



A Study On The Employee Opinion Towards The Human Resource Digitalization In Industry 4.0 On The Manufacturing Industry

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Abstract: This study investigates employee perspectives on HR digitalization within manufacturing organizations in the context of Industry 4.0. It focuses on key factors such as ease of use, training effectiveness, and communication quality, and how these influence employee satisfaction and adoption of digital HR systems. A structured questionnaire was administered to 132 employees, and data were analyzed using SPSS, employing Mann-Whitney U, Kruskal-Wallis H, and Friedman tests. Findings reveal that while employees recognize the benefits of digitalization—such as improved communication and work-life balance—they also face challenges like technical difficulties and limited training. The study concludes that prioritizing employee feedback, continuous support, and system usability is essential for successful HR digital transformation.

Index Terms - HR digitalization, Industry 4.0, System usability, Training effectiveness, Digital transformation and Employee satisfaction .

I. INTRODUCTION

The Fourth Industrial Revolution is reshaping the manufacturing sector through technologies like automation, AI, data analytics, and IoT. This transformation extends beyond production to impact human resource management (HRM). Digitalization of HR functions enhances operational efficiency, agility, and employee engagement. Core HR activities such as recruitment, training, performance management, and workforce planning are increasingly managed through digital platforms. However, the success of these systems relies heavily on employee acceptance and effective use. In a diverse manufacturing workforce, digital readiness varies significantly. Understanding employee perceptions helps identify gaps in usability, communication, and training. These insights are essential for aligning digital tools with employee needs. This study aims to explore employee views on HR digitalization to inform human-centered transformation.

II. OBJECTIVES

- To examine the influencing factors on the effectiveness of human resource digitalization in Industry 4.0.
- To assess the level of employee satisfaction with HR digitalization practices in Industry 4.0.
- To collect employee insights on enhancing the digital transformation of workforce management in Industry 4.0.

III. SCOPE OF THE STUDY

- To study HR digitalization acceptance across sectors and identify trends.
- To explore the long-term impact of digital HR on retention, culture, and performance.
- To evaluate the effectiveness of specific digital tools on different employee groups.
- To investigate the role of leadership and change management in digital HR adoption.
- To examine the future integration of emerging technologies in HR functions.

IV. REVIEW OF LITERATURE

1. **Jie Zhang & Zhisheng Chen (2023):** This study analyzes HRM digital transformation, highlighting five key drivers and focusing on technology-driven HR practices. It emphasizes both benefits and challenges, offering insights into balancing innovation with employee adaptation.
2. **Ling Li (2022):** This research discusses Industry 4.0's impact on workforce reskilling, stressing the need for continuous skill development. It highlights essential future skills and calls for accessible lifelong learning to build a competitive workforce.
3. **L.B.P. da Silva et al. (2022):** This study reviews 93 papers to identify 13 key themes on how Industry 4.0 and digitalization shape HRM. It highlights the impact of disruptive technologies on workforce management and offers insights to help organizations become more productive, human-centric, and digitally advanced.

V. RESEARCH METHODOLOGY

The study uses a descriptive research design to examine the Employee opinion towards the HR digitalization. A sample size of 132 employees was selected using simple random sampling from a total population of 200. Data collection follows quantitative methods, and since the data is not normally distributed, non-parametric tools were applied for analysis.

6.DATA ANALYSIS AND INTERPRETATION

Categories	Sub categories	No. of respondents	Percentage (%)
Gender	Male	39	30
	Female	93	70
Age	Below 25	55	42
	25-34	39	30
	35-54	27	20
	Above 55	11	8
Experience	Less than 1 year	42	32
	1-3 year	41	31
	4-5 year	16	12
	More than 5 years	33	25
Income level	Below 15000	34	26
	15000-25000	44	33
	25000-50000	29	22
	Above 50000	25	19
Total	All categories	132	100

