GREEN COMPETENCIES: CONCEPTUALISATION, CONSTRUCT DEVELOPMENT AND MEASUREMENT VALIDATION

A THESIS

Submitted in partial fulfillment of the requirements for the award of the degree

of

DOCTOR OF PHILOSOPHY

in

MANAGEMENT STUDIES

by

CLEMENT CABRAL

DEPARTMENT OF MANAGEMENT STUDIES

INDIAN INSTITUTE OF TECHNOLOGY

ROORKEE, UTTARAKHAND – 247667 (INDIA)

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CANDIDATE'S DECLARATION

I hereby certify that the work which is being presented in the thesis entitled " **GREEN COMPETENCIES: CONSTRUCT DEVELOPMENT AND MEASUREMENT VALIDATION** " in partial fulfilment of the requirements for the award of the Degree of Doctor of Philosophy and submitted in the Department of Management Studies of the Indian Institute of Technology Roorkee, Roorkee is an authentic record of my own work carried out during a period from July, 2016 to August, 2019 under the supervision of Dr. Rajib Lochan Dhar, Associate Professor, Department of Management Studies, Indian Institute of Technology Roorkee, Roorkee.

The matter presented in this thesis has not been submitted by me for the award of any other degree of this or any other Institution. This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

(CLEMENT CABRAL)

Abstract

This thesis discusses about the conceptualisation and measurement validation of green competencies scale. The literature on Green Human Resource Management (GHRM) lacks wider-accepted scale to measure Green Competencies (GC) scale which is an essential requirement in an organisation. GC is considered to be a significant concept in GHRM but not much importance were given to develop the measurement scale. Even though, there are some scales in environmental psychology and few studies in GHRM which describes about the concept, no study has covered the entire dimension of GC.

To address the lack of conceptualisation, construct development and measurement validation regarding the concept of green competencies. This study developed a Green Competencies Scale in accordance with the Natural-Resource-Based View and uses mixed methods approach. Initially, systematic literature review was conducted to identify the six dimensions of the construct. In case of item generation, through 15 qualitative interviews, the authors matched the literature review with the statements of the respondents and finalised a total of 40 items. Later, the Q-sort procedure was conducted to refine the results. Furthermore, an Exploratory Factor Analysis was completed to determine the factor structure of the green competencies construct, which is comprised of six dimensions and 29 items. After finalising the scale, the PLS-SEM statistical analysis tool was tested to prove the construct's precision, which reasserted its reliability and validity. To test the nomological model, the mediating effect of green competencies on green training and environmental performance was examined. In addition, the direct relationship of green training on environmental performance and moderated mediation of environmental commitment between green competencies and environmental performance were examined. The relationship between the constructs expect the moderated relationship of environmental commitment was significant. The theoretical and practical implications of the findings are also discussed followed by the future scope and limitations.

Keywords: green competencies; green training; environmental performance; environmental commitment; green human resource management; scale development

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List of Publications

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2. Cabral, C. & Dhar, R.L. (in press). "Ecotourism research in India: from an integrative literature review to a future research framework". Journal of Ecotourism. 1–27. doi:10.1080/14724049.2019.1625359 (Scopus & Thomas Reuters, ABDC: B).

3. Cabral, C., & Dhar, R.L., (in press). Skill Development in India: From Systematic Literature Review to Future Research Framework. Benchmarking: an International Journal. DOI: https://doi.org/10.1108/BIJ-07-2018-0211 (ESCI, ABDC: B).

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International Conferences

1. Cabral. C. (2019). "Green Training and Employees' Service Quality: Mediating Role of Green Competencies", 50th Annual TTRA International Conference, Melbourne, Australia.

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4. Cabral, C. & Dhar, R. L. (2016). "Ecotourism in Kerala", International Conference on Strategies in Volatile and Uncertain Environment for Emerging Markets, Indian Institute of Technology Roorkee, Roorkee, Uttarakhand, India.

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List of Abbreviations

AVE	Average Variance Extracted
CFA	Confirmatory Factor Analysis
EC	Environmental Commitment
EFA	Exploratory Factor Analysis
EM	Environmental Management
GA	Green Abilities/Capabilities
GB	Green Behaviour
GC	Green Competencies
GDP	Gross Domestic Product
GHRM	Green Human Resource Management
GI	Green Attitude
GK	Green Knowledge
GS	Green Skills
GSCM	Green Supply Chain Management
GT	Green Training
GW	Green Awareness
HTMT	Heterotrait-Monotrait
IATO	Indian Association of Tour Operators
ISO	International Standard Organisation
KSAO	Knowledge, Skills Abilities and Others
NRBV	Natural Resource-Based View
PLS-SEM	Partial Least Square – Structural Equation Modelling
R&D	Research and Development
RBV	Resource-Based View
RTI	Right to Information
SPSS	Statistical Package for Social Sciences
UNCED	United Nations Conference on Environment and Development
UNWTO	United Nations World Tourism Organisation
USD	United States of America – Dollar
WTTC	World Travel and Tourism Council

CHAPTER 1
INTRODUCTION

1.1 Context of the Study

Sustainable development has gained relevance in the academic world and in practice during the 21st century owing to the Brundtland report (OECD, 2007). Recently, the concept has gained importance due to treaties such as the Paris Climate Agreement to combat climate change (UNFCCC, 2015). In this century, business organisations play a pivotal role in achieving sustainable development goals (SDGs), which include the aim to eradicate poverty, mitigate inequality and injustice, and stop climate change by the year 2030 (Business & Sustainable Development Commision, 2017). Sustainable development is vital to business organisations because it integrates the three objectives of sustainability, i.e., environmental, social and economic dimensions (triple bottom line) (Elkington, 1998), provides considerable shareholder engagement (Dyllick and Hockerts, 2002), and contemplates future generations in relation to the current generation (Bansal and DesJardine, 2014). With regard to the role of sustainable development in organisations, environmental aspects have been incorporated in the field of management, and environmental management (EM) has emerged as a discipline. EM has immense potential to solve environmental problems (Sauvé et al., 2016) caused by rapid industrial growth that causes degradation of the natural environment as well as human physical and mental health issues. The prime factor behind these challenges is business organisations. In this scenario, organisations are forced to adopt environmental practices in their day-to-day operations as a result of pressure from their stakeholders (Sarkis et al., 2010). Moreover, business organisations need to integrate sustainability into their operations to achieve continuous progress (Bansal, 2005). For these reasons, sustainable development has been integrated into the management discipline. It comprises of functions such as protecting biodiversity, conserving resources and preserving culture (Kirk, 1995), and facilitates green productivity (Tuttle and Heap, 2008).

According to The Centre for International Development, the report of Harvard University states that India tops the chart as the fastest growing economy in the world with a growth rate of 7.9%. The rankings were based on the criteria specified in the Complexity Opportunity Index (COI), which is an index that assess the ease of replacing the knowhow and diversifying the existing capabilities into products (Business Line, 2018). The drastic economic growth in the last decade has led to the reduction of poverty in India, which in turn

has resulted in the degradation of natural environment mainly owing to the overuse of resources that ultimately led to the scarcity of resources (The World Bank, 2011). Moreover, India is also the fourth largest greenhouse gas emitter in the world. It is reflected in the Environmental Performance Index, where out of 180 nations, the ranking of India is 177; this index encompasses variables such as environmental health and ecosystem vitality (Environmental Performance Index, 2018). The country faces several environmental challenges such as pollution of natural environment, degradation of fragile ecosystem, biodiversity and natural resources, absence of environment governance and perils owing to climate change (The World Bank, 2011). According to the World Health Organisation (WHO) report, 14 cities in India were ranked as the most polluted cities among the top 20 polluted cities in the world, wherein Kanpur holds the numero uno position with high level of p.m. 2.5 in the year 2016 (BBC News, 2018). It is important for the organisations to create a culture with learning in accordance to such dynamic changes (Singh, 2009, 2010). In this regard, it implies the responsibility of organisations to engage in business activities that has least carbon footprint and to initiate steps for conserving the natural resources, biodiversity, and ecosystem. Hence, it is inevitable for the organisations to incorporate environmental management as part of their business operation, which consequently helps in achieving financial performance (Klassen and McLaughlin, 1996). Similarly, it is significant in emerging nation like India to adopt environmental management practices to reduce degradation of natural environment and to achieve sustainable development (Gupta and Singh, 2017; Tara et al., 2019).

An organisation can acquire numerous benefits from the implementation of environmental management, especially from the viewpoint of competitive advantage and environmental conservation (Rosen, 2001). This implementation encourages a transformation in the organisation that focuses on sustainable development and integrates business along with protection of the environment. Moreover, environmental management is not only related to the integration of environmental concern within an organisation, it is also associated with opportunities in the organisation to convert the existing production processes and products so that they become environmentally friendly (Berry and Rondinelli, 1998). Barbeiri (2008) defined environmental management as “environmental issues that should be taken into account when organisations make decisions about strategic planning activities, production, marketing, and R&D among others” (Jabbour, Santos, and Nagano, 2010, p. 1051). Conventionally, the aforementioned activities have been undertaken by different departments

such as marketing and operations (Mittal and Sangwan, 2014). But recently, these activities have also been expanded to the Department of Human Resources because of their importance in accomplishing the desired goals of environmental management (Jackson, Renwick, Jabbour, and Muller-Camen, 2011). Human resource management acts as a vital enabler in an organisation to improve its environmental performance (Gupta et al., 2013; Sekhar et al., 2016). Similarly, Perron, Cote, and Duffy (2006) highlighted the need for integrating the technical aspects of environmental management with other environmental management practices of Human Resources Management and named it Green Human Resource Management. The functions of Green Human Resource Management are comprised of green recruitment and selection, green training, green performance management, a green pay and reward system, and green employee involvement (Tang et al., 2017). Furthermore, green competencies are considered an essential Green Human Resource Management requirement.

1.2 Statement of the problem

The term 'green' means aspects related to nature and natural environment (Gupta and Singh, 2017; Opatha and Arulrajah, 2014). Across the globe, the service sector like tourism industry impacts the natural environment (Mieczkowski, 1995). In fact, the consumption of fossil fuels in tourism industry registers for 8% of the aggregate emissions as compared to greenhouse emissions due to manmade activities (Lenzen et al., 2015). Moreover, energy consumption of tourism industry causes adverse impact on air quality index, environmental degradation and negative tourist experience on the destination (Bashir and Goswami, 2016; Gössling, 2002). Hence, the tourism industry causes several environmental consequences in the destinations.

In this regard, the research focuses on organisations in tourism industry and investigate how sustainability can be achieved in such organisation through developing GHRM requirement such as green competencies. It is vital for the organisation to ensure sustainability by considering the human element in conservation and preservation of natural environment, mitigating environmental pollution and creating natural locations (Opatha and Arulrajah, 2014).

Green human resource management is a significant practice in an organisation to achieve environmental performance (Paillé et al., 2014). The practices such as green recruitment, green selection, green training, green employee retention and green compensation aid in greening the organisation to achieve sustainability. In addition to such practices, green competencies is vital element to achieve environmental goals and objectives of the

organisation. Examination into green competencies especially its theoretical definition and measurement scale are uncommon in the literature which indicates the research gap and investigate such issues in the literature.

The study extends the state-of-the-art literature by conceptualising and developing measurement scale for green competencies, and testing the conceptual model that connects the green human resource management variables. The investigation of constructs in GHRM context is a vital measure for comprehending the ways in which green competencies and GHRM variable - green training can be a factor in improving environmental performance of the organisation. Applying natural-resource-based-view as a theory contributes to existing theory and practice and such examination build onto explore the benefits toward organisational change, specifically it relates to the adverse impacts on environmental degradation.

1.3 Aim and Scope

The aim of the study is to conceptualisation, construct development and measurement validation of the green competencies. Based on the research gaps, research objectives and research questions were formulated.

1.3.1 Research Gaps

The conceptual understanding of green competencies has previously been elaborated in subject areas such as environmental psychology and environmental education. Corral-Verdugo, Frias-Armenta, and Corral-Verdugo (1996) stated that green competencies are one of the significant determinants of environmental critical thinking and an indicator of conservation behaviour. Corral-Verdugo (2002) introduced, specified, and empirically tested the green competency model and proposed that the construct involves dimensions such as green perception values, motives, and beliefs for meeting environmental conservation. In the same perspective, Roczen, Kaiser, Bogner, and Wilson (2014) proposed a dual prototypical alternative idea related to green competencies. They described that green competencies are comprised of skills, personal motives, cultural beliefs, and environmental perception and variables such as green behaviour, green knowledge, and green attitude. The study proposed a green competencies model, which acts as a guide for an individual to propagate ecological engagements.

The management literature search uncovered a number of papers related to green competencies from the viewpoint of green skills, i.e., specifically in the vocational context (Bozkurt and Stowell, 2016; McCoy et al., 2012a; McGrath and Powell, 2016). The literature states that there is ambiguity in the concept of green competencies, and furthermore, there is

a lack of empirical study examining construct development and measurement validation (Dlimbetova et al., 2015). To date, no effort has been made to formally establish a measurement scale for green competencies, which creates ambivalence and ambiguity around the concept.

There is lack of understanding exists regarding green competencies' antecedents or outcomes. The literature suggests that green training as an antecedent and environmental performance as consequent variable for green training. Though green training is highly significant (Daily and Huang, 2001; Renwick et al., 2013), very few studies have been conducted in this area of research (Wagner, 2011). The existing literature on green training elaborates the variable as a HR practice to facilitate sustainable procurement (Aragão and Jabbour, 2017), support eco-innovation (Brío and Junquera, 2003; Neto et al., 2014), encourage environmental management practices (Teixeira et al., 2012), nurture proactive environmental strategies (Fernández et al., 2003; Vidal-Salazar et al., 2012), and establish sustainable intellectual capital (López-Gamero et al., 2011). To the best of our knowledge, no study has scrutinized the ways of developing green competencies through green training for achieving better environmental performance in the organisation. Only few studies have examined the relationship of green training with environmental performance, these studies were conducted on manufacturing firms in countries such as United States of America (Daily et al., 2007), Mexico (Daily et al., 2012), and Palestine (Masri and Jaaron, 2017). Furthermore, there is lack of study related to the service sector and the non-developed countries with focus on the theme of green training; hence, this study addresses the aforementioned research gaps (Jabbour, 2013).

1.3.2 Research Objectives

Based on the research gaps, the first objective of the study involves construct development of green competencies i.e. identification of its nature and the dimensions of the construct. The second objective is to develop a scale for measuring green competencies in the context of travel and tourism industry by generation of items, evaluating the dimensionality, psychometric properties, and establish convergent and discriminant validity of the green competencies scale. The last objective is to inspect the scale's nomological validity and predictive validity by measuring its relationship with the antecedent variable, i.e., green training. To determine the nomological validity, the research objectives were further segregated into following sub-objectives (a) to find the effect of green Training on environmental performance, (b) To find the mediating relationship of green competencies between green training and environmental performance, (c) to examine the moderating

impact of environmental commitment on green competencies and environmental performance.

1.3.3 Research Questions

In accordance with aforementioned objectives, the study develops comprehensive research question and as follows:

1.3.3.1 Construct development

1. What is the concept - green competencies?
2. What are the dimensions of green competencies?

1.3.3.2 Scale development

3. What are the items that can capture the construct – green competencies?
4. What is the dimensionality and psychometric properties of the scale?
5. Whether the scale has convergent and discriminant validity?

1.3.3.3 Testing nomological model

6. How does green training have an impact on environmental performance?
7. How green competencies have an influence on the relationship between green training and environmental performance?
8. Whether environmental commitment moderates the relationship between environmental management maturity and environmental performance?

1.3.4 Scope of the study

This study collected quantitative and qualitative data from the Indian tourism industry to address a research gap, in particular, how tour operators' deal with ecotourism initiatives in the Indian state of Kerala.

The thesis is narrowed down to construct development and measurement validation of green competencies in the perspective of management sciences. The study is focused only on green human resource management practice – green training and not considering other practices such as green recruitment and selection, green performance management and green employee

involvement. The study considers the theory of natural resource-based view and considers human capital and ignores the physical capital and social capital delineated in the theory. Such limitations are put forward because the examination of the domain is complex and vast.

1.4 Purpose of the study

The organisations are facing environmental challenges due to lack of green competencies to generate environmental performance (Fergusson and Langford, 2006). Such organisations desire implementation of environmental management systems that integrates in green human resource management practices to achieve competitive advantage (Mishra, 2017). The means to implement such competencies is to implement the green human resource practices such as green recruitment, green selection, green training and so on (Yong and Mohd-Yusoff, 2016). Muster and Schrader (2016) have delineated significance of green competencies achieved through green human resource management to facilitate environmental-friendly behaviour. However, the literature on GHRM has not investigated the construct, its measurement scale (Dlimbetova et al., 2016) and how they affect environmental performance, because the studies have not clearly identified its GHRM perspective. It is difficult to investigate the green competencies in void without its foundations in green human resource management because it is regarded as a key requirement to ensure corporate environmental objectives (Opatha and Arulrajah, 2014). This is the reason that conceptualisation and construct development of green competencies in framed in the context of GHRM instead of relating the construct with social capital and physical capital.

1.5 Rationale of the study

1.5.1 Theoretical Significance

The literature discusses about the lack of conceptualisation and established scale to measure the green competencies in the organisation. To address ambiguity about the concept and rectify the limitation on the existing scale ensured motivation for construct development and measurement validation, which covers the dimensions such as green knowledge, green skills, green awareness, green attitude, green behaviour and green abilities. Hence, multi-dimensional green competencies scale was developed in this thesis. To test the nomological validity of the constructs, green competencies was considered as mediating variable between the constructs green training and environmental performance. As of now, few studies have

delineated its relationship in service sector especially tourism industry. Hence, this study provides insights about the empirical relationship that exists between the constructs.

The organisation needs to invest in training and development of human force to attain the core objective of environmental management i.e. environmental performance. Primarily, the present study focuses on employees, as they are the one who formulate strategic plans for achieving environmental performance in the organisation. Besides, this study would also try to understand not only about green training's direct impact on environmental performance but also the indirect effect through green competencies to attain environmental performance in the organisation. In addition, the moderating effect of environmental commitment between green competencies and environmental performance were also be examined. Initially, the present study adds to current literature on issues of Green Human Resource Management (GHRM) and Environmental Management (EM).

1.5.2 Practical Significance

On the practical level, the results of the study would provide insights about green human practices in the organisation. Specifically, the study is focused on tour operators in tourism industry. The managers can implement green human resource practices such as green training to develop their employees' green competencies for achieving environmental performance. The GC scale developed in this study can be used by the managers to examine whether their employees have green competencies. In case of deficiency, through green training such issues can be rectified. The advantage of such fostering green competencies among employees are that such initiatives results in providing environmental performance in an organisation.

1.6 Overview of the Thesis

The remaining portion of the thesis after Chapter 1: Introduction is structured in the following manner. Theoretical framework and hypothesis formulation were discussed in the Chapter 2. This chapter mentions about the application the theoretical foundation that is used establish the relationship between the constructs. Resource-based view and Natural resource-based view were applied in this regard. Besides, the literature discussion about green human resource management and description about the constructs such as green training, environmental performance, and environmental commitment were mentioned in this chapter.

Chapter 3 delineates about the research methodology applied in the study which includes epistemology, ontology and theory. The reason for using the mixed method as research

orientation were discussed in this chapter. Further in detail, rationale of employing each research method for objectives were discussed i.e. why systematic literature review is used to discuss about the conceptualisation of green competencies and what are the construct development and measurement validation strategies used in this study? To specific, the reason for data collection as well as data analysis methods were described.

Chapter 4 elaborates about the conceptualisation of green competencies by employing the systematic literature review method. This section follows the step discussed by Tranfield et al. (2003) and starts with formulation of research question, selecting research articles based on structured keywords, descriptive analysis and ends with thematic analysis.

Chapter 5 highlights the construct development and measurement validation procedures by following the studies of Churchill (1979) and Hinkin (1995). Based on the deductive method, this chapter constitutes of four stages of scale development a) item generation b) item sorting c) item purification and d) item validation. This chapter discusses about items that are required to capture green competencies, dimensionality, psychometric properties and convergent and discriminant validity of the constructs. The mediating effect of green competencies between green training and environmental performance was examined. In addition, the direct effect of green training on environmental performance and moderating effect of environmental commitment between green competencies and environmental performance were verified.

Chapter 6 outlines the results and findings observed in the study. By applying the statistical method, nomological validity between the constructs were discussed in this section. This chapter emphasise that green competencies is a multi-dimensional hierarchical construct with dimensions such as green knowledge, green skills, green abilities, green attitudes, green behaviour and green awareness.

Chapter 7 focuses on theoretical and practical implication that has been inferred in this study. The scope for future research and conclusion of the doctoral thesis are described in this section.

Chapter Summary

The first chapter of this thesis provided context of the study, statement of the problem and research aim and scope. In research aim, the research questions, research objectives and

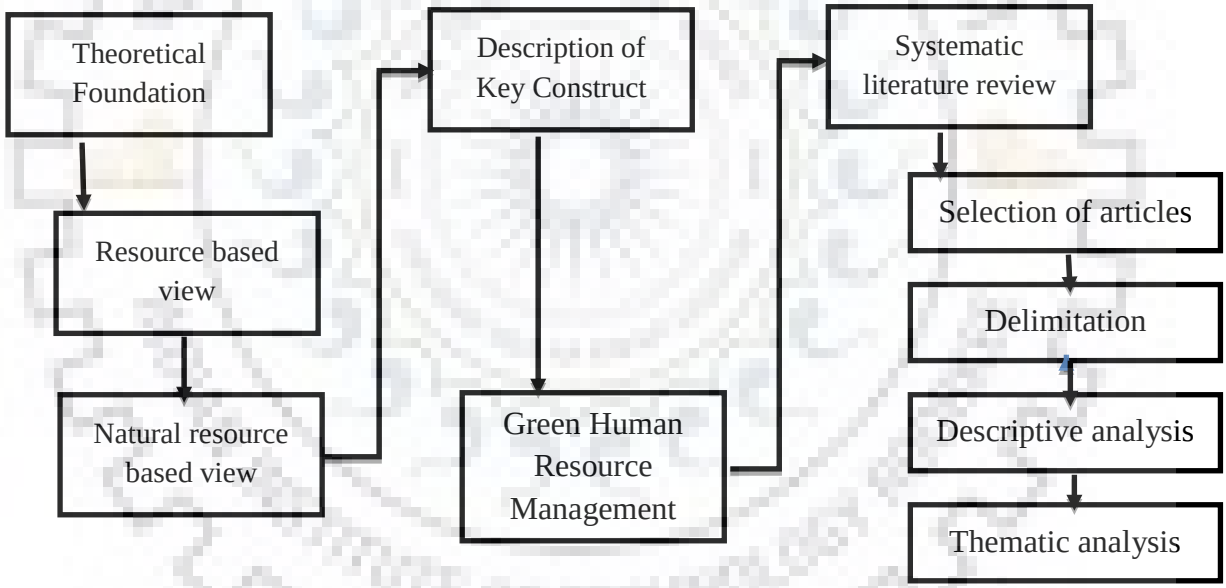
scope of the study were elaborated. A brief description about the purpose, rationale and overview of the thesis structure is included in this chapter.

