

# GREEN CAREER DEVELOPMENT AND ENVIRONMENTAL PERFORMANCE IN CHENNAI'S IT SECTOR: UNRAVELLING THE HUMAN CAPITAL BEHAVIOUR – KPI CHAIN

Srividya Prathiba C. S.

*Controller of Examinations & Associate Professor, M. O. P. Vaishnav College for Women (Autonomous), Nungambakkam High Road, Chennai, Tamil Nadu, India. Email: myfdpprog@gmail.com; svpravid1284@gmail.com; ORCID: 0000-0002-8739-1002*

**Abstract:** *The climate crisis has pushed environmental performance from a peripheral corporate social responsibility (CSR) concern to a core strategic imperative. Yet, most organisations still struggle to translate lofty sustainability goals into day-to-day employee action. Green human resource management (HRM) has emerged as a critical strategic lever, integrating environmental concerns into human resources (HR) practices to foster eco-friendly employee behaviours and enhance organisational sustainability performance. This study focuses on understanding green career development (GCD) as a critical aspect of green HRM. The study collects data from individual employees comprising software engineers, analysts, project leads, and delivery managers employed in Chennai's information technology (IT) park – TCS, CTS, Infosys, Wipro, and HCL. Sample size is 300. This research addresses the individual contribution of GCD and its impact on both green behaviour and organisational environmental performance. The upshot of the analysis revealed that GCD leads to green human capital (GHC) and employee green behaviour (EGB) and in turn leads to organisational environmental performance.*

*Sustainable strategies remain aspirational until employees see a compelling personal return on their efforts. This study reveals that career system is not a peripheral HR subfunction but a hinge that converts environmental training, feedback, and rewards into sustained employee action and measurable environmental gains.*

**Keywords:** *Green Career Development, Green Human Capital, Green Behaviour, Organisational Environmental Performance, Green Servant Leadership*

**JEL Classification:** Q01, Q56, Q54, J24, M12, M14, D19

## INTRODUCTION

Global decarbonisation pledges have made environmental key performance indicators a board-level metrics in information technology (IT) and service firms. Yet reductions in scope of 1, 2, and 3 emissions remain uneven suggesting that technical solutions must be complemented by human capital strategies as suggested by Renwick et al. (2023). In the face of accelerating environmental degradation, organisations are under increasing pressure to transition towards sustainable operations. Green human resource management (HRM) has emerged as a critical strategic lever, integrating environmental concerns into

human resources (HR) practices to foster eco-friendly employee behaviours and enhance organisational sustainability performance. While existing research explored various green HRM dimensions such as green recruitment, training, and performance management, the missing link is green career development (GCD). GCD is an understudied aspect of green HRM. Most studies examine green HRM practices in aggregate failing to assess their individual contributions or measure the extent of their implementation. This research addresses this critical gap by developing a scale and validating the same to measure GCD and empirically testing its unique impact on both employee green behaviour and organisational

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environmental performance. When the pathways are visible, like new pro-environmental behaviour will yield long-term returns, it will enhance support for green career advancements. On the other hand, if the advancements are not visible employees may view sustainability initiatives only as add-ons.

## Rationale of the Study

Chaudhary et al. (2025) in their systematic review conclude that career development practices are the least studied in green HRM dimensions. Most papers aggregate green HRM into a single index, coving the unique contribution of career signals.

Ren, Tang and Jackson (2018) lay emphasis on the need for micro-level, multistage studies that link employee-level green HRM perceptions to objective environmental KPIs rather than self-reported eco initiatives.

Azadeh Shafaei and Mehran Nejati and Yusmani Mohd Yusoff (2020) in their study reveal that green human capital (GHC) mediated the relationship between green HRM practices and voluntary pro-environmental behaviour supporting the proposed mediation chain.

Saeed et al. (2019) in their study demonstrate that green behaviour significantly predicts audited reductions in energy use and waste, validating the move from self-reports to objective environmental performance.

Al-Swidi, Abdullah and Gelaidan, Hamid and Saleh, Redhwan (2021) identify in their study that leadership climates amplify green HRM effects, providing early evidence for including green servant leadership (GSL) as a moderating variable.

