



A Study on Strategic Human Resource Practices and its Impact on Manufacturing Performance

(A Study with Reference to Tube Products of India, Chennai)

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ABSTRACT

This research attempts to analyze the strategic HR practices and their impact on manufacturing performance taking reference of the Tube Products of India (TPI) a premium precision steel tubes manufacturer in Murugappa Group Chennai. Strategic HR Management (SHRM) has always been considered as a very strong driving force for effective functioning of any organization in today's competitive manufacturing environment. The study design was descriptive with quantitative research method, using primary data from 120 respondents through structured questionnaire on a 5- point Likert scale. The various HR practices that were being studied were Training & Development, Employee Performance Appraisal, Employee Engagement and Work Environment. Performance measurement of the manufacturing performance was measured on criteria such as Productivity, Quality, Efficiency and Retention. Descriptive statistics, cronbach's alpha reliability test, Pearson correlation analysis and Chi-Square test were applied in the study for statistical analysis. From the survey it has been proved that all the HR practices are positively and significantly related with performance parameters of manufacturing performance. Cronbach's Alpha obtained is 0.957 which showed a good internal reliability. Chi-Square tests also demonstrated that demographics of respondents does not appear to affect their responses on performance measure

significantly. This study showed that strategic HR practices have strong impact on overall organizational manufacturing performance and employee productivity.

Keywords: Strategic HRM, Manufacturing performance, training & development, employee engagement, operational excellence, tube products of India.



1. INTRODUCTION

Human resources are being identified today, in the competitive and ever-changing manufacturing environment, as an organization's competitive strength. The concept of Strategic Human Resource Management (SHRM) entails that the practices of HR need to be in alignment with the organizational strategy so as to achieve organizational objectives and overall success. In manufacturing firms, especially the automobile industry and related manufacturing companies, SHRM can be effectively employed towards achieving operational excellence by increasing productivity, quality, cost-effectiveness and continuous improvement.

Operational excellence involves efficient, effective and dependable implementation of business operations to yield high value for customers by optimum utilization of resources. HR practices such as employee selection and recruitment, employee training and development, performance appraisal, employee engagement, remuneration and industrial relations are significant in shaping employee attitudes and hence their work related behaviors.

Tube Products of India (TPI), a premier manufacturing organization within the pipe and tube industry, functioning under the Murugappa Group, is positioned in a competitive market that demands efficiency, quality, safety and timely delivery from every operation. The application of strategic HR practices will ensure a well-qualified and competent workforce to back-up lean manufacturing processes, Total Quality Management initiatives, and operational effectiveness activities.

This study, hence, attempts to investigate the Strategic Human Resource practices prevalent in Tube Products of India and intends to assess the contribution of HR strategies toward the productivity and reduction in inefficiencies of operations. This study also seeks to analyze how HR practices affect the overall performance of employees. By creating a link between SHRM practices and the overall performance of the manufacturing organization, this study attempts to provide relevant information to the management toward developing HR policies which support the business and help in effective strategic functioning.

2. REVIEW OF LITERATURE

A comprehensive literature review was conducted to investigate the theoretical and empirical base of strategic HRM practices and their effects on the performance of manufacturing industries.

According to Zakaria et al. (2021), HRM practices influence manufacturing SMEs where employees training, recruitment and empowerment contribute in enhancing the production performance. Anwar and Abdullah (2021) investigated the influences of HRM practices and discovered that compensation system, training and development are essential for enhancing employees and organizational performance as it increase the human capacity. Zhang and Huang (2021) explored the cross-functional training in world class manufacturing and observed that training and problem solving skills employees possessed were higher when they were cross-functionally trained. Longo, Nicoletti and Padovano (2022) focused on human resources in Industry 4.0 smart factory and found that human capital remains important despite the increased use of automation. Jackson et al. (2023) investigated the impact of strategic HRM practices on organizational sustainability and identify employee training, green recruitment and sustainable leadership practices as key drivers.

A bibliometric review of sustainable HRM literature, undertaken by Faisal (2023), indicated that employee engagement, leadership development, and sustainability oriented training are among the key contributors to organizational performance. Javed et al. (2023) analyzed the impact of electronic HRM on manufacturing SMEs, and revealed that digital recruitment, human resources training programs and compensation schemes significantly influence employee and organizational performance. According to Galanti et al. (2023) digital transformation has brought new challenges on HRM where organizations need to develop HRM strategies that create an innovation and adaptive workforce.

