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Research Article

Exploring HRM Effectiveness: A Comparative Analysis of Public vs. Private Sector Organizations

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ABSTRACT

The relationships of employees within an organization are mostly influenced by Human Resource Management (HRM), which has an impact on hiring, training and organizational strategies. The proposed research evaluates HRM in 2 distinct sectors: the public sector and private sectors. The framework employs a stratified random sampling approach to collect varied perspectives from employees, organizational leaders, and HR professionals among both sectors. Various statistical tools, including Independent Samples t-Tests, ANOVA, and Chi-square tests, were utilized to determine the training quality, efficacy of recruitment, and overall HRM practices within public and private organizations. The outcomes show that when compared to private sector approaches, the training and recruitment methods of public sector are superior, particularly in terms of acquiring talented employees and offering excellent opportunities. However, the training initiatives of public sector demonstrate more diversity compared to the private sector, which offers more consistent quality training. The results indicate that while public sector succeeds in recruitment as well as training, the private sector requires enhancements in recruitment techniques and the quality of training initiatives. Overall, the proposed research delivers insights into how the HRM strategies impact the success of organizations, particularly in sectors that depend on innovation and trained employees.

Keywords: Human Resource Management, public sector, Private sector, recruitment, training programs.

1. INTRODUCTION

HRM is defined as a collection of processes and techniques designed to effectively manage employees at all levels of the organization to achieve organizational objectives [1]. Human resources are critical to the effectiveness of organizations in the public and private sectors and in business analysis. HRM effectively manages individuals to improve employee productivity, align with business objectives, and enhance employee satisfaction and achievement. Fundamental HR strategies such as recruitment, training, performance management and employee retention are essential to ensure a highly productive and motivated workforce [2].

Recruitment methods are essential for HR, as they dictate the caliber of individuals that will enter the organization [3]. Effective recruitment entails attracting and choosing qualified individuals whose talents, values, and aspirations correspond with the organization's objectives and vision. Recruitment strategies have evolved dramatically, with skills-based recruitment evolving from traditional methods such as job advertisements and walk-in interviews to more modern methods using artificial intelligence (AI), data analytics and online techniques. Furthermore, the addition of recruitment technologies such as Application Tracking Systems (ATS), automated screening tools and virtual hiring platforms has improved talent availability. These recruitment strategies simplify, reduces recruitment costs, and increases overall operational efficiency.

Development and training initiatives, essential components of human resource management, substantially improve employee productivity and effectiveness [4]. Training is essential not just for refining job-specific abilities but also for promoting professional development and encouraging lifelong learning. Organizations that implement comprehensive training programs typically attain elevated employee satisfaction, enhanced productivity, and less

staff turnover. Training methodologies differ among organizations, encompassing on-the-job training, workshops, mentorship programs, and more advanced techniques such as e-learning, virtual simulations, and AI-enhanced individualized learning. The implementation of technology-based training methodologies has transformed the learning experience by providing flexibility, scalability, and cost efficiency. E-learning systems allow employees to access educational resources at their ease of use, while virtual reality (VR) and augmented reality (AR) provide realistic learning instances, especially in technical and high-risk areas.

Human Resource Management techniques are crucial in organizations, as they directly affect employee performance, job satisfaction, and organizational outcomes [5]. A high-performance culture is fostered through human resource management strategies that guarantee employee enthusiasm, engagement, and alignment with company goals. Training initiatives and recruitment strategies are crucial for filling skills gaps, increasing worker productivity, and preparing staff for future difficulties. Furthermore, HRM practices affect organizational agility, creativity, and competitiveness, all of which are essential for success in the current turbulent economic landscape. The strategic alignment of HRM practices with organizational objectives allows organizations to establish a lasting competitive advantage by attracting and retaining superior talent, enhancing employee performance, and cultivating a culture of continuous development and innovation.

Effective HRM practices are crucial for organizations to maintain operational excellence and achieve strategic objectives in the present competitive landscape. HRM strategies in public sector enterprises are generally formulated to enhance innovation, augment technical expertise, and ensure long-term sustainability. Conversely, private sector enterprises emphasize adaptability, a performance-oriented culture, and responsiveness to market exigencies. The necessity of analyzing the impact of HRM strategies, particularly recruitment and orientation, on organizational effectiveness across various industries is highlighted by this disparity. Understanding these dynamics is crucial, as it allows firms to tailor their HRM procedures to meet specific goals, improve efficiency, and obtain a competitive edge.

The importance of HRM strategies in firms is paramount. Efficient recruitment techniques synchronize talent acquisition with corporate goals, whereas structured training programs foster skill development, work satisfaction, and employee retention [6]. These actions improve individual performance and significantly promote organizational growth and sustainability. Assessing how HRM practices affect organizational effectiveness, particularly in a variety of contexts, is therefore essential for identifying best practices and areas for improvement. The proposed research aims to examine the impact of recruitment strategies and training initiatives on the efficacy of human resource management in these two sectors, offering essential insights into the importance of HRM for organizational performance.

2. RELATED WORKS

Manzur Quader (2024) [7] examined the influence of HRM policies on satisfaction of employee in the private banking sector of Bangladesh. Data was gathered from 100 bank employees, with 88 furnishing valid responses. The investigation indicated considerable employee discontent with salary packages, as well as concerns about career advancement, rewards and incentives, training, and management methods. Statistical techniques, such as Z-tests and mean comparisons, were employed to evaluate satisfaction levels across nine domains of Human Resource Management. The findings highlighted issues in HRM practices, emphasizing the necessity for enhancements in compensation, career progression, and managerial strategies.

