

ABSTRACT

During the past four decades, organisations worldwide have been sensing the intensity of competition that has led them to adopt competitive strategies. Researchers and practitioners have been evolving many new manufacturing managerial models to attain these competitive strategies so as to enable these organisations to achieve competitiveness. Among the manufacturing models, Six Sigma became a promising managerial model for achieving competitiveness by facilitating to achieve zero defects in manufacturing of products and offering of services. In parallel to this development, organisations have been striving to achieve continual quality improvement through ISO 9001 certification. ISO 9001 certification has been driving the organisations to install Quality Management System (QMS). Thus, as a sequel to the increasing intensity of competition, the world began to see the emergence of numerous manufacturing managerial models with the objective of achieving higher degree of quality, defect free operations and systematic continual quality improvement.

Meanwhile, it is realised that, during the recent years, the demand pattern of customers has varied. Customers have begun to demand variety of models of the product in numerous volumes at low price. In order to face this challenge, many manufacturing companies have started to implement Lean

manufacturing tools and techniques. These developments have created an impression that, today's Engineers and Managers have the option of implementing several techniques, tools and standards for achieving competitiveness in organisations. However, at one point of time, researchers began to realise that applying various manufacturing management models would propel the organisations in different directions, which would defeat the purpose of achieving competitiveness. Hence, researchers began to explore the means of achieving competitiveness by integrating various manufacturing managerial models. One of the outcomes of this exploration has been the emanation of Lean Six Sigma model.

As the title implies, Lean Six Sigma steers the adoption of Lean manufacturing and Six Sigma principles to achieve synergy out of them. In line to this kind of synergising efforts, few researchers have suggested the integration of Six Sigma with ISO 9001 based QMS. Most of these researchers have reported the reaping of significant benefits using the synergised models like Lean Six Sigma and ISO 9001 standard based QMS integrated Six Sigma. These encouraging reports created an interest to identify any research work which has been carried out to integrate Lean Six Sigma with ISO 9001 standard based QMS. As, no such research works have been reported in this area, the doctoral work reported in this thesis was carried out to investigate the

implementation of Lean Six Sigma through ISO 9001:2008 standard based QMS.

The doctoral work reported in this thesis was begun by conducting a literature review. During the conduct of this literature review, the principles of Lean Six Sigma and the eight clauses of ISO 9001:2008 standard were studied. The principles of Lean Six Sigma were appended with the main five clauses of ISO 9001:2008 standard to design a model named as L6QMS-2008 (Lean Six Sigma Quality Management System 2008). Subsequently, a hypothetical case study was explored. This hypothetical case study was encapsulated with 20 steps for implementing L6QMS-2008 model. By keeping these 20 steps as reference, the practicality of L6QMS-2008 model was investigated by conducting two case studies. One case study was carried out in a textile yarn manufacturing mill and the other was carried out in a manufacturing company.

Although few bottlenecks were experienced, L6QMS-2008 model was implemented to a good extent in both cases. Both case studies involved the implementation of L6QMS-2008 model in two units of organisations with different characteristics. These varying characteristics did not affect the implementation of L6QMS-2008 model indicating its generic practical compatibility. These experiences and observations indicated that, L6QMS-2008 model has the capability to serve as the vehicle for implementing Lean

Six Sigma under the ambit of ISO 9001:2008 based QMS and thereby, to enable the organisations to acquire competitive strength. Besides contributing L6QMS-2008 model, this doctoral work has opened up new avenues for pursuing researches in the direction of implementing Lean Six Sigma under the umbrella of integrated system models.