

Hierarchical impact of green supply chain initiatives on sustainable performance: the Food and Beverage processing SMEs in Australia

Adeline Kemilembe Benjamin

Bachelor of Commerce in Computers, Osmania University, India

Master of Business Administration, Victoria University, Australia

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Abstract

Environmental pollution remains a major concern, leading firms to take initiatives on greening the supply chain to reduce environmental impacts. In view of this, green supply chain management (GSCM) initiatives have emerged as a competitive priority at the intersection of sustainability, environmental management and supply chain management literature. GSCM can be defined as consolidation of environmental thinking and supply chain management incorporating product design, material sourcing and selection, manufacturing operations, delivery of the final product to the consumer, and end-of-life handling of the product. The literature so far has been inconclusive regarding the relationship between green supply chain initiatives (GSCIs) and sustainable performance. Given that operations have gone from local optimisation of environmental management at firm level to regional supply chain involving the production, shipment, consumption and end-of-life disposal of products, further investigation of this relationship is timely. In addition, the increasing concern of environmental sustainability – whether driven by government legislation, supplier pressure or customer requirement – is unknown, and warrants an investigation into the context of Australian food and beverage small and medium enterprises (SMEs). The SMEs in this sector are lagging behind in environmental practices partly due to limited resources and not able to realise the immediate return on investment.

Institutional theory and Natural Resource Based View (NRBV) theory underpin this research. Institutional theory asserts that an organisation's environmental initiatives are influenced by three external drivers; namely, coercive (regulatory), normative (customer) and mimetic (competitor) pressures. Regulations imposed on organisations, customers' increased environmental knowledge, and the emulation of competitors' successful green strategies have resulted in environmental alignment within organisations' supply chain operations. NRBV theory argues that implementation of GSCIs and the adoption of green strategies help to improve firms' performance and sustain their competitive advantage. The green strategies include pollution prevention, product stewardship and the sustainable development of clean technology. Any green strategies initiative and its implementation aims to minimise environmental pollution in the supply chain and gain a

competitive advantage in the market. Drawing on the institutional theory and NRBV perspectives, the research therefore aims to investigate the hierarchical impact of GSCM initiatives on green performance and subsequently on economic and social performance.

This research used a cross-sectional survey to collect data from SMEs in the food and beverage sector in Australia. Structural equation modelling (SEM) was employed to test the hypothesised relationship of the study variables in a conceptual framework. The SEM results reveal that GSCIs have a positive impact on green performance which, in turn, positively affects economic and social performance. Also, institutional pressures and green human resource management practices (GHRMPs) have a positive and significant effect on GSCIs. This research contributes to a theoretical and practical context. Theoretically, this study adds new insight to the literature by developing a comprehensive understanding of the hierarchical impact of green initiatives on environmental performance, which is influenced by institutional pressure and green human resource practices. Practically, managers can apply this framework to support their business strategies for sustainable performance.

Declaration

I, Adeline Kemilembe Benjamin, declare that the DBA thesis entitled “Hierarchical impact of green supply chain initiatives on sustainable performance: food and beverage manufacturing SMEs in Australia” is no more than 65,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

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Scriptural verse

Philippians 4:13

This thesis has been professionally copy edited by Dr Francesco Gimelli according to the Australian Standards for Editing Practice. These standards relate to appropriate academic editing, including clarity of expression, spelling, punctuation and grammar, and ensuring the document meets the examining university's format, style and sequencing requirements.

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List of Abbreviations

AGFI	Adjusted Goodness-of-Fit
AVE	Average Variance Extracted
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
ECP	Economic Performance
EFA	Exploratory Factor Analysis
EM	Expectation Maximisation
GFI	Goodness-of-Fit Index
GHRMP	Green Human Resource Management Practices
GOF	Goodness of Fit
GP/EVP	Green Performance/ Environmental Performance
GSCI/GSCMP	Green Supply Chain Initiatives/ Green Supply Chain Management
GSCM	Green Supply Chain Management
KMO	Kaiser-Meyer-Olkin
MAR	Missing at Random
MCAR	Missing Completely At Random
MI	Multiple Imputation
ML	Maximum Likelihood
MNAR	Missing Not At Random
NFI	Normed Fit Index
NRBV	Natural Resource Based View
PAF	Principal Axis Factoring
RMSEA	Root Mean Square of Approximation
SEM	Structural Equation Modelling
SFL	Standardised Factor Loadings
SMC	Squared Multiple Correlation
SMEs	Small and Medium Enterprises
SP	Social Performance
SRMR	Standardised Root Mean Square Residual
TLI	Tucker-Lewis Index
χ^2	Chi-Square

Chapter 1

Introduction

1.1 Introduction

This chapter lays the foundation of the thesis by introducing a growing concept in the contemporary environment: the green supply chain management (GSCM) in Section 1.2. It goes on to briefly explain the research context – Australian food and beverage manufacturing small and medium enterprises (SMEs) – and to justify its selection. The chapter explores the scarcity of empirical evidence on the impact of green supply chain initiatives/management practices on environmental performance and the subsequent effect on economic and social performance under the influence of institutional pressures and green human resource management practices (GHRMPs).

This dearth of research provides a platform for research questions and objectives. Section 1.3 discusses the relevance of this research by exploring its significance for food and beverage manufacturing SMEs. Subsequently, Section 1.4 discusses the research methodology and Section 1.5 discusses ethics approval. The introductory chapter of Section 1.6 outlines subsequent chapters of this thesis and, finally, Section 1.7 gives a brief overview of the chapter.

1.2 Background

1.2.1 Green supply chain management

GSCM research attracted the attention of academics and practitioners in the early years of the 21st Century (de Sousa Jabbour et al. 2013; Luthra et al. 2011; Mangla, Madaan & Chan 2013; Mitra 2014; Rostamzadeh et al. 2015). The challenges brought about by climate change, the depletion of natural resources and environmental pollution are the major influences behind the global attempts to ensure greener supply chains (Younis 2016). GSCM has become known as a cutting-edge approach balancing a firm's green (environmental), economic and social demands (Wu & Chang 2015). In elaborating their

perspectives on GSCM, various scholars have provided definitions according to their views. Vanalle et al. (2017) define green supply chain as an expansion of the traditional supply chains to incorporate practices aimed at reducing environmental effects over the entire life cycle of products. These practices include eco-design, resource management, toxic material minimisation and product recycling. According to Agarwal, Giraud-Carrier and Li (2018), GSCM is the action of including environmental issues in business and supply chain activities. Luthra, Garg and Haleem (2016) consider it as new supply chain approach in terms of the purchase of green raw materials from suppliers, the manufacturing and packaging of green products and reverse logistics. The other widely used definition put forward by Srivastava (2007) discusses GSCM as the consolidation of environmental thinking and supply chain management incorporating product design, material sourcing and selection, manufacturing operations, delivery of the final product to the consumer, and end-of-life handling of the product. GSCM, following the definition offered by Lee (2008) and incorporating GHRMP and external pressures used in this study, is defined as the GHRMPs that enable SMEs to undertake environmental-friendly initiatives within the supply chains to improve sustainable performance in compliance with regulatory bodies, competitors and customer requirements.

