

EMPLOYEES PERCEPTION OF GREEN HRM PRACTICES IN SELECTED INFORMATION TECHNOLOGY COMPANIES IN TAMIL NADU

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Abstract: Purpose: This research aims to explore the role of Green Human Resource Management (GHRM) practices on environmental sustainability in ISO 14001-certified IT firms in Tamil Nadu, India. The study emphasizes how green practices like eco-friendly hiring, green training, carbon footprint minimization, e-waste handling, and cloud computing influence employee commitment, performance management, and environmental stewardship, eventually leading to sustainable organizational performance.

Methodology: Quantitative cross-sectional survey design was employed, and 120 IT professionals were chosen by applying stratified random sampling. Data were gathered by employing structured questionnaires and responses were measured by a 4-point Likert scale. Collected data were analyzed by applying Partial Least Squares Structural Equation Modeling (PLS-SEM) in order to examine the relationships between GHRM practices, employee-level mediators and environmental sustainability.

Findings: The findings substantiated that GHRM practices significantly have a positive effect on employee commitment ($\beta = 0.42$), performance management ($\beta = 0.35$), and e-waste management ($\beta = 0.39$), all at $p < 0.001$. Workers were discovered to view GHRM practices as effective in fostering sustainability, where there was a great consensus regarding cloud computing benefits, green recruitment, and motivation. Research highlights that embedding green values into HR policies has the ability to engender an environmental responsibility culture, improve operational efficiency, and boost organizational reputation within the IT sector.

Keywords: Environmental Sustainability, Employee Commitment, E-waste Management and performance Management.

1. INTRODUCTION

In the past decades, rapid industrialization, urbanization, and technological advances have generated indubitable benefits to society [1]. Yet these advances also generated severe environmental problems [2]. These environmental problems have reached a critical level on the international level, and therefore, governments, industries, and civil society have been forced to act collectively [3]. One of the most significant reactions to this environmental crisis has been the incorporation of sustainable practices in business operations [4]. Among the many strategies to sustainability, GHRM is one of the important and new-age strategies. GHRM is a concept that brings together ideas of environmental management with conventional roles of HRM. It encompasses the integration of HR practices like recruitment, training, performance appraisal, employee involvement, and organizational culture with the ultimate long-term objective of environmental sustainability [5]. GHRM aims to cultivate a workforce not only effective and skilled but environmentally aware and committed to minimizing the environmental impact of the organization [6]. GHRM attempts to inject sustainability into the DNA of the firm by affecting workers' behavior and cultivating an ecologic culture.

1.1 Core Concept of GHRM

GHRM goes beyond the traditional range of HR activities. It builds on the concept of how employees can play an important role in the environmental targets of a business [7]. Organizations cannot achieve their sustainability targets through the implementation of technological innovations or regulatory compliance alone; instead, they need to involve their staff as co-performers of green actions. GHRM practices include various activities like recruitment of employees with a green mindset, conducting training sessions on the basis of conservation of the environment, integration of sustainability into performance reviews, and rewarding employees for green initiatives [8]. Such practices motivate employees to save resources, minimize waste, re-use, and provide support for environmental innovations [9]. For example, green recruitment helps in the hiring of environmentally friendly candidates, and green training promotes eco-consciousness about environmental problems and trains the employees for environmentally friendly practices [10]. Similarly, performance management systems with inclusion of green KPIs (Key Performance Indicators) can motivate employees to meet the environmental objectives as part of their work duties [11]. Through this process, GHRM reduces not just operation expenses but also boosts the business firm's brand equity as well as long-term stability [12-14].

1.2 GHRM in the IT Sector

GHRM is particularly critical in IT firms, which are characterized by high energy consumption and quick equipment obsolescence. Even though they belong to a non-manufacturing industry, IT companies are major contributors to environmental degradation due to the heavy usage of servers, data centers, computers, and other electronic equipment. These devices use enormous amounts of electricity, usually from non-renewable sources, and produce huge amounts of electronic waste when they become old or are discarded [15]. As digital transformation, cloud computing, artificial intelligence, and big data take center stage, the environmental footprint of the IT industry is bound to grow unless proactive sustainability strategies are implemented. Thus, the incorporation of GHRM in IT firms is not just an ethical imperative, it is a strategic imperative [16]. Through enabling digital sustainability, facilitating telecommuting to contain travel emissions, having e-waste management policies, and empowering innovation towards green technology solutions, GHRM practices can deliver a remarkable difference. Moreover, IT companies are leaders in terms of innovation, and their activity tends to steer other industries as well. Through adopting GHRM by IT companies, an example is established for green-friendly behavior, thus encouraging a mass movement towards corporate sustainability within the global corporate platform [17].

1.3 The Regional Focus: Tamil Nadu, India

The southern Indian state of Tamil Nadu has evolved quickly into a technology center, with many multinational IT firms and local software companies. Chennai, Coimbatore, and Trichy have all seen significant expansion in IT parks and technology-driven employment [18]. This expansion has created more resource usage and waste production, thus highlighting the importance of sustainable business practices. Tamil Nadu also has various ISO 14001-certified organizations, which follow globally recognized environmental management standards. ISO 14001 certification means that a company systematically controls its environmental affairs to improve sustainability [19]. These certified companies are suitable for the examination of GHRM since they already have standardized environmental procedures in place and most likely have HR policies favoring green activities. This gives a contextual background to assess the implementation and effects of GHRM practices at a regional level [20].

1.4 Objectives:

- To analyze the degree to which GHRM practices are adopted, encompassing green recruitment, training, performance appraisal, cloud computing, and carbon footprint reduction in ISO 14001-certified IT firms in Tamil Nadu.
- To study employee's attitudes and commitment towards environmental sustainability as affected by GHRM practices in chosen IT organizations.
- To determine the effect of GHRM on fostering employee responsibility towards e-waste management and reducing environmental damage generated by digital infrastructure.

1.5 Statement of the Research

This research is an attempt to understand how the practices of GHRM can impact environmental sustainability in selected IT firms of Tamil Nadu, certified with ISO 14001. With the growth of environmental awareness regarding the utilization of energy and e-waste in the IT industry, research is specifically focused on green efforts like environment-friendly recruitment, training, cloud computing, and mitigation of carbon footprint. The research offers insights into how HR initiatives can facilitate environmental objectives and induce a green work culture in the IT sector.

1.6 Research questions

- How do GHRM initiatives impact employee performance management in terms of environmentally responsible behavior?
- What is the role of GHRM in influencing employee responsibility for e-waste management in IT companies?
- How do GHRM practices impact the overall environmental sustainability of IT organizations in Tamil Nadu?

2. LITERATURE REVIEW

The research conducted by Ishfaque Ahmed Lashari et al. [1] employed a multi-wave, multi-respondent approach to investigate how Green HRM practices at Pakistani universities affect environmental sustainability and with innovative work behavior as a mediator. Data were gathered from the academic head, supervisor, and faculty at three points in time. The benefit of the method is decreased common method bias and enhanced data validity, but the primary drawback is the complexity and time required for multi-phase data collection. The research supported all hypotheses, underlining the beneficial role of GHRM in enhancing sustainability in developing country academia. Research by Adedapo Oluwaseyi Ojo [4] utilized PLS-PM for testing data for 333 employees in IT sectors in ISO 14001-certified companies in Malaysia. The study confirmed that green training, employee empowerment, and performance management enhance pro-environmental IT behavior, which in turn enhances environmental IT performance. The approach is effective in managing complicated models with a small sample size but lacks support for strong model fit testing. Farooq Ahmad et al. [5] applied a quantitative survey research approach on 155 Pakistan-based green-certified university academic personnel to study the effect of green HRM practices on environmental performance through employee environmental commitment, moderated by green knowledge sharing. The strength of the approach lies in the fact that it is able to investigate complex relationships and mediating/moderating effects in real-life settings. A limitation is however, potential bias based on self-reported data and the lower generalizability due to the specific academic population. Samuel Ogbeibu's [7] research brings out that in Nigerian manufacturing companies, organizational smart technology and AI capabilities (STARA) enhance the efficacy of GHRM programs in furthering environmental sustainability (ES). Though most of GHRM practices like green recruitment, selection, training, and participation positively affect ES, surprisingly, green performance and compensation adversely impact it. Through this research, the researchers also find that STARA capabilities, though largely enabling in their contribution to ES, have a detracting role as they adversely impact the favorable contribution of training-based GHRM practices towards ES. Diego Vázquez-Brust's study [8] highlights that stakeholder pressures significantly affect the application of both Environmental Protection Hardware (EPH) and Software (EPS), with GHRM playing a more mediating role in applying EPH. Employee Commitment to Environmental Sustainability captures the degree to which the employees adopt and incorporate environmentally sound values, practices, and responsibilities into their work culture on a daily basis. By the AMO model and stakeholder theory, the research indicates that GHRM practices such as training, reward, and teamwork facilitate translating external environmental pressures into workplace green actions. Still, the effect is stronger for tangible, hardware-based solutions than for soft, behavioral ones. Nonetheless, a shortcoming is the weaker mediation effect on EPS, indicating the need for more complete integration of soft practices.