Employee wellness programs and ethics labor practices research have also shown that HR practices in this aspect leads to higher productivity and reduced employee turnover (Patel, 2024). HR strategies in alignment with organizational goals are also able to increase employees' productivity and motivation (Lorot, 2024).



In profit oriented organizations, strategic HRM research revealed that recruitment, training, performance appraisal, and career development, has an influence on employee performance (Mwambela, 2024). A meta-analysis conducted by Ralan (2025) affirmed a positive impact of SHRM practices on performance indicators such as productivity, operational efficiency, and innovativeness.

3. RESEARCH GAP

Based on the in depth analysis of existing literature, the following research gaps have been identified and the proposed study intends to address these:

In depth studies are available on strategic HR practices, particularly for general manufacturing or automotive industry. It is quite interesting to see the lacuna that exists in studies related to a precision tube manufacturing company, such as Tube Products of India.

Most previous researches discuss on HR practices and organizational performance at the macro level; However the direct relationship of HR practices with certain manufacturing performance metrics (such as productivity, quality, operational efficiency, safety) has not been extensively covered.

A dearth of empirical research is observed on strategic HR practices and their correlation with operational excellence for Indian manufacturing companies; specifically Murugappa Group companies.

While most of the studies have concentrated on one particular HR practice at a time, there is a gap for research that tries to analyse the cumulative effect of multiple HR practices on manufacturing performance strategically.

Previous research works often rely on secondary data; thus a gap exists for primary, worker-centric research that would cover shop floor workers, supervisors and managers' perception regarding HR practices.

A lack of context-specific research is evident for industrial relations, employee involvement and safety practices with their implications for uninterrupted manufacturing operations.

4. OBJECTIVES OF THE STUDY

Main objective

To study the influence of strategic HR practices on the manufacturing performance in Tube Products of India.

Secondary objectives

To understand the current strategic HR practices followed in Tube Products of India.

To study the effectiveness of recruitment and selection practices for the availability of skilled manpower in the manufacturing.

To analyze the contribution of training and development on employees' skills, productivity and quality performance.

To investigate the impact of industrial relations and industrial harmony on seamless functioning of the manufacturing.

To pinpoint the critical HR factors that contribute toward enhancement of productivity, quality and operation excellence.

5. RESEARCH METHODOLOGY

5.1 Research Design

The present study adopts a descriptive research design with an objective to investigate the influence of SHRM practices on mfg performance at Tube Products of India. The study employed a quantitative approach and collection of data by using questionnaire survey.

5.2 Sources of data

Primary data were collected by means of questionnaire survey to 120 employees of different department (Production, HR, quality, maintenance) in Tube Products of India. Questionnaires survey contained 32 statements using 5 points scale ranging from strongly disagree to strongly agree (Likert Scale). Secondary data were collected from journals of research papers, Annual Report, Books on SHRM, & Databases from Online.

5.3 Sampling design & size of sample

In this study the probability sampling techniques have been used. Sample size was 120 employees out of 600 employees from TPI.



5.4 Variables of the study

Independent Variables (HR practices) Training and Development, Performance appraisal, Employee involvement, work environment
 Dependent Variables (Mfg. Performance) Productivity, Quality, Efficiency, employee retention
 Control Variables Age, Gender, education, experience, Department.

5.5 Statistical tools

The data was analyzed by means of statistical tools that are (i) Descriptive Statistics-To know the mean, std. Dev, etc.; (ii) Cronbach's alpha reliability test-To calculate reliability (Cronbach's Alpha); (iii) Pearson Correlation analysis-To measure linear relationship between the variables; (iv) Chi-square test- To assess the relationship between demographic variables and other variables of study.

6. ANALYSIS OF THE STUDY

6.1 Descriptive Statistics

Table 1 presents the mean scores and standard deviations of the key constructs (N = 120). All mean values range between 3.87 and 4.17, indicating a generally positive perception by employees toward the HR practices and manufacturing performance indicators measured in this study.

Table 1: Summary of Descriptive Statistics (N = 120)

S.No	Construct	Key Statement	Mean	Std. Dev.
1	Training & Development	Training programs are relevant to my job role	4.06	0.833
2	Performance Appraisal	Performance evaluation criteria are clearly communicated	4.08	0.832
3	Employee Engagement	There is effective communication between management and employees	3.99	0.884
4	Work Environment	The organization maintains good working conditions	4.04	0.854
5	Productivity	I am able to complete tasks efficiently	4.17	0.803
6	Quality	Errors and defects in work have reduced	4.01	0.855
7	Efficiency	Tasks are completed within the given time	4.03	0.825
8	Employee Retention	HR policies help reduce employee turnover	3.97	0.845

Interpretation: The statement "I am able to complete tasks efficiently" recorded the highest mean score (4.17), while "Quality standards are consistently maintained" recorded the lowest (3.87), though both reflect positive employee perceptions. Standard deviation values below 1.0 indicate consistency in responses.