As mentioned, the subject of green supply chains has been very popular, and this is mainly due to the growing need to manage the effects of environmental pollution and climate change (Luthra, Garg & Haleem 2015; Nejati, Rabiei & Jabbour 2017; Tseng et al. 2019). GSCM enables a firm to attain its economic targets, minimise environmental hazards, reduce its harmful environmental effects, and enhance its ecological efficiency and that of its partners across the supply chain (Zhu, Sarkis & Lai 2008). It aims to reduce or eradicate emissions, energy use, harmful chemical waste and solid waste throughout the supply chain (Chin, Tat & Sulaiman 2015); alleviate climate change (Luo et al. 2017); and lay the foundations for achieving sustainable manufacturing. Through greening their supply chains, firms improve their economic performance and maintain their competitiveness (Choi & Hwang 2015; Rao & Holt 2005; Zhu, Feng & Choi 2017) in a volatile, uncertain, complex and ambiguous environment. Koh, Gunasekaran and Tseng (2012) assert that GSCM can help to avoid the use of harmful substances such as

those prohibited by the Directive for Restriction of the Use of Certain Hazardous Substances in electrical and electronic equipment in the European Union.

The practices undertaken in GSCM are described as green supply chain initiatives (GSCIs) (Huang, Huang & Yang 2017). Green initiatives have brought a new philosophy that helps organisations and their partners attain corporate economic benefits by minimising their environmental risk while enhancing their ecological efficiency (Azevedo, Carvalho & Machado 2011; Zhu, Sarkis & Lai 2008). GSCIs facilitate the achievement of sustainable performance (Zaid, Jaaron & Bon 2018), while external drivers known as ‘institutional pressure’ have played a significant role in enhancing the implementation of green initiatives (Huang, Huang & Yang 2017; Vanalle et al. 2017; Yang 2018). The collaboration of these activities has been supported by institutional theory (DiMaggio & Powell 1983) and Natural Resource Based View (NRBV) theory (Hart 1995). GSCM is increasingly acknowledged by developed countries such as Australia due to the environmental concerns that continue to mount (Luthra, Garg & Haleem 2016).

GSCM has been acknowledged as a vital element in influencing firm sustainability (Rath 2013; Sarkis, Zhu & Lai 2011). Sustainable development is widely defined as development which fulfils the demands of the present without undermining the capability of future generations to fulfil their own demands (WCED 1987). The other prominent definition is one established in recent years which explains sustainable development as the fulfilment of fundamental economic, social and security demands presently and in future years, without compromising the natural resource platform and environmental standard upon which life relies (Environmental Protection Agency 2011).

It is thus asserted that sustainability should concurrently consider environmental, economic and social views (European Commission 2011). Former UK Prime Minister Gordon Brown (2006) asserted in a speech to United Nations Ambassadors in April 2006 that green sustainability is not a choice; it is vital. For countries to thrive, for poverty to be eradicated globally, for the welfare of populations on the earth to be improved, not just in the present generation but in subsequent generations also – we have a pressing and

ever-more-intense responsibility of stewardship to look after the environment and resources on which our economic performance and social infrastructure relies.

1.2.2 Sustainability

From a business point of view, the objective of sustainability is to maximise long-term shareholder and social benefits, while minimising the firm's use of materials and decreasing negative effects on the environment (Environmental Protection Agency 2011). Sustainability is an inevitable primary issue for business leaders in every country (Porter & Kramer 2006), and is becoming a central concern for many businesses (Govindan et al. 2015; Govindan et al. 2016; Govindan et al. 2014; Mangla, Sachin Kumar, Kumar & Barua 2016; Seuring 2013). The shift towards sustainability in businesses is subject to both internal and external drivers. The main external drivers that will be discussed for this research stem from regulations, customers and competitors (Diabat, Kannan & Mathiyazhagan 2014; Shaharudin et al. 2015). For example, in some countries, governments and regulations compel businesses to take sustainability into consideration in their strategy. Some industries in Europe, such as the electrical and electronic equipment industries, are pressured to put a sustainability agenda in their business plan by the European Union (European Union 2011).

Embracing sustainable development is fundamental for organisations facing intense competition from other companies, as they must look for new action plans to maintain their businesses and ensure their future. Many organisations incorporate sustainability in their business strategy as a way to give them a sustained competitive edge over rivals (Gunasekaran & Spalanzani 2012). Many businesses have also lately realised the value of integrating sustainability in their processes because it can eventually result in the minimisation of expenses, including labour expenses (Carter & Rogers 2008), energy expenses, and landfill discharge expenses (Welker, van der Vaart & van Donk 2008). Besides lowering costs, sustainability also minimises lead time and enhances the standard of the product and organisational image (Mitra & Datta 2014). For organisations to thrive and maintain a competitive edge they need to embrace sustainability in their business operations by simultaneously incorporating environmental, economic and social aspects (De Giovanni 2012). For example, food and beverage manufacturing SMEs in Australia

encounter limited knowledge in achieving green initiatives (Bressan 2014) minimizing their prospects in advancing the sustainability agenda which is crucial for organizations in thriving and sustaining their competitive edge in the market (Govindan, Khodaverdi & Vafadarnikjoo 2015).

1.2.3 Food and beverage manufacturing SMEs in Australia

The food and beverage industry is Australia's largest manufacturing industry and contributes substantially to the economy (Australian Advanced Manufacturing Council 2015). It is the leading sector in providing employment (Australian for Food and Beverage Processing 2014). It employs around 300,000 people – representing 2.6% of all employed people in Australia (Australian for Food and Beverage Processing 2014). In the competitive contemporary environment, GSCM helps organisations to secure their competitive advantage, enhance their corporate image and minimize their environmental impact (Ahmed et al. 2019; Choi & Hwang 2015; Govindan, Khodaverdi & Vafadarnikjoo 2015), which is why organisations are striving to embrace GSCM in their operations. The SMEs in the food and beverage sector are lagging behind when it comes to embracing environmental practices in their operations, for reasons including inadequate knowledge and skills (Bressan 2014), and limited resources (Brammer, Hojmosse & Marchant 2012).

GSCM is still a new idea in the manufacturing sector (Zhu, Sarkis & Lai 2012a), so it is vital that practitioners and scholars incorporate the agenda in their operations and research. Research has focused on this area of SMEs to help industry practitioners realise the importance of GSCM in minimising the manufacturing sector's negative environmental impacts, including climate change concerns, which remain pivotal in Australia. Environmental pollution and climate change are major topics of discussion in Australia (Farstad 2019). By embracing GSCM initiatives, SMEs, which constitute a major segment of the food and beverage manufacturing sector, will significantly enhance their economic performance while minimising their environmental impact and improving the well-being of the community.

1.2.4 Research gap

Many studies have investigated the relationship between GSCIs and performance (Green Jr, Zelbst, Bhadauria, et al. 2012; Green et al. 2019; Huang, Huang & Yang 2017; Kalyar, Shoukat & Shafique 2019; Vanalle et al. 2017; Zhu, Sarkis & Lai 2013). For example, Green Jr, Zelbst, Bhadauria, et al. (2012) find a positive relationship between green practices and economic and green performance. They also reveal that improved economic and environmental performance help to improve operational performance, which in turn enhances the performance of the organisation. In a combined approach, Green et al. (2019) find that total quality management and GSCIs have a positive outcome on environmental performance. Kalyar, Shoukat and Shafique (2019) look at GSCIs such as green manufacturing, eco design and green purchasing, and determine that the GSCIs have a positive outcome for environmental performance. Vanalle et al. (2017) find that green practices have a positive impact on environmental and economic performance but their impact on operational performance could not be proven significant. Moreover, Zhu, Sarkis and Lai (2013) conclude that green initiatives (i.e. internal and external practices) have a positive influence on environmental and operational performance which eventually impacts positively on economic performance in the longer term. However, they have not considered the social dimension in their study. In addition, Huang, Huang and Yang (2017) find that green initiatives impact positively on economic performance, environmental performance and competitiveness. The social dimension was ignored.