Paille, Boiral and Chen (2013) highlight that perceived organisational support for the environment strengthens the link between individual green behaviour and aggregate environmental outcomes.

Mustafa et al. (2023) in their article highlight the importance of nurturing a skilled, sustainability-oriented workforce as green HRM practices foster competitive advantage, through green knowledge sharing and green innovation. The study further identifies GHC as a significant moderating factor.

Renwick, Douglas and Redman, Tom and Maguire, Stuart (2012) in their study draw three parallel findings that environmental management and HRM is linked; they map the overall landscape for this and also include sustainability within the scope of HRM and explore if it can help in pollution prevention.

Vazques et al. (2023) explores the role of green HRM in explaining the variations in the implementation of EPH and EPS in response to stakeholders' pro-environmental pressures. Green HRM systems partially mediated the association between stakeholder pressures, EPS, and EPH in Brazilian organisations. The study reveals that green HRM systems are a crucial factor in explaining the intensity of the implementation of green practices in response to stakeholder environmental pressures.

Katarzyna Piwowar-Sulej, Qaisar Iqbal (2023) carried out a systematic review of articles from various databases linking the leadership styles and sustainable performance. The study shows how different leadership styles influence sustainable performance, including the mechanisms and conditions involved. The most discussed leadership styles were transformational and sustainable leadership styles. Transformational leadership style worked in enhancing environmental performance whereas sustainable leadership style focused on sustainable practices.

Zafar & Suseno (2023) reveal in their study that climate variables (POSE) are necessary conditions, without which green HRM practices fail to translate into discretionary green actions. Thus, this study, taking all the above into account, focuses on GCD and empirically testing its unique impact on both employee green behaviour (EGB) and organisational environmental performance.

## Research Gap

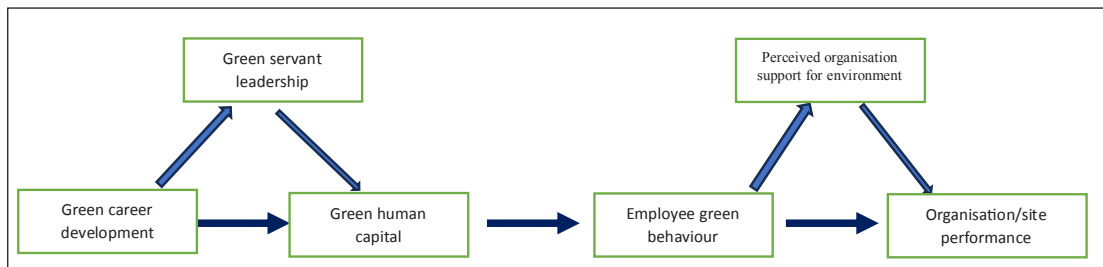
Based on the above burgeoning stream of research arguments the missing link is GCD in green HRM – the deliberate infusion of environmental objectives into HR practices such as staffing, training, appraisal, and rewards. Research now shows that green HRM bundles can improve both environmental outcome and competitive advantage, but only when employees possess the green knowledge, skills, and motivation to act. Career development being the most potent lever in the traditional HR tool kit has remained a blind spot. While there have been many researches on green recruitment, green training, and green performance in isolation the notion that organisations can systematically cultivate green careers has received little attention. This is striking because career signals are precisely what persuade employees to invest in new competencies and to persist with pro-environment behaviours that often yield long-term uncertain pay-offs. Without visible pathway and support for greener advancement, even well-intentioned workers may view sustainability initiatives as discretionary add-ons rather than career-relevant priorities.

## Need for the Study

Policy imperatives require IT firms to evidence year-on-year reduction in carbon intensity. Existing green HRM studies rely on self-reported environmental outcomes or aggregated indices yielding ambiguous managerial guidance. By isolating GCD and linking it to audited KPIs this study offers actionable prescriptions for HR and sustainability managers. GCD has a set of HR practices that will build, signal, and reward the competencies necessary for environmentally sustainable progression.

## Objectives

- To develop and validate a multidimensional GCD scale.
- To test the direct effect of GCD on GHC.
- To examine the sequential mediation GCD-----GSL-----GHC-----EGB-----POSE-----Organisation/site performance.
- To investigate if GSL and POSE mediate key paths.



