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A ROADMAP FOR SUCCESSFUL WORLD CLASS MAINTENANCE IMPLEMENTATION IN INDIAN AUTOMOTIVE INDUSTRIES

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Abstract: *This paper proposes a roadmap for successful world class maintenance implementation in Indian automotive industries. It consists internal and external problems of automotive industries, inhibiting factors, facilitating factors, obstacles, organizational barriers, their effects, proposed suggestions; critical success factors, justification and likely benefits in implementation of world class maintenance are discussed.*

The objective of this research paper is to identify the different factors, which affect the successful implementation of world class maintenance. This study will propose a step-wise programme which can be used as a generic roadmap for Indian automotive industries, which are committed to implementing their world class maintenance strategy.

It gives useful references for maintenance management professionals and researchers working on maintenance management for successful implementation of world class maintenance in Indian automotive industries.

Keywords*: World Class Maintenance, Automobile industries, Critical Success Factors.*

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1 INTRODUCTION:

Today, a productive strategy and programs are needed, which can cope with the dynamic needs and discover the hidden but unused or under utilized resources (human brain power, man-hours, machine-hours).World class maintenance method has the potential to meet the current demands. Nevertheless, it alone cannot solve all the current needs of manufacturing organizations but has the potential to transcend into other major dimensions. World class maintenance's mission is directed toward elimination of equipment and plant maintenance.

One of the imperatives for that is to apply a total participatory equipment maintenance technique by K (knowledge)- workers in teams. World class maintenance brings everyone, from equipment designer to operators, together to work under autonomous and small group environment. Besterfield wrote, "*i* World class maintenance i*s keeping the current plant and equipment at it's highest productive level through the cooperation of all areas of an organization*". World class maintenance is a partnership between maintenance and production organizations to improve product quality, reduce waste, reduce manufacturing cost, increase equipment availability, and improve the company's over state of maintenance. Proper maintenance is one of them, which protects the firm's investment, prolongs equipment life and can lead to substantial savings to capital investment.

1.1 AUTOMOTIVE INDUSTRIES:

To emerge as a leading manufacturing base for the world market, a tough competition from global players being faced on Indian automotive industries. Though efforts have been made to boost industrial development, yet much needs to be done by reducing costs, improving quality, offering more variety of products with improved services.

On the maintenance front, major initiatives have been taken particularly after 1990s. Initially due to protected and controlled economy, Indian automotive executives did not pay much attention towards equipment related failures and losses. Maintenance was viewed as a reactive problem fixing and an operating expense to be minimized. But the burgeoning pressures from customers to reduce costs, defects and lead time have forced management to pay attention towards maintenance and allied issues through improvement drives like world class maintenance. It is now clear to the Indian automotive executive that world class maintenance is not a waste, but an investment. It helps in zeroing down the defectives and failures to ensure quality at reduced cost.

Traditionally Indian automotive organizations are likely to struggle when attempting to implement a world class maintenance strategy. There are many obstacles or barriers affecting the successful implementation of world class maintenance within Indian automotive organizations.

2 REVIEW OF LITERATURE

PROBLEMS OF INDIAN AUTOMOTIVE COMPANIES:

2.1 External Factors

- Tough Competition
- Globalization
- Increase in
  - ✓ Raw material cost
  - ✓ Energy cost

2.2 Internal Factors

- Losses
- low Productivity
- Customer complaints
- Defective products
- Non - adherence to delivery time
- Increase in wages and salaries
- low knowledge and skill level of workers