Previous authors have used environmental, economical, and operational performance as outcomes of green initiatives but ignored the key construct of ‘social performance’ in their framework. Two exceptions are studies by De Giovanni (2012) and Zaid, Jaaron and Bon (2018), who have included social performance in their framework along with the other two dimensions of the triple bottom line (TBL): economic performance and environmental performance (Elkington 1998). De Giovanni (2012) finds that green initiatives have a direct impact on environmental and social performance, but an indirect impact on economic performance, while Zaid, Jaaron and Bon (2018) deduce that green initiatives impact positively on economic, environmental and social performance. Their study does not establish a relationship between environmental and social performance

separately, where the environmental effect is realised faster than social effect.

The social dimension has an enormous impact on organisations and communities (Mitra 2014) and is therefore necessary to include in the study. It helps to minimise accidents within organisations, enhance efficiency among employees, reduce absenteeism, and improve workers' satisfaction and health conditions (Mitra & Datta 2014). Human resource management also plays a crucial role in the implementation of green initiatives within an organisation (Jabbour, & de Sousa Jabbour 2016). It helps organisations incorporate environmental practices within their human resource undertakings (Nejati, Rabiei & Jabbour 2017; Zaid, Jaaron & Bon 2018), contributing to employee participation in achieving a sustainability agenda (Teixeira et al. 2016). External forces such as institutional pressure are crucial drivers in enabling organisations to implement GSCIs (Huang, Huang & Yang 2017; Vanalle et al. 2017; Zhu, Sarkis & Lai 2013). Several studies have elaborated on how significant institutional pressures have been critical to the successful implementation of GSCIs (Ahmed et al. 2019; Kalyar, Shoukat & Shafique 2019). Green human resource management has not been investigated thus far as a factor combined with institutional pressures in shaping green initiatives. This research aims to fill this gap by investigating green human resources and institutional pressures, and how their interaction shapes environmental practices.

Previous studies have considered the impact of green initiatives on dimensions of sustainable and organizational performance concurrently (Huang, Huang & Yang 2017; Huang, & Yang 2014; Vanalle et al. 2017; Zaid, Jaaron & Bon 2018; Zhu, Sarkis & Lai 2013). However, this research emphasises the immediate effect of green initiatives on environmental performance and its hierarchical impact on economic and social performance. Stefanelli, Jabbour and de Sousa Jabbour (2014) and Ahmed et al. (2019) argue that environmental performance is crucial in determining the success of other performance dimensions such as social and economic. This research will therefore examine the sustainable performance in a hierarchical order. In doing so, it will evaluate the extent to which green performance impacts social and economic performance.

Institutional pressures play a critical role in shaping GSCIs. A study conducted among Chinese manufacturers explains the effect of institutional pressures on GSCIs, and establishes the impact of GSCIs on environmental, economic and operational performance (Zhu, Sarkis & Lai 2013). Thus, a limited study is undertaken to evaluate the capacity of institutional pressures on GSCIs (green supply chain management practices) to influence environmental performance, and the subsequent effect on economic and social performance. The study is also limited in evaluating the synchronised effect of institutional pressures and GHRMPs on GSCIs, and its impact on environmental performance. From an institutional theory perspective, the external pressure from regulations, customers and competitors will be used as antecedents to examine their impact on GSCIs and subsequently how GSCIs affect green performance and, in turn, economic and social performance. Further, this research has used NRBV theory, which states that the implementation of GSCIs and green strategies helps to improve organisations' performance and sustain their competitive advantage. The relationship between GSCIs, their impact on green performance and subsequently on economic and social performance can also be substantiated by this theory. Therefore, the aim of this study is to empirically investigate how institutional pressure and GHRMPs impact GSCIs, and that in turn affect green performance and its subsequent effect on economic and social performance.

The following sub-objectives aim to:

- 1) Examine the relationship between institutional pressures and GSCIs.
- 2) Examine the relationship between GHRMPs and GSCIs.
- 3) Examine the relationship between GSCIs and green performance.
- 4) Examine the relationship between green performance and economic and social performance.
- 5) Examine the relationship between social performance and economic performance.

The research question to address the above objective is what extent institutional pressure and GHRMPs affect the GSCIs and what is the impact of GSCIs on green performance of

firms and its subsequent effect on economic and social performance

The following sub-questions address the research objectives:

- 1) How do institutional/external pressures affect GSCIs?
- 2) What is the relationship between GHRMPs and GSCIs?
- 3) What is the relationship between GSCIs and green performance?
- 4) What is the relationship between green performance and economic and social performance?
- 5) What is the relationship between social performance and economic performance?

1.3 Significance of the study to SMEs

Food and beverage manufacturing SMEs in Australia are not adopting GSCM effectively within their supply chain operations. This is due to a lack of adequate knowledge, insufficient funds, and GSCM being regarded as unimportant at a managerial level. SMEs are viewed as being among the main contributors to environmental pollution, which in turn has negative impacts on the economy. Although environmental pollution has long been a topic of serious discussion in Australia, no comprehensive plan for resolution has emerged. The Australian economy, already in recession, is expected to be further affected by the recent drought and disastrous bushfires. GSCM is a new approach to be embraced by SMEs in order to minimise the effects on the environment and remain competitive in these uncertain times. It assists organisations in achieving sustainable performance, an important factor in the contemporary environment where economies seek to achieve their set sustainable development goals. By complying with environmental regulations, meeting customers' green product demands, and emulating competitors' successful green strategies, SMEs can effectively adopt GSCIs and enhance their environmental performance – an area in which they seem to be lagging.

Additionally, equipping employees with environmental knowledge will enhance their approach towards GSCI implementation and address environmental challenges. SMEs

that adopt GSCIs effectively can assist the government in curbing the effects of environmental pollution through their operations, in turn helping to tackle climate change. Organisations that have embraced GSCM by implementing GSCIs in their daily operations have the advantage of enhancing their corporate image and increasing their customer base, as consumers are increasingly aware of the benefits of consuming environmentally friendly products. Improved corporate image enables organisations to thrive economically and in turn sustain their competitive edge in the market. SMEs can therefore leverage being at the centre of the economy through their eco-friendly products.

1.4 Methodology

This research adopted a quantitative method approach. Following approval from the ethics department, primary data was collected through pre-testing and then main survey distribution. The survey instrument was adapted from established literature. The instrument was pre-tested through a pilot study prior to the launch of the main survey. The final version of the survey was distributed online among potential respondents representing SMEs within the food and beverage manufacturing sector. The unit of analysis was SMEs in food and beverage manufacturing, although the respondent from each firm in the sampling frame was a manager with adequate knowledge of the environmental effects of supply chain management. The survey returned 168 responses, which represents a response rate of 31%. The descriptive statistics were analysed using SPSS 23 followed by structural equation modelling (SEM) using SPSS AMOS 23. This two-step procedure was performed using the SEM method following the steps recommended by Anderson and Gerbing (1988). The SEM helps establish the measurement model along with assessment of construct reliability and validity, followed by analysis of the structural path model to examine the proposed study hypotheses.

1.5 Ethics

Ethics approval was obtained for this research project from the Victoria University Human Research Ethics Committee (VUHREC). The study was deemed to meet the

National Statement on Ethical Conduct in Human Research (2007). The approval was granted from 12/12/2018 for two years, under the application ID: HRE18-219 (Appendix A). The research posed a low risk to participants in terms of the psychological, physical, social, financial, legal and community dimensions. Professional harm to the associated Participants or organisations was minimised and managed. Participants were informed of the nature of research, potential benefits and related risks; advised to engage by meeting the required criteria; and allowed the choice of participation and to opt out at any point. Confidentiality was safeguarded.

