QUBAHAN ACADEMIC JOURNAL
VOL. 5, NO. 1, February 2025
https://doi.org/10.48161/qaj.v5n1a1069

The Impact of Green Human Resource Management on IT Employees' Environmentally Eco-friendly Performance and Behavior: The Mediating Role of Organizational Commitment

KDV Prasad [1,*], Shivoham Singh [1], Ved Srinivas [2], Hemant Kothari [3], and Devendra Shrimali [4]

[1] Symbiosis Institute of Business Management, Hyderabad; Symbiosis International (Deemed University), Pune 412115, India;
[2] Thiagarajar School of Management, Madurai 625005 India;
[3] Pacific Academy of Higher Education & Research University, Udaipur 313001, India;
[4] Department of Business Administration, University College of Commerce and Management Studies, Mohanlal Sukhadia University, Udaipur 313001, India.

* **Corresponding author:** kdv.prasad@sibmhyd.edu.in.

ABSTRACT: This study examined the influence of green human resource management (GHRM) on information technology employees' environmentally friendly performance and eco-friendly conduct. This study also investigated the mediating role of organizational commitment on the nexus between GHRM and employees' environmentally friendly and eco-friendly behavior. The data were gathered via a structured questionnaire. Data normality and questionnaire internal consistency and reliability were assessed measuring Chronbach's alpha statistic, which reveals the data were normally distributed, and the questionnaire maintained internal consistency and reliability. 500 valid responses were analyzed and four reflective constructs, organizational commitment, green human resource management, organizations' environmental performance, and employees' eco-friendly behavior, were assessed via exploratory, confirmatory factor analysis, and hypotheses were tested via structural equation modeling analysis. The impact of green human resources was positive and statistically significant for all the study variables. Employees' eco-friendly behavior has a positive and statistically significant impact on IT organizations' environmental performance. Organizational commitment partially mediated the relationships between green human resource management and organizations' eco-friendly behavior and environmental performance. The data were gathered using convenience sampling which is fast, cost-effective, easy and suitable for our research. However, the limitations, bias and generalizability were handled through common method bias and the size of 500 is very large for SEM studies and results can be generalizable to some extent. The results have several practical implications for green organizations in terms of recruiting, training, and reducing carbon footprints.

Keywords: GHRM, employees' eco-friendly behavior, environmental performance, carbon footprint

I. INTRODUCTION

A set of guidelines, strategies, and practices that embolden environmentally friendly conduct among employees is green human resource management (GHRM). The goal of GHRM is to establish an organization that is resource-conscious, socially conscious, and environmentally conscious. This approach has gained popularity in the IT industry in the Hyderabad Metro. The idea that GHRM is essential to sustainability was first proposed in the middle of the 2000s. Around this time, businesses realized how important it was to align their HRM procedures with their environmental sustainability goals. As a result, GHRM is now seen as a tool to support OS by encouraging employees to act in an environmentally conscious manner. According to recent research trends, GHRM plays a major role in supporting an organization's sustainable development strategies by helping businesses achieve their sustainability goals, which improves overall performance, customer loyalty, and employee satisfaction in IT industries [1].

Companies are implementing sustainability strategies to address climate change challenges and disasters. Social justice, equity, and environmental sustainability are desirable social objectives that are gaining popularity.

Industrial organizations are reducing waste and enhancing corporate performance. Service industries are also reducing waste. Experimental research on the IT industry in Hyderabad Metropolis reveals the impact of GHRM on employee eco-friendly conduct [2]. The term "employee eco-friendly behavior" describes a range of actions taken by staff members in the workplace with the intention of preserving the environment and advancing the organization's sustainable growth. These actions include resource conservation, waste management, acquiring knowledge about environmental protection, and sustainable work practices. Due to stakeholder demands for a smaller ecological footprint, small and medium-sized IT companies are aggressively putting environmental mitigation strategies into practice. As a result, sustainable environmental practices are becoming an integral part of the daily operations of IT enterprises. An organization's ability to achieve long-term success while reducing negative effects on the environment and society is referred to as sustainable performance. The environmental performance refers to organizational environmental performance where the organization is following the green practices that protects the environment like green recruitment, green training, green employee involvement, sustainable practices and educating the employees on green human resource practices.

Green initiatives in the service sector seek to educate clients and staff while lowering waste, using less energy, and conserving water. Studies have shown a GHRM and business sustainability are causally related, particularly in the IT industry in the Hyderabad Metro [3, 4]. The GHRM strongly emphasizes selecting and keeping environmentally conscious workers, offering environmental education, and considering workers' eco-friendly contributions to performance evaluations. The methods approached hiring such workers are green recruitment, green training, green and employee involvement. Environmentally conscious candidates were drawn during the recruitment and later the employees will be assisted in becoming aware of the company's environment policy. The employees will be educated through training on organizations green initiatives and best practices in business. The staff members were given an opportunity to voice their thoughts and propose solutions for environmental green practices, minimizing the use of gasoline vehicles, car-pooling and recycling are some of the methods suggested to the employees. It aims to shape ecologically conscious behavior, mitigate the carbon footprint, and contribute to organizational sustainability. Green HRM strategies drastically improve workplace sustainability, as organizations focus on profit maximization [5]. Employee environmentally friendly behavior is crucial for a company's environmental performance. The effect of GHRM on eco-friendly behavior is mediated by organizational commitment and social identity theory, with employees likely to integrate ideals from the organization. An empirical study of the Hyderabad Metro demonstrated the impact 0of green HRM on employee eco-friendly behavior [6, 7]. Organizational commitment significantly influences employee attitudes, leading to noble behavior, such as organizational citizenship behavior (OCB).

Rapid economic progress has raised environmental concerns, including natural resource loss, unpredictable changes in climate and pollution. The IT industry's actions contribute to these issues. Businesses and governments are calling attention to green issues because they understand how crucial environmental sustainability is to social and economic development [8, 9]. Industries are adopting environmentally responsible practices due to pressure from the government, people, and environmental laws. In the information technology industry specifically, GHRM is a strategy to increase reputation and accomplish environmental goals that impact patron satisfaction, credibility, trust, and preference [10-12]. The information technology industry has engaged in significant green initiatives, converting energy and water, cutting waste, controlling food waste, and teaching employees on these issues [13-16].

The study explores motivational factors influencing IT professionals' pro-environmental behaviors (PEBs), using self-determination theory and green human resource management literature to examine direct and indirect effects. The study, involving 333 IT professionals in Malaysia, found that autonomous motivation and GHRM practices significantly impact PEBs, with GHRM acting as a moderator. The findings suggest that IT professionals' PEBs are linked to environmental practices based on interest and value [17]. This study explores the impact of green human resource management (GHRM) practices on employee pro-environmental behavior and environmental performance, focusing on their internal resources. Partial least square path modelling of data collected from 333 IT professionals in ISO 14001 companies in Malaysia was used to test the hypothesized relationships. Green training, development, performance management, and empowerment are crucial for promoting pro-environmental IT behavior, with significant mediating effects from pro-environmental IT behavior. The study suggests that GHRM practices significantly predict environmental IT performance, but training and development may not be effective unless it encourages pro-environmental behavior among employees [18].

How, in accordance with various theories, GHRM influences these green behaviors and GHRM practices in employees through various mechanisms. Organizational commitment is one mediating factor. Self-determination theory states that GHRM will influence employees' behavioral motivations and judgement criteria when addressing environmental issues, thereby improving employee behavior and encouraging them to voluntarily

participate in the organization's green initiatives. Environmentally conscious behavior by employees is another study variable. The social identity theory states that GHRM will increase employees' awareness of the company's green objectives, which will raise their GOI and allow them to exhibit more environmentally friendly behavior at work. Therefore, this study uses social identity and self-determination theories to construct a dual-mediation model to explore the impact of GHRM on employee voluntary green behavior like saving energy, water, recycling and use the allowed plastics and transmission to GHRM, focusing on information technology companies to enhance theoretical research and promote employee green behavior.

Self-determination theory suggests that motivation is influenced by internal needs, and GHRM promotes green values among employees, enhancing their environmental protection willingness and responsibility, thus enhancing their environmental behavior. Self-determination theory suggests employees with high environmental belief value environmental protection as meaningful and interesting, leading to increased voluntary and self-satisfaction. Social identity theory suggests individuals recognize their social group membership and emotional significance. Research shows human resource management is crucial for forming identity within organizations, as it communicates norms and values to employees. Thus, GHRM communicates green values and environmental management goals to members, influencing attitudes and attitudes towards environmental problems, enhancing enthusiasm for environmental protection and recognition of the enterprise's goals.

Green human resource management (GHRM) is gaining attention in academic circles for its impact on employee green behavior, but few studies have explored its information delivery perspective. This research explores the impact of five GHRM practices (employee life cycle, rewards, education, empowerment, manager involvement) on employee green behavior in the workplace, mediated by information needs. The study tested a theoretical model in China, finding that employee life cycle, education, empowerment, and manager involvement positively impact in-role and extra-role green behavior, while rewards only predict extra-role behaviors. Information needs influences employee life cycle, education, training, and manager involvement on green behavior in the workplace [19]. Another main reason and context to examine this area is the United Nations sustainable development goals lead international sustainability initiatives and stress an all-encompassing approach to organization’s sustainability. A Comprehensive integration of GHRM and organizational sustainability literature is hampered by a lack of prior reviews. The hybrid review approach offers a thorough evaluation of the GHRM and organizational commitment literature. The future research directions are provided by the intellectual scaffolding of the GHRM and organizational commitment researches. The study also integrates green human resource management in the context of organizational development

The authors examined the implementation of Green Human Resource Management (GHRM) practices in the Indian IT industry, focusing on how these practices influence employees' task-related and intentional green performance. The study examines the role of Green Human Resource Management (GHRM) in employee environmental performance, focusing on five Indian IT companies. It emphasizes the need to integrate sustainability into HR systems to achieve sustainable development goals [20].

