Exploring The Applications Of Lean Manufacturing Practices In Textile Industry

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Abstract

This study is conducted to explore the applications of lean manufacturing (LM) practices in textile industry. It is observed that unlike other industries like pharma and automobile very few studies are conducted to explore the applications of LM practices in textile industry. The rigorous search is conducted for sufficient relevant data from research journals, books, conference proceedings, magazines and internet. The data is scrutinized on the basis of relevancy and authenticity to conduct initial data analysis. The detailed analysis is conducted then and LM practices are identified in the context of textile industry. The LM practices are short listed on the basis of their frequency and the scope of applications in textile industry. Most relevant and suitable case studies are also discussed to explain applications of these selected LM practices in the textile industry. In the conclusion, the most notable LM practices in the context of textile industry are identified and discussed in detail. Also, the applications of these LM practices in the textile industry are discussed with the help of suitable examples and related case studies. The key findings of the study mentioned that various authors commented that the LM research should be widened in various ranges of industries, and specifically in the process industries where it has hardly been studied. In addition, it is also found that there are numerous studies on discrete manufacturing but very few in process industries. A closer investigation reveals that JIT and Kanban tools are applicable in process industries. SMED principles to reduce set-up time are applied in two case studies. Goforth investigated cases from textiles and found that lean practices 5S, Kaizen, VSM and visual control were used in maximum cases. Lee discussed the transferability of JIT and TQM to Indian textile industry. 5S and TPM are useful lean practices to minimize the wastes in the textile organizations. Lean practices like cellular manufacturing, Kanban, mistake proofing, policy deployment and rapid improvements were rarely used in textile industries. Lean practices and lean wastes investigation is new to textile industry. Only one waste is considered in most of the studies and among them the defect wastes considered in more than half of the studies. Only 1 or 2 appearances of other 6 wastes in all the studies. Lean Six sigma is the most popular practice in the yarn manufacturing industry for the analysis of defect waste. After that 5S and TPM are the most popular practices and these are also considered as the foundation for the implementation of LM. Automation and SMED are also getting importance as the technology is continuously improving and the lead time is affected by the setup changes. All the other practices are

appeared in either 1 or 2 studies except cellular manufacturing, policy deployment, rapid improvement and supermarket which are not appeared in any selected study.

Keywords

Lean manufacturing, review, applications, textile industry, lean manufacturing practices

Acknowledgements

Biography

Muhammad Ali Khan currently works as Assistant Professor in the Department of Industrial Engineering and Management, Mehran UET, Jamshoro, Sindh, Pakistan. He has sixteen years university teaching experience. He has supervised more than a dozen theses at undergraduate level. He is pursuing his PhD in the same department. He has completed his Bachelor of Engineering, Post Graduate Diploma and Master of Engineering in Industrial Engineering and Management. He has also completed his MBA in Industrial Management from IoBM, Karachi, Pakistan. He has authored various research papers for conferences and journals. He has participated in many professional seminars, workshops, symposia and trainings. He is registered with Pakistan Engineering Council and many other professional bodies. He does research in diversified fields of Industrial Engineering. The current projects are related to Lean manufacturing, Six Sigma, Project management, Operations management; MIS and Entrepreneurship. He has also earned various certifications in his areas of research.

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Dr. Hussin Bux Marri currently works as Professor in the Department of Mechanical Engineering Technology, Benazir Bhutto Shaheed University of Technology & Skill Development, Kairpur Mirs, Sindh, Pakistan. He has served as Professor and Chairman in the Department of Industrial Engineering & Management, Mehran UET, Jamshoro, Sindh, Pakistan. He is PhD & Post-Doc from Brunel University, UK. He has over 38 years of teaching experience. He is also awarded as "Best teacher" and "Meritorious Professor" from HEC Pakistan. He has served as Member in PEC, HEC and NCRC HEC, Pakistan. He has supervised many B.E, M.E and PhD theses. He has participated in various Courses, Trainings and Workshops. He has won many research awards & grants. He has various publications, Conference Proceedings/Abstract, Books, Textbooks/Monographs, International Book Chapters, and Practical Workbooks. He has high impact factor and high google scholar citation index. He is the active member of many professional bodies.