1.6 Thesis structure

This dissertation is divided into seven chapters. Chapter 2 reviews the literature and relevant theories. The literature is reviewed in order to discuss the main constructs for this study. Institutional theory and NRBV theory were employed to explain the relationships among constructs. The literature was critiqued to substantiate the gap for this study.

Chapter 3 presents the conceptual framework and hypotheses. The main constructs—including internal GSCM practices, external GSCM practices, GHRMPs, regulatory pressure, customer pressure, competitor pressure, environmental performance, economic performance and social performance – are conceptualised and the hypotheses links among the constructs are established. The chapter discusses both the direct effects of the main constructs and the mediation effects.

Chapter 4 addresses the research methodology of the study. A survey method is employed to conduct this study and attain the research aims. This chapter defines all the constructs and establishes the measurement items based on the existing literature. It also discusses the research design, target respondents, data collection, and the data analysis techniques that have been employed for the study.

Chapter 5 explains the findings of the quantitative analysis. The demographic data of the survey sample was analysed by employing descriptive statistics to discuss the profiles of

the target respondents. Thereafter, preliminary analysis was conducted to screen and purify the data. Chapter 5 lays out the results in validation of the conceptual framework through convergent and discriminant validity and the hypothesis testing using SEM.

Chapter 6 presents a discussion of the study findings and explains the theoretical and practical implications. The discussion focuses on the findings of data analysis and hypothesis testing. This chapter presents answers to the research questions in order to attain the aims of this dissertation. It then discusses the theoretical and practical implications of the study.

Chapter 7 concludes the thesis by summarising what was discussed in previous chapters. Finally, the chapter addresses the limitations of the study and recommends future research directions.

1.7 Summary

This chapter introduced the GSCM concept and discussed the Australian food and beverage manufacturing SMEs sector, its contribution, opportunities and the challenges it encounters. It also explained the questions and objectives of the research and significance of the study. The chapter presented the rationale for exploring the impact of GSCIs on environmental performance and the subsequent impact on economic and social performance under the influence of institutional pressures and GHRMPs.

GSCM has emerged as a competitive priority for firms in the contemporary environment, as it introduces the environmental agenda in the supply chains, which is crucial for firms to continue thriving and sustaining their competitive edge. This has therefore called for organisations to adopt green practices in their operations. The influence of institutional pressures and GHRMPs is critical to the success of GSCIs. However, there is a gap in knowledge of how to address their impact on GSCIs, their effect on environmental performance (which is the determining factor on the success of other performance dimensions), and its subsequent impact on economic and social performance.

Chapter 2

Literature review

2.1 Introduction

This chapter begins by explaining GSCM practices in Section 2.2 and proceeds to explain GHRMPs in Section 2.3. The subsequent sections – Section 2.4, Section 2.5 and Section 2.6 – provide detailed explanation of the three dimensions of the triple bottom line: environmental, economic and social performance. Section 2.7 discusses the institutional pressure placed on organisations, while the institutional and NRBV theories that underpin this research are discussed in section 2.8. Thereafter, in Section 2.9, the literature from previous studies is discussed and the dearth of research is established, which illustrates the gap that this study intends to address. Section 2.10 explains Australian food and beverage manufacturing SMEs and discusses why the sector requires immediate attention. The rationale for the selection of the constructs employed for the study is explained in Section 2.11. The concluding chapter discusses environmental sustainability and Industry 4.0 in sections 2.12 and 2.13 respectively.

2.2 GSCM practices

GSCM can be defined as a strategic capability that creates strategies, initiatives, plans and policies that focus on handling the environmental effect of supply chain activities (Ahmed et al. 2019). The operations undertaken are known as GSCM practices, which are management actions executed by an organisation through the entire value chain to minimise pollutants and energy usage and improve sustainability in the long term (Liu et al. 2020). GSCM has drawn significant global focus among both academics and practitioners in recent years (de Sousa Jabbour et al. 2013; Govindan et al. 2014; Luthra, Garg & Haleem 2013; Luthra et al. 2011; Rostamzadeh et al. 2015). It helps to sustain green, economic and social benefits (Mangla, Sachin K, Kumar & Barua 2014) and has appeared to be a key management approach for companies looking to become more green

friendly, cost efficient and competitive (Luthra, Garg & Haleem 2015). It has also been acknowledged as facilitating company sustainability (Rath 2013).

Within GSCM studies, a range of views on green practices and initiatives have been presented. Some scholars classify green initiatives into the groupings of green inbound, green outbound and green production (Rao & Holt 2005). The leading scholars within the green supply chain field categorize the initiatives as internal and external green supply initiatives (Zhu, Sarkis & Lai 2013). Huang, Huang and Yang (2017), however, demonstrate a different view by categorising green supply practices as internal green management, green design, environmental purchasing, consumer green collaboration and reverse logistics. In this research, the green supply initiatives are classified as internal and external green undertakings. The important criteria of green human resource practices (Nejati, Rabiei & Jabbour 2017) is also incorporated in order to present a comprehensive understanding of the human factor within green supply initiatives, and its impact on the successful implementation of day-to-day green operations and outcomes for the businesses.

GSCM is also an approach to achieving sustainable development (Khan & Qianli 2017; Sarkis, Zhu & Lai 2011). Sustainable development was initially discussed in the Brundtland report, a report published by World Commission on Environment and Development. It was defined as development which fulfils the demands of the present without undermining the capability of future generations to fulfil their own demands (WCED 1987). GSCM, which focuses on incorporation of green issues within supply chain systems also assists in achieving sustainability agenda, which constitutes matters around environment protection. There are similarities in the way the environmental issues both GSCM and sustainable development intend to tackle. They all aim to minimize the negative effects of environment that in turn tackle the climate change crisis. GSCM, thus, helps achieve sustainable development goals (Luthra, Garg & Haleem 2015). This among others has made it increasingly popular both within academia and among practitioners. GSCM is also pivotal in addressing the environmental goals of large institutions such as UN global compact in tackling climate change crisis (Bristol-Alagbariya 2020).

2.2.1 Internal GSCM practices

Internal green practices, without direct supplier and customer engagement, can be handled and executed by a manufacturer and include dimensions such as top management involvement and green design (Ahmed & Najmi 2018; Zaid, Jaaron & Bon 2018; Zhu, Sarkis & Lai 2012a).

2.2.1.1 Top management commitment

Senior management commitment plays a key role in driving an organisation to undertake GSCIs in order to minimise environmental pollution and ultimately counter the effects of climate change. It is an important catalyst in a firm's decisive plans and actions (Dai, Montabon & Cantor 2014). Senior management's commitment, supervision and dedication to change are crucial antecedents to the realisation of supply chain practices and plans (Agi & Nishant 2017). The human resource management outlook recommends that senior management drives the formation of company ethics and initiates appropriate management designs to direct company preference and enhance the organisation's performance (Hambrick & Mason 1984). According to echelons theory (Hambrick & Mason 1984), the firm's culture and principles are reflective of senior management. An organisation's top managers have the mandate to drive the company's activities (Finkelstein & Hambrick 1996), and so for a firm to fully embrace green excellence, senior management must play a key role (Dubey, Gunasekaran & Ali 2015; Zsidisin & Siferd 2001). The responsibility of top managers to link internal networks with external sources of information is believed to positively impact green programs by enhancing the commitment of workers (Dai, Montabon & Cantor 2014). Examples set by senior executives have the capacity to affect a worker's conduct in a morally uncertain and complex environment where an organisation's policy may not be crystal clear (Carter & Jennings 2004).