Green Human Resource Management (GHRM) is a set of policies promoting sustainable environmental behavior among employees, crucial for achieving sustainable development goals. In this research, IT companies have been taken into account because, in this digital age, they are extremely important to India's economy, with the pandemic effects serving as a bonus. Purposive sampling was used in an empirical study to gather 261 samples from IT workers in order to examine the relationship between GHRM practices and environmental performance in particular IT firms. The study's conclusions show that GHRM practices significantly and favorably affect the companies' environmental performance. It is evident that GHRM is a successful business strategy that lowers expenses, conserves energy, reduces carbon footprints, and boosts the company's profitability. As a result, the study offers helpful guidance on going green to improve the environmental performance of the businesses [21].

In a different study, researchers looked at how information technology affects the environment, how much it costs, and the advantages of sustainable IT planning, barriers to adoption, and potential greening methods for organizations, highlighting the need for companies to manage their IT systems environmentally for environmental and financial reasons. This investigation examined data center efficiency, power consumption, and environmental impact, including paper recycling and the IT client side. It analyzes greening techniques, offers guidelines for sustainable IT structures, and presents a new manual with real-world examples to help businesses assess their IT infrastructure and become more environmentally friendly [22]. The use of the social information technology applications DropBox and WordPress in higher education focuses on reducing paper and ink usage. Research involving 150 sophomore computer science faculty students revealed that these applications create a convenient and environmentally friendly learning environment, attracting most students [23].

Some of the gaps identified are that the research indicates that green human resource management (GHRM) impacts workers' environmental performance and pro-environmental behavior, but few studies specifically

examine how GHRM practices affect these behaviors. This study aims to understand how GHRM practices can be used as internal tools to promote pro-environmental IT behavior among employees. GHRM practices are crucial for promoting pro-environmental IT behavior among employees, but without proper training and development, they may negatively impact performance. This study enhances the resource-based view of HRM by analyzing GHRM practices as organizational resources for promoting employee pro-environmental IT behavior and supporting environmental IT performance.

1. *ENVIRONMENTAL CHALLENGES OF IT INDUSTRY*

Software engineers, IT employee and product designers often overlook the significant resources required for their digital projects, often focusing on the "Cloud" and ignoring its importance. The energy and resources used in building computers, powering data centers, and cloud storage contribute to carbon emissions, emphasizing the responsibility of technology professionals to consider environmental impact.

The ICT sector is rapidly expanding, contributing over 2% of global emissions, similar to the aviation industry's fuel emissions. The growing environmental impact, exacerbated by increasing devices, data center expansion, and carbon offset ambiguity, can be mitigated through thoughtful research and planning.

2. *IT INDUSTRY IMPACT ON CARBON EMISSIONS*

An Increasing Number of Devices Means an Increased Need for Energy

The ICT sector currently contributes to over 2% of global emissions, but if trends persist, it could account for 15% of global emissions by 2040. The rapid growth of the Internet of Things (IoT) has led to the collection and exchange of data between internet-connected, "smart" physical objects via wireless networks. Juniper Research predicts a 130% growth in IoT connections from 35 billion in 2020 to 83 billion in 2024, and 66% of the global population will have internet access by 2023. As people become more connected, the question arises about the availability of electricity to power devices, as finite resources like fossil fuels and nuclear power are used, and more data centers are needed.

3. *EXPANSION OF DATA CENTERS*

Due to the proliferation of devices and cloud-based services, data centers—which account for 2% of global electricity consumption—are growing. By 2030, that figure may reach 8%. 70% of all internet traffic is processed by the little-known tech hub known as "Data Centre Alley." In Data Centre Alley, businesses like Microsoft, Apple, Google, Amazon, and Apple own or rent data centres. As the largest owner of data centres in the cloud computing space, Amazon powers almost one-third of the internet with its Amazon Web Services (AWS). For the fastest service and updates, this has led to a desire among many tech companies and their stakeholders for their cloud computing services to be hosted locally. Tech companies often face the dilemma of choosing between being on the cutting edge and being sustainable, as their data centers are reliant on fossil fuel-based utility provider Dominion Energy in Loudoun County, Virginia, despite AWS's efforts to power operations with renewable energy.

4. *THE AMBIGUITY OF CARBON OFFSETS*

IT industries are increasingly purchasing carbon offsets to offset negative impacts of their emissions and public perception. These offsets compensate for emissions made elsewhere, often in forest management or renewable electricity generation initiatives. Individuals and organizations can also buy offsets to balance emissions they cannot reduce themselves.

Mandatory offsets are legally binding, while voluntary offsets are purchased at an individual's discretion. The mandatory offset market was $44 billion in 2019, while the voluntary offset market was $300 million.

Purchasing carbon offsets raises concerns due to the lack of a globally recognized price and federal regulation, resulting in lower prices and potential misrepresentations of the actual cost of climate damage caused by emissions.

Critics argue that carbon offsets are a means for wealthy companies to fund environmental issues, often purchased in developing countries, putting the responsibility on local communities. Transparency in carbon emissions can help individuals and companies understand their choices' impact and encourage greener practices, as people develop creative ways to reduce greenhouse gas emissions.

Therefore, in order to demonstrate the positive social impact of GHRM practices, it is imperative to review the literature and research on their implementation. Thus, this analysis necessitates a look into the particular assistance provided by HRM procedures like hiring and selection, training and development, performance

review, and employee rewards. To achieve this maintaining the adoption of such green policies without HR support is another. As a result, there is an increasing need for corporate organizations to recognize, incorporate, and match environmental sustainability with their HRM procedures, which include hiring and selection as well as managing individual and corporate performance.

5. RESEARCH GAP

The body of research on the subject recognizes that green human resource management, or GHRM, influences workers' environmental performance and pro-environmental behavior. Only a small number of research, though, have looked specifically at how GHRM practices affect employees' pro-environmental behavior. The purpose of this study is to conceptualize GHRM practices as internal tools that support pro-environmental IT behavior among employees. Numerous studies show that GHRM practices are important indicators of environmental IT performance; however, unless training and development encourage employees to engage in environmentally friendly behavior, it may have the opposite effect on performance. By analyzing GHRM practices as organizational resources for promoting employee pro-environmental IT behavior to support environmental IT performance, this study adds to the resource-based view of HRM. Similar studies were carried out by [17, 22] T that explored the impact of green human resource management (GHRM) practices on employee pro-environmental behavior, focusing on their potential to stimulate IT-related pro-environmental behavior. The relationships were tested using partial least square path modelling on data from 333 IT professionals in Malaysian ISO 14001 companies. Green training, development, performance management, and empowerment are crucial for promoting pro-environmental IT behavior, with significant mediating effects from pro-environmental IT behavior. However, the findings from our study show that GHRM practices significantly predict environmental IT performance; however, unless training and development encourage employees to engage in environmentally friendly behavior, it may have the opposite effect on performance.

II. LITERATURE REVIEW

In a study, Lin et al., [24] explored the impact of green work-life balance (GWLB) policies on UK industrial companies' corporate sustainability performance and employee retention (ER), focusing on how individuals can reduce environmental impact and enhance human resource management practices. It also looks at how these factors are impacted by green innovation (GI) and organizational culture (OC). In this study, 450 operational supervisors from a range of UK manufacturing companies were surveyed. The data was gathered using a scale-based, self-administered survey. The data was analyzed using Smart PLS 4 and SPSS 26. Research indicates that GWLB initiatives and GHRM practices enhance ER and CSP. The study reveals that GI mediates the relationship between GHRM practices, ER, GWLB, and CSP in the UK manufacturing industry, affecting HR specialists, academics, and corporate leaders. The relationship between GHRM practices and GWLB, CSP level, and ER rate was examined by the authors. We also looked at how GI and OC affected these correlations. The results of the study show that GHRM practice adoption methodologies have a major impact on GI promotion, OC development, green employee behavior formation, and CSP enhancement. The results highlight how important it is for businesses to encourage environmental responsibility and incorporate sustainability ideas into HR procedures and policies. Encouraging environmentally conscious behavior among employees and putting GWLB initiatives into practice can improve long-term effectiveness and ER. The relationship between GHRM practices and ER is greatly impacted by GI. GHRM practices are a socially and environmentally responsible way to improve performance over the long term. ER, CSP, and GHRM practices are all closely related to OC. The relationship between GI and different outcomes, like GWLB, CSP, and ER, is facilitated by a mediator. An important link between GWLB, CSP, and ER is OC.

Given the increasing interest in human resources, it is imperative to investigate digital ways of showcasing the function of human resource management (GHRM) in businesses. In order to investigate the effects of green HRM practices on employee engagement in the context of Chinese organizations, this study constructed a moderated mediation model and introduced the variables of organizational identification and green self-efficacy. The results of the study show that GHRM has a favorable impact on worker engagement. This study offers businesses a fresh viewpoint on enhancing worker engagement and a foundation for GHRM implementation [25].

