

UNIVERSITI TEKNOLOGI MARA

**THE SIX SIGMA APPLICATION
AND ITS IMPACTS ON THE
SUSTAINABILITY OF GOLD SCRAP
MANAGEMENT PROCEDURE
IN SMALL-SCALE JEWELLERY
INDUSTRY**

SAADIAH BINTI KASPIN

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ABSTRACT

This study aims to assess small scale jewellers' knowledge of gold waste and quality management processes. In this context, quality can be defined as a dynamic state associated with products, services, people, processes, and environments that meets or exceeds expectations and contributes to the creation of superior value. Despite the changing business landscape, the study found that most existing fabrication techniques and design methodologies are still traditional. The research focuses on small-scale industry players in Kelantan, Malaysia. The critical question is how existing fabricators and producers develop, track, and monitor their business's efficacy in performing day-to-day processes, as there is a gap in the space of gold waste management processes that could result in monetary loss and have a significant impact on their financial standings. As a result, it is critical for this research to establish credibility by validating potential weaknesses and gaps, particularly in gold waste management and handling processes, and then developing the appropriate mechanism to nearer the holes. Thus, the study validates the rationale for the impact of waste quality management on their efficiency and has enormous potential for application to Malaysia's small-scale jewellery producers and fabricators. In a nutshell, inefficiencies throughout the fabrication process contribute directly to the probable loss of gold in the form of waste/scrap, ultimately degrading product quality and reducing profit margins in the long run. The documentation provided was insufficient. The DMAIC technique (Define, Measure, Analyse, Improve, and Control) was used to analyse and uncover the root causes of gold losses, improve gold scrap collection procedures, and decrease gold losses. The data are gathered through a survey and observations using the theoretical framework as a guide. As a result, five root causes of gold losses have been identified and classified into six categories: techniques, people, measurements, materials, equipment, and environment. DMAIC Six Sigma improved productivity and quality in the small-scale jewellery industry while lowering operational expenses and improving customer satisfaction. The advantages of Six Sigma are that it helps reduce scrap, which helps to reduce the amount of gold wasted throughout the jewellery manufacturing process. As a result, of the principle of sustainability and future growth, it is time for the state's small-scale and traditional jeweller producers to adopt such a practice to ensure sustainable business while also aligning with Industry 4.0.

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