with single points of contact where feasible.
- Redesign processes to be customer-centric.
- Use technology to enable your processes.
- Decrease inefficiencies in the hand-offs.



Figure 1 Basic Steps in Business Process Mapping

### D. Benefits of Process Mapping

- Process mapping allows you to visually illustrate and convey the essential details of a process in a way that written procedures cannot do. A process map can replace many pages of words.
- Effectively communicate ideas, information and data visually.
- Aid in solving problems and making decisions.
- Identify actual or ideal paths and can reveal problems and potential solutions.
- Be produced quickly and economically by a skilled individual.
- Show processes broken down into steps using symbols that are easy to follow and understand.
- Show intricate connections and sequences easily, allowing for immediate location of any element of a process.
- Show an entire business process from beginning to end and can be used to understand the current-state and to design and depict the future-state process.

### How to create a process map

**Step 1:** Identify the problem

**Step 2:** Brainstorm activities involved

**Step 3:** Figure out boundaries

**Step 4:** Determine and sequence the steps

**Step 5:** Draw basic flowchart symbols

**Step 6:** Finalize the process flowchart

### IV. OBSERVATIONS & FINDING: PROCESS MAPPING IN PURCHASE AND STORE DEPARTMENT OF ABC CRANE SERVICE COMPANY

To understand the process flow conducted one to one interview with below department representatives in ABC crane service Pvt. Ltd.

- Purchase & Store

### Purchase & Store Finding:

1. No concept of ABC analysis is implemented in store.
2. No concept of reorder level is implemented in store.
3. Spare part purchasing is done on gut feeling.
4. Lack of communication between user and buyer on approval purchase or material requisition.
5. Lack of communication between store team, user and buyer on receipt of material.
6. Lack of communication between accounts team & purchase team on payment of vendors.
7. Lack of focus on new vendor development.

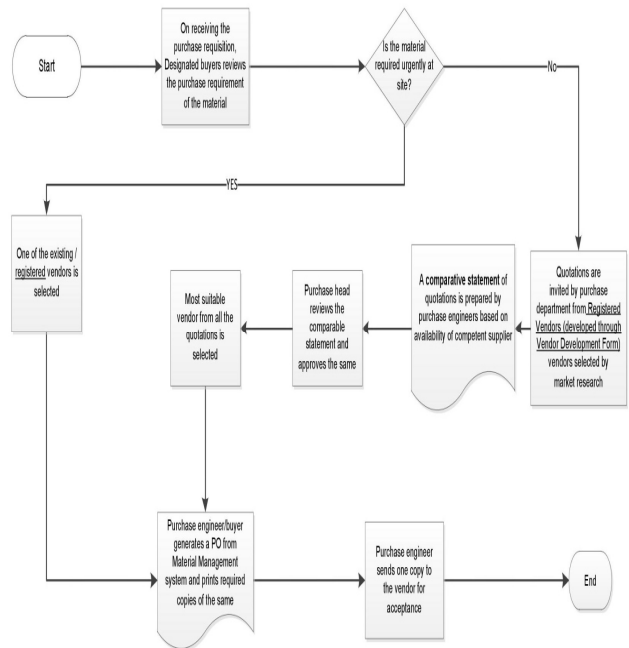
8. There is no mechanism implemented for vendor audit and rating.
9. No analysis on lead time calculation which vendor take to deliver product after placement of purchase order.
10. No analysis on lead time which buyer take to raise purchase order after approval of purchase or material requisition.
11. Very low focus on implementation and execution of annual rate contract with vendors.
12. Not able to make cost comparative statement in to MRP software.
13. For last three financial year average Inventory carrying cost is approximately 10 crore.
14. There is no provision to enter obsolete material in to MRP system.

**V. CONCLUSION**

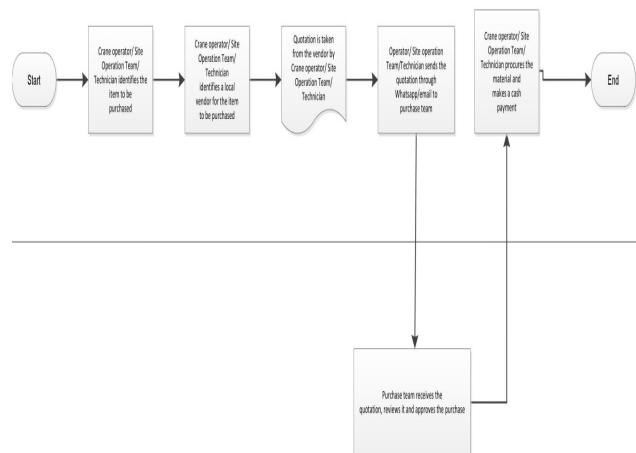
- Purchase team needs to analyse the MRP data and should bifurcate items as per ABC analysis.
- Spare part purchasing should not be based on gut feel, before buying any spare parts for equipment last purchase summary and consumption summary should be checked and analysed for the required part.
- MRP system should send an auto email notification to buyer and user once purchase requisition is approved by approving authority. MRP system should send an auto email notification to buyer, user, PR/PO approving authority once GRN is done by store team.
- MRP system should auto calculate lead time required to deliver material after PO is punched in to system. Bank payment requisition related to vendor payment should be routed through MRP system.
- Purchase / material requisition should be raised against specific asset code to which material is going to consume. Only store in charge will raise PR against common for cranes or common for trailer code.
- While raising such PR store team needs to provide last three year’s item consumption history to PR approving authority.
- For stock items no PR should be raised on gut feeling, before raising such PR for stock store in charge or fleet coordinators need to check last three years consumption pattern / history for the required spare parts. Company should start consolidation of consignment when cranes accessories are shifted / mobilized from one location to another location. Company should go for implementation ERP system.

