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A Study of Skill Gap Analysis in Manufacturing Industry

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ABSTRACT

By identifying critical areas where current workforce competencies fall short of industry needs, this study explores the persistent skill gaps in the manufacturing sector. The study investigates the underlying reasons for these disparities, such as curriculum constraints, inadequate career preparation, and the quick development of technology through automation and artificial intelligence. The study examines skill level expectations and the readiness of both new and current employees through workforce assessments and employer surveys. It also evaluates the success of recent governmental measures and training programs designed to close these disparities. This study chosen sample size 136 has been determined using morgans table, hence convenience sampling technique used in this study .Tools used in this study krushal wallis ,Mann whitney . The results provide information to help policymakers, educators, and industry stakeholders match workforce development to changing manufacturing demands.

Keywords: skill gap, technological advancement,employeer expectations, training program.

INTRODUCTION

In the rapidly evolving landscape of modern manufacturing, the ability to maintain a competitive edge hinges on the skills and adaptability of the workforce. Over the past decade, manufacturers worldwide have faced a growing challenge: the skills gap-a persistent mismatch between the competencies required by advanced manufacturing processes and the capabilities present within the existing labor pool.This gap has been exacerbated by several factors, including the accelerated adoption of automation, robotics, and digital technologies, as well as the retirement of experienced workers and the slow pace of educational adaptation to industry needs.

OBJECTIVES

- To identify key skill gaps in the manufacturing industry.
- To analyze the causes behind the skill gap, including education gaps, training inadequacies, and technological advancements.
- To assess employer expectations regarding skill requirements and employee preparedness.
- To evaluate current training programs and policies addressing the skill gap.

SCOPE OF THE STUDY

The study will focus on identifying specific skill gaps within the ESSAB industry workforce, including

technical, managerial, and soft skills, required to meet current and future demands. The research will assess how advancements in technology (such as automation, digital tools, and robotics) are altering skill requirements within ESSAB's operations and how employees are adapting to these changes. The scope will include evaluating current workforce competencies and how they align with ESSAB's strategic goals, focusing on areas that require immediate attention to improve performance.

REVIEW OF LITERATURE

Zhang & Zhao (2024): AI and Skill Development in the Chinese Electronics Manufacturing Industry: An Analysis Zhang and Zhao focus on the impact of artificial intelligence on skill requirements in the Chinese electronics manufacturing industry. Their study highlights the increasing demand for AI- related skills, such as machine learning and data analytics. The authors argue that China's manufacturing sector is struggling to meet these demands, leading to a significant skill gap. They recommend that manufacturing firms partner with universities to develop specialized training programs

Wang & Liu (2024): Closing Skill Gaps through Upskilling in the Semiconductor Manufacturing Industry. Wang and Liu investigate the effectiveness of upskilling programs in bridging skill gaps in the semiconductor manufacturing sector. They find that companies offering continuous training and professional development opportunities see a significant reduction in skill shortages. Their studyunderscores the importance ofworkforce flexibility and lifelong learning programs to adapt to technological disruptions in semiconductor manufacturing.

RESEARCH METHODOLOGY

The type ofresearch design used in this study is descriptive research design. This study chosen sample size of 136 using morgan's table, hence convenience sampling techniques is used.

PERCENTAGE ANALYSIS

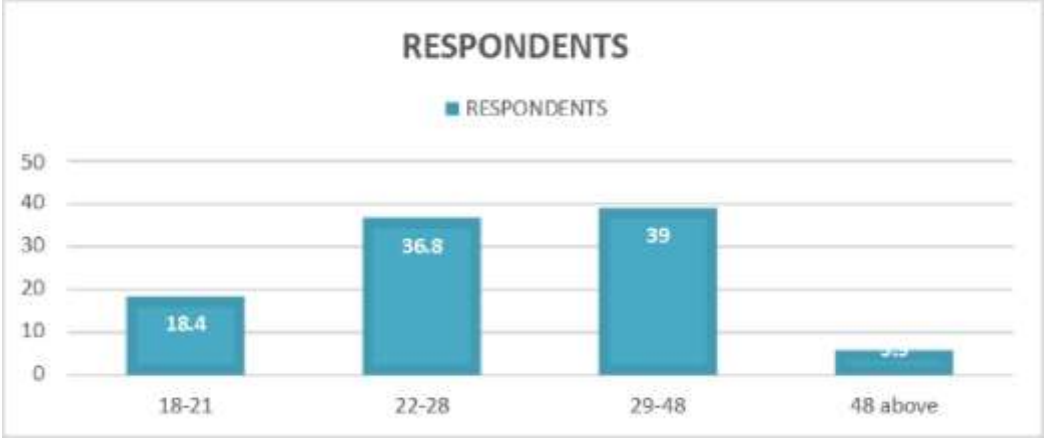
Table 1: Demographic profile of employees

Age	Respondents	Percentage
18-21	25	18.4
22-28	50	36.8
29-48	53	39
48 above	| 8	5.9
total	| 136	100

FINDINGS:

The above table shows the majority of the 39 % of the respondents are fall in the 29—48 age group indicating that majority ofthe employee are adult. The 36.8 % of the respondents are fall in the 22 — 38 age group and the 18.4% of the respondents are fall in 18 — 21 age group. The 5.9% respondents are fall in the 48 above age group.

INFERENCE: From the above table, it is inferred that 39 % of the respondents are belonging to 29 — 48 age groups.



MAN-WHITNEY TEST

Ho (Null Hypothesis): There is no significant difference in belive manufacturing companies invest enough in employee in skill development scores between male and female respondents.

Hi (Alternative Hypothesis): There is a significant difference belive manufacturing companies invest enough in employee in skill development between male and female respondents.

GENDE R	N	Mean Rank	Sum of Ranks
BELIVEi	122	90.77	11074.50
MANUFACTURINGCOMPANIES INVEST 2 ENOUGH IN	10	70.01	3290.50

EMPLOYEES SKILLTotal

DEVELOPMENT	132		

BELIVE MANUFACTURING COMPANIES INVEST ENOUGH IN EMPLOYEES SKILL DEVELOPMENT	
Mann-Whitney U	2162.500
Wilcoxon W	3290.500
Z	-2.570
Asymp. Sig. (2-tailed)	.010

INFERENCE

Kruskal-Wallis test results show no significant difference in perceived effectiveness of the grievance redressal system across experience levels ($p = 0.321$), but a significant difference in satisfaction with grievance outcomes ($p = 0.030$).

KRUSKAL WALLIS TEST

Ho: There is no significant difference in extent manufacturing in company to fill skill gaps across experience.

Hi: At least one extent manufacturing in company to fill skill gaps across experience.

EXTENT MANUFACTURING COMPANIES STRUGGLE TO FILL SKILL POSITIONS	
Chi-Square	4.689
Df	4
Asymp. Sig.	.321

The Kruskal-Wallis test result (Chi-Square = 4.689, p = 0.321) indicates that there is no statistically significant difference in perceptions across different experience levels regarding the extent to which manufacturing companies struggle to fill skilled positions.