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A comprehensive literature review on Six Sigma Initiatives

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Abstract: *The implementation of Six Sigma is directly proportional to the growing number of enterprises and the ever rising competition. To survive in the highly competitive market and build market value the organizations are focused on producing high quality products/services with minimum possible costs incurred. In this paper an attempt has been made to present the literature review on Six Sigma methodology.*

Keywords: *Six Sigma, Literature Review, SMEs.*

1. INTRODUCTION

Six Sigma is a business strategy that helps to identify and eliminate causes of defects or variations, defined as anything which can lead to customer dissatisfaction (Antony, 2004). Six Sigma has been widely accepted as a management methodology to produce high quality products and reduce the cost by minimizing the defects or variations in the products. Six Sigma methodology has become one of the most expansively used approach in the field of Quality Management, since its focuses on the process output quality by identifying and removing the causes of defects and variability in business processes (Cagnazzo et al. 2009). The two most well-known success cases of successful implementation of Six Sigma are Motorola and General Electric.

2. DEFINITIONS

Six Sigma is defined as a flexible and comprehensive system for achieving, sustaining and maximizing business success (Pande et al, 2000). Six Sigma is a work philosophy to achieve, maximize and maintain commercial success by understanding needs of customers (Rotondaro, R 2002). Six Sigma is based on scientific method utilizing statistical thinking and not just simple statistics (Snee, 2003). Six Sigma is defined as a set of statistical tools adopted within the quality management to construct a framework for process improvement (McAdam and Evans, 2004). The objective is to enhance the Six Sigma level of performance measures referred to as the Critical to Quality (CTQ) which reflects the customer requirements through a group of tools for the analysis of the data. Statistical tools identify the main quality indicator which is the Parts per Million (PPM) of nonconforming products (Mitra, 2004). Six Sigma is thought to provide a structure and promote a culture that promotes problem/opportunity identification, process analysis, and the creation of sustained improvements (Swink and Jacobs, 2012).

3. LITERATURE REVIEW

Six Sigma is defined as a flexible and comprehensive system for achieving, sustaining and maximizing business success (Pande et al, 2000). While Six Sigma was developed keeping in mind the manufacturing sector but many authors have reported many difficulties and problems associated with its application in manufacturing industry. The authors stated that the types of success a business company may achieve are extensive since the proven benefits of Six Sigma are varied which includes cost reduction, strong customer holding, productivity improvement, cycle time reduction, defect reduction, and so on.

Chakrabarty and Tan (2007) tried to find out difficulties in implementation of Six Sigma in service organisations and recognised insufficient time to work on Six Sigma projects, lack of knowledge regarding Six Sigma and poor data collection as some of the problems faced by service organisations. They also identified that misunderstanding of process and sub-processes and difficulty to sustain Six Sigma improvements due to insufficient resources leads to difficulties in its proper implementation. Six Sigma promotes a culture that promotes problem identification, process analysis, and the conception of continuous improvement (Swink and Jacobs, 2012). Six Sigma is a powerful business strategy which can offer managers an extremely powerful competitive advantage in terms of reducing operational costs, defect rate in core processes and delivery high-quality service which result in superior customer satisfaction (Tan and Chakraborty, 2009). Senapati (2004) perceives Six Sigma as a trend with the same tools as employed in many other quality initiatives offered, e.g. total quality management. He also stated that critics are of the view that there are huge risks in heavy investment in this business strategy as it takes long time before reaping any tangible benefits.

The objective of a Six Sigma strategy in service processes is to understand how defects occur and then to devise process improvements to reduce the occurrence of such defects, which improve the overall customer experience and thereby enhance

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customer satisfaction (Antony, 2004a,b). The popularity of Six Sigma as a means of improving the quality of service and customer satisfaction has grown exponentially in the last couple of years. Linderman et al., (2003) and Schroeder et al., (2008) stated that Six Sigma is different from other process management approaches due to its organizational structures, methods and emphasis on customer requirements. McAdam and Evans (2004) claimed that Six Sigma program is weak in transforming customer needs into products. Antony (2008) that although Six Sigma is popular as a powerful strategy, it still lacks a hypothetical foundation with other management theories. Linderman et al. (2006) attempted to enhance the original theory by linking Six Sigma to goal theory. While Six Sigma was launched for manufacturing industries but many authors have reported serious problems with its implementation in manufacturing units. Desale et al. (2013) stated that Six Sigma can provide a broader quality concept, detailed performance measurement, and coordination in repetitive process is and performance improvement. It has produced quality improvements directly/indirectly with positive increase in production efficiency.

Borse et al. (2016) stated that Six Sigma is a quality improvement technique that has been implemented in manufacturing and other industries. Six Sigma is the concept of improving the quality by reducing process variations, making continuous improvements, reducing defect rates and improving the processes. The Definitions & Concepts of Six Sigma have been changing since its evolution as per the requirements of time & market conditions. Initially, the concept of Six Sigma focused on defect reduction, then on cost reduction along with value addition and now on value creation, improving the process-capability making the process more reliable along with reducing eight wastes of industry & improving the competitiveness of a product with least possible costs incurred on it (Chikkara et al. 2017). He et al. (2017) stated that both Six Sigma and innovation play key roles in improving competitiveness. They further claimed that Six Sigma management, infrastructure, and core practices have a positive relationship with product, process, and administrative innovation.

4. CONCLUSION

This article presents a literature review on Six Sigma. In Six Sigma strategy significant achievements can be made by altering every problem and by considering each variable responsible for production of goods/services at the minimum possible cost. It is presented that the literature review will help organizations envisage what quality can be produced in various situations and help them in their development.

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