CHAPTER 2
THEORETICAL FRAMEWORK AND SYSTEMATIC LITERTAURE REVIEW

2.1 Chapter Overview

This chapter provides theoretical foundation of this thesis wherein the theories used in the study such as resource-based view and natural-resource based view were elaborated. The description about the key constructs used in the study such as green human resource management, green training, environmental performance and environmental commitment. Further, to achieve the first two research questions which is to conceptualise the green competencies, systematic literature review is applied.

Figure 1: Outline of the Chapter Structure



2.1 Theoretical Foundation

2.1.1 Resource-Based View

Major share of studies in green human resource management were based on Resource-Based View (RBV) (Ehnert, 2009). The theory has explained that human resources play a crucial

role for business organisations to attain sustainable competitive advantage as well as to earn profit than their rivals. Human resources in the organisation are considered to be rare, valuable, non-imitable and unsubstitutable (Barney, 1991). An organisation has tangible as well as intangible basic resources which is combined together to form higher-order resources. Collaborating the resources enable the organisation to fulfil its goals and objectives. Such higher-order measures adds competitive advantage to the firm and it can be termed as competencies (Evans, Joas, Sundback, & Theobald, 2006). The competencies in the organisation is viewed in three perspectives viz. physical capital, human capital as well as social capital (Youndt, Subramaniam, & Snell, 2004). This study expands the literature from the perspective of human capital which encompasses of employees' knowledge, skills, abilities and others (KSAOs).

2.1.2 Natural Resource-Based view

Hart (1995) extended the resource-based view by incorporating natural environment for developing competitive advantage of the firm. The theory studies the relationship between the organisation and natural environment based on the lines of resource-based view. The increase in stakeholder pressure for the pro-environmental activities has compelled the organisation to transform its existing resources and capabilities for reducing the environmental degradation and transforming the associated threats into competitive advantage of the firms (Hart and Dowell, 2011). Providing learning opportunities for the human resources are important to overcome challenges faced due to environmental degradation (Verona, 1999). Besides, the literature argues that human capital are most important resource to converge the physical capital and social capital in the organisation. Such steps create enhancement of business operations and formulate strategies with its tangible and intangible resources (Collis and Montgomery, 2009).Three important strategic capabilities discussed by the theory involves pollution prevention, product stewardship, and sustainable development. Pollution prevention means avoiding the wastage of resources as well as reducing emissions by substituting the 'end of the pipe' solutions with cleaner technologies. Product stewardship refers to integration of product life cycle or value chain system for product or process development (Pacoy, 2010). Finally, sustainable development means developing strategies that reduce not only environmental degradation but also considers social concerns and enhances economic benefits (Hart, 1995).

The study employs the NRBV (Hart, 1995) to explain the theoretical orientation of GC. The theory postulates the interrelationship between variables such as firm resources,

organisational capabilities and competitive advantage. To achieve competitive advantage, instead of examining its competitive environment, the organisation can search such capabilities within its environment (Hart and Dowell, 2011). NRBV is an extension of the resource-based view of the firm (Barney, 1991), which outlines how tangible and intangible resources can be combined and integrated to achieve better organisational performance. Organisations that engage in eco-friendly practices reduce their carbon footprint and increase energy efficiency. Hence, a firm's resources and organisational capabilities are required to achieve competitive advantage.

In this context, the present study employs NRBV to describe requirements for GHRM – green competencies and their dimensions. Previous literature has considered GHRM a type of competitive advantage in an organisation. By assimilating green competencies among employees through GHRM functions such as green recruitment, green selection and green training, the organisation achieves a competitive advantage compared to its rivals.

2.1.3 Green Human Resource Management

Green human resource management can be conceptualised as "alignment of HRM practice with environmental management practices wherein human resources play a strategic role while deciding upon organisations' environmental policies and practices" (Singh and El-Kassar, 2019, p. 1264). The three core functions of GHRM involves developing green abilities, motivating employees in environmental practices and providing opportunities for environmental management (Renwick et al., 2013; Sohal and Venkatesan, 2016; Venkatesan and Rohatgi, 2018). GHRM commences with attracting the right talent through recruitment and selection, developing the employees through green training, nurturing adequate green knowledge and leadership skills for environmental conservation. The employees can be motivated through green performance management and appraisal system and aligning reward management systems with environmental objectives. Green opportunities in the organisation can be provided through green involvement practices such as employees empowerment and engagement, and organisation culture and citizenship behaviour for environmental management (Jackson et al., 2011; Renwick et al., 2013). The literature on GHRM has discussed its relationship to achieve environmental performance (Guerci et al., 2016; Masri and Jaaron, 2017; Paillé et al., 2014), interrelationship between green supply chain management (Jabbour & De Sousa Jabbour, 2016; Jabbour, Mauricio, & Jabbour, 2017; Nejati, Rabiei, & Jabbour, 2017; Teixeira, Jabbour, de Sousa Jabbour, Latan, & de Oliveira, 2016), organisational development (Mishra, 2017). Tang et al. (2017) delineated that GHRM comprises of five dimensions viz. green training, green recruitment and selection, green

involvement, green performance management as well as green pay and reward which has been empirically validated.

Stakeholder pressure has forced the organisations to embrace environmental sustainability in their business activities which results in need for enhancing the state-of-the-art in GHRM. The study delineates the need to improve the future studies on GHRM including green training (Jackson et al., 2011).

2.2 Conceptualisation of Green Competencies Scale

As per Torraco's (2005) guidelines, this study integrated the various themes in selected articles and formulated a novel research framework while designing a new perspective on the concept. The procedure, adopted from Junior and Filho (2012), states that the initial step is to search relevant articles from the databases for a systematic literature review. The second step is to develop a categorisation framework to classify the articles in a logical manner. The third step includes categorising the relevant articles as per the framework and assigning a suitable code. The fourth step constitutes conducting descriptive analysis and answering research questions. In the final step, the authors highlight implications for academicians and practitioners. The technique was used to identify patterns in the selected studies through coding, development of theme and refining the themes (Braun & Clarke, 2006). The studies such as Cabral and Dhar (2019c, 2019a).

2.2.1 Content analysis

Content analysis is used in this study for categorising the articles. Content analysis refers to "research method for the subjective interpretation of the context of text data through the systematic classification process of coding and identifying themes or patterns" (Hsieh and Shannon, 2005, p. 1278). Content analysis is the technique that helps to identify the patterns and trends in a research article (Stemler, 2001). The categorisation of the articles helps to ensure clarity and identifies the various patterns associated with the study. The major themes of the articles involve a) frequency distribution of articles published on GC each year, b) frequency distribution of the articles published in journals, c) categorisation based on the origin of the study, i.e., the affiliation of the authors, d) description of GC in each study, e) the research methodologies involved, f) the economic sector considered as the sample of study, g) dimension of GC, and h) dimension of sustainable development. To ensure the reliability of the study, we conducted the categorisation of articles independently. Later, the differences evolving in the areas such as article selection, its objective, research methodology, key findings, and future recommendations were sorted out through discussion.

2.4 Selection of prominent articles

Articles related to GC were searched with the help of structured keywords. Terms such as abilities, attributes, capabilities, competencies, and skills were used interchangeably with words related to sustainability such as sustainable, green, environment/al, ecology/ical, and sustainable development. The search process in databases was conducted in two phases. The first phase involved searching databases such as Web of Science (WoS) and Scopus (Chadegani et al., 2013). In the second phase, databases of major publishers such as Elsevier, Wiley, Emerald, ProQuest, Sage, Springer, and Taylor & Francis were examined. Duplicate articles in both databases were ignored. The authors checked the title and abstract to ensure inclusion or exclusion of the articles. Backward reference searching was conducted to identify works related to the concerned area. The process helped understand development of the topic. Searching continued until identifying articles reached the saturation point. Lastly, the aggregate number of articles considered for the current systematic literature was 40.

2.5 Inclusion and exclusion criteria

The inclusion and exclusion criteria are the following:

1. The study considered subject areas related to management, business, accounting, economics, education, social science, and psychology and ignored subject areas such as engineering, computer science and material science.
2. During article search, languages such as French, Chinese and German were identified. Such languages were ignored, and the search was confined to English.
3. Though the authors were aware of the existence of other forms of documents such as conference proceedings, book chapters and research reports, this study restricted the search to academic papers. Such documents are peer-reviewed, ensuring high quality (Wang and Waltman, 2016). However, book chapters such as Fraijo-Sing et al. (2014, 2010) were included for analysis.
4. Some studies like Luthra et al. (2017) have related GC to GSCM and asserted that GC is an important sustainable supplier selection criteria. However, there is no conceptual elaboration about GC, and these studies were excluded.
5. The resource-based-view, initially proposed by Barney (1991) and later elaborated by Youndt et al. (2004), explained that internal resources in an organisation comprise physical capital, human capital and social capital. In this study, capabilities associated with human capital, i.e., employees' knowledge, skills and abilities were considered. Studies such as Berchicci et al. (2012), Routroy and Kumar (2016) and Teeter and

Sandberg (2016) describe capabilities from the perspective of physical and social capital. Hence, those studies were ignored.

2.6 Classification framework

To achieve the descriptive results of the prominent articles, classification framework was formulated. Table 1 has described the classification framework. The origin of the study is considered as Classification 1. Classification 2 comprises the degree at which the concept is described in each study. Research methods employed in the study are indicated in Classification 3. Classification 4 contains economic sector mentioned in the study, whereas Classification 5 describes the dimensions of GC. The dimensions of sustainable development encompass economic, social, and environmental factors; and they were discussed in Classification 6. Finally, the outcomes of GC were explained in Classification 7.

Table 2: Classification framework for bibliometric analysis

Classification	Main theme	Sub themes
1	Origin of the study	Asia Africa Australia North America South America Europe
2	Focus of the concept	Entirely on the concept green competencies Green competencies and another/various factor/s Green competencies is not predominant in the analysis
3	Economic Sector	Agricultural and allied activities Industrial sector Service sector
4	Research Methods	Descriptive/Exploratory Experimental/Quasi-experimental Review Meta-analysis
5	Dimensions of	Green Knowledge (GK)

	Green Competencies	Green Skills (GS) Green Abilities/Capabilities (GA) Green Awareness (GW) Green Behaviour (GB) Green Attitude (GI)
6	Dimensions of Sustainability	Economic Social Environmental

2.7 Descriptive analysis

Table 3 indicates assigning the structural dimensions for each prominent article selected for the analysis.

Table 3: Classification of the analysed studies

Sl. No.	Study	Geographical context	Focus	Economic sectors	Research methods	Dimensions of GC	Dimensions of Sustainability
1.	Álvarez-García et al. (2015)	Spain; Europe	Green Competencies is not predominant in the analysis	Service sector	Review	Green knowledge; Green behaviour; Green attitude	Social; Environmental
2.	Bozkurt and Stowell (2016)	U.K; Europe	Entirely on the concept green competencies	Industrial Sector	Descriptive/Exploratory	Green skills; Green knowledge	Social; Environmental
3.	Brown (2013)	Australia	Entirely on the concept green competencies	Service Sector	Descriptive/Exploratory	Green skills; Green awareness	Economic; Social; Environmental
4.	Brown (2015)	Australia	Entirely on the concept green	Industrial Sector; Service	Descriptive/Exploratory	Green skills; Green knowledge; Green attitude; Green	Economic; Social; Environmental

			competencies	Sector		awareness	
5.	Cleverley (2014)	U.S.A; North America	Entirely on the concept green competencies		Descriptive/Exploratory	Green skills	Economic; Social; Environmental
6.	Consoli et al. (2016)	Spain; Europe	Entirely on the concept green competencies	Industrial Sector; Service Sector	Non experimental	Green skills	Economic; Social; Environmental
7.	Corral-Verdugo (2002)	Mexico; North America	Entirely on the concept green competencies	Agriculture and allied activities	Non experimental	Green knowledge; Green skills; Green abilities; Green behaviour; Green attitude	Social; Environmental
8.	Curry (1997)	U.K.; Europe	Entirely on the concept green competencies	Agriculture and allied sector	Descriptive/Exploratory	Green skills; Green attitudes	Economic; Social; Environmental
9.	Dibrell et al. (2015)	U.S.A; North America	Green Competencies	Industrial sector	Non experimental	Green knowledge; Green awareness; Green attitude	Economic; Social; Environment

			and another/various factor/s				
10.	Dlimbetova et al. (2015)	Kazakhstan; Asia	Entirely on the concept green competencies	Service sector	Non experimental	Green knowledge; Green skills; Green abilities; Green awareness; Green attitude	Economic; Social; Environmental
11.	Dlimbetova et al. (2016)	Kazakhstan; Asia	Entirely on the concept green competencies	Service sector	Non experimental	Green knowledge; Green skills; Green awareness; Green behaviour; Green attitude	Social; Environmental
12.	Esposto and Annakis (2016)	Australia	Green Competencies is not predominant in the analysis	Service sector	Descriptive/Explorator y	Green knowledge; Green skills	Economic; Social; Environment
13.	Evans and Stroud	U.K.; Europe	Green	Industrial sector	Descriptive/Explorator	Green knowledge; Green skills; Green	Economic; Environmental

	(2016)		Competencies is not predominant in the analysis		y	abilities; Green attitude	
14.	Fien and Winfree (2014)	Australia	Green Competencies is not predominant in the analysis	Industrial sector	Descriptive/Explorator y	Green knowledge; Green skills	Economic; Environmental
15.	Fraijo-Sing et al. (2010)	Mexico; North America	Entirely on the concept green competencies	Service sector	Non experimental	Green knowledge; Green skills; Green awareness; Green attitude; Green behaviour	
16.	Fraijo-Sing et al. (2014)	Mexico; North America	Entirely on the concept green competencies	Service sector	Non experimental	Green knowledge; Green skills; Green awareness; Green behaviour	Social; Environment
17.	Joachim et al. (2016)	Nigeria; Africa	Green Competencies is	Industrial sector	Non experimental	Green knowledge; Green skills	Economic; Environmental

			not predominant in the analysis				
18.	Mankad and Gardner (2016)	Australia	Green Competencies is not predominant in the analysis	Agriculture sector	Non experimental	Green knowledge; Green skills; Green awareness; Green behaviour; Green attitude	Economic; Social; Environmental
19.	Martinez-Del-Rio et al. (2012)	Spain; Europe	Green Competencies and another/various factor/s	Agriculture and allied activities	Non experimental	Green abilities	Economic; Environment
20.	McCoy et al. (2012)	U.S.A; North America	Green Competencies and another/various factor/s	Industrial sector	Descriptive/Exploratory	Green knowledge; Green skills; Green abilities	Social; Environmental

21.	McGrath and Powell (2016)	U.K; Europe	Entirely on the concept green competencies	Service sector	Descriptive/Exploratory	Green knowledge; Green skills; Green abilities; Green awareness	Economic; Social; Environmental
22.	Mohtar and Rajiani (2016)	Malaysia, Asia	Green Competencies and another/various factor/s	Industrial sector	Non experimental	Green knowledge; Green skills; Green abilities; Green awareness; Green behaviour	Economic; Environment
23.	Murga-Menoyo (2014)	Spain, Europe	Entirely on the concept green competencies	Service sector	Descriptive/Exploratory	Green knowledge; Green skills; Green awareness; Green attitude	Social; Environment
24.	Pedersen (1999)	USA; North America	Entirely on the concept green competencies	Service sector	Non experimental	Green knowledge; Green skills; Green awareness; Green attitude	Social; Environmental
25.	Rajiani et al. (2016)	Malaysia, Asia	Green Competencies	Industrial sector	Non experimental	Green skills; Green abilities; Green behaviour	Economic; Environment

			and another/various factor/s				
26.	Ramus (2002)	U.S.A; North America	Green Competencies is not predominant in the analysis	Industrial sector; Service sector	Non experimental	Green skills; Green behaviour	Economic; Environmental
27.	Reddy (2016)	India; Asia	Green Competencies is not predominant in the analysis	Industrial sector; Service sector	Non experimental	Green knowledge; Green skills; Green awareness	Economic; Social; Environmental
28.	Renwick et al. (2013)	U.K, Europe	Green Competencies and another/various factor/s		Review	Green knowledge; Green skills; Green abilities; Green awareness; Green behaviour	Economic; Environment

29.	Richards and Marrone (2014)	Australia	Green Competencies is not predominant in the analysis	Service sector	Non experimental	Green knowledge; Green skills; Green awareness	Economic; Social
30.	Sack (2012)	Australia	Entirely on the concept green competencies	Service sector	Descriptive/Exploratory	Green skills	Economic; Social; Environmental
31.	Scully-Russ (2013)	U.S.A, North America	Green Competencies is not predominant in the analysis	Industrial sector; Service sector	Descriptive/Exploratory	Green knowledge; Green skills	Economic; Social; Environment
32.	Stroud et al. (2014)	U.K; Europe	Entirely on the concept green competencies	Industrial sector	Descriptive/Exploratory	Green knowledge; Green skills; Green abilities; Green attitude	Economic; Social; Environmental
33.	Subramanian et al. (2016)	China, Asia	Entirely on the concept green	Industrial sector	Non experimental	Green knowledge; Green skills; Green awareness; Green	Economic; Environment

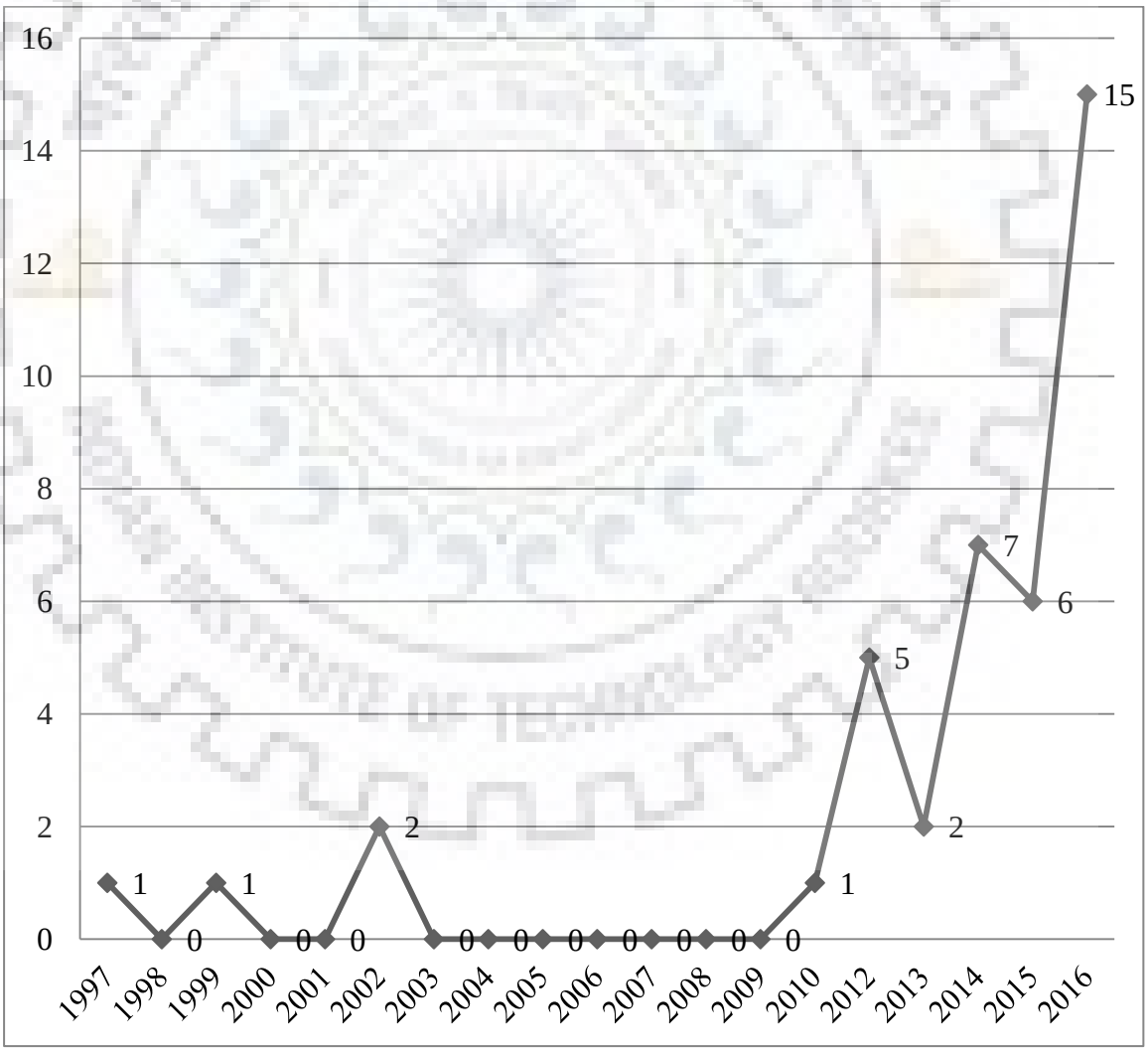
			competencies			behaviour; Green attitude	
34.	Thomas and Day (2014)	Australia	Entirely on the concept green competencies	Service sector	Non experimental	Green knowledge; Green skills; Green abilities; Green awareness; Green behaviour; Green attitude	Social; Environmental
35.	Thomas and Depasquale (2016)	Australia	Entirely on the concept green competencies	Service sector	Non experimental	Green knowledge; Green skills; Green abilities; Green behaviour; Green attitude	Economic; Social; Environmental
36.	Vega-Marcote et al. (2015)	Spain, Europe	Entirely on the concept green competencies	Service sector	Non experimental	Green knowledge; Green skills; Green behaviour; Green attitude	Social; Environment
37.	Wood and Muncaster(2012)	U.K, Europe	Green Competencies is not predominant	Industrial sector	Non experimental	Green skills	Economic; Social; Environment

			in the analysis				
38.	Wu et al. (2016)	Taiwan, Asia	Green Competencies and another/various factor/s	Service sector	Non experimental	Green knowledge; Green skills; Green abilities; Green awareness	Economic; Environment
39.	Yeung (2015)	Indonesia, Asia	Green Competencies is not predominant in the analysis	Service sector	Non experimental	Green knowledge; Green skills; Green attitude	Economic; Social; Environment
40.	Zareie and Navimipour (2016)	Iran, Asia	Green Competencies and another/various factor/s	Service sector	Non experimental	Green skills; Green awareness; Green behaviour; Green attitude	Social; Environment

2.7.1 Frequency distribution of research articles in terms of time period

The articles considered were published between 1992 and 2017, as the concept of sustainable development emerged from United Nations Conference on Environment and Development (UNCED), which was conducted at Rio De Janeiro in 1992 (UNCED, 1992). However, it has been observed that the first study was published in the year 1997, followed by a study each in 1999 and 2002. Thereafter, it took eight years to publish the next study on 2010. The year of distribution for the articles ranging from 1997 to 2016 is portrayed in the Figure 1. From 2012 to 2015, there was reasonable number of articles published and the fluctuation was observed in the publication of articles. It has been noticed that 15 studies out of 40 studies were published in the year 2016, which indicates the prominence of the topic among academicians.

