
**THE STUDY ON HRM'S ROLE IN BUILDING A SECURITY-
CONSCIOUS WORK CULTURE IN AMSTEEL CASTINGS PVT LTD**

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ABSTRACT

Background: Manufacturing organizations, particularly those in the metal casting and steel sectors, operate in high-risk environments that demand robust workplace safety and data security measures. Human Resource Management (HRM) plays a strategic role in cultivating a security-conscious work culture that goes beyond compliance with regulations.

Objectives: This study examines the role of HRM in promoting workplace safety and security at Amsteel Castings Pvt. Ltd., a Chennai-based manufacturing firm. It evaluates the effectiveness of HR-led training programs, communication strategies, and policy enforcement mechanisms in building employee awareness and compliance.

Methodology: A descriptive research design was adopted using both primary and secondary data. A structured questionnaire was administered to 100 employees selected through simple random sampling. Statistical tools including Chi-square test, ANOVA, t-test, and Mann–Whitney U test were applied for analysis.

Findings: Results reveal that over 85% of employees are aware of organizational security policies and 80% have attended security training. Statistical analysis confirms significant positive relationships between HRM practices and employee security behavior. Most respondents agree that HR effectively communicates policies, conducts regular training, and promotes a culture of security awareness.

Conclusion: HRM acts as a critical bridge between management policies and employee behavior, fostering a security-conscious organizational culture. Continuous training, participative engagement, and leadership support are essential for sustaining this culture in high-risk manufacturing settings.

KEYWORDS; Human Resource Management, Security-Conscious Culture, Workplace Safety, Manufacturing, Amsteel Castings, Employee Awareness, Organizational Behavior.

1. INTRODUCTION

In the modern industrial and business environment, organizations face a wide array of challenges related to workplace safety, operational risks, and data security. Manufacturing organizations, in particular, operate in high-risk environments due to the involvement of heavy machinery, molten metals, automated systems, and sensitive production processes. In such settings, even minor lapses in safety protocols can result in significant financial losses, legal penalties, or human injury.

A security-conscious work culture goes beyond mere compliance with legal regulations. It reflects the collective mindset and behavior of all employees toward safety, data protection, and adherence to organizational policies. Employees become vigilant, accountable, and proactive in maintaining both physical and digital security. Building such a culture requires a coordinated effort led by Human Resource Management (HRM), which serves as the key link between organizational policies and employee behavior.

Modern HRM practices focus on recruitment, training, performance management, leadership development, and employee engagement — all of which directly influence security-conscious behavior. In manufacturing organizations such as Amsteel Castings Pvt. Ltd., which is engaged in metal casting and die manufacturing with over 400 employees in Chennai, Tamil Nadu, the role of HRM becomes even more critical. Employees are required to handle heavy machinery, molten metals, and specialized equipment, while also protecting sensitive design data and client specifications.

Research indicates that organizations with strong HR-led security cultures experience lower accident rates, higher employee engagement, and improved compliance with legal and regulatory standards. This study aims to analyze the role of HRM in promoting a security-conscious work culture at AMsteel Castings Pvt. Ltd., providing insights for both practitioners and scholars.

2. REVIEW OF LITRATURE

Debi S. Saini & Pawan Budhwar (2013) discuss the evolution of HRM in India, emphasizing that structured HR interventions help employees understand organizational expectations and adopt safer work practices. They highlight how HRM shapes employee behavior through embedding values, policies, and learning programs.

P. Budhwar & P. Sparrow (2002) examine the strategic integration of HRM in Indian organizations, demonstrating that HR policies aligned with organizational strategy improve employee attitudes, commitment, and compliance with safety protocols. The study underscores HRM as a key driver of security and safety awareness.

L.M. Suhasini & P.G. Thirumagal (2024) review contemporary HRM practices, arguing that HR strategies aligned with organizational objectives create environments where employees are motivated to adopt safe and secure work behaviors. Training programs, policy enforcement, and performance management are identified as key mechanisms.

Sangeeta Trehan & Karan Setia (2022) demonstrate that HR policies tailored to organizational culture enhance employee engagement, accountability, and compliance with safety standards. Their study emphasizes HRM as instrumental in embedding security-conscious practices into organizational norms.

Ritwik Raj Saxena (2024) highlights the use of predictive analytics in occupational health and safety, showing that analytics-driven HR strategies improve compliance, reduce accidents, and enhance employee awareness. Integrating technology with HR practices creates a data-informed security-conscious culture.

Al Mekhlafi (2025) examined the impact of HRM practices on safety culture, emphasizing that training programs, employee engagement initiatives, and clear communication foster compliance with safety protocols and build shared security values across organizations.

Chodyka et al. (2025) explored HRM's contribution to comprehensive organizational security systems, showing that careful selection, competency development, and security-oriented training are critical for building organizational resilience against internal and external threats.