3. CONCEPTUAL FRAMEWORK

The research is based on a comprehension of how the practices of GHRM impact pro-environmental behavior and environmental sustainability within the IT industry. It consolidates three layers of variables:

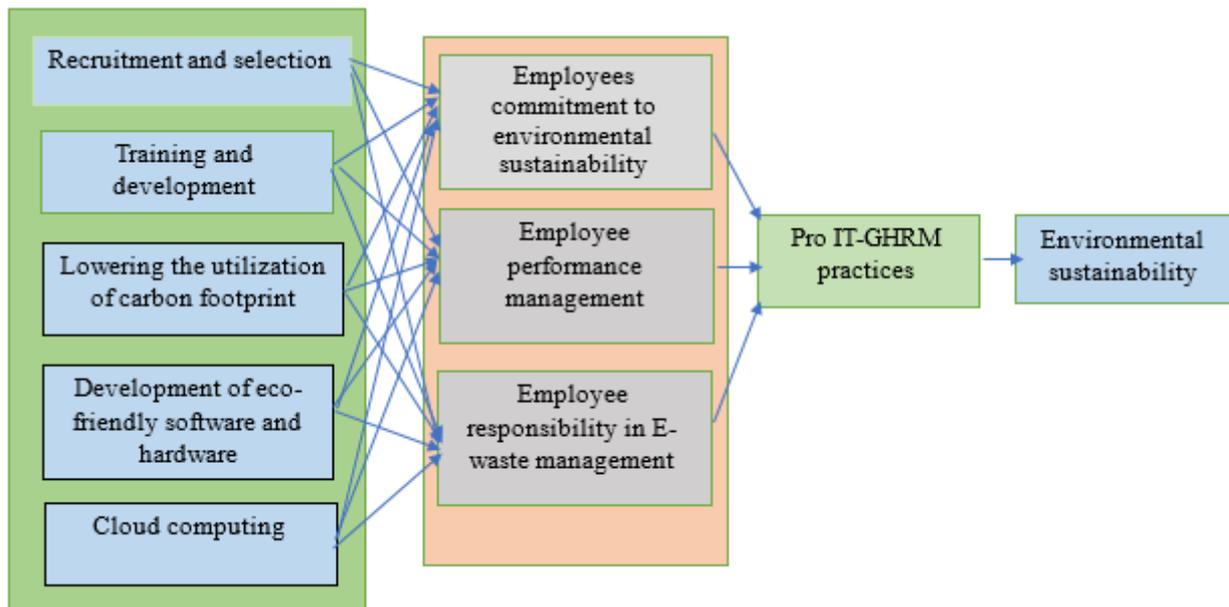


Figure 1: Conceptual Framework for Pro-IT GHRM Practices and Environmental Sustainability

3.1 Independent Variables (GHRM Practices)

They are the very specific HRM strategies that act as the key interventions to advance environmental awareness and sustainability:

3.1.1 Green Recruitment and Selection

This is a process of recruitment, identification, and selection of candidates who, in addition to having the appropriate skills and qualifications, also reflect a high degree of awareness and commitment towards the sustainability of the environment. During this process, organizations embed eco-consciousness in the selection process by seeking those individuals who are compatible with the company's green values and goals. It might involve screening job candidates on the basis of prior engagement with environment-friendly programs, eagerness to follow environmentally-friendly work styles, and experience working with green technology or procedures. By valuing employees with a sustainability orientation, organizations can create a workforce that is proactively engaged in green business, stimulates innovation in green working practices, and aligns with long-term environmental objectives. Aligning employee value with organizational goals secures that sustainability is embedded at the core of the company culture from the outset.

3.1.2 Green Training and Development

This process involves formal courses, training sessions, and modules on green technologies, energy-saving practices, waste minimization techniques, and the overall sustainability objectives of the company. Through the education of employees about their green role and the impact of their actions, businesses are able to establish a green awareness and green participation culture. This training improves workers' capacity to contribute to sustainability-oriented tasks, efficiency in operations through decreased resource usage, and organizational environmental goal alignment with individual behavior. Finally, green training enables employees to be change agents, assisting organizations in achieving long-term ecological and business sustainability.

3.1.3 Carbon Footprint Reduction Activities

Carbon Footprint Reduction Activities are organizational policies and practices with the objective of reducing greenhouse gases emitted through day-to-day operations, for which employees and departments are actively engaged. These programs generally entail encouraging energy-conserving practices like turning off standby electric devices, optimizing lighting and HVAC systems, utilizing public transport or carpooling, implementing remote working strategies, and organizing waste

minimization and recycling campaigns. Through behavior change and awareness generation, organizations can remarkably minimize their environmental footprint. Drawing workers into the role of taking control of their carbon footprint not only makes the operations cleaner but also gives them a stake in sustainability goals. IT companies also gain from financial savings on operations as well as improving their corporate image by being on par with world environmental standards.

3.1.4 Green Workshops and Technology Innovation

Green Workshops and Technology Innovation are programs aimed at encouraging innovation and employee engagement in developing sustainable technological solutions. Green workshops are forums for training and involving employees in developing, designing, and implementing green technologies such as energy-saving software, low-power usage hardware, and environmentally friendly IT infrastructure. By cooperative learning and hands-on experimentation, workers are encouraged to think about how they can minimize environmental impact in their job. Such activities also foster a culture of environmental responsibility and improvement, with sustainability integrated into product design cycles. By spending money on green technology and hosting workshops, firms not only do their bit for the environment at the global level but also gain competitiveness by keeping pace with green market pressure and corporate social responsibility pressure.

3.1.5 Cloud Computing Utilization

Utilization of Cloud Computing is a significant use in GHRM practice as it reduces the reliance on hardware, consequently reducing energy consumption, physical infrastructure, and electronic waste (e-waste). By moving data storage, application software, and processing functions to cloud platforms, organizations can obtain greater efficiency and scalability with lower resource consumption. Cloud solutions support virtualization, which permits numerous systems to be run on a single server, reducing the necessity for extra physical hardware and decreasing the organization's overall carbon footprint. In addition, cloud service providers typically utilize cutting-edge energy-efficient technologies and green data center management techniques, and they further promote environmental sustainability. With cloud adoption, IT firms not only automate processes and save on operational expenses but also make positive contributions to green initiatives, and thus, cloud computing is an imperative component of GHRM and sustainable development. These practices are activities that are being implemented by HR departments with the intent to create a green work culture and create environmental obligations awareness.

3.2 Control Variables (Moderators of Impact)

These variables represent how employees' related factors mediate GHRM practices and organizational sustainability performance:

3.2.1 Employee Performance Management

Employee Performance Management according to GHRM entails linking the performance of individual workers with environmental sustainability targets and green key performance indicators (KPIs). It entails identifying the degree to which employees incorporate green practices in their day-to-day work, including reducing consumption of resources, adopting digital workflow, and engaging in green activities. Through the incorporation of sustainability indicators into performance evaluation, organizations influence staff to factor environmental concerns in decision-making and behaviors in the workplace. Not only does this support task effectiveness and output quality, but also brings about a spirit of responsibility and continuous improvement to green objectives. While performance systems reward innovation as well as sustainability behavior, they encourage employees to contribute to environment objectives and further enhance the aggregate sustainability performance of the organization.

3.2.2 Employee Responsibility for E-waste Management

Employee Responsibility for E-waste Management is the employees' active participation in ensuring that electronic waste generated within the company is disposed of, recycled, and handled in the proper manner. In GHRM, this responsibility is encouraged through raising awareness campaigns, training sessions, and establishing clear guidelines in disposing of old devices, batteries, and other electronic components. The workers are supposed to embrace green culture practices, such as segregation of e-waste, avoiding incorrect disposal, and supporting causes that promote recycling and refurbishment. With employees gaining understanding of the environmental consequences of e-waste and armed with the tools and the knowledge to address it responsibly, there is a significant reduction in the damage to the environment. Along with this, establishing a sense of personal responsibility for the handling of e-waste helps to build a green culture within the office, which is a part of the company's overall sustainability objectives.

