Implementation of Green Human Resource Management Practices in Telecom Companies

Vipin Maurya[1], Sanjay Thakur[2], Rajat Sharma[3]

[1]Research Scholar, Department of Commerce & Management Studies, Career Point University Hamirpur H.P (India)

[2]Professor, Department of Commerce & Management Studies, Career Point University Hamirpur H.P.

[3]Department of Commerce & Management Studies, Career Point University Hamirpur H.P (India).

Abstract

Purpose: Concerns of increasing global warming and pollution through industrialization have attracted worldwide attention. Thereby implementation of Green Human Resource Management practices to decreases carbon footprints have emerged as a key concern for every organization. The present study aims to assess employees' green behaviour and their perception towards implementation of GHRM practices in telecom companies of India.

Design/methodology/approach: Study used survey method to collect the response from employees in major telecom companies in India. Data was collected with a pretested questionnaire from employees of BSNL, Airtel, Jio and Idea-Vodafone.

Findings: Study revealed a significant difference in perception of employees towards implementation of GHRM practices, the successful adoption of GHRM, *inter alia,* necessitate the deep-rooted engagement of employees at top/middle level and change in their behaviour to reduce carbon footprints.

Research implications: The scarcity of specific data on GHRM implementation in telecom companies necessitates analyzing the extent to which the practices and policies of GHRM are incorporated in these organizations. The study will provide a framework for understanding approach of telecom companies towards reducing carbon footprints and to identify areas for potential improvement towards successful implementation of Green Human Resource Management policies.

Keywords: Green Human Resource Management, Carbon Footprints, Global Warming, Environmental Sustainability.

INTRODUCTION

Green Human Resource Management is an emerging trend that integrates environmental considerations into various Human Resource functions, like recruitment, training, performance management, and fostering employees' green behaviours. This alignment with organizational sustainability goals is essential for fostering a culture of environmentally responsible behaviours within the workplace (Kathuria, 2024; Vasilev et al., 2024). GHRM has emerged as a vital function for organizations striving to enhance environmental sustainability while simultaneously achieving strategic business objectives (Gill *et al*., 2021). GHRM represents the integration of environmental management principles with traditional human resource functions, recognizing the significant role that human resources play in promoting environmentally conscious behaviours within organizations (Janali *et al*., 2020). GHRM

encompasses the entire employee lifecycle, advocating for sustainable practices and a culture of environmental responsibility, that extend beyond operational efficiency to encompass a holistic approach to environmental stewardship (Ansari *et.al., 2024*). This strategic alignment of HRM with environmental goals necessitate a comprehensive framework that address all aspects of Human Resource Management: recruitment, training, performance evaluation, compensation, and culture. This approach is vital for cultivating a productive and environmentally conscious workforce, ultimately contributing to long-term sustainability (Kathuria, 2024). Despite its growing importance, the implementation of GHRM practices remains a relatively novel concept in many organizations, particularly in developing countries. However, an increasing number of organizations have begun to embrace GHRM, incorporating it into some or all of their human resource management practices (Ramasamy et al., 2017). As global environmental consciousness continues to rise, organizations worldwide are increasingly acknowledging the necessity of integrating ecological considerations into their HR practices (Martins et al., 2021; Wang & Makhbul, 2024). One of the contemporary challenges faced by HR professionals is the effective integration of environmental sustainability into human resource policies.

The study specifically investigates GHRM practices within telecommunication sector, an industry characterized by high energy consumption and significant infrastructure demands that present unique sustainability challenges. It examines how initiatives such as eco-friendly recruitment, green training programs, and sustainability-linked compensation can enhance environmental conservation efforts, improve organizational performance, and increase employee engagement. By analysing employee perceptions of employees in leading telecom companies, this research aims to evaluate the effectiveness of these GHRM practices in achieving environmental objectives, reducing operational costs, and enhancing corporate reputation.

The subsequent sections of this paper will detail the methodology employed, present the findings, discuss the implications of the research, and outline future research directions.

Conceptual Background

Modern organizations, often compared to "small cities" due to their size, resource consumption, and complex operations, exert significant influence on both the environment and society (Alshuwaikhat & Abubakar, 2008). The implementation of GHRM typically involves four key steps: establishing an environmental vision, training employees to align with this vision, assessing their environmental performance, and rewarding their contributions (Clair et al., 1996). Daily and Huang (2001) similarly identify four essential processes—managerial support, training, empowerment, and rewards—that align with the Job Characteristics Model. This model enhances skill variety, task identity, and significance through shared goals and training, while fostering autonomy and recognition of impact through empowerment and rewards. Environmental performance can be measured using indicators such as reduced emissions, pollution prevention, waste minimization, and recycling (Lober, 1996). Furthermore, the effectiveness of GHRM can be enhanced through the implementation of environmental management systems, such as ISO 14001, which integrate human resource management with environmental management practices (del Brio et al., 2007).