An absence of senior authority assistance is a main cause for the failure of GSCIs (Geng, Mansouri & Aktas 2017). It should therefore be ingrained within organisations that senior management's commitment to green initiatives will drive their organisation to undertake these practices for their development and success (Dai, Montabon & Cantor 2014; Jazairy & von Haartman 2020). Environmental management includes the supervision and

evaluation of suppliers, which helps to create control systems to examine green performance as it pertains to legal agreements, and to prevent potential environmental hazards caused by suppliers' defects (Klassen & Vachon 2003). To be capable of efficiently supervising suppliers, high-level strategy and mission statements should be well established (Dai, Montabon & Cantor 2014). Most green assessment practices rely on predetermined performance models to set a standard for materials and suppliers' internal administration of green activities (Leenders & Fearon 1997).

Assistance from top-level managers can also influence supplier rewards and reviews, which can then impact supplier ability to comply with guidelines to achieve green initiatives (Dai, Montabon & Cantor 2014). Including suppliers in environmentally friendly product creation initiatives is another important aspect of environmental management. Prior research has suggested that suppliers' abilities contribute substantially to an organisation's capacity for innovation and product development (Song & Di Benedetto 2008). Including suppliers in the creation process for green products assists the organisation in determining possible technical challenges – such as those grounded in contrasting understandings or idealistic product or service designs – early in the process, thus facilitating progress and the ability to meet market requirements (Kessler & Chakrabarti 1996). Senior managerial involvement and assistance is one key approach to conquering obstacles to supplier engagement for newly developed products (Primo & Amundson 2002; Ragatz, Handfield & Scannell 1997). Evident support from top-level administration also influences staff to work with suppliers on green product formation programs (Swink 2003).

2.2.1.2 Green manufacturing

Green manufacturing describes manufacturing activities that use greener materials while maintaining consistently high production with little-to-no pollution produced (Baines et al. 2012; Dubey, Gunasekaran & Ali 2015; Gopalakrishnan et al. 2012). Green manufacturing involves utilising the best materials available to industry, which can result in gaining a competitive edge in the long term by improving productivity through enhancing quality produce and output at an optimal cost (Fullerton et al 2008). Green manufacturing can result in reduced resource and energy use, reduced environmental and

occupational safety costs, and an enhanced organisational reputation (Porter & Van der Linde 1995). Initiatives that involve green manufacturing are lean manufacturing (Dües, Tan & Lim 2013; Luthra, Garg & Haleem 2016; Schmidt, Foerstl & Schaltenbrand 2017), total quality manufacturing (Dubey, Gunasekaran & Ali 2015; Prajogo et al. 2012), supplier relationship management (Çankaya & Sezen 2019; Van Hoof & Lyon 2013), leadership (Dües, Tan & Lim 2013; Van Hoof & Lyon 2013), and technologies for cleaner output (Aslam, Waseem & Khurram 2019; Luthra, Garg & Haleem 2016; Van Hoof & Lyon 2013; Zhang et al. 2013). Dillon and Fischer (1992) contend that critical insight into production activities and managerial roles is essential to improve green manufacturing approaches in operations.

2.2.1.3 Eco-design

Eco-design is fundamental to eco-friendly product design (Chan, et al. 2016; Lin 2013; Peng & Lin 2008; Wong et al. 2012; Zailani et al. 2012; Zhu, Sarkis & Geng 2005). It can also be understood as the activities carried out during product formation with the objective of reducing a product's environmental effect throughout its entire life cycle – from obtaining materials to processing, usage, and eventually to its ultimate disposal – without ignoring other key product benchmarks such as organisational accomplishment and costs incurred (Eltayeb, Zailani & Ramayah 2011). Environmentally friendly design is regarded important because it embeds green elements into product design, including by considering the product's movement in its value chain (Eltayeb, Zailani & Ramayah 2011).

The production, use and discharge of products have direct ramifications for product design and significantly contribute to negative environmental outcomes (Handfield, Sroufe & Walton 2005). At the design phase, the function of the product, process or service is explained and necessary resources and supplies are determined. These in turn indicate the energy that will be used in production and the amount of pollutants that will be produced. Green design practices differ between organisations and products; however, the fundamental green-design undertakings consist of five dimensions. First, design for the minimisation or eradication of toxic materials (Zsidisin & Siferd 2001). Second,

design that enables re-use of goods with or without minimised handling of the used product (Sarkis 1998). Third, design that enables disassembly of the waste goods, detachment of pieces according to the material, and recovery of the material (Lin, Jones & Hsieh 2001). The fourth aspect is design that enables recondition, reshaping and renovation practices with the objective of making the product new or improved. The final aspect is the design for resource efficiency, which refers to the minimisation of materials and energy use of a product during consumption (Mitra 2014).

2.2.2 External GSCM practices

These are green management initiatives that require partisan coordination with suppliers and customers regarding their environmental practices, such as green purchasing, reverse logistics, green logistics and environmental collaboration (Ahmed, Najmi & Khan 2019; Zaid, Jaaron & Bon 2018; Zhu, Sarkis & Lai 2013).

2.2.2.1 Green purchasing

Green purchasing is environmentally friendly purchasing that requires procured goods or resources to meet green targets – such as minimising sources of pollutants, fostering recycling, resource diminution and replacement of materials – set by the organisation making the purchase (Carter, Ellram & Ready 1998; Min & Galle 2001; Zsidisin & Siferd 2001). Green purchasing implies that supply chain executives factor sustainability into their buying of raw materials while satisfying the other traditional aspects of cost, quality and delivery (Eltayeb, Zailani & Ramayah 2011; Lambert & Cooper 2000). Hamner (2006) encapsulates the environmental purchasing practices in seven categories: product requirements, product restrictions, labelling, supplier questionnaire, certification, green management systems and compliance audits.

Buying green resources can be an expensive responsibility but it also yields financial rewards in the form of minimum disposal expenses, enhanced material preservation and improved company reputation (Azevedo, Carvalho & Machado 2011). By incorporating environmental considerations into buying, organisations can set design guidelines for suppliers about raw materials (Govindan, Khodaverdi & Vafadarnikjoo 2015). According to Min and Galle (2001), it is vital to understand how suppliers' development of goods

and packaging transforms their environmental approach. Green purchasing involves waste minimisation, green resource replacement and toxic material reduction. Therefore, organisations have to manage suppliers' green performance progressively and guarantee that procured materials are environmentally friendly (Govindan, Khodaverdi & Vafadarnikjoo 2015; Hervani, Helms & Sarkis 2005; Lin 2013).

2.2.2.2 Reverse logistics

Various scholars have defined reverse logistics differently. Ye et al. (2013), in agreement with the broader literature, define reverse logistics as the transportation, warehousing and administration of inventory connected with reverse supply chain activity, whereby attempts are undertaken to regain value from any product or resource that a consumer returns to a value chain system (Kopicki, Berg & Legg 1993; Stock 1998). Reverse logistics has been explained more broadly as involving all procedures associated with the collection, disassembly, reassembly, distribution, and sale of recycled materials or repaired goods (Daugherty, Autry & Ellinger 2001; Gonzalez-Torre, Adenso-Díaz & Artiba 2004). In some previous literature, reverse logistics is regarded as waste flow (Guide & Van Wassenhove 2002; Prahinski & Kocabasoglu 2006).

