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RESEARCH PAPER

Analysing the Effect of Green Intellectual Capital On Environmental Growth: The Mediating Role of Green Training and Improvement

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ABSTRACT

This study examines the effect of GIC on environmental growth, with a particular focus on the mediating role of green training and improvement. By integrating intellectual capital theory and environmental management practices, the research explores how organizations leverage green knowledge, skills, and innovation to enhance sustainable development. Data was collected from 150 HR professionals, and Smart PLS software was used for data analysis. The findings confirm 12 key hypotheses, highlighting the positive impact of GIC on environmental growth through green training initiatives. The results further indicate that fostering green knowledge and skills significantly enhances an organization's environmental performance. This study underscores the importance of structured green training programs in bridging the gap between intellectual capital and sustainability. It's recommended that companies adopt a holistic and integrated approach to sustainability using simultaneously investing in green intellectual capital (GIC) and robust green training and development (GTD) packages.

Introduction

The study has analysed the connection between green intellectual capital (GIC) and its implications in the context of better use of green practices for Green support. The analysis narrates how green practices can be additive in dealing with challenges related to Green context and how the practices can be applied better (Bombiak, 2022). Green intellectuals play an essential role in handling various challenges that are accountable for environmental degradation. This is why it is important to review the connection between green intellects and the context of support for green practices with the privilege of relevant training. Pakistani working life is currently undergoing the biggest change in decades. Changing employers is part of this transition, and it has a significant impact on working life. Changing employers causes a financial and operational burden for organizations, but also stress for the employee on an individual level. It is important to study and understand the social and psychological factors of work well-being that led to switching, so that in the future these factors could be developed and switching could be prevented (Zott & Amit, 2007). By developing the social and psychological aspects of well-being at work, working life could be made more sustainable.

Green intellectual capital is essential to review for the dimensions of sustainable human capital, sustainable structural capital and sustainable relational capital. The three play an essential role in the organization for understanding the environmental and social needs of the community and supporting global environmental activism for enhancing sustainability practices (Malik et al., 2020). It is also important to review the impact of

this intellectual on environmental growth because if the impact is positive then it is essential to encourage this kind of practice and make sure that the individuals understand the need to implement environmentally supportive strategies to overcome the challenges in a global perspective for ecologies. Organisations need to emphasise environmental support projects because it has been found that environmental degradation is increasing with the passage of time and leading to critical environmental issues that need to be addressed.

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Literature Review

HR Professionals' Views on Green Sustainability

Change trends affect the field of HR management through business, operating processes, work itself and employees. Since the Green crisis has been identified as one of the megatrends shaping work, it must also be taken into account in HR management. The following paragraph discusses how HR professionals experience Green sustainability in their own work. When studying sustainable development and responsibility, the focus is often on social responsibility in the field of HR management (Johan & Turan, 2016). Human resources professionals also bring up themes related to social responsibility the most. Greenly sustainable operations are seen as important, but the responsibility for moving it forward is felt to be more on other professionals. Many already feel that complying with statutory obligations is a responsible and sustainable activity. On the other hand, environmental professionals believe that complying with laws is the minimum obligation of a company that every company must do. Only activities that go beyond legislation are seen as sustainable activities. Jackson et al., (2011) has presented the four levels of responsible management, where, like Aaltokoski, the first level, in other words the minimum level, is compliance with laws and good customs. In Pyramid Competency model, genuine responsibility is promoted at levels three and four, where the company takes many steps to increase responsibility

HR professionals' means for Green sustainability

In HR management, various methods are used to implement HR policies and policies. Professionals feel that employees value companies that are responsible more. By communicating about Green sustainability already during recruitment, it was felt that we would get greener applicants. Therefore, information about the company's environmental performance has been added to the recruitment notices. It is popular for companies to attach various certificates and audits to both recruitment and general websites, which they use to communicate their values and operating methods (Twill et

al., 2010). Rewarding has been perceived as a good way to increase commitment to good Green habits. It can be used, for example, to motivate busy managers to work on environmental issues. On the other hand, while job seekers emphasize their green skills, according to the study, this has not been reflected in recruitment decisions. Professionals, however, strive to act as promoters of the company's responsibility and communicate responsibility, even if it is not always visible in action.

Certain research information on how the greenness of recruitment notices and the recruitment of a green candidate affects the Green sustainability of the company. The topic still needs more research. It is beneficial for professionals to communicate Green sustainability to staff based on the company's values and sustainability goals. In communication, interactivity is encouraged and the possibility of monitoring environmental initiatives. Acting on the basis of the environmental initiatives made by the employees and communicating it was felt to be particularly important. Some of the professionals have adapted the communication to suit the target audience (Hargreaves, 2011). However, it is not recommended to modify the communication to suit a certain department of the company very much, so that the communication remains authentic and it does not cause only the department's own interests to be pursued. Targeted communication often does not create long-term activity, nor does it form part of the company's strategy, which, however, is usually the goal of sustainability communication.