3.2.3 Employee Commitment to Environmental Sustainability

Employee Environmental Sustainability Commitment is voluntary and goes beyond compliance and is a personal commitment to advancing the environmental objectives of the company, including minimizing waste, conserving energy, and sustainable practices. Dedicated employees will be more inclined to take proactive environmental measures, propose green innovations, and influence others in a positive way. Lastly, great employee commitment turns into a force multiplier in instilling an eco-friendly organizational culture, and sustainability should not be merely a policy but an innate value within the employees. These employee-level controls regulate the degree to which GHRM practices get converted into real behavior that affects sustainability.

3.3 Dependent Variables (Outcomes)

These are the desired outcomes of practicing GHRM and regulating them via employee performance and commitment

3.3.1 Pro-IT GHRM Practices

Pro-IT GHRM Practices are the proactive adoption and embedding of environmentally friendly behaviors, policies, and operating strategies in the IT industry based on GHRM. Such practices are characterized by the hiring of green value-based employees, the provision of sustainability-oriented training, promoting prudent use of energy, resources, and using technology with low environmental footprints like cloud computing and environmentally responsible software/hardware development. In the IT context, Pro-IT GHRM practices seek to integrate human resource functions with environmental objectives, establishing a culture where sustainability is embedded in day-to-day operations and decision-making. In this way, IT organizations enhance not only their environmental performance but also build a stronger brand reputation, employee engagement, and make meaningful contributions to wider sustainability goals.

3.3.2 Environmental Sustainability

Environmental Sustainability in the business world means the long-term engagement of a business firm towards its operation in such a manner that it saves natural resources, reduces negative impacts on the environment, and contributes to ecological stability. This entails embracing practices that enhance energy efficiency, restrict greenhouse gas emissions, manage and recycle electronic waste in a proper manner, and honor environmental laws and green policies. For technology firms, this might involve a transition to cloud computing, designing energy-efficient systems, encouraging digital processes over paper-based processes, and establishing a corporate culture of environmental responsibility among workers. Environmental sustainability is all about meeting current business needs without compromising resources for future generations, and ensuring adherence to global standards of sustainable practices.

3.4 Hypotheses Development

H1: Employee commitment and GHRM practices have a positive relationship with Environmental Sustainability and Pro-IT GHRM practices.

GHRM practices create an organizational culture that engenders environmental sensitivity, and employees who internalize such green principles in their thinking will have an increased commitment toward sustainability, hence improving pro-environmental IT behavior.

H1a: GHRM recruitment and selection strongly boost the commitment of employees towards environmental sustainability.

GHRM recruitment and selection encompass identifying and hiring candidates who share inbuilt valuations for sustainability and are inclined to commit to the green cause. As firms emphasize the value of the environment through recruitment by highlighting competencies, attitudes, or behavioral signals linked to sustainability in job profiles and interviews, they hire applicants with congruent personal values towards the green missions of the company. Under the Person-Organization Fit Theory, employees are more likely to demonstrate high commitment and job satisfaction when their values align with those of their employer. This alignment is likely to create a sense of belonging and purpose among employees, encouraging them to actively support and contribute to environmental sustainability goals. Consequently, not only do employees adhere to green practices, but they are also active agents of change in the organization, integrating sustainability into their everyday work culture.

H1b: GHRM training and development are positively linked to employee sustainability.

GHRM training and development are critical in helping employees acquire the information, skills, and attitude needed to start environmental programs within the organization. Companies that invest in developing their employees using Human Capital Theory gain a competitive advantage since trained employees are more competent and aligned with strategic objectives. In this case, green training is a driver of generating environmentally friendly behaviors, pushing employees to incorporate sustainability into day-to-day job responsibilities and decision-making. It leads to an informed and active workforce that is equally committed to achieving the environmental objectives of the company.

H1c: Boosting low utilization of carbon footprints significantly increases employee's commitment towards preserving the environment.

Encouraging carbon footprint minimization within an organization fosters a culture of environmental accountability and responsibility. When companies themselves voluntarily promote measures such as conserving energy, limiting unnecessary travel, or adopting green technology, employees get sensitized about their own contributions to the environment. Social Exchange Theory would interpret this phenomenon as indicating that when there is genuine concern by an organization for the well-being of nature, employees feel obligated to reciprocate. This mutualism is reflected in their own willingness to embrace green practices, like supporting carbon reduction initiatives. By openly joining and promoting such sustainable causes, employees will become more inclined to embrace green principles, actively contribute to sustainability causes, and become more deeply engaged in the environmental cause of the company.

H1d: Green workshops and creating sustainable technology significantly enhance employee commitment towards environmental sustainability.

Green technology innovation and eco-friendly workshops are at the core of incorporating green values within an organizational culture. Green workshops not only inform employees on cutting-edge green innovations like energy-efficient systems, biodegradable hardware, and low-emission IT solutions but also enable them to become agents of change for sustainability. Through the Green Theory of Technology, technological progress that works together with environmental objectives can transform behavior, attitude, and organizational practices towards sustainability. By exposing employees to the constant learning environment of eco-innovation, they are equipped with skills and motivation to take up and disseminate green practices. This continuous involvement fosters responsibility and ownership, thus increasing their long-term loyalty to the cause of environmental sustainability by the organization and making valuable contributions to sustainability culture.

H1e: Fostering the use of cloud computing is strongly associated with employee commitment towards environmental sustainability.

Facilitating the use of cloud computing in organizations is a strategic step towards environmental sustainability through minimized physical infrastructure, lowered energy use, and reduced electronic waste. This transition to virtualization improves operating efficiency while also matching green-friendly practices. Under the Technology Acceptance Model (TAM), when employees view that a technology is beneficial and has organizational values such as sustainability, they are more inclined to embrace and incorporate it in their daily workings. Through seeing their company make green innovations such as cloud computing, employees are encouraged to reflect this commitment through action. Such alignment between technological advancement and greenery reinforces employees' commitment to green objectives and strengthens their motivation to be able to contribute to the company's wider sustainability strategy.

H2: Employee performance management and GHRM practices are positively related to Pro-IT GHRM practices and Environmental Sustainability.

GHRM practices, if combined with employees' performance management, improve Pro-IT GHRM and environmental sustainability via the integration of green goals within job descriptions and performance appraisals. As an extension of Performance Management Theory, sustainability-targeted KPIs compel the employees to conduct themselves in ways that are good for the environment. Aligning this improves accountability, triggers responsible behavior like energy conservation, e-waste disposal, and instills green values into organizational culture, particularly important in technologically driven contexts.

H2a: GHRM recruitment and selection immensely contribute to employee performance management.

H2a argues that GHRM recruitment and selection immensely contribute to employee performance management through ensuring that the correct people, those who believe in sustainability, are recruited into the organization. Based on Strategic

HRM theory, matching recruitment strategies with organizational objectives helps companies construct a workforce that can accomplish certain goals, like environmental sustainability. By choosing candidates who exhibit eco-awareness and the desire to adopt green behaviors, companies can create an environment in which performance is measured on both conventional dimensions and environmentally friendly actions. It leads to more effective performance management systems, supporting and inspiring green outcomes.

H2b: Training and development through GHRM improves employee performance management.

According to the Resource-Based View (RBV) of the firm, this approach views employee competencies as essential strategic assets. When companies invest in green training, they enhance the capacity of employees to make meaningful contributions towards environmental objectives, a potential competitive advantage. In addition to enhancing environmental awareness, the training embeds green thinking into core job processes, hence enhancing individual and organizational performance to sustainability standards.

H2c: Encouragement of low-carbon lifestyles highly improves employees' performance management.

H2c hypothesizes that low-carbon footprint activation profoundly improves staff performance management by connecting environmental objectives to individual responsibility. Goal-Setting Theory holds that when well-defined and challenging goals, e.g., lowering carbon emissions, are clearly framed in performance measures, staff are better positioned to accomplish them. By including carbon management in key performance indicators (KPIs), firms establish a formal mechanism for staff to embrace sustainable behavior. This confluence leads to a performance culture where environmental sustainability is an answerable and rewarded element of work performance, hence enhancing overall efficiency and accountability.

H2d: Employee performance management has a very high correlation with green technology development and green workshops.

H2d assumes that green workshops and green technology development are positively related to employee performance management as they usher in positive learning and innovation. Organizational Learning Theory assumes that by making investments in continuous environmental learning and technological progress, organizations establish a culture of adaptability and knowledge sharing. Green workshops make workers more competent and eco-friendlier, and involvement in green technology initiatives promotes innovative problem-solving. The combination allows the employee's ability to execute tasks better and in a more sustainable manner, coordinating their performance with green organizational goals and reconfirming an engaged response to environmental stewardship.

H2e: The use of cloud computing greatly improves employee performance management.