Since they give organizations the fundamental tools, they need to more effectively manage their environmental impact, green HRM practices are the most effective way to improve environmental performance. In order to investigate the key components of green HRM and the impact of GHRM on ecological performance, this study combined the theoretical frameworks of Ability Motivation-Opportunity (AMO) and Social Identity (SI). We examined data from 474 full-time employees of IT companies in Chennai using SPSS and SmartPLS. The

study found that five factors significantly impact GHRM: green hiring practices, green education, performance monitoring, green pay, and green engagement, and that integrating these factors significantly improves environmental performance [26].

The study explores the impact of personal norms and employee sex on green HRM practices and environmental sustainability in a developing economy, using positivist and quantitative approaches in the context of information technology industry. The study found a positive relationship between environmental sustainability, green human resource management practices, and employee personal norms, with employee norms significantly influencing the relationship among workers. Sex significantly moderated the relationship between employees' personal norms and environmental sustainability, green human resource management, and the mediation of these norms on green HRM and environmental sustainability. Human resource managers should integrate environmental sustainability initiatives into their practices, utilizing communication and collaboration to maximize employee norms and efforts in developing economies [27].

1. THE RELATIONSHIP BETWEEN HRM AND ENVIRONMENTAL MANAGEMENT

The GHRM is a an expressed used by scholars to refer to the environmental management component of human resource management, with certain protocols developed for employing green HRM practices [5]. Daily and Huang [28] suggested a framework for integrating the human resource components of environmental management systems, including providing an environmental vision, training employees, evaluating performance, and recognizing environmental activities. The proposed model focuses on environmental HR components, including senior executive support, training, empowerment, and rewards. It communicates environmental policies, encourages employees to engage in environmental activities, and rewards motivate responsible behavior. GHRM focuses on developing green skills through recruitment, training, and leadership development; motivating employees through performance evaluation and rewards; and stimulating employee involvement to cultivate an ecologically conscious organizational culture [5].

2. THEORETICAL BACKGROUND

In line with social identity theory, people can develop a positive self-concept by categorizing themselves into positive groups and identifying with teams. Self-concept is influenced by societal membership, and it is reinforced by attachment. This theory also explains the nexus among a company and its employees, demonstrating strong organizational commitment [29],[30]. Employees with positive perceptions of the social responsibility of the industry, particularly the IT industry, and environmental management initiatives show greater organizational commitment. Social identity theory suggests that commitment is correlated with behavior, leading to extra role behavior or organizational citizenship behavior (OCB). Workers who are loyal to their employer are more likely to put in more effort to meet the organization's objectives [31,12].

After the thorough review of the literature the authors could find several sources in relation to green human resource management practices in general, mostly related to manufacturing industries. However, no study examined the role of information technology employees environmentally eco-friendly performance and behavior and mediating effects of employee organizational commitment. The authors investigated the impact of green human resource management on IT employees' environmentally eco-friendly performance and behavior: The mediating role of Organizational commitment. This study compliments the available literature in GHRM in general and environment friendly and eco-friendly behavior of IT employees in particular.

3. RESEARCH QUESTIONS

1. Does green human resource management (GHRM) of IT industry employees to develop attitude of environmentally friendly behavior (save energy, water, use recycled products, purchase environmentally friendly products)?
2. Do green human resource management (GHRM) practices of an organization enable to enhance environmental performance of IT organizations (reduce food wastage, water, energy, purchase of more renewable materials and environmentally friendly products?

4. HYPOTHESES DEVELOPMENT

Scholars assert that strategic HRM principles impact employee attitudes and commitment, enhancing performance through employee development and empowerment to meet organizational objectives. This is in contrast to traditional HRM, which emphasizes behavioral control and external recruitment. The relationship between strategic HRM practices and employee organizational commitment is supported by empirical data [32,

33]. Socially responsible HRM is an essential part of corporate social responsibility and environmental conservation initiatives, and strategic HRM can also be applied to these initiatives. Organizational commitment is positively impacted by SRHRM, which comprises social responsibility training, employee behavior assessments, and the hiring of socially conscious staff. This study also explores GHRM, which includes environmental issues, and its impact on employees' commitment levels in the IT industry via social identity theory [12, 34]. On the basis of prior research and social identity theory, Hypothesis 1 is proposed below

Hypothesis 1: Green human resource management has a positive and statistically significant effect on organizational commitment.

The HRM practices increase employees' discretionary efforts, as high-quality exchange relationships with companies or supervisors lead to increased service behavior. Positive attitudes regarding GHRM tactics, such as hiring and training, are held by front-line staff members, who provide superior customer service to hotel guests [35, 36]. An approach that takes a practical approach to comprehending eco-friendly work environment behavior is OCB for the environment (OCBE). It describes optional actions taken by staff members who are not compensated for improving the environment. SHRM, equivalent to green HR management, positively impacts OCBE [28, 37]. The study suggests the concept of eco-friendly behavior as a viable alternative to OCBE, which is available only for voluntary and discretionary conduct and focuses on specific actions such as energy, water, and waste reduction in the hotel context. On the basis of the aforementioned analysis and synthesis, the authors of this study anticipate that GHRM significantly influences employees' environmentally conscious behavior. Consequently, they propose the following hypothesis. The IT industry must adopt green practices to manage environmental complexities, enhancing long-term development and competitive advantages. The GHRM is increasingly recognized as a crucial practice that impacts environmental performance and stakeholder pressure. Recent studies have explored the relationship between GHRM and perceived financial sustainability in the hospitality sector [3, 38, 39]. Therefore, the following hypothesis was formulated:

Hypotheses 2 GHRM has a positive effect on employers' eco-friendly behavior (energy saving, water saving, reuse through recycling and environmentally friendly behavior).

Organizational commitment increases employees' willingness to perform extra tasks, positively influences their organizational behavior (OCB) and positively affects frontline employees' commitment [40]. Meyer et al. [41] reported a fair correlation among affective organizational commitment and altruistic organizational conduct (OCB). High organizational commitment leads to selfless helping behavior and strong attachment to organizations. Ng and Feldman [42] reported a positive correlation among affective organizational commitment and OCB, suggesting that strong commitment leads to eco-friendly behavior among employees. This empirical research explores the nexus between GHRM and organizational commitment in Pakistani dairy companies. The ability, motivation, and opportunity theories are used to ascertain both the direct and indirect effects of GHRM. The findings show that green recruitment, selection, training, and development directly affect organizational commitment, with green human capital playing a crucial role in mediating these effects [43]. This empirical research investigates the influence of the GHRM effect on eco-friendly behavior among information technology employees in Hyderabad. The study employs a quantitative approach and bootstrapping procedure to examine the correlation between GHRM and eco-friendly behavior, revealing that GHRM effectively increases employee commitment. This contributes in the area of GHRM and addresses a gap in the literature [44]. Therefore, the following hypotheses are proposed:

Hypothesis 3: Employees' organizational commitment has a positive and statistically significant effect on their eco-friendly behavior (energy saving, water saving, reuse through recycling and environmentally friendly behavior).

Hypothesis 4: Organizational commitment mediates the relationship between GHRM and employee ecofriendly behavior, IT industry environmental performance.

A company's HRM system and organizational performance have been found to be significantly correlated by [45] with HR functions such as compensation and selection having a positive effect on business performance. HRM comprises opportunities for growth, activities that increase motivation, and activities that improve skills and improve procedures. The environmental literature frequently views environmental management as complete organizational or corporate performance, as opposed to direct environmental performance.

High integration of environmental management positively impacts a firm's environmental performance, whereas IT industry environmental performance refers to reducing negative environmental effects. The environmental management with HR practices enhances performance, whereas Melnyk et al. [2] reported that businesses with formal environmental management systems perform well. The authors propose that the positive relationship between environmental management systems (EMSs) and IT industry environmental performance also holds for GHRM. Thus, we formulate,

Hypothesis 5: GHRM has a positive effect on the environmental performance of IT organizations (reduce food wastage, water, energy, purchase of more renewable materials and environmentally friendly products.

Walz and Niehoff [46] discovered that the organizational behavior (OCB) of employees has a major effect on the quality of restaurants, customer satisfaction, and financial performance. Employees' OCBs enhance organizational performance by facilitating problem solving, distributing information, and enhancing adaptability to changes in a company's environment [47]. A positive relationship between OCB and corporate performance. Paillé et al.'s [49] study established the link between workers' OCBE and environmental performance, underscoring the paucity of empirical studies on the subject. This empirical research examined the connection between eco-friendly employee behavior and hotel environmental performance by [28, 48]. Therefore,

Hypothesis 6: Employees' eco-friendly behavior has a positive effect on organizations' environmental performance.

5. *THEORETICAL FRAMEWORK*

Our research can be best described in the context of social identify theory. The goal of social identity theory is to define and forecast the conditions in which people perceive themselves as members of a group or as individuals. The theory also takes into account how social and personal identities affect how people perceive themselves and behave in groups. In the recent past, the organizations are adopting green human resources management in the information technology sector so the employees can behave and adopt GHRM and conserve energy, water, recycle the paper and purchase green and environmentally friendly products. The GHRM can increase the success of adopting green intentions of the teams in IT sector and thus become an integral part of the daily work life. However, the positive effects of GHRM and green teams remains unclear the concept of social identify theory identification of employees with teams, the idea of the extended self refers to the assimilation of material belongings into one's sense of self, whereas social identity theory explains how workers identify with their teammates and maintain a group identity. The article updates our understanding of social identity and the extended self by adopting GHRM in a collaborative setting, thereby expanding upon the existing literature by analyzing the effects of GHRMs on individuals and teams in the context of their eco-friendly behavior and organizations environmentally friendly performance. Both the aspects information technology industry's environmental performance and information technology employees' eco-friendly behavior – saving resources, energy, water, recycling of products and purchase of green and environmentally friendly products. The mode was developed combining both the theories and study extended identification explaining the relationships of teams in the context of GHRM. This study contributes to the understanding on the influence of the extended self and social identity on collaboration adopting GHRM. The authors' theoretical model is presented in Figure 1 and respondents details presented in Table 1.