Figure 1: Year-wise distribution of prominent studies considered in the analysis



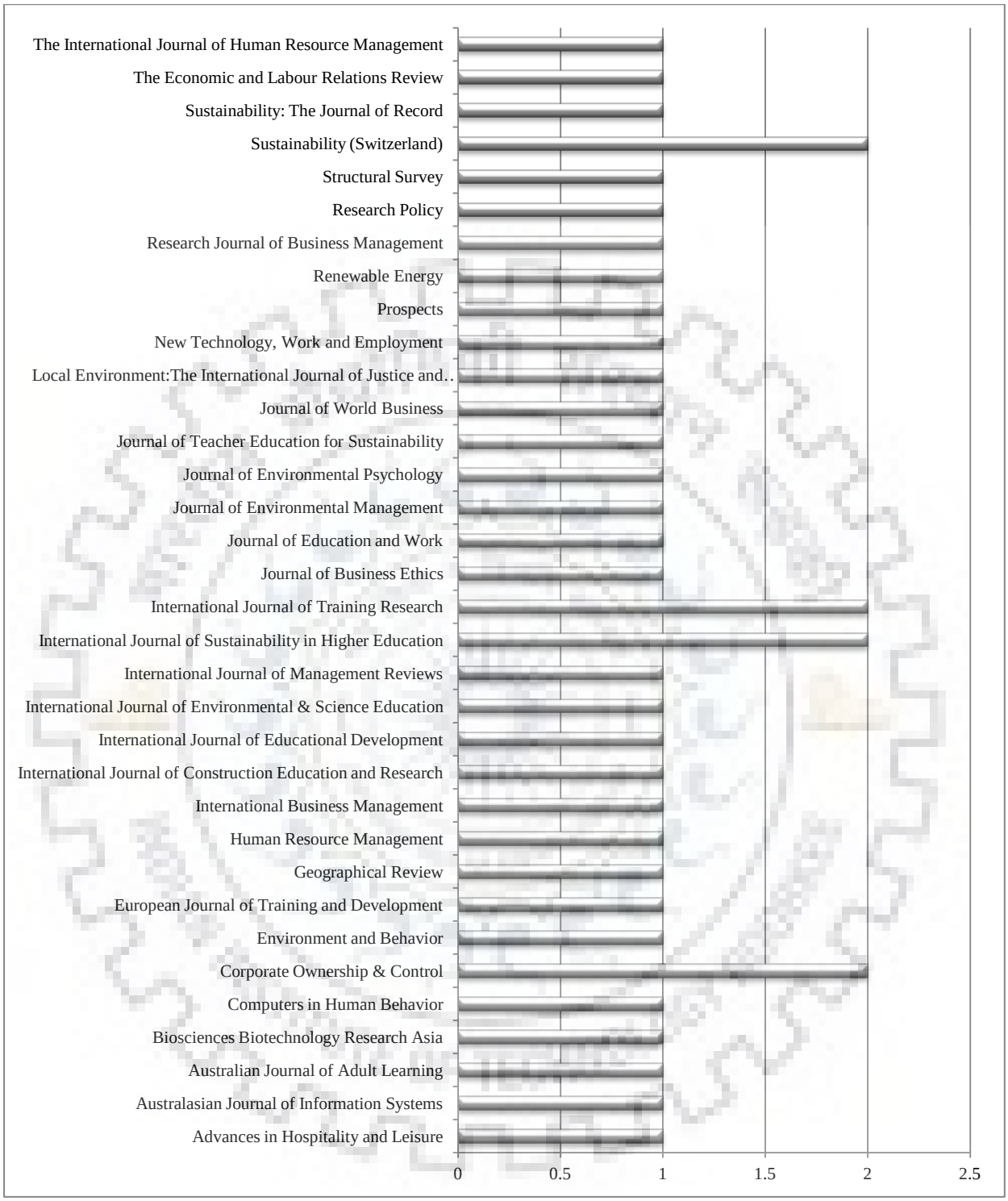
2.7.2 Frequency distribution of research articles in terms of journal

The journal-wise distribution of prominent studies was depicted in Figure 2. It is interesting to note that articles were equally distributed across the journals, the journals such as *Corporate Ownership & Control, International Journal of Sustainability in Higher Education, International Journal of Training Research*, and *Sustainability (Switzerland)* registered two articles each. Moreover, the journals considered in the study were from diverse fields, i.e., Management, Education, Economics (*Research Policy* and *The Economic and Labour Relations Review*), Psychology (*Environment and Behaviour,* and *Journal of Environmental Psychology*), Geography (*Geographical Review*), Information Technology (*Computers in Human Behavior, Australasian Journal of Information Systems and New Technology, Work and Employment*), Tourism & Hospitality (*Advances in Tourism and Hospitality*), Sustainable Development (*Local Environment: The International Journal of Justice and Sustainability (Switzerland)*), and Bioscience (*Bioscience Biotechnology Research Asia*).

Within Management, there exist 11 areas of research, which are Corporate Governance (*Corporate Ownership & Control*), General Management (*Research Journal of Business Management, International Business Management*, and *International Journal of Management Reviews*), Environmental Management (*Journal of Environmental Management*), Business Environment (*Journal of World Business*), Human Resource Management (*Human Resource Management, The International Journal of Human resource Management, European Journal of Training and Development*, and *International Journal of Training Research*), and Business Ethics (*Journal of Business Ethics*).

Similarly, wide range of research has been found in the field of education, i.e., adult and community education (*Australian Journal of Adult Learning*), education and economic systems (*Journal of Education and Work, International Journal of Educational Development*), environmental education (*International Journal of Environmental & Science Education*), teacher education (*Journal of Teacher Education for Sustainability*), sustainability and higher education (*Sustainability: The Journal of Record*), curriculum learning and assessment (*Prospects*), and construction education (*International Journal of Construction Education and Research*).

Figure 2: Journal-wise distribution of prominent studies considered for the analysis



2.7.3 Origin of the studies

Classification 1 is the origin of the study, i.e., affiliation of the first author and the structural dimensions in this classification consists of continents, viz., Asia, Africa, Australia, North America, South America, and Europe. It is inspired from the work of Amui et al. (2017) and Fahimnia et al. (2015). The map depicting the origin of the study is visualised in Figure 3. Using the website—mapchart.net, the geographical location of each nation that indicates the affiliation of first author were displayed. Majority of the studies originated from the European continent, i.e., 12 studies. In Europe, the studies were contributed by two countries—the U.K. (7 studies) followed by Spain (5 studies). The continents of Asia, Australia, and North America have equal number of studies (9 articles). In the case of Asia, the studies were diversified among different nations, two studies in Kazakhstan and Malaysia; one study each from India, China, Taiwan, Indonesia, and Iran. As far as North America is concerned, the studies were distributed between two countries, i.e., the U.S.A (6 studies) and Mexico (3 studies).

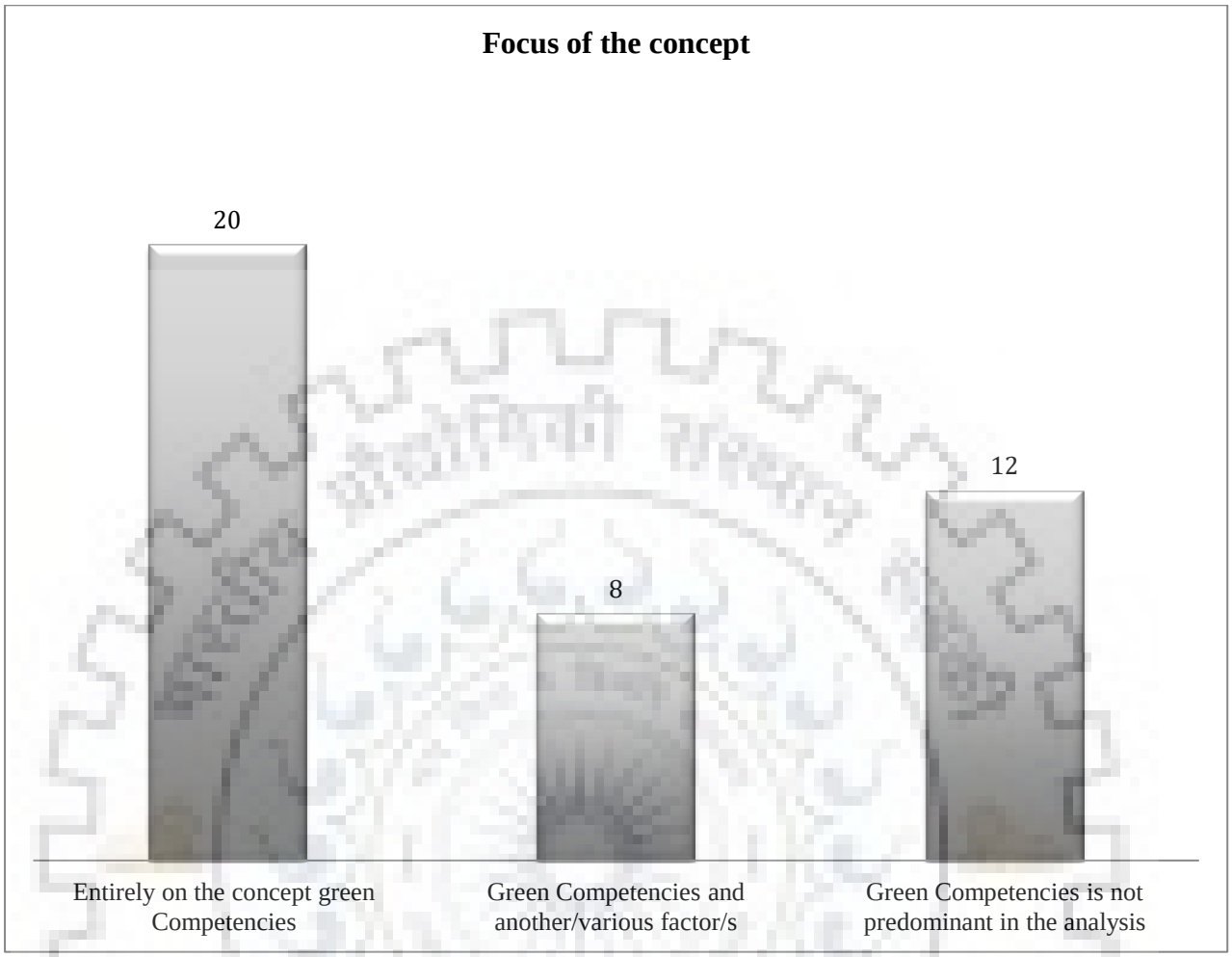
Figure 3: Frequency distribution indicating Origin of the study

In the continents of Africa, we noticed dormancy in the number of studies in this area, as only 1 study from Nigeria was present. In terms of African continent, the GC is of utmost important, as the continent accounts to world's largest natural resources, viz., minerals, petroleum products, agroforestry, etc. (Zoogah, 2017). GC is essential to conserve such scarce resources and imbibing GC in the organisation will help to achieve environmental performance. As far as South America is concerned, the continent is also known for its abundant natural resources such as petroleum, minerals (e.g. gold, silver etc.) because these resources have uplifted several South American economies from the poverty line. Therefore, imbibing GC is also of utmost important to create environmental behaviour necessary for the labour force, so that they engage in environmental conservation.

2.7.4 Focus of the concept

Classification 2 is the focus of the concept (Figure 4), which were inspired from the work of Jabbour (2013), and it includes the structural dimensions such as 'Entirely on the concept GC' , 'GC and another/various factor/s', and 'GC is not predominant in the analysis'. Albeit, the majority of studies has highlighted the sub-theme 'entirely on the concept GC' (20 studies), only few studies, e.g., Dlimbetova et al. (2016) have used the specific term GC. However, other studies have used different nomenclature to describe the same concept, for example, pro-environmental competency (Corral-Verdugo, 2002; Fraijo-Sing et al., 2010, 2014), green skills (Bozkurt and Stowell, 2016), environmental competence (Pedersen, 1999), etc. This is in line with the concern elaborated by Sauvé et al. (2016), as it is observed that academicians in the disciplines such as social science, management, etc., employ various terminologies related to environmental concepts in their domain. The different terminologies cause difficulty in understanding varied concepts even though they would be dealing with the same phenomenon. Besides, 12 studies provide least consideration to the concept GC. In this regard, the future studies need to conceptualise the concept GC by elaborating its sub constructs—whether reflective or formative construct—its antecedents and consequent variables.

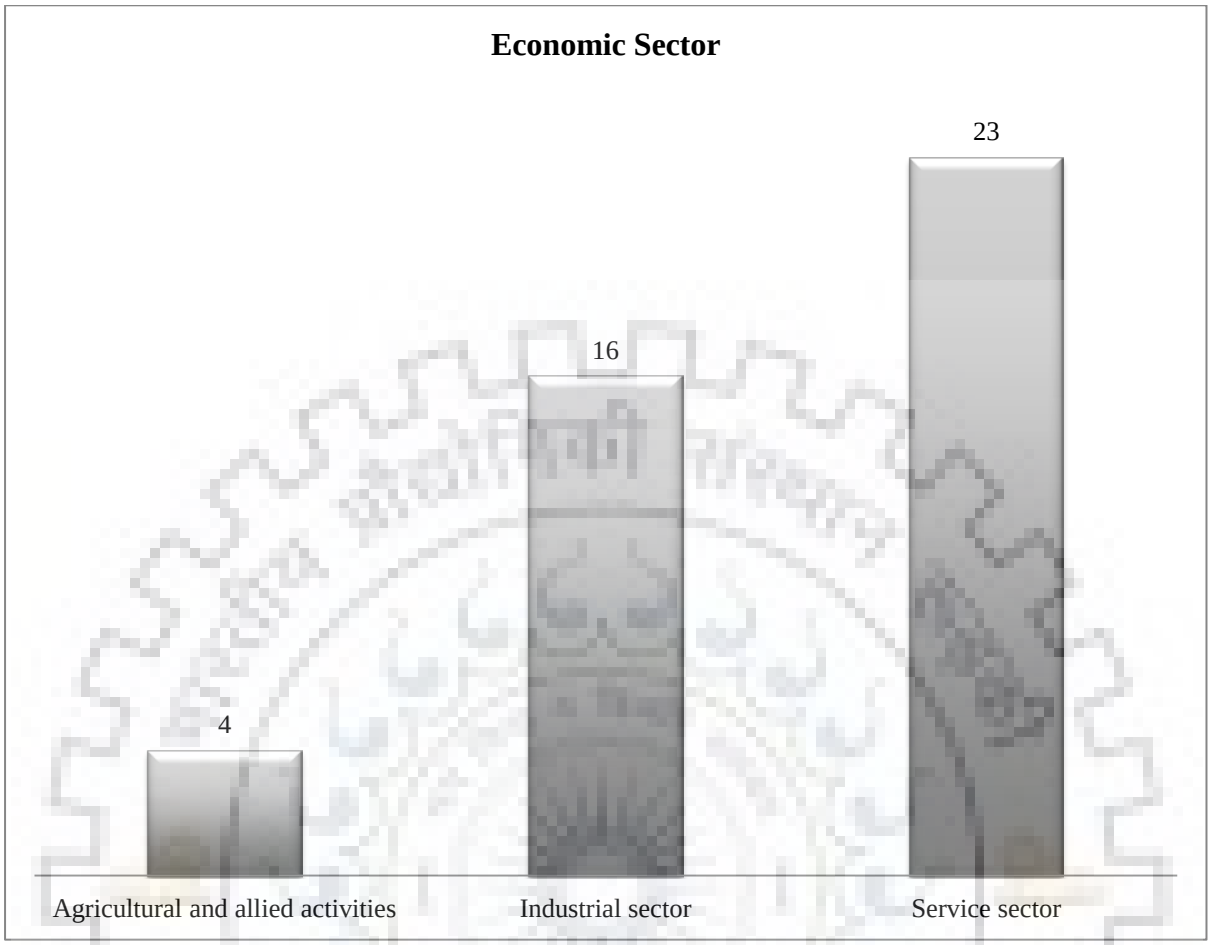
Figure 4: Frequency distribution indicating focus of the concept



2.7.5 Economic Sector

Classification 3 discusses about economic sector (figure 5), and it includes Primary Sector, Secondary Sector, and Tertiary Sector. This classification was chosen being motivated from the study of Amui et al. (2017) , who cited the work of Gunasekaran and Gallear (2012). This classification is incorporated because of the significance of the economic sector in sustainable development studies. The concept of sustainable development is viewed distinctively in economic sector such as manufacturing as well as service. Besides, this study incorporated agricultural sector as the third sub theme. The analysis indicates that majority of the studies are from the service sector (23 studies). The reason is that more studies are aligned to the subject area, education, and the subject being categorised under service sector, the number of studies under the structural dimension increases. Excluding this, the numero uno position for number of studies is under the industrial sector. Moreover, the agriculture and allied activities are least considered and therefore require special consideration.

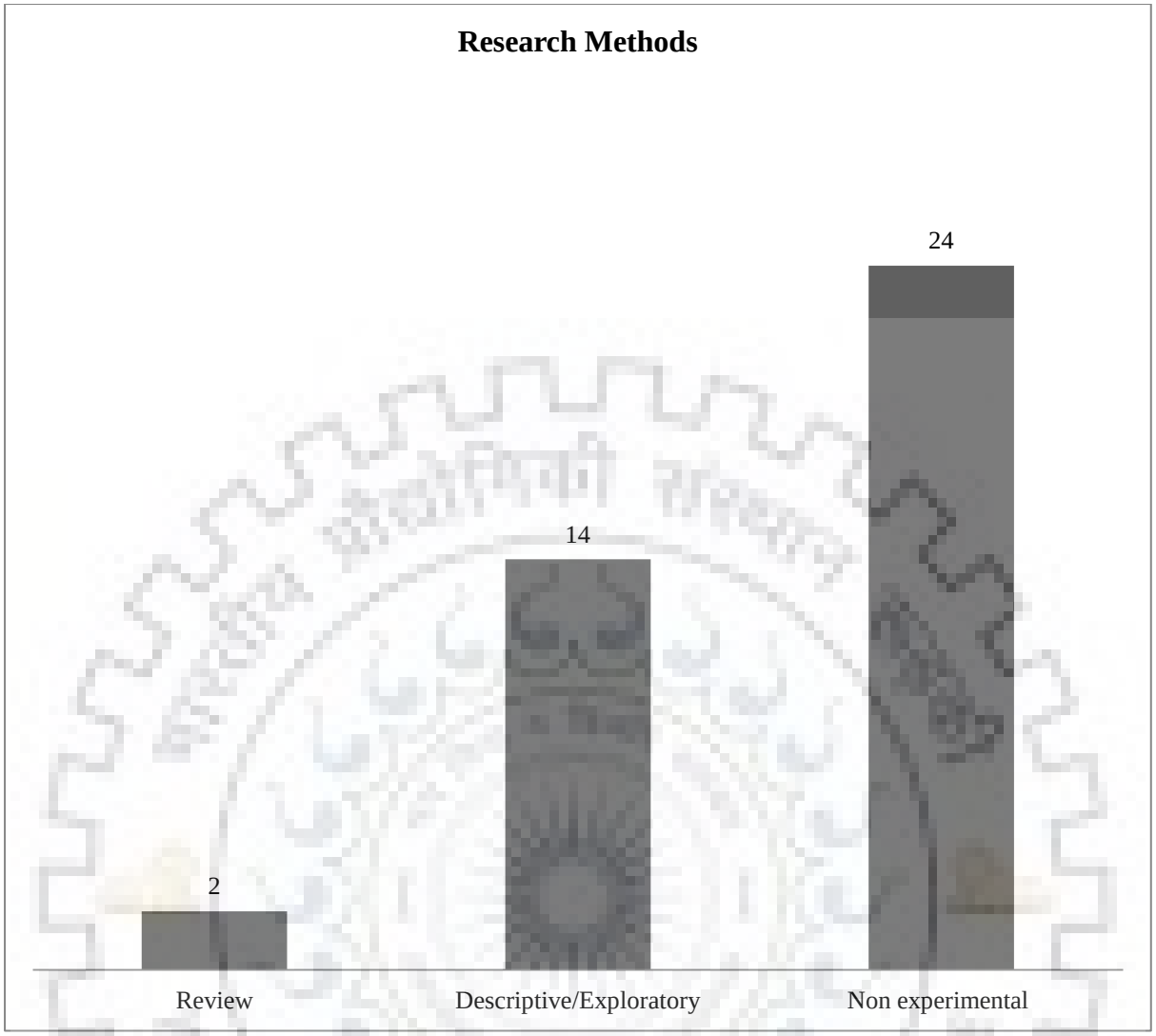
Figure 5: Frequency distribution indicating economic sector



2.7.6 Research Methods

Classification 4 differentiates the studies into six types: descriptive/exploratory, correlational, quasi-experimental/experimental, non-experimental (survey), review, and meta-analytic (Malik and Butt, 2017). The analysis indicates that the majority of studies were experimental and descriptive/exploratory studies come in second position. There are few review studies and the research designs such as correlational, quasi-experimental, and meta-analytic were absent. Hence, it is recommended to employ mixed method as methodological choice for the academicians because such methodologies are important to deal with the problems as well as research questions that pertain to environmental management (Molina-Azorín and López-Gamero, 2016). However, there exists dearth of empirical studies that measures the concept, whether cross-sectional or longitudinal analysis. Therefore, it is vital to conduct studies that help to understand causal relationship as well as to determine the antecedent or outcome variables.