Khan *et al.* (2024) [8] examined the role of HRM in overseeing internal brand identity (IBM) at higher education institutions (HEIs) in Khyber Pakhtunkhwa, Pakistan, contrasting public and private universities. The study utilized qualitative case studies, encompassing interviews, questionnaires, and document analysis, to elucidate the divergent methodologies adopted by both industries. Private universities emphasized training programs, orientation sessions, and branding initiatives to align professors and staff with institutional principles, promoting active brand advocacy and competition. In contrast, public institutions integrated brand values naturally by utilizing established traditions and inclusive policymaking, fostering a collective sense of identity and purpose. Both sectors encountered distinct challenges and potential in brand management, however sought to improve institutional reputation and bolster their influence within the higher education arena.

Fazal Mahmood *et al.* (2024) [9] investigated the correlation between human resource (HR) procedures and employees' perceived performance within Pakistan's banking sector. Data was collected from 100 respondents at two public and two private banks using a personally given questionnaire and random sampling. The findings indicated a substantial positive correlation between HR practices like training, planning, remuneration, performance appraisal, and recruitment and employee performance. Remuneration and performance appraisal were significantly more pronounced in private banks than in public banks. The data revealed that training and recruitment were crucial elements, however they were affected by employees' experience, gender, and educational attainment.

Sandeep *et al.* (2024) [10] investigated the influence of compensation on the attraction and retention of talent in public, private, and international banks. The study employed a mixed-method approach to assess compensation systems, encompassing salaries, bonuses, benefits, and incentives, while also examining employees' opinions of fairness, transparency, and alignment with career objectives. Findings revealed significant disparities among banking sectors, with foreign and private banks succeeding in talent acquisition and retention compared to public sector banks. The improved effectiveness of their compensation structures, along with attributes like professional development opportunities, corporate culture, and work-life balance, resulted in this outcome. Public sector banks exhibited lower mean scores, highlighting the necessity to improve their remuneration as retention strategies to maintain competitiveness in the evolving talent market and achieve enduring organizational success.

Hakro *et al.* (2023) [11] examined the correlation among HRM practices, perceived organizational support, employee attitudes, behaviors, and discretionary actions. They employed a quantitative, explanatory, and predictive methodology, utilizing a logical approach and a positivist ideology. Data was gathered from officers and employees of the Hyderabad Electric Supply Corporation (HESCO) via convenience sampling, with the analysis of 100 closed-ended questionnaires. The results indicated a positive and significant correlation among HRM practices and perceived organizational support, employee attitudes, and flexible behavior. Data analysis was performed with SPSS and PLS-SEM, demonstrating robust correlations among the variables. The research found that HRM methods significantly influenced employee behavior and attitudes.

Govand Anwar *et al.* (2021) [12] analyzed the impact of HRM practices on the functioning of governmental organizations in a swiftly evolving economic context. The research employed a quantitative methodology, sampling 240 respondents to investigate five HRM practices: employee incentives, training, selective recruiting, job security, and decentralization. The results indicated that decentralization positively correlated with organizational performance, whereas the other techniques did not. Data was gathered via surveys from employees of the Ministry of Regional Municipalities and Water Resources in Iraq, and reliability analysis validated the measurement instruments. Correlation and regression analysis indicated that decentralization was a major predictor of performance, whereas incentives, training, selective recruiting, and job security were not. The research emphasized decentralization as a crucial element in enhancing organizational effectiveness.

Onsardi *et al.* (2021) [13] examined the impact of various HRM practices on employee outcomes, mediated by Perceived Organizational Support (POS). The study employed structural equation modeling (SEM) using data from banks employees in Bengkulu, Indonesia, demonstrating that HRM policies strongly impacted POS and employee outcomes, such as organizational commitment, job satisfaction, and turnover intention. The findings demonstrated that POS significantly affected the correlation between HRM practices and employee outcomes, revealing striking distinctions between public and private banks. The results underscored the significance of systematically overseeing human resources to improve employee engagement and retention.

Blom *et al.* (2020) [14] performed a meta-analysis to examine the variations in the impact of HRM methods on individual performance among public, semi-public, and private sectors. The research revealed that, contrary to anticipations, the impacts of HRM practices exhibited no substantial disparities between the public and private sectors. Nonetheless, semi-public firms had significantly more pronounced benefits of opportunity-enhancing strategies, especially in positions necessitating elevated intrinsic motivation and specialized competencies, such as those in healthcare and education. The authors underscored that sectoral disparities may be less significant than previously assumed and stressed the value of accounting for sector-specific variables in the implementation of HRM policies.

Saleh Amarneh *et al.* (2020) [15] examined the correlation between HRM practices, Person-Organization (P-O) fit, and job satisfaction among nurses at private hospitals in Jordan. The research investigated the impact of recruitment and selection, training and development, and performance appraisal on person-organization fit and job satisfaction. PLS-SEM analysis of 274 responses indicated that recruiting and selection, together with performance appraisal, significantly affected P-O fit, although training and development did not. P-O fit was identified as a mediator in the interactions among recruitment, performance appraisal, and job satisfaction, but not in the context of training and development. Nurses aged 25-34 with 1-5 years of experience exhibited more favorable attitudes of HRM procedures.

Alserhan et al. (2020) [16] investigated how HRM practices affected competitive advantage among Jordanian private university employees, with organizational commitment acting as a mediating factor. Using SmartPLS 3 software, data from 232 individuals at ten colleges were analyzed using PLS-SEM. The findings indicated that HRM methods substantially affected both organizational commitment and competitive advantage, with organizational commitment serving as a partial mediator. The study emphasized how crucial it is to align HRM procedures with strategic goals in order to enhance organizational performance and employee dedication. Managers were urged to cultivate collaboration, offer assistance, and establish policies that enhance commitment, thus promoting competitive advantage.