H2e implies that the use of cloud computing greatly improves employee performance management by ensuring efficiency, flexibility, and sustainability. According to Innovation Diffusion Theory, the implementation of new technology like cloud computing enables new practices to be quickly and efficiently diffused within an organization. Cloud computing lowers dependence on hardware infrastructure, reduces energy usage, and simplifies access to data and collaboration, thus contributing to green initiatives. These advancements in the use of resources and operations facilitate the employees to accomplish tasks better, coordinate efforts in terms of ecological objectives, and assist in enhancing overall performance management within a sustainable IT system.

H3: GHRM practices and Employee responsibility for E-waste management are positively related with Pro-IT GHRM practices and Environmental Sustainability.

This is confirmed on the basis of Stakeholder Theory and Environmental Responsibility Theory, highlighting the aspect that employees, being major stakeholders, bear the moral and functional obligation to preserve the environment. When HRM policies are crafted to encourage environmental awareness and allocate specific responsibilities like proper e-waste disposal and recycling, employees are more likely to adopt sustainable behaviors.

H3a: GHRM recruitment and selection significantly and positively influence employee accountability for E-waste management.

H3a implies that GHRM recruitment and selection practices have a strong positive impact on employee accountability for e-waste management. This hypothesis is justified by Competency-Based HRM Theory, which supports the hiring of employees who share the skills, values, and attitudes that match organizational objectives in this instance, environmental sustainability. If the hiring process at the time of hiring emphasizes the hiring of candidates who are environmentally

conscious and responsible, there will be greater chances of hiring employees who are aware and committed to disposing of e-waste. They are naturally more likely to adhere to the e-waste procedures, encourage recycling, and dispose of electronic waste safely.

H3b: GHRM training and development have a positive correlation with the accountability of employees for E-waste management.

H3b posits that GHRM training and development have a positive relationship with employee responsibility for e-waste management. This relies on the KAPModel, which states that one's knowledge improvement has a positive effect on their attitudes, and these attitudes affect their behavior. When workers are provided with specific green training aimed at e-waste problems like environmental consequences of waste disposal, recycling procedures, and safe handling of electronic material then they achieve the competence as well as enthusiasm to behave ethically. Through such training procedures, workers gain a sense of responsibility and adopt sustainable practices while undertaking their daily operations, particularly with regard to dealing with and minimizing electronic trash within the enterprise.

H3c: Encouraging low carbon footprint usage highly increases employee responsibility for E-waste management.

H3c posits that encouraging the low utilization of carbon footprints significantly boosts employee responsibility towards e-waste management. This is echoed by the Corporate Environmental Management Theory that states that incorporating environmental approaches in business activities supports the development of a culture of sustainability. With companies encouraging low-carbon behavior, such as the reduction of power, the reduction of travel emissions, and the usage of green technology, workers are likely to be environmentally conscious and take note of their carbon footprint. This increased awareness is then transferred to other environmental stewardship domains, such as the correct handling and disposal of e-waste. As the workers absorb the company's environmental ethos, they will be inclined to embrace good e-waste management practices, including recycling, reusing machines, and staying away from unsafe disposal techniques, thus helping drive larger sustainability objectives.

H3d: The employee accountability for the handling of e-waste is positively correlated with green technology innovation and environment-friendly workshops.

H3d theorizes that employee accountability for handling e-waste is positively correlated with environment-friendly workshops and green technology innovation. These workshops are informal but efficient learning and engagement platforms, where employees are introduced to sustainable practices, the environmental impact of digital and hardware waste, and the importance of e-waste management in a safe manner. Staff members receive hands-on training, discussions, and demonstrations that provide them with hands-on expertise and motivation to adopt green behaviors. Additionally, green technology exposure, such as energy-saving equipment and reusable components, makes them more aware of green choices.

H3e: Employee adoption of cloud computing is strongly related to E-waste responsibility.

H3e shows that employee adoption of cloud computing is strongly related to e-waste responsibility. By shifting from hardware-dependent conventional systems to virtual, cloud-based infrastructure, organizations significantly cut down on the requirement for physical devices, thus reducing the amount of electronic waste generated. According to the Sustainable IT Infrastructure Model, cloud adoption creates awareness of environmental effects and urges employees to adopt digital substitutes in place of hardware replacements. It reinforces environmentally responsible behavior by encouraging workers to become more aware of the impact technological decisions have on the environment, hence more engagement in environmentally friendly e-waste practices like recycling, refurbishment, and safe disposal. Cloud computing is, therefore, ultimately both a behavioral and technological force for sustainable IT management.

4. RESEARCH METHODOLOGY

4.1 Research Design

The current research employs a quantitative research design with a survey-based method for collecting data from IT professionals working in Tamil Nadu in a systematic manner. The research is conducted using a cross-sectional design, where data collection is done at one point in time and not over a period of time. This method is appropriate for understanding the perceptions of employees regarding GHRM practices and their effect on environmental sustainability. Through the application of structured questionnaires, the research adopts a standardized data collection method that facilitates statistical analysis and hypothesis testing.

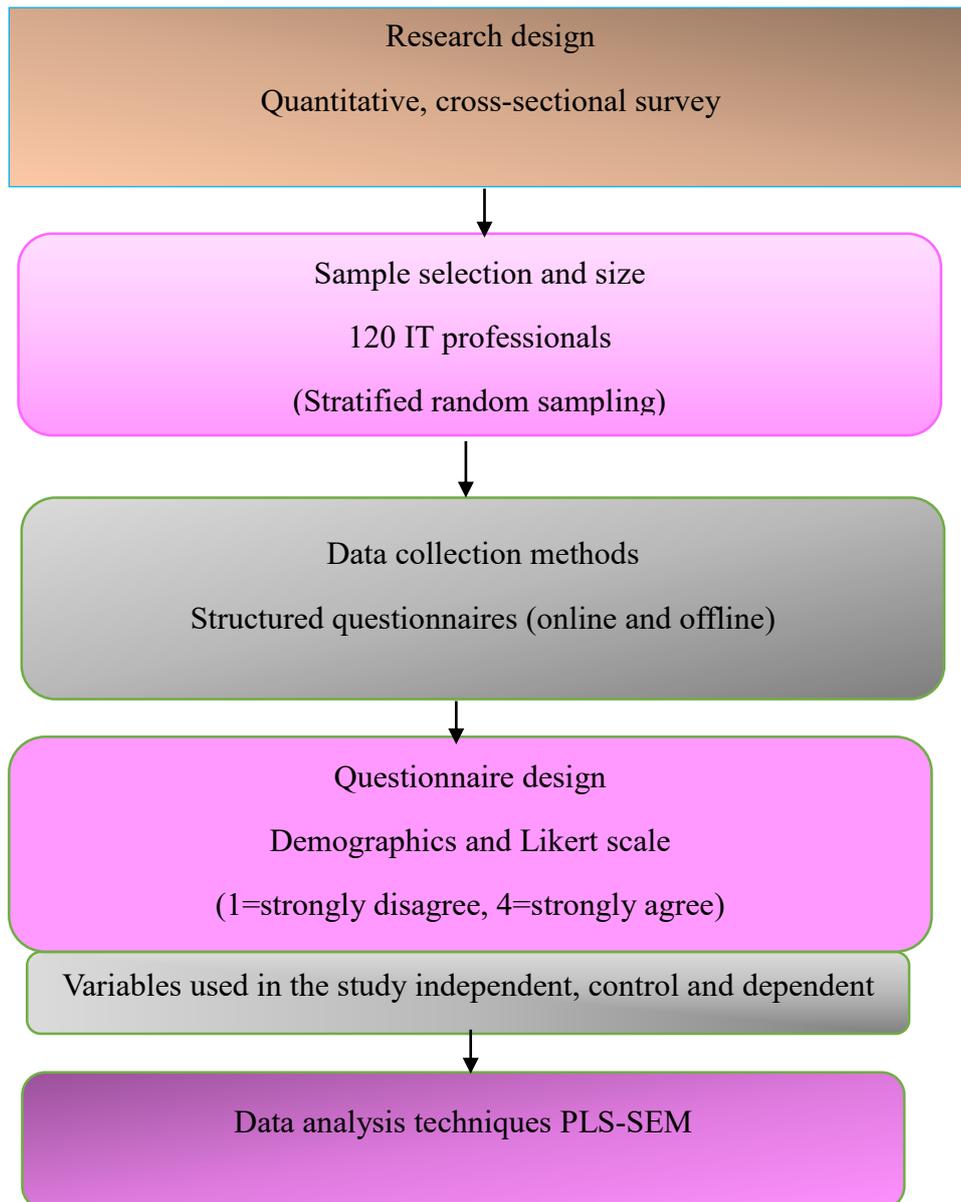


Figure 2: Cross-Sectional Quantitative Framework for Measuring Employee Perceptions of GHRM Practices in the IT Industry

4.2 Sample Selection and Size

The research targets IT professionals employed in ISO 14001-certified firms in Tamil Nadu, as these firms adhere to globally accepted environmental management standards. To have a representative and diverse sample, the research adopts a stratified random sampling method that consists of segmenting the population across organizational levels (entry-level staff, mid-management levels, and executive levels) and functional departments (HR, software development, IT support, and administration). This increases the credibility of the results through the guarantee that views are gathered from different organizational roles. 120 participants were chosen, constituting an appropriate number for statistical analysis and maintaining pragmatic viability.

