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Confluence of Green Intellectual Capital and Green Human Resource Management on Social Innovation Through Corporate Social Responsibility with Moderating Effect of Green Self Efficacy

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ABSTRACT

Purpose: The purpose of the current study is to investigate the impact of green human resource management (GHRM) and green intellectual capital (GIC) on social innovation (SI) through corporate social responsibility (CSR) with moderating effect of green self-efficacy (GSE) in Information Technology Companies of Pakistan.

Methodology: Data were collected from the managers of IT companies located in Lahore, Pakistan. After screening, a total of 680 questionnaires were employed in the current study analysis. Statistical analysis for regression, mediation, moderation and mediated moderation was done using Smart PLS 3.2.9.

Findings: The findings indicate that companies having employees and management adhering to GHRM and GIC can offer unique solutions to the environmental concerns caused by the firm's activities, increasing their propensity to foster SI. Furthermore, CSR mediates and GSE moderates the relationship between the independent variables (GHRM, GIC) and dependent variable (SI). Whereas moderated mediation was not evident in the model.

Originality/Value: In recent decades, the idea of *"becoming green"* has expanded significantly. Therefore, businesses need to be ethical in their conduct to address social challenges to safeguard their environment. Rising environmental consciousness among the public and stricter Worldwide Environmental preservation laws have made the business world more competitive for survival. Along with other sectors, the Information Technology sector needs to take cautious steps to be competitive and environmentally safe. Current study adds to the body of knowledge by explaining the effect of GRHM and GIC on social Innovation through CSR and with the intersection of GSE in the IT sector.

Introduction

Going green has become pervasive in the past few decades. Business units work within a competitive global marketplace and must address numerous challenges, one of which is the simultaneous requirement for individualized and effective value adding (Aithal, 2023). This competitive context is also increasingly influenced by the rising trend through increased environmental awareness on the part of the consumers and more stringent global legislations towards the environmental protection (Awewomom et al., 2024). It therefore means that companies are required to be proactive to survive in today's competitive business world (Elali, 2021; Salunkhe et al., 2023).

Environmental issues have become a growing concern for the information and communications technology (ICT) sector, because running traditional business models have imposed adverse impacts to our environment (Mulyono, 2021), the natural resources dependents as one of their important raw materials for production (Erdoğan et al., 2021), the consumers who prefer purchasing environmental friendly products based on their awareness of environmental issues (Kim & Lee, 2023) and the customers who priorities environmental responsibility purchasing behaviour (Kiliańska & Pajęcki, 2022). IT professionals and software developers face mounting pressure to create energy-efficient products. As a consequence, there is an increasing amount of pressure on IT professionals and software developers to develop energy-efficient products (Chau et al., 2021). It has been because of this demand that Green Information Technology (GIT) has birthed, advocating for sustainability in the ICT industry with an emphasis on eco-friendliness (Kaunda, 2023).

Experts point out that various stages of the IT lifecycle pose environmental challenges such as electronic waste (e-waste), CO_2 emissions, and infective energy consumption (Fawole et al., 2023). Much effort can be compensated for these negative effects through proactive green IT practices such as the reuse of IT-related devices and extension of their lifetime without e-waste, paper savings, and energy saving (Sikder et al., 2023). Green IT strategies include using digital data storage over papers, CDs over materials printed on paper, shutting down computers when not in use, and decreasing screen brightness to minimize energy consumption (Molla et al., 2014). Solving potential environmental problems that may arise also requires the availability of resources, capabilities, and expertise in place of firms to create value (Teece, 2007).

Chen (2008) proposed the concept of green intellectual capital (GIC) which has created debate in the area of ecological management and green governance. i.e., the term consists of corporate knowledge and expertise and the intangible assets of a firm, which leads to competitive advantage and value creation (Abeysekera, 2021; Volkov & Garanina, 2007). Essential elements of intellectual capital are accumulated knowledge, proprietary information, core values, intellectual properties, experience and, customer relations (Abeysekera, 2021). At organizational level, businesses in developed and developing countries are required to be involved in environmentally friendly activities to meet global demands on green products, services, and consumption (MD & Akhil, 2016).