Conceptual Framework

It has been reviewed that the conceptual framework is comprised of the variables of the current study. The mean intellectual capital and the green human capital in addition to green relational capital and green structure capital have an impact on the green HRM. The green HRM has an impact on the green training and development and pro environmental behavior. Adding the environmental knowledge in addition to pro environmental behavior can encourage environmental performance in the end.

Figure 1: The Conceptual Framework
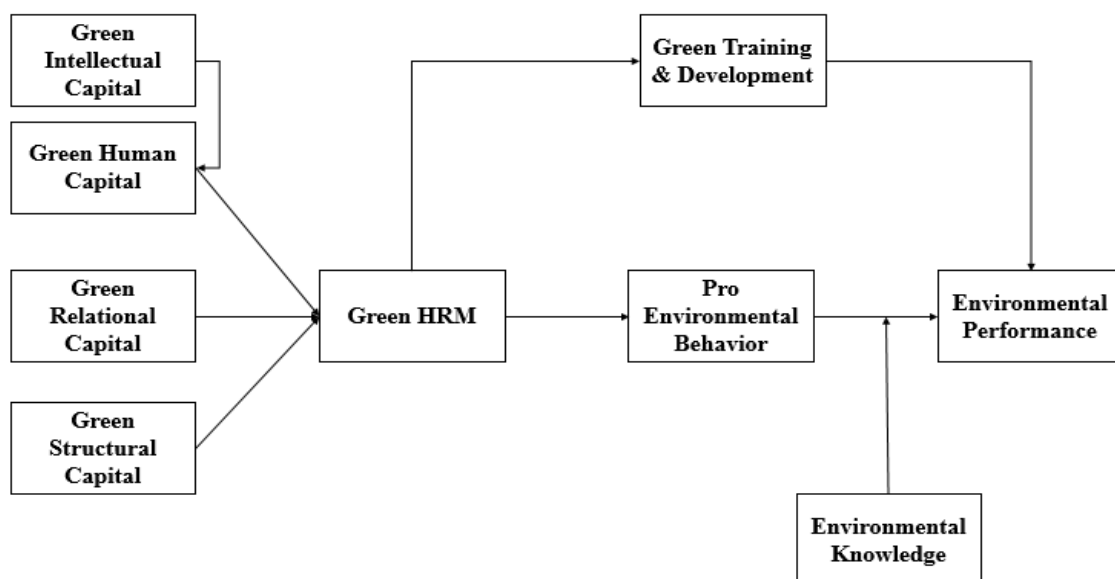
Hypotheses

H1: Green human capital (GHC) has a positive effect on environmental performance (EP).

H2: Green relational capital (GRC) has a positive effect on environmental performance (EP).

H3: Green structural capital (GSC) has a positive effect on environmental performance (EP).

H4: Green training and development (GTD) mediates the relationship between green human capital (GHC) and environmental performance (EP).

H5: Green training and development (GTD) mediates the relationship between green relational capital (GRC) and environmental performance (EP).

H6: Green training and development (GTD) mediates the relationship between green structural capital (GSC) and environmental performance (EP).

H7: Environmental knowledge (EK) positively influences pro-environmental behavior (PEB).

H8: Pro-environmental behavior (PEB) positively influences environmental performance (EP).

H9: Environmental knowledge (EK) mediates the relationship between green training and development (GTD) and pro-environmental behavior (PEB).

H10: Pro-environmental behavior (PEB) mediates the relationship between green training and development (GTD) and environmental performance (EP).

H11: The combined effects of green human capital (GHC), green relational capital (GRC), and green structural capital (GSC) lead to a synergistic improvement in environmental performance (EP).

H12: Organizations with high levels of green intellectual capital (GIC) and effective green training and development (GTD) achieve superior environmental growth compared to those with lower levels.

Material and Methods

Following the primary quantitative research design and positivism philosophy in the current study, the suitable approach is deductible because it reveals the relevant information from the respondents with the help of a closed-ended questionnaire during the survey. Positivism philosophy has been chosen to reveal the data from the relevant content. It has been found that the philosophy helps extract the data from the respondents in the quantitative paradigm because it does not go into irrelevant details that might detract the researcher.