4.3 Data Collection Methods

The research is based on the initial collection of data using structured questionnaires that are disseminated among employees via online and offline channels. Online channels of dissemination include email questionnaires, Google Forms, and company intranet websites to ensure easy access and wide coverage among IT professionals. Offline distribution channels like hardcopy questionnaires and personal delivery are also used to reach respondents who are more familiar with conventional surveying. The questionnaire is effectively designed to gauge employees' attitudes towards GHRM practices,

their environmental sustainability pledge, and key variables of recruitment, training, performance management, and e-waste management. By a systematic pattern, the study ensures consistency of response, and this allows statistical analysis and testing of hypotheses with ease.

4.4 Questionnaire Formulation and Likert Scale

The questionnaire applied in this research is divided into several sections to collect data systematically from IT professionals regarding the GHRM practices and their contribution to environmental sustainability. The demographic information like age, gender, designation, educational qualification, and awareness level concerning GHRM practices is captured in the first section to put response analysis into perspective. The following sections are devoted to detailed GHRM dimensions by way of recruitment and selection, training and development, carbon footprint minimization, eco-friendly practices, and use of cloud computing. To obtain respondents' attitude appropriately, a 4-point Likert scale with Strongly Disagree (1) and Strongly Agree (4) is used. There is no middle point for the scale so that participants must remain firm on all the statements. Through this systematic method, the questionnaire is made reliable, consistent, and easy to analyze statistically, producing meaningful results about the level of employee participation in GHRM activities and their contribution towards environmental sustainability.

4.5 Data Analysis Techniques

The gathered data is examined with the aid of PLS path modeling, an SEM method used to quantify the strength and significance of the proposed relationships between GHRM practices and environmental sustainability. Descriptive statistics are employed for the purpose of presenting demographic information and key variables to establish employee perceptions regarding GHRM practices. Correlation analysis is applied to identify the interdependence among various variables and ascertain that chosen factors are interrelated. Moreover, regression analysis comes into identify the influence of GHRM practices on employees' commitment, performance management, e-waste responsibility and, eventually, their contribution to IT firm environmental sustainability. This use of analytical tools guarantees to have an overall assessment of the research hypothesis, thus enabling data-based findings and managerial conclusions.

5. DATA ANALYSIS AND RESULTS

This section reports the results of the study, including descriptive statistics, hypothesis testing, PLS path model, and interpretation of the results.

5.1 Descriptive Statistics

Descriptive statistics give an overview of respondents' demographic profile and the most important research variables. The gender profile of respondents within this research informs us about the nature of the workforce within IT organizations that are practicing GHRM. Of the 120 respondents, a majority were male (62.5%), and female participants made up 37.5%, and so a gender imbalance but one representative of wider industry trends. In age categorization, the most significant portion was 31–40 years (41.7%), then 20–30 years (33.3%), reflecting a predominantly young to mid-level workforce. The 41–50 years category accounted for 16.7%, while 8.3% were above 50, which reflects a comparatively younger workforce population. At the job levels, mid-management level employees comprised the largest part (45.8%), followed by entry-level staff (33.3%) and senior managers (20.8%), demonstrating a high density of managerial-grade professionals. Department-wise, the respondents were fairly spread out, with Software Development (33.3%) and IT Support (29.2%) being the highest represented, followed by Administration (20.8%) and HR (16.7%). This mixed sample captures diverse views of GHRM practices according to functional roles and experience levels within the IT sector.

Table 5.1: Demographic Characteristics of Respondents

Variable	Category	Frequency (N=120)	Percentage (%)
Gender	Male	74	62.5%
	Female	45	37.5%
Age group	20-30 years	40	33.3%
	31-40 years	50	41.7%
	41-50 years	20	16.7%
	Above 50 years	10	8.3%
Job level	Entry-level	40	33.3%

	Mid-level manager	55	45.8%
	Senior executive	25	20.8%
Department	HR	20	16.7%
	IT support	35	29.2%
	Software development	40	33.3%
	Administration	25	20.8%

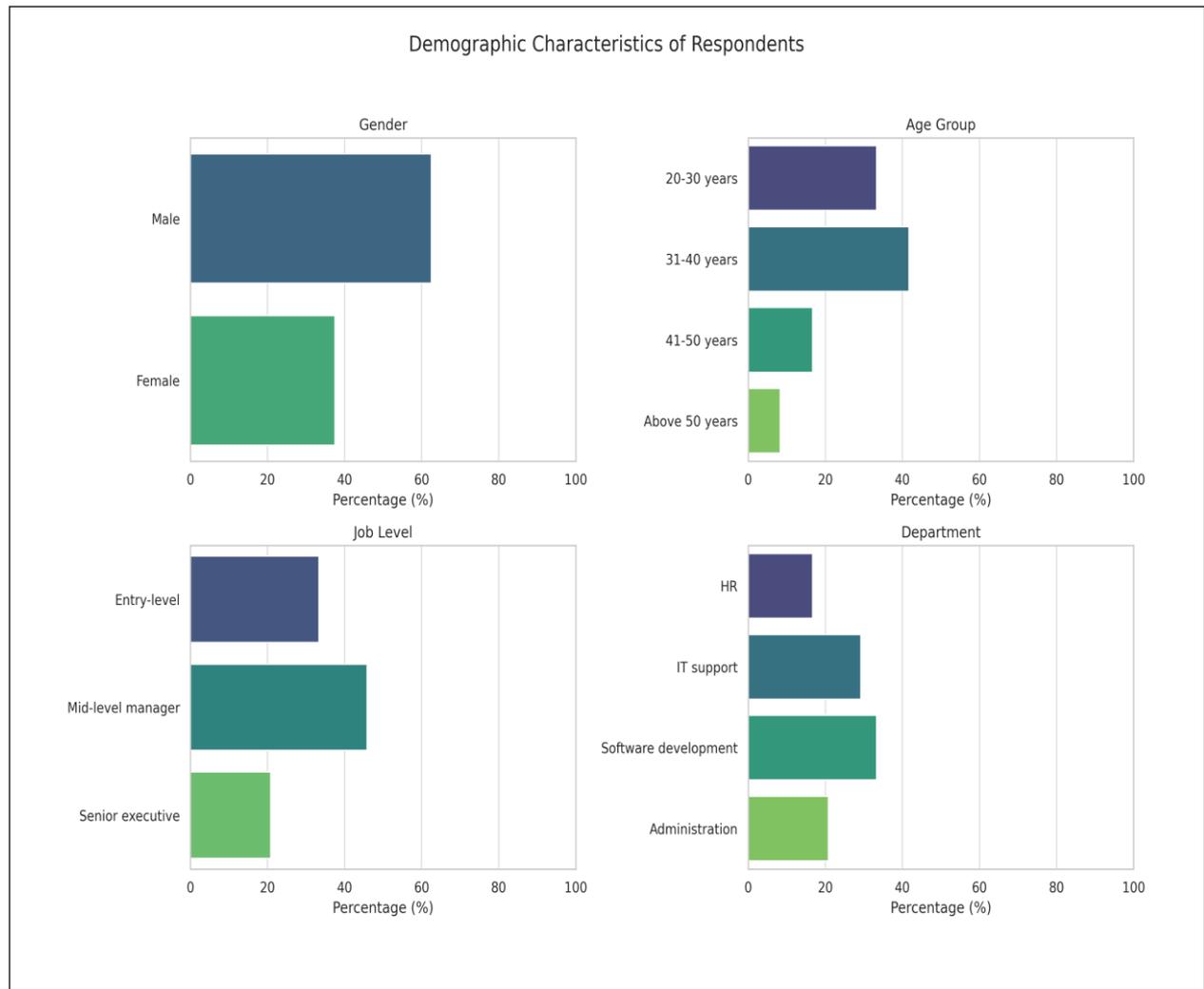


Figure 3: Illustrative Representation of Demographic Characteristics of Respondents

Table 5.2 below provides the descriptive statistics of the primary research variables, i.e., GHRM Practices, Employee Commitment, Performance Management, E-Waste Management, and Environmental Sustainability. The mean scores of all variables lie between 3.15 and 3.50, suggesting that respondents, in general, have moderately positive attitudes towards green practices and sustainability initiatives in their organizations. More specifically, Environmental Sustainability had the highest mean score (3.50), indicating that respondents feel that their organizations are comparatively active in pursuing sustainability-related initiatives. GHRM Practices averaged 3.21, and E-Waste Management had the lowest average (3.15), which means that although these practices are recognized, there is scope for improvement in these practices. The standard deviations of all variables are quite low (0.55 to 0.72), which shows a moderate level of consensus among the respondents. The values for skewness are slightly negative across all variables between -0.30 and -0.45, reflecting mild left skewing, meaning there were more responses above the mean. All values for kurtosis between 2.5 and 2.78 reveal that distributions were slightly less pointed than in a normal distribution, but still safe enough for analysis to proceed. All these statistics attested to suitability for additional inferential analysis based on PLS path modeling.