**Fig. 1: Conceptual Framework**

GCD: Green career development

GHC: Green human capital

EGB: Employee green behaviour

GSL: Green servant leadership

POSE: Perceived organisational support for environment

GCD will help elevate employee's GHC, which will translate that capital into consistent GHB and ultimately enhance organisational environment performance.

## METHODOLOGY

The study has used qualitative and quantitative research methods to describe, examine, and statistically analyse the primary data gathered from the survey process. We have collected primary data for the study specifically from major IT companies in Chennai with published environmental KPIs. They were approached and 300 employee responses were collected. And site-level KPIs were extracted from 2023 sustainability reports. A structured questionnaire with 16 items was developed to measure GCD, for GHC a six-item scale was adapted from Subramaniam & Youndt, for EGB an eight-item scale adapted from Kim et al., for green servant leadership six items adapted from Liden et al., and for perceived organisational support for the environment

five items. We have a structural equation model created taking into account the impact of GCD on GHC and GHB with GSL and POSE as mediating variables. The organisational performance or the site score has been taken from the audited quantitative environmental KPIs published.

## Respondent's Details

The data were collected from 300 managers and senior managers who:

- Were working in IT companies operating in Chennai who publish audited KPIs in their annual reports.
- Were positioned at managerial cadre, who administer/experience career development practices.
- Were assessed using the questionnaire.

Primary data for the study were collected during April 2025.

## Pilot Study

A pilot study was conducted to check the reliability of the statements in the questionnaire. The scores of the Cronbach's alpha is given in Table 1. All the scores are above .80 indicating that all statements in the questionnaire have been clear for the respondents to express their acumen.

**Table 1: Cronbach Alpha's Reliability**

Measure	No of Statements	Range	Cronbach's Alpha
GCD	16	1-7	.889
EGB	8	1-7	.876
GHC	6	1-7	.867
GSL	6	1-7	.844
POSE	5	1-7	.875

### Factors of GCD and EGB

Exploratory factor analysis using a Varimax rotation was used in the analysis. All the factor loadings of 0.6 or

above were identified under principal component analysis method.

**Table 2: Kaiser-Meyer-Olkin and Bartlett's Test**

		Green Career Development	Employee Green Behaviour	Green Human Capital
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.889	.905	.703
Bartlett's Test of Sphericity	Approx Chi-Square	3110.456	2280.421	705.791
	Df	120	28	15
	Significance	.000	.000	.000

Source: Computed data.

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy recorded values of 0.889, 0.905, and 0.703 as presented in Table 2, indicating that the data were suitable for factor analysis. The Bartlett's test of sphericity showed approximate chi-square values of 3110.456, 2280.421, and 705.791, all of which were statistically significant at the 5% level, confirming sufficient correlations among variables.

The analysis revealed that the 16 variables related to GCD, eight variables pertaining to GHB, and six variables pertaining to GHC were condensed into four principal factors for GCD and two principal factors for GHC and

GHB. The eigenvalues were greater than 1, confirming their significance.

The rotated component matrix was employed to identify the factor loadings for each variable. The abbreviations used in Fig. 2 are detailed in Table 3, along with their corresponding variables. Only variables with factor loadings exceeding 0.60 were retained for interpretation. Sixteen factors of GCD had condensed into four major factors, green competency building (GCB), career support and mentoring, career advancement, and performance review and feedback with individual variances of 19.554, 19.379, 19.353, and 19.033.

**Table 3: Rotated Component Matrix GCD**

Rotated Component Matrix <sup>a</sup>			
	Component		
	Factor Loading 1	Shown in Fig. 2	Name Given to the Factor
Provides formal training to improve my EKS (environment knowledge and skills).	.847	gcd1	Green competency building
Provides e-content, workshops on sustainability topics related to my job.	.845	gcd2	
Encourages me to apply and obtain green certifications.	.847	gcd3	
Helps me in improvising eco-friendly procedures.	.857	gcd4	
We have mentors inside the company who support our green career aspirations.	.850	gcd5	Career support and mentoring
Senior managers publicly endorse and reward employees who engage in green career initiatives.	.864	gcd6	
I get opportunities to attend conferences and professional networks focused on sustainability.	.833	gcd7	
I can discuss long-term green career goals with my superiors.	.855	gcd8	