The existing researches provides significant insights on the role of HRM procedures across several industries, such as banking, higher education, and government entities. Nonetheless, a substantial gap persists in comprehending the unique impact of HRM practices on organizational performance within the high-tech, defense, and manufacturing sectors, especially regarding recruiting and training. Although prior research has concentrated on the financial and public sectors, a comparative examination of HRM practices in government organizations and private sector firms remains insufficiently investigated. Moreover, although recruitment and training have been analyzed independently, limited research investigates their cumulative influence on organizational performance across various sectors. The proposed study aims to overcome these drawbacks by offering a thorough analysis of the impact of recruitment strategies, training programs, and HRM practices on organizational success, while evaluating the efficacy of these practices in both public and private sector organizations.

3. RESEARCH QUESTIONS

- How do the recruitment strategies of the public and private sector organizations differ in terms of attracting and selecting skilled personnel, and which organization demonstrates more effectiveness in this regard?
- What are the key training initiatives implemented by public and private sector organizations, and how do these initiatives contribute to enhancing employee skills and organizational performance?
- What is the influence of HRM practices, particularly recruitment strategies and training programs, on the overall effectiveness of human resource management in public sector compared to private sector organizations?

4. OBJECTIVES OF THE STUDY

- To examine the demographic profile of employees from public and private sectors, to understand how these factors influence their perceptions of recruitment strategies, training initiatives, and overall organizational performance.
- To evaluate and compare the effectiveness of recruitment strategies employed by the public and private sector organizations, focusing on their ability to attract and select skilled personnel.
- To analyze and compare the training initiatives implemented by public and private sector organizations, identifying the key practices that enhance employee skills and contribute to organizational performance.
- To identify the impact of HRM practices, specifically recruitment strategies and training programs, on the overall effectiveness of human resource management in public and private sector organizations.

5. PROPOSED HYPOTHESES

H_{01}: There is no significant difference in the effectiveness of recruitment strategies employed by public and private sector organizations in attracting and selecting skilled personnel.

H_1: There is a significant difference in the effectiveness of recruitment strategies employed by public and private sector organizations, indicating that the HRM practices of these organizations impact recruitment success differently.

H_{02}: There is no significant difference in the quality of training initiatives implemented by public and private sector organizations in terms of enhancing employee skills and organizational performance.

H_2: There is a significant difference in the quality of training initiatives between public and private sector organizations, suggesting that the HRM practices of each sector influence the effectiveness of training programs.

H_{03}: HRM practices, specifically recruitment strategies and training programs, do not have a significant impact on the overall effectiveness of human resource management in public compared to private sector organizations.

H_3: HRM practices, particularly recruitment strategies and training programs, have a significant impact on the overall effectiveness of human resource management in public compared to private sector organizations.

6. RESEARCH METHODOLOGY

6.1 Conceptual Framework

The proposed research investigates the intricate relationships among key independent variables, specifically the type of organization and specific HRM practices within each category, and their influence on critical dependent variables, including the effectiveness of recruitment strategies, the quality of training programs, and the overall effectiveness of HRM. The proposed research aims to explore how organizational differences impact the implementation and outcomes of HRM practices. The research focuses on recruitment strategies that determine talent acquisition efficiency and alignment with organizational goals, as well as training programs designed to enhance employee skills, productivity, and adaptability. By examining these HRM components, the study seeks to clarify how organizational structure, policies, and strategic priorities shape the overall effectiveness of HRM systems in fostering employee performance, retention, and organizational success. The suggested research's conceptual framework is depicted in Figure 1.

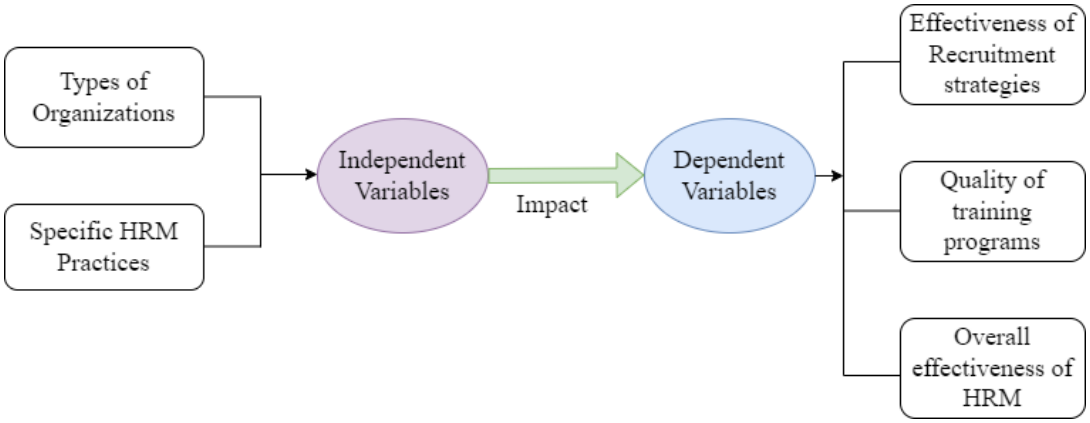


Fig.1. Conceptual framework of the proposed framework

6.2 Research Design

The research adopts a mixed-methods approach to examine the human resource management practices in the public and private sector organizations. By integrating quantitative and qualitative approaches, the study enables the exploration of statistical trends in HRM practices alongside a deeper understanding of individual perspectives and organizational dynamics. The mixed-methods design facilitates the triangulation of data, ensuring a well-rounded comparison between the HRM strategies of public and private sector organizations.