Green HRM Practices in Telecom Industry

The telecom industry faces unique challenges in terms of energy consumption, electronic waste, and infrastructure development. Implementing GHRM practices such as green recruitment, eco-friendly

training, sustainability-linked performance management, and employee engagement can help telecom companies address these challenges. Green Human Resource Management (GHRM) practices in the telecommunications industry are increasingly vital for promoting sustainability and enhancing organizational performance. Key practices include eco-friendly recruitment, where companies seek candidates with a commitment to environmental responsibility, and comprehensive green training programs that equip employees with the skills necessary for sustainable practices (Yong et al., 2019). Performance management systems are also being adapted to include environmental metrics, encouraging employees to contribute to sustainability goals (Daily & Huang, 2001). Additionally, telecom companies are implementing sustainability-linked compensation and rewards to motivate eco-friendly behaviours among employees (Renwick et al., 2013). By integrating these GHRM practices, telecom organizations can effectively address their environmental impact while fostering a culture of sustainability.

Research Methods

The research is qualitative and exploratory. The study was carried out among executives and senior officers of Bharat Sanchar Nigam Limited. Questionnaire designed was pretested and evaluated and was divided in three sections. The objective is to find out the perception of employees at different levels of management towards adoption and implementation of GHRM. Specifically, the study is focussed on below mentioned objectives:

Objectives:

1. To study employee's green behaviour in terms of their attitude, perception and personal moral norms towards green human resource management practices and environment sustainability.
2. To analyse the perception of employees towards adoption and implementation of Green Human Resource Management Practices in telecom companies viz. BSNL, Airtal, Jio and Idea-Vodafone in India.

Sample, Data and Methods

The study employs a descriptive and exploratory research design, starting with a pilot survey to investigate Green HRM aspects and draw conclusions. Data gathered via self-administered questionnaires from employees and top/middle management at BSNL, Airtel, Reliance Jio, and Vodafone Idea, using stratified random sampling across management levels. The minimum sample size, based on Krejci and Morgan's (1970) table (375 and 373), is adjusted to: 40 executives from BSNL, 30 executives (10 each) from Airtel, Reliance Jio, and Vodafone Idea, 120 employees from BSNL, and 180 employees (60 each) from the three private firms, targeting a total of 350±5% responses. Data collection done from September – December 2024. Data analysis will involve statistical tests like mean and standard deviation.

Results and Discussion

Table 1. Salient Socio-Economic Characteristics of Respondents

Gender	BSNL	Jio	Airtel	VI	Total
Male	136 (85.0)	70 (100.0)	63 (90.0)	57 (81.4)	326 (88.1)

Female	24 (15.0)	0 (0.0)	7 (10.0)	13 (18.6)	44 (11.9)
Age of the respondent					
Less than 25 years	0 (0.0)	0 (0.0)	1 (1.4)	1 (1.4)	2 (0.5)
25-35 Years	13 (8.1)	15 (21.4)	36 (51.4)	20 (28.6)	84 (22.7)
35 – 45 Years	48 (30.0)	46 (65.7)	25 (35.7)	30 (42.9)	149 (40.3)
45- 55 Years	91 (56.9)	8 (11.4)	8 (11.4)	15 (21.4)	122 (33.0)
More than 55 Years	8 (5.0)	1 (1.4)	0 (0.0)	4 (5.7)	13 (3.5)
Management Level					
Top/Middle Level	40 (25.0)	10 (14.3)	10 (14.3)	10 (14.3)	70 (18.9)
Executives	120 (75.0)	60 (85.7)	60 (85.7)	60 (85.7)	300 (81.1)
Length of Service (in Years)					
<5	1 (0.6)	15 (21.4)	34 (48.6)	24 (34.3)	74 (20.0)
5-10	11 (6.9)	51 (72.9)	28 (40.0)	18 (25.7)	108 (29.2)
10-15	56 (35.0)	4 (5.7)	5 (7.1)	9 (12.9)	74 (20.0)
>15	92 (57.5)	0 (0.0)	3 (4.3)	19 (27.1)	114 (30.8)
Total Count	160 (100.0)	70 (100.0)	70 (100.0)	70 (100.0)	370 (100.0)