Rotated Component Matrix <sup>a</sup>			
	Component		
	Factor Loading 1	Shown in Fig. 2	Name Given to the Factor
There are promotion tracks that require strong environmental credentials.	.818	gcd11	Career advancements
When a sustainability-related position opens, internal candidates are given priority consideration.	.841	gcd12	
High environmental performance is one of the criteria for reaching senior leadership positions in my organisation.	.834	gcd13	
Working on green projects is perceived as a fast track for career progression here.	.856	gcd14	
Performance review includes specific objectives related to environmental outcomes.	.857	gcd10	Performance review and feedback
I receive constructive feedback on the sustainability aspects of my work.	.862	gcd9	
Success stories about employees who advanced through green achievements are shared across the organisation.	.830	gcd15	
Measures and communicates how individual green efforts contribute to broader corporate sustainability targets.	.849	gcd16	
Extraction Method: Principal Component Analysis			
Rotation Method: Varimax with Kaiser Normalisation			
a. Rotation converged in 5 iterations			

### Confirmatory Factor Analysis

AMOS was used to test the validity. CFA revealed a four-factor model for GCD. The focus is to build four dimensions of GCD by laying emphasis on green competencies, career advancement, and support and feedback on sustainable

activities taken up. This clearly shows that organisations can bring in green careers in their promotion ladders, which will motivate employees to actively participate in green initiatives and sustainability activities of the organisation as they see a visible career path.

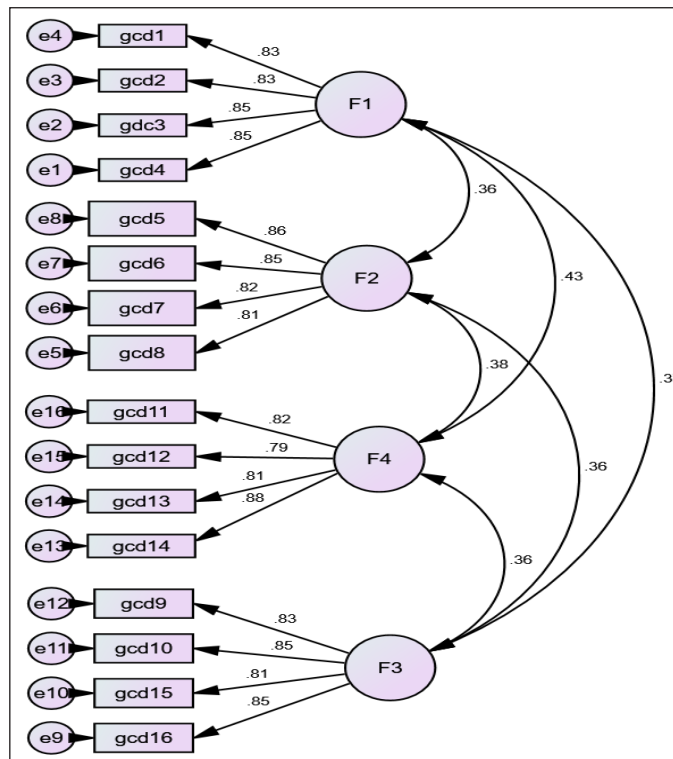


Fig. 2: CFA GCD

### Rotated Component Matrix EGB

The rotated component matrix was employed to identify the factor loadings for each variable. The abbreviations used in Fig. 3 are detailed in Table 4, along with their corresponding

variables. Only variables with factor loadings exceeding 0.60 were retained for interpretation.