The study has chosen the quantitative research design because it is suitable to avoid biases and make sure then the data is authentic in the context of reliability features. The quantitative paradigm has helped clear the closed-ended questionnaires and make sure that relevant opinion has been supported with evidence based on the information about green intellectual capital applications in the context of already identified variables step by step. The quantitative paradigm is also helpful to target the hypothesis and make sure that the researcher can understand the value of the current study in reading the

pronounced effects of the green intellectual for supporting the evidence and making sure that sustainability policy has a connection with the environmental performance.

Sampling Design

The sampling technique helps choose the relevant respondents from the whole population because the researcher is unable to survey the whole population and reveal the data based on the information of the whole population. In the current study, the primary quantitative paradigm has been supported with the purpose of sampling because relevant people working in the manufacturing industry using sustainability practices have been used to answer the researcher's Google survey questionnaire. A Google survey questionnaire has been sent to them so they will be able to fill it out online and avoid any inconvenience in sending it back to the researcher.

Sample Size

The sample size for this study contains one hundred whole and legitimate responses from employees within the manufacturing region. This sample size is taken into consideration for conducting quantitative research and acting statistics evaluation of the use of Smart PLS software, as advised by Leavy (2017). Smart PLS is suitable for managing small-to-medium sample sizes and offers strong consequences in structural equation modelling (SEM) analysis, which is relevant to this study objective. The procedure of figuring out the sample size followed a systematic technique to ensure reliability and authenticity. While 150 responses may appear modest, it is suitable given the specificity of the target population and the exploratory nature of the study.

Data Collection Tools

Data collection tools help the researcher to choose the specific methods for the data collection process so the result will be more authentic with the help of content taken from the primary sources (Sharma, 2017). The data collection tools chosen in the current study are comprised of a questionnaire which is closed and data has been generated on the Google survey form. The questionnaire tool has been applied with the help of ethical considerations because data has been taken from the primary sources and it is important to make sure that prior permission has been taken before sending the Google survey form link to them.

Result and Discussion

Data Screening

Data verification is an important step in certifying the accuracy and reliability of any research results. In this analysis, the data has been examined in detail for problems that may occur, like abnormal values, and lacking or inconsistent, which may affect the accuracy of the findings. Abnormal values are specified using statistical techniques such as Boxplots and Z-SCores, which can help in emphasizing the extreme values that can deviate any unusual results. The missing data is managed using the appropriate campaign technique to ensure that there are no valuable details. The method of information is selected according to the characteristics of the data with the goal of data distribution and bias minimization. The normal value of the data has been evaluated through the Kurtosis with a skewed method of creating images such as herso programs and plots. These steps can be confident that the assumptions of normal are responded by analysts that follow. Come to make the results that are more reliable and more effective.

Table 1
Path Coefficient

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
EK -> EP	0.402	0.410	0.081	4.945	0.000
GHC -> GR	0.115	0.109	0.097	1.178	0.239
GIC -> GR	0.151	0.155	0.082	1.837	0.066
GR -> GTD	0.706	0.705	0.065	10.923	0.000
GR -> PEB	0.492	0.501	0.060	8.212	0.000
GRC -> GR	0.206	0.206	0.100	2.072	0.038
GSC -> GR	0.440	0.445	0.114	3.863	0.000
GTD -> EP	0.392	0.390	0.102	3.827	0.000
PEB -> EP	0.016	0.015	0.059	0.276	0.783
EK x PEB -> EP	-0.120	-0.116	0.048	2.491	0.013

The table of path coefficient significantly evaluates the relationships between constructs in the model, which illustrates the energy and essentialism of each link. Relationships with a T statistic extra than 1.96 and a P cost beneath 0.05 are taken into consideration statistically good sized. Key large relationships consist of Environmental Knowledge (EK) to Environmental Performance (EP) (0.402, T = 4.945, P = 0.000) and Green Resources (GR) to Green Training and Development (GTD) (zero.706, T = 10.923, P = 0.000), which demonstrates robust positive results. GR to Pro-Environmental Behavior (PEB) (0.492, T = eight.212, P = 0.000) and Green Social Capital (GSC) to GR (zero.440, T = 3.863, P = 0.000) are giant paths, which shows the have an impact on of those constructs. Non-substantial relationships include Green Human Capital (GHC) to GR (T = 1.178, P = 0.239) and PEB to EP (T = zero.276, P = 0.783), which demonstrates restricted or no direct results. However, the interplay time period EK x PEB has a coefficient which is negative (-0.120) however remains considerable (T = 2.491, P = 0.013), and it indicates a moderating impact. Such outcomes significantly validate the majority of hypothesized links while identification of weaker links which require further exploration.

