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A Preliminary Investigation of Robotic Automation for Manufacturing Development in Lesotho: An African Perspective

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Abstract

The adoption of robotic automation in manufacturing is a global trend, but its application within developing economies, particularly in African nations such as Lesotho, is not well documented. Lesotho's manufacturing sector is a major employer yet contends with productivity and competitiveness challenges. This preliminary investigation aimed to assess the current awareness, perceived opportunities, and barriers to adopting robotic automation in Lesotho's manufacturing sector. The objective was to establish a foundational understanding to inform future research and strategy. A qualitative, exploratory approach was employed. Semi-structured interviews were conducted with a purposive sample of managers and engineers from various manufacturing firms in Lesotho. Thematic analysis was applied to the transcribed interview data. Current adoption rates were found to be low. However, there was strong interest in using automation for quality control and repetitive assembly tasks. The most significant barrier identified was the perceived high initial investment cost. Concerns about technical skills gaps and inadequate maintenance infrastructure were also prominent. While robotic automation is seen to have potential for supporting manufacturing development in Lesotho, substantial systemic barriers relating to cost, skills, and infrastructure presently constrain its practical implementation. It is recommended to initiate pilot programmes focusing on collaborative robotics for specific,

high-return tasks. The development of local technical training curricula and the exploration of innovative financing models are also urged to build foundational capacity. Robotics, Automation, Manufacturing, Lesotho, African Development, Industrial Technology, Skills Gap This study provides a first empirical insight into the contextual realities of robotic automation in Lesotho’s manufacturing sector, offering evidence-based perspectives to inform national industrial policy and targeted international development support in engineering.