Green Human Resource Management (GHRM) is a nascent area which can contribute significantly to promoting environmental responsibility by organizations (Khatoon et al., 2022). GHRM incorporates environmental sustainability into HR activities that influence employee behaviors, attitude, and moral judgment toward environmental responsibility (Fawehinmi et al., 2020). It includes policies for encouraging and maintaining green practices among employees (P. K. Saha et al., 2021b). Embedding ecological consciousness inhuman resource management has to touch the conduct of sustainability activities in most sectors over the long term (Abhayaguanrathna & Bhagyani, 2024). One of the major results of GHRM practices is the emergence of GSE, which is understood as the belief that an individual can accomplish something to protect the environment (Miah et al., 2024). It is possible that when employees feel that their organization is dedicated to sustainability, they would make more contributions to green initiatives (Ramus, 2001).

No matter what industry, visiting any enterprises are more enterprise attaches great importance to CSR and green management (Dey et al., 2018). Social Responsibility gives companies a competitive edge by providing businesses with an engaging story that creates enduring value for the company (Smith, 2007). CSR is known as a company's responsibility of ethical, beneficial for society and sustainable practice beyond regulation obligation (Amin-Chaudhry, 2016). Clear and visible disclosure of business practices builds trust in the public eye, which then adds credibility to CSR efforts (Siebecker, 2009). Given such situation, CSR practices would be helpful in propelling green innovation, providing rules and criteria for sustainable business behaviors (Le, 2022). CSR, as we know today comes from a company's commitment to the welfare of its stakeholders and the contribution it makes to society as a whole by producing ethically and sustainably (Carroll, 2015).

It is not only the green practices and social innovation intertwined with the ICT industry should focus on, but also the research on the green intellectual capital and green human resource management contributing to social innovation probably through the mediating effect of corporate social responsibility and the moderating effect of green self-efficacy needs to pay more attention. To fill this paucity, this research attempts to fill the gap in understanding the linkage between Green Intellectual Capital (GIC) and Social Innovation (SI), study the effect of Green Human Resource Management (GHRM) on Social Innovation

(SI), and examine the mediator role of Corporate Social Responsibility (CSR) and the moderator role of Green Self-Efficacy(GSE) on the relationship between GIC, GHRM, and SI.

Literature Review

Recent evidence reports that social innovation as being based on cultural, economic and social values, which implies that it plays a large role in the business strategy of the present days (Aksoy et al., 2019; Gasparin et al., 2021). This can be part of corporations as self-interest. By pursuing social innovation in their operations, corporate growth rates and profitability are increased and societal problems are solved. In competitive markets where products or services are relatively homogenous, firms need to utilize social innovation and differentiate themselves from other firms in the market (Weerawardena & Mort, 2012). Instead of being ghettoized within a sector, social innovation should cut across sectors because each sector has a part, stake and responsibility in creating meaningful change (Perrini & Vurro, 2006).

Most of the studies implicate that industry should also involve in building inclusive communities, for instance, through CSR (Jagannathan & Vethirajan, 2020; Lashitew et al., 2024). CSR is premised on belief organizations are obligated not only to meet shareholder requirements but also to promote societal welfare (Abidin et al., 2025). Focusing on the function of corporate social responsibility, it is intriguing to consider how a company's CSR strategy might reflect it in social innovation (Le, 2022). To improve the company's reputation amongst shareholders, managers must examine how workers feel about CSR initiatives (Vuong & Bui, 2023). The ability of human resource managers to successfully implement CSR goals across their processes will increase when they have a clear understanding of the CSR approach (Malik et al., 2021). The most common definition of ethics is "doing righteous things," and it is frequently connected to CSR. CSR's only goal is to uphold company ethics, which includes environmental protection, which can be achieved by engaging in eco-friendly activities (Fatima & Elbanna, 2023).

GHRM practices play a crucial role in boosting workers' welfare as well as corporate performance yet applying green measures depends mostly on trained and contented human resources (Amjad et al., 2021). These measures are instruments to help HRM become more attractive to job searchers who favor companies with a positive image for the environment (Al Kerdawy, 2019). GHRM is a subclass of self-sustaining human resource management, and it also encompasses corporate social responsibility problems (Wagner, 2011). Through its various practices, including recruitment, remuneration, rewards, and departure rules, human resource management techniques promote the adoption of environmentally friendly policies and practices (Ahmad, 2015).