Table 2
Outer Loading

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
EK 1 <- EK	0.766	0.776	0.034	22.609	0.000
EK 2 <- EK	0.844	0.837	0.042	20.001	0.000
EK 3 <- EK	0.897	0.888	0.034	26.575	0.000
EK 4 <- EK	0.733	0.724	0.073	10.090	0.000
EK 5 <- EK	0.711	0.693	0.089	8.015	0.000
EP 1 <- EP	0.872	0.875	0.018	49.226	0.000
EP 2 <- EP	0.791	0.787	0.064	12.388	0.000
EP 3 <- EP	0.880	0.878	0.030	29.574	0.000
EP 4 <- EP	0.587	0.569	0.121	4.851	0.000
EP 5 <- EP	0.621	0.613	0.119	5.208	0.000
GHC 1 <- GHC	0.822	0.823	0.028	29.521	0.000
GHC 2 <- GHC	0.809	0.808	0.052	15.543	0.000
GHC 3 <- GHC	0.822	0.822	0.038	21.447	0.000
GHC 4 <- GHC	0.830	0.828	0.035	23.821	0.000
GHC 5 <- GHC	0.794	0.790	0.047	16.716	0.000
GIC 1 <- GIC	0.725	0.723	0.044	16.418	0.000
GIC 2 <- GIC	0.742	0.739	0.046	16.064	0.000
GIC 3 <- GIC	0.814	0.813	0.031	26.554	0.000
GIC 4 <- GIC	0.728	0.727	0.047	15.640	0.000
GIC 5 <- GIC	0.768	0.766	0.046	16.609	0.000
GIC 6 <- GIC	0.834	0.834	0.034	24.580	0.000

GIC 7 <- GIC	0.752	0.747	0.053	14.084	0.000
GIC 8 <- GIC	0.824	0.821	0.032	25.660	0.000
GR 1 <- GR	0.806	0.806	0.035	23.129	0.000
GR 2 <- GR	0.846	0.846	0.026	33.149	0.000
GR 3 <- GR	0.843	0.841	0.038	22.310	0.000
GR 4 <- GR	0.889	0.888	0.023	38.413	0.000
GR 5 <- GR	0.805	0.803	0.046	17.586	0.000
GR 6 <- GR	0.838	0.838	0.029	28.537	0.000
GR 7 <- GR	0.813	0.811	0.041	19.634	0.000
GR 8 <- GR	0.865	0.865	0.027	31.493	0.000
GRC 1 <- GRC	0.816	0.818	0.030	26.768	0.000
GRC 2 <- GRC	0.703	0.692	0.103	6.815	0.000
GRC 3 <- GRC	0.758	0.756	0.063	12.080	0.000
GRC 4 <- GRC	0.692	0.690	0.068	10.168	0.000
GRC 5 <- GRC	0.887	0.886	0.021	42.618	0.000
GSC 1 <- GSC	0.758	0.755	0.057	13.201	0.000
GSC 2 <- GSC	0.747	0.744	0.046	16.291	0.000
GSC 3 <- GSC	0.681	0.678	0.060	11.287	0.000
GSC 4 <- GSC	0.744	0.744	0.052	14.331	0.000
GSC 5 <- GSC	0.685	0.680	0.074	9.267	0.000
GSC 6 <- GSC	0.638	0.633	0.067	9.505	0.000
GSC 7 <- GSC	0.795	0.791	0.047	17.088	0.000
GSC 8 <- GSC	0.799	0.797	0.042	19.030	0.000
GSC 9 <- GSC	0.765	0.767	0.041	18.578	0.000
GTD 1 <- GTD	0.885	0.884	0.026	34.365	0.000
GTD 2 <- GTD	0.913	0.913	0.018	50.347	0.000
GTD 3 <- GTD	0.884	0.882	0.029	30.289	0.000
PEB 2 <- PEB	0.707	0.700	0.076	9.313	0.000
PEB 3 <- PEB	0.833	0.833	0.036	22.900	0.000
PEB 4 <- PEB	0.632	0.631	0.082	7.728	0.000
PEB 5 <- PEB	0.894	0.892	0.020	45.635	0.000
PEB 6 <- PEB	0.824	0.821	0.041	20.100	0.000

The table of outer loading significantly measures the relationships between individual signs and their corresponding constructs, which suggest how properly every indicator represents the construct. Loadings above 0.70 are generally taken into consideration sturdy, which demonstrates accurate representation. For Environmental Knowledge (EK), signs along with EK 2(0.844) and EK 3(0.897) exhibit robust relationships, whilst EK 4(0.733) and EK 5(0.711) are barely decrease but nevertheless giant. For Environmental Performance (EP), indicators like EP 3 (0.880) have strong loadings, whilst EP 4 and EP 5 show mild values. For different constructs consisting of Green Resource Consumption (GRC) and Green Intellectual Capital (GIC), most signs exceed the brink, which significantly confirms their validity. GTD and PEB indicators consistently display excessive loadings, mainly GTD 2 (0.913) and PEB 5 (0.894). All indicators have statistically huge loadings (P < 0.05), which significantly helps the reliability and validity of the dimension model