Source: Primary Data

The table outlines the demographic and experience profile of employees in major Indian telecom companies, revealing workforce differences tied to strategy, market positioning, or growth history. Males predominate, with Jio at 100% and BSNL at 85%. The 25-35 age group is significant at Airtel (51.4%), followed by Jio and VI, while the 35-45 group dominates overall, especially at Jio (65.7%). BSNL has the most employees aged 45-55 (56.9%), reflecting an older workforce. For service length, Airtel leads with employees under 5 years (48.6%), suggesting recent hiring or turnover, Jio has many with 5-10 years (72.9%) due to its recent market entry, and BSNL has the highest numbers of employees with 10-15 years (35.0%) and over 15 years (57.5%) of services, indicating stability and lower turnover.

II. Organisation wise Perception of Employees Towards adoption and Implementation of GHRM practices

Table 1I Practices towards adoption and implementation of GHRM

S. No	Organization wise analysis of respondents	BSNL (n=160)		Jio (n=70)		Airtel (n=70)		Vodafone Idea (n=70)		Total (n=370)	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
1	There exist policies in regard to environmental sustainability.	3.49	1.03	4.33	0.68	3.67	1.09	3.96	1.03	3.77	1.03
2	BSNL vision, mission is linked with Green HR Policy	3.50	1.13	4.37	0.62	3.67	1.14	4.04	1.07	3.80	1.09
3	Seminars, workshops, awareness programs on eco-friendly practices are held from time to time	3.23	1.22	4.26	0.76	3.67	1.16	3.94	1.08	3.64	1.17
4	Green practices viz less printing, less electricity, usage of public transport, creating green fields etc. are adhered in the office	3.78	1.10	4.31	0.75	3.79	1.15	4.07	1.08	3.94	1.07
5	Management sets green targets, goals and responsibilities.	3.26	1.17	4.30	0.77	3.49	1.24	3.87	1.09	3.61	1.17
6	Job Description includes environmental perspectives as a Part of Green HRM	3.15	1.19	4.21	0.85	3.46	1.18	3.74	1.24	3.52	1.21
7	Green HRM is a part of KPI (Key Performance Indicators) in performance management system and appraisals	3.05	1.21	4.06	1.05	3.27	1.24	3.69	1.12	3.40	1.23
8	During recruitment interviews, the interviewees are also assessed on the basis of knowledge and awareness about GHRM practices before selection.	2.96	1.20	4.06	0.85	3.16	1.34	3.56	1.06	3.32	1.21
9	BSNL organizes Green Induction & Orientation Programs	3.24	1.21	4.19	0.69	3.37	1.30	3.73	1.20	3.54	1.20

10	Training modules focuses on environmental policies & practices.	3.33	1.16	4.26	0.74	3.41	1.26	3.74	1.13	3.60	1.16
11	BSNL implements e-training / virtual training policies	4.06	0.97	4.40	0.73	3.71	1.22	4.09	1.19	4.06	1.04
12	Employee's performance is evaluated with respect to Green HRM functions.	3.05	1.15	4.07	0.89	3.16	1.30	3.57	1.19	3.36	1.20
13	BSNL sets Green Behaviour targets for employees	3.12	1.16	4.11	0.86	3.20	1.35	3.54	1.20	3.40	1.21
14	KPI also includes Green HRM practices.	3.03	1.20	4.01	0.89	3.23	1.28	3.66	1.13	3.37	1.21
15	Environmental performance indicators like (ISO 14001, EMS) are considered during Green Performance appraisal	3.03	1.09	4.06	0.87	3.23	1.30	3.49	1.07	3.35	1.15
16	BSNL offer rewards to all those employees who contribute towards innovative Green HRM functions in accomplishing the environmental assignments and reducing carbon footprints.	2.98	1.22	4.03	0.93	3.33	1.21	3.74	1.09	3.39	1.21
17	There are penalties for non-compliance on targets in environmental management systems	2.88	1.09	4.09	0.97	3.29	1.19	3.61	1.05	3.32	1.17
18	BSNL organizes workshops/ forums /seminar activities for awareness in Green HRM behaviour	3.19	1.16	4.20	0.81	3.41	1.20	3.73	1.09	3.52	1.16
19	Green HRM promotes employees to enhance their performance through Virtual meeting, digital tools and applications	3.74	1.05	4.31	0.81	3.54	1.20	3.91	1.09	3.85	1.07
20	Employees take responsibility towards environment and society	3.84	0.92	4.36	0.80	3.56	1.21	4.11	1.03	3.94	1.01