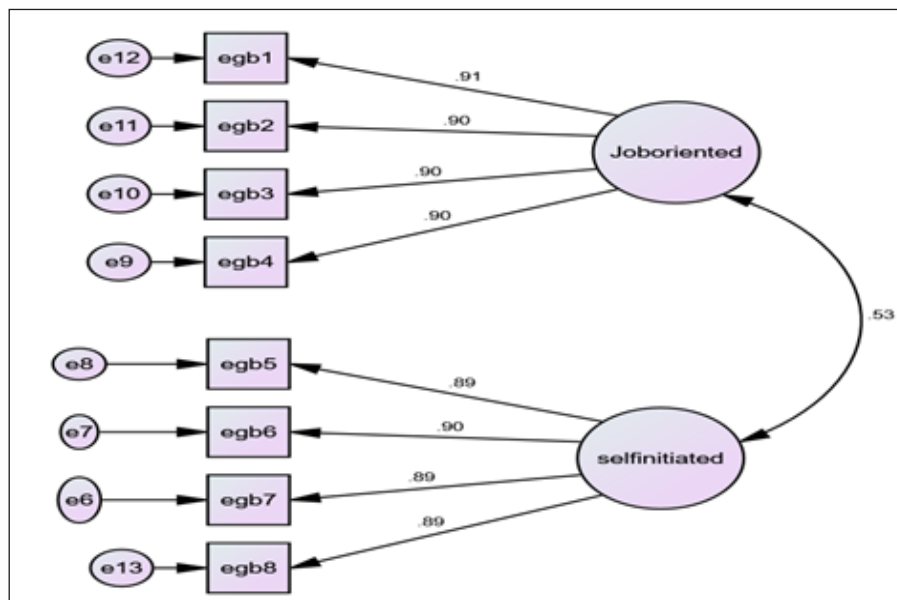
Factor analysis revealed two factors with individual variances of 42.962 and 42.536. The CFA also revealed a two-factor model as given in Fig. 3.

**Table 4: Rotated Component Matrix EGB**

Rotated Component Matrix <sup>a</sup>			
	Component		
	Factor Loading 1	Shown as in Fig. 3	Name Given to the Factor
Encourage co-workers to act environmentally responsible.	.902	egb1	Job-related
Follow energy-saving procedures in my job.	.899	egb2	
Comply with organisation's waste separation guidelines.	.894	egb3	
Use digital tools as replacement for paper.	.889	egb4	
I volunteer for green projects.	.893	egb5	Self-initiated
I give suggestions to improve environment performance.	.891	egb6	
I switch off power when not in use.	.890	egb7	
I share green ideas during meetings.	.886	egb8	

The CFA revealed a two-factor model on employee green behaviour both in terms of job-related as well as self-initiated. This shows that when you have a well-defined green career

growth employees exhibit GHB. Green behaviour exhibited is inclusive of both job-related and self-initiated.



**Fig. 3: CFA Employee Green Behaviour (EGB)**

### Rotated Component Matrix GHC

Factor analysis revealed two factors with individual variances of 44.68 and 27.88. The CFA also revealed a two-factor model as given in Fig. 4 and Table 5.

Table 5: Rotated Component Matrix GHC

Rotated Component Matrix <sup>a</sup>			
	Component		
	Factor Loading 1	Shown as in Fig. 3	Name Given to the Factor
I have up-to-date knowledge of environmentally sustainable practices relevant to my job.	.832	ghc1	Sustainability skill proficiency
I can apply green technologies or methods effectively in my daily tasks.	.769	ghc2	
I know how to measure the environmental impact of my work activities.	.864	ghc3	Eco competence
My colleagues regard me as a 'go-to' person for eco-friendly solutions.	.782	ghc4	
I continuously improve my green skills through formal or informal learning.	.777	ghc5	
I am able to identify new opportunities to reduce resource consumption at work.	.745	ghc6	

CFA resulted in a two-factor model for GHC – eco-competency and sustainability skill proficiency. Knowledge, ability, and skills (KSA) will result in competence. When an

individual possesses the requisite KSAs relating to cleaner and greener environment it often results in creation of GHC.