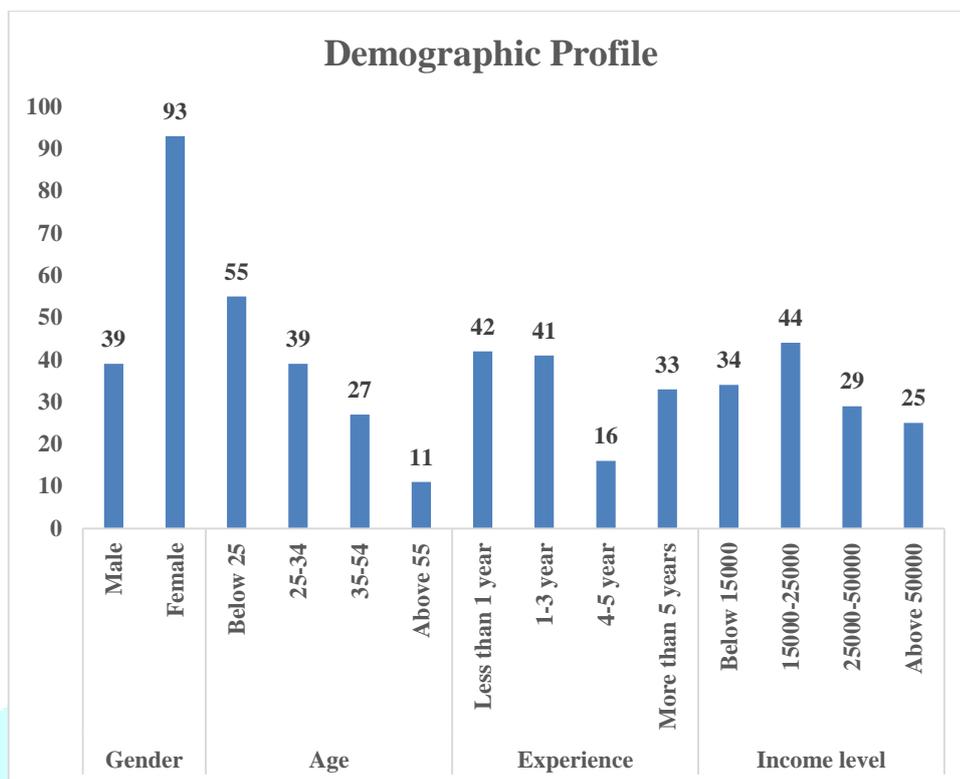
FINDINGS

- The majority of respondents shown that 30% of the respondents are Male and 70% respondents are Female.
- From the table, it is evident that **42%** of respondents are below 25, **30%** are aged 25–34, **20%** fall between 35–54, and **8%** are above 55 years old.
- From the table, it is evident that **32%** of respondents have less than 1 year of experience, **31%** have 1–3 years, **12%** have 4–5 years, and **25%** have more than 5 years of experience in the organization. From the table, it is evident that **33%** of respondents earn between ₹15,000–₹25,000, **26%** earn below ₹15,000, **22%** fall within ₹25,000–₹50,000, and **19%** have an income above ₹50,000.

Inference

- **70% of respondents are female**, highlighting a significant female representation in the workforce.
- **42% of respondents are under the age of 25**, indicating a youthful workforce predominates in the organization.
- **32% of respondents have less than 1 year of experience**, suggesting a substantial portion of the workforce is relatively new to the organization.
- **33% of respondents earn between ₹15,000 and ₹25,000**, making it the most common income bracket among employees.

Figure 1.1 Demographics Profile



6.2 STATISTICAL TOOL

MANN WHITNEY U TEST

Null Hypothesis (H0): There is no significant difference between the mean rank of male and female with respect to all three variables.

Alternative Hypothesis (H1): There is significant difference between the mean rank of male and female with respect to all three variables

Inference:

From Mann Whitney U-test since p-values for all variables are greater than 0.05.this means there is no significant difference between male and female employees in their responses regarding the three variable

TABLE SHOWING TEST OF MANN WHITNEY

	Employee work experience	Employee communication	Employee adaption
Mann-Whitney U	1718.500	1479.000	1463.000
Wilcoxon W	6089.500	2259.000	2243.000
Z	-.488	-1.726	-1.801
Asymp. Sig. (2-tailed)	.625	.084	.072
a. Grouping Variable: Gender			

KRUSKAL WALIS TEST

Null Hypothesis (H_0): There is no significant difference between the mean rank of respondents Age with respect to all three variables.

Alternative Hypothesis (H_1): There is significant difference between the mean rank of respondents Age with respect to all three variables.

TABLE SHOWING TEST KRUSKAL WALLIS

	Employee work experience	Employee adaption	Employee communication
Chi-Square	1.736	4.037	11.043
df	3	3	3
Asymp. Sig.	.629	.257	.011
a. Kruskal Wallis Test			
b. Grouping Variable: Age (in years)			

Inference:

From Kruskal wallis h test since all p-values are less than 0.05, we reject the null hypothesis (h_0). This indicates that there is a significant difference in the perceptions of employees based on their Age across all three variables.

FRIEDMAN TEST

Null Hypothesis H_0 : There is no significant difference in the mean ranks of the five HR technology strategies.

Alternative Hypothesis (H_1): There is a significant difference in the mean ranks of at least one HR technology strategy compared to the others.

Rank Table

	Mean Rank
AI-driven career development tracking	4.09
Automated performance recognition	3.32
Digital learning and upskilling programs	3.05
Flexible digital HR policies	2.36
Predictive analytics for employee turnover	2.19

N	132
Chi-Square	138.732
df	4
Asymp. Sig.	.000

Inference

From Friedman Test Since the p-value is less than 0.05, the result is statistically significant. This indicates that there are significant differences in the mean ranks of the HR technology strategies. Therefore, the null hypothesis is rejected.

7. SUMMARY OF FINDINGS

- **70% of respondents are female**, highlighting a significant female representation in the workforce.
- **42% of respondents are under the age of 25**, indicating a youthful workforce predominates in the organization.
- **32% of respondents have less than 1 year of experience**, suggesting a substantial portion of the workforce is relatively new to the organization.
- **33% of respondents earn between ₹15,000 and ₹25,000**, making it the most common income bracket among employees.
- From Mann Whitney U-test since p-values for all variables are greater than 0.05.this means there is no significant difference between male and female employees in their responses regarding the three variable
- From Kruskal wallis h test since all p-values are less than 0.05, we reject the null hypothesis (h_0). This indicates that there is a significant difference in the perceptions of employees based on their Age across all three variables .
- From Friedman Test Since the p-value is less than 0.05, the result is statistically significant. This indicates that there are significant differences in the mean ranks of the HR technology strategies. Therefore, the null hypothesis is rejected.

8.SUGGESTION

- Provide targeted training and onboarding for younger, less experienced employees to improve digital adaptation.
- Simplify HR system interfaces and ensure real-time, accurate data to enhance usability and trust.
- Implement AI-driven communication tools and align them with preferred channels to improve clarity and responsiveness.
- Integrate personalized career tracking and automated recognition features to boost engagement and retention.

9.CONCLUSION

This study explored employee perspectives on HR digitalization in the manufacturing industry under Industry 4.0. Findings show that younger, less experienced employees struggle with system usability and data accuracy. Digital literacy training and user-focused system improvements are needed. Ongoing feedback and inclusive strategies can support effective HR transformation.

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