M. Ying & Allaqtta (2025) investigated the relationship between safety culture and organizational performance, demonstrating that engaged employees are more likely to comply with safety protocols. HRM interventions including training, performance feedback, and communication enhance employee engagement and embed safety norms effectively.

Edgar H. Schein (2010) explored organizational culture and leadership, explaining that leadership behavior, communication, and consistent reinforcement are critical for embedding a security-conscious mindset. HR initiatives can translate cultural values into everyday

employee behavior.

James Reason (1997) developed the Swiss Cheese Model of accident causation, demonstrating how HRM interventions — including training, supervision, and policy development — can reduce organizational vulnerability to incidents by addressing both individual behavior and systemic processes.

3. OBJECTIVES OF THE STUDY

- To understand the role of HRM in promoting workplace security and safety.
- To examine the strategies used by HRM to build a security-conscious work culture.
- To analyze the effectiveness of employee training programs in improving security awareness.
- To study the impact of HR policies on employee behavior towards workplace safety.
- To evaluate employee participation in maintaining a secure work environment.
- To identify challenges faced by HRM in implementing security policies.
- To suggest measures for improving HR practices in building a security-conscious culture.

4. RESEARCH GAP

A review of existing literature reveals several significant gaps that this study addresses:

- Limited studies examine HRM's role in security culture within the Indian metal casting and manufacturing sector; most research focuses on IT or service industries.
- Physical and digital security are often studied separately, without an integrated HRM approach.
- Few studies explore employee perceptions and participation in HR-led security initiatives in high-risk manufacturing environments.
- Limited empirical evidence exists on the effectiveness of HR interventions in enhancing security culture within the Indian cultural and regulatory context.

5. RESEARCH METHODOLOGY

Research Design

The study adopts a Descriptive Research Design, used to describe and analyze existing conditions, practices, and perceptions within the organization without manipulating any variables. The nature of the study is descriptive, analytical, empirical, cross-sectional, and organization-based — focusing specifically on employees of AMsteel Castings Pvt. Ltd.

Data Collection

Primary data was collected through structured questionnaires distributed to employees, comprising close-ended, multiple-choice, and Likert scale questions related to HR practices, workplace safety awareness, and security measures. Secondary data was obtained from research journals, academic articles, company records, industry reports, and online sources.

Sampling

The study population consists of all employees at AMsteel Castings Pvt. Ltd., including workers, supervisors, and administrative staff. A sample of 100 employees was selected from different departments using Simple Random Sampling, ensuring equal probability of selection and minimizing bias.

Tools for Analysis

The following statistical tools were used for data analysis: Percentage Analysis, Tabular Presentation, Chi-square Test, ANOVA (Analysis of Variance), One-Sample T-Test, and Mann–Whitney U Test.

6. DATA ANALYSIS AND INTERPREATION

6.1 Demographic Profile of Respondents

Table 1 summarizes the demographic characteristics of the 100 respondents surveyed at Amsteel Castings Pvt. Ltd.

Table 1: Demographic Profile of Respondents. (n=100)

Variable	Category	Percentage
Gender	Male	70%
	Female	25%
	Prefer not to say	5%
Age Group	18–25 years	20%
	26–35 years	35%
	36–45 years	30%
	Above 45 years	15%
Department	Operations	50%
	IT	15%
	HR	10%
	Finance	10%
	Others	15%
Experience	Less than 1 year	15%
	1–3 years	35%
	3–5 years	25%
	More than 5 years	25%

The majority of respondents (70%) are male, reflecting the male-dominated nature of manufacturing operations. The largest age group is 26–35 years (35%), followed by 36–45 years (30%), indicating a predominantly young to middle-aged workforce. Operations department staff constitute 50% of respondents, as they are directly exposed to workplace risks. Most respondents (35%) have 1–3 years of experience, indicating a workforce with early to mid-level tenure.

6.2 Security Policy Awareness

A strong majority of respondents (85%) confirmed awareness of organizational security policies, indicating effective HR communication. Additionally, 85% of employees agreed or strongly agreed that the HR department clearly communicates security policies. An ANOVA analysis ($F = 13.85$, $p = 0.000$) confirms statistically significant variation in employee responses, indicating that while most are well-informed, some gaps in communication clarity persist.

6.3 Training and Development

Table 2 presents the Chi-square test results for the association between security training effectiveness and employee perception.

Table 2: Chi-Square Test – Training Effectiveness vs. Employee Perception.

