

Universidad de Lima  
Facultad de Ingeniería y Arquitectura  
Carrera de Ingeniería Industrial



# **INTEGRATED LEAN-BPM MODEL TO INCREASE ORDER FULFILLMENT IN MYPES IN THE TEXTILE SECTOR**

Tesis para optar el Título Profesional de Ingeniero Industrial

**Alithu Ankara Marquez Ordinola**

**Código 20170899**

**Judith Anita Vasquez Solis Echegaray**

**Código 20171645**

**Asesor**

Juan Carlos Quiroz Flores

Lima – Perú

Setiembre de 2022



# Integrated Lean-BPM Model to Increase Order Fulfillment in MYPES in the Textile Sector

**Alithu Ankara Marquez  
Ordinola**

Facultad de Ingeniería y  
Arquitectura  
20170899@aloe.ulima.edu.pe  
Universidad de Lima

**Judith Anita Vasquez Solis  
Echegaray**

Facultad de Ingeniería y  
Arquitectura  
20171645@aloe.ulima.edu.pe  
Universidad de Lima

**Juan Carlos Quiroz-Flores**

Facultad de Ingeniería y  
Arquitectura  
jcquiroz@ulima.edu.pe  
Universidad de Lima

**Alberto Enrique Flores-  
Pérez**

Facultad de Ingeniería y  
Arquitectura  
alflores@ulima.edu.pe  
Universidad de Lima

**Martín Fidel Collao-Díaz**

Facultad de Ingeniería y  
Arquitectura  
mcollao@ulima.edu.pe  
Universidad de Lima

**Abstract:** The textile industry is one of the most important developments of the Peruvian economy; However, this sector has been presenting a series of challenges such as the necessity of reduce some relevant costs, high percentages of waste and low efficiency in the production line, all this problems evidence a low availability of machines that ranges from the hand with a disorganized production. In this way, the problematics mentioned before, generates cycle times shorter than Takt times, bringing as a fundamental consequence, the non-fulfillment of planned orders. In this research, we proposed an integrated model that uses lean manufacturing tools such as standardized work, SMED and TPM, hand in hand with the BPM philosophy, which provides a process-oriented approach. In this way, the proposed model seeks to increase the current order fulfillment indicator of 72%, which, after implementation, showed an increase of 12.4%, verifying the effectiveness of the proposed model, in which the results were corroborated through a simulation

**Keywords:** lean, BPM, fulfillment orders, SMED, TPM

Conference Proceedings: 2022 11TH International Conference on Industrial Technology and Management (ICITM)

Date of Conference: 18-20 Feb. 2022

Copyright © 2022, IEEE

ISBN: 978-1-6654-8470-1