6.3 Data Collection

Quantitative as well as qualitative techniques are employed in the data collection process to ensure a thorough understanding of HRM practices. Structured questionnaires and surveys were distributed to staff members of selected companies in order to gather quantitative data. The closed-ended questions in these surveys were intended to collect statistical information on a range of HRM aspects. HR specialists and organizational leaders from the chosen companies participated in in-depth semi-structured interviews in order to gather qualitative data. The purpose of HRM practices, the challenges that firms confront, and the strategic objectives pertaining to employee recruitment, growth, and retention were all clarified by these interviews. Additionally, document analysis was carried out by reviewing publicly available organizational documents, such as HR manuals, annual reports, and policy documents, to uncover formal HR practices that might not have been captured through surveys or interviews.

6.4 Designing of Questionnaire

The questionnaire was carefully designed to collect both quantitative and qualitative data, ensuring a comprehensive awareness of hiring practices and training programs in organizations. To measure important factors including the efficacy of different recruitment channels, the appeal of job offers, and the alignment of recruitment procedures with organizational goals, the quantitative component comprised closed-ended questions with Likert-scale responses. This approach made it easier to quantify trends and preferences in hiring practices. In order to evaluate the types, frequency, and accessibility of training programs as well as employees' opinions regarding their efficacy in improving job performance and career advancement, the training section also included quantitative questions. In addition, the qualitative component included open-ended questions that prompted respondents to discuss their own experiences and perspectives on the ways in which hiring procedures and training programs have affected their current positions.

6.5 Sampling Technique and sampling area

The study employed a stratified random sampling approach to assure that the sample appropriately represented a diverse cross-section of employees from both public and private sector organizations. Participants were categorized into strata based on their hierarchical level—entry-level, mid-level, and senior-level—to capture a comprehensive understanding of HRM practices across different roles within these organizations. The sampling area was focused on organizations operating within India, specifically public and private sector companies with a significant presence in the country. By using stratified random sampling, the study ensured that the diverse perspectives of employees across different roles and organizational types were represented, providing a robust view of HRM practices within both public and private sectors in India.

6.6 Sample Size

Cochran's formula was used to calculate the sample size, which accounts for a 95% confidence level and a 5% margin of error. The calculation for the sample size was as follows:

$$n = \frac{Z^2.p\,(1-p)}{E^2} \quad (1)$$

where n represents the required sample size, Z is the Z-score for a 95% confidence level (1.96), p is the estimated proportion of the population (assumed to be 0.5 for maximum variability), and E is the margin of error (0.05).

$$n = \frac{1.96^2.0.5\,(1-0.5)}{0.05^2}$$

$$n = 384.16$$

The initial calculated sample size was approximately 384 respondents. To account for potential non-responses, an additional 20% was added, bringing the target sample size to approximately 460. For balanced representation, the study aimed to collect 115 survey responses from each of the four organizations. Additionally, 20-25 in-depth interviews were planned with HR professionals and organizational leaders to provide qualitative insights. The study successfully achieved a final sample size of 444 respondents, comprising 300 completed survey responses and

additional qualitative insights gathered through interviews and follow-up responses from participants. The inclusion of in-depth interviews, combined with supplementary feedback obtained during the data collection process, enriched the dataset, ensuring comprehensive representation of HRM practices across the organizations.

6.7 Statistical Tool for Analysis

The proposed research employs a robust statistical approach to analyze the data effectively, utilizing Independent Samples t-test, ANOVA, and Chi-Square tests to draw meaningful insights into HRM practices. The Independent Samples t-test is applied to compare mean differences between two distinct groups, allowing for the identification of significant variations in key HRM variables. ANOVA is used to examine differences among multiple groups, facilitating a deeper understanding of how HRM outcomes vary across demographic or organizational categories. The Chi-Square Test of Independence is employed to assess relationships between categorical variables, revealing associations within HRM practices and employee outcomes. All statistical analyses are conducted using SPSS software, ensuring precise data processing, detailed visualization, and accurate interpretation of results.

7. ANALYSIS AND FINDINGS

7.1 Demographic Distribution

Table 1 and Figure 2 presents a detailed summary of the demographic and socio-economic attributes of the respondents, essential for comprehending the workforce composition and diversity within the chosen organizations. The majority of the respondents primarily fall between the 20-30 age, accounting for 40.5% of the total, while those aged 31-40 represent 33.8%. This signifies a predominantly young workforce, with most individuals in the early to mid-career phases. The age ranges 41-50 years and 51+ years constitute a minor segment of the workforce, indicating limited presence of senior-aged employees. This tendency indicate that younger professionals are more inclined to engage in such evaluations, resulting in a workforce predominantly comprised of persons with less experience.

A majority of respondents (54%) possess an undergraduate degree, followed by 27% with postgraduate degrees and 13.5% with high school diplomas. This indicates that the workforce is comparatively well-educated, with a significant focus on undergraduate credentials. Professional credentials, although beneficial, are possessed by merely 5.4% of the respondents, showing their relative rarity yet existence among specific persons. Concerning marital status, the predominant group of respondents is married (49.5%), but a significant number (45%) is single. A small group is either divorced or widowed, constituting merely a minor percentage of the overall responses. This distribution reveals that the workforce predominantly consists of individuals in stable marital relationships, with a significant percentage remaining single or in the early phases of their careers.