Table 5.2: Descriptive Statistics of Key Variables

Variable	Mean	Standard deviation	Skewness	Kurtosis
GHRM Practices	3.21	0.65	-0.32	2.58
Employee Commitment	3.35	0.58	-0.41	2.65
Performance Management	3.40	0.62	-0.30	2.71
E-Waste Management	3.15	0.72	-0.45	2.50
Environmental Sustainability	3.50	0.55	-0.38	2.78

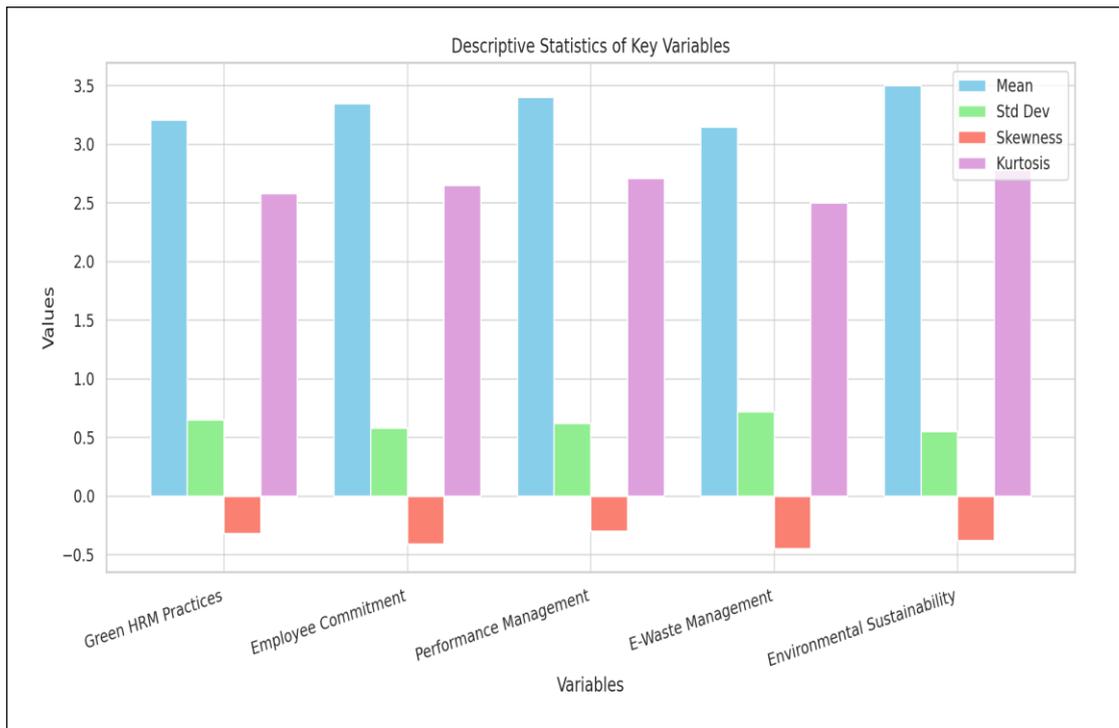


Figure 4: Illustrative representation of Descriptive Statistics of Key Variables

5.2 Hypothesis Testing Using PLS-SEM Modeling

The PLS-SEM findings indicate that there are statistically significant and strong relationships between the GHRM practices and the three dependent variables. The analysis specifically validates all three hypotheses, indicating that the GHRM programs positively impact employee outcomes as well as environmental practices within the company. The path coefficient for H1 ($\beta = 0.42$, $t = 5.12$, $p < 0.001$) indicates that workers have greater levels of commitment when there are environmentally sustainable HR practices. Likewise, H2 ($\beta = 0.35$, $t = 4.85$, $p < 0.001$) establishes that performance management systems consistent with green values function better as a result of higher employee motivation and accountability. Besides, H3 ($\beta = 0.39$, $t = 4.62$, $p = 0.001$) also establishes a positive association between GHRM and enhanced e-waste management, indicating that employees are more responsible and conscious of the proper disposal and handling of electronic waste when such values are supported in HR practices.

Table 5.3: PLS Path Coefficients and Hypothesis Testing

Hypothesis	Relationship	Path Coefficient (β)	t-Value	p-Value	Decision
H1	GHRM \rightarrow Employee Commitment	0.42	5.12	0.000	Supported
H2	GHRM \rightarrow Performance Management	0.35	4.85	0.000	Supported
H3	GHRM \rightarrow E-Waste Management	0.39	4.62	0.001	Supported

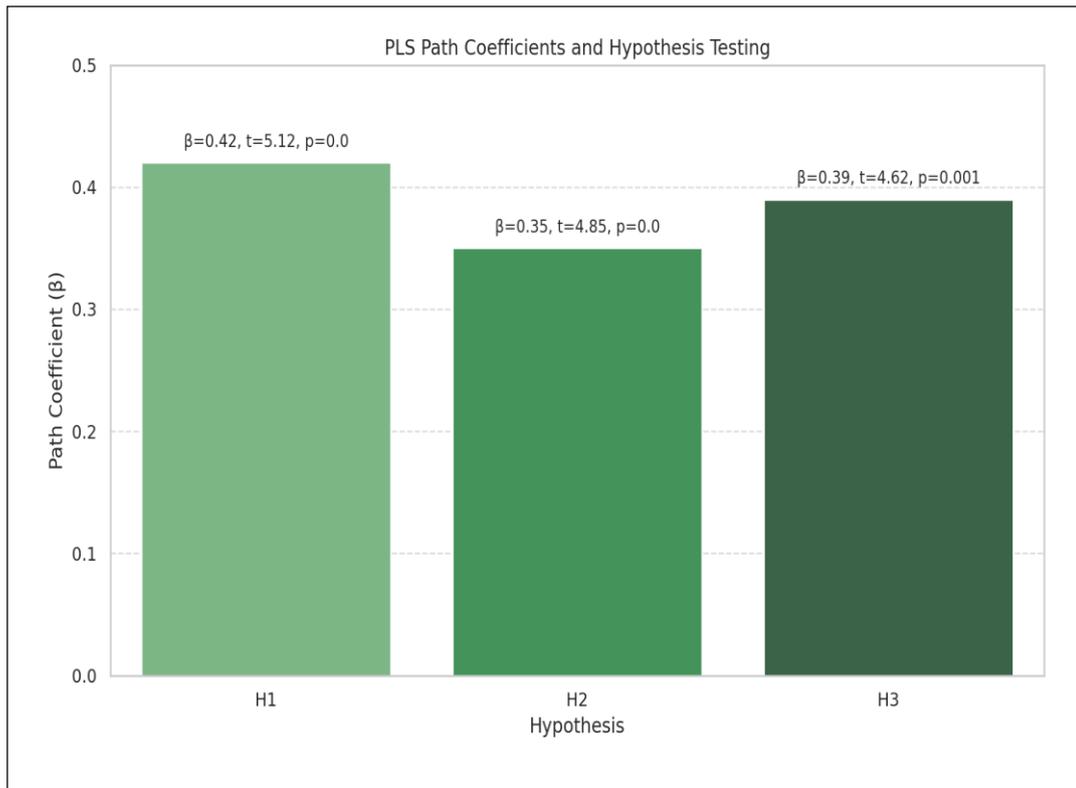


Figure 5: Illustrative Representation of Hypothesis Testing Using Partial Least Squares Path Modeling

5.3 Results Interpretation

The findings presented in Table 5.3a show that GHRM practices significantly influence various organizational factors, including employee commitment, performance management, and e-waste management. Both employee commitment and performance management recorded mean scores of 3.35 and 3.40, respectively, and thus have a high degree of impact, indicating that workers are responding positively to green-friendly activities that align with their individual values as well as work expectations. Such alignment leads to stronger loyalty, motivation, and participation. The fact that the mean score for e-waste management was a lower (3.15) but still in the moderate to high impact category indicates a positive trend, but perhaps room for further improvement through better training or awareness.

