

Reducing Inbound Logistics Process Cycle Time Using Lean Six Sigma

Ana Branco

Master's Student in Management of Services and Technology
Iscte – Instituto Universitário de Lisboa
Lisbon, Portugal
acrbo11@iscte-iul.pt

Jamison V. Kovach

PMI Houston Endowed Professor in Project Management
University of Houston
Houston, TX, USA
jvkovach@uh.edu

Ana Lúcia Martins

Business Research Unit (BRU-ISCTE)
Iscte – Instituto Universitário de Lisboa
Lisbon, Portugal
almartins@iscte-iul.pt

Abstract

Developing process efficiencies resulting in shorter cycle times (i.e., the elapsed time between starting and completing a job) is one mechanism organizations often use to achieve a competitive advantage, higher profits, and/or better customer satisfaction. Given the nature of their business, minimizing process cycle time is a necessity for third-party logistics providers (3PLs). This research examined how one Portuguese 3PL reduced its process cycle time through an action research project in which researchers worked side-by-side with employees to develop and implement practical solutions. Given the specific goal to reduce the cycle time of their existing inbound logistics process across four warehouses, the company selected the Lean Six Sigma methodology to guide its process improvement efforts. This began with mapping the process, analyzing measurement systems, and collecting cycle time data. In addition to establishing a baseline measurement, these data were analyzed to identify the sub-process steps, clients, product types, etc. with the longest cycle times. These aspects were then analyzed further to determine the causes of waste in the process. Next, ideas were developed regarding how to reduce/eliminate the causes of waste, these ideas were evaluated using group decision-making tools, and the most appropriate solutions were implemented. Because employees' input was incorporate through every step of this project, few issues were encountered when implementing process changes. Finally, a control plan was established to facilitate behavior change of employees working in the processes and monitor the improved process performance to ensure long-term sustainment of the reduced cycle times.

Keywords

Action research, Lean Six Sigma, Third party logistics, Warehouse, Cycle time

Biographies

Ana Catarina Rodrigues Branco is a second year Master's student in Management of Services and Technology at Iscte – Instituto Universitário de Lisboa. She earned a Bachelor's degree in Economics from the same institution in 2019. Ms. Branco previously worked in the Management and Control Department at Leroy Merlin – Alfragide and in that time strengthened her data analysis skills while learning how to manage productivity and stocks. Additionally, she has also worked in the Sales Department at Renova SA, where she developed her time management abilities in

addition to her negotiating and communication skills. She is currently the on-site leader of an action research project implementing the Lean Six Sigma methodology in a third-party logistics provider.

Jamison V. Kovach is the PMI Houston Endowed Professor in Project Management at the University of Houston. She received her Ph.D. in Industrial Engineering from Clemson University. Her industrial experience includes more than five years as a product and process improvement engineer in the U.S. textile industry. Her current research investigates the use of methods for product and process innovation, expanding the use of these methods, and developing new improvement approaches. For her work, Dr. Kovach was recognized as the 2010 ASQ Feigenbaum Medalist, and she received the ASQ Six Sigma Forum Award for the Advancement of Six Sigma in 2019. Dr. Kovach is an Academician in the International Academy for Quality, an ASQ Fellow, and the Editor for *Lean & Six Sigma Review*. In addition, Dr. Kovach is a Fulbright Scholar who completed her project in 2022 at ISCTE – Instituto Universitário de Lisboa, Business Research Unit, Lisbon, Portugal. Dr. Kovach is also the Director of the UH- College of Technology's Lean Six Sigma Professional Training Program. She was trained in Lean Six Sigma by the former CEO of the Juran Institute, and has experience applying this valuable methodology through her own work experience as well as in conjunction with industry partnerships for over 20 years. She has published more than 65 articles on the subject of Lean Six Sigma and related topics, and she regularly presents her work at conferences and professional meetings around the world.

Ana Lúcia Martins is an Assistant Professor at Iscte – Instituto Universitário de Lisboa and an integrated researcher at BRU-ISCTE (Business Research Unit). She holds a Ph.D. in Management, with a specialization in Operations Management and Technology, and an MSc in Management, with a specialization in Strategy. She currently serves as Iscte Business School Vice-dean for Teaching and Innovation, and as Vice-President of Iscte's Pedagogical Council. She also serves as director of the Master in Humanitarian Action, and in the past served as director of the bachelor's degree in Industrial Management and Logistics. Dr. Martins teaches Operations Management, Logistics Management, Service Operations Management, and Supply Chain Management. She has authored more than 100 scientific articles, many of them in international journals. Dr. Martins has also authored books and book chapters in logistics management and lean management in the justice system. Her current main research topics are operations management in humanitarian settings, logistics management, supply chain management, and lean management in the services area, mainly in judicial and healthcare systems.