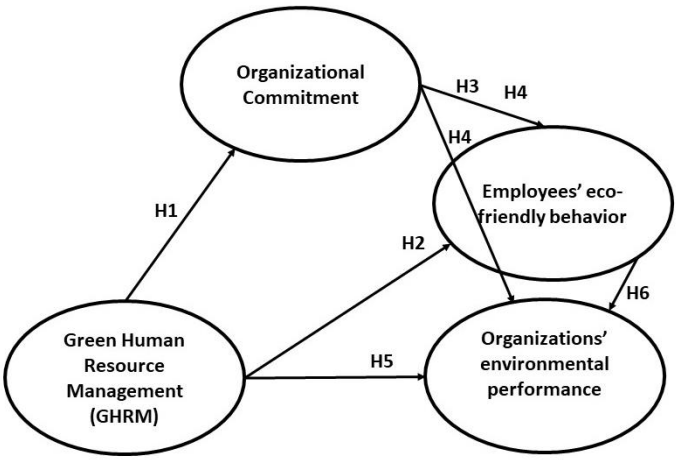

FIGURE 1. Authors theoretical model.

Table 1. Respondents' demographic characteristics.

Gender	**Men**	**267**	**53.4**	**500**
	Women	233	46.6	500
"Age (in years)"	21-30	136	27.20	500

	31-40	180	36.00	500
	41-50	120	24.00	500
	>50	64	12.80	500
Qualifications	SSC	73	14.60	500
	Graduate	264	52.80	500
	Post-Graduate	144	28.80	500
	Others	19	3.80	500
"Experience (in years)"				
	1-5	166	33.20	500
	6-10	131	26.20	500
	11-15	115	23.00	500
	>15	88	17.60	500

III. METHODOLOGY

1. *MEASURES*

A Likert-type scale was developed to measure 4 constructs: green human resource management (5) items, organizational commitment (4 items), employee eco-friendly behavior (4 items) and an organization's environmental performance (4 items), for a total of 17 items. The green HRM scale is a 5-item scale modified from the scales of Shen and Benson [31] and Hsiao et al. [34]. The employees' organizational commitment scale is based on the scale developed and validated by Mowday et al. [50]. The employees' ecofriendly behavior scale is based on [34, 51, 52]. Finally, the organizations' environmental performance scale is a modified version of the scales from Paille et al. [37] and Melnyk et al. [2]. All the scale items are presented in Table 2. Several researchers used these items and scale to study the green human resource management practices and modeled the constructs for structural equation modeling analysis.

2. *DATA COLLECTION*

Data were collected via a research instrument that is a questionnaire to measure 4 reflective constructs with 17 items. The survey instrument was published on Google Form, and a link was shared with the 600 respondents through email and WhatsApp. The convenience sample method was used to target the required population. Five hundred thirty-six (536) responses were received. However, only 500 responses were considered for data analysis, as some of the responses were incomplete, and some responses presented the issue of misbehavior. The respondents' misbehavior was identified by verifying the responses of respondents who marked the same answers for all the questions; whereas the incomplete responses were those records where the respondents were not selected there to more than 20% of the questions. The large sample size of 536 given the comfort of deleting the incomplete and misbehaved employees. The sample size of 500 is very large enough to carry structural equation modeling studies and a justification for this was provided under "Justification of sample size section.

The convenience sampling was used as the respondents were targeted specific characteristic like employees of IT industry with GHRM practices and organization that encourages the green practices. Further, Convenience sampling is a good option when participants are easily located and available. It is cost-effective, can do the sampling with limited time and resources and useful in empirical research. When it's not feasible to reach every member of IT industry a sizable target audience, convenience sampling is a wise decision When convenience sampling is used by researchers for their study, selection bias, also known as convenience bias, may arise. Convenience sampling's main drawback is bias, which occasionally makes the benefits outweigh the drawbacks. The results cannot be extrapolated to a larger population because the collected samples might not accurately reflect the population of interest. Convenience sampling may lead to a variety of biases, such as positivity bias, selection bias, and sampling bias. However, the authors could overcome certain bias problems collecting the sample from various (multiple) information technology industry employees with diverse culture and educational qualifications. Further we have assessed the common method bias which is 3.874 units of Chi Square and not possessed any effect on outcome of the study.

3. RATIONALE BEHIND THE SAMPLE SIZE

For maximum likelihood estimation with multivariate normal data, [53] suggested a sample size of 200–400 with a 5:1 case-to-free parameter ratio. This suggests that only one indicator or statement is needed for the sample.

In addition, SEM analysis was conducted via "50+5x, where x is the number" of statements, in accordance with James Gaskin's [54] criteria. On the basis of these criteria, 125 subjects make up the sample size required for the 17 questions in the current empirical research. In this empirical study, 500 subjects had a legitimate response rate that was higher than the required sample size.

Moreover, the sample size used for SEM analysis is greater than what [55] advised. This study used Monte Carlo data simulation methods to calculate the necessary sample size for frequently. Another main reason for a sample size of 500 is to take the outcome nearer to generalizability.

The sample size large from wider variety of people with diverse educational and cultural backgrounds which reduced the bias. Further, the samples were collected from the employees of several IT industry that are hosted in Hyderabad Metro.

4. JUSTIFICATION OF SAMPLE SIZE

The authors distributed the questionnaire link to 600 respondents and received 536 responses, for a response rate of 89%. As described earlier, only 500 responses were considered for analysis. The data were analyzed for exploratory, confirmatory analysis, and hypotheses were tested via structural equation modeling analysis. A power test was carried out to determine the sample size.

5. POWER TEST

The power test a statistical computation known as a power analysis is used to estimate the smallest sample size required in a study in order to detect an effect with a given level of confidence. It is used to plan studies that aren't too big, which could waste money, or too small, which could overlook significant effects.

With an alpha value of 0.05, a power analysis using SPSS version 29 was used to calculate the study sample's power [56]. The sample's standard deviation was 1.07. With an effect size of 0.8 and an actual power value of 0.995 for the sample size of 500, the results indicated a strong and significant relationship between the variables. To assess the study hypotheses, a sample size of 500 is more than adequate [57, 58].

Table 2. Study variables and outer loadings.

Green Human Resource Management α=0.948, CR=0949; AVE=0.787		
GHRM1	"My organization provides adequate training to promote environmental management as a core organizational value"	0.90
GHRM2	"My organization considers how well employee is doing at being eco-friendly as part of their performance appraisal"	0.92
GHRM3	"My organization relates employee's eco-friendly behavior to rewards and compensation"	0.88
GHRM4	"Employees fully understand the extent of corporate environmental policy"	0.87
GHRM5	"My organization encourages employees to provide suggestions on environment improvement"	0.87
	"Organizational commitment α = 0.911; CR = 0.913, AVE= 0.679"	
OC1	"I talk up my firm to my friends as a great firm to work for"	0.83
OC2	"I find that my values and the firm's values are very similar"	0.87
OC3	"I am product to tell others that I am a part of this firm"	0.86
OC4	"For me this is the best of all possible firms for which to work"	0.79
OC5	"My firm truly inspires the very best in me in the way of job performance"	0.76
	"Organizations environmental performance α = 0.945; CR = 0.946, AVE = 0.815"	
ORENVP1	"Organization reduces wastes of food, water and energy"	0.91
ORENVP2	"Organization reduced the purchase of nonrenewable materials, chemicals, components, etc."	0.88
ORENVP3	"Organization conserves energy usage"	0.93
ORENVP4	"Organization improved the position in market concerning eco and environmental friendliness"	0.89
	"Employees' eco-friendly behavior α = 0.920; CR = 0.921, AVE = 0.744"	

ECOFR1	"Before I get off work, I turn off the electric appliances like monitor, computer, photocopier etc."	0.88
ECOFR2	"When I leave a room that is unoccupied, I turn off the light"	0.82
ECOFR3	"I sort the recycle garbage in the workplace"	0.89
ECOFR4	"I pay close attention to the water leakage"	0.85

[1] Source: Primary data processed

[2] " GHRM: Green human resource management; OC: Organizational commitment; ORENVP: Organizations' environmental performance; ECOFR: Employee eco-friendly behavior"

IV. DATA ANALYSIS AND RESULTS

The data were analyzed using exploratory and confirmatory factor analysis and hypotheses were tested using structural equation modeling. The mediating effects of organizational commitment on the relationship between green human resource management and employee eco-friendly behavior. In several studies on organizational psychology, researchers have evaluated absolute path coefficients using IBM-AMOS software with both large and small sample sizes as well as both normal and non-normal data.