According to Guo et al. (2019), there is a strong relationship between green self-efficacy (GSE) and executives' environmental perspectives and behaviors, which enhances corporate accountability and encourages businesses to adopt sustainable practices. Implementing green human resource management (GHRM) strategies fosters employees' self-efficacy by strengthening their confidence and competence in executing green initiatives (Butt et al., 2025). GSE reflects individuals' belief in their ability to contribute to environmental sustainability and organize effective green strategies (Sh. Ahmad et al., 2022). When employees perceive their organization as genuinely committed to sustainability, their self-efficacy strengthens, creating a positive feedback loop that boosts engagement in green initiatives (Pradhan et al., 2020). This aligns with Social Cognitive Theory (SCT), which posits that individuals with stronger self-belief exhibit greater perseverance and dedication to achieving their goals (Bandura, 1999).

The commitment of a company to becoming environmentally friendly is a recent development that impacts on the staff and management (Mandip, 2012). Due to its ability to have a bearing on several organizational elements, intellectual capital (IC) has garnered the heed of both enterprises and scholars (Mention, 2012). GIC can assist businesses in adhering to environmental laws, generating value for the business, and satisfying client expectations for environmental concerns (Trevlopoulos et al., 2024). In terms of ecological conservation or green innovation, green intellectual capital (GIC) refers to the entirety of a person's or a company's stocks of intangible resources, knowledge, abilities, relationships, etc. (Shahbaz & Malik, 2025b). Active spending in GIC enables businesses to reduce manufacturing waste, boost production, and enhance their brand recognition (Shahbaz & Malik, 2025a). Research findings have shown that GIC can help the corporation by fostering corporate longevity, boosting workers' organizational commitment, and lowering workers' desire to depart the company (Mustafa et al., 2020; SELHADIN, 2019).

H_1: GHRM positively influences the adoption of CSR.

H_2: GHRM has a positive direct effect on SI.

H_3: GIC of a company has a positive effect on employees' perception of CSR.

H_4: GIC has positive influence on SI.

H_5: CSR positively influences SI.

H_6: CSR mediates the effect of GIC on social innovation.

H_7: CSR mediates the effect of GHRM on social innovation.

H_8**:** GSE moderates the relationship of GIC and CSR.

H_9**:** GSE moderates the relationship of GHRM and CSR.

H_{10}**:** Green self-efficacy positively moderated the mediating role of CSR between GHRM, GIC and SI.

Theoretical framework

Resource-Based View (RBV) Theory

According to the Resource-Based View (RBV) Theory Barney (1991), organizations achieve a competitive advantage by utilizing their unique and valuable internal resources. In this investigation, Green HRM and GIC are critical strategic resources used as antecedents which stimulate CSR and SI. GHRM Nurtures Environmentally Sustainable Workforce. One of the major contributions of GHRM to CSR is that it enables organizations to have employees who understand the significance of the environment since they become conscious of environmental issues as a result of being trained to be sustainable workers (recruitment, training & performance management) (Malik et al., 2021). Second, GIC, that is, green knowledge, skills and capabilities, refers to the creative response to sustainability challenges (Ma et al., 2025). As companies invest in these green resources, they establish a base for long-term social and environmental responsibility and increase their capacity to introduce social innovation and to keep on innovating (Yuan & Cao, 2022). RBV elaborates on how companies can increase their sustainability efforts, in part by adopting CSR and creating an innovative culture, by leveraging GHRM and GIC as strategic resources (Shahbaz & Malik, 2025b).