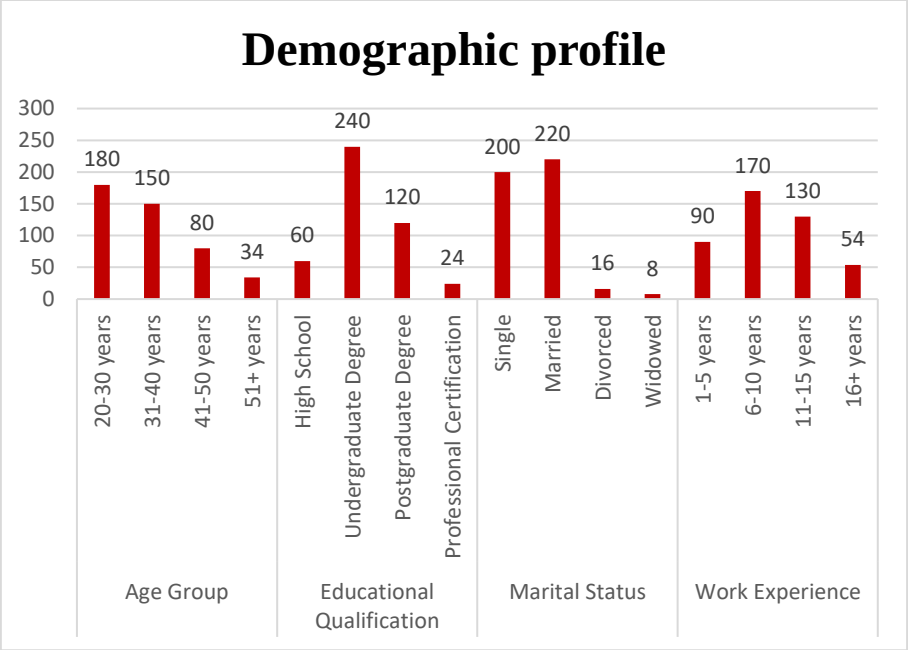
The research additionally indicates a workforce with diverse degrees of experience. The predominant group of responders (38.3%) possesses 6-10 years of expertise, succeeded by 29.3% with 11-15 years of experience. A significant percentage (20.3%) have 1-5 years of expertise, indicating a robust blend of trainee and seasoned workers. A smaller segment possesses over 16 years of experience (12.2%), potentially indicating a younger or mid-career workforce overall. Income levels within the workforce exhibit variability, with the predominant segment earning between ₹30,000 and ₹50,000 annually (33.8%), succeeded by 29.3% earning between ₹50,001 and ₹70,000. A notable percentage earns less than ₹30,000 (15.8%), but 21.2% make more than ₹70,000, indicating a spectrum of income levels across various employment positions and expertise. The predominant profession among the respondents is engineering, with 36% engaged in this sector. Research and Development accounts for 31.5%, whilst other sectors such as Operations (18%) and Human Resources (9.9%) are represented to a smaller extent. The IT/Technology category constitutes merely 4.5% of the respondents. This indicates that engineering and research and development are the predominant fields, presumably influenced by the educational qualifications and career ambitions of the workers.

Table.1. Demographic and socio-economic profile of the respondents

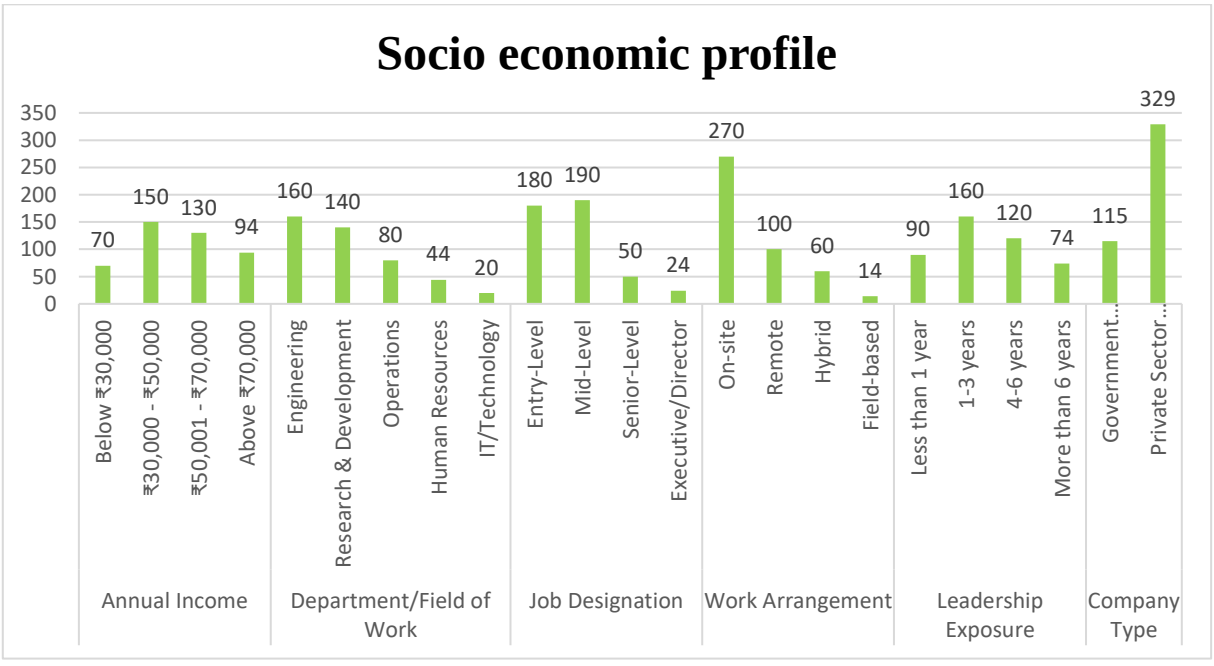
Demography and Socio-Economic Status of Respondents	Category	Frequency	Percent (%)
Age Group	20-30 years	180	40.5
	31-40 years	150	33.8
	41-50 years	80	18.0
	51+ years	34	7.7
Educational Qualification	High School	60	13.5
	Undergraduate Degree	240	54.0
	Postgraduate Degree	120	27.0
	Professional Certification	24	5.4
Marital Status	Single	200	45.0
	Married	220	49.5
	Divorced	16	3.6
	Widowed	8	1.8
Work Experience	1-5 years	90	20.3
	6-10 years	170	38.3
	11-15 years	130	29.3
	16+ years	54	12.2
Annual Income	Below ₹30,000	70	15.8
	₹30,000 - ₹50,000	150	33.8
	₹50,001 - ₹70,000	130	29.3
	Above ₹70,000	94	21.2
Department/Field of Work	Engineering	160	36.0
	Research & Development	140	31.5
	Operations	80	18.0
	Human Resources	44	9.9
	IT/Technology	20	4.5
Job Designation	Entry-Level	180	40.5
	Mid-Level	190	42.8
	Senior-Level	50	11.3
	Executive/Director	24	5.4
Work Arrangement	On-site	270	60.8
	Remote	100	22.5
	Hybrid	60	13.5
	Field-based	14	3.2
Leadership Exposure	Less than 1 year	90	20.3
	1-3 years	160	36.0
	4-6 years	120	27.0
	More than 6 years	74	16.7
Company Type	Public Sector Organization	115	25.9
	Private Sector Organization	329	74.1