We have reported the said fit indices when using Structural Equation Modelling (SEM), fit indices aid researchers in assessing how well a model fits the intended data. Their significance lies in guaranteeing that the model precisely mirrors the data. Nevertheless, fit indices may have certain drawbacks, such as Researchers may misuse fit indices to justify models that don't fit well, or to selectively report indices that suggest the best fit. Even when a model has poorly fitting portions, fit indices can indicate that the model is generally well-fitting. In addition to fitting well, a model should be theoretically sound, comprehensible, and frugal. Certain fit indices, such as the Normed Fit Index (NFI) and Goodness-of-Fit Index (GFI), are no longer advised because of sample size concerns. One non-normed fit index that is less impacted by sample size is the Tucker-Lewis Index (TLI). Therefore, we reported fit-indices where several researchers reported referring their cutoff values.

For convenience of presentation, we used GHRM to denote green human resource management, OC: Organizational commitment; ORENVP: Organizations' environmental performance; ECOFR: Employee eco-friendly behavior. The descriptive statistics for the study variable are presented in Table 3.

Table 3. Descriptive statistics.

	N Valid	Mean	Median	Std. Deviation	Skewness	Kurtosis
GHRM1	500	6.11	6.00	1.029	-1.659	3.758
GHRM2	500	6.17	6.00	0.977	-1.640	3.469
GHRM3	500	6.09	6.00	1.055	-1.570	2.901
GHRM4	500	6.07	6.00	1.048	-1.480	2.674
GHRM5	500	6.20	6.00	0.985	-1.610	3.300
OC1	500	6.12	6.00	0.883	-0.956	0.841
OC2	500	6.18	6.00	0.871	-1.129	1.683
OC3	500	6.22	6.00	0.807	-0.944	1.119
OC4	500	6.08	6.00	0.934	-1.007	0.855
OC5	500	6.30	7.00	0.882	-1.477	3.150
ECOFR1	500	6.13	6.00	1.046	-1.430	2.179
ECOFR2	500	6.23	7.00	1.078	-2.051	5.368
ECOFR3	500	6.12	6.00	1.047	-1.505	2.743
ECOFR4	500	6.22	6.00	0.988	-1.737	4.141
ORENVP1	500	5.67	6.00	1.046	-0.799	0.545
ORENVP2	500	5.60	6.00	1.143	-0.929	1.004
ORENVP3	500	5.61	6.00	1.094	-0.859	0.639
ORENVP4	500	5.77	6.00	1.063	-0.940	1.121

1. COMMON METHOD BIAS (CMB)

Data collection from various sources is need for behavioral sciences studies to avoid CMB but has demerits like requiring private information and decreasing respondents' preparedness to participate in surveys. The study used various techniques to ensure anonymity and confidentiality, preventing the effects of cross-sectional

sampling (CMB) and improving responses [47]. The authors used three statistical techniques to detect possible CMB in their study: Harman's single-factor test, analysis of the PLS model with a marker variable, and examination of the general factor [59]. The study by The PLS model was changed into a model with a marker variable suggesting that the underlying CMB was not a significant problem.

The PLS model was determined by the authors to be fully convergent and free from CMB because all variance inflation factors fell below the recommended criterion values by [60] Harman's one-factor test identified 23.74% common method bias, above the key criterion of 50% [47].

According to previous studies [61], The model with 4 variables had the best fit indices. As a result, the model does not suffer from common method bias.

Table 4. Correlation matrix (Fornell and Larcker criterion).

	GHRM	OCMT	ORENP	ECOF
GHRM	0.887			
OCMT	0.487***	0.824		
ORENP	0.446***	0.388***	0.903	
ECOF	0.270***	0.342***	0.265***	0.862

[1] Source: Primary data processed

Table 5. Heterotrait–monotrait analysis.

	GHRM	OCMT	ORENP	ECOF
GHRM				
OCMT	0.463			
ORENP	0.426	0.370		
ECOF	0.255	0.319	0.242	

[1] Source: primary data processed
[2] Thresholds are 0.850 for strict and 0.900 for liberal discriminant validity.

The factor analysis distributed the 14 variables into 4 components. A Kaiser–Meyer–Olkin (KMO) sample adequacy measure of 0.912 indicates that the data are appropriate for additional study. Eight components accounted for 80.868% of the total variance, exceeding the threshold and suggesting a value of 60%. To ascertain whether the variables are uncorrelated and whether the correlation matrix of the observed variable is an identity matrix, Bartlett's test of sphericity is performed. When the correlations between the variables are considerably different from zero, as indicated by a Bartlett test value <0.001, the data are suitable for additional investigation

The hypothesized measurement model consisted of 4 reflective constructs: GHRM, employee eco-friendly behavior, organizations' environmental performance and organization commitment. The goodness-of-fit indices presented excellent fir values for "CMIN, and the values of $\chi 2(17, N=500) = 272.861$, df=129; $\chi 2/df = 2.115$, $p<0.001$, RMSEA=0.047; SRMR=0.029, CFI=0.982, AGFI=0.924; TLI=0.978, NFI=0.966 and PClose=1.000" are excellent, as suggested by [6]. The values in Table 4 indicate that for all the variables, the Cronbach's α and CR values are > 0.7, indicating high reliability [63],[64]. All variables have AVE values > 0.5, revealing convergent validity. Table 4 shows that the square root of the AVE of each variable in the correlation matrix reached its maximum value. Table 5 shows that all the heterotrait–monotrait ratios met the requirement of being < 0.85. This, combined with the previous analysis in Table 4, indicates good discriminant validity. Therefore, the model's reliability and validity were assessed.

2. *HYPOTHESES TESTING*

To investigate the theorized hypotheses, the data were analyzed using structural equation modeling via AMOS 28 via an AMOS bootstrapping algorithm. The bootstrapping created 2000 resamples, and the study corrected the biases within 95% of the confidence intervals. There were no multi-collinearity issues. The tolerance values for the independent variables are >0.20 relationships among the constructs; the variance inflation factors (VIF values) for the independent variables are less than the threshold limit of 4; and the eigenvalues for all the independent variables are not close to zero. Finally, the condition index values for all the independent variables are <15. Therefore, in the present study, no such multi-collinearity issue was found. Therefore, further analysis was carried out.

The hypothesis is aimed at determining the relationship between GHRM and the organizational commitment of employees. The results of Table 6 indicate that the effect of GHRM on organizational commitment is positive and statistically significant (ß=0.385, t=10.413, p<0.001), influencing the organizational commitment of IT industry employees and supporting, **Hypothesis 1:** Green human resource management has a positive and statistically significant effect on organizational commitment.

Similarly, the impact of GHRM on employee eco-friendly behavior is positive and statistically significant (ß=0.140; t-2.651, p<0.05), influencing employee eco-friendly behavior and supporting, **Hypothesis 2:** GHRM has a positive effect on employers' eco-friendly behavior.

Similarly, the influence of organizational commitment on employees' eco-friendly behavior is positive and statistically significant (ß=0.340, 4.934, p<0.001), supporting, **Hypothesis 3:** Employees' organizational commitment has a positive and statistically significant effect on employees' eco-friendly behavior.

The impact of GHRM on IT organizations' environmental performance is positive and statistically significant (ß=0.337, t=6.548, p<0.001), supporting **Hypothesis 5:** GHRM has a positive effect on the environmental performance of IT organizations.

Similarly, the impact of employees' eco-friendly behavior on organizations' environmental performance is also positive and statistically significant (ß=0.118, t=2.499, p<0.05), supporting **Hypothesis 6:** Employees' eco-friendly behavior has a positive effect on organizations' environmental performance (Figure 2).

In the Table 6 some relationships are have higher beta values and respected t-values indicating larger impact on the model output. The larger regression coefficient or beta values indicate significantly higher impact of the relationships in model. Another reason the model tests all the relationships simultaneously, values of each coefficient can be altered by adding or removing variables because each coefficient is dependent on the other variables in the model. In this study all the relationships are positive and statistically significant. Please note the regression coefficient shows how steeply a line slopes either upward or downward.

Table 6. Hypothesis testing.

Relationship	ß	SE	t value	p value	Decision
GHRM → Organizational commitment	.385	.037	10.413	***	Supported
Organizational commitment → Employee eco-friendly behavior	.340	.069	4.934	***	Supported
GHRM → Employee eco-friendly behavior	.140	.053	2.651	.008	Supported
Organizational commitment → Organizations environmental performance	.243	.067	3.605	***	Supported
GHRM → Organizations environmental performance	.337	.052	6.548	***	Supported
Employees eco-friendly behavior → Organizations environmental performance	.118	.047	2.499	.012	Supported

[1] Source: Primary data processed

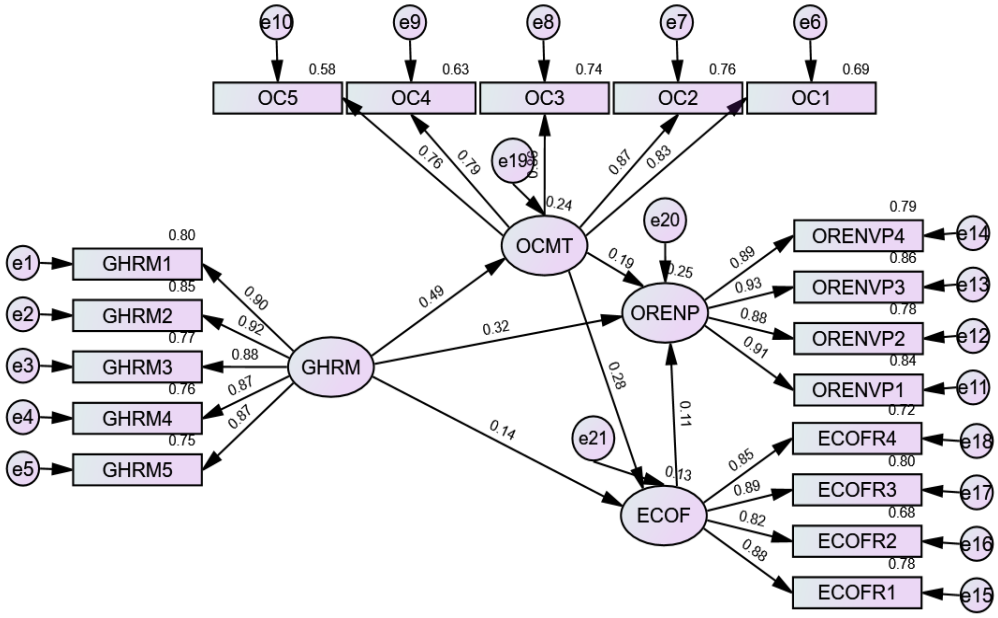

FIGURE 2. Testing of hypothesis and mediation analysis.