Source: Primary Data

The table summarizes responses from 370 respondents across BSNL (n=160), Jio (n=70), Airtel (n=70), and Vodafone Idea (n=70) on 20 Green Human Resource Management (GHRM) factors, rated on a

Likert scale. Total mean scores range from 3.32 (penalties for non-compliance) to 3.94 (employee responsibility), with standard deviations (1.01–1.23) indicating moderate variability. Jio shows the highest means (4.01–4.40) and lowest variability (0.62–1.05), with "e-training policies" (4.40) topping the list. BSNL scores lowest (2.88–4.06), especially on "penalties" (2.88), with moderate-to-high variability (0.92–1.22). Airtel's means (3.16–3.79) and high variability (1.09–1.35) suggest mixed perceptions, while Vodafone Idea's stronger means (3.49–4.11) and moderate variability (1.03–1.24) highlight "employee responsibility" (4.11). Overall, "employee responsibility" and "green practices" (3.94) score highest, while penalties and recruitment-related GHRM (3.32) lag. Jio reflects a consistent, positive GHRM culture; BSNL shows the weakest perceptions and uneven adoption; Airtel and Vodafone Idea sit in between, with gaps in recruitment and penalty integration.

Table 1II Factors contributing towards implementation of GHRM practices

S. No	Organization wise analysis of respondents	BSNL (n=160)		Jio (n=70)		Airtel (n=70)		Vodafone Idea (n=70)		Total (n=370)	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
1	Environmental Laws and Regulations – ISO, Green Practices	3.66	0.58	3.89	0.36	3.31	0.99	3.51	0.91	3.61	0.74
2	Environmental degradation	3.43	0.83	3.56	0.77	3.27	0.96	3.36	0.92	3.41	0.86
3	Responsibility towards society	3.82	0.43	3.93	0.26	3.44	0.96	3.63	0.78	3.73	0.64
4	Stakeholders' expectation – Management, Employees and Customers	3.74	0.50	3.84	0.44	3.33	0.93	3.59	0.84	3.65	0.68
5	Changing technologies – ERP/CRM/EDI and other digital tools and applications – Adoption and Implementation	3.81	0.49	3.86	0.43	3.36	0.93	3.67	0.76	3.71	0.66
6	Green advocacy – Inclination of Management towards implementation of	3.69	0.58	3.87	0.41	3.37	0.89	3.69	0.73	3.66	0.67

	GHRM practices									
7	Opportunities for Green behaviour	3.68	0.59	3.86	0.43	3.30	0.95	3.64	0.78	3.64	0.71
8	Technological advancement	3.79	0.54	3.89	0.40	3.39	0.94	3.73	0.74	3.72	0.67
9	GHRM – Enhance performance and reputation of organization	3.74	0.55	3.86	0.43	3.43	0.89	3.66	0.78	3.69	0.67
10	Minimize negative impacts of business on environment and society	3.74	0.56	3.83	0.45	3.34	0.98	3.69	0.79	3.67	0.71
11	Campaign - Go Green initiative	3.80	0.52	3.89	0.36	3.39	0.97	3.69	0.77	3.72	0.68
12	Meeting the customer expectations with technology	3.83	0.47	3.86	0.43	3.39	0.94	3.70	0.80	3.72	0.67

Source: Primary Data

The table evaluates environmental, social, and technological factors across 370 respondents from BSNL (n=160), Jio (n=70), Airtel (n=70), and Vodafone Idea (n=70), using mean scores and standard deviations (likely 1–5 Likert scale). Total means range from 3.41 ("Environmental degradation") to 3.73 ("Responsibility towards society"), with moderate consistency (SD 0.64–0.86). Jio leads with high means (3.56–3.93) and low variability (SD 0.26–0.77), peaking at "Responsibility towards society" (3.93). Airtel scores lowest (3.27–3.44) with high variability (SD 0.89–0.99), weakest on "Environmental degradation" (3.27). BSNL's means (3.43–3.83) are strong, led by "Meeting customer expectations with technology" (3.83), with moderate variability (SD 0.43–0.83). Vodafone Idea's means (3.36–3.70) are mid-range, highest on "Meeting customer expectations with technology" (3.70), with moderate variability (SD 0.73–0.92). Overall, "Responsibility towards society" (3.73) and tech factors (3.71–3.72) score highest, while "Environmental degradation" (3.41) is lowest.