As per the standardised logistics, reverse logistics incorporates two aspects: product return and product recovery (Huang et al. 2015; Luthra, Garg & Haleem 2016; Schmidt, Foerstl & Schaltenbrand 2017; Ye et al. 2013). Product return relates to the physical supply of faulty products from the consumption point to the original point with the aim of recycling or disposal. Product recovery relates to the reworking of faulty products in an attempt to regain value by restoring, refurbishing and re-using them. Reverse logistics can also be understood as an integration of both these definitions; that is, it can be defined as a sequence of events essential to recover goods from the consumption point to their disposal or re-manufacturing point in order to regain financial and environmental value (Huang et al. 2015; Ye et al. 2013). Some authors regard reverse logistics as linked with the recycling, reuse and reduction of materials in the production process (Abdullah, Ab Halim & Yaakub 2014; Chan et al. 2012; Huang et al. 2015; Lai, Wu & Wong 2013; Younis 2016).

2.2.2.3 Green logistics

Green logistics involves the environmentally friendly packaging, storage, transportation and distribution of goods in order to minimise environmental impact (Mitra 2014). While packaging is essential to protect goods from destruction during transit, packaging materials such as wood, metal and plastic can increase waste, if not well managed. Therefore, many countries have packaging regulations to reduce the flow of packaging materials into waste (Rao & Holt 2005). Packaging materials should be minimal (Carter, Kale & Grimm 2000) and should not have any detrimental environmental effects (Cucchiella et al. 2012). Moreover, they should be reusable (Hollo, Blome & Foerstl 2012; Wong et al. 2012) many times before being discarded, and be biodegradable (Zhu, Sarkis & Lai 2012a) at the end of life. Wu and Dunn (1995) contend that effective and secure storage will not only make for smooth storage of goods and recovering but also results in enhanced green performance. organisations should also consider the use of railways and waterways as alternative means of transport because they are more environmentally friendly (Cucchiella et al. 2012; Green Jr, Zelbst, Meacham, et al. 2012; Kumar, Teichman & Timpernagel 2012; Wong et al. 2012) than road and air transport. Railways also yield cost advantages in comparison to road and air transport, which not only minimises fuel use and air contamination, but also reduces the prices of goods (Mitra 2014).

2.2.2.4 Supplier and customer collaboration

Supplier collaboration involves practices that improve suppliers' green performance in areas such as integrated environmental programs, shared green information, and environmental product growth and creativity, which have a positive impact on distribution and supplier development (Eltayeb, Zailani & Ramayah 2011; Govindan, Khodaverdi & Vafadarnikjoo 2015; Vachon & Klassen 2007, 2008). Green coordination assists organisations in handling suppliers' green performance to guarantee that the procured resources are green friendly and produced using environmental procedures (Geng, Mansouri & Aktas 2017; Lin 2013; Zhu & Sarkis 2007). Environmental initiatives can integrate supply chains with non-environmental supply chain initiatives more effectively than traditional supplier corporation. This approach improves organisations'

capacity to meet customer needs and minimise company waste and supply chain expenses (Azevedo, Carvalho & Machado 2011; Gunasekaran, Lai & Cheng 2008). Similar to supplier cooperation, customer green cooperation includes direct participation by an organisation to enhance the green performance of its consumers (Eltayeb, Zailani & Ramayah 2011; Kalyar, Shoukat & Shafique 2019). Consumer green cooperation involves the sharing of technical knowledge between an organisation and its consumers, as well as a readiness to understand each other's activities so as to strategise and formulate targets for green development (Govindan et al. 2015). It also means collaborating to minimise the negative environmental effects linked to the movement of goods in the supply chain (Vachon & Klassen 2007, 2008).

Vachon and Klassen (2006) discuss firms which form collaborative functions to manage green issues to reduce negative environmental impacts within the supply chain, by handling cooperative associations between company and supply chain partners (Lin 2013). Consumer green cooperation involves a company's direct engagement in guaranteeing better green performance for its consumers. It includes practices such as the exchange of technical knowledge between an organisation and its consumers, consumer training, consumer support and joint ventures (Eltayeb, Zailani & Ramayah 2011; Govindan, Khodaverdi & Vafadarnikjoo 2015). These functions improve green performance for consumers of environmentally friendly goods (Eltayeb, Zailani & Ramayah 2011; Geng, Mansouri & Aktas 2017; Vachon & Klassen 2007, 2008). An efficient organisation/consumer relationship enables green cost minimisation, enhances the response to consumers' environmental concerns, improves fulfilment of customer demands and minimises company waste (Aslam, Waseem & Khurram 2019; Azevedo, Carvalho & Machado 2011).

2.3 Green human resource management practices

GHRMPs can be defined as initiatives involving the integration of traditional human resource initiatives (i.e. recruitment, empowerment, reward, training and appraisal) with green goals (Jabbour & de Sousa Jabbour 2016).

2.3.1 Green performance appraisal

Green performance appraisal directs workers' performance to attain required environmental outcomes through evaluation of workers' input in the development and progress of green initiatives (Ahmad 2015). Performance systems assure the efficiency of environmental management work within a set time period (Jackson et al. 2011) and safeguard green management activities against decline (Epstein & Roy 1997). To maintain favourable green outcomes, companies must implement organisation-wide metrics for evaluating material purchase, consumption and pollution, and develop environmental management information systems to monitor material movement and green audits (Arulrajah, Opatha & Nawaratne 2015; Jackson & Seo 2010). In the modern era, many companies have established organisation-wide green development benchmarks that are integrated with environmental information systems, to assess the green progress of their workers (Marcus & Fremth 2009). Human resource management should incorporate a green agenda in its performance systems by instituting environmental targets and roles, assessing green operations, and analysing the accomplishment of green aims by using a green work score as the vital measurement of employees' performance (Kapil 2015; Sharma & Gupta 2015).

This environmental work score should be incorporated in workers' appraisal files (Prasad 2013; Renwick, Redman & Maguire 2013). Furthermore, companies should give frequent reviews to staff about their role in accomplishing green objectives to ensure the maintenance of the company's corporate image (Arulrajah, Opatha & Nawaratne 2015; Jackson et al. 2011). These reviews will assist staff in improving their understanding, expertise and capability. Govindarajulu and Daily (2004) also make this point, arguing that informing workers of their appraisal outcomes and how they are contributing to attaining green aims is important for their drive, and will enhance their participation in assuming green roles. As recommended by Harvey, Williams and Probert (2013) and Kapil (2015), companies may also offer an online information platform and audits that allow workers to engage, monitor their environmental progress, and recommend practical approaches to helping the company become better in its green orientation. To attain this, Ahmad (2015) recommends that human resource units remodel the performance appraisal

score structure to be able to rank workers on their conduct and technical capabilities related to green sustainability. Green performance appraisal is vital for food and beverage manufacturing SMEs that are still in the embryonic phase of green initiatives implementation to consistently comply with environmental practices by continuously monitoring their progress.

2.3.2 Green training

Green training is one of the fundamental ways in which human resource management establishes assistance for green management practices (Jabbour 2013). It was also a focus of research in the 1990s that discussed human resources and green sustainability (Madsen & Ulhøi 2001). Opatha, HHP and Arulrajah (2014) propose that green training is the most notable contributor towards green consciousness among workers. According to scholars, this kind of training is geared towards shaping the culture to promote environmental initiatives in firms. This is consistent with the conclusions of Sarkis, Gonzalez-Torre and Adenso-Diaz (2010), who suggest that workers can promote green initiatives through appropriate green training. Similarly, Arulrajah, Opatha and Nawaratne (2015) contend that the essence of green training and development plans should incorporate societal and environmental aspects in every phase (Mandip 2012; Mehta & Chugan 2015). According to Cherian and Jacob (2012), it is important to design green training to realise optimal green outcomes. Green training helps in imparting environmental knowledge to the employees within the food and beverage manufacturing SMEs and therefore increase the implementation of GSCI among firms especially SMEs that are inefficient in the supply chain environmental adoption.