3. *MEDIATION ANALYSIS*

The authors investigated how organizational commitment mediated the relationships between green human resource management employee eco-friendly behavior and organizations' environmental performance. Since both the direct and indirect relationships were statistically significant, organizational commitment partially mediated the nexus amongst GHRM and employees' environmentally friendly behavior and organizations' environmental performance (Table 7), supporting, **Hypothesis 4:** Organizational commitment mediates the relationship between GHRM and employee ecofriendly behavior and IT industry environmental performance" (Figure 2).

Table 7. Mediation analysis results.

Relationship	Direct effect	Indirect effect	Confidence Interval		P value	Conclusions
	ß	ß	"Lower bound"	"Upper bound"		
GHRM → Organizational commitment → "Employee eco-friendly behavior"	0.140 (<0.05)	0.135 (0.000)	0.088	0.205	0.001	Partial mediation
GHRM → Organizational commitment → Organizations environmental performance	0.337 (<0.001)	0.098 (0.000)	0.049	0.160	0.001	Partial mediation

V. DISCUSSION

This empirical research investigated the nexus between GHRM and organizational commitment, employee eco-friendly behavior and organizational environmental performance in the context of the information technology sector. The researchers used structural equation modeling analysis to decrease the results.

The results reveal that IT employees' perception of GHRM enhances employees' loyalty and commitment to their respective organizations in the context of eco-friendly behavior to enhance the organization's environmental performance. All the hypotheses are supported, and the SEM results reveal positive effects of GHRM on organizational commitment, employee eco-friendly behavior and organizational environmental performance, which are in line with previous findings [8]. These authors reported a positive impact of environmental management strategies on commitment to the organization. Another study reported positive impacts of sustainable environmental practices and organizational commitment [37]. Several past researchers have assessed strategic and sustainable environmental management techniques, like releasing annual reports on environmental issues and publishing environmental practices. HRM is a key player in fulfilling organizations' goals through employee participation [32, 65].

The study explores the link between the GHRM and organizational commitment in the IT industry, recommending GHRM practices to enhance environmental performance. It also explores the mediating role of organizational commitment. This study ratifies the effectiveness of GHRM implementation in enhancing employee behavior and organizational performance, despite previous research not including eco-friendly behaviors in the hypothesis [28, 66]. The study explores employees' psychological involvement in their organization's environmental efforts, highlighting the crucial relationship between the organization and the individual in influencing their pro-environmental behavior. Research indicates that green human resource management (GHRM) positively influences green hotel innovation, supporting the recommendation to improve it by promoting environmentally friendly activities and encouraging workers to be environmentally conscious [8, 67]. Green human capital (GHRM) enhances employee abilities, behavior, and attitudes, thus enhancing environmental performance. This relationship is mediated by green human capital, that contributes to environmental knowledge, OCB behavior, and the motivation to adopt green behavior [65].

This study explores the relationship between employee commitment to GHRM and eco-friendly behavior, highlights the limited literature on this topic, and focuses on social identity theory. The study suggests that organizational commitment influences individual employee behavior, leading to active eco-friendly behavior and improved environmental performance in IT industry, confirming previous research on EOC [67,68]. This study reveals a significant single mediating effect of EEB and a sequential mediating effect through EOC and EOB, supporting the social identity perspective's impact on eco-friendly behavior [28]. Organizational commitment and environmental concern increase employees' awareness, enhancing organizational environmental performance. Knowledge empowers employees to recognize their environmental responsibilities and use their skills to protect the IT industry environment. The results indicate that the influence of GHRM on environmental performance is strengthened when employees have a greater sense of environmental concern. MECs moderate the relationship between GHRM and green human capital, which is consistent with findings from recent research [1,69] showing that GHRM and organizational commitment are positively correlated with environmental concerns.

This empirical study was carried out surveying information technology employees from several IT companies in and around Hyderabad. The self-reported data can have the issues like response bias, social desirability bias, inaccuracies, incomplete data, and subjectivity. These issues were addressed assessing the questionnaire's reliability, validity, discriminant validity and convergent validity and common method bias. All the reliability and validities are fell under the benchmark values and under common method bias some bias was observed, it is very minimal, and has no impact on study's outcome. The issues were also addressed collecting the data from more than one IT companies where the employees with diverse educational, and cultural backgrounds.

This study is unique and significant because of a number of important factors. It first improves comprehension and awareness of the benefits related to GHRM development. Second, no thorough investigation of GHRM in IT industry considering organizational environment performance and employees eco-friendly behavior considered. The study's findings provide insight into the limitations that still exist and prevent the GRHM from realizing its full potential as well as strategies for resolving these issues. It is anticipated that this study will add to the body of knowledge about the application of green HRM and its advantages in information technology industry. Notably, the study stressed how critical it is to adopt GHRM as a strategic priority and foster an environmental citizenship culture while coordinating corporate social responsibility efforts with sustainability objectives.

VI. CONCLUSIONS AND RECOMMENDATIONS

The current study adds to the body of knowledge already available on enhancing environmental performance, particularly in Indian IT sector. Among the IT GHRM methods are associated with green human capital. In conclusion, employing watchful staff, providing opportunities for training and advancement, and maintaining green standards are all ways that the IT sector can boost its green human capital. The explored motivational

factors influencing IT professionals' pro-environmental behaviors, using self-determination theory and green human resource management literature to examine direct and indirect effects [71]. The study, involving 333 IT professionals in Malaysia, found that autonomous motivation and GHRM practices significantly impact PEBs, with GHRM acting as a moderator. The findings suggest that IT professionals' PEBs are linked to environmental practices based on interest and value.

In another study that green human resource management practices, including recruitment, training, compensation, performance management, and empowerment, can influence employees' pro-environmental IT practices, particularly in the IT sector.

The path model analysis results validate the noteworthy influence of empowerment, participation, and green training and development. Additionally, recommendations are made regarding the application of GHRM practices to encourage employees' pro-environmental IT behavior, and the implications of the findings are discussed.

In another research the authors explored the impact of five types of green human resource management practices (employee life cycle, rewards, education, training, empowerment, and manager involvement) on employee green behavior in the workplace, focusing on the mediating effects of information needs based on technology acceptance models. The suggested theoretical model was tested using cross-sectional survey data from businesses in the People's Republic of China. The findings demonstrated that, while rewards only significantly predicted extra-role behaviors, employee life cycle, education and training, employee empowerment, and manager involvement all significantly affect employees' in-role and extra-role green behavior positively.

The relationship between the employee life cycle, education and training, and manager involvement and the employees' environmentally conscious behavior at work is mediated by information need.

The results imply that green human capital encourages workers to think positively about their capacity to practice environmentally friendly behaviors because they possess the necessary capacities, mechanisms, and expertise. Ultimately, these conditions deepen our comprehension of the environment and encourage innovation in environmental performance. Green innovation may result from the MEC's requirement to satisfy organizational environmental expectations and standards.

The findings go beyond simple theoretical inferences; they also demonstrate how to use human capital to raise staff members' environmental awareness, which enhances the environmental performance of the IT industry. From a process standpoint, the study showed how GHRM methods combined with environmental knowledge can promote more innovation. Because the study concentrated on GHRM strategies as a possible source of human capital rather than behavior reinforcement, it contributed to the body of knowledge on the theory of human capital.

One approach to using human capital management to assist companies in becoming more environmentally sustainable is through green human resource management, or HRM. Among the green HRM techniques are:

Green recruitment: Draw in environmentally conscious candidates and assist them in becoming aware of the company's environmental policy.

Green training: Educate employees on green initiatives and best practices in business.

Green employee involvement: Give staff members an opportunity to voice their thoughts and propose solutions for environmental problems.

Sustainable practices: Encourage staff members to walk, carpool, or take public transportation. Encourage composting, recycling, and cutting back on paper use as well.

Educate employees: Involve staff members in corporate sustainability programs and provide them with sustainable development education.