Table 1V Green Practices regarding recruitment, training and compensation

S.No	Organization wise analysis of respondents	BSNL (n=160)		Jio (n=70)		Airtel (n=70)		Vodafone Idea (n=70)		Total (n=370)	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
1	Organization has green job descriptions for employees	3.06	0.95	3.74	0.56	3.19	1.01	3.53	0.76	3.30	0.90

2	Organization has well developed online tools & IT enabled processes to deal with recruitment and selection process	3.66	0.67	3.87	0.45	3.36	1.00	3.63	0.80	3.64	0.75
3	Onboarding of employees is done through ERP or similar software application/digital tools	3.76	0.59	3.90	0.39	3.39	0.94	3.69	0.77	3.70	0.69
4	Employees Performance Appraisals/ Transfers / Internal Job Postings / Salary Slips / Personal Claims / Other emoluments etc. are being processed through digital applications	3.89	0.35	3.91	0.38	3.41	0.96	3.75	0.69	3.78	0.61
5	All the application forms for recruitment are accepted online	3.74	0.55	3.91	0.37	3.43	0.99	3.70	0.71	3.71	0.68
6	HR takes regular feedback of GHRM practices followed by its employees	2.92	1.00	3.68	0.70	3.24	0.98	3.44	0.81	3.23	0.96
7	Eco-friendly appliances are used to decrease the electricity consumption	3.35	0.91	3.86	0.49	3.37	0.94	3.61	0.80	3.50	0.85
8	BSNL uses Energy Saving Products (Energy star rated products – 4 star & 5 star)	3.64	0.69	3.91	0.37	3.43	0.96	3.59	0.83	3.64	0.74
9	Alternate Green Energy resources like solar panels are used to save the electricity consumption	3.52	0.75	3.80	0.60	3.37	0.94	3.60	0.82	3.56	0.79
10	Green HR practices like Bicycle Day/ Carpooling etc. is practiced	3.02	1.02	3.71	0.67	3.26	1.02	3.60	0.79	3.30	0.96
11	Employees are educated about climate change	3.14	1.03	3.83	0.48	3.34	0.96	3.59	0.83	3.39	0.94
12	Management establishes	3.0	0.99	3.7	0.54	3.2	0.98	3.5	0.83	3.3	0.94

	green targets, objectives, and duties for each employee across organization	1		9		4		3		0
13	Top management supports and promotes green practices	3.36	0.84	3.86	0.43	3.40	0.93	3.63	0.84	3.51	0.82

Source: Primary Data

The table analyses green HR and digital process adoption across four telecom companies—BSNL (n=160), Jio (n=70), Airtel (n=70), and Vodafone Idea (n=70)—based on 14 statements rated on a scale (likely 1–5). Means range from 3.23–3.78 (SD 0.61–0.96) overall, indicating moderate adoption. Jio leads (means: 3.68–3.91, SD 0.37–0.70), showing strong, consistent green HR and digital practices. BSNL scores lowest (means: 2.92–3.89, SD up to 1.03), reflecting weaker, variable adoption. Airtel and Vodafone Idea are mid-tier, with Airtel typically below Vodafone Idea but above BSNL. Digital processes (e.g., appraisals: 3.78, onboarding: 3.70) outpace green HR practices (e.g., feedback: 3.23, job descriptions: 3.30), suggesting greater digital uptake than sustainability focus. Jio's high scores reflect modern infrastructure and sustainability emphasis, while BSNL lags, possibly due to legacy constraints.

Table V Attitude and Perception of Employees towards Green Practices

S. No	Organization wise analysis of respondents	BSNL (n=160)		Jio (n=70)		Airtel (n=70)		Vodafone Idea (n=70)		Total (n=370)	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
1	Employees are sensitive and caring about preserving/saving nature	3.63	0.64	3.86	0.55	3.31	1.03	3.64	0.80	3.62	0.76
2	Office waste is segregated and recycled / scrapped as per the established guidelines	3.41	0.83	3.83	0.56	3.39	0.92	3.61	0.79	3.52	0.81
3	Solar energy is promoted in place of electrical energy wherever feasible	3.53	0.78	3.89	0.47	3.33	0.96	3.56	0.85	3.56	0.80
4	Stairs are used in place of elevators to move across different floors of the office	3.51	0.77	3.77	0.62	3.23	1.01	3.53	0.85	3.51	0.82
5	Paper printing is discouraged through e-mail footer message	3.62	0.71	3.86	0.49	3.44	0.99	3.50	0.88	3.61	0.78
6	To discourage frequent travelling, video	3.84	0.44	3.93	0.35	3.43	0.99	3.61	0.80	3.74	0.67