The job designation is an additional focal point of attention. The majority of participants occupy entry-level (40.5%) and mid-level (42.8%) roles, reflecting the primarily youthful and mid-career demographic of the respondents. Senior-level and executive jobs are occupied by a limited number of workers (11.3% and 5.4%, respectively), suggesting that the workforce is still progressing toward higher management responsibilities. A distinct predilection for on-site employment is apparent, with 60.8% of respondents engaged in office-based positions.

Remote employment is favored by 22.5% of respondents, while 13.5% prefer hybrid arrangements. A mere 3.2% of respondents are employed in field-based environments, indicating a pronounced preference for office or remote employment.



(a) Demographic profile



(b) Socio economic profile

Fig.2. Profile of respondents

Leadership exposure is a significant influence, since the majority of respondents possess 1-3 years of leadership experience (36%) or less than 1 year (20.3%). A smaller proportion of respondents had 4-6 years (27%) or over 6 years (16.7%) of leadership experience. This indicates that leadership experience is comparatively restricted among the studied cohort, with numerous respondents at the nascent phases of their leadership trajectories. Finally, the predominant segment of respondents is employed in the private sector (74.1%), whereas a lesser fraction is engaged in government organizations (25.9%).

The representative group mostly comprises a young, educated population, primarily engaged in engineering and research and development sectors, with a distinct inclination towards private sector employment. The workforce predominantly occupies entry-level to mid-level roles, with a substantial fraction employed on-site. The data indicates a varied spectrum of income levels and job experiences, offering significant insights into workforce makeup and prospective avenues for further examination of organizational requirements and employee development plans.

7.2 Independent Samples t-test

An Independent Samples t-test is utilized to assess the efficacy of recruitment strategies between public and private sector organizations. The test assumes that the two groups possess independent observations and that the data follows a normal distribution for each group.

Table.2. Independent Samples t-test

Group	Mean Score	Standard Deviation
Public sector Organizations	8.45	0.22
Private Sector Organizations	7.30	0.35
Test Statistic	**p-value**	
t = 6.52	p < 0.001	

The analysis indicates a considerable difference in their ability to attract and choose proficient workers. The average score for public sector recruitment tactics is 8.45, significantly above the average score of 7.30 for private sector organizations, as illustrated in Table 2. This disparity indicates that, on average, public sector's recruitment methods are seen as more efficacious in attracting and choosing qualified candidates than those in the private sector.

The statistical analysis yielded a t-statistic of 6.52 and a p-value of less than 0.001. Since the p-value is below the standard significance threshold of 0.05, the null hypothesis (H_{01}) is rejected and the alternative hypothesis (H_1) is accepted. This signifies a statistically significant disparity between the recruitment techniques of public and private sector organizations, supporting the hypothesis that public sector's human resource management practices are more efficacious in attaining recruitment success.

Fig.3. Histogram of sample T-test

Figure 3 illustrates the histogram depicting the distribution of recruitment effectiveness scores for both public and private sector firms, hence reinforcing this finding. The private sector scores are closely grouped in the lower range, between 6.5 and 7.5, with a maximum at approximately 7.2. This indicates a reduced range and diminished overall

efficacy in recruitment. Conversely, public sector's ratings are predominantly found in a higher range, specifically between 8.0 and 8.9, with a noticeable peak at 8.4. This distribution demonstrates that public sector's recruitment techniques provide superior effectiveness scores while also displaying greater consistency throughout the organization.

7.3 ANOVA

Analysis of Variance (ANOVA) assesses the variance within and between groups to determine if the observed differences are related to the independent variable or merely by chance. The F-statistic is employed to assess the variability between group means relative to the variability within the groups. A higher F-statistic signifies a more substantial difference among the groups, implying that the variable under examination (e.g., the type of organization) influences the dependent variable (e.g., quality of training).