**Process Mapping Flow Chart**

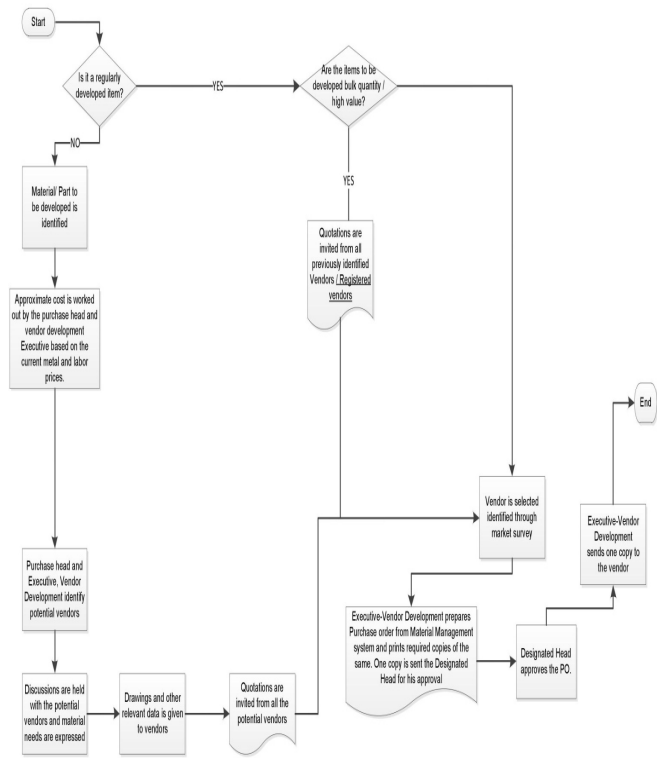
**A. Purchase Material Requisition and Purchase Ordering**



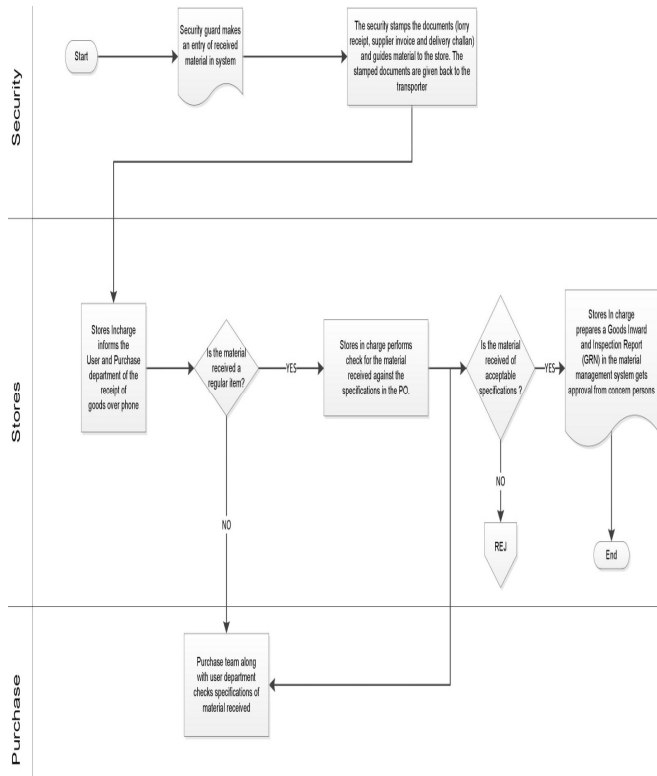
**B. Cash Purchase**



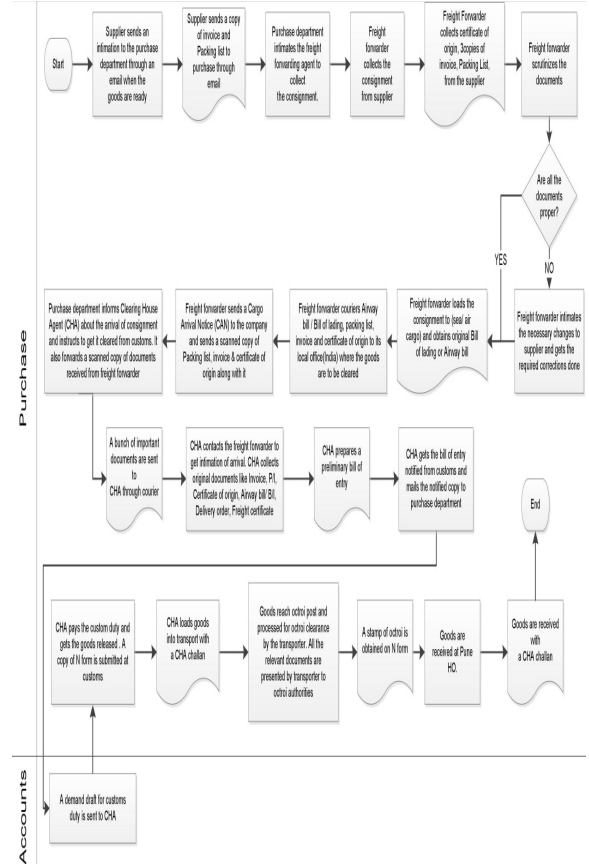
**C. Vendor Development**



**D. Material Receipt**



**C. Material Receipt-Import**



**D. Material Rejection**