Table 3
R Square

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
EP	0.579	0.598	0.061	9.556	0.000
GR	0.723	0.736	0.048	15.017	0.000
GTD	0.498	0.502	0.090	5.540	0.000
PEB	0.242	0.254	0.060	4.049	0.000

The table R-square (R^2) measures the variance that is explained through the impartial variables within the dependent constructs, which shows predictive strength of the model. For Environmental Performance (EP), the R^2 value of 0.579 shows that 57.9%

of its variance is defined with the aid of its predictors, which indicates moderate explanatory strength. GR has a high R² value of 0.723, which shows that 72.3% of its variance is accounted for via the impartial variables, which reflects strong predictive relevance. For GTD, the R² value of 0.498 highlights that 49.8% of its variance is defined, that significantly moderate predictive power. Finally, Pro-Environmental Behavior (PEB) has a decrease R² of 0.242, which signifies that 24.2% of its variance is defined, which is suitable but pretty weaker. All values of R² are statistically widespread (P < 0.05), which confirms the reliability of the model.

Table 4
R Square Adjusted

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
EP	0.566	0.585	0.062	9.060	0.000
GR	0.714	0.727	0.050	14.392	0.000
GTD	0.495	0.498	0.091	5.457	0.000
PEB	0.236	0.249	0.060	3.923	0.000

The table of R² adjusted refines the variance explained with the aid of the independent variables inside the established constructs, accounting for the quantity of predictors within the model. For Environmental Performance (EP), the adjusted R² value of 0.566 demonstrates that 56.6% of its variance is defined by way of its predictors, slightly lower than the unique R², but nonetheless highlighting slight explanatory strength. Green Resources (GR) sheds light on a strong adjusted R² of 0.714, which signifies that 71.4% of its variance is defined. For Green Training and Development (GTD), the adjusted R² value of 0.495 significantly indicates that 49.5% of its variance is accounted for, which reflects mild explanatory energy. Pro-Environmental Behavior (PEB) has an adjusted R² of 0.236, which is showing 23.6% variance clarification, which is exceedingly lower but statistically widespread. All values are fairly considerable (P < 0.05), which confirms model reliability.

Table 5
Average Variance

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
EK	0.629	0.623	0.055	11.465	0.000
EP	0.578	0.578	0.049	11.833	0.000
GHC	0.665	0.665	0.041	16.190	0.000
GIC	0.600	0.599	0.035	17.099	0.000
GR	0.703	0.703	0.041	17.347	0.000
GRC	0.600	0.600	0.050	12.076	0.000
GSC	0.542	0.542	0.048	11.298	0.000
GTD	0.799	0.798	0.030	26.789	0.000
PEB	0.614	0.614	0.040	15.514	0.000

The Average Variance Extracted (AVE) table significantly evaluates the convergent validity of constructs by calculating the degree to which indicators constitute their latent constructs. A value of 0.50 or above shows enough convergence. All constructs, for this model, exceed the brink, which shows sturdy convergent validity. Green Training and Development (GTD) have the best AVE at 0.799, which demonstrates exceptional illustration via its signs. Green Resources (GR) also indicates robust convergent validity with an AVE of 0.703. Constructs like Green Human Capital (GHC) and Environmental Knowledge (EK) AVEs of 0.665 and 0.629, respectively, which demonstrates reliable indicator illustration. Lower AVEs along with Green Structural Capital (GSC) at 0.542 nonetheless meet the minimum requirement. It shows perfect

validity. All T-statistics is showing excessive importance (P < 0.05), making sure statistical robustness for such constructs in explaining variance.

Table 6
Cronbach Alpha

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
EK	0.860	0.857	0.028	30.861	0.000
EP	0.817	0.812	0.040	20.643	0.000
GHC	0.874	0.872	0.024	36.969	0.000
GIC	0.904	0.903	0.015	62.254	0.000
GR	0.940	0.939	0.012	76.716	0.000
GRC	0.831	0.827	0.037	22.329	0.000
GSC	0.894	0.891	0.022	41.446	0.000
GTD	0.874	0.873	0.024	36.299	0.000
PEB	0.838	0.836	0.029	29.386	0.000

The Cronbach's Alpha assesses the construct's internal reliability and consistency. A cost above 0.70 demonstrates appropriate reliability, while values that are higher, illustrates more potent consistency. All constructs, in this model, meeting or exceeding the reliability threshold, which shows sturdy inner consistency. Green Resources (GR) has the highest alpha cost at 0.940. it significantly indicates good reliability. Also, Green Intellectual Capital (GIC) and Green Structural Capital (GSC) are showing sturdy reliability with alpha values of 0.904 and 0.894, respectively in the table. Other constructs, which is consisting of Environmental Knowledge (EK) and Green Human Capital (GHC), which show off high reliability, with values of 0.860 and 0.874. Even the bottom value, Environmental Performance (EP) at 0.817, is well within acceptable limits. All T-statistics are substantial (P < 0.05). So, it gives indication of reliability measures statistically.