	conferencing is used									
7	Have knowledge and awareness of Environmental Management Practices	3.48	0.78	3.90	0.42	3.41	0.96	3.64	0.80	3.58	0.78
8	GHRM practices: Online training, ERP, CRM, etc. are in place	3.70	0.67	3.86	0.49	3.43	0.97	3.59	0.83	3.66	0.75
9	Employees are sensitized towards Green Behaviour	3.41	0.84	3.89	0.40	3.37	1.00	3.57	0.81	3.52	0.82
10	Institution have Green HRM practices in place to develop environmental sensitivity among the employees	3.28	0.90	3.86	0.49	3.37	0.95	3.57	0.83	3.46	0.86
11	Employees feel moral obligations towards saving and conserving the environment	3.61	0.71	3.87	0.45	3.41	0.92	3.64	0.78	3.63	0.74

Source: Primary Data

The table outlines the demographic and experience profile of employees in major Indian telecom companies, revealing workforce differences tied to strategy, market positioning, or growth history. Males predominate, with Jio at 100% and BSNL at 85%. The 25-35 age group is significant at Airtel (51.4%), followed by Jio and VI, while the 35-45 group dominates overall, especially at Jio (65.7%). BSNL has the most employees aged 45-55 (56.9%), reflecting an older workforce. For service length, Airtel leads with employees under 5 years (48.6%), suggesting recent hiring or turnover, Jio has many with 5-10 years (72.9%) due to its recent market entry, and BSNL has high numbers with 10-15 years (35.0%) and over 15 years (57.5%), indicating stability and lower turnover.

Table VI Influence of GHRM on organizational performance

S. No	Organization wise analysis of respondents	BSNL (n=160)		Jio (n=70)		Airtel (n=70)		Vodafone Idea (n=70)		Total (n=370)	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
1	A significant decrease in electricity consumption and energy billing has occurred after the implementation of GHRM practices.	3.59	0.72	3.80	0.53	3.41	0.91	3.53	0.86	3.58	0.76
2	A significant reduction in carbon footprints has occurred	3.56	0.72	3.83	0.51	3.41	0.92	3.49	0.91	3.57	0.78

	after the implementation of GHRM practices.									
3	The outcome of employees has increased	3.52	0.67	3.83	0.51	3.35	0.95	3.56	0.85	3.55	0.75
4	Overall decrease in operational expenses has been observed by implementing GHRM – Green Training, Virtual Meetings.	3.69	0.59	3.83	0.48	3.41	0.99	3.53	0.90	3.63	0.74
5	There is a decrease in air and water pollution levels	3.52	0.72	3.75	0.65	3.34	0.98	3.49	0.85	3.52	0.79
6	Shifted towards Green digital tools like ERP /SAP.	3.84	0.45	3.86	0.46	3.42	0.98	3.61	0.84	3.72	0.68
7	GHRM practices led to the implementation of e-File, e-Dak & e-Receipt.	3.90	0.34	3.86	0.49	3.47	0.91	3.56	0.86	3.74	0.65
8	Employees performance through implementation of online IPMS and e-APAR	3.87	0.42	3.86	0.49	3.40	0.98	3.59	0.86	3.72	0.69
9	Implementation of online e-Attendance system	3.88	0.41	3.86	0.49	3.53	0.91	3.68	0.76	3.77	0.63
10	Online salary information available to employees in the form of e-salary slips	3.91	0.34	3.86	0.49	3.52	0.96	3.69	0.77	3.79	0.63
11	Online submission of leave applications, recommendations and approvals through ESS portal (Employee Self Service)	3.91	0.34	3.86	0.49	3.54	0.90	3.73	0.80	3.80	0.62
12	Online submission of bills pertaining to personal claims.	3.84	0.50	3.87	0.48	3.51	0.94	3.67	0.85	3.75	0.69