Table 5.3a: Interpretation of Relationships Between Variables

Relationship	Mean Score	Standard deviation	Impact Level	Interpretation
GHRM → Employee Commitment	3.35	0.58	High	GHRM policies foster greater employee alignment with sustainability values.
GHRM → Performance Management	3.40	0.62	High	Integration of green goals improves performance tracking and engagement.
GHRM → E-Waste Management	3.15	0.72	Moderate to High	Green training encourages active participation in e-waste initiatives.

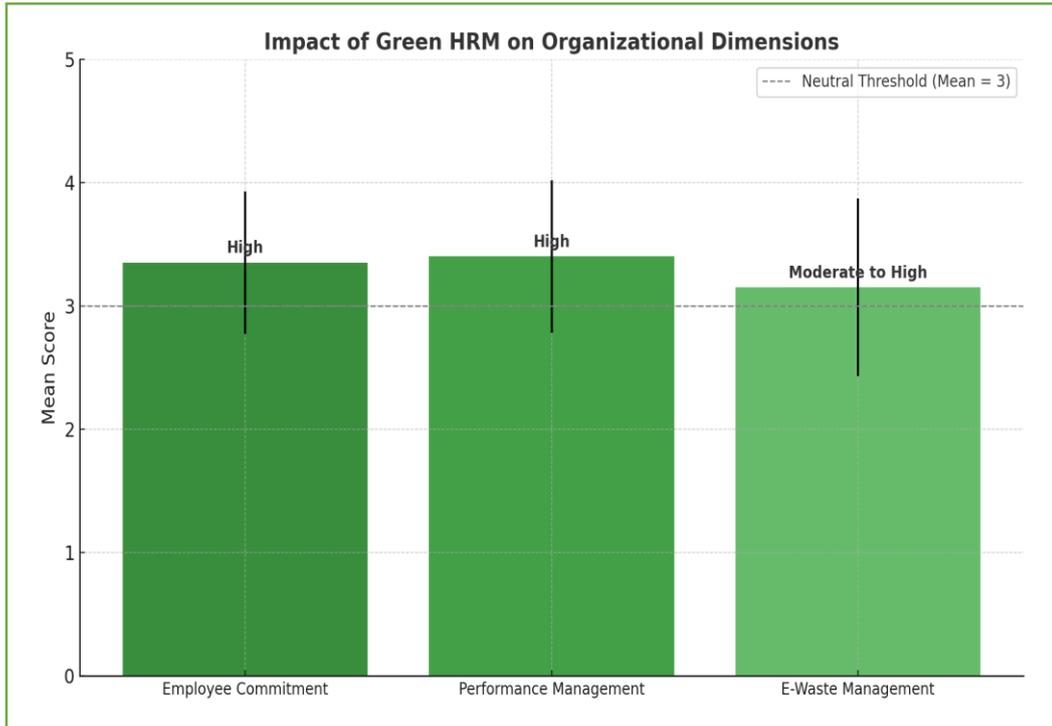


Figure 6: Graphical representation of the Interpretation of Relationships Between Variables

5.4 Employee Perceptions on GHRM Practices

Employee perceptions of GHRM practices show a generally positive attitude towards environmentally friendly initiatives in the organization. As illustrated in Table 5.4, the mean scores for all statements range from 3.25 to 3.50, reflecting moderate to high agreement levels. The highest agreement (87%) was witnessed in the statement in support of the overall effectiveness of GHRM policies, reflecting strong organizational convergence with environmental objectives. Besides that, 85% of employees concurred that green practices also positively affect their performance and motivation, further underlining the significance of sustainability to employee engagement. The adoption of cloud computing was also perceived to be positive by 83%, who acknowledged the minimization of the environmental footprint it plays. Still, 81% and 78% of respondents identified efforts made by the organization in conducting eco-friendly recruitment/training and responsible e-waste disposal, respectively. These results indicate that employees not only recognize but also embrace the organization's GHRM practices, viewing them as favorable to personal and environmental growth.

Table 5.4: Employee Perception Scores on GHRM Practices

Statement	Mean	SD	Agreement (%)
My organization promotes eco-friendly recruitment and training	3.30	0.62	81%
GHRM practices enhance my performance and motivation	3.42	0.58	85%
My company actively encourages e-waste reduction and responsible disposal	3.25	0.70	78%
Cloud computing adoption has reduced environmental impact	3.45	0.55	83%
Overall, GHRM policies in my organization are effective	3.50	0.57	87%

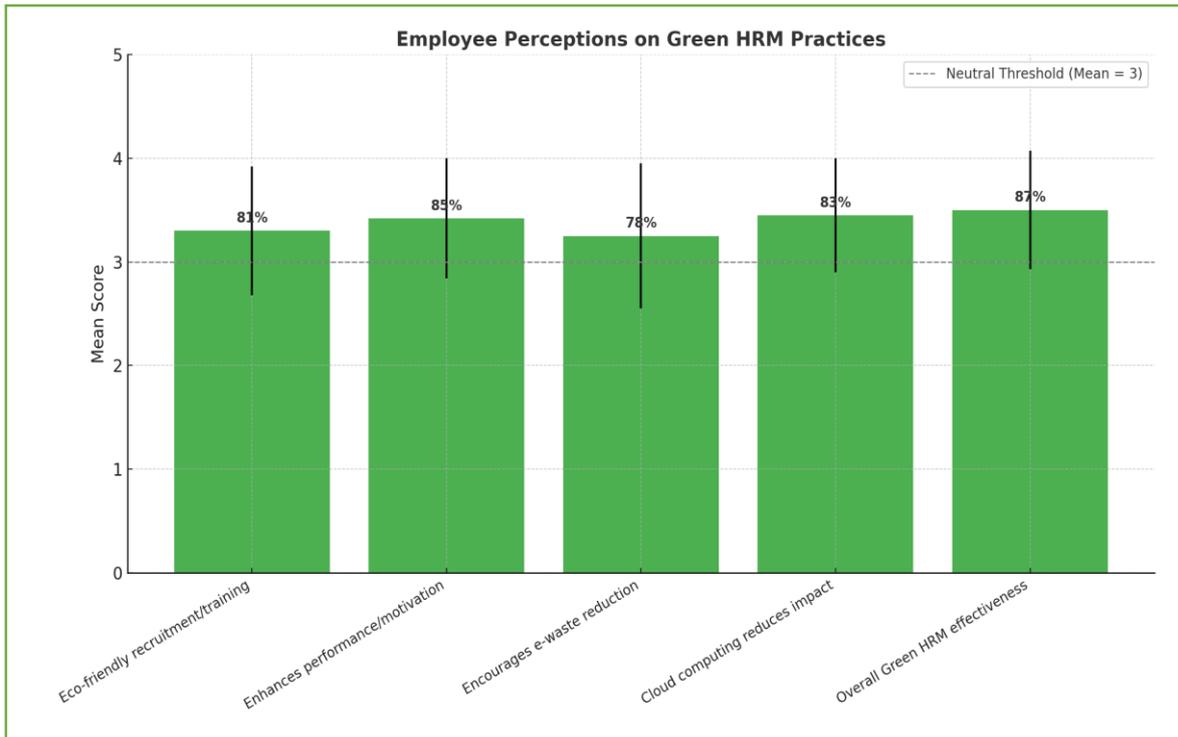


Figure 7: Graphical representation of the Employee Perceptions on GHRM Practices

5.5 Summary of Key Findings

The key findings summary captures the multi-dimensional influence of GHRM practices in IT organizations. For the first argument, employee commitment is also found to be significantly influenced by the application of green HR policies, as it indicates that when employees feel that their organization has a commitment to sustainability, it makes them feel more committed to being loyal, having morale, and feeling belongingness. Regarding performance management, synchronizing sustainability goals with employee objectives results in improved motivation, accountability, and transparency in work activities. Though the impact on e-waste management is moderate, there is a distinct positive trend indicating that with further awareness campaigns and specific training programs, this can be developed further. In addition, the study finds an overall positive attitude towards green initiatives by the employees, indicative of strong cultural readiness for more extensive integration of sustainable practices. In summary, the research highlights that GHRM plays a key role in the achievement of environmental objectives but also influences employees' motivation and work efficiency, thus making HR the strategic facilitator of sustainable organizational longevity

Table 5.5: Summary of Key Findings

Key Area	Finding	Implication
Employee Commitment	Strongly influenced by GHRM policies	Boosts loyalty, morale, and organizational belonging.
Performance Management	Positively impacted through alignment with sustainability objectives	Enhances motivation, transparency, and responsibility.
E-Waste Management	Moderate influence; positive trend identified	Needs more awareness programs or targeted training.
Employee Perception	Generally favorable towards green practices	Indicates cultural readiness for sustainable transformations.
Organizational Benefit	GHRM integrates well into IT context, enhancing both human and environmental sustainability	Positions HR as a strategic partner in sustainability and long-term operational effectiveness.