Figure 6: Frequency distribution indicating research methods

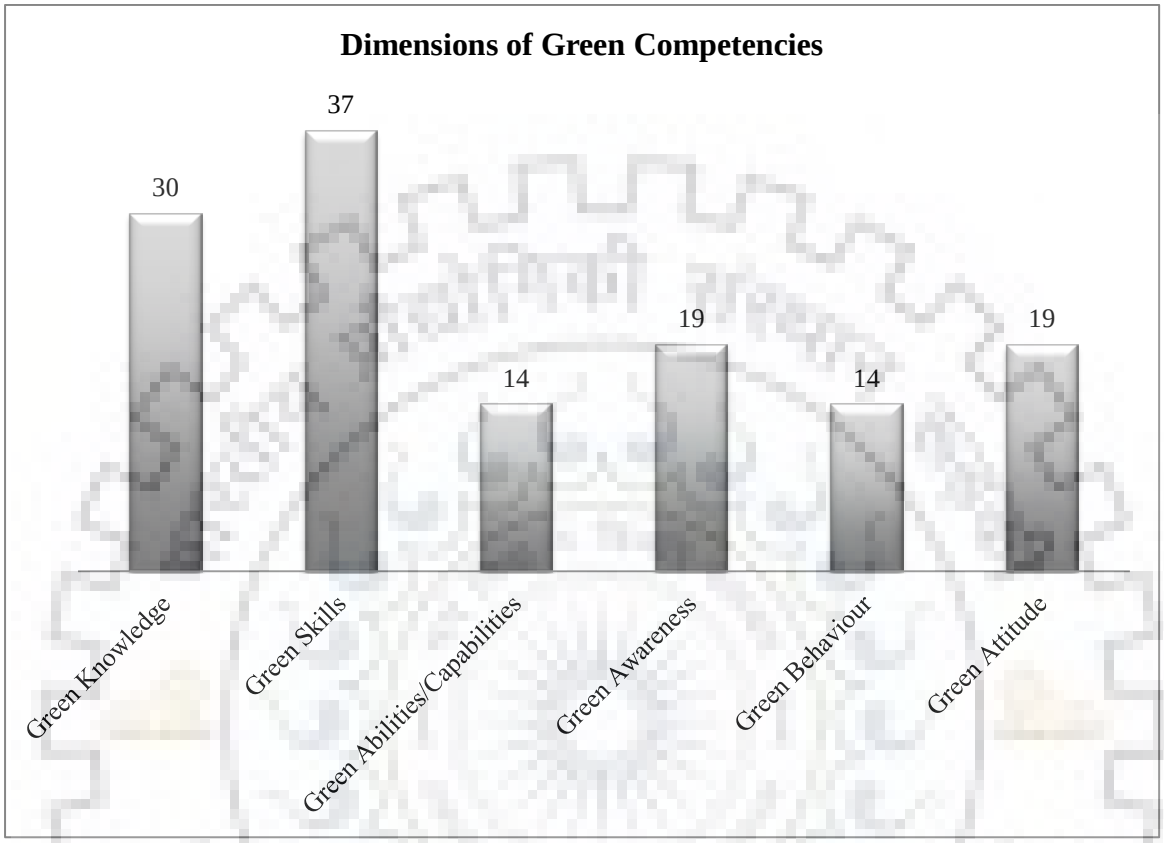


2.7.7 Dimensions of Green Competencies

Green knowledge, green skills, green abilities, green awareness, green attitude, and green behaviour were considered as Classification 5 under the structural dimension—dimensions of GC (figure 7). The analysis indicates that green skills are the most discussed facet. Nonetheless, it is to be noted that the terms GC and green skills are used interchangeably; hence, major number of studies has been classified under the head, green skills. It also reflects the lack of common terminology to portray the concept. It has been inferred that studies under economics view green skills as the skills required for green jobs and also in perspective to Vocational Education and Training see: Bozkurt and Stowell (2016) and Evans and Stroud (2016) and ignored other dimensions of the GC. Green knowledge is the next most discussed dimension, under which 30 studies have been found. The increase in number of studies under green skills and green knowledge indicates that the concept GC is viewed narrowly, as it is limited to green skills and green knowledge. Under the dimensions, green

attitude and green awareness, we found 19 studies each. 14 studies each have been found under dimensions green behaviour and green abilities. It is viewed that conceptual clarity on the dimension green abilities is not covered by the studies; hence, it needs to be addressed.

Figure 7: Frequency distribution indicating dimensions of green competencies



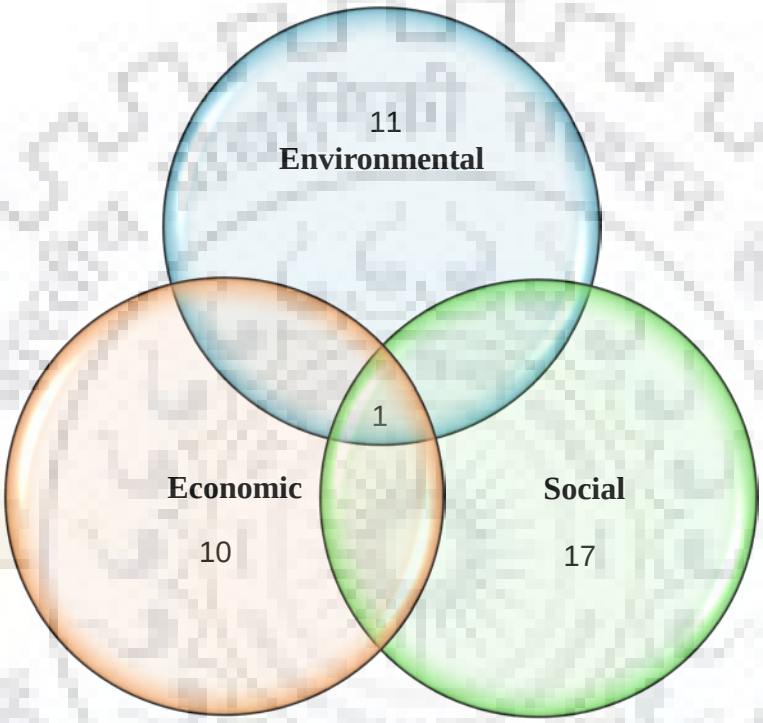
2.7.8 Dimensions of Sustainable Development

The dimensions of sustainable development were explained in Classification 6, and it has been previously examined in the work of Seuring and Muller (2008). The structural dimension includes economic, social, and environmental dimensions (Figure 8). It is observed that the lion share of studies (17 studies) has discussed about the concept of sustainability from a macro perspective with no clear demarcation among economic, social, and environmental impacts. Besides, reasonable number of studies discusses the economic–environmental impacts (10 studies) and social–environmental impacts (11 studies). There exists dearth of studies about the economic–social impacts (1 study); hence, future studies need to be investigated.

It is evident from the analysis that the studies were explored in terms of environmental aspects by side-lining other dimensions, for instance, the study of Dlimbetova et al. (2016), which examined the environmental skills, knowledge, behaviour, and opinions in GC and

identified the ambivalence among respondents, who perceived the impact of GC as environmental friendliness owing to lack of awareness. These results can be corroborated with the outcome of systematic literature review by Seuring and Muller (2008), who viewed the aspects in sustainability dimensions only in terms of environmental perspective and undermined the significance of other dimensions, especially social impact.

Figure 8: Frequency distribution indicating dimensions of sustainable development



2.8 Thematic analysis

Table 4: Definitions of Green Competencies

Sl. No.	Definitions	Author/s
1.	Commonwealth Department of Education, Employment and Workplace Relations (DEEWR) 2011 p. 31 states "Green skills, or skills for sustainability, are the professional and vocational skills, as well as the generic skills (such as sustainable approaches, innovation and problem solving) required for new green jobs and the greening of existing jobs across all industry sectors as a response to climate change and sustainability imperatives."	Brown (2013, p. 28)
2.	"personal qualities, skills, knowledge, abilities and activities, aimed at reducing of energy consumption, protecting ecosystems and biodiversity or minimisation of emissions and wastes"	Dlimbetova et al. (2015, p. 317)
3.	"complexes of knowledge, skills and attributes that enable successful task performance and problem solving with respect to real-world sustainability problems, challenges and opportunities".	Vega-Marcote et al. (2015, p. 2605)

2.8.1 Conceptualisation

Competencies can be depicted as the exhibition of individual skills, operational knowledge and behaviour regarding a particular task that enhances job performance (Jacobs, 2015; Murray, 2003). The United States Office of Personnel Management (OPM) has defined competencies as "measurable patterns of knowledge, skill, abilities, behaviours, and other characteristics that an individual needs to perform work roles or occupational functions successfully" (Rodriguez, Patel, Bright, Gregory, & Gowing, 2002, p. 310). The emotional and personal competencies are the significant factor to determine the productivity of the employees which improves job performance and builds valued human capital in an organisation (Singh, 2010). Recently, due to climate change and environmental degradation,

corporations have considered the development of competencies among employees by contemplating the immediate natural environment to ensure sustainable development. In this regard, the concept of GC comes into the mainframe (Sladyk et al., 2009). Subramanian et al. (2016) defined GC as "the requisite ecological knowledge, skills and other socio-economic behaviour an individual has to help him/her behave and act rightly and responsibly towards the overall well-being of his/her immediate environment" (p. 154). Other definitions explained in the literature are presented in Table 3. Albeit a plethora of studies explain competencies in management, the case of GC is different because major works on the topic were examined in other disciplines such as environmental education (McGrath and Powell, 2016), environmental psychology (Pedersen, 1999), and environmental economics (Kouri and Clarke, 2014). Moreover, it has been observed that owing to ambiguity about the concept among academicians, numerous terminologies have been used in different studies such as sustainable capabilities (Thomas and Day, 2014; Thomas and Depasquale, 2016), green skills (Cleverley, 2014; Dlimbetova et al., 2016), green abilities (Wu et al., 2016), pro-environmental competency (Corral-Verdugo, 2002; Fraijo-Sing et al., 2010, 2014), and environmental competence (Pedersen, 1999).

As for management literature, it is perceived that GC can be aligned with GHRM functions. Among the two schools of thought in the GHRM literature (see Ren et al. (2017)), GC is more aligned with the second school of thought, wherein the notion states that the construct acts as an end which propagates changes in attitude and behaviour and results in achieving environmental performance (Ehnert, 2009). As per the first school of thought, GC can be categorised under the GHRM function as green training, wherein it may act as a consequent variable (Jacobs and MacRae, 2013). The organisation that provides green training helps employees develop not only adequate attitude and behaviour to embrace environmental performance but also green knowledge, green skills and green abilities (Pacoy, 2014).

Steele (1980) defined GC as "people's ability to deal with immediate surroundings in an effective and stimulating manner". The author argued that there are three dimensions in the construct, viz., 1) personal awareness, style, and attitude, 2) environmental knowledge and 3) environmental skills. To bridge the gap in empirical evidence, Pedersen (1999) conducted factor analysis and identified six dimensions related to GC. These six dimensions are conscientious, resource conservation, outdoor skills, practical skills, knowledge, and wayfinding. Corral-Verdugo (2002) in his work on environmental psychology, proposed GC as a higher-order factor which encompasses dispositional variables such as attitudes, motives and perception. With empirical evidence, the study establishes the significance of GC in

sustainability issues such as water conservation. Similarly, Thomas and Day (2014) examined GC mentioned in university statements and the existence of a gap regarding the concepts' theory and practice. The study, which is in the context of higher education, excavated dimensions of GC such as green knowledge, green skills and green attributes (green values and green attitudes) among university students in Australia.

Recently, Subramanian et al. (2016) formulated a scale to measure GC. They categorised GC into two parts, i.e., natural GC and acquired GC. Natural GC involve innate traits such as green concern, whereas acquired GC is the expertise acquired by a person through personal experiences, and it includes green knowledge, green skills, green behaviour, and so on. The study highlighted the importance of acquired GC over natural GC because traits such as green attitude towards conservation enables employees to engage in green behaviour rather than showing a meagre green concern. Zareie and Navimipour (2016), in their study on university students, examined the impact of dispositional variables such as green attitudes, green awareness, green values, green skills, green knowledge, green responsibility, and public information on green behaviour. The study established the relationship between the constructs and delineated the importance of environmental learning as well as teaching through e-learning systems to improve green behaviour. In the same vein, Wu et al. (2016) established the relationship among green awareness, green knowledge, and green skills, which can be collectively called GC, that facilitates hotels' environmental and financial performance. Thus, employees trained in GC contribute towards adopting greener practices in hotels. To sum up, GC consists of six dimensions, viz., green knowledge, green skills, green abilities, green awareness, green attitudes, and green behaviour (Pacoy, 2009).

2.8.2 Dimensions of the concept

2.8.2.1 Green Awareness

Green awareness is defined as "knowing of the impact of human behaviour in the environment" (Kollmuss and Agyeman, 2002, p. 253). The concept includes consciousness or perception of environmental issues or challenges caused by the organisation. As far as the natural environment is concerned, green awareness is considered a vital organisational element that influences environmental measures. Moreover, the concept enables the organisation to be conscious of environmental degradation which results in reducing energy consumption and achieving energy efficiency (Zilahy, 2004). The advantages of assimilating green awareness among employees are to achieve proactive environmental management and accomplish effective environmental performance in the organisation (Stabler and Goodall, 1997).

Green awareness is a significant dimension in GC and has several advantages, especially increasing efficiency in the consumption of wastage and materials, reducing the cost involved in such practices (Brown et al., 2013), and ensuring environmental performance in an organisation (Wu et al., 2016). Zareie and Navimipour (2016) argued that green awareness is the "ability to perceive, to feel, to be conscious of events, objects, thoughts, emotions or sensory patterns" (p. 3) about the natural environment and its problems. The study delineated the requirement of green awareness in influencing green behaviour of employees. Following is the synthesis of the findings derived from the selected studies.

(a) green awareness as the personal awareness, curiosity and ability regarding the natural environment (Pedersen, 1999),

(b) awareness of sustainable development especially about the environment, society and economics (Thomas and Day, 2014),

(c) knowing about employees' actions which cause impacts on the environment (Wu et al., 2016),

(d) consciousness about the environment (Dibrell et al., 2015),

(e) awareness of the natural environment (Dlimbetova et al., 2016),

(f) awareness of environmental problems (Dlimbetova et al., 2015),

(g) awareness of sustainability (Brown, 2013; Brown et al., 2013; Sack, 2012),

(h) commitment to and engagement in environmental protection (Martinez-Fernandez et al., 2010), and

(i) perception, feeling and consciousness about the environment and its problems (Zareie and Navimipour, 2016).

2.8.2.2 Green Knowledge

Green knowledge refers to knowledge related to the environment, which includes the concepts and their relationship to nature and ecosystem wherein such knowledge is attained through education or observation. In the words of Fryxell and Lo (2003), green knowledge is "what people know about the environment, key relationships leading to environmental aspects or impacts, an appreciation of 'whole systems', and collective responsibilities necessary for sustainable development" (p. 48). The literature has categorised green knowledge as abstract and concrete (Schahn and Holzer, 1990) as well as objective and subjective (Barber et al., 2009). Abstract knowledge refers to general knowledge about environmental problems and concepts that can be used to identify solutions. Concrete knowledge is knowledge that influences a person's behaviour to initiate action (Schahn and Holzer, 1990). Objective knowledge is existing knowledge about the natural environment,

wherein subjective knowledge refers to an individual's perceived knowledge about the natural environment (Barber et al., 2009).

The literature has viewed green knowledge from various perspectives, such as

(a) knowledge acquired through domains such as natural history as well as ecology and environmental issues and challenges (Alvarez-García et al., 2018),

(b) knowledge that integrates the disciplines of natural science and social sciences to focus on aspects that mitigate energy consumption, reducing environmental waste and conserving ecosystems (Dlimbetova et al., 2015),

(c) knowledge associated with eco-friendly practices especially compliance with law and order and safety regulations (Dlimbetova et al., 2016),

(d) knowledge to mitigate energy and raw materials consumption, reduce the greenhouse effect, diminish waste and pollution, and conserve and preserve natural ecosystems (Esposto and Annakis, 2016),

(e) knowledge about the conservation of natural resources (Fraijo-Sing et al., 2010),

(f) knowledge about sustainable development (Murga-Menoyo, 2014),

(g) knowledge associated with recycling centres, renewable energy sources, space utilisation, territorial and personal space norms, and access to sustainable services (Pedersen, 1999), and

(h) understanding of the natural environment, environmental degradation and eco-friendly actions (Wu et al., 2016).

2.8.2.3 Green Skills

Theoretical knowledge of environmental facts or concepts is insufficient to engage in environmental conservation. In this regard, it is vital for individuals to be equipped with green skills, which represent a practical application of theoretical knowledge. In the words of Coeckelbergh (2015), green skills are "skilful engagement with our (natural) environment" (p. 97). It is possible to transform the green knowledge gained through education or training into skills for dealing with the preservation of an individuals' immediate natural environment. Similar to green knowledge, green skills have a positive relationship with green behaviour. For instance, Corral-Verdugo (1996) observed the direct impact of green skills on the reuse and recycling of products of green behaviour, which engages people in the conservation of natural resources. In the same vein, Corral-Verdugo (2002) established that green skills in water conservation had a positive and significant relationship with individuals engaged in green behaviour, i.e., conservation of scarce resources such as water. In this regard, green

skills are a significant dimension of GC that enable employees in the organisation to use their technical skills to reduce environmental degradation.

The literature discusses that green skills are comprised of

a) skills required for EM such as product development and in product life cycle by integrating recycling, reuse and eco-design (Wu et al., 2016),

b) skills required for green jobs which include mitigating the usage of energy and raw materials, alleviating greenhouse gas emission, reducing pollution, and conserving the ecosystem (Brown, 2015),

c) skills acquired through formal education and training with concern the for natural environment and its ecosystem (Subramanian et al., 2016),

d) sustainability skills (Brown et al., 2013),

e) skills required for recycling and waste management (Bozkurt and Stowell, 2016),

f) higher-level skills for green product development (Cecere and Mazzanti, 2017),

g) skills that extend from soft skills to skills for energy efficiency (McCoy et al., 2012a),

h) skills that focus on human development and sustainable work, account for the political economy and transform the livelihood of poor (McGrath and Powell, 2016), and

i) skills associated with green jobs with green processes, green products and services, green industries and occupations evolved to meet the need of a green economy (Consoli et al., 2016).

2.8.2.4 Green Abilities

Green abilities are an individual's capacities to integrate theoretical knowledge and practical expertise in the natural environment to solve real environmental challenges. Green abilities may be natural or acquired. The former refers to a person's intrinsic behaviours to engage in activities to achieve environmental performance, and the latter are gained through transforming organisational policies to pro-environmental activities due to social pressure. It is a critical variable that influences GHRM innovation in the organisation. The variable enables a person to comprehend the incorporation of environmental aspects in organisational culture by employing EM practices to solve challenges and engage in personal values such as altruism and biopherism (Rajiani et al., 2016).

Mohtar and Rajiani (2016) posited that nurturing green abilities involves EM practices which lead to effective utilisation of resources and mitigation of environmental pollution. Green abilities directly influence the impact of green behaviour because employees' natural green abilities help them engage in behaviour that conserves natural resources without any external

compulsion to accomplish environmental performance. However, employees lacking natural green abilities can be rectified by the organisation providing environmental training sessions.

2.8.2.5 Green Attitude

A green attitude is defined as "the psychological tendency that is expressed by evaluating perceptions of or beliefs regarding the natural environment, including factors affecting its quality, with some degree of favour or disfavour" (Milfont, 2007, p. 12). It is a two-dimensional higher-order construct comprising preservation and utilisation. Preservation refers to conserving nature and its resources, i.e., an eco-centric perspective which includes conservation policies, eco-centric concern and engagement of nature. Utilisation means using natural resources for the benefit of mankind, i.e., anthropocentric concern which includes factors such as changes by human interference to nature, and dominance over nature (Milfont and Duckitt, 2010).

Several studies have shown the importance of a green attitude for influencing the behaviour of employees. For instance, Vega-Marcote et al. (2015) asserted that a green attitude has an influence on teachers' behaviour to engage in sustainable behaviour in educational institutions. Similarly, Bergin-Seers and Mair (2009) stated that a green attitude influences green tourists' behaviours in purchase intention and information seeking. Fraijo-Sing et al. (2014) elaborated green competencies as a higher-order dispositional variable and green attitude as a significant dimension of the construct.

The literature views green attitudes in the following perspectives,

a) attitudes that formed as a part of environmental education for environmental problems and solutions (Fraijo-Sing et al., 2010),

b) attitudes towards environmental education and education for sustainable development (Álvarez-García et al., 2015),

c) attitudes towards environmental protection (Curry, 1997; Dlimbetova et al., 2016; Evans and Stroud, 2016; Pedersen, 1999),

d) attitudes towards sustainable development (Murga-Menoyo, 2014; Sack, 2012),

e) attitudes towards an environmental worldview and concern as well as a commitment to solving environmental problems (Zareie and Navimipour, 2016),

f) attitude towards commitment to ecological challenges (Dlimbetova et al., 2015), and

g) an attitude backed by a sense of responsibility for environmental issues, respect for nature and society, and assessing socio-environmental conflicts (Alvarez-García et al., 2018).

2.8.2.6 Green Behaviour

Green behaviour is behaviour that causes an employee to work in a sustainable manner, conserve resources, discourage others from engaging in environmental degradation, initiate action to protect the environment, and rescind environmental deterioration (Ones and Dilchert, 2012). Norton et al. (2015) categorised green behaviour into two categories, viz., required green behaviour and voluntary green behaviour. Required green behaviour arises when employees perform within the purview of their tasks and duties in the workplace. Such employees achieve environmental performance that facilitates and supports organisational policies for conserving the natural environment. Voluntary green behaviour refers to green behaviours performed by employees beyond the limits of their organisational jobs or tasks. Such behaviour encourages organisational involvement in activities related to environmental interests, which may be backed by environmental activism, further influencing employees to engage in environmental programs.

Zareie and Navimipour (2016) examine the green behaviour among students using e-learning systems and stipulates the requirement of environmental learning to maintain, restore and enhance green behaviour. The literature delineates that green behaviour can be viewed in various perspectives such as environmental conservation (Corral-Verdugo, 2002) and green purchasing (Subramanian et al., 2016).

Prominent studies delineate green behaviour as the following viewpoints,

(a) behaviour that demonstrates respect for the environment and engages in pro-environmental collective actions (Alvarez-García et al., 2018),

(b) preventive actions initiated to protect the natural environment and conserve energy (Zareie and Navimipour, 2016),

(c) reusing and recycling natural resources (Corral-Verdugo, 1996),

(d) behaviour for environmental conservation (Corral-Verdugo, 2002),

(e) behaviour to achieve sustainability (Fraijo-Sing et al., 2014; Vega-Marcote et al., 2015), and

(f) behaviour to produce green products, labelling the products as environmentally safe, recycling and receiving packages, and developing products that cause the least harm to the environment (Subramanian et al., 2016).