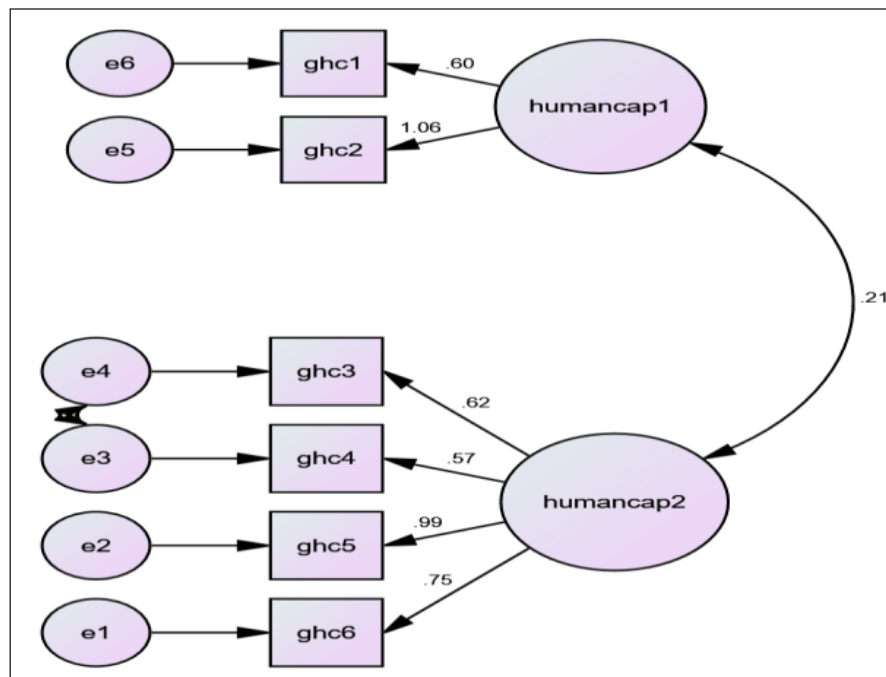


Fig. 4: CFA Green Human Capital (GHC)

### Hypothesis

H<sub>1</sub> = GCD has a positive impact on elevating employees' green human capital.

H<sub>2</sub> = GHC has a positive impact on green behaviours.

H<sub>3</sub> = GHB positively enhances organisational environmental performance.

H<sub>4</sub> = GCD has a positive impact on organisational environmental performance through GHC and GHB.

H<sub>5</sub> = GSL mediates the GCD and GHC.

H<sub>6</sub> = POSE mediates GHB and organisational environmental performance.

## Model Fit

CFA provided satisfactory fit to the data for GCD, GHC, and green employee behaviour. All estimated loadings such as GFI, AGFI, CFI, NRI, and TLI are significant. The RMSEA and RMR values exhibit a good model fit. Thus, the results

reveal that when an employee has the ability, motivation, and opportunity to perform they will contribute to the maximum. GCD scale takes into consideration the green competencies required, when adequately rewarded and career opportunities are provided and backed up by leaders through organisational support on environmental initiatives that are evident.

**Table 6**

Measure	Threshold			
	Green Career Development	Green Human Capital	Employee Green Behaviour	Model Fit
Chi-square/df (CMIN/DF)	1.872	1.835	1.432	2.441
P-value for the model	.000	.000	.000	.000
Goodness-of-Fit Statistic (GFI)	.967	.986	.993	.971
Adjusted Goodness-of-Fit Statistic (AGFI)	.954	.958	.987	.951
Comparative Fit Index (CFI)	.990	.992	1.00	.994
Normed-Fit Index (NFI)	.976	.983	.997	.973
Tucker-Lewis Index (TLI)	.973	.982	.995	.991
Incremental Fit Index (IFI)	.967	.992	.996	.994
Root Mean Square Residual (RMR)	.107	.187	.018	.340
Root Mean Square Error of Approximation (RMSEA)	.054	.053	.034	.031

GCD functions as a distinct green HRM practice that increases employee's human green capital, which in turn becomes consistent green behaviour and thus enhances organisational environment performance. Four major factors, green career, GCB, mentoring, and green performance and feedback, can be used as a tool to assess how career-related positions in organisations can attenuate green HRM practices. When employees perceive clear green advancements, they tend to exhibit green behaviours, which in turn helps in carbon reduction or lower carbon intensity. Leadership and supportive functions definitely amplify the impact (Lent et al., 2023). The paper reviews different ideas about proactive career behaviour and identifies three main categories: planning or looking ahead for career growth, networking or getting to know others, and exploring or looking out for growth opportunities. All three factors put together will result in career sustainability behaviour. Employees with these behaviour and supportive supervisors have a quest for career sustainability. Taking this forward the research has built a GCD scale, which will help employees exhibit green behaviour and organisations can have GHC with adequate support from leaders and organisational support organisations can create careers in sustainability. The findings go with the study.