3 WORLD CLASS MAINTENANCE

The maintenance organization of today, like many departments, is under continued pressure to cut costs, show results, and support the mission of the organization, as it is a logical expectation from the business standpoint. The evolving maintenance operation has been changed with supporting the broader efforts of WCM like six-sigma, lean manufacturing and other major quality initiatives. Wireman (1990) in his book titled World-class maintenance management referred to maintenance planning as the last frontier for organizations. Many firms are realizing a critical need for effective maintenance of production facilities and operating systems. Wireman (1990) emphasized that it is vital for maintenance management to be integrated with corporate strategy to ensure equipment

availability, quality products, on-time deliveries, and competitive pricing. The changing need of modern organizations necessitate a re-examination of the role that improved maintenance management plays in achieving key cost and service advantages, leading them to become a world-class manufacturer. Hence World-class maintenance is defined as maintenance without waste, where waste is defined as the gaps between the way things are and the way things could be. With poorly organized maintenance operations, this gaps tends to increase continuously, because the focus is on reacting to problems either immediately or on short notice. One requirement to become world-class is to have preventive and proactive measures to avoid the problems, similarly many authors have defined world-class maintenance in different ways.

Labib (1998) described that implementation of computerized maintenance management systems (CMMS) will be an effective tool to support decision making in an organization with the objective of achieving world-class manufacturing status, where the system was used to analyze the trends and performance levels, based on which techniques were formulated to eliminate losses. Thus it provided an increased support to decision making and enabled appropriate maintenance strategies to be implemented. Hiatt (2000) stated that a world-class maintenance operation differs from a run-of-the-mill operation only by the degree to which it achieves its primary function to ensure that the right amount of equipment is ready and available. Norman (1995) defined that an organization aspiring to achieve world-class maintenance organization will perform the following activities, focusing in teamwork, implementing CMMS, installing preventive maintenance (PM) and predictive maintenance (PdM) etc. A world-class maintenance and reliability is a holistic system created when organizations combine coherent, visionary leadership with robust processes and a supportive culture to ensure that the vision and ownership of appropriate maintenance methods permeate the organization.

Smith (2000) has emphasized that following a reliability centered maintenance can lead the organization to achieve the world-class status in maintenance. Blann (2002,2003), based on his experience, stated that organizations that have actually a world-class maintenance organization, invariably found operations functioning efficiently in every phase and these organizations have excellent computerized maintenance management, with equipment data streaming in, partnerships between operations working and possess good process

management and control Smith (2003), a director in a consulting firm-Life Cycle Engineering (LCE) Inc. presented a case study about the maintenance process of Alcatel. According to LCE Inc. the best practices followed in maintenance referred to the world-class standards and the maintenance practice of Alcatel was benchmarked with these standards based on which LCE Inc. recommended necessary changes to achieve excellence in maintenance.

Ingalls (2002) defined world-class maintenance organizations as those that consistently demonstrate industry best practices and produce bottom-line result as well. The later part of that statement produce bottom-line results is what separates the best from the rest. The author also stressed that the ability to be successful in that charter lies within the practices and systems that make up the maintenance function. In fact, regardless of who does maintenance, whether it is a specialized skilled or multi-skilled or a highly trained operator/mechanic, maintenance practices are the keystone to world-class maintenance, which leads to world-class operations.

4 IMPLEMENTING WORLD CLASS MAINTENANCE IN THE INDIAN AUTOMOTIVE INDUSTRY:

Introducing world class maintenance is not easy, but like any major project, commitment, planning and direction go a long way in achieving success. By literature review, it is found that the main reasons for world class maintenance implementation failure during the early implementation attempts include:

- Simultaneous introduction of world class maintenance on too many machines;
- Lack of involvement of production associates (operators);
- Introduction of world class maintenance on machines those are not really important to the product process.

A Inhibiting Factors

- “Resisting to change” by some employee.
- Non resident consultant.
- Lower education level of Workers.
- Worker’s apprehension that manpower will be reduced.
- Production worker feels extra work load.
- Reluctant to change work practice.

- Limited knowledge of world class maintenance.
- Less time for world class maintenance activities.

B Facilitating Factors

- Massive Mental Preparation prior to kick off.
- Management support and priority.
- Allocate significant Monetary, human resource and time.
- Create understanding about world class maintenance at grass root levels, in advance.
- Involvement of senior management is must.
- Be Unwavering and Unflinching in support of world class maintenance.