To sum up, “green competencies is defined as the green knowledge, green skills, green abilities, green awareness and other environmental characteristics, such as green attitude and green behaviour, that are required in green jobs to achieve financial and environmental performance through pollution prevention, product stewardship and sustainable development” (Cabral & Dhar, 2019, p. 890).

4.6 Chapter Summary

To conceptualise the green competencies construct and identify their dimensions, this study used a systematic literature review. The review identified state-of-the-art green competencies research published during the period 1992 to 2017. The descriptive analysis in terms of time period of publication, publication outlet, focus of the concept, economic sector, research design, and dimensions of sustainable development were examined. In addition, the study conducts a thematic analysis of the scholarly works to comprehend the conceptual definition and dimensions of green competencies. The analysis and synthesis signify the construct as a higher-order construct with six dimensions viz. green knowledge, green skills, green abilities, green awareness, green attitudes, and green behaviour.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Chapter Overview

This chapter discusses about the methodological issues related to approaches considered in this thesis. First, the paradigmatic foundations of the methods were explained. The use of cross-sectional non-experimental design is discussed in next stage. This is followed by the scale development technique for item generation, item sorting, item purification and item validation. An overview of sample definition which includes sample area, sample industry, survey, method, sample size and measures were discussed.

3.2 Research Design

In this study, cross sectional non-experimental design were used to develop scale for measuring green competencies. Qualitative methods such as in-depth interview and q-sort analysis were used for generating and sorting selected items. It examines structural as well as psychometric properties. Exploratory Factor Analysis (EFA) and Multi-Dimensional Scaling were employed.

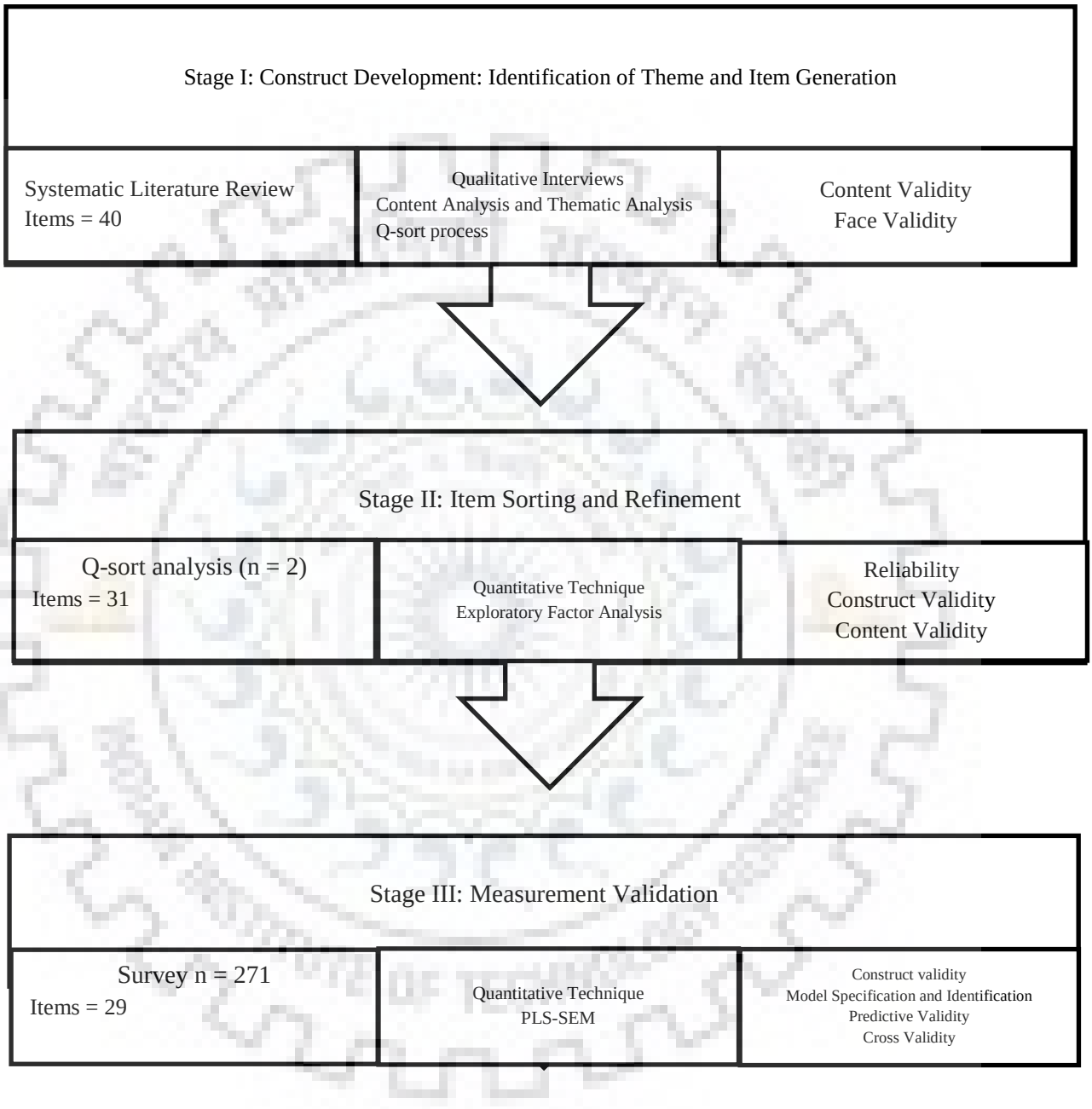
3.3 Paradigmatic foundations of the methods

3.3.1 Pragmatism

Pragmatism is the paradigm which argues about not only the philosophical foundations, but also the methodological aspects to apply the mixed method research (John W. Creswell, 2002). The approach employs abductive reasoning in case of connecting theory and data. Such approaches start with transforming observations into theories and later, the theories into actions. In case of association between research and research process, the approach follows the inter-subjectivity approach. It indicates the significance of communication processes and shared meaning of the pragmatic approach. The third dimension is transferability which means the importance to examine the factors about knowledge and it can be transferred to different background (Morgan, 2007).

The prime reason to choose pragmatism paradigm for this study is because of the nature of current research work. According to the paradigm, both quantitative and qualitative approach were adopted wherein the former provides empirical evidence among the relationship between the constructs wherein latter provides meanings. Symbols, description and definition of the certain phenomenon related to qualitative aspects (Berg and Lune, 2012). Besides, the perspective provides viable and liberating perspective on the research question. The perspective answers about extent to which human considers ‘means’ especially green human

resource management practices to achieve the end i.e. environmental performance (Visser, 2019).



3.3.2 Mixed-method research

Mixed method research is defined as "an intellectual and practical synthesis based on qualitative and quantitative research; it is the third methodological or research paradigm" (Johnson, Onwuegbuzie, & Turner, 2007, p. 129). The key features of the mixed method are philosophy of pragmatism, adhere to logic of mixed method, both quantitative and qualitative

perspective are used and adding socio-political realities, needs as well as resources (Anisimova and Thomson, 2012; Johnson et al., 2007).

Mixed method research has several advantages such as (a) qualitative aspects of research output provides meaning to quantitative results, (b) quantitative results provide precision to the qualitative aspects of research output, (c) the strengths of quantitative and qualitative method would be identified, (d) grounded theory can be employed and tested, (e) broader scope to answer research questions wherein several methods or approaches are used, (f) the weaknesses of one method can be rectified by using additional method, (g) the findings observed in one method can be triangulated with another method, (h) extends insights by inclusion of different methods, (i) generalisability of the results can be enhanced and (j) provide overall knowledge in theory as well as practice (Johnson and Onwuegbuzie, 2004).

3.3.2.1 Instrument development

The study adopted the scale development techniques proposed by Churchill (1979) and scale improvement scheme suggested by Hinkin (1995) to develop the scale for green competencies. The steps involved in scale development are a) generation, b) refinement, c) purification, and d) validation.

3.3.3 Qualitative methods

Qualitative methods are related to quality as well as textures of experience of the research subject (Willig, 2001). Such research provides in-depth, qualitative representation of data, significance to investigate to the research process and openness to truth (Camic et al., 2003). The advantage of employing qualitative techniques before the quantitative part in the scale development are to provide insights about the construct in real-life situations which provides an open viewpoint (Padgett, 1998; Srivastava and Thomson, 2009; Thomson, 2011). To validate these arguments, it is vital to perceive and understand how employees in tourism industry view green competencies. Hence, the researcher have explained the theoretical and operational definition of construct to the respondents. Such description helps the respondents to know the meaning of the construct which is absent in the quantitative techniques.

3.3.3.1 Qualitative interviews

The items for the scale is developed using qualitative interviews. Deductive method is used to excavate the items of the constructs. The authors examined credibility, reliability, transferability, and dependability during the qualitative interviews (Guba, 1981). The credibility was ensured through peer review and respondent validation (Guba, 1981; Krefting, 1991). Peer review indicates cross examination of the collected data and ensures that the concepts discussed by the researcher were conveyed in the same sense and same manner by

the audience (Krefting, 1991). Reliability was examined through the repetition of coding by authors independently and this examination was stopped after arriving at less deviation in the coding. The last element, conformability, was completed through the triangulation of data, which refers to citing the literature sources to support the argument.

Purposive sampling were used to collect the in-depth interview. Purposive sampling means "elements selected for the sample are chosen by the judgment of the researcher (Black, 2009, p. 225)". It was conducted to safeguard transferability, which indicates that the obtained outcomes could be easily transferred from one sample area to another sample area. Examining transferability helps to overcome the complexity of generalisation in qualitative interviews. The advantages of this sampling technique are, it is the most common sampling techniques for qualitative study and chooses the appropriate sample for research question in the study (Marshall, 1996). Such sampling was significant to ensure the core element of transferability in qualitative interviews (Guba, 1981).

3.3.3.2 Q-sort analysis

The items in the constructs were sorted using a Q-sort procedure (Rosenzweig and Roth, 2007). The technique is primarily used for examining the important viewpoints of green competencies. The technique involves several procedures. Initially, the experts sorted the statements according to the themes and provided their perspective on the topic. Based on their viewpoint, similar statements associated with the constructs were clustered and grouped (McKeown and Thomas, 1988). This procedure is commonly used to understand the different perspectives related to areas, which are complex, disputed, and value laden. Therefore, the procedure was particularly applied in the domain of environmental studies (Dryzek, 2008).

3.3.4 Quantitative methods

Quantitative research examines the research specifically in the topic, formulate the questions which is specialised in those topics and conduct data collection for statistical analysis in an unbiased manner (Creswell, 2002). The key features of quantitative methods are objectivity, replicability as well as generalisability of the statistical results wherein it is used for prediction (Lincoln, 2007). In this study, the quantitative phase ensures to investigate the potential predictive power related to dimensions of the constructs and validate the same with its antecedents and outcome variables.

3.3.4.1 Exploratory factor analysis (EFA)

Exploratory factor analysis (EFA) is conducted for purification of item observed in the summated scale. EFA is conducted in seven stage process. In first stage, the objective of the factor analysis is specified. Precisely, it includes identifying the unit of analysis whether R

factor analysis or q factor analysis, deriving data summarisation and data reduction, and selection of variable. The second stage involves calculating correlations among the identified variables, selection of variables and measurement issues and adequate sample size. Satisfying the assumption in factor analysis is third stage. The steps included were solving conceptual issues and statistical issues. The data assumptions of normality, linearity, homoscedasticity, and multicollinearity are rarely examined and the indicators such as intercorrelation, Barlett's test of sphericity, and measure of sample adequacy were examined. Fourth stage consists of two major steps selecting a factor model i.e. extract factors using component analysis in case of total variance and common factor analysis in relation to common variance. Specifying the number of factors to retain the final step. Stage five consists of selection of the factors based on rotational method. Varimax, equimax and quartimax were used in orthogonal methods wherein oblimin, promax and orthooblique were used in case of oblique methods. The steps such as interpretation of rotated factor matrix and re-specifying factor model is conducted in this stage. The final stage is to validate the factor matrix.

3.3.4.2 Partial least square- structural equation modelling (PLS-SEM)

The two-stage procedure of Hulland (1999) was used to conduct PLS-SEM. In the first stage, descriptive analysis, reliability, and validity were estimated. In the second stage, the path coefficients between the variables were examined. The study uses the PLS-SEM method for two different reasons. First, the technique is flexible as it is not limited to data assumptions and it is also used for theory building because of its high statistical power (Hair et al., 2011). The theoretical model developed in this study is novel and adds to theory building. Second, the study uses a complex model and is also considered a promising tool for analysing the complex and hierarchical model.

3.4 Respondent definition and inclusion criteria

The respondents considered in this study were tour operators domiciled in Indian state of Kerala. The population of the study is decided based on the 'Right To Information Act' (RTI) to understand the list of tour operators promoting ecotourism. The RTI states that tour operators are not categorised in terms of ecotourism, but it provides a list of tour operators who are recognised by the Government of Kerala and are known for conducting sustainable tourism activities. Because the number of tour operators is low, the list has been extended by including the members of the Indian Association of Tour Operators (IATO). IATO members are added because they are known to explicitly conduct sustainable tourism activities in their organisation, and only experienced tour operators are provided membership to the association. Business experience is a vital factor for tour operators to engage in

environmental management systems and to use these systems to achieve enhanced environmental performance (Herremans et al., 2005). Employees who have a work experience of at least one year in the organisation is eligible to participate in the survey.

3.5 Methodology used for sampling

3.5.1 Industry considered for sampling – Travel and tourism industry

Travel and tourism industry is considered to be the fastest growing sector in the world (Baum, 2015). With respect to the industry's direct contribution to India's GDP, our country held eighth position in the world and contributed around 91.27 billion USD in 2017. The industry also occupied the third position in foreign exchange earnings in the world by contributing about 27.69 billion USD. The sector contributed 47.8 billion USD in 2017 to the Indian economy (Indian Brand Equity Foundation (IBEF), 2018). Moreover, the report of World Travel and Tourism Council (WTTC) (2017) stated that India has a major share in the tourism industry and generates numerous employment opportunities, which is approximately 40.3 million jobs.

The tourism industry is vulnerable to several challenges, such as economic leakages and a rise in unemployment among local communities, which rely on forest resources that cause their disengagement from ecotourism principles (Ahmed et al., 2012; DeFries et al., 2010). For example, in the case of Nanda Devi Biosphere Reserve, Uttarakhand, it has been observed that local communities are alienated from their homeland and deprived of their resources. This led to the exploitation of sensitive flora and fauna in the ecotourist sites and deterioration of the fragile natural environment (Silori, 2004; Singh and Singh, 2004). In another case of Kanha Tiger Reserve, Madhya Pradesh, a lack of infrastructure development and economic leakages resulted in a lack of participation from local communities to embrace ecotourism principles (Sinha et al., 2012). In contrast, there are some cases that demonstrate a well-planned and optimum utilisation of natural resources. For instance, Anamalai Tiger Reserve, Tamil Nadu, has showcased that ecotourism initiatives improve the standard of living of local communities who are employed in the tourism industry. In addition, it also reduced the dependency of the people on forest-based products to earn a livelihood as it enhanced new avenues of income sources through employment. Similarly, Periyar National Park, Kerala, has also focused concerted efforts to follow ecotourism principles through community participation and dissemination of the economic benefits to local communities, which encourage environmental conservation (Banerjee, 2012). However, even though there

was some level of effort to fulfil ecotourism principles by the latter two ecotourist sites, the authors indicate that the efforts were not perfect.

The adverse impact caused by the leakage of benefits from local communities hinders tourism development. However, this can be rectified through the integration of tourism stakeholders, especially the tour operators, to attain socio-economic, legal, and political dimensions to ensure sustainable tourism activities (Tosun, 2000). Although there is a lack of incentive for environmental conservation activities from the government, tour operators engage in several sustainable practices, such as providing environmental training to employees, employing green purchasing strategies, and incorporating environmental management systems (Budeanu, 2005), which integrate the economic, social, and environmental dimensions of sustainable development.

3.5.1.1 Tour operator

In the long run of the business cycle, the tour operators play a major role in influencing the sustainability of tourism destination (Carey et al., 1997). Tour operators conduct and promote practices that support sustainable development and try to implement environmental management practices. These initiatives avoid the adverse effects of tourism activities and enable cost reduction, which further improves public image of the company (Tepelus, 2005). Tour operators can also influence the selection of tourists for different tourism destinations along with tourists' activities by fulfilling their expectations (Bhattacharyya and Chatterjee, 2005; Bhattacharyya and Srithika, 2009; Rajeev and Bhattacharyya, 2007). They depend on local communities not only for labour or services, but also for supplies, which leads to convergence of the economic and social dimensions of sustainability with environmental dimensions (Linson and Getz, 1996).

3.5.2 Sample area – Kerala, India

Kerala is a state of India known for its natural beauty and is also tagged as 'God's Own Country'. The state has been listed in the millennium edition of National Geographic magazine, where Kerala has been adjudged as one amongst the ten 'Paradise Found' tourism destination in the world (National Geographic, 2009). Tourism has been considered as the hallmark for economic development as well as the major revenue contributor to the economy of Kerala (Menski, 2002a). Tourism sector has several contributions to the economy of Kerala such as robust growth and employment generation, foreign exchange as well as propagates traditional industries (Kerala State Planning Board, 2016). Additionally, Kerala has a wide range of natural assets, which encompasses pristine backwaters, palm-line beaches, mystic hill stations, and unique flora and fauna (Chettiparamb and Kokkranikal,

2012). Besides, Kerala is home for Western Ghats, which is UNESCO World Heritage Site and one amongst the 'hottest hotspots' of biodiversity in the world (IUCN World Heritage Outlook, 2017). In addition, six National Parks and 17 Wildlife Sanctuaries (WII-ENVIS, 2018) attract large chunk of tourist, especially for the nature-based tourism in Kerala (Menski, 2002b, 2004). Above all, Kerala is a remarkable example for the developing nations to imitate its 'Sustainable Tourism Model', wherein the sustainable tourism initiatives in the Indian state provides economic benefits to the local communities as well as propagates cultural exchange with tourists, environmental conservation, and government involvement in supporting sustainable development (Thimm, 2017). On the basis of the state's effort to support sustainable tourism initiatives, the state has been conferred United Nation's World Tourism Organisation's (UNWTO) Ulysses Award for Excellence and Innovation in 2014 (United Nations World Tourism Organisation, 2014)

3.5.3 Survey

This study uses survey method because it is regarded as an alternative for observation, assessment of value, beliefs as well as intentions and accounts the perception of the respondents (Sackett and Larson, J. R., 1990). This study tries to understand the perception of behaviour, attitude, ability and so on of the employees in the organisation and the survey technique collets the data by circulating questionnaire among the respondent. The questionnaire captures the perception of the managerial level employees about the green competencies, green training, environmental commitment and environmental performance. Purposive sampling is used to collect the sample. The state of Kerala were stratified into three zone viz. north zone, central zone, and south zone. The details of tour operators in respective districts were classified in Table 1. Lottery method is used to select the tour operators in each zone.

3.5.3.1 Questionnaire distribution

The author made personal visits to the tour operator through informal contact. Based on such contacts, cover letter, researcher's identity details and questionnaires were disclosed to the concerned authorities. Data collection was approved by the authorities on the basis of assurance made by the researcher in terms of confidentiality of the data and it will be collected and used for the research purpose. Prior to the data collection, the details about each constructs were briefed to the respondents. They were selected based on purposive sampling. Adequate sample was collected based on the recommendations by Hair, Black, Babin, and Anderson (2010).

Table 1: Segregation of districts in terms various zones in Kerala

Zone	Name of the districts
North zone	Kasargode, Kannur, Wayand, Kozhikode, Malappuram
Central zone	Ernakulam, Thrissur, Palakkad, Idukki
South zone	Thiruvanathapuram, Kollam, Pathanamthitta, Kottayam, Alappuzha

3.6 Sample size

The sample size of the study was verified using the software G*Power 3.1. The software shows the adequate sample size necessary for obtaining statistical significance for recovering false outcomes. The results were evaluated based on effect size and power i.e. 1 – β error probability (Faul et al., 2009). Additionally, the sample size efficiency were validated with the recommendation provided by Hair, Ringle, and Sarstedt (2011) in their study, where they asserted that the efficient sample size must be "ten times the largest number of structural paths directed at a particular latent construct in the structural model" (p. 144), i.e., 4 multiplied by 10, which is equal to 40.

3.7 Measures

The conceptual model in the study comprises of five constructs, which include green training, green competencies, environmental performance, environmental commitment, and proactive EMM. All the constructs are reflective in nature. To ensure content validity, the scales used for measuring the constructs were employed from the previous works. The items of each constructs were assessed by employees working in tour operator organisations. Each item was measured on a 7 point scale, i.e., '1 – Strongly Disagree' to '7 – Strongly Agree'.

3.7.1 Green training (GT)

For measuring the green training, a 10-item scale developed by Teixeira et al. (2016) is used. The sample question of the scale includes "The responsibilities and duties of official green trainers are precisely defined".

3.7.2 Environmental commitment (EC)

Environmental Commitment in the organisation was measured using the scale developed by Raineri and Paillé (2016). The sample item in the scale is "The environmental concern of my company means a lot to me".

3.7.3 Environmental performance (EP)

Environmental Performance was measured using the 7-item scale developed by Masri and Jaaron (2017), and the sample item is “Reduce emissions of toxic chemicals in air and water.”

3.8 Chapter summary

In this chapter, the details regarding research design in each phases of the study is discussed. This study is conducted in three stages, starting with identification of theme and item generation through systematic literature review and qualitative interviews. Second stage comprises of item sorting and refinement through q-sort analysis and exploratory factor analysis respectively. On the final stage, the developed scale is validated by examining the relationship of green competencies with green training, environmental performance and environmental commitment.

CHAPTER 4

CONSTRUCT DEVELOPMENT GREEN COMPETENCIES

4.1 Chapter Overview

The chapter shows the results of instrument development process starting with corroborating 40 items generated from literature review with the qualitative interviews. With the help of two experts, q-sort analysis was conducted to the items. Prior to collecting data for item purification, the questionnaires were circulated to fifteen respondents for pre-testing. Exploratory factor analysis was conducted to refine the items and finally 29 items were taken forward to validate the measurement scale.

4.2 Instrument development process

The study conducted a two-stage preliminary test to formulate the questionnaire to ascertain the construct of 'Green Competencies'. The previous studies, such as Chowdhury and Quaddus (2017) and Akter, D'Ambra, and Ray (2013), also used the same steps to develop the scale.

