

EFFECTS OF QUALITY INSPECTION MACHINE TO THE EMPLOYEE PRODUCTIVITY IN PROGREZIVE INCORPORATED AT PROJECT 8, QUEZON CITY

ABSTRACT

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This study evaluates the impact of automated quality inspection (QI) machines on employee productivity at Progrezive Incorporated, a garment manufacturing company located in Project 8, Quezon City. Anchored in the principles of Total Quality Management (TQM), the research explores how automation affects work efficiency, error rates, and skill utilization. The study also aims to identify the challenges posed by automation and its influence on workforce dynamics. A descriptive quantitative research design was employed, surveying 15 employees from the engineering and production departments through purposive sampling. Data were gathered using structured questionnaires and analyzed using statistical tools such as weighted mean, Mann-Whitney U test, and Kruskal-Wallis H test. The study focused on key productivity metrics, including efficiency, error rates, workload distribution, and adaptability to automation. The findings revealed notable improvements in work efficiency, with mean scores ranging from 3.26 to 4.00, and in error rate reduction, with scores between 3.15 and 3.80. Respondents acknowledged better throughput and workload balance as a result of QI machine integration. However, skill utilization scored lower (2.50 to 3.10), indicating difficulties in adjusting to automated processes. Statistical analysis showed no significant differences in productivity effects based on age, gender, tenure, or department ($p > 0.05$), thus supporting the null hypothesis. Key challenges included job security concerns (identified by 60% of respondents), machine malfunctions (40%), and false rejections (33%), which led to decreased trust in the QI system. Additionally, employees reported reduced teamwork and communication, attributed to an over-reliance on automation. To address the identified challenges, the study proposes six key strategies: (1) Enhance adaptability through technical upskilling and mentorship programs; (2) Integrate AI-driven predictive maintenance to reduce machine downtime; (3) Implement department-specific training and workflow automation such as automated labeling; (4) Establish a troubleshooting system with real-time error tracking and feedback loops; (5) Utilize a Smart Manufacturing Dashboard for real-time defect monitoring; and (6) Promote employee engagement through career development pathways and incentives. These recommendations aim to align TQM practices with human-machine collaboration, mitigating fears around automation while optimizing productivity. The study highlights the dual role of automation in improving operational efficiency and transforming organizational culture, offering a model for small- and medium-sized enterprises (SMEs) seeking to adopt technology while maintaining workforce inclusivity.

RECOMMENDED CITATION

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