2.3.3 Green recruitment and selection

Green recruitment ensures that fresh recruits are knowledgeable about a company's environmental culture and share its green norms (Jackson & Seo 2010) through the assessment of applicants' green understanding, principles and opinions (Renwick, Redman & Maguire 2013). Recruitment communications should incorporate a green benchmark (Arulrajah, Opatha & Nawaratne 2015). In the job evaluation stage, position specifications should emphasise and elaborate on environmental issues and achievements,

and describe what is expected of prospective green workers (Mandip 2012; Renwick, Redman & Maguire 2013). Wehrmeyer (2017) suggests some additional ways that companies can improve green recruitment and selection procedures. First, employment descriptions should focus attention on the responsibility of green reporting. Second, induction sessions for new workers should focus on offering information about the company's sustainability strategies, principles and objectives (Masri & Jaaron 2017). Third, interviews should be structured to examine how applicants align with the company's environmental strategies and plans. This pattern for the interview procedure is endorsed by Razab, Udin and Osman (2015), who assert that when interviewing prospective applicants, green-related questions should account for the main portion of the assessment procedure. In addition, Arulrajah, Opatha and Nawaratne (2015) describe how companies can enhance their attempts to conserve the environment by integrating environmental functions into the tasks and role of each worker, or structuring green-focused meetings to concentrate exclusively on the company's environmental matters (Opatha 2013). The shortlisting procedure should guarantee the selection of dedicated green applicants with previous engagement in environmental activities (Jose Chiappetta Jabbour 2011). Green recruitment can help in acquisition of green orientated employees from the initiate phase in turn help in enhancing the initiatives of a food and beverage manufacturing enterprise towards its GSCI.

2.3.4 Green rewards

Accomplishing the target of greening the company can be facilitated by awarding workers for their dedication to green initiatives (Jabbour & de Sousa Jabbour 2016; Jabbour & Santos 2008). In this setting, green initiatives could profit from awards and remuneration programs if it concentrates on evasion of unfavourable conducts and foster the green friendly performance (Zoogah 2011). To achieve this, award programs should be designed to reflect administration's dedication to green initiatives while promoting and encouraging workers' pro-green actions (Daily & Huang 2001). This administrative engagement will improve the dedication of employees, encouraging them to become more green minded and more engaged in green activities (Renwick, Redman & Maguire 2013). Calia, Guerrini and de Castro (2009) demonstrate that to effectively incentive

workers' pro-green performance through awards events, awards should be linked with the outcomes of greening activities. Additionally, the key to the success of awards is making them accessible at various ranks within the company (Arulrajah, Opatha & Nawaratne 2015). There are various awards schemes relating to the acquirement of green expertise (Masri & Jaaron 2017). These schemes show a high regard for staff who work diligently towards the achievement of sustainability (Renwick, Redman & Maguire 2013) by appreciating and awarding workers who are committed to accomplishing green objectives, as well as those in middle management who motivate their juniors to implement environmental activities (Arulrajah, Opatha & Nawaratne 2015; Kapil 2015). Green rewards motivate employees to further strive in implementation of environmental practices in their operations, where by for food and beverage manufacturing SMEs that still lag behind; this is a catalyst for firms to advance in their contribution for green initiatives.

2.3.5 Green empowerment and participation

Green empowerment is defined as a way that management shares its authority with staff to resolve green challenges (Massoud, Daily & Bishop 2011). As part of minimising pollution and waste, human resource personnel must prepare and empower workers to engage in and institute green-friendly concepts (Ahmad 2015; Jabbour & Santos 2008). For this reason, human resource employees should emphasise to senior management the importance of forming an engaged workplace where staff can challenge or discuss terms with management and provide advice to resolve key matters (Liebowitz 2010). According to Harvey et al (2013), enhancing a firm's channels for staff empowerment and engagement involves listening to the opinion of workers to assist in the formulation of green goals. However, workers' empowerment and engagement strengthens their capacity to make resolutions regarding green issues and other challenges they may face during the course of their work (Daily, Bishop & Massoud 2012; Daily & Huang 2001). Furthermore, encouraging workers' engagement develops entrepreneurs within the company who are environmentally focused (Sudin 2011). To achieve this, workers should engage in developing green programs to institute and enlarge the required understanding to market eco-friendly goods and services (Margaretha & Saragih 2012).

Worker engagement improves the knowledge of individuals within the organisation, which has a substantial impact in determining the origin of pollutants, controlling urgent situations, extending preventative resolutions (Boiral & Paillé 2012) and generating enhanced green operations (Renwick, Redman & Maguire 2013). Green empowerment can enable the food and beverage manufacturing SMEs in enhancing their environmental consciousness and enable the firms to thrive in a dynamic and competitive environment.

2.4 Green performance

Green performance (Yang 2017) is defined as the measurement of the association between the business and the environment (Olsthoorn et al. 2001). Environmental performance can be determined according to diverse indicators that involve the minimisation of energy use, pollution, waste, and the discharge of greenhouse gases; compliance with legislation; and the establishment of an organisational green reputation (Daugherty, Myers & Richey 2002). Green performance draws considerable interest among managers for various reasons, including regulation, contractual agreements, social values and the desire to maintain a competitive edge (Theyel 2006). For instance, Frosch (1994) contends that an inter-company connection enabled by proximity could result in increased green performance. Geffen and Rothenberg (2000) argue that associations with suppliers help with the implementation and establishment of creative environmental technologies, and such interaction may promote development in green performance. The main factors that can indicate an organisation is attaining its green performance targets, and thereby improving its green image, are environmental minimisation effects and environmental cost saving programs (Cucciella et al. 2012).

Zhu and Sarkis (2004) argue that organisations with higher levels of green initiatives implementation have better green performance growth. Other researchers (Berry & Rondinelli 1998; Rogers & Tibben-Lembke 2001; Stock, Speh & Shear 2002) have discovered that implementing proactive environmental management programs helps to not only protect firms from environmental fines, but also to minimise costs, grow revenue, enhance customer services, and improve their competitive edge. In addition, adopting such approaches means a company enjoys the intangible benefits associated with a better

organisational image, organisational public legitimacy and competitive edge (Esty & Winston 2009; Stock, Speh & Shear 2002). For example, Taiwanese shipping companies have been incorporating more green practices. Shipping firms with a green brand image are growing in appeal for shippers who are becoming increasingly conscious of the need to conserve the environment, minimise greenhouse gas emissions, and promote their company's image. The requirement for more green friendly international logistics services has driven container shipping companies to reexamine their marketing approach and form a greener brand image (Yang 2017).