Table 7
HTMT Ratio

	Original sample (O)	Sample mean (M)	2.5%	97.5%
EP <-> EK	0.683	0.684	0.527	0.829
GHC <-> EK	0.687	0.683	0.508	0.825
GHC <-> EP	0.623	0.631	0.455	0.789
GIC <-> EK	0.501	0.502	0.317	0.688
GIC <-> EP	0.666	0.670	0.514	0.807
GIC <-> GHC	0.871	0.871	0.792	0.937
GR <-> EK	0.547	0.544	0.370	0.702
GR <-> EP	0.513	0.526	0.341	0.707
GR <-> GHC	0.824	0.823	0.720	0.914
GR <-> GIC	0.804	0.804	0.706	0.887
GRC <-> EK	0.651	0.647	0.448	0.823
GRC <-> EP	0.849	0.850	0.673	0.995
GRC <-> GHC	0.866	0.865	0.755	0.959
GRC <-> GIC	0.877	0.875	0.787	0.944
GRC <-> GR	0.863	0.861	0.765	0.944
GSC <-> EK	0.588	0.586	0.414	0.740
GSC <-> EP	0.637	0.649	0.475	0.812
GSC <-> GHC	0.935	0.936	0.874	0.994
GSC <-> GIC	0.881	0.882	0.811	0.945
GSC <-> GR	0.896	0.896	0.827	0.958
GSC <-> GRC	0.960	0.960	0.884	1.030
GTD <-> EK	0.581	0.579	0.376	0.763
GTD <-> EP	0.701	0.704	0.505	0.879
GTD <-> GHC	0.849	0.848	0.734	0.938
GTD <-> GIC	0.864	0.862	0.781	0.928
GTD <-> GR	0.778	0.775	0.624	0.898

GTD <-> GRC	0.883	0.882	0.789	0.958
GTD <-> GSC	0.815	0.812	0.717	0.890
PEB <-> EK	0.376	0.395	0.227	0.560
PEB <-> EP	0.303	0.323	0.180	0.496
PEB <-> GHC	0.377	0.384	0.215	0.561
PEB <-> GIC	0.556	0.556	0.414	0.690
PEB <-> GR	0.548	0.549	0.418	0.672
PEB <-> GRC	0.418	0.427	0.272	0.587
PEB <-> GSC	0.622	0.624	0.497	0.746
PEB <-> GTD	0.422	0.424	0.256	0.583

The table of Heterotrait-Monotrait Ratio (HTMT) evaluates discriminant validity by analyzing the correlation between constructs. Values of HTMT beneath 0.85 imply robust discriminant validity, while values between 0.85 and 0.90 are suited. The table is suggesting most relationships fall inside appropriate thresholds. It demonstrates that constructs are good. For instance, the correlation among EP and EK is 0.683, and among GIC and EK, it's miles 0.501, both well below 0.85. High correlations, which include GSC and GRC (0.960), and GSC and GHC (0.935), is recommending more potent associations, thus remain ideal. The 2.5% and 97.5% confidence intervals offer in addition perception into the steadiness of the values of HTMT. Constructs i.e. PEB and EP (0.303) is significantly showing clean differences. The table is confirming discriminant validity for most constructs, which ensures the reliability and precision of the model.

Hypotheses Testing

H1: Green Intellectual Capital (GIC) has a Significant Impact on Environmental Growth

The first hypothesis shows that green intellectual capital (GIC) positively affects environmental growth. GIC refers to intangible assets of organization related to environmental knowledge, capabilities, and behaviors that promote sustainability. The hypothesis suggests that organizations with strong GIC are better equipped for promoting environmental growth. This includes improving innovations aimed at achieving sustainable goals, environmental friendly performance. This hypothesis is based on a theoretical framework linking intellectual capital to organizational sustainability. Previous researches demonstrate that organizations that effectively manage and deploy intellectual capital can be at the forefront of creating environmental solutions. This is because there is an increased ability to innovate and adapt to sustainability challenges. There are many researches stating that GIC can push sustainability and environmental efficiency. For example, an organization with environmental knowledge base (GIC's important composition) is likely to utilize green technology and utilize the policy that reduces carbon dioxide. In environmental development, when considering this, the positive relationship between GIC and the growth of the environment is in line with the extensive literature about the role of intellectual capital in promoting sustainable operations of business.