## Managerial Implications

HR leaders can add sustainability metrics to promotion scorecards and create green mentors. They can map eco innovations on job to next-level roles whereby green environmental behaviour can offer them higher roles in the organisation especially when there are measurable reductions in energy use, waste reduction, and reduction in carbon emissions. This will in turn aid in corporate sustainability.

## CONCLUSION

When employees are able to see a compelling personal return on the efforts put in by them their contribution towards sustainability increases. This study reveals that if an organisation is able to bring in green competencies into their promotion ladders, provide green mentors, and continuously appraise green contributions, it will be able to make sustainability a pathway towards advancements. Further, this study can be extended across various sectors and even in educational institutions as they are the building blocks of tomorrow's workplace.

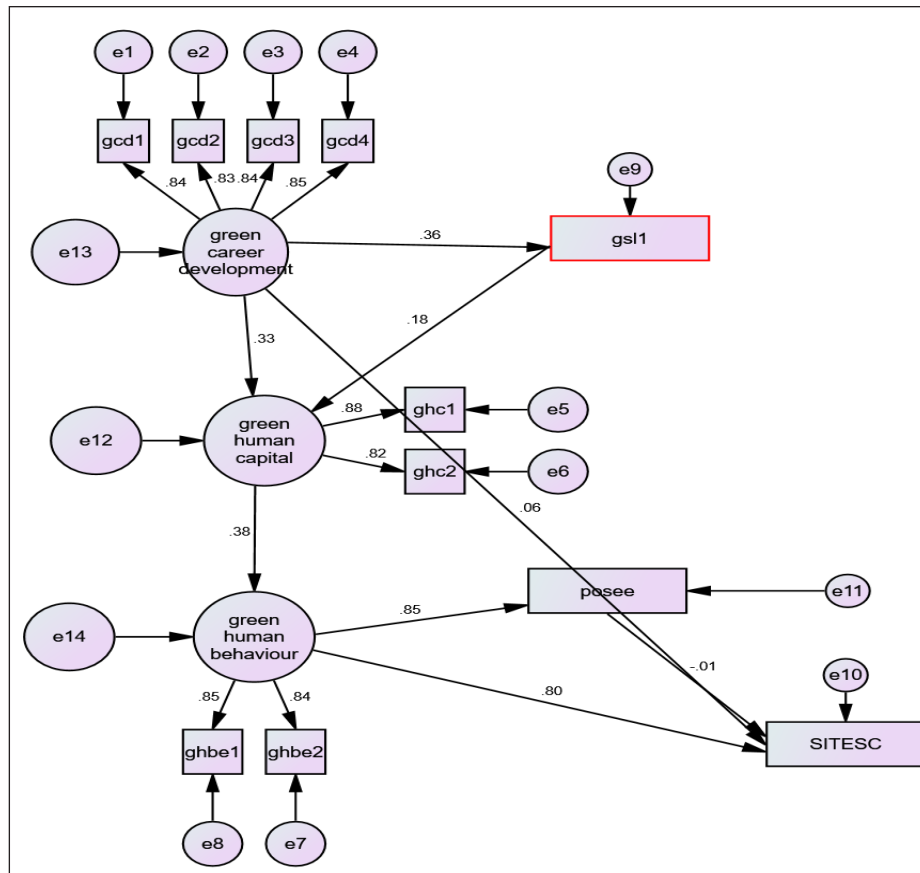


Fig. 5

**Author's Contribution:** Srividya Prathiba C S has contributed to the design and implementation of the research, in terms of analysis, writing, and editing of the manuscript.

**Conflict of Interest:** There is no conflict of interest. This study has been done purely for academic purposes only.

**Scope for Further Research:** A structural equation model showing the impact of GCD on GHC and GHB can be replicated across sectors, cultures, and supply-chain tiers, while practitioners can begin redesigning their career architectures to make sustainability the default pathway to advancement.

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