

Applicability and Scope of the Lean Management Philosophy in an E-Commerce Fulfilment Center Environment

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Abstract

Lean Management has proven to be a robust methodology of *continuous improvement* wherein the focus is to identify and eliminate the MUDAS or *Wastes* throughout the process under consideration so as to improve the overall business and more importantly sustain this improvement. In the e-commerce industry, *price* and *quality* of the product along with delivery *speed* are the most critical levers influencing customer choice. To ensure a good quality product at competitive price delivered within the shortest lead time together constitute the key differentiating factors in today's highly competitive e-commerce industry.

The *Fulfilment Center* lies at the focal point of this industry and is clearly the key asset in the whole e-commerce supply chain, which stores and processes tens of thousands of different SKUs from various sellers and suppliers. Triggered by a customer order, the correct SKU is *picked, packed* and *dispatched* from the fulfilment center within few mins to ensure that it is delivered within the promised time to the customer. It can be clearly inferred that an improvement towards optimality in fulfilment center operations would have a positive domino effect on the supply chain both upstream and downstream of the fulfilment center. Hence, we look to examine the lean methodology in a fulfilment center context.

Presently, multiple lean methodology derivatives are being used at the fulfilment center such as *5S, FIFO, Single Piece Flow, Line Balancing, JIT, JIDOKA, Multi Skilling* in every process while receiving the material from a supplier or seller so that the correct material is unloaded, inspected and in-warded inside the fulfilment center and stored at the desired location with appropriate identification both visual and also in the warehouse management system (WMS). Although the material is received in Lots or as a Bulk shipment, it is pushed into a single piece flow or broken down in to smaller lots so as to allow for the all the activities at the fulfilment center which are largely sequential in nature to be balanced within the *TAKT time* with a view to optimize warehouse infrastructure and other limited resources. Another important aspect of the warehouse processes is to ensure the flow of quality of the product through various *visual check points* and system *poka-yoke* such as *barcode scanning*, which help to ensure that the correct product is delivered to customer.

This paper presents a comprehensive overview of the fulfilment center operations and explains the applicability of specific lean management techniques in operations across the process flow which occurs in a fulfilment center. The paper goes on to present a pre v/s post implementation view of these techniques to get an understanding of *realized goodness*. Further, it presents a scope for the applicability of lean techniques in new areas and how this can help attain successful upgradation from status quo.

Keywords Fulfilment Center, Lean Management, Muda, Resource Optimization, Process Improvement

Biography

Subrata Pal is a Senior Manager in the Fulfilment Center Design team at Flipkart.com, India's largest online marketplace. He is currently responsible for Fulfilment Centre Process Design and Optimization through Lean, Six-Sigma and Innovation Initiatives. He has graduated in Mechanical Engineering from Jadavpur University, Kolkata, India and has earned his Master's in Financial Management from Mumbai University. He holds over 16 years of experience in the field of Engineering, Manufacturing, Quality and Supply Chain Management with active deployment of Lean Six-Sigma methods with world class companies such as Denso, Flextronics, Aditya Birla, Mahindra & Mahindra.

Ananth Rangarajan is a Manager-II in the Fulfilment Center Design team at Flipkart.com, India's largest online marketplace. His focus areas are Industrial Engineering and Supply Chain Innovation. He earned his Bachelor in Industrial Engineering from the University of Pune, India and has graduated from the Postgraduate Program in Management at the Indian School of Business with concentrations in Finance and Operations Management. Ananth has served with Mercedes-Benz India in Assembly Line & Plant Management, Logistics & Supply Chain Management and Production Planning. He has been involved in academic research since his deputation to the University of Windsor, Ontario, Canada as an Undergraduate Exchange Scholar. He has been associated with the IEOM society since the inaugural conference in Dhaka'10 where he was the youngest delegate. He has published conference and journal articles on financial modelling, simulation, service sector process flows, urban transportation, healthcare, back office operations and e-commerce. He also serves on the panel of peer reviewers for multiple international journals and conferences.