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Facultad de Ingeniería y Arquitectura  
Carrera de Ingeniería Industrial



# **LEAN SERVICE MANAGEMENT MODEL TO INCREASE THE LEVEL OF SERVICE IN PERUVIAN A METALWORKING SMEs**

Tesis para optar el Título Profesional de Ingeniero Industrial

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## **Abstract:**

The absence of scientific models, techniques, and work strategies actually applied to small and medium-sized enterprises has been evidenced in the metalworking sector due to the lack of financial support in research and development. In the pandemic context, a methodological change is needed to recover from the ravages, and it is necessary to use methodologies that can minimize losses in industries. The purpose of the bibliography presented and gathered here is to expose the use of lean manufacturing tools for improvement of current systems and processes, revealing the trends of use within the industry, their application in conjunction with these techniques and their combination with methodologies from other areas. The model was validated through a simulation in the Arena software where the results achieved were a reduction in the packaging cycle time from 231.6 to 109.2 sec, the welding time from 69.26 to 65.26 sec, the external delivery delays from 367 to 46 min and internal from 52 to 7 min. Thus, a significant improvement in the level of service from 74% to 87%. This model shows a methodological integration of the differences applied to the Peruvian reality.

**Keywords**—service level, lean manufacturing, production model, metal working, SMEs

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