6.2 Reliability Analysis (Cronbach's Alpha)

The Cronbach's Alpha of the scale (32 items; N=120) was found to be 0.957. This is considered Excellent (benchmark: 0.90). This shows that the scale possesses excellent internal consistency, therefore suitable for further statistical analysis.



6.3 Pearson Correlation Analysis

Pearson Correlation Analysis was performed on the eight main constructs of the study. All the constructs are positively and significantly correlated with each other ($p < 0.01$). Correlation coefficients of the constructs ranged from 0.338 (Performance appraisal and productivity) to 0.481 (Training and Development and efficiency). There was a moderate positive relationship between all the eight constructs.

Most strongly positively correlated constructs are Training & Development with Efficiency ($r = 0.481$). It proves that the training programmes are well-designed that has a significant influence on efficiency.

6.4 Chi-Square Analysis

Chi-Square Tests were performed to examine whether demographic variables are associated with performance outcomes. Table 2 summarises the results:

Table 2: Chi-Square Test Results

Variables Tested	Chi-Square Value	df	p-Value	Result
Gender vs Productivity	2.848	4	0.584	No Significant Association
Age vs Employee Retention	2.303	4	0.890	No Significant Association
Department vs Quality	2.460	4	0.749	No Significant Association
Experience vs Efficiency	3.511	4	0.742	No Significant Association
Qualification vs Work Environment	0.678	4	0.995	No Significant Association

Since all p-values exceed 0.05, the null hypothesis is accepted for all tests, indicating that demographic variables such as gender, age, qualification, department, and experience do not significantly influence perceptions of manufacturing performance outcomes.

7. FINDINGS, SUGGESTIONS AND CONCLUSION

7.1 Key Findings

Employees reported a favorable attitude toward all the HR practices with mean values lying in between 3.87 and 4.17.

"I am able to complete tasks efficiently" obtained highest mean of 4.17 confirming highest belief of employee's capability in the operational part.

Cronbach's Alpha value of 0.957 assures excellent internal consistency of the measuring instrument.

All the HR practices variables are positively and significantly correlated to manufacturing performance measures which include productivity, quality, efficiency and employee retention.

strongest positive association is obtained between Training & Development and Efficiency ($r=0.481$) signifying importance of employee training to manufacturing.

Chi-Square results confirmed that there is no influence of the demographic variables to employee's beliefs on the performance measures (all p-values > 0.05).

Overall, all the HR practices show a positive significant influence to manufacturing performance of Tube Products of India.

7.2 Suggestions

It is recommended to continuously conduct advance and further training on technical knowledge in order to upgrade and enhance employee's skills to achieve further level of operational efficiency.



Periodically, review the performance appraisal system for a greater fairness, transparency and satisfaction among employee's.

Strengthen employee engagement strategies through implementing and refining suggestion schemes, and participation at decision making, employee feedback sessions and group discussions etc.

Focus on continuous monitoring of standards so that the quality consistently remains maintained.

Better prospect on career path growth and proper succession planning would improve the longer term of employment.

Update the HR policies so that they are concurrent to the evolving organizational context and expectations of work force.

7.3 Conclusion

The current study finds that effective human resource management practices indeed have significant positive impact on the manufacturing performance at Tube Products of India. Employee's stated a higher level of satisfaction toward existing HR practices related

8. POTENTIAL RESEARCH Avenues

The study has implications for the following future research:

Future studies should involve larger sample of organizations from manufacturing sector in the entire country.

A longitudinal study may be done to explore the long-term effects of strategic HR on manufacturing performance.

Similar comparative study of HR-manufacturing performance relationship for public and private sector could reveal interesting findings.

Mediation effect of Organizational culture and leadership style in the HR-manufacturing performance relationship can be empirically tested.

The impact of Industry 4.0 (Automation, AI, Digital HR etc.) on HR practices and manufacturing performance is a new research arena which future research can explore.

Complementary use of qualitative approaches such as interviews, case studies along with quantitative measures can bring forth in-depth and context specific insights about the strategic HR.

Future studies can investigate moderation effects of firm size, market competition and technological competence.

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