Social Cognitive Theory (SCT)

Social Cognitive Theory (SCT) Bandura (2001) likens how people act inside an organization to their perceptions of self-efficacy, social learning, and reinforcement of behavior. This theory is highly important for understanding of influence of GSE on employees' CSR commitment and social innovation. If the employees have confidence in their capability to apply green behaviors, they will also be more willing to engage with the green work and maintain good green behavior, which in turn leads to the success of CSR strategies (Ahmed et al., 2020). GSE is also a significant moderator in attenuating the effect of organizational resources such as GHRM and GIC by enabling employees to participate in sustainability practices (Shahbaz & Malik, 2025b). When associates witness green behaviors and see them become ingrained as part of the behavior of the organization, then they are more confident to be proactive when it is time to implement sustainable initiatives (Boiral, 2009). This is consistent with the core of SCT that people are more likely to perform a behavior they observe their organization and leaders demonstrating. In the end, SCT articulates how the creation of a culture of environmental self-efficacy is crucial to both higher efficacy of green management strategies and innovation in sustainable corporate activities (Alam et al., 2024).

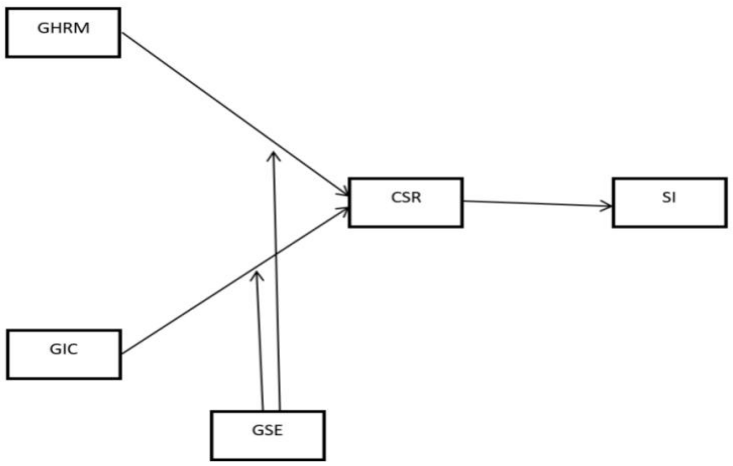


Figure 1: Conceptual Framework

Research Methodology

The current study dissected the contributions of green human resource management and green intellectual capital to social innovation in the Pakistani information technology sector. To achieve the goal, we investigate the hypothesized model shown in Figure 1. In total, five factors were employed in this study to explore how human resource management and green intellectual capital affect social innovation.

The variables in this study can be classified into independent and dependent variables. Social innovation is dependent variable, while green intellectual capital and human resource management are independent variables. Green self-efficacy is moderating variable while corporate social responsibility is mediating variables of the study. Because several of the questionnaire's components were subjective in character and it was plausible that respondents' perceptions could have had a role, interpretivism was employed as the study's philosophical framework.

Data Collection

The unit of analysis for this study is individual firms. The target population consists of Pakistani IT firms, while the sample frame specifically includes IT firms located in Lahore.

Basic random sampling was the sample technique used in this investigation. The research design was cross-sectional. Environmental concerns (green issues) and business considerations (HRM, intellectual capital) are combined in this study. Considering this, it is desirable if the pertinent source of information is familiar with the two components. As a result, the questionnaires were sent to respondents who are top-level managers, CEOs, or directors of departments responsible for marketing, manufacturing, research and development, human resources, or environmental protection. Direct submission from the respondents and coaching them to complete questionnaires were the methods used to acquire the data.

Item response theory was utilized while determining sample size (Lu et al., 2014; Van Heel & Schatz, 2005). We opted for a multiple of 10. Since the questionnaire contained 75 items, our sample size was 750. All questionnaires were delivered together with a cover letter outlining the purpose of research and assuring the confidentiality of the responses. The data were then processed to provide a response to the research questions. We got 700 responses out of 750, the response rate was 93%. After removing responses that were not completely filled by the respondents, 680 questionnaires finally used in data analysis.

Measurement

A survey tool and measuring scale was built to evaluate the conceptual framework and examine this relationship. The questionnaire's amended form was then completed and utilized to analyze the suggested hypotheses. The measuring instrument employed in questionnaire included items that represented green intellectual capital, including green human capital, green structural capital, and green relational capital, as well as green HRM, which is measured through various dimensions like green hiring, green development, green appraisal, and green reward.