H2: Green Training and Improvement (GTI) has a Significant Impact on Environmental Growth

The 2nd hypothesis is that green training and improvement (GTI) positively impacts environmental sustainability. GTI refers to the efforts of organization for enhancing knowledge, skills, and behaviors of employees regarding environmental sustainability through training programs and continuous improvement initiatives. It is suggested by this hypothesis that when employees have the appropriate knowledge and tools for dealing with environmental challenges, organizations have more chances of

achieving better environmental outcomes like sustainability, environmental impact, and green innovation. H2 rely on a strong link between employee training and the performance of organization. As organizations provide continuous green training and promote continuous improvement of environmental practices, they not only but increases the capabilities of employees but also directly supports the organization's sustainable development goals.

H3: Green Intellectual Capital (GIC) has a Significant Impact on Environmental Growth

Hypothesis H3 suggests that green intellectual capital (GIC) plays an important role in promoting environmental growth. GIC refers to knowledge, expertise and intellectual property within the organization that focuses on sustainability and environmental initiatives. It consists of three main components:

- **Human capital:** Employees' knowledge, skills, and expertise in environmental practices.
- **Structural capital:** Organizational processes, policies, and systems that support green initiatives.
- **Relational capital:** External relationships and partnerships that enable a company for pursuing sustainable practices

This hypothesis asserts that GICs drive innovation through the intellectual resources they bring together, improving decision making and promoting organizational practices that cause environmental improvement and growth because organizations put more emphasis on sustainability. The essentialism of intellectual capital supporting green initiatives is therefore critical for achieving superior environmental results. The significant role of green intellectual capital in driving the environmental efficiency has been well recorded in academic literature. Intellectual capital is a vital resource for different organizations. Researchers showed that the organization with a strong GIC is better ready for adjusting the operation to be in line with the environmental goals. It may lead to increased sustainability and reduces the environmental impact.

H4: Green Training and Improvement (GTI) has a Significant Impact on Environmental Growth

Hypothesis H4 states that green training and improvement (GTI) has a significant impact on green growth. GTI refers to the continuous process of educating employees about sustainable practices. Developing skills in green technology and foster an environment where environmental practices can thrive. The essentialism of green training and improvements in driving environmental outcomes is widely recognized in the literature. A research found that organizations that make investments in green training programs shows improvement in environmental performance. This is because their employees are better equipped for the implementation of green initiatives. Similarly, another study emphasizes the essentialism of continuous improvement and knowledge sharing within organizations to promote sustainable development. In the context of environmental growth Green, training is a vital factor in innovation. It helps different organizations in the adaptation of new green technologies for reducing environmental impact and adjusting operations in line with sustainability goals.

H5: Green training and development (GTD) mediates the relationship between green relational capital (GRC) and environmental performance (EP).

This hypothesis suggests that the effect of green relational capital, along with sustainable collaborations with stakeholders, companions, and clients, on environmental performance is channelled through GTD projects. When businesses invest in GTD, they translate their external green relationships into internal abilities by equipping employees with the expertise and abilities vital to put in place eco-friendly practices, thereby enhancing ordinary environmental effects.

H6: Green training and development (GTD) mediates the relationship between green structural capital (GSC) and environmental performance (EP).

The idea is that green structural capital—like eco-efficient systems, processes, and databases—only results in stepped forward environmental overall performance while employees are nicely skilled to apply and optimize those systems. GTD serves as the bridge, making sure that the workforce can translate structural sustainability properties into tangible, advantageous environmental outcomes.

H7: Environmental knowledge (EK) Significantly influences pro-environmental behavior (PEB).

This hypothesis posits that the greater personnel understand approximately environmental troubles and sustainability practices, the more likely they are to engage in behaviors that protect and maintain the environment. A stable basis of environmental knowledge allows individuals to make knowledgeable alternatives, adopt green conduct, and support organizational sustainability efforts proactively.

H8: Pro-environmental behavior (PEB) Significantly influences environmental performance (EP).

PEB encompasses the actions personnel take, along with decreasing waste, maintaining strength, and following green protocols, that directly contribute to a firm's environmental goals. This speculation asserts a right away hyperlink between such character behaviors and broader organizational consequences, reinforcing the value of encouraging environmentally accountable behavior amongst personnel.

H9: Environmental knowledge (EK) mediates the relationship between green training and development (GTD) and pro-environmental behavior (PEB).

