Summary for the application for Olle Jonson-priset 2025

Our names are Amanda Lindfors and Emma Wiksfors. During the spring of 2025, we conducted our master's thesis in collaboration with Swedish Match, focusing on improving production efficiency through Lean Six Sigma methodology.

Thesis title:
Analyzing Production Efficiency: Recommendations Based on the DMAIC Cycle

Summary:
This thesis explores how Lean Six Sigma can be applied to enhance productivity, reduce waste, and optimize material flow in one of Swedish Match's largest production lines. The project was conducted using the DMAIC framework—Define, Measure, Analyze, Improve, and Control—and included tools such as capacity analysis, fishbone diagrams, FMEA, and Pugh Matrix to systematically identify and evaluate improvement opportunities.

The research was guided by two research questions:

1. What are the identified possible causes of problems on the production line?
2. What changes can be made to increase uptime and improve efficiency?

Thirteen improvement proposals were developed based on data collected through interviews, observations, and frequency measurements. These proposals were evaluated and ranked using a Pugh Matrix. By June, four of them had already been implemented, with two more scheduled during the summer. The early adoption of these improvements highlights the practical relevance of the findings, and the factory's management has initiated similar projects on other lines based on this work.

In August 2025, the authors of this master's thesis asked the company to summarize the outcome from the implemented improvement proposals. The implemented proposals had by August already led to measurable improvements:

- **Overall Equipment Effectiveness (OEE)** increased by **8%**
- **Shortage of cans** decreased by **20%**
- **Start-up pouch waste** reduced by **25%**

- **Stops in the packing machines** decreased by **46%**

This thesis contributes to existing research by demonstrating a real-world application of Six Sigma tools in a Swedish manufacturing context. While many studies focus on theoretical frameworks, this project bridges the gap between theory and practice, showing how tools like FMEA and Pugh Matrix can be used to address diverse challenges in production environments. It also emphasizes the importance of cross-functional collaboration and the human factor—areas often acknowledged in theory but less frequently illustrated in applied studies.

Sustainability was considered across environmental, economic, and social dimensions. Several proposals aim to reduce material waste, such as minimizing damage to lids and cans during transport and reducing pouch waste during machine start-ups. Economically, improvements like better material specifications and task reallocation can reduce costs and optimize resource use. Socially, proposals that improve signal systems, standardize work methods, and balance workloads contribute to reduced stress and increased job satisfaction among operators.

Overall, this thesis demonstrates how structured, data-driven improvement initiatives can lead to measurable gains in efficiency, sustainability, and employee well-being in industrial settings.