

## **Abstract**

This project aims to implement the Lean Six Sigma (LSS) DMAIC (Define, Measure, Analyze, Improve, Control) methodology to enhance operational efficiency in the One Shot production line at Al-Hijaz Chocolate Factory (HCF). The primary goal is to reduce setup time, improve production readiness, minimize operational waste, and enhance overall productivity.

The Define phase has been completed through problem identification, scope clarification, and detailed project charter development. Measurements were conducted on downtime events, changeovers, and machine setup durations, revealing an average setup time ranging between **125–150 minutes per day**, significantly exceeding the expected standard.

Based on the analysis conducted through the DMAIC framework, the study identified the key factors driving setup time variability, particularly frequent changeovers and inconsistent preparation practices. The findings highlight that the current setup process operates with high variation and lacks statistical control, resulting in extended setup durations and reduced line availability. The results of this study provide a clear baseline of current performance and support data-driven decision making for controlling setup time and enhancing process stability.

**Keywords:** Lean Six Sigma (LSS), DMAIC, Chocolate Industry, Standard Operating Procedures (Sop), Waste Reduction