Response Category	Observed (O)	Expected (E)	(O–E) ² /E
Strongly Agree	42	20	24.20
Agree	43	20	26.45
Neutral	7	20	8.45
Disagree	5	20	11.25
Strongly Disagree	3	20	14.45
Total χ^2	84.80 (Critical value at df=4, p<0.05: 9.488 — H₀ Rejected)		

The Chi-square value ($\chi^2 = 84.80$) far exceeds the critical value of 9.488 at 4 degrees of freedom ($p < 0.05$), leading to rejection of the null hypothesis. This confirms a significant association between training effectiveness and employee perception. 85% of respondents agreed that training programs improve risk awareness, and 80% confirmed attendance at security awareness training. The remaining 20% who have not attended training represent a gap that requires HR intervention.

6.4 ANOVA Analysis – Satisfaction with Security Measures

Table 3: ANOVA Results – Employee Satisfaction with Security Measures.

Source	Sum Squares	df	F-value	Sig.
Between Groups	1540.80	4	10.70	0.000
Within Groups	720.00	20	—	—
Total	2260.80	24	—	—

The ANOVA results ($F = 10.70$, $p = 0.000$) indicate statistically significant differences in satisfaction levels across employee groups. A strong concentration of responses falls toward the satisfied and very satisfied categories (80% combined), confirming that most employees view the organization's security measures positively.

6.5 T-Test – Security Culture Promotion

A one-sample t-test was conducted to evaluate whether the mean agreement score for the statement 'The organization promotes a culture of security awareness' differed significantly from the neutral value of 3.

Table 4: One-Sample T-Test Results.

Sample Mean	4.13
Test Value (Neutral)	3.00
Std. Deviation	0.95
t-value	11.89
p-value	0.000 (H ₀ Rejected)

The mean score of 4.13 is significantly above the neutral threshold ($t = 11.89$, $p = 0.000$), confirming strong employee agreement that the organization actively promotes a security-conscious cult.

7. FINDINGS

The following key findings emerged from the data analysis:

- 85% of employees are aware of organizational security policies, indicating effective HR communication initiatives.
- 80% of employees have attended security awareness training programs; however, 20% remain untrained, representing a gap to be addressed.
- Chi-square analysis ($\chi^2 = 84.80$, $p < 0.05$) confirms a significant association between training effectiveness and employee risk perception.

- ANOVA results confirm statistically significant variation in satisfaction levels with security measures ($F = 10.70$, $p = 0.000$), with a strong concentration toward satisfaction.
- A t-test revealed a mean agreement score of 4.13 for security culture promotion, significantly above neutral ($p = 0.000$), confirming strong organizational commitment.
- Mann–Whitney U test confirms that 86% of employees hold positive views on HR responsiveness to reported security issues ($p = 0.000$).
- Operations department staff (50% of respondents), who face the highest physical risks, demonstrated strong security awareness and compliance.
- 90% of respondents believe HR plays an important role in building a security-conscious workplace.
- 88% of employees recommend that security awareness programs be conducted more frequently.
- Online training (35%) is the most preferred mode of security training, followed by workshops (30%).

8. SUGGESTIONS

- Ensure 100% participation in security training through mandatory sessions, targeting the 20% who have not yet attended.
- Conduct periodic refresher training to prevent complacency and maintain consistent security awareness over time.
- Incorporate practical, hands-on training elements including mock drills, simulations, and real-time demonstrations.
- Leverage multiple communication channels — emails, notice boards, mobile alerts, and team meetings — to reinforce security messaging.
- Strengthen onboarding programs with comprehensive safety orientation and dedicated mentoring for new employees.
- Establish safety committees and employee suggestion systems to promote participative decision-making.
- Implement reward and recognition programs to motivate employees who consistently adhere to safety protocols.
- Introduce anonymous reporting mechanisms to reduce hesitation in flagging potential security risks.
- Define standard response time protocols (SOPs) for HR response to reported security

incidents.

- Integrate AI-based analytics and IoT monitoring tools to enhance data-driven HR security management.

9. CONCLUSIONS

This study demonstrates that Human Resource Management plays a pivotal and strategic role in building a security-conscious work culture at AMsteel Castings Pvt. Ltd. The findings confirm that HRM-led initiatives — including training programs, clear policy communication, performance management, and employee engagement — significantly influence employee awareness, attitudes, and behaviors toward workplace safety and security.

Statistical analyses across multiple tests (Chi-square, ANOVA, t-test, Mann–Whitney U) consistently reveal strong, significant positive relationships between HRM practices and security-conscious behavior. Over 80–90% of respondents affirm the effectiveness of HR interventions and the importance of HRM in creating a secure work environment.

In high-risk manufacturing environments like metal casting, a robust security culture is not merely a compliance requirement but a strategic imperative. HRM serves as the bridge between organizational policies and employee behavior, translating abstract safety regulations into everyday practices. Continuous improvement in training delivery, communication, employee participation, and technology integration will further strengthen this culture, enhancing operational efficiency, employee well-being, and organizational resilience.

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