By modifying the elements from Chen (2008), the green IC construct was measured. The green HRM scale, however, was derived from (Huang & Kung, 2011) and (Kim et al., 2019). To evaluate the CSR construct, the items from (Fatma et al., 2016) were modified. Items from Hsu et al. (2019) were modified to measure the social innovation construct. The items from Chen et al. (2014) were modified to measure the green self-efficacy construct. Aside from the demographic details, the responses fell on a 5-point Likert scale, ranging from 1 ("strongly disagree") to 5 ("strongly agree").

Data Analysis Tools and Techniques

The research model designed for this study was examined using Smart PLS 3.2.9. This software's objective is to examine non-normal data. It is second generation statistical software that was created and introduced by (Memon et al., 2021). The moderating influence of GSE was tested on the direct effect of GHRM and GIC, through interaction terms, using moderated mediation approach

Measurement Model

As the model created in this study included second-order variables or higher-order constructs for social innovation, we first examined the first-order components' validity and reliability before moving on to the second-order factors. convergent validity was examined using factor loadings, average variance extracted (AVE), composite reliability (CR), and Cronbach's Alpha while the discriminant validity was examined using criteria (Hair & Alamer, 2022; Henseler et al., 2015).The square root of the AVE was greater to all the correlations in the same row and column of the given construct to determine whether discriminant validity had been reached, as indicated by (Fornell & Larcker, 1981).

Table 1: Normality of data

Variables	Mean	St. Deviation	Skewness	Kurtosis
CSR	3.2493	.71341	-.587	*.437*
GHRM	3.4243	.75694	*-.532*	*.703*
GIC	3.3784	*.72987*	*-.515*	.866
GSE	3.4868	*.74542*	*-1.00*	*1.852*
SI	3.3883	*.73562*	*-.567*	*.892*

The data's normality was verified using skewness and kurtosis, as shown in Tables 1. Data was normal since its skewness and kurtosis values fell within the range of +1, -1, +3, and -3, respectively.

Table 2: Composite Reliability & Convergent Validity

First order	Second order	Cronbach's Alpha	Rho_A	Composite Reliability	Average variance extracted
CSR		0.859	0.861	0.886	0.514
GHRM		0.905	0.906	0.916	0.575
GIC		0.861	0.862	0.886	0.601
GSE		0.720	0.721	0.825	0.572
	SI	0.725	0.724	0.829	0.548

To verify the validity and reliability of the measurement items, the factor loadings from the findings, average variance extracted, and composite reliability were evaluated.

The aforementioned table shows that all loadings were greater than 0.708, all AVEs were greater than 0.5, and all CRs were greater than 0.7, indicating that all metrics are reliable and valid for both first- and second-order data (Memon et al., 2021; Ramayah et al., 2018).

Table 3: Heterotrait-Monotrait Ratio (HTMT)

Variables	GIC	GSE	GHRM	CSR	SI
GIC	1				
GSE	0.652**	1			
GHRM	0.677**	0.620**	1		
CSR	0.622**	0.569**	0.53**	1	
SI	0.301**	0.244**	0.324**	0.357**	1

**Correlation is significant at 0.01 level (2-tailed)

Referring to the guidelines by (Henseler et al., 2015), the HTMT ratio cannot be more than 0.85, indicates that it meets the criteria for discriminant validity.

Structural Model Assessment

As a procedural measure, the respondents were informed of the study's goal in an effort to reduce common method variance (CMV) problems, in accordance with recommendations from (Jakobsen & Jensen, 2015). Additionally, in order to identify the problem with CMV, we used a statistical method of doing a thorough collinearity test in terms of variance inflation factors (VIFs) (Podsakoff et al., 2003).

Nonetheless, every VIF value was within the permissible range of less than 3.3, as advised by (Kock & Lynn, 2012). As a result, no CMV problem was found in the dataset. The CMV test was also run, and the value of total variation explained was 26.814%, or less than 50%. As a result, the data acquired is ready for further analysis because there is no common procedure that is biased.