5 THE OBSTACLES TO INTRODUCING WORLD CLASS MAINTENANCE:

The number of companies, successfully implementing a world class maintenance program is considered relatively small and failure has been attributed to the following three major obstacles:

- Lack of management support and understanding
- Lack of sufficient training
- Failure to allow sufficient time for the evolution.

The lack of management support is attributed to management by not completely understanding the true goal of the world class maintenance program. For example if management consider that world class maintenance is a means to reduce maintenance staff, then they are failed to understand the true goal and purpose of the program. The real goal is to increase the equipment's effectiveness, not reduce the labour head-count. Lack of training will inevitably lead to a decrease in overall equipment effectiveness and result in failure to adopt new and improved methods. To make world class maintenance become a successful part of factory life, it will take considerable effort to change mindsets from a traditional maintenance approach.

world class maintenance must be seen as a long-term commitment to strive for zero losses and not a way of obtaining short-term fixes. Windle (1993), an active management consultant implementing improvement programs, considers that limited applications of world class maintenance from companies, which have taken the short-term perspective, have led to regressive steps, including:

- converting skilled maintenance personnel into routine operators;

- shifting line authority for maintenance crews to production managers;
- pushing world class maintenance as a means to reduce the apparent overhead of the maintenance department;
- Applying world class maintenance principally to reduce maintenance costs.

Similarly, main reasons for world class maintenance failure within automobile industries are:

(1) The program is not serious about change.

(2) Inexperienced consultants/trainers are used.

(3) The program is too high level, run by managers for managers.

(4) There is a lack of structure and relationship to strategic needs.

(5) The program does not implement change on the shop floor and is not managed.

(6) A lack of education and training for those expected to take it on board and provide support.

(7) Programs are initiated and run exclusively by engineering and seen by production as a project that does not involve them.

(8) Attempts to apply world class maintenance in the same way it is implemented in Japan, using the standard approach found in Japanese publications.

(9) World class maintenance teams, lack the necessary mix of skills and experience.

(10) Poor structure to support the world class maintenance teams and their activities.

Table 1: Organizational barriers, their effects and proposed suggestions for implementing world class maintenance in the automotive industry

Barriers	• Lack of senior management support • Tight budget pressure of workload • Contradiction of management initiatives • Contradiction of other organizational change
Effects	• Insufficient use of skilled maintenance workers on simple tasks • Frustration of maintenance workers on being called on simple maintenance tasks and on operators, not doing what they are supposed to do, i.e. plant care

