Chapter 78
The Role of Lean Production on Organizational Performance

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ABSTRACT

This chapter introduces the role of Lean Production on organizational performance, thus explaining the management practices of Lean Production of just in time, total productive maintenance, total quality management, cellular manufacturing, and human resource management. The successful Lean Production implementation programs can facilitate the manufacturing organization's quest for achieving enhanced business performance leading to competitive advantage. This chapter has highlighted some significant revelations about various facets of simultaneous implementation of Lean Production paradigms in the manufacturing organizations. Lean Production implementation dimensions are important to the manufacturing organizations trying to realize manufacturing excellence for competing in the highly dynamic global marketplace. The study also highlights that significant business performance enhancements can be realized through Lean Production implementation over considerable period of time. Organizations should focus on developing the management practices of Lean Production of just in time, total productive maintenance, total quality management, cellular manufacturing, and human resource management in order to achieve better organizational performance.

INTRODUCTION

Manufacturing industries around the world are being affected profoundly by emerging technologies resulting in a significant increase in competition in local, regional, and global markets. Competition is worldwide, and markets are fast becoming more price sensitive (Kaur, Singh, Ahuja, 2013). Achieving manufacturing excellence is seen as essential to survival and economic growth for any country in this age of globalization (Singh & Khanduja, 2010). Recent competitive trends have been pushing manufacturing managers to reconsider the impact and importance of increasing equipment availability and utilization, increasing maintenance productivity, resource utilization, and increasing quality and responsiveness of maintenance services for meeting global competition (Singh, Garg, & Sharma, 2010). In the dynamic and

DOI: 10.4018/978-1-5225-0196-1.ch078

highly challenging environment, reliable manufacturing equipment is regarded as a major contributor to the performance and profitability of manufacturing systems (Kutucuoglu, Hamali, Irani, & Sharp, 2001). Companies recognize that consistent and disciplined application of Lean Production strategies with the emphasis on waste elimination and process streamlining can lead to business excellence (Mejabi, 2003; Rahman, Laosirihongthong, & Sohal, 2010; Taj, 2008). There is a high level of consensus to identify the practices associated with Lean Production: (1) just in time (JIT); (2) total productive maintenance (TPM), (3) total quality management (TQM), (4) cellular manufacturing and (5) human resource management (HRM) (Cagliano, Caniato, & Spina, 2006; Narasimhan, Swink, & Kim, 2006; Shah, Chandrasekaran, & Linderman, 2008; Shah & Ward, 2003). Lean Production is a manufacturing paradigm based on the fundamental goals of Toyota Production System (TPS), which is aimed at continuously minimizing waste to maximize flow (Vinodh, Arvind, & Somanaathan, 2010). Lean Production philosophy is one of the initiatives that many major businesses around the world have been trying to adopt in order to streamline the production process and achieve optimization in resources (Schonberger, 2007). Lean Production is an integrated set of socio-technical practices aimed at eliminating wastes along the whole value chain within and across companies (Holweg, 2007; Womack, Jones, & Roos, 1990). The whole set of Lean Production leads companies to high performance due to the synergistic effects among Lean Production practices (Schroeder & Flynn, 2001). The simultaneous implementation of different Lean Production practices (i.e., JIT, TPM, TQM, cellular manufacturing, and HRM) substantially contributes to the plant's operational performance regarding the synergistic effects among these practices (Shah & Ward, 2003).

Evidence on Lean Production's organizational performance effects is mixed (Ahmad, Mehra, & Pletcher, 2004; Boyd, Kronk, & Boyd, 2006; Eriksson & Hansson, 2003; Fullerton, McWatters, & Fawson, 2003; Nahm, Vonderembse, & Koufteros, 2003; Wayhan & Balderson, 2007; York & Miree, 2004). Manufacturing firms which embrace modern manufacturing improvement philosophies such as JIT, TQM, business process re-engineering (BPR) and time-based competition (TBC) use the principles of cellular manufacturing systems in their restructuring efforts so as to meet world-class manufacturing status (Wemmerlov & Johnson, 1997). Lean Manufacturing techniques (i.e., 5S, Kanban, Kaizen, TPM, TQM, failure mode and effect analysis (FMEA), quality function deployment (QFD), value stream mapping (VSM), cellular manufacturing) are currently under implementation (Vinodh et al., 2010). Camacho-Miñano, Moyano-Fuentes and Sacristán-Díaz (2013) showed a review of the previous literature on the impact of Lean Production on organizational performance to confirm that there is a positive relationship between Lean Production and organizational performance. Managers have to design and operate an organization that is in line with the Lean Production philosophy where people at all levels are involved and fully committed in order to make Lean Production techniques the backbone of the operational workings of the company (Furlan, Vinelli, & Pont, 2011). This chapter introduces the role of Lean Production on organizational performance, thus explaining the management practices of Lean Production of just in time, total productive maintenance, total quality management, cellular manufacturing, and human resource management.

BACKGROUND

Lean Production has to be considered as a system (Dean & Snell, 1996; Shah & Ward, 2007) and therefore the relationships among Lean Production bundles have to be taken into account. Researchers maintain that it is the joint implementation of JIT and TQM that leads companies to high performance, due to