Before addressing the mediation and moderation hypothesis, we evaluated the direct impacts of GHRM and GIC on social innovation. The structural model's path coefficient, t-values, p-values, and standard errors were presented using a 5000-sample re-sample bootstrapping approach, as advised by (Hair et al., 2021). The table below presents the results of the hypothesis testing. Ten hypotheses have been put to the test, and all were determined to be significant.

Table 4: Hypotheses testing (Direct Effects)

	Std. Deviation	T Statistics	P Values	Decision
CSR → SI	0.065	4.547	0	Accepted
GHRM → CSR	0.042	10.417	0	Accepted
GHRM → SI	0.063	2.55	0.011	Accepted
GIC → CSR	0.043	8.916	0	Accepted
GIC → SI	0.044	7.963	0.012	Accepted

Level of Significance 5% i.e., 0.05

About 6.5% of the variation in social innovation was explained by CSR. Approximately 4.2% of the variations in corporate social responsibility were explained by green human resource management. In terms of social innovation, green human resource management accounted for around 6.3% of the variations. Approximately 4.3% of the variations in corporate social responsibility were explained by green intellectual capital. In social innovation, green intellectual capital accounted for 4.4% of the variation. About 4.5% of the variation in corporate social responsibility was explained by green self-efficacy.

Table 5L Indirect effects (Mediating effect)

	Std. Deviation	T Statistics	P Values	Decision
GHRM → CSR → SI	0.03	4.139	0	Accepted
GIC → CSR → SI	0.027	4.213	0	Accepted

Level of Significance 5% i.e.,0.05

Following the advice of Nitzl (2016) the current study examined the mediation effect of CSR on the relationship between GHRM and SI. According to the above-mentioned Table, GHRM has a considerable positive direct effect on SI (the dependent variable), and it has a similar significant positive indirect effect on SI through CSR. As a result, the indirect impact revealed a favorable association, establishing the initial prerequisite for the mediation effect discovered by (Nitzl, 2016; Sarstedt et al., 2020).

As depicted in the table given above, both direct and indirect effects are significantly related and in the same direction (i.e., positive).

Direct and indirect impacts are strongly correlated and point in the same direction (i.e., positive), as the accompanying table illustrates. As a result, it was determined that GHRM, CSR, and SI are partially mediated. Complementary mediation highlights that there might be an omitted mediator in the direct path (Rasoolimanesh et al., 2021).

Table 6: Interaction term effect (Moderating effect)

	Std. Deviation	T Statistics	P Values	Decision
GIC*GSE → CSR	0.06	2.804	0.005	Accepted
GHRM*GSE → CSR	0.059	3.016	0.003	Accepted

Level of Significance 5% i.e.,0.05

Table 7: Index of Moderated Mediation

	Index	Boot SE	Boot LLCT	Boot ULCI
GSE	-.0094	0.0205	-.0516	.0322

Moderation mediation does not exist as lower and upper ULCI have both positive and negative values as shown in the following figures.