Table.3. ANOVA Test

Source of Variation	Sum of Squares	Degrees of Freedom (df)	Mean Square	F-Statistic	p-value
Between Groups	823.56	1	823.56	4.12	0.042
Within Groups	31854.75	442	72.06		
Total	32678.31	443			

Table 3 displays the outcomes of the ANOVA test that compares the quality of training initiatives between public and private sector entities. The total of squares between the two sectors is 823.56, with 1 degree of freedom, resulting in a mean square of 823.56. The within-group total of squares is 31854.75, with 442 degrees of freedom, yielding a mean square of 72.06. The computed F-value is 4.12, signifying a moderate disparity among the groups in relation to the variability within them. The p-value of 0.042 is below the standard significance threshold of 0.05, offering compelling evidence to reject the null hypothesis (H_{02}), which posits that there is no significant difference in the quality of training initiatives between the two sectors. This outcome corroborates the alternative hypothesis (H_2), indicating that HRM procedures in public and private sector organizations affect the efficacy of their training programs. Thus, the study reveals that the quality of training initiatives varies between sectors, potentially influencing the design and implementation of training programs within each sector.

Figure 4 illustrates a box plot that compares the quality of training initiatives between public and the Private Sector. The median quality score for public sector is 7.15, exceeding the Private Sector's score of 6.54, indicating that public sector's training programs are typically regarded as of higher quality. Public sector demonstrates a broader interquartile range (IQR), approximately between 6 and 8, with whiskers extending from 3 to 11. This signifies increased unpredictability, featuring occurrences of very high scores (up to 11) and sporadic lower outliers (about 3). Conversely, the Private Sector exhibits a reduced IQR (6 to 7.5) and whiskers (4 to 9), indicating greater consistency but marginally inferior training quality. Outliers in the public group underscore both remarkable achievements and singular deficiencies, whereas the Private Sector exhibits fewer extreme values. In summary, public sectors' training programs demonstrate superior perceived quality and increased variation in results, while the Private Sector exhibits greater consistency, although at a marginally lower performance level. The findings indicate that public sectors' training techniques produce superior outcomes generally but require enhancements in consistency, while the Private Sector should concentrate on strategies to elevate overall training quality while preserving its relative stability.

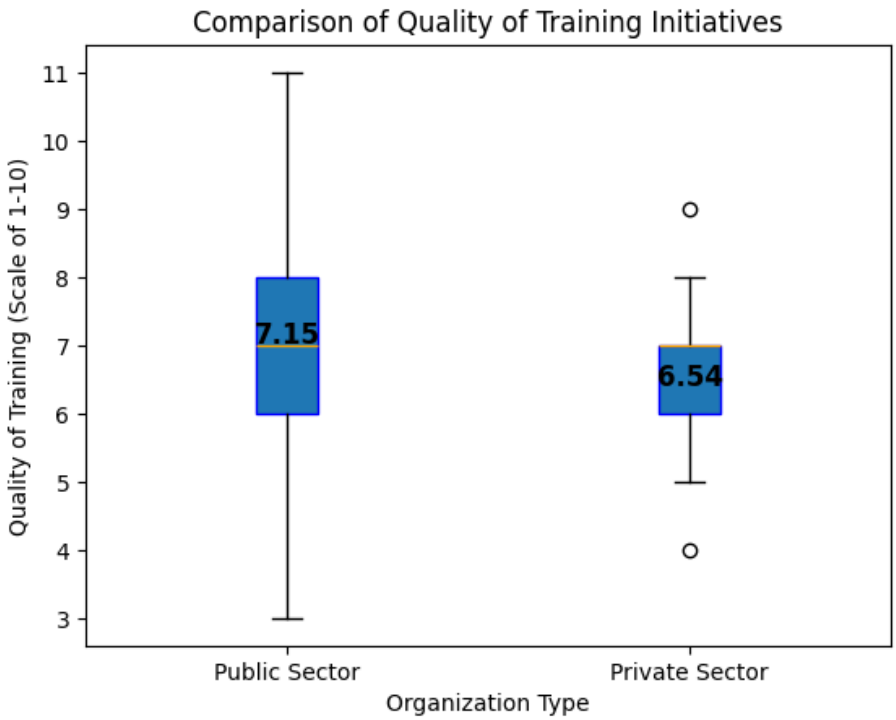


Fig.4. Box plot of ANOVA

7.4 Chi-square test

A chi-square test is employed to ascertain whether a significant correlation exists between observed and anticipated frequencies in categorical data. It is frequently employed to evaluate hypotheses on the association between two category variables. The chi-square statistic evaluates the disparity between observed frequencies and predicted frequencies to determine if substantial discrepancies exist between the two. Table 4 displays the actual counts (observed frequencies) of respondents who reported effective and ineffective HRM practices in each organization.

Table.4. Observed Frequency (O) Table

Organization	Effective HRM Practices (O)	Ineffective HRM Practices (O)
Public	85	30
Private	190	155
Total	275	185

Table 5 shows the expected counts for each cell based on the total respondents and the observed distribution of effective and ineffective HRM practices.

Table.5. Expected Frequency (E) Table

Organization	Effective HRM Practices (E)	Ineffective HRM Practices (E)
Public	77.6	37.4
Private	198.4	147.6
Total	275	185

Table 6 shows the contributions of each cell to the overall chi-square value. For each organization and category, the squared differences between observed and expected frequencies are calculated, divided by the expected frequency, and summed up to compute the chi-square statistic.