This mediation hypothesis proposes that GTD on its own is not always sufficient to activate behavioral trade; instead, it enhances environmental information, which in turn influences behavior. Essentially, schooling programs are powerful after they result in know-how gains, which then empower personnel to engage in environmentally friendly practices.

H10: Pro-environmental behavior (PEB) mediates the relationship between green training and development (GTD) and environmental performance (EP).

In this model, the effectiveness of GTD on enhancing environmental overall performance is realized thru its capability to sell PEB. Training applications equip personnel with the mindset and equipment necessary for sustainable action, and these behaviors, in aggregate, power enhancements in an organization's ecological footprint.

H11: The combined effects of green human capital (GHC), green relational capital (GRC), and green structural capital (GSC) lead to a synergistic improvement in environmental performance (EP).

This hypothesis highlights the integrated nature of green human capital. When the human, relational, and structural factors work in tandem, they amplify each other's impact, leading to advanced environmental outcomes. The synergy created through aligning human beings, systems, and partnerships round inexperienced goals fosters a robust and cohesive method to sustainability.

H12: Organizations with high levels of green intellectual capital (GIC) and effective green training and development (GTD) achieve superior environmental growth compared to those with lower levels.

This very last hypothesis underscores the importance of both static and dynamic abilities. GIC affords the foundational property needed for sustainability, even as GTD turns on and continuously evolves those assets. Together, they position companies to recognize more potent environmental development than competitors lacking in both areas.
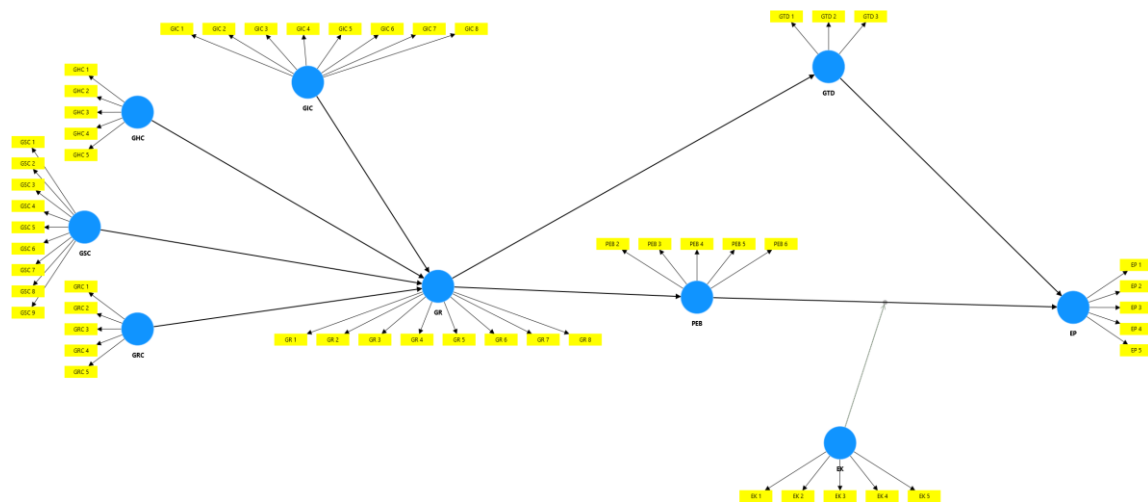

Figure 2: Diagrammatic Outlook

Conclusion

The purpose of the study was to find out how the themes of Green sustainability can be taken into account in personnel management. The research showed that the themes of Green sustainability are taken into account relatively widely in the field of personnel management. Green sustainability is taken into account in recruitment, communication, management behavior, trainings, rewards, performance management, workplace culture and as part of the company's strategy. Green sustainability has been identified as an important topic as part of personnel management, however, practices and means are lagging behind and their critical examination is needed. Green sustainability is best taken into account in companies where it is part of the company's strategy. HR professionals, according to the survey, felt that Green sustainability is not the first priority in their field and that the promotion of environmental issues is perceived to be more the work of other professionals (Idie Widigdo, 2013). Few resources prevent the implementation of Green sustainability as part of personnel management.

Consideration of Green sustainability has also been found to bring benefits to personnel management. These include the improvement of employer image, competitive advantage, increased commitment of employees and the opportunities for working remotely.

Recommendations

Based on the findings related to hypotheses, it's recommended that companies adopt a holistic and integrated approach to sustainability using simultaneously investing in green intellectual capital (GIC) and robust green training and development (GTD) packages. Specifically, firms ought to foster environmental knowledge among personnel, cultivate seasoned-environmental behaviors via continuous learning, and align their human, structural, and relational green property to work synergistically. By embedding sustainability into each organizational infrastructure and employee improvement, corporations can notably improve their overall environmental performance and steady long-term ecological and economic benefits.

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