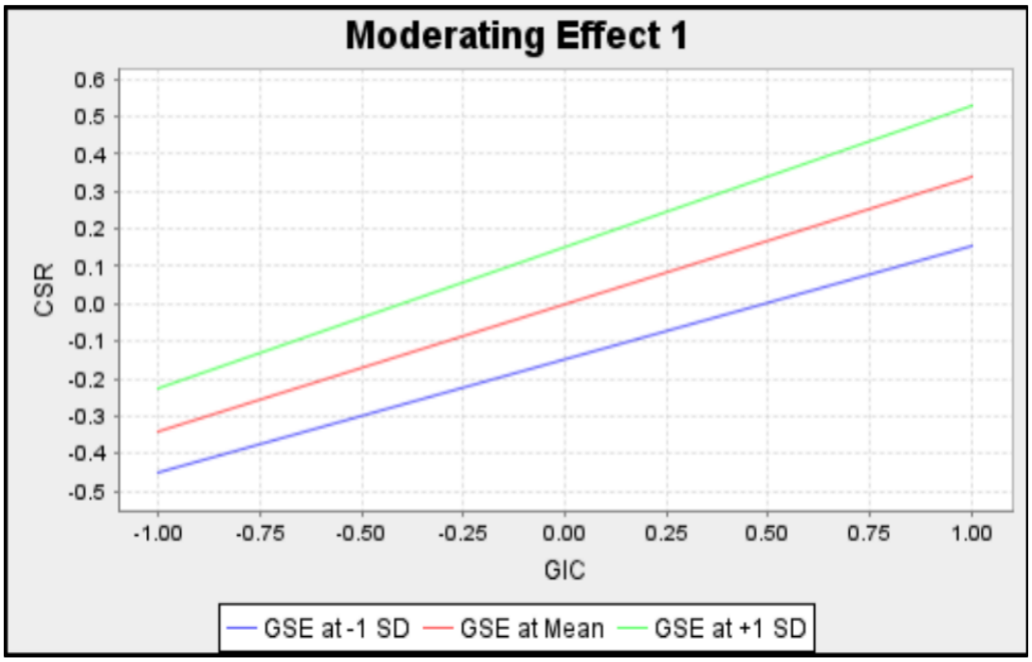


Figure 2: Moderating Effect 1

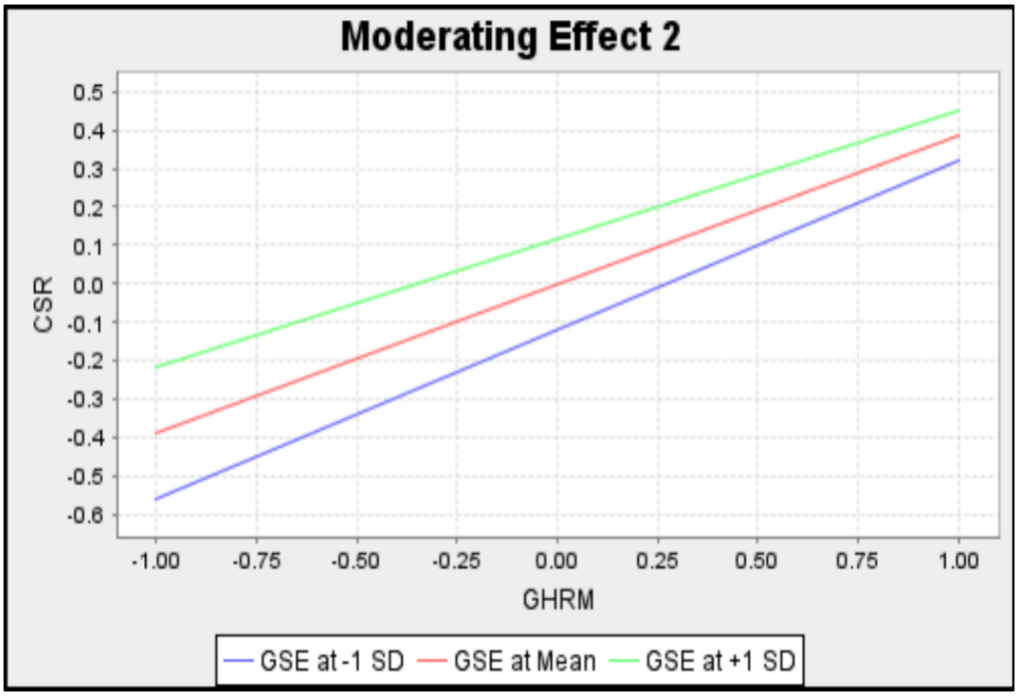


Figure 3: Moderating Effect 2

Discussion

The findings of this research yield some critical implications concerning the associations among GHRM, GIC, CSR, SI and GSE. The findings also corroborate the theoretical arguments of the resource-based view (RBV) which posits that internal resources of an organization such as GHRM and GIC are positively linked to sustainability results. Particularly, GHRM practices including green recruitment, development, appraisal and rewards exerted a substantial positive influence on CSR and SI, revealing that the integration of environmental values into HR process be able to generate a workforce that can contribute to corporate sustainability efforts. In addition, GIC, covering green human, structural, and relational capital, had a significant impact on both CSR and SI, confirming that it is a significant intangible resource that fosters environmental and social innovation.