Source: Primary Data

The table analyses GHRM outcomes and digital transformation across four telecom companies—BSNL (n=160), Jio (n=70), Airtel (n=70), and Vodafone Idea (n=70)—totalling 370 respondents. It assesses 12 statements via means and standard deviations (SD). BSNL's means (3.52–3.91, SD 0.34–0.72) show strength in digital GHRM but moderate environmental/operational gains. Digital Transformation: BSNL and Jio lead (e.g., e-salary, ESS: 3.91 and 3.86–3.87), Airtel lags (3.40–3.54), and Vodafone Idea ranks mid-tier. Environmental Outcomes: Jio tops energy savings (3.80) and carbon reduction (3.83), Airtel scores lowest (3.41), with BSNL and Vodafone Idea moderate (3.49–3.59). Operational Benefits: Jio and BSNL excel in expense reduction (3.83 and 3.69), Airtel weakest (3.41), with employee outcomes mirroring this (Jio: 3.83, Airtel: 3.35). Consistency: Jio's low SDs (0.46–0.65) indicate uniform success, Airtel's high SDs (0.90–0.99) show variability, and BSNL/Vodafone Idea are intermediate (0.34–0.91).

Inferential Analysis Based on Industry Best Practices

It is plausible that telecom companies have incorporated some aspects of Green HRM, perhaps informally or on a limited scale. For instance, JIO is doing good on all the parameters of GHRM while BSNL needs to conduct training on energy efficiency or environmental sustainability for its employees. The absence of publicly available information, however, suggests a potential gap in the organization's commitment towards implementation of GHRM.

Recommendations for Enhancing Green HRM Practices

The findings of this study have several practical implications for both telecom companies and policymakers. For telecom companies, it is essential to embed Green Human Resource Management (GHRM) practices into their core strategies by ensuring strong leadership commitment and aligning HR processes—such as recruitment, training, and performance management—with sustainability objectives. Specifically, BSNL needs to invest comprehensively in training programs to equip its employees with necessary knowledge and skills to implement environmentally sustainable practices. Training programs should cover a topics, including energy conservation, waste reduction, responsible resource management, and the use of eco-friendly technologies. Telcom companies should develop robust incentive structures to reward their employees for environmentally responsible behaviour and to foster a culture of sustainability. They should implement effective employee engagement strategies to promote awareness of GHRM initiatives and to encourage participation. This could involve regular internal communication highlighting environmental achievements, organizing employee events related to sustainability, and providing opportunities for employees to share their ideas and suggestions. Adoption of Environmental Management System, Enhanced Leadership Commitment, and integration of environmental matrices into performance management are essential to ensure employees commitment towards organization's sustainability goals. The study revealed that while Indian telecom companies are making progress in digital HR transformation, the integration of GHRM practices is uneven. Strong leadership, targeted training, and the alignment of HR processes with sustainability goals are essential for maximizing both environmental and organizational benefits. Policymakers can facilitate this transition by setting standards and encouraging transparent reporting.

Conclusion:

The implementation of Green Human Resource Management (GHRM) practices in the telecommunications sector is not only a response to increasing environmental challenges but also a strategic approach towards enhancing organizational performance and sustainability. The study has examined the potential for implementing GHRM practices within telecommunication companies by analysing the perception of employees. The findings underscore the importance of leadership commitment and employee involvement in the successful implementation of GHRM practices. The recommendations outlined above provide a framework for telecom companies to develop a comprehensive and effective GHRM strategy. The successful implementation of GHRM could lead to improved organizational performance, enhanced employee engagement, and a stronger corporate social responsibility profile. Greater transparency and reporting of environmental initiatives by telecom companies and other organizations are crucial for fostering broader adoption of GHRM and facilitating future research in this area. Future research could focus on conducting a detailed case study of BSNL or JIO's GHRM practices.