6 CRITICAL SUCCESS FACTOR IN IMPLEMENTING WORLD CLASS MAINTENANCE:

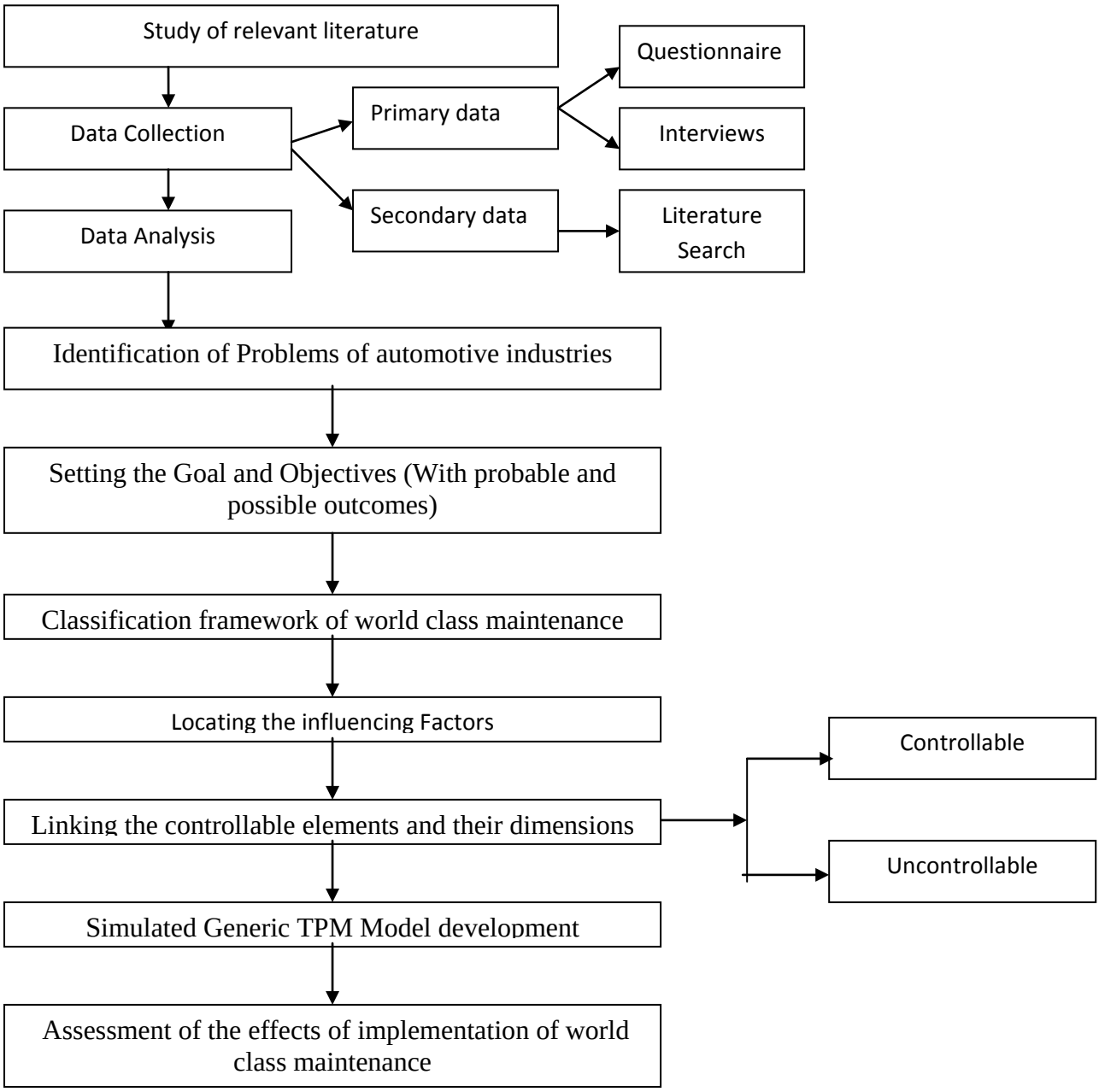
World class maintenance demands commitment, structure and direction. It also takes a great deal of time, effort and resource to establish and sustain as with many other change

management philosophies. The key factors for successful implementations of world class maintenance in automobile industries are:

- approach world class maintenance realistically, developing a practical plan and employing program and project management principles;
- accept that world class maintenance will take a long time to spread across the company and change existing maintenance culture;
- be determined to keep going;
- put in place, train and develop a network of world class maintenance coordinators that will promote and support world class maintenance activities every day;
- support world class maintenance coordinators with time and resources, plus senior level back up;
- put in place relevant measures of performance and continually monitor and publicize benefits achieved in financial terms;

7 PROPOSED ROADMAP:

A systematic implementation framework coupled with the standard tools, techniques and practices is designed.



CONCLUSION

This proposed research is focused on world class maintenance practices, mainly in automotive industries. This proposed work will consider different dimensions that describe the fundamental characteristics and properties of a world class maintenance programme. The combination of these dimensions will provide a classification framework by means of which the majority of world class maintenance programmes will be categorized.

This research identifies different factors which are critical for the successful implementation of world class maintenance in Indian automotive industries. This study also highlights the complexities involved in implementing world class maintenance.

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