4.1.1 Qualitative interviews and item generation

Table 5: Demographic details of qualitative interview respondents

Participants	Designation	Gender	Marital Status	Age	Experience	Education
P1	Manager	Male	Single	20-29	1-10	Post-Graduation
P2	Manager	Male	Married	40-59	21-30	Post-Graduation
P3	Manager	Male	Married	40-59	21-30	Graduation
P4	Manager	Male	Married	40-59	21-30	Post-Graduation
P5	Managing Director	Male	Married	40-59	21-30	Graduation
P6	Managing Director	Male	Married	40-59	21-30	Graduation
P7	Tour Executive	Male	Married	40-59	21-30	Post-Graduation
P8	Tour Executive	Female	Single	20-29	1-10	Post-

						Graduation
P9	Tour Executive	Female	Married	40-59	1-10	Graduation
P10	Manager	Male	Married	20-29	1-10	Post-Graduation
P11	Managing Director	Male	Married	40-59	21-30	Post-Graduation
P12	Manager	Male	Married	30-49	1-10	Post-Graduation
P13	Tour Executive	Male	Single	20-29	1-10	Graduation
P14	Managing Director	Male	Married	40-59	21-30	Post-Graduation
P15	Tour Executive	Male	Single	20-29	1-10	Post-Graduation

The authors conducted fifteen in-depth interviews of managers and employees of tour operators located in Kerala, India, to examine the practical relevance of the items inferred from the literature review. In the existing literature, green competencies was described based on the western context and the interviews have helped to infer about the construct in Indian context. The demographic profile of the respondents is shown on Table 1. The duration of the interviews ranged from 30 to 60 minutes. The qualitative interviews were recorded, scripted, and coded. Saturation is an important element to decide the number of samples for qualitative interviews. It refers to point whereby the researcher achieves data saturation i.e. no novel information related to concepts would be obtained any further. According to Guest, Bunce, and Johnson (2006), 12 interviews were sufficient to reach saturation in the homogenous group. In addition, Crouch and McKenzie (2006) propose collection of qualitative interviews less than the sample size of 20 which is essential to reduce the biasness and validity issues. This study also deals with homogenous group i.e. tour operators. 15 interviews were conducted which is sufficient to assess the information about the concept green competencies.

Figure 9: Word-cloud related to transcribed interview data

The R Qualitative Data Analysis (RQDA) package (Huang, 2018) was used in R 3.1.2 software to conduct a content analysis of the interview transcript. A total of 103 pages were obtained after the transcription of the interview audios. The accuracy of the transcribed pages was cross-verified by the authors. Thematic analysis (and more precisely a theoretical method) was employed to identify, analyse and report themes in the semi-structured interview transcripts. According to Braun and Clarke (2006), the theoretical method is driven by the researchers' theoretical analytic interest in the area, and this method is more explicitly analyst-driven. In other words, this approach codes and identifies patterns based on existing concepts in the literature and triangulates it with interview data. The respondents provided their perspective regarding green competencies and packages, such as "tm" and "wordcloud", which were used to form word-cloud through the R software. This displayed a generalised view related to green competencies by the respondents (Figure 1). The patterns identified in the transcribed data were coded. After repeatedly reviewing the themes, the relevant nodes were linked and insignificant nodes were deleted. Finally, the major themes and items were decided upon after a detailed analysis of each theme that corresponded to a dimension. The studies, such as Akter et al. (2013) and Chowdhury and Quaddus (2017) employed theoretical thematic analysis.

Table 6: Results of the content analysis

Constructs	Items	Statements

Green Knowledge	The organisation uses less polluting industrial processes and products	**"***We avoided installing the air conditioner in ecolodge because the sound produced by the a/c compressor may suppress the humming sound of birds."* **P5**
	The organisation has developed a green program (waste management, control of effluents, inventory of pollution sources)	*"There is proper waste disposal mechanism within the premises of the property. The accumulated food waste is treated and can be used as bio gas; this bio fuel is also used for day to day purposes."* **P5**
	The organisation has developed a drafting of environmental emergency plans and measures	*"We have well-trained staff with sufficient knowledge to take care of emergencies during trekking in wilderness. We follow standard procedures and contingency plan to overcome any unforeseen events"* **P7**
	*The organization promotes Environmental Management Systems (EMS)	*"We have environmental policy, planning and implementation of environmental goals. If any diversion happens for such goals, we take corrective actions."* **P14**
Green Skills	*The organisation provides skills in recycling	*"…when we deliver tickets or other invoice to the customers we avoid delivering in paper or plastic covers, instead we use cloth or jute covers/packets."* **P4**
	The organisation creates skills in energy conservation	*"Recently, in our office we have changed high energy consumption lightings and replaced with LED bulbs."* **P12**
	The organisation provides skills in reducing the consumption of materials	*"…instead of providing water in plastic bottles, we use glass bottles for giving water to clients. These glass bottles were reused after sterilising measures. Thus, we reduce the consumption of plastic bottles."* **P3**

	The organisation facilitates adequate skills in environmental protection	*"We use cars if the number of people is less than four. In case, if there is large number of visitors we surely use coach buses. We do not use several small vehicles to accommodate large groups. We take tourists in coach buses which is not only for security or monetary advantage but also for reducing the harmful effect on ecology through pollution and reducing the traffic congestion."* **P15**
Green Abilities	The organisation enables us to solve simple to complex environmental tasks	*"The company provides us all kind of support to sort out the issues which can be large to small."* **P12**
	The organisation helps to find out the several solutions for environmental issues	*"We do not limit our ideas by limiting to a single solution rather we brainstorm to find more alternatives and select the best out of it."* **P14**
	The organisation created a platform that makes me to associate different environmental concepts	*"Training conducted in the company help us to know about various concepts related to environment and we were able to connect it with real life situation"* **P13**
	*The employees are able to utilise the knowledge and skill to solve environmental issues	*"we provide sufficient education to employees for usage of their expertise to figure out the problems related to environment"* **P6**
	The organisation ensures that the employee can relate the past environmental problem with the new issues	*"Our senior staffs are well-versed to solve the new issues arising in the company as they can cite the previous cases and solve the issues within short span of time."* **P13**
Green Attitude	It is essential to promote green living from the part of my organisation	*"We will only consider the number of tourists based on the carrying capacity of the destination. For example, if we are taking a group in village, in case, if the*

	group is greater than thirty, we try to divide the group and send them to nearby tourist destinations" **P2**
I strongly agree that more environmental protection works are needed from my organisation	*"I have learned from the classroom about the aspects such as environmental conservation, protecting the local communities, promoting the handicrafts, and integrating them with ecotourism activities. But, sometimes in the industry, the benefits were diverted to the suppliers not to the local communities. To be frank, I think the company need to stop this economic leakage."* **P8**
It is very important to raise environmental awareness among employees	*"If I perceive that the fresher's who join the firm lacks environmental awareness. We always strive to provide the necessary information to them. It is our responsibility to instantaneously undertake the necessary measures to avoid the future repercussions."* **P4**
Environmental protection works are not simply a waste of money and resources	*"The tourists prefer the destination such as Kumarakom because there are several resorts that support the responsible tourism initiatives. The cost is the major factors that deter large chunk of tourists to visit such destinations. However, we make our effort and spend money for such initiative because we believe the necessity of environmental protection."* **P9**
Environmental protection issues are our business	*"we do not allow any tourism activities that damages nature because we consider protecting environment is important for the well-being of our business"* **P1**

	The organisation think environmental protection is meaningful	*"The employees working in the tour operation companies may not behave like other employees who may indulge in polluting the environment. We really know how meaningful and important is to conserve the environment"* **P15**
	It is wise for organisation to spend a vast amount of money on promoting environmental protection	*"This company has a total number of 35 properties in Thattekad which provides only ecotourism activities. The occupancy rate is not full but it is sufficient to reach break-even point. However, we value such initiatives because these investments help to protect the environment."* **P5**
	*The organisation is concerned about the environment	*"we are concerned about the plastic menace. Earlier we used to provide plastic carry bags to the guests. Currently, we are providing eco-products which is completely free from resins, and use jute bags."* **P12**
	*It is important to be conscious about the consequences of climate change	*"you may know that recently we were hit by Ockhi cyclone which is a rare incident in Kerala's history. The prime reason for such events are climate change due to absence of environmental protection"* **P9**
Green Behaviour	The employees in organisation try to learn more about the environment.	*"Several naturalists would be attending these conferences and while interacting with them we will get several information related to environment. Recently, we have visited the Wayanad with these naturalists, while we were walking in forest, the naturalists showed us several varieties of snails which is an amazing experience."* **P2**

	The organisation find ways of working that are better for the environment.	*"We provide only one PET mineral water bottle to the tourists and insists to keep the empty bottle with them. To refill the PET bottle we provide 20 litres of water container. The bottle can be refilled from this 20 litre jar."* **P6**
	The organisation offer ideas for reducing our impact on the environment.	*"We provide necessary awareness to the employees by organising excursion to tourist destinations. There will be interaction between us in the travel and we would discuss our ideas to conserve the environment"* **P2**
	The organisation shares knowledge about the environment with others.	***"**We markets the property as a nature camp. Before starting of the camping facilities our coordinator provides the necessary briefing to the customers. We state the camp as an ecotourism initiative and nobody is allowed to litter the premises**"*** **P5**
	The organisation applies new ideas for reducing our impact on the environment.	*"Recently, we are planning to provide paper pens instead of plastic pens and the order has been processed. There is seed embedded inside this pen and after the use this seed can be sowed. It is seed from Agastya (Sesbania grandiflora) which has numerous Ayurvedic capabilities. The doctors insist the necessity of this plant in every household."* **P7**
	*The organisation creates green processes and products.	*"We ask employees to state the services that can be rendered to the tourists from the existing natural environment, which may be free of cost and should not harm or causes any negative impact on*

		environment." **P2**
	The organisation performs environmental tasks that are not required.	*"We do engage in activities other than our core business activities. As part of Clean Kochi Foundation, which is a committee of tourism stakeholders to clean the surroundings of tourist destination such as Fort Kochi"* **P3**
	The organisation questions the practices that are likely to hurt the environment.	"*We can see that tress cut down by people in our localities. If it is nearby my locality I will surely initiate action. Whatever it maybe, if it is damaging the environment, I will take an opportunity to question the situation."* **P4**
	The organisation reuses materials.	*"There is a need to provide bottled water to the clients which is a necessity that is unavoidable. As a solution to the problem, instead of plastic bottles we gave metallic bottles to the clients that can be reused."***P8**
	The employees reduce their energy use.	*"Even it is in my personal life or official life, I will try to reduce power consumption like reducing the usage of fan or turn off after its use. I also felt the need to conserve water, as we see that people turn on the tap and wasting water."* **P9**
	*The organisation make the employees involved in environmental activities that are not part of their job	*"Our employees' participate in initiative such as cleaning the tourist destination - Fort Kochi beach and plant tree saplings as part of World Environmental Day."* **P6**
	*The organisation has working environment that encourage employees to think about the environment	*"We conduct periodical training with qualified trainers and also integrated eco-projects with these sessions. These sessions have enabled the employees to*

		consider environmental conservation." **P10**
	The organisation supports the employees to solve environmental problems in society	*"Transportation facilities in tourist destination creates air pollution. To reduce its impact, we keep old vehicles for particular tenure and it is well maintained. The pollution control measures and documentation were also properly maintained. We also follow nations' vehicle laws and environmental law to reduce the pollution."* **P11**
Green Awareness	The organisation facilitates the use of environmentally friendly products	*"As far as gifts are concerned, earlier we were providing gifts made up of plastics. Right now we were providing bamboo made gifts which is not only to protect ecosystem but also to help the poor people who were employed in such jobs."* **P1**
	The organisation encourage the employees recycle	*"We do have recycling process. We do not use any plastic or steel bins to dump wastes which is not only in our office but also during tour with clients, instead we use bamboo made baskets."* **P1**
	The organisation creates understanding among the employees to learn about environmental issues	*"We send employees to external conferences which has enhanced their environmental knowledge. We also send employees to nature walk in villages such as Kumbalangi and provide opportunities for them to interact with local communities."* **P11**
	The organisation educate employees regarding the negative impact caused to environment	*"We educate our employees on adverse effect caused to environment through our tourism activities because conservation of environment has influence in gaining*

		future business." **P14**
	*The decisions that organisation initiate have important effect on the natural environment	*"If we are reluctant to protect the nature, I think it will cause several environmental problems. Therefore, we take judicious decisions through planning to avoid such events."* **P10**

***items that are ignored during q-sort process

The results obtained from the content analysis of the transcribed data categorises 6 themes related to green competencies. Furthermore, 6 themes were cross-verified though a literature review. For instance, in the case of green knowledge, the themes were matched with a scale developed by Cegarra-Navarro, Martinez-Martinez, Ortega Gutiérrez, and Luis Leal Rodríguez (2013). Based on the qualitative study, the necessary alterations were made in the items. This was similar for the case of green skills (Wong et al., 2012), green attitudes (Han et al., 2009), green behaviour (Kaiser et al., 1999), and green awareness (Ballantyne et al., 2008). However, there was no valid or reliable scale for measuring green abilities, and therefore, the items were adopted from Mohtar and Rajiani (2016) and Renwick, Redman, and Maguire (2013). This process resulted in the generation of 40 items categorised under six dimensions and after the deletion of unmatched or duplicate items. In the later stage of the study, the reliability and validity of the created items was examined. The items that matched the responses of the in-depth interviews and literature reviews are showcased in Table 2.

4.1.2 Item sorting

Table 7: Item placement ratio and inter-rater reliability

Constructs	Theoretical construct classification	Number of dropped items	Actual items in construct	% of Hits	Cohen's Kappa score
Green Knowledge	4	1	3	75.00	0.55
Green Skills	4	1	3	75.00	0.55
Green Abilities	5	1	4	80.00	0.57
Green Attitude	9	2	7	77.78	0.68
Green Behaviour	13	3	10	76.92	0.69
Green Awareness	5	1	4	80.00	0.63

Total	40	9	**31**

In this stage, the domain coverage and reliability of each item in the green competencies was examined and this was conducted at two levels. Initially, the domain coverage was examined with the help of two experts, viz., one academician and one manager. The authors requested that the academician in the domain and the managing director of the Tour Operation Company sort the statement and provide feedback based on their perspective. The Q-sort procedure helps to identify the appropriate placement items within the constructs. This procedure ensures necessary proof of content validity among various items in the constructs. The results obtained from the item placement ratio indicate that 31 correct placements were acquired from a total of 40. The individual hit ratio was greater than 75%, which is within the acceptable limit prescribed by Menor and Roth (2007). The Cohen's Kappa score obtained from the analysis was above the threshold limit of < 0.41 (McHugh, 2012). Finally, a sum of 31 items was considered for instrument testing (see: Table 3).

4.2 Instrument testing

4.2.1 Developing an initial questionnaire and pre-testing

For pre-testing the initial questionnaire it was distributed to 15 respondents (5 scholars, 5 managers, and 5 employees). There were 31 items (questions) and they were measured on a 7-point Likert scale. The pre-testing was conducted to receive inputs from the respondents and improve the clarity. The respondents' feedback was addressed in the final draft of the questionnaire and this draft was used for the field study.

4.2.2 Purification of measures

Table 8: Results obtained from Exploratory Factor Analysis (EFA)

Items	**Extracted Factors**					
	1	**2**	**3**	**4**	**5**	**6**
Green Knowledge 1	-.068	.019	.054	-.083	.018	**.797**
Green Knowledge 2	.057	-.076	.171	-.041	.096	**.767**
Green Knowledge 3	.084	.004	-.001	-.012	-.018	**.856**
Green Skills 1	.206	.200	.022	-.005	**.808**	.020
Green Skills 2	.316	.171	.076	.138	**.751**	.031
Green Skills 3	.280	.218	-.011	-.036	**.743**	.079
Green Abilities 1	.073	.127	**.862**	.026	-.001	.019
Green Abilities 2	.148	.187	**.832**	.052	.053	.030

Green Abilities 3	.240	.154	**.846**	.021	.016	.109
Green Abilities 4	.173	.123	**.840**	.071	.032	.118
Green Attitude 1	**.709**	.162	.094	.081	.139	-.049
Green Attitude 2	**.701**	.139	.210	.041	.164	-.038
Green Attitude 3	**.599**	.196	.106	-.013	.315	-.027
Green Attitude 4	**.762**	.079	.068	.000	.182	.013
Green Attitude 5	**.681**	.174	.032	.063	.136	.063
Green Attitude 6	**.684**	.149	.001	.047	.147	.048
Green Attitude 7	**.595**	.294	.221	.065	.051	.081
Green Behaviour 1	.456	**.525**	.164	.044	.004	.022
Green Behaviour 2*	.524	.503	.279	.123	.124	.011
Green Behaviour 3*	.499	.408	.169	-.063	-.201	.021
Green Behaviour 4	.453	**.543**	.212	.004	.028	.044
Green Behaviour 5	.166	**.733**	.129	.067	.094	-.038
Green Behaviour 6	.173	**.677**	.018	.037	.127	-.091
Green Behaviour 7	.064	**.722**	.106	.018	.132	.027
Green Behaviour 8	.135	**.655**	.097	.136	.181	-.075
Green Behaviour 9	.352	**.677**	.065	-.015	-.011	.057
Green Behaviour 10	.134	**.690**	.092	.176	.225	.038
Green Awareness 1	.065	.106	.060	**.786**	-.007	-.037
Green Awareness 2	.012	.014	.013	**.739**	-.026	-.024
Green Awareness 3	.013	.119	.071	**.767**	.068	-.023
Green Awareness 4	.095	.055	.000	**.839**	.048	-.057

Table 9: Results obtained from Exploratory Factor Analysis (EFA) after dropping items –Pilot Study

Items	Loadings	Eigen value	Cumulative variation	Cronbach's α
Green Knowledge 1	.653	8.021	27.659	.749
Green Knowledge 2	.635			
Green Knowledge 3	.739			
Green Skills 1	.761	2.713	37.014	.820
Green Skills 2	.730			

Green Skills 3	.716			
Green Abilities 1	.767	2.527	45.727	.902
Green Abilities 2	.758			
Green Abilities 3	.812			
Green Abilities 4	.770			
Green Attitude 1	.597	1.925	52.367	.862
Green Attitude 2	.608			
Green Attitude 3	.522			
Green Attitude 4	.639			
Green Attitude 5	.525			
Green Attitude 6	.516			
Green Attitude 7	.508			
Green Behaviour 1	.510	1.715	58.281	.868
Green Behaviour 4	.513			
Green Behaviour 5	.609			
Green Behaviour 6	.526			
Green Behaviour 7	.562			
Green Behaviour 8	.519			
Green Behaviour 9	.611			
Green Behaviour 10	.585			
Green Awareness 1	.638	1.317	62.821	.799
Green Awareness 2	.548			
Green Awareness 3	.616			
Green Awareness 4	.725			

The items generated from the previous stage were transferred into the initial survey questionnaire to conduct the exploratory factor analysis. The employees of the tour operator in Kerala were considered a sample. A back translation method (Brislin, 1970) was applied to translate the English questionnaire to the local language of Kerala, i.e., Malayalam with the help of language experts in the respective field. However, the majority of the respondents in Kerala preferred the English questionnaire, which might be because of the high level of education and knowledge of the English language in the state.

Exploratory factor analysis was conducted using SPSS software. During the process of conducting EFA, the items with factor loadings less than 0.60 (Green Behaviour 2) and cross loadings (Green Behaviour 3) were dropped. The factor loadings of each item are presented in Table 4. After dropping the items, the authors applied both a component analysis and a varimax method. The results revealed that the eigen value of each factor is greater than one, and the values recorded after rotation are 4.741, 4.341, 3.251, 2.591, 2.193, and 2.039 (Hair, Black, Babin, and Anderson, 2010). The Kaiser-Meyer-Olkin (KMO) index was used to measure the overall sampling adequacy and it was found to be > 0.50, i.e., the value of 0.888 and Bartlett's test of sphericity indicated the validity of the instrument (χ^2= 4699.016, df= 465, and p= 0.000), and the sum of the squared loadings of the six constructs with 29 items resulted in a cumulative variation of 61.793 (see: Table 5).

4.3 Model specification

4.3.1 Formative or reflective construct

This study followed the guidelines stipulated by Baxter (2009), Hair, Hult, Ringle, and Sarstedt (2016), and Jarvis, MacKenzie, and Podsakoff (2003) to identify whether green competencies are a reflective or formative construct. Similar steps were followed in the work of Akter et al. (2013).

In agreement with the decision rules stipulated by Jarvis et al. (2003), the nature of the construct was decided and it was determined whether it was formative or reflective. First, the direction of causality of the literature shows that the dimensions of green competencies were from constructs to indicators. For instance, the dimension of green knowledge was reflected through three items wherein the items are interchangeable, and elimination of an indicator will not alter the domain coverage of the construct. Second, the results of the EFA demonstrated the existence of a positive correlation among items under a construct, which further indicates that the construct is reflective in nature (Bollen and Lennox, 1991) and internal consistency is within the cut-off (Petter et al., 2007). Third, the nomological network of the indicators was examined, and it was observed from the extensive literature that the nomological network of the construct of green competencies do not change and are also backed by the existence of the same antecedent and consequent variable. Last, there is proof of the uni-dimensionality of the construct, which is visible during scale refinement. In addition, the dropping of the items in the scale enhanced the construct validity without affecting its content validity. Therefore, the study postulates that the scale of green competencies is hierarchical, multidimensional, and reflective and consists of six dimensions

such as green knowledge, green skills, green awareness, green abilities, green behaviour, and green attitude.

CHAPTER 5
DATA ANALYSIS: LARGE SCALE SURVEY AND INSTRUMENT VALIDATION

5.1 Chapter Summary

Based on proof from the literature and statistical evidence regarding the structure of green competencies, a model was drafted to validate the scale. The green competencies were comprised of 6 dimensions and 29 items and three hypothesis was formulated such as direct relationship of green training and environmental performance, mediating effect of green competencies and moderating effect of environmental commitment.

5.2 Hypothesis formulation

5.2.1 Green Training and Environmental Performance

Academics have applied the concept of green training to understanding the environmental performance of an organisation. Daily et al. (2007) posit a model that integrates human resource practices with environmental management systems, and propose that providing green training to employees has a significant relationship with environmental performance. They further highlight the importance of human resource factors in the implementation of environmental management systems or ISO14001 certification. Similarly, Golds (2011) proposes that providing green training to employees leads change in organisations, as well as improving the environmental performance of organisations. In the same vein, Daily et al. (2012) argue for the significance of green training in terms of environmental performance and environmental empowerment, as the former has greater capability to influence human resources and engage in sustainable activities.

In recent years, the literature on environmental management has considered green training as a dimension of green human resource management. For instance, Masri and Jaaron (2016) examine green training as a part of green human resource management practices and verify its impact on environmental performance. Their results indicate a positive relationship, but with a lower effect for green training in comparison with other green human resource management practices. Cherian and Jacob (2012) establish green training as a green human resource management practice, as well as a crucial dimension that helps employees to execute green management principles, which help in achieving environmental performance. In addition, Guerci, Longoni, and Luzzini (2016) delineate green training, which is part of green human resource practice, as helping organisations to develop environmental attributes and improve environmental performance.