5.6 Implications of the study:

i) Theoretical Implications

This research affirms that the incorporation of environmental responsibility into HR policies promotes responsible behaviors such as e-waste management, consistent with Environmental Responsibility and Stakeholder Theories. These findings fortify the theoretical support for integrating sustainability into HRM, particularly in the IT industry.

ii) Managerial Implications

The research recommends that managers integrate green values within HR functions, link performance appraisals with green KPIs, and encourage cloud computing to reduce power consumption and e-waste. It stresses the need to carry out constant green training and eco-workshops to support sustainable practices. Promoting employee responsibility in e-waste management is also central to minimizing environmental damage and maintaining ISO 14001 compliance. These steps contribute to developing a sustainability-oriented workforce, enhancing organizational reputation, and assisting with environmental and regulatory objectives.

5.7 Limitations

- The study is limited to IT firms in Tamil Nadu, which could restrict generalizability to other areas or industries.
- Data were gathered at a single point in time, precluding conclusions about the long-term consequences of GHRM practices.
- Answers might be subject to social desirability bias, as respondents may overreport their endorsement of green values.
- While statistically adequate, a larger or more diverse sample might yield more subtle conclusions.

5.8 Future Scope

- Future studies could investigate the long-term effect of GHRM practices on organizational performance and environmental outcomes.
- Cross-industry comparative studies (e.g., manufacturing vs. IT) may provide more general insights.
- Studies on AI, IoT, and blockchain synergy with GHRM may unlock new avenues in digital sustainability.
- Deep interviews may enhance the comprehension of employee motivations and impediments towards green HR adoption.

5.9 Author Contribution

The author(s) of this research contributed substantially at all phases of the research. To collect data, they used a structured survey approach on 120 IT professionals working in ISO 14001-certified organizations with the help of stratified sampling, thus adding to the generalizability of the results. The analysis was conducted with the aid of PLS-SEM, enabling a strong investigation of complex relationships. Interpretation-wise, the authors were successful in connecting empirical findings to both theoretical knowledge and practical implications. Significantly, the research is among the few empirical studies that exclusively examine GHRM practices in the IT industry in Tamil Nadu, thus filling an important gap in regional and sectoral literature on sustainability in HRM.

6. CONCLUSION

The study's conclusion emphasizes that GHRM practices have a very positive impact on major organizational outcomes, specifically employee commitment, performance management, and responsibility towards e-waste. Employees working in ISO 14001-certified IT firms have a positive outlook towards such green activities, particularly green hiring, adoption of cloud computing, and eco-friendly training programs. These activities help foster a culture of sustainability at the workplace level while also improving operational efficiency and employee motivation. The study underlines the fact that HR departments have a pivotal strategic role in instilling environmental values into the organizational processes. Through the synchronization of HR policies with sustainability objectives, organizations are able to incorporate green practices in their everyday activities, thereby enhancing ecological accountability and sustainable business success.

REFERENCES

- [1] Lashari, I. A., Li, Q., Maitlo, Q., Bughio, F. A., Jhatial, A. A., & Rashidi Syed, O. (2022). Environmental sustainability through green HRM: Measuring the perception of university managers. *Frontiers in Psychology*, 13, 1007710.
- [2] Al Doghan, M. A., Abdelwahed, N. A. A., Soomro, B. A., & Ali Alayis, M. M. H. (2022). Organizational environmental culture, environmental sustainability and performance: the mediating role of green HRM and green innovation. *Sustainability*, 14(12), 7510.
- [3] Kuo, Y. K., Khan, T. I., Islam, S. U., Abdullah, F. Z., Pradana, M., & Kaewsang-On, R. (2022). Impact of green HRM practices on environmental performance: The mediating role of green innovation. *Frontiers in Psychology*, 13, 916723.
- [4] Ojo, A. O., Tan, C. N. L., & Alias, M. (2022). Linking green HRM practices to environmental performance through pro-environment behaviour in the information technology sector. *Social Responsibility Journal*, 18(1), 1-18.
- [5] Ahmad, F., Hossain, M. B., Mustafa, K., Ejaz, F., Khawaja, K. F., & Dunay, A. (2023). Green HRM practices and knowledge sharing improve environmental performance by raising employee commitment to the environment. *Sustainability*, 15(6), 5040.
- [6] Irani, F., & Kilic, H. (2022). An assessment of implementing green HRM practices on environmental performance: The moderating role of green process innovation. *Journal of Global Hospitality and Tourism*, 1(1), 16-30.
- [7] Ogbeibu, S., Emelifeonwu, J., Pereira, V., Oseghale, R., Gaskin, J., Sivarajah, U., & Gunasekaran, A. (2024). Demystifying the roles of organisational smart technology, artificial intelligence, robotics and algorithms capability: A strategy for green human resource management and environmental sustainability. *Business Strategy and the Environment*, 33(2), 369-388.
- [8] Vázquez-Brust, D., Jabbour, C. J. C., Plaza-Úbeda, J. A., Perez-Valls, M., de Sousa Jabbour, A. B. L., & Renwick, D. W. (2023). The role of green human resource management in the translation of greening pressures into environmental protection practices. *Business Strategy and the Environment*, 32(6), 3628-3648.
- [9] Garavan, T., Ullah, I., O'Brien, F., Darcy, C., Wisetsri, W., Afshan, G., & Mughal, Y. H. (2023). Employee perceptions of individual green HRM practices and voluntary green work behaviour: A signalling theory perspective. *Asia Pacific Journal of Human Resources*, 61(1), 32-56.
- [10] Hameed, Z., Khan, I. U., Islam, T., Sheikh, Z., & Naeem, R. M. (2020). Do green HRM practices influence employees' environmental performance?. *International Journal of Manpower*, 41(7), 1061-1079.
- [11] Rubel, M. R. B., Kee, D. M. H., & Rimi, N. N. (2021). The influence of green HRM practices on green service behaviors: the mediating effect of green knowledge sharing. *Employee Relations: The International Journal*, 43(5), 996-1015.
- [12] Ababneh, O. M. A. (2021). How do green HRM practices affect employees' green behaviors? The role of employee engagement and personality attributes. *Journal of Environmental Planning and Management*, 64(7), 1204-1226.
- [13] Venkatesh, D. A. N., Tirpude, R. R., Pathak, P., Pankajam, A., George, S., & Adhav, S. (2023). Perception Towards Green Human Resource Management Practices and Implementation in Financial Institutions in Kerala. *World Journal of Management and Economics*.
- [14] Jain, N., & D'lima, C. (2018). Green HRM—a study on the perception of Generation Y as prospective internal customers. *International Journal of Business Excellence*, 15(2), 199-208.
- [15] Al-Hawari, M. A., Quratulain, S., & Melhem, S. B. (2021). How and when frontline employees' environmental values influence their green creativity? Examining the role of perceived work meaningfulness and green HRM practices. *Journal of Cleaner Production*, 310, 127598.
- [16] Jerónimo, H. M., Henriques, P. L., de Lacerda, T. C., da Silva, F. P., & Vieira, P. R. (2020). Going green and sustainable: The influence of green HR practices on the organizational rationale for sustainability. *Journal of business research*, 112, 413-421.

- [17] Nejati, M. E. H. R. A. N., & Ahmad, N. H. (2015, May). job seekers' perception of green hrm. In Conference on Green Human Resource Management (CGHRM) 2015 (pp. 92-101).
- [18] Chen, T., & Wu, Z. (2022). How to facilitate employees' green behavior? The joint role of green human resource management practice and green transformational leadership. *Frontiers in psychology*, 13, 906869.
- [19] Younis, Z., & Hussain, S. (2023). Green transformational leadership: bridging the gap between green HRM practices and environmental performance through green psychological climate. *Sustainable Futures*, 6, 100140.
- [20] Hadi, H. K., Kautsar, A., Fazlurrahman, H., & Rahman, M. F. W. (2023). Green HRM: The Link Between Environmental and Employee Performance, Moderated by Green Work Climate Perception. *International Journal of Sustainable Development and Planning*, 18(5), 1573-1580.