Moreover, the research also provides support to the Social Cognitive Theory (SCT) as it shows that Green Self-Efficacy has a positive impact on CSR. Workers with a perception of their own ability to act for the benefit of green practices tend to support CSR activities; consequently, psychological empowerment is essential for sustainability initiatives. However, the moderation effect of GSE was not a significant moderator in the mediated pathways from GHRM and GIC to the SI through CSR (the confidence-interval cross zero). This suggests that GSE may strengthen constituents' commitment to CSR at an individual level, but it may not necessarily reinforce the broader organizational processes by which green resources lead to innovation through CSR. As such, GSE's effect could be action-based and operate only in the influencing of CSR actions, rather than the dynamic paths of inducement to innovation.

More importantly, the study revealed that CSR mediates the partial effect of GHRM on SI. This partial mediation indicates that GHRM not only directly influences social innovation but also affects it indirectly through CSR activities. The existence of complementary mediation indicates that other unexplored variables might also enhance innovation, for example, green organizational culture, leadership support, or stakeholder engagement. The current study thereby makes a significant contribution to literature by providing empirical evidence which reveals that CSR is not only a consequence, but also a vehicle through which green practices lead to wider social innovations.

Practically, the findings highlight the significance of firms to intentionally support green HRM and intellectual capital policies, to create CSR and innovation. The development of an eco-competent workforce via a set of well-designed HR practices can promote sustainable behavior and organizational change. Similarly, reinforcing GIC will enable companies to delocalize their knowledge and relationships in order to find novel and socially responsible solutions. Consistent with media and-centered CSR, GSE did not significantly moderate the indirect paths, and its direct effects on CSR indicate that managers should still pay attention to measures that boost their employees' confidence, that engage in green behaviors-related activities (e.g., targeted training, recognition and supportive leadership).

While these are the strengths of our study, our work is not without limitations. The non-significant moderated mediation suggests the need to investigate alternative moderating factors that capture more fully when GPMs will relate to inn ovation, for example green leadership or organizational climate. Taking together, this study contributes a full context on how green resources within organizations affect sustainability outcomes, theoretically advancing the green resources and sustainability literature and providing practical guidance for companies to pursue social and environmental innovation.

Conclusion

Knowledge, skills, and experiences related to the environment serve as an inexhaustible reservoir of innovation, particularly social innovation aimed at addressing environmental concerns. When combined with the right knowledge, abilities, and competencies, green intellectual capital can provide innovative answers to the environmental issues raised by the company's operations, which will increase the likelihood that it will promote social innovation. Human resource management experts have stated that personnel's attitude and behavior are improved by HRM practices. Human resource management practices, according to studies, increase personnel's drive to perform efficiently and, in the long run, improve their self-efficacy (self-confidence and capability) through transforming workers' behavior and attitudes (Syarif & Herlina, 2019). Corporate social responsibility and environmental management initiatives are undertaken by businesses in the hope that these initiatives would encourage innovation inside their own company innovation and improve societal performance (Le, 2022). Finally, we anticipate that the findings of this study will be useful to businesses, executives, and academic scholars.

Practical Implications

The results have beneficial managerial qualifications for the IT industry from the standpoint of decision-making. Considering that companies have paid a lot of focus to green initiatives in recent years to achieve a competitive edge, policymakers may enhance green practices through intangible assets. To create a green organization, legislators should also contact environmental protection agencies and adhere to their regulations. As a result, HR directors and upper management must think carefully about their hiring practices and establish standards that other businesses in the sector can follow.

Limitations and Future Research Directions

This study has limitations, just like any other research. The focus of this study was on IT sector in Pakistan. As a result, it restricts the applicability of results in other fields. It is suggested that this model be used in other industries for validation purposes. Second, a cross-sectional study design was employed; as a result, it is suggested that longitudinal or experimental research designs be used. Thirdly, because of specific research goals, this research is restricted to a limited set of variables and did not consider additional variables. More variables may be included in future study, and the developed framework may be expanded to include competitive advantage, performance, and sustainability.

In addition, managers of the IT organizations participated in a self-reported survey for the research. The participants in future studies should be drawn from a variety of groups. Furthermore, the primary data for this research was collected from internal stakeholder responses. Yet, the participation of other stakeholders may offer insightful information about the operation and creativity of the company.

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