Even though there are several studies that examined the significance of training in hospitality organisation (Cortés, 2014; Jaworski, Ravichandran, Karpinski, & Singh, 2018; Martínez-ros & Orfila-sintes, 2012), very few empirical studies have established the relationship between green human resource management practices and environmental performance in the hospitality literature. For instance, Kim, Kim, Choi, and Phetvaroon (2019) assert that green human resource management practices – which are part of an environmental management system – have a positive association with environmental performance. However, no study to date in the tourism and hospitality literature has examined the relationship between green training and environmental performance. Thus, it is important to test this relationship in the literature. Accordingly, the following first hypothesis is proposed:

Hypothesis 1: Green training has positive and significant relationship with environmental performance.

5.2.2 The Mediating effect of Green Competencies

The environmental technologies utilised in an organisation alone are insufficient to resolve adverse environmental effects; hence, these technologies must be supplemented by environmentally competent employees with green knowledge and green skills (Venselaar, 1995). In order to resolve these problems, green training programmes are conducted in organisations to help employees enhance their green competencies, which in turn can improve the environmental performance of the organization. Green training is vital not only so that top management can improve their employees' skills in environmental matters, but also to incorporate different aspects of the organisation which are related to environmental conservation (Govindarajulu & Daily, 2004). In the same vein, Opatha and Arulrajah (2014) assert that dimensions of green competencies, such as green knowledge and green skills, can be propagated among employees through green training, which will in turn help to create green behaviour for achieving environmental performance. These researchers explain the that green competencies provided by green training include areas such as energy conservation, waste reduction, environmental awareness and problem solving, as well as further aiding an organisation to improve environmental performance. Similarly, Soltero (2004) asserts that the adoption of environmental practices is insufficient for achieving environmental performance, as these practices need to be backed up by enhancing the competencies of employees.

In the context of hospitality management, Wu, Thongma, Leelapattana, and Huang (2016) discuss the crucial role of green training in disseminating dimensions of green competencies such as green knowledge and green skills among employees. This study found that the improvement of green skills and green knowledge enhances the overall performance of hotels

(including environmental performance), along with their green abilities. Therefore, the existing literature delineates the role of green training in enhancing green competencies among employees, leading to the outcome of improved environmental performance. On the basis of the aforementioned arguments, the following hypothesis is proposed:

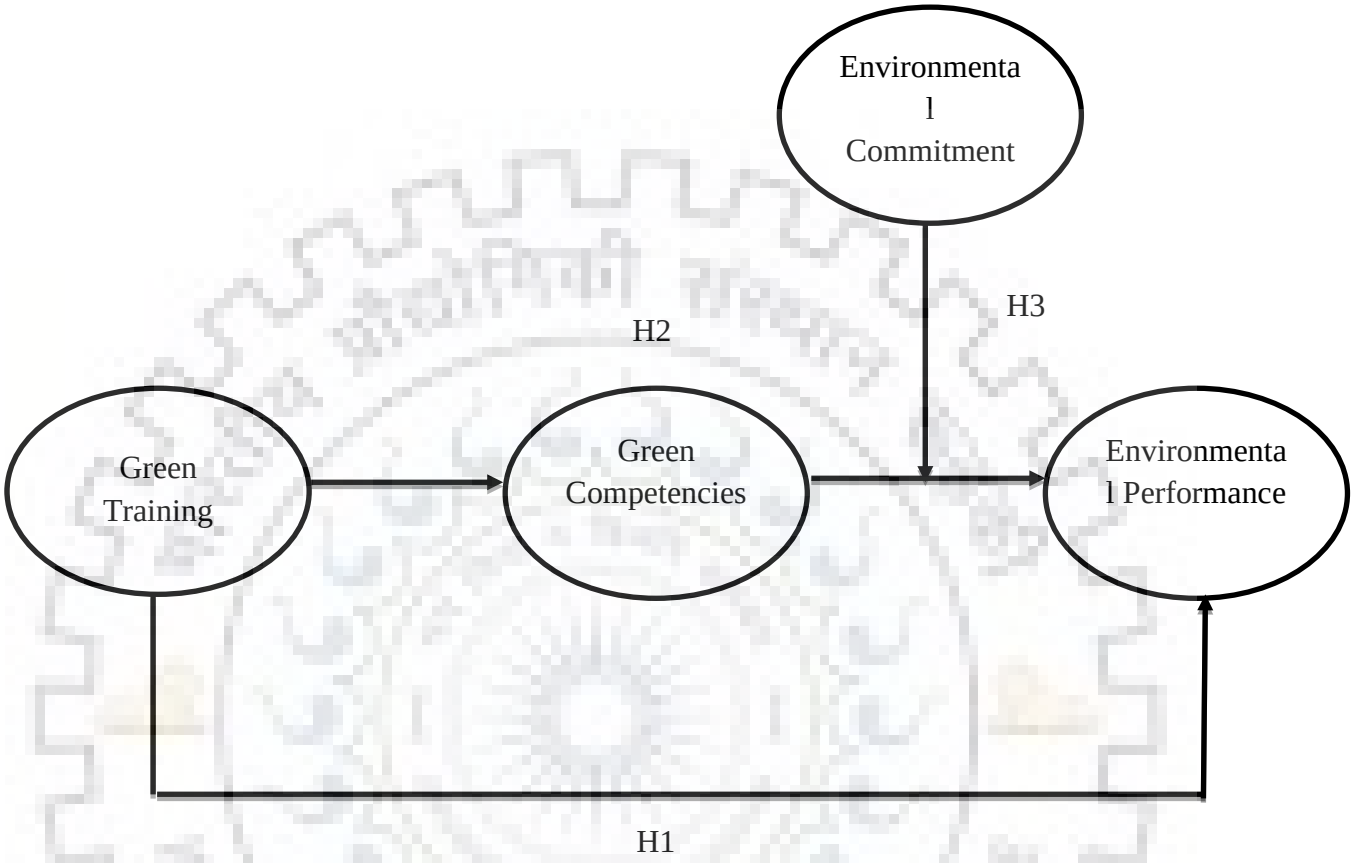
Hypothesis 2: Green competencies mediate the relationship between green training and environmental performance.

5.2.3 The Moderating effect of Environmental Commitment

Organisational commitment is formed in employees due to several factors such as job identification, job involvement (Singh, 2007) and job satisfaction (Pandey et al., 2019). Environmental Commitment is defined as "a frame of mind denoting both a sense of attachment and responsibility to environmental concerns in the workplace" (Raineri & Paillé, 2016, p. 133). In the seminal work, Hunt and Auster (1990) has categorised level of environmental management into five stages and stated that pro-activist companies provide prime importance to environmental management and their top management has deep concern on environmental commitment to mitigate the environmental degradation in the organisation, thus achieving environmental performance. Henriques and Sadorsky (1999) examined the association between environmental commitment as well as stakeholder importance, asserted that firms which accomplished pro-active level of environmental management showcase environmental commitment to engage with various stakeholders. Lynes and Dredge (2006) study on identifying the motivation behind environmental commitment in service sector context (Scandinavian Airlines) identified that the environmental commitment of top-level management helps to ensure airlines' environmental performance. Therefore, this study posits that environmental commitment among the top-level managers strengthens the relationship of environmental management maturity and environmental performance, and next hypothesis as follows.

Hypothesis 3: Environmental Commitment moderates the relationship between Green Training and Environmental Performance

Figure 9: Theoretical model



5.2 Confirmatory analysis

Table 10: Demographic profile of respondents -Survey

Employees' Details (n = 303)	**Frequency(s)**	**Percentage (%)**
Gender		
Male	192	72.18%
Female	74	27.82%
Marital Status		
Single	76	28.57%
Married	190	71.43%

Age (in yrs)		
21-30	84	31.58%
31-40	68	25.56%
41-50	91	34.21%
51-60	15	5.64%
61 & above	8	3.01%
Education		
Senior School	22	8.27%
Graduation	125	46.99%
Post Graduation	119	44.74%
Work Experience		
1-9 years	104	39.10%
10-19 years	65	24.44%
20-29 years	89	33.46%
30 years & above	8	3.01%

As the degree of convergent and discriminant validity is less evident from the pilot study, confirmatory factor analysis was conducted to validate the green competencies scale. Cross-sectional data were collected from the tour operators through face-to-face surveys. A total of 350 survey questionnaires were distributed among the sample group and 276 questionnaires were returned, which indicates that the response rate was 78.86%. After eliminating the questionnaires with missing data and outliers, 268 questionnaires were used for further analysis. The demographic details of the study are presented in Table 6. The sample size of 268 was enough for the analysis, which was verified through G*Power 3.1 software (Faul et al., 2009) because the software shows the adequate sample size necessary for attaining statistical significance by recovering false outcomes. The results obtained after data processing were 0.30 as the effect size and 0.99 as the power (1-β error probability), which reveals that the minimum sample of the study was 55. Hence, the sample size of 266 satisfies the criteria for adequate sample size.

Common method bias is another concern as the responses were collected from a single category of respondents. The methodology adopted in the study, such as selecting items for constructs through qualitative interviews and the Q-sort process, resulted in data

triangulation, and this reduced the common method bias to a certain extent. In addition, Harman's one factor test was assessed and the results depicted that the un-rotated analyses were within the threshold limit of 50%, i.e., 29.406% (Podsakoff and Organ, 1986).

5.2.1 Treatment of missing data

While examining the data, missing data has been identified wherein such issue arise in case, the respondent voluntarily or involuntarily unable to fill the questions in the survey. Case-wise deletion has been used to remove the responses from analysis wherein missing data of the items are observed.

5.2.2 Treatment of suspicious response patterns

Suspicious response patterns arise when the respondent fills the same response to the entire range of items at a higher rate. Observed straight lining and suspicious responses have been removed prior to the data analysis.

5.2.3 Treatment of outliers

Outliers are the extreme response provided by the respondent to an indicator. Such identified response in the study has been removed from the study.

5.2.4 Data distribution - Test of normality

Skewness and kurtosis have been used to test the normality of data. Skewness examine whether the construct are normally distributed and kurtosis checks the peakedness of the normal distribution. The results show that skewness ranges from 0.871 to -0.421, and kurtosis ranges from 0.781 to -0.121 which reflects that data is non-normal.

Table 10: Mean, Standard Deviation. Skewness and Kurtosis

Items	Mean	Standard Deviation	Kurtosis	Skewness
GT1	2.495	1.900	0.158	1.150
GT2	2.756	1.746	0.260	1.070
GT3	2.772	1.768	0.113	0.936
GT4	2.746	1.742	0.197	0.989
GT5	2.525	1.776	0.405	1.153
GT6	2.571	1.735	0.589	1.212
GT7	2.594	1.775	0.585	1.229
GT8	2.647	1.747	0.210	1.036
GT9	2.482	1.813	0.560	1.266
GT10	2.630	1.713	0.189	1.078

GC1	2.333	1.766	0.957	1.413
GC2	2.492	1.778	0.651	1.294
GC3	2.363	1.712	1.164	1.435
GC4	2.446	1.762	0.604	1.256
GC5	2.518	1.770	0.783	1.324
GC6	2.307	1.718	1.240	1.467
GC7	2.409	1.763	1.160	1.434
GC8	2.363	1.822	0.897	1.396
GC9	2.340	1.761	0.941	1.411
GC10	2.383	1.770	0.776	1.323
GC11	2.482	1.759	0.540	1.202
GC12	2.459	1.755	0.655	1.275
GC13	2.373	1.697	1.114	1.418
GC14	2.465	1.704	0.720	1.267
GC15	2.465	1.674	0.785	1.233
GC16	2.429	1.752	1.225	1.469
GC17	2.429	1.763	0.946	1.403
GC18	2.502	1.757	0.431	1.174
GC19	2.469	1.736	0.722	1.287
GC20	2.436	1.756	0.934	1.357
GC21	2.472	1.783	0.587	1.260
GC22	2.419	1.795	0.650	1.308
GC23	2.403	1.695	0.854	1.326
GC24	2.538	1.785	0.587	1.224
GC25	2.482	1.768	0.249	1.135
GC26	2.386	1.778	0.676	1.302
GC27	2.548	1.788	0.342	1.165
GC28	2.475	1.834	0.777	1.345
GC29	2.498	1.750	0.338	1.177
EP1	2.733	1.964	-0.291	1.005
EP2	2.726	2.033	-0.428	0.963
EP3	2.670	1.913	-0.064	1.069
EP4	2.739	1.945	-0.365	0.914

EP5	2.729	1.988	-0.392	0.956
EP6	2.733	1.956	-0.228	0.974
EP7	2.713	1.829	-0.062	1.080
EP8	2.422	2.050	0.514	1.430
EP9	2.541	1.929	0.014	1.191
EC1	3.023	2.275	-1.157	0.672
EC2	3.317	2.134	-1.085	0.565
EC3	3.145	2.100	-0.933	0.643
EC4	3.254	2.222	-1.046	0.673
EC5	3.168	2.167	-1.140	0.537
EC6	3.304	2.159	-1.151	0.496
EC7	3.135	2.286	-1.113	0.707
EC8	3.106	2.240	-1.145	0.708

Table 11: Correlation matrix

	Green Training	Green Knowledge	Green Skills	Green Abilities	Green Attitude	Green Behaviour	Green Awareness
Green Training	1.00						
Green Knowledge	0.50	1.00					
Green Skills	0.40	0.56	1.00				
Green Abilities	0.51	0.37	0.27	1.00			
Green Attitude	0.61	0.46	0.31	0.59	1.00		
Green Behaviour	0.28	0.14	0.09	0.25	0.33	1.00	
Green Awareness	0.46	0.21	0.20	0.36	0.53	0.12	1.00

5.3 Outer model (Measurement model)

Table 12: Standardised factor loading and VIF

Items	Environmental	Environmental	Green	Green

	Commitment	Performance	Competencies	Training
EC1	0.902			
EC2	0.857			
EC3	0.843			
EC4	0.874			
EC5	0.843			
EC6	0.849			
EC7	0.914			
EC8	0.923			
EP1		0.861		
EP2		0.854		
EP3		0.831		
EP4		0.808		
EP5		0.840		
EP6		0.826		
EP7		0.870		
EP8		0.921		
EP9		0.910		
GC1			0.857	
GC2			0.831	
GC3			0.840	
GC4			0.806	
GC5			0.821	
GC6			0.827	
GC7			0.836	
GC8			0.836	
GC9			0.840	
GC10			0.793	
GC11			0.806	
GC12			0.821	
GC13			0.826	
GC14			0.816	
GC15			0.764	

GC16	0.839	
GC17	0.850	
GC18	0.777	
GC19	0.818	
GC20	0.810	
GC21	0.811	
GC22	0.829	
GC23	0.810	
GC24	0.793	
GC25	0.798	
GC26	0.792	
GC27	0.777	
GC28	0.834	
GC29	0.802	
GT1		0.836
GT2		0.808
GT3		0.757
GT4		0.779
GT5		0.791
GT6		0.824
GT7		0.812
GT8		0.806
GT9		0.845
GT10		0.811

The statistical calculation in this study was computed using SmartPLS 3 software. The three steps propounded by Fornell and Larcker (1981) and Hair et al. (2016) were employed to measure the reliability of the constructs. First, the factor loadings were checked to see whether they exceed 0.70. It was observed that the loadings ranged from 0.704 to 0.902 and thereby satisfied the condition (Table 7). Additionally, the t-value exceeds $\pm$ 1.96 at the 5% significance level.

The issue of multi-collinearity was assessed through Variance Inflation Factors (VIF). The values of VIF ranged from 1.485 to 2.487, which indicated that multi-collinearity is within the acceptable limit of < 3.3 (Roldán and Sánchez-Franco, 2012) (Table 7).

The values of Cronbach's α for each construct were: green training (0.912), green knowledge (0.862), green skills (0.831), green abilities (0.879), green attitude (0.885), green behaviour (0.883), and green awareness (0.783). These values are greater than the rule of thumb, i.e., 0.70 (Bagozzi and Yi, 1988) and therefore are acceptable. The composite reliability of the constructs is also greater than 0.70 and the values range from 0.860 to 0.920, which indicates the existence of internal consistency and reliability among the constructs (Table 8).

Table 12: Reliability and validity measures

Constructs	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Environmental Commitment	0.957	0.959	0.963	0.768
Environmental Performance	0.955	0.957	0.962	0.737
Green Competencies	0.982	0.982	0.983	0.666
Green Training	0.94	0.942	0.949	0.652

Table 13: Discriminant Validity: Fornell Larcker

Constructs	Environmental Commitment	Environmental Performance	Green Competencies	Green Training
Environmental Commitment	0.876			
Environmental Performance	0.484	0.859		
Green Competencies	0.366	0.712	0.816	
Green Training	0.401	0.701	0.677	0.807

Table 14: Discriminant Validity: Heterotrait-Monotrait criteria

Constructs	Environmental Commitment	Environmental Performance	Green Competencies	Green Training
Environmental Commitment	1.000			
Environmental Performance	0.504	1.000		
Green Competencies	0.375	0.733	1.000	
Green Training	0.419	0.735	0.701	1.000

Average Variance Extracted (AVE) and it is greater than 0.50, which indicates the presence of convergent validity. The values in the study range from 0.543 to 0.784 (Bagozzi and Yi, 1988) as shown in Table 8.

Besides Fornell and Larcker's (1981) AVE-SE, the Heterotrait-Monotrait (HTMT) ratio correlation is also used to measure discriminant validity. The value of AVE was found to be < 0.85 (Henseler et al., 2015), which demonstrated discriminant validity and is shown in Table 9.

5.4 Inner model (Structural model)

Table 15: Hypothesis Testing: Path coefficient

Relationship	Beta Coefficent	Standard Deviation	T Statistics	P Values	
Green Training -> Environmental Performance	0.666	0.084	7.889	0.000	Supported
Green Training -> Green Competencies -> Environmental Performance	0.677	0.06	11.304	0.000	Supported

Moderating Effect 2 -> Environmental Performance	-0.067	0.071	0.952	0.341	Unsupported

This study adopted the steps posited by Hair et al. (2016). First, the path coefficients among the constructs were evaluated and are tabulated in Table 10. It was found that green training has a positive relationship with green competencies (β= 0.694, $p < 0.001$), which highlights that hypothesis 1 is supported. The values of the t-statistics exceeded ± 1.96 at the 5% level of significance and thus indicated acceptance of the hypothesis. Second, the variance of the constructs were measured using R^2 (the coefficient of determination) and the variance of green training to other sub-construct records, such as green abilities (0.273), green knowledge (0.256), green awareness (0.219), and green skills (0.163), which indicates a moderate relationship, whereas green attitude (0.373) depicts large variance (Hair, Ringle, and Sarstedt, 2011).

Third, f^2 (effect size) was examined to understand the variance of the independent variable on the dependent variable. Hair et al. (2016) proposed that the variance is weak if the value is 0.02, it is moderate if the value is 0.15, and it is large if the value is 0.35. The results indicate that green attitude (0.594) and green abilities (0.375) have a large variance. The dimensions, such green awareness (0.280), green skills (0.195), and green knowledge (0.344), depict that the variance is moderate.

Finally, the existence of predictive relevance between the independent and dependent variable is measured using blindfolding (Stone-Geisser's Q^2). The results indicate that Q^2 is > 0 (Chin, 2010), i.e., green knowledge (0.114), green skills (0.108), green abilities (0.159), green attitude (0.141), green behaviour (0.031) and green awareness (0.120) showcase the presence of higher predictive relevance in the model.

5.5 Chapter Summary

This chapter consists of measurement validation of the developed theoretical model. Data analysis was conducted with PLS-SEM and the interpretation was explained in detail. The results verified the direct relationship between green training and environmental performance, mediating relationship of green competencies between green training and environmental performance, and moderating effect of environmental commitment between green competencies and environmental performance.

CHAPTER 6
CONTRIBUTIONS, LIMITATIONS AND CONCLUSION

6.1 Chapter Overview

In this section, implications of study which include contribution about theory and practice were discussed. Limitations and conclusions were delineated under this chapter.

6.2 Theoretical implications

This study elaborates the Green Human Resource Management literature by formulating and validating a green competency model, i.e., a higher-order model, which consists of different dimensions: green knowledge, green skills, green abilities, green awareness, green attitude, and green behaviour. To emphasise, this study adds to the Green Human Resource Management literature from numerous perspectives. First, this study developed and defined the concept, i.e., green competencies and its measurement validation in the context of the tourism and hospitality industry.

This study also presents a model that evaluates and integrates the concept of green training and green competencies. However, there are few studies that identify the relationship between green training and environmental performance (Daily and Huang, 2001) or environmental management maturity (Jabbour, 2015). This is the first study that establishes the empirical relationship between green training and green competencies. This study employed the Natural-Resource-Based-View to arrive at the solution. In fact, the Natural-Resource-Based-View proves that a firm's resources (i.e., green training provided to human resources) and capabilities (i.e., green competencies, which have attributes, viz., rare, non-substitutable, non-inimitable, and valuable) may increase the firm's environmental performance and result in a competitive advantage (Barney, 1991; Hart, 1995b).

Second, the importance of green training to disseminate green knowledge to employees in the organisation was established. The findings agree with the work of Arulrajah, Opatha, and Nawaratne (2015), who posited that green knowledge is a vital element that can be provided through green training and it builds an organisational culture that supports environmental practices in the organisation. Similarly, a study by Daily, Bishop, and Steiner (2007) indicated that green training provides green knowledge to green teams to utilise existing opportunities, which helps them face several challenges posed by the external environment.

Considering the tourism and hospitality industry, it should be noted that green knowledge is not just confined to environmental aspects. Green knowledge also includes social aspects that are related to ecotourism principles such as the conservation of biodiversity and respect for cultural heritage, contributions to the welfare and empowerment of the local communities, and assistance in the democratic process and human rights (Cobbinah, 2015).

Third, this study asserted the impact of green training on enhancing green skills. Renwick et al. (2013) stated that the role of providing green training in the workspace is to nurture green skills regarding energy efficiency, waste management, and environmental analysis among employees. Dlimbetova et al. (2016) further asserted the lack of understanding and the need for developing green skills in the workspace. Hence, a deficiency of green skills can be rectified through green training by incorporating environmental aspects in the curriculum. Such acts can enable employees to engage in practices that diminish the adverse impacts caused by an organisation on the natural environment.