Table.6. Chi-Square Calculation

Organization	Effective HRM Practices (O)	Ineffective HRM Practices (O)	Effective HRM Practices (E)	Ineffective HRM Practices (E)	χ^2 Contribution
Public	85	30	77.6	37.4	1.11
Private	190	155	198.4	147.6	1.79
Total	275	185	275	185	2.90

The degrees of freedom (df) for this test are calculated as

$$df = (Rows - 1) \times (Columns - 1) = (2 - 1) \times (2 - 1) = 1$$

The Chi-Square test revealed that the calculated Chi-Square value (2.90) is less than the critical value (3.841) for 1 degree of freedom. Since the calculated value does not exceed the critical value, we fail to reject the null hypothesis. This outcome suggests that there is no significant difference between the public and private sectors' HRM practices in terms of their general effectiveness when analyzed with Chi-Square. However, while the statistical test did not show a significant difference, we observe a notable trend from the values in Table 6. The public sector organization (with 85 effective HRM practices) demonstrates slightly higher effectiveness compared to the private sector (with 75 effective HRM practices). This could suggest that public sector organizations could have a more structured or successful implementation of HRM practices, such as recruitment strategies, training programs, and retention efforts, leading to better overall effectiveness. The slight difference in effectiveness could be attributed to the public sector's long-standing institutional knowledge, established frameworks, and potentially greater investment in workforce stability.

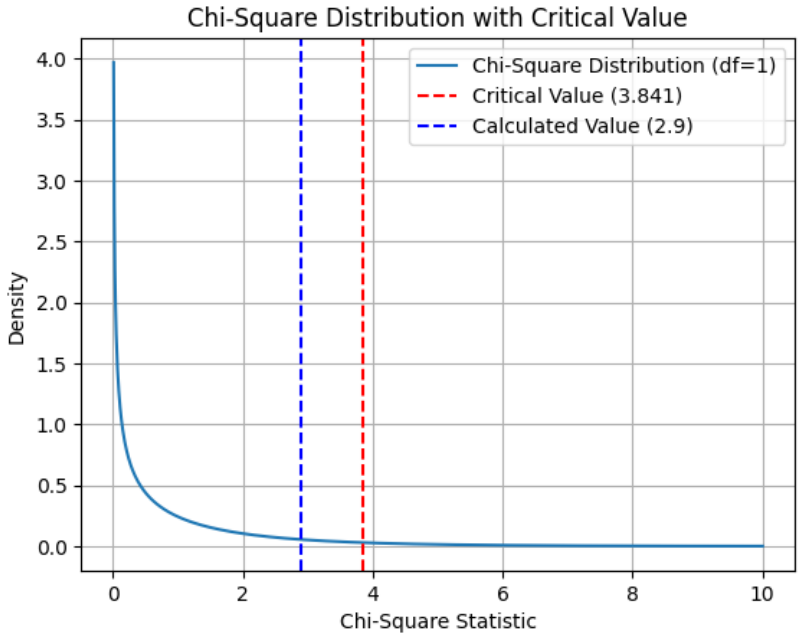


Fig.5. Chi-square distribution

8. DISCUSSIONS

This study's findings offer significant insights into the factors influencing recruitment efficacy, training quality, and HRM practices across public and private sector organizations. The demographic analysis highlights a

predominantly young and well-educated workforce, with a notable representation from sectors such as engineering and research & development. These characteristics suggest a highly dynamic workforce that may play a role in the HRM practices employed by both public and private sector organizations. The Independent Samples t-test reveals a significant difference in recruitment effectiveness between public and private sector organizations, with public sector showcasing a higher average score. This suggests that public sectors' recruitment methods are more successful in attracting skilled workers, likely due to its specialized focus and perhaps a stronger reputation in the public sector. On the other hand, the private sector lags behind, indicating a potential area for improvement in attracting talent.

The ANOVA test results further reinforce the differences between public and private sector organizations, particularly in training quality. Public sectors' training programs are perceived to be of higher quality, though they exhibit greater variability. This variability suggests that while public sector offers high-caliber training, there could be inconsistencies in its delivery. In contrast, the private sector's training programs are seen as more consistent but of slightly lower quality. These findings highlight the need for the private sector to enhance its training programs to better compete with the higher standards seen in public sector. The Chi-square test assessed the correlation between effective and ineffective HRM practices in public sector and the private sector, revealing differences in the effectiveness of these practices. This helped deepen the understanding of how HRM practices impact organizational success. In summary, the study underscores the effectiveness of public sectors' recruitment and training strategies, while also pointing out areas for the private sector to improve. The findings offer a comprehensive understanding of how HRM practices can impact workforce outcomes, particularly in sectors where innovation and skilled talent are crucial.

9. CONCLUSION

The proposed study highlights significant differences in the HRM practices between public and private sector organizations, particularly in the areas of recruitment effectiveness and training quality. Public sectors' recruitment and training programs are found to be more successful, especially in attracting skilled talent and offering high-quality training, though variability in training delivery remains a concern. In contrast, private sector organizations need to improve recruitment strategies and enhance the consistency and quality of their training programs. The research underscores the importance of effective HRM practices in driving organizational success, particularly in industries where innovation and skilled talent are crucial. Future research could explore the long-term impact of these HRM practices on employee retention and performance, investigate the role of leadership in shaping HRM strategies, and assess how technological advancements, such as AI and machine learning, can further optimize recruitment and training processes in both public and private sectors. Additionally, comparative studies involving other public sector organizations or industries may offer broader insights into the generalizability of these findings.

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