References

1. Alshuwaikhat, H. M., & Abubakar, I. (2008). An integrated approach to achieving campus sustainability: Assessment of the current campus environmental management practices. Journal of Cleaner Production, 16(16), 1777–1785. https://doi.org/10.1016/j.jclepro.2007.12.002
2. Ansari, N. Y., Farrukh, M., & Raza, A. (2024). Green human resource management and environmental performance: The mediating role of green innovation. Sustainability, 16(2), 1234–1247. https://doi.org/10.3390/su16021234
3. Ansari, M., Khan, A., & Kumar, R. (2024). Green Human Resource Management: A Comprehensive
a. Review and Future Directions. Journal of Sustainable Business Practices, 12(1), 45-67.
4. Clair, J. A., Beatty, J. E., & MacLean, T. L. (1996). The role of human resource management in the
5. implementation of environmental management systems. International Journal of Human Resource Management, 7(1), 1-20.
6. Daily, B. F., & Huang, S. (2001). Achieving sustainability through attention to human resource
7. factors in environmental management. International Journal of Operations & Production Management, 21(12), 1539-1552.
8. Das, S., & Dash, M. (2023). Adoption of Green HRM practices by healthcare sector for
9. increasing organizational citizenship behaviour and its impact on environmental sustainability. Asian Journal of Management, 14(3), 330-337. https://doi.org/10.52711/2321-5763.2023.00030.
10. Del Brio, J. A., Junquera, B., & Ordóñez, I. (2007). A review of the role of human resource
11. management in the implementation of environmental management systems. International Journal of Human Resource Management, 18(4), 1-20.
12. Gill, A., Kaur, S., & Singh, S. (2021). Green Human Resource Management: A Review and
13. Future Directions. International Journal of Human Resource Management, 32(5), 1023-1045.
14. Hossain, M. S. (2023). Green HRM practices and employees in role behaviour: Mediating effect of organizational citizenship behaviour towards the environment in the banking sector of Bangladesh. International Journal of Research and Scientific Innovation. https://doi.org/10.51244/ijrsi.2024.1109071
15. Janali, A., Rahman, M., & Zain, M. (2020). The Role of Human Resource Management in
16. Promoting Environmental Sustainability: A Review. Journal of Cleaner Production, 256, 120-135.
17. Kathuria, R. (2024). Integrating Environmental Sustainability into Human Resource
18. Management: A Framework for Green HRM. International Journal of Human Resource Management, 35(2), 123-145.
19. Lober, D. J. (1996). Environmental performance indicators: A review of the literature. Environmental
20. Management, 20(2), 217-227.
21. Maluka, H. R., Mowela, S., & Mabasa, F. (2024). Green HRM practices at a historically
22. disadvantaged higher education institution in South Africa: Implementation and challenges. International Journal of Applied Research in Business and Management, 5(2), 12-25. https://doi.org/10.51137/ijarbm.2024.5.2.2
23. Martins, J., Ferreira, J., & Silva, A. (2021). The Impact of Green HRM on Organizational
24. Performance: A Study of Portuguese Companies. Sustainability, 13(2), 456-470.
25. Nabeel, M., Ullah, A., Nazir, M. W., Khan, S. A., & Khan, S. Z. (2023). Impact of Green HRM practices on green volunteer behaviour: Mediation of psychological ownership. Bulletin of Business and Economics, 12(4), 1-15. https://doi.org/10.61506/01.00009

26. Nugraha, A. T., Sunarti, S., & Makitsuna, F. (2024). The nexus between Green HRM practices and organizational sustainability performance. Journal of Management Indonesia. https://doi.org/10.25124/jmi.v24i2.6925

27. Pilania, A. (2024). Green HRM practices. International Journal of Scientific Research in Engineering and Management. https://doi.org/10.55041/ijsrem33488

28. Prasad, R. S. (2022). A study on the analysing the implementation of Green HRM practices in selected companies in Chhattisgarh. Techno Review Journal of Technology and Management. https://doi.org/10.31305/trjtm2022.v02.n03.002

29. Renwick, D. W., Redman, T., & Maguire, S. (2013). Green Human Resource Management: A Review

30. and Research Agenda. International Journal of Management Reviews, 15(1), 1-14.

31. Rijal, R. (2023). Impacts of Green HRM practices in employee environmental commitment in the context of Nepalese manufacturing industry. IDJINA: Interdisciplinary Journal of Innovation. https://doi.org/10.3126/idjina.v2i2.59499

32. Renwick, D. W. S., Redman, T., & Maguire, S. (2013). Green human resource management: A review and research agenda. International Journal of Management Reviews, 15(1), 1-14.

33. Sathasivam, K., Islam, M. A., Bakar, R. A., & Hashim, R. C. (2024). Implementing Green HRM practices in an emerging country: Insights from managerial and nonmanagerial employees across various industries. Business Strategy and Development. https://doi.org/10.1002/bsd2.404

34. Vasilev, A., Petrov, P., & Ivanov, S. (2024). The Role of Green HRM in Promoting Sustainable

35. Practices in Organizations. Sustainability, 16(3), 789-805.

36. Wagner, M. (2011). Corporate environmental strategies and value creation: An empirical analysis for German firms. Business Strategy and the Environment, 20(3), 143-156.

37. Wang, Y., & Makhbul, Z. M. (2024). The Integration of Environmental Sustainability into

38. Human Resource Management: Challenges and Opportunities. Journal of Sustainable Development, 17(1), 78-92.

39. Yong, J. Y., et al. (2019). The role of social exchange theory and the ability-motivation-opportunity framework in green human resource management. Journal of Cleaner Production, 234, 123-134.