1. THEORETICAL IMPLICATIONS

This study highlights the relationship between GHRM and environmentally responsible (EOC) practices, revealing which employees perceive GHRM as a positive organizational movement, leading to increased commitment and commitment [37]. This study supports findings by explaining the psychological relationship between an organization and its workers in environmental management contexts using social identity theory which is applicable to IT organizations. This study reveals distinct effects of Green Greenhouse Gas (GHRM) on HEP in green and nongreen hotels, highlighting the lack of evidence on its effectiveness in promoting environmental protection and sustainability [16, 34] Past studies have not explored the role of GHRM in promoting environmental protection from emissions, which may lack funds for green certificates. This study reveals that the impact of GHRM on organizational commitment in IT industry is fully mediated on the relationship between GHRM and "employee eco-friendly behavior and organizations environmental performance [13], This study highlights the importance of green human resource management (GHRM) practices

in the informational technology industry's environmental performance, particularly for nongreen hotels, and contributes to future research on sustainable management and environmental protection. This empirical research highlights the link GHRM and green innovation, suggesting that greening HRM and creative methods can enhance the environmental performance of IT industry [39] and our results are consistent with the authors findings. By addressing environmental performance in the IT industry and addressing several issues that prior research has demonstrated, the study adds value to the body of literature. HRM techniques can improve environmental protection by transforming resources from the IT industry into human capital.

2. PRACTICAL IMPLICATIONS

IT organizations are increasingly recognizing the importance of sustainable management, including environmental conservation. They should prioritize Green Human Resource Management (GHRM) before other environmental management efforts. This promotes eco-friendly behaviour and strengthens employees' dedication to the company, resulting in successful environmental performance [12, 16, 34].

This study advocates that hotel top management and HR managers establish core environmental management values in their GHRM policies and hire employees with similar values. HR practitioners should use situational questions in job postings and interview processes to evaluate applicants' values. Additionally, providing education and training programs on protection of the environment can increase employees' awareness of environmental conservation. The study reveals that green and nongreen hotels have different GHRM strategies, suggesting that nongreen managers should develop distinct strategies. Considering this, the IT industry should implement environmental training programs to encourage employee commitment and eco-friendly behavior. By offering nonmonetary awards, green IT HR managers can encourage eco-friendly practices, whereas the nongreen IT industry should consider monetary compensation for employee engagement. These recommendations are based on long-term ecological sustainability visions, whereas nongreen IT strategies are based on short-term strategies. Customized support and monetary rewards can also encourage eco-friendly behavior [70, 71, 72].

Green human resource management (GHRM) practices can help organizations achieve sustainability and competitive advantage. GHRM practices can be implemented in the IT industry in the following ways.

Encourage employees' sustainable practices: Encourage staff members to bike, carpool or take public transportation to work. Additionally, you can provide free safe bicycle parking, subsidized parking for carpools, and discounts on public transit.

Save paper: Adopt digital HR systems and digital formats

Save energy: Educate employees to follow energy saving options, switching off lights, addressing water leakages, enhance recycling: Promote recycling wherever possible Environmental considerations: Incorporate environmental factors into programs for employee engagement, training, and hiring. And other aspects green employee involvement, green innovation processes and green knowledge sharing can be practiced.

3. LIMITATIONS AND FUTURE DIRECTIONS

This study has several limitations, including common method bias and the use of self-rated predictors and criterion variables. Future research should gather data from different sources and consider cultural differences, as the findings may not be applicable across different contexts, which requires further investigation. The data collection methods suggested are random sampling, stratified random sampling which can enhance the representativeness of the sample. Further collecting the sample from various industries and demographics is another option. The other variables can be considered age, gender, qualifications, length of service and training to test the effect GHRM practices in the industry. Collecting the data from healthcare industry, manufacturing and automobile industry further enhances the areas of the study. Future research should consider individual self-efficacy and Organizational elements that help us better understand environmentally friendly workplace practices include supervisory support behaviors. High confidence in task completion can lead to eco-friendly behavior. Further studies should explore these variables to gain more informative insights. This research has limitations, including the need for future studies to consider organizational commitment as a mediator on the nexus amongst between GHRM and the ECB or OEP and the limited generalizability of the findings due to its focus on the IT industry in India. The authors suggest studying the mediating role of environmental knowledge in green human capital and green innovation, suggesting that future research should explore organizational citizenship attitudes and consider multiple industries, such as manufacturing and technology, to address environmental challenges.

The authors suggest to make the study more generalizable by conducting a cross-sectional study across the different industry, different culture, investigating gender parities. Integrating more constructs like environmental

knowledge can be done. The generalizability is the application of research results and conclusions from a study done on a sample population to the entire population. This extension is statistically likely, but its dependability is not absolute. The best basis for achieving broad generalizability comes from quantitative research, such as experiments, since sound generalizability necessitates data on large populations. One can extrapolate the results more broadly the larger the sample population.

Funding Statement

These authors have not received any funding for this research.

Authors Contribution

All authors made an equal contribution to the development and planning of the study.

Conflict Of Interest

The authors have no potential conflicts of interest or such divergences linked to this research study.

Acknowledgment

The authors are thankful to the information technology industry employees who responded to our survey.

REFERENCES

1. Gilal, F. G., Ashraf, Z., Gilal, N. G., Gilal, R. G., & Channa, N. A. (**2019**). Promoting environmental performance through green human resource management practices in higher education institutions: A moderated mediation model. *Corporate Social Responsibility and Environmental Management, 26*(6), 1579-1590.
2. Melnyk, S. A., Sroufe, R. P., & Calantone, R. (**2003**). Assessing the impact of environmental management systems on corporate and environmental performance. *Journal of Operations Management, 21*(3), 329-351.
3. Yong, J. Y., Yusliza, M. Y., Ramayah, T., Chiappetta Jabbour, C. J., Sehnem, S., & Mani, V. (**2020**). Pathways towards sustainability in manufacturing organizations: Empirical evidence on the role of green human resource management. *Business Strategy and the Environment, 29*(1), 212-228.
4. Mousa, S. K., & Othman, M. (**2020**). The impact of green human resource management practices on sustainable performance in healthcare organisations: A conceptual framework. *Journal of Cleaner Production, 243*, 118595.
5. Renwick, D. W., Redman, T., & Maguire, S. (**2013**). Green human resource management: A review and research agenda. *International Journal of Management Reviews, 15*(1), 1-14.
6. Jeronimo, H. M., de Lacerda, T. C., & Henriques, P. L. (**2020**). From sustainable HRM to employee performance: A complex and intertwined road. *European Management Review, 17*(4), 871-884.
7. .Elziny, M. (2019). The impact of green human resource management on hotel employees' eco-friendly behavior. International Academic Journal Faculty of Tourism and Hotel Management, 5(1), 107-126.
8. Kim, Y. J., Kim, W. G., Choi, H. M., & Phetvaroon, K. (**2019**). The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance. *International Journal of Hospitality Management, 76*, 83-93.
9. Watson, R. A., & Tidd, A. (**2018**). Mapping nearly a century and a half of global marine fishing: 1869–2015. *Marine Policy, 93*, 171-177.
10. Hollebeek, L., & Rather, R. A. (**2019**). Service innovativeness and tourism customer outcomes. *International Journal of Contemporary Hospitality Management, 31*(11), 4227-4246.
11. Kim, Y. J., Kim, W. G., Choi, H. M., & Phetvaroon, K. (**2019**). The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance. *International Journal of Hospitality Management, 76*, 83-93.
12. Yen, C. H., Teng, H. Y., & Tzeng, J. C. (**2020**). Innovativeness and customer value cocreation behaviors: Mediating role of customer engagement. *International Journal of Hospitality Management, 88*, 102514.
13. Bohdanowicz, P., Zientara, P., & Novotna, E. (**2011**). International hotel chains and environmental protection: An analysis of Hilton's We Care! programme (Europe, 2006–2008). *Journal of Sustainable Tourism, 19*(7), 797-816.
14. Darvishmotevali, M., & Altinay, L. (**2022**). Toward pro-environmental performance in the hospitality industry: Empirical evidence on the mediating and interaction analysis. *Journal of Hospitality Marketing & Management, 31*(4), 431-457.
15. Pham, N. T., Hoang, H. T., & Phan, Q. P. T. (**2020**). Green human resource management: A comprehensive review and future research agenda. *International Journal of Manpower, 41*(7), 845-878.
16. Rahman, I., Reynolds, D., & Svaren, S. (**2012**). How "green" are North American hotels? An exploration of low-cost adoption practices. *International Journal of Hospitality Management, 31*(3), 720-727.
17. Ojo, A. O. (**2022**). Motivational factors of pro-environmental behaviors among information technology professionals. *Review of Managerial Science, 16*(6), 1853-1876.
18. 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.
19. Zhang, Y., Luo, Y., Zhang, X., & Zhao, J. (**2019**). How green human resource management can promote green employee behavior in China: A technology acceptance model perspective. *Sustainability, 11*(19), 5408.
20. Senthilkumar, S., & Kukunuru, S. (**2021**). Green human resource management in Indian Information Technology Industry. *Arab Journal of Administration, 41*, 1-22.