Fourth, the relationship of green training with green abilities was also confirmed. The findings agree with the work of Arulrajah et al. (2015), wherein the researchers described the effect of green training on employees to create green abilities in the organisation, which results in enhancing overall environmental performance. Green training ensures that the employees apply green knowledge and skills in practical situations and enables the business organisation to achieve its environmental goals. Similarly, Appelbaum, Bailey, Berg, and Kallerberg (2000) stated that training assists in enhancing employees' green abilities, which benefit the organisation in mitigating waste and improving productivity, profitability, and the quality of the service/product (Renwick et al., 2013).

Fifth, the relationship between green training and green awareness was established in this study, which is consistent with the assertion of Opatha and Arulrajah (2014). The researchers proved that green awareness is an important constituent that is fostered through green training. The study of Mishra (2017) (in the Indian context) provided a case of a public organisation where green training sessions were conducted on environmental awareness, and these sessions aided the employees in becoming aware of the environmental degradation and caused them to undertake measures for avoiding these environmental issues. Green awareness can be regarded as the dimension that stimulates and commences green competencies in employees. For instance, the awareness imbibed in employees through green training enlightens the perception, consciousness and feelings about environmental conservation and assists the employees to learn the facts and concepts about the environment and ecosystems and thus indoctrinates green knowledge. Likewise, green awareness also stimulates other

dimensions in green competencies, such as green attitude and green behaviour, wherein training on green awareness results in creating favourable cognitive assessment of environmental protection, i.e., green attitudes. These attitudes nurture behaviour that benefits the environment, i.e., green behaviour.

Sixth, training on environmental aspects influences the two core components of employees' attitudes, i.e., their belief system and thought process along with their emotions. The information accessed through green training sessions influences the employees to maintain positive emotions and to participate in activities that conserve natural resources. This agrees with the findings of Tisdell and Wilson (2005) who stated that providing education in environmental studies alters the attitude of tourists and drives them to take part in conservation activities. Similarly, providing green training sessions within the organisation forges green attitude, which encourages a positive approach among employees to endeavour in pollution reduction, product stewardship, and sustainable development.

Seventh, green training acts as a systematic process that enables green behaviour in an employee, which in turn aids an organisation in achieving their environmental objectives. The findings agree with Mishra (2017) who asserted that providing environmental training or learning to employees helps them to imbibe in green behaviour. Utilising green behaviour is a sub-dimension in green competencies that can be directly observed by people and can be stated as an outcome of green competencies in employees. Employees with green behaviour detract themselves from unsustainable activities that degrade the natural environment. Moreover, these employees display a positive attitude towards the education of various environmental concepts and transferring them to colleagues and clients (Aytac, 2017; Bilgel et al., 2006; Ceylan et al., 2008).

Eight, based on the theory propounded by Hart (1995), the study reaffirmed the direct effect of green training on environmental performance. The existing literature was based on western nations and manufacturing industries. This study extended the GHRM literature and on service industry, i.e., tourism, and postulated the importance of GHRM practices in the tourism industry for achieving sustainable development.

Ninth, the study reaffirmed the direct relationship between green training and environmental performance, which is in line with the findings of Daily et al. (2012, 2007); Masri and Jaaron (2017). Third, the study emphasised the mediating role of green competencies between green training and environmental performance. The study reaffirmed that green competencies as a hierarchical construct encompasses environmental knowledge, skills, and abilities (KSA), green awareness and environmental attitude and behaviour. The green training in the

organisation subsumes environmental KSA and awareness among the employees, which results in the alteration of the attitude and behaviour and involves the employees in environmental activities, and it consequently results in environmental performance of an organisation.

6.1.1 Implications based on systematic literature review

1. In terms of research methodology, conceptual studies need to be conducted because of the ambivalence regarding the concept and the lack of universal application. Academicians employ various synonyms in their studies to denote GC. Even though there are a few empirical studies, they fail to measure the GC concept or identify its antecedents and consequences. More importantly, there is a lack of measurement validation and instrument development to measure GC. Hence, such research gaps need to be addressed. A mixed method is recommended as a methodological choice for academicians because such methods are important for the problems and research questions that pertain to EM (Molina-Azorín and López-Gamero, 2016). However, there exists a dearth of empirical studies that measure the concept in terms of cross-sectional or longitudinal analysis. Therefore, it is vital to conduct studies to understand the causal relationship as well as to determine its antecedent or outcome variables.
2. The majority of studies highlighted the sub-theme 'entirely on the concept of GC', but only a few studies, e.g., Dlimbetova et al. (2016) used the specific term GC. Other studies used different nomenclature to describe the same concept. This is in line with the concern elaborated by Sauvé et al. (2016), as some observe that academicians in disciplines such as social science and management employ various terminology related to environmental concepts in their domain. The different terminologies cause difficulty in understanding such constructs even though they deal with the same phenomenon. In this regard, future studies need to conceptualise the GC concept by elaborating its sub-constructs, whether reflective or formative.
3. The lion's share of studies in the service sector was skewed under education. It would be ideal to diversify the concept into other areas in the service sector, e.g., information technology, banking and finance, and tourism and hospitality. Furthermore, it is crucial to conduct studies examining the influence of the service sector on GC, as there is an absence of consciousness regarding the sector's indirect effect on environmental degradation (Rosenblum et al., 2000). Apart from the service sector, studies need to be conducted in the manufacturing sector, which is a major culprit in environmental pollution not only in developed countries but also in emerging economies (Rehman et al., 2016).

4. It is evident from the analysis that the studies were explored in terms of environmental aspects by side-lining other dimensions, for instance, the study of Dlimbetova et al. (2016), which examined environmental skills, knowledge, behaviour, and opinions in GC and identified ambivalence among respondents. They perceived the impact of GC as environmental friendliness owing to a lack of understanding of the concept. These results can be corroborated with the outcome of a systematic literature review by Seuring and Muller (2008), who viewed the aspects in sustainability dimensions only in terms of environmental perspective and undermined the significance of other dimensions, especially social impact. It is common in sustainability studies to consider only the environmental dimension and ignore other dimensions such as social and economic. The scenario of GC is indifferent because the studies were viewed in a microscopic perspective by meagrely considering environmental dimensions and ignoring other dimensions, especially social impacts. Hence, future studies need to account for these gaps

6.2 Managerial implications

The findings of this study are significant for managers and employees in not only the tourism and hospitality industry, but also when extended to other economic sectors. The findings emphasise the existing understanding of green competencies, which need to be developed among employees. Specifically, the findings advocate that managers must nurture an ecosystem of creating green competencies in the organisation by providing adequate green training on a regular basis.

The results prove that green training is essential to inculcate green competencies among the employees in an organisation. To achieve a positive environmental performance, an organisation needs to consistently diffuse green competencies among their employees. Managers can use the scale developed in this study to assess the improvement of green competencies among employees through green training. The scale can also be used to assess the green competencies of candidates during the selection process or to evaluate the existing level of green competencies among employees. If the employees lack green competencies, this can be rectified through adequate green training. In fact, the scale provides insights for managers in the tourism and hospitality industry to have a basic understanding of the elements that constitute green competencies and possible ways of nurturing those elements within the organisation. Most importantly, this study elaborates on the importance of behavioural factors, such as green behaviour and green attitude, which indicates that a meagre supply of knowledge or skill is insufficient to achieve the desired environmental

outcomes. The findings also discuss the idea of nurturing green abilities among employees because these abilities make the employees utilise their existing green knowledge and green skills to solve imminent environmental problems in the organisation. More precisely, the conceptual model could be helpful to managers in the tourism and hospitality industry to consider behavioural aspects such as green competencies for overcoming environmental degradation and for facilitating sustainability in the organisation.

Overall, the green competencies model described in this study may help business organisations consider the immediate environment, counter climate change vulnerabilities, and achieve environmental sustainability.

This study put forward the significant managerial implications that were derived from the findings that green training to the employees leads to environmental performance and it positively contributes to the reduction of carbon emissions, energy efficiency, waste reduction, etc., in a tourism destination. In India, the GHRM practices such as green training were provided in informal basis rather than formal and structured manner to cut down the cost. Furthermore, the major lacunae is the lack of effective way to measure the efficiency of such green training (Mishra, 2017). In this regard, it is advocated to managers that they consider green training as an investment rather than cost and to conduct training session regularly in the organisation. The managers need to consider green training as a means of influencing the employees to be environmentally competent, which enables them to assimilate green knowledge, green awareness, green skills and green abilities; thus making them to involve in environmental supportive activities. Green training encourages employees to develop pro-environmental behaviour and integrates sustainable development activities in their day-to-day operations. It also makes the employees to formulate effective strategies to be sustainable and ethical rather than green washing; and finally, integrates such strategies to be part of the company's strategy for achieving environmental performance. The environment commitment acts as a moderator; hence, the managers also need to check whether the employees are committed to engage in environmental conservation activities because the variables strive to strengthen the relationship and lack of environmental commitment may hinder the employees from achieving environmental performance.

6.3 Policy implications

Government authorities need to comprehend the importance of assimilating green competencies among individuals and engaging in overall development through plans and actions. There is a requirement for environmental education which should involve components such as curriculum needs that are assessed in a systematic manner,

understanding the learning goals and objectives, and training and development which supports learning. Green training needs to be designed and delivered to support the core objectives of sustainable development. Overall, such measures should result in improving existing knowledge and skills.

Policy makers in both developed and non-developed nations have not yet placed considerable importance on green competencies. Hence, in a time when the world faces adversity such as climate change, rapid increases in pollution and degradation of natural ecosystems, it is imperative to develop such competencies in organisations to reduce their carbon footprint to ensure sustainability. Since business organisations are major contributors to carbon emissions, policy makers must draft policies to countering these challenges. Green knowledge can be developed through education curriculum, and the subject of EM needs to be integrated with mainstream management education. The inadequacy of green awareness can be avoided by training sessions and workshops. To incentivise such initiatives, policy makers need to draft policies that support use of funds allocated through corporate social responsibility (CSR) or tax benefits. Developing green abilities which require real-life application of theoretical and practical application can be enhanced through conducting on-the-job training and internships which need to be facilitated by government agencies.

6.4 Limitations

The present study has a few limitations. First, the study is cross sectional survey, which is subjected to certain disadvantages, and it is advocated to use longitudinal survey in future research. Second, the study focuses only on single GHRM function, i.e., green training for achieving environmental performance and the mediating effect of green competencies. Therefore, future studies could explore the impact of other GHRM dimensions such as green human resource planning, green recruitment, green selection, green induction, and green performance evaluation. Third, the findings of the study are based on 303 samples; hence, the generalisability of the results in other cultures is questionable. Fourth, the present green competencies scale was constructed on the basis of the experience of Indian employees in the tourism and hospitality industry; hence, the scale is subjected to national cultural bias. The replication of this scale in other national contexts would help to understand its generalised use. Fifth, the study has only collected data from service sector, i.e., tourism industry. Therefore, to prove the universal application of the model, future studies need to be conducted on other service sectors such as hospitality industry, Information Technology industry or manufacturing sector, which could reinforce the validity of the study.

6.5 Conclusion

The present study aims to develop a valid and reliable scale for encapsulating green competencies in organisations, especially in the Indian tourism and hospitality industry. There are a few previous studies that conceptualised green competencies; this is the first study that completed construct development and measurement validation of a scale. The study follows a rigorous research methodology to validate the scale and its psychometric properties were examined through PLS-SEM path modelling. The outcome obtained from the analysis reveals that green competencies are a parsimonious item construct included under the six dimensions, which are reflective in nature. The measurement instrument has a high level of reliability and validity, which can be used to measure green competencies in a business organisation. This study provides new insights in theory and practice related to an essential Green Human Resource Management requirement in the organisation, i.e., green competencies. The study also formulates an effective model that integrates the construct of green training and its direct impact on green competencies, which agrees with the theory of the Natural-Resource-Based-View. Therefore, the study provides insights into the existing state-of-the-art in Green Human Resource Management in the literature.

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Appendix

Appendix A

INTERVIEW GUIDE

Section 1: Demographics

Name of the respondent: ---------- *(Optional)*

Name of the organisation: ---------- *(Optional)*

(Please tick the exact option)

Gender: Male ☐ Female ☐ **Marital Status:** Single ☐ Married ☐

Age (in yrs): 18 – 20 ☐ 21 – 30 ☐ 31 – 40 ☐ 41 – 50 ☐ 51 – 60 ☐ > 60 ☐

Education: Senior School ☐ Graduation ☐ Post Graduation ☐

Work Experience: 6 months & under ☐ 6 – 12 months ☐ 1 – 9 years ☐

10 – 19 years ☐ 20 – 29 years ☐ 30 yrs & above ☐

Section 2: Interview Questions

1. What do you mean by green competencies?
2. Explain about the green knowledge provided in this organisation?
3. What is green skills and how are green skills imbibed to the employees?
4. Describe about the green awareness in this organisation?
5. How can you relate green attitude in this organisation?
6. Explain about the green abilities exhibited by the employees in this organisation?
7. Elaborate about the green behaviour shown by the employees in this organisation?

Appendix B

Q-SORT ANALYSIS QUESTIONNAIRE

Section 1: Demographics

Name of the expert: …….

Gender: Male ☐ Female ☐

Age (in yrs): 18 – 20 ☐ 21 – 30 ☐ 31 – 40 ☐ 41 – 50 ☐ 51 – 60 ☐ > 60 ☐

Education: Senior School ☐ Graduation ☐ Post Graduation ☐

Work Experience: 6 months & under ☐ 6 – 12 months ☐ 1 – 9 years ☐

10 – 19 years ☐ 20 – 29 years ☐ 30 yrs & above ☐

Designation: ……...

Name of the Organisation: ……...

Section 2: Meaning of the constructs

Green Knowledge is defined as "general knowledge about the facts, concepts, and relationship regarding the natural environment and the entire ecosystem. It also means "one's ability to understand and evaluate the impact of society on the ecosystem".

Green Skills are the skills for sustainability such as professional skills, vocational skills, as well as generic skills (for e.g. skills required for eco-innovation, problem solving etc.).

Green Behaviour means "a behaviour that harms the environment as well as possible or even benefits the environment". It is also stated as "scalable actions and behaviours that employees engage in that are linked with and contribute to or detract from environmental sustainability.

Green Attitude refers to 'the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question'. Green attitude refers to "individuals' cognitive assessment of the value of environmental protection."

Green Awareness in the organisation enables the employees to be concerned about the adverse impacts to the environment and the organisation will likely to initiate action to mitigate the adverse impacts.

Green Abilities refers to the ability of the person to apply his environmental skills and knowledge in a practical situation that evolved to reduce the pollution, carbon emission, reduce carbon footprint etc. Environmental culture in the organisation plays a huge role in enhancing the green abilities.

Section 2: Q-Sort analysis *(Kindly enter the number of items/indicators in respective constructs column)*

Indicators/Items of the respective constructs
Green Knowledge
GK1: The organisation uses less polluting industrial processes and products
GK2: The organisation has developed a green program (waste management, control of effluents, inventory of pollution sources)
GK3: The organisation has developed a drafting of environmental emergency plans and measures
GK4: The organization promotes Environmental Management Systems (EMS)
Green Skills
GS1: The organisation provides skills in recycling
GS2: The organisation creates skills in energy conservation
GS3: The organisation provides skills in reducing the consumption of materials
GS4: The organisation facilitates adequate skills in environmental protection
Green Abilities
GA1: The organisation enables us to solve simple to complex

Green Knowledge

Green Skills

environmental tasks
GA2: The organisation helps to find out the several solutions for environmental issues
GA3: The organisation created a platform that makes me to associate different environmental concepts
GA4: The employees are able to utilise the knowledge and skill to solve environmental issues
GA5: The organisation ensures that the employee can relate the past environmental problem with the new issues
GI1: It is essential to promote green living from the part of my organisation
GI2: I strongly agree that more environmental protection works are needed from my organisation
GI3: It is very important to raise environmental awareness among employees
GI4: Environmental protection works are not simply a waste of money and resources
GI5: Environmental protection issues are our business
GI6: The organisation think environmental protection is meaningful
GI7: It is wise for organisation to spend a vast amount of money

Green Abilities

Green Awareness

on promoting environmental protection
GI8: The organisation is concerned about the environment
GI9: It is important to be conscious about the consequences of climate change
GB1: The employees in organisation try to learn more about the environment.
GB2: The organisation find ways of working that are better for the environment.
GB3: The organisation offer ideas for reducing our impact on the environment.
GB4: The organisation shares knowledge about the environment with others.
GB5: The organisation applies new ideas for reducing our impact on the environment.
GB6: The organisation creates green processes and products.
GB7: The organisation performs environmental tasks that are not required.
GB8: The organisation questions the practices that are likely to hurt the environment.
GB9: The organisation reuses materials.
GB10: The employees reduce their energy use.

Green Attitude

Green Behaviour

GB11: The organisation make the employees involved in environmental activities that are not part of their job
GB12: The organisation has working environment that encourage employees to think about the environment
GB13: The organisation supports the employees to solve environmental problems in society
GW1: The organisation facilitates the use of environmentally friendly products
GW2: The organisation encourage the employees recycle
GW3: The organisation creates understanding among the employees to learn about environmental issues
GW4: The organisation educate employees regarding the negative impact caused to environment
GW5: The decisions that organisation initiate have important effect on the natural environment

Suggestions, if any.

Appendix C

SURVEY

Section 1: Demographics

Name of the respondent: ---------- *(Optional)*

Name of the organisation: ---------- *(Optional)*

(Please tick the exact option)

Gender: Male ☐ Female ☐ **Marital Status:** Single ☐ Married ☐

Age (in yrs): 18 – 20 ☐ 21 – 30 ☐ 31 – 40 ☐ 41 – 50 ☐ 51 – 60 ☐ > 60 ☐

Education: Senior School ☐ Graduation ☐ Post Graduation ☐

Work Experience: 6 months & under ☐ 6 – 12 months ☐ 1 – 9 years ☐
10 – 19 years ☐ 20 – 29 years ☐ 30 yrs & above ☐

Section 2: Green Training

The following questions are asked to know the details regarding green training happening in the organisation. Kindly circle the best suitable option from the following scale as per your view.

1	2	3	4	5	6	7
Strongly Disagree	Somehow Disagree	Disagree	Neutral	Agree	Somehow Agree	Strongly Agree

Code	Particulars	1	2	3	4	5	6	7
A.	***Green Training*** Jabbour (2015). Environmental training and environmental management maturity of Brazilian companies with ISO14001: empirical evidence							
GT1	The content of the green training is							

	determined through a systematic analysis of training needs							
GT2	The responsibilities and duties of the employees responsible for environmental training are well define							
GT3	The green training is offered to all the employees (including outsourced ones) on all the hierarchical levels							
GT4	There is adequate structure (physical space, equipment, and people) for offering green training							
GT5	Green training sessions take place within the company							
GT6	Green training sessions take place outside the company							
GT7	There is adequate evaluation of employees' performance after offering green training							
GT8	Employees are overall satisfied with the green training offered							
GT9	The topics covered in green training sessions are suitable and current for the activities of the company							
GT10	Employees who receive green training have many opportunities to apply the acquired environmental knowledge							

Section 3: Green Competencies

The following questions are enquired to know about the Green Competencies of the employees in the organisation. Kindly tick (√) the best suitable option from the following scale which suits best as per your view.

1	2	3	4	5	6	7
Strongly Disagree	Somehow Disagree	Disagree	Neutral	Agree	Somehow Agree	Strongly Agree

Code	***Green Competencies***	**1**	**2**	**3**	**4**	**5**	**6**	**7**
GC1	The organisation uses less polluting industrial processes and products							
GC2	The organisation has developed a green program (waste management, control of effluents, inventory of pollution sources)							
GC3	The organisation has developed a drafting of environmental emergency plans and measures							
GC4	The organisation creates skills in energy conservation							
GC5	The organisation provides skills in reducing the consumption of materials							
GC6	The organization facilitates adequate skills in environmental protection							
GC7	The organisation enables us to solve simple to complex environmental tasks							

GC8	The organisation helps to find out the several solutions for environmental issues							
GC9	The organisation created a platform that makes me to associate different environmental concepts							
GC10	The organisation ensures that the employee can relate the past environmental problem with the new issues							
GC11	It is essential to promote green living from the part of my organisation							
GC12	I strongly agree that more environmental protection works are needed from my organisation							
GC13	It is very important to raise environmental awareness among employees							
GC14	Environmental protection works are not simply a waste of money and resources							
GC15	Environmental protection issues are our business							
GC16	The organisation think environmental protection is meaningful							
GC17	It is wise for organisation to spend a vast amount of money on promoting environmental protection							

GC18	The employees in organisation try to learn more about the environment.							
GC19	The organisation shares knowledge about the environment with others.							
GC20	The organisation applies new ideas for reducing impact on the environment.							
GC21	The organisation performs environmental tasks that are not required.							
GC22	The organisation questions the practices that are likely to hurt the environment.							
GC23	The organisation reuses materials.							
GC24	The organisation tries to reduce my energy use.							
GC25	The organisation supports the employees to solve environmental problems in society							
GC26	The organisation facilitates the use of environmentally friendly products							
GC27	The organisation encourage the employees recycle							
GC28	The organisation creates understanding among the employees to learn about environmental issues							
GC29	The organisation educate							

	employees regarding the negative impact caused							

Section 4: Environmental Commitment (EC)

The following questions are enquired to know about the Environmental Commitment (EC) of the employees in the organisation. Kindly tick (√) the best suitable option from the following scale which suits best as per your view.

1	2	3	4	5	6	7
Strongly Disagree	Somehow Disagree	Disagree	Neutral	Agree	Somehow Agree	Strongly Agree

Code	**Environmental Commitment**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
EC1	My company really cares about environmental concern							
EC2	I feel bad if I do support my company's effort to conserve environment							
EC3	I feel proud in my company's efforts to facilitate environmental concern							
EC4	My company feels a sense of duty to support environmental efforts							
EC5	My company makes the employees to integrate its environmental problems as same as ours							
EC6	My company makes the employees to be personally attached with environmental concern							
EC7	My company makes the employees to be obliged for							

	supporting the environmental efforts							
EC8	My company makes the employees to be strongly valued on environmental efforts							

Section 5: Environmental Performance (EP)

The following questions are enquired to know about the Environmental Performance (EP) of the employees in the organisation. Kindly tick (√) the best suitable option from the following scale which suits best as per your view.

Code	**Environmental Performance (EP)**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
EP1	The company has improved corporate reputation on environmental conservation							
EP2	The company strives to reduce the emission of toxic chemicals in air and water							
EP3	The company has improved service quality							
EP4	The company tries to reduce waste and recycle the materials during the service provided							
EP5	The company reduced the consumption of water							
EP6	The company reduced the consumption of electric energy							
EP7	The company design and develop pro-environmental services							
EP8	The company has increased use of renewable energy and sustainable fuels							
EP9	The company has responsible							

	waste management system							