21. Shobhana, N., Amudha, R., Alamelu, R., Rengarajan, V., Dinesh, S., & Nalini, R. (**2022, February**). Green Human Resource Management [GHRM] practices in pursuit of reinvigorating environmental performance in IT firms: A SEM approach. In *2022 Interdisciplinary Research in Technology and Management (IRTM)* (pp. 1-5). IEEE.
22. Unal, C., & Ceylan, C. (**2009**). Green IT: A guideline for energy efficient and environmentally friendly information technology.
23. Abdillah, L. A., Rofiq, A. A., & Indriani, D. E. (**2018**). Information technology utilization in environmentally friendly higher education. *arXiv preprint arXiv:1811.1085*.
24. Lin, Z., Gu, H., Gillani, K. Z., & Fahlevi, M. (**2024**). Impact of Green Work–Life Balance and Green Human Resource Management Practices on Corporate Sustainability Performance and Employee Retention.
25. Bi, T. (**2024, May**). The impact of green human resource management: A moderated mediation model. In *Proceedings of the 2024 International Conference on Digital Society and Artificial Intelligence* (pp. 105-109).
26. Govindaraj, M., Krishnan, R., Gnanasekaran, C., Khan, P., Sirotiya, M., & Harish, D. N. (**2024**). Greening the workforce: Exploring green HRM dimensions and its relevance to environmental performance in the IT sector. In *Anticipating Future Business Trends: Navigating Artificial Intelligence Innovations: Volume 1* (pp. 149-166). Cham: Springer Nature Switzerland.
27. Segbenya, M., Kissi, E. A., & Amoah, J. O. (**2024**). Green human resource management and environmental sustainability in a developing economy: Examining the mediation and moderation effect of employee personal norms and sex. *Social Sciences & Humanities Open, 10*, 101016.
28. Daily, B. F., & Huang, S. C. (**2001**). Achieving sustainability through attention to human resource factors in environmental management. *International Journal of Operations & Production Management, 21*(12), 1539-1552.
29. Tajfel, H., & Turner, J. C. (**2003**). The social identity theory of intergroup behavior. *Social Psychology, 4*, 73-98.
30. Peterson, D. K. (**2004**). The relationship between perceptions of corporate citizenship and organizational commitment. *Business & Society, 43*(3), 296-319.
31. Shen, J., & Benson, J. (**2016**). When CSR is a social norm: How socially responsible human resource management affects employee work behavior. *Journal of Management, 42*(6), 1723-1746.
32. Domínguez-Falcón, C., Martín-Santana, J. D., & De Saá-Pérez, P. (**2016**). Human resources management and performance in the hotel industry: The role of the commitment and satisfaction of managers versus supervisors. *International Journal of Contemporary Hospitality Management, 28*(3), 490-515.
33. Takeuchi, R., Chen, G., & Lepak, D. P. (**2009**). Through the looking glass of a social system: Cross-level effects of high-performance work systems on employees' attitudes. *Personnel Psychology, 62*(1), 1-29.
34. Hsiao, T. Y., Chuang, C. M., Kuo, N. W., & Yu, S. M. F. (**2014**). Establishing attributes of an environmental management system for green hotel evaluation. *International Journal of Hospitality Management, 36*, 197-208.
35. Van Knippenberg, D., Van Dick, R., & Tavares, S. (**2007**). Social identity and social exchange: Identification, support, and withdrawal from the job. *Journal of Applied Social Psychology, 37*(3), 457-477.
36. Tsaur, S. H., & Lin, Y. C. (**2004**). Promoting service quality in tourist hotels: The role of HRM practices and service behavior. *Tourism Management, 25*(4), 471-481.
37. Paillé, P., Boiral, O., & Chen, Y. (**2013**). Linking environmental management practices and organizational citizenship behaviour for the environment: A social exchange perspective. *The International Journal of Human Resource Management, 24*(18), 3552-3575.
38. Dragomir, V. D. (**2020**). Theoretical aspects of environmental strategy. In *Corporate Environmental Strategy* (pp. 1-31). Springer.
39. Ren, S., Tang, G., & Jackson, S. E. (**2018**). Green human resource management research in emergence: A review and future directions. *Asia Pacific Journal of Management, 35*, 769-803.
40. Podsakoff, P. M., & MacKenzie, S. B. (**2014**). Impact of organizational citizenship behavior on organizational performance: A review and suggestions for future research. *Organizational Citizenship Behavior and Contextual Performance*, 133-151.
41. Meyer, J. P., Stanley, D. J., Herscovitch, L., & Topolnytsky, L. (**2002**). Affective, continuance, and normative commitment to the organization: A meta-analysis of antecedents, correlates, and consequences. *Journal of Vocational Behavior, 61*(1), 20-52.
42. Ng, T. W., & Feldman, D. C. (**2011**). Affective organizational commitment and citizenship behavior: Linear and non-linear moderating effects of organizational tenure. *Journal of Vocational Behavior, 79*(2), 528-537.
43. Shoaib, M., Abbas, Z., Yousaf, M., Zámečník, R., Ahmed, J., & Saqib, S. (**2021**). The role of GHRM practices toward organizational commitment: A mediation analysis of green human capital. *Cogent Business & Management, 8*(1), 1870798.
44. Ly, B. (**2023**). Green HRM and eco-friendly behavior in Cambodian public organizations: The mediation of organizational commitment. *Environmental Challenges, 10*, 100674.
45. Becker, B., & Gerhart, B. (**1996**). The impact of human resource management on organizational performance: Progress and prospects. *Academy of Management Journal, 39*(4), 779-801.
46. Walz, S. M., & Niehoff, B. P. (**2000**). Organizational citizenship behaviors: Their relationship to organizational effectiveness. *Journal of Hospitality & Tourism Research, 24*(3), 301-319.
47. Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (**2003**). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879.
48. Roy, M. J., Boiral, O., & Paillé, P. (**2013**). Pursuing quality and environmental performance: Initiatives and supporting processes. *Business Process Management Journal, 19*(1), 30-53.
49. Paillé, P., Chen, Y., Boiral, O., & Jin, J. (**2014**). The impact of human resource management on environmental performance: An employee-level study. *Journal of Business Ethics, 121*, 451-466.
50. Mowday, R. T., Steers, R. M., & Porter, L. W. (**1979**). The measurement of organizational commitment. *Journal of Vocational Behavior, 14*(2), 224-247.
51. Chou, C. J. (2014). Hotels' environmental policies and employee personal environmental beliefs: Interactions and outcomes. Tourism management, 40, 436-446.

52. Scherbaum, C. A., Popovich, P. M., & Finlinson, S. (2008). Exploring individual-level factors related to employee energy-conservation behaviors at work 1. Journal of Applied Social Psychology, 38(3), 818-835.
53. Anderson, J. C., & Gerbing, D. W. (**1984**). The effect of sampling error on convergence, improper solutions, and goodness-of-fit indices for maximum likelihood confirmatory factor analysis. *Psychometrika, 49*, 155-173.
54. Gaskin, J., Jenkins, J., Meservy, T., Steffen, J., & Payne, K. (**2017**). Using wearable devices for non-invasive, inexpensive physiological data collection.
55. Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (**2013**). Sample size requirements for structural equation models: An evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement, 73*(6), 913-934.
56. Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (**2007**). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175-191.
57. Kyriazos, T. A. (**2018**). Applied psychometrics: Sample size and sample power considerations in factor analysis (EFA, CFA) and SEM in general. *Psychology, 9*(08), 2207.
58. Goulet-Pelletier, J. C., & Cousineau, D. (**2018**). A review of effect sizes and their confidence intervals, Part I: The Cohen's d family. *The Quantitative Methods for Psychology, 14*(4), 242-265.
59. Liang, H., Saraf, N., Hu, Q., & Xue, Y. (**2007**). Assimilation of enterprise systems: The effect of institutional pressures and the mediating role of top management. *MIS Quarterly, 31*, 59–87.
60. Kock, N. (**2015**). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of E-Collaboration, 11*, 1–10.
61. Cao, Y., Yan, B., & Teng, Y. (**2023**). The impact of green human resource management on hospitality employees' quitting intention: A dual perspective study. *Journal of Hospitality and Tourism Management, 57*, 270-283.
62. Kline, R. B. (**2023**). *Principles and practice of structural equation modeling*. Guilford Publications.
63. Churchill Jr, G. A. (**1979**). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research, 16*(1), 64-73.
64. Raza, S. A., & Khan, K. A. (**2022**). Impact of green human resource practices on hotel environmental performance: The moderating effect of environmental knowledge and individual green values. *International Journal of Contemporary Hospitality Management, 34*(6), 2154-2175.
65. de la Cruz Déniz-Déniz, M., & De Saá-Pérez, P. (**2003**). A resource-based view of corporate responsiveness toward employees. *Organization Studies, 24*(2), 299-319.
66. Lo, S. H., Peters, G. J. Y., & Kok, G. (**2012**). A review of determinants of and interventions for pro-environmental behaviors in organizations. *Journal of Applied Social Psychology, 42*(12), 2933-2967.
67. Carmeli, A. (2005). Exploring determinants of job involvement: An empirical test among senior executives. International Journal of manpower, 26(5), 457-472.
68. Liden, R. C., Wayne, S. J., Kraimer, M. L., & Sparrowe, R. T. (2003). The dual commitments of contingent workers: An examination of contingents' commitment to the agency and the organization. Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior, 24(5), 609-625.
69. Han, H., Yu, J., & Kim, W. (2019). Investigating airline customers' decision-making process for emerging environmentally-responsible electric airplanes: Influence of gender and age. Tourism management perspectives, 31, 85-94.
70. Joshi, A., Kataria, A., Rastogi, M., Beutell, N. J., Ahmad, S., & Yusoff, Y. M. (**2023**). Green human resource management in the context of organizational sustainability: A systematic review and research agenda. *Journal of Cleaner Production, 139713*.
71. Ojo, A. O., & Raman, M. (**2019**). Role of green HRM practices in employees' pro-environmental IT practices. In *New Knowledge in Information Systems and Technologies: Volume 1* (pp. 678-688). Springer International Publishing.
72. Zhang, Y., Luo, Y., Zhang, X., & Zhao, J. (**2019**). How green human resource management can promote green employee behavior in China: A technology acceptance model perspective. *Sustainability, 11*(19), 5408.