2.5 Economic performance

Economic performance, which generally refers to profitability, is a primary reason for organisations to employ GSCIs (Geng, Mansouri & Aktas 2017). It is the most vital catalyst for businesses, especially businesses in emerging economies (Zhu & Sarkis 2004). Generally, in order to attain long-term economic performance, organisations look for a corporate action plan to build a better bottom line for the business. It is crucial that this plan is well-suited to the organisation. Analysis of the literature reveals that the term 'economic performance' is perceived differently by different scholars, with some regarding it as financial performance (Freedman & Jaggi 1988) and some as market performance (Rao & Holt 2005; Stevens 2012). Most people believe that economic and financial performance have the same meaning. Before evaluating overall performance, companies should clarify how they define both environmental and economic performance. In fact, there exists a clear difference between financial and economic performance, as clarified by Elkington, Henriques and Richardson (2004). Their view is that the financial dimension is about the provision of money, including the time and place for investment. This indicates that financial outcomes should be cross-checked with organisational records and the annual report before being published. On the other hand, the economic aspect is the platform by which the community employs human and natural resources in striving towards social welfare. As a result, economic performance broadens beyond the confinements of a single firm and is connected to environmental and social dimensions of sustainability.

This means that financial performance is an aspect of economic performance. The economic performance construct in this research will encompass both economic and market performance. In previous studies, researchers have used various indicators for economic performance. For example, Zhu and Sarkis (2007) categorise economic performance into five measures: the decrease of expenses for material purchasing, energy usage, waste treatment and discharge, and penalties for environmental accidents. A year later, Green Jr, Whitten and Inman (2008) had a different view; their measures include average return on investment, market share growth and sales growth, among others. In conclusion, it can be deduced that economic performance will quantify both financial and non-financial performance. All the measurements indicate an organisation's growth and success. They should also yield a good corporate image, enhance organisational reputation and eventually improve a firm's sustainable performance (Çankaya & Sezen 2019).

2.6 Social performance

Social performance relates to an organisation's standards and rules of social responsibility, procedures of social responsiveness, and strategies, plans and observable results linked to the organisation's social relations (Wood 1991). In the view of Zailani et al. (2012) and Ashby, Leat and Hudson-Smith (2012), social performance is a way to quantify the results of green initiatives relating to enhancing product and corporate image, safeguarding employee health and safety, and guaranteeing customer loyalty and fulfilment. There has been no consensus in reaching a single definition of social performance. In previous literature, financial gain is identified as one aspect of the long-term accomplishment for organisations, while the future of people and the planet are of more recent interest for the purpose of legitimacy (Kleindorfer, Singhal & Van Wassenhove 2005). Sustainability should be a moral code for human existence and development (Sharma, Sanjay & Ruud 2003) and accomplished in an all-encompassing, connected, fair, sensible and safe manner (Gladwin, Kennelly & Krause 1995). The first three aspects of this meaning strongly relate to social performance (Schaefer 2004) and how it can be legislated through supply chains by minimising unemployment,

safeguarding employee health and safety, guaranteeing fair treatment and restraining social exclusion (Leire & Mont 2010).

The social dimension of sustainability is related to the management of ‘social talents’; that is, people’s expertise and capabilities, institutions, relationships and social norms (Sarkis, Helms & Hervani 2010). At the business level, this requires organisations and their suppliers to ensure value addition by growing people’s human capital and social capital (Dyllick & Hockerts 2002). The social dimension of performance can be classified into four main groups: internal human resources, which involves initiatives linked to employment security and health and safety; external public, which involves human, productive and societal capital; stakeholder engagement, which involves supply of information and stakeholder concerns; and social performance matters (Sarkis, Helms & Hervani 2010). Social equity is a vital element of the social performance dimension and ranges from the demand that all members of the community have similar access to resources (Bansal 2005), to the just and egalitarian treatment of workers (Krause, Vachon & Klassen 2009). It deals with poverty, fairness and human rights, and from a value chain outlook takes into consideration the well-being of all workers worldwide (Krause, Vachon & Klassen 2009).

2.7 Institutional pressures

Institutional pressures, also regarded as external pressures, can be classified under three categories: regulatory (coercive), customer (normative) and competitor (mimetic) (DiMaggio & Powell 1983; Yang 2018; Zhu, Sarkis & Lai 2013). Regulatory pressures are official mechanisms that take the form of standards, laws and procedures instituted by regulatory bodies to encourage organisations to be environmentally compliant (Huang, Yang & Wong 2016). Various studies support the idea that rules and regulations enforced by government and regulatory institutions help organisations to implement GSCIs (Saeed et al. 2018; Yang 2018). Customer pressure is the pressure placed on organisations by consumers to implement green initiatives (Huang, Huang & Yang 2017). Customers are starting to question the environmental impact of the commodities they purchase, and expect organisations to have basic benchmarks related to the environmental impacts of

their products and services (Hsu et al. 2013). The pressure imposed on organisations by customers is a result of increasing awareness around the benefits of consuming eco-friendly products and the impact this has on the environment (Agarwal, Giraud-Carrier & Li 2018).

Normative pressure is highly beneficial for organisations as it helps them to become environmentally compliant in their operations, which is an important feature to demonstrate in the current climate, where the globe is faced with potentially catastrophic environmental challenges. It can also lead to organisations being considered more legitimate and trustworthy, which in turn enhances their corporate image (Sarkis, Zhu & Lai 2011).

Competitor pressure is another type of institutional pressure, and is hugely important in today's highly diverse market (Zhu, Sarkis & Lai 2013). Innovation is the driving force that makes firms stay relevant and able to sustain their dominance in a volatile, complex, uncertain and ambiguous environment. As GSCM has become the standard approach for organisations to sustain their advantage, mimetic pressures have compelled firms to learn and mimic the green initiatives and strategies of their competitors in order to thrive (Christmann & Taylor 2001; Huang, Yang & Wong 2016). By imitating their competitors, an organisation can implement GSCI and continuously improve in their adoption in order to remain competitive (Huang, Huang & Yang 2017; Huang & Yang 2014).

2.8 Theoretical background of the research

The present study is founded on the conceptual framework chosen in line with its objectives (the role of GHRMPs and institutional pressures in the implementation of GSCI to improve sustainable performance within Australian food and beverage manufacturing SMEs). Within the scope of the contextual background, the conceptual framework integrates institutional pressures, GHRMPs and GSCIs with the aim of improving sustainable performance and comprises key aspects of two extant theories: institutional theory and NRBV theory.

2.8.1 Institutional theory

The effect of regulations, customers and competitors on GSCIs can be explained from the institutional theory (DiMaggio & Powell 1983; Sarkis, Zhu & Lai 2011; Yang 2018) point of view. This theory proposes that institutional pressures such as external drivers influence green supply chain implementation (Hoejmose, Grosvold & Millington 2014; Schoenherr & Talluri 2012; Vanalle et al. 2017; Wu, Ding & Chen 2012), and that firms have a tendency to interact with these external drivers through three channels: regulatory, customer and competitive pressures (DiMaggio & Powell 1983; Zhu, Sarkis & Lai 2013). Regulatory pressure comprises formal and informal drivers originating from cultural, political and legal contexts, such as government regulation mandating the implementation of pollution management equipment (Popp 2010). Compliance through regulatory pressure occurs through the influence exercised by those in authority (Zhu & Sarkis 2007). Government offices are examples of influential groups that may drive the activities of a company (Rivera, De Leon & Koerber 2006). Kilbourne, Beckmann and Thelen (2002) suggest that regulatory pressures are vital to compel companies to institute green supply chain adoption. Sarkis, Zhu and Lai (2011) explore how in advanced economies such as the USA, regulatory pressure through rules, principles and guidelines enhances environmental consciousness, and thus influences GSCIs. Clemens and Douglas (2006) also indicate that rules and laws in advanced economies result in increased regulatory pressure for organisations in emerging economies to enhance their green practices. In many cases, such drivers have prompted companies in developing countries to initiate green practices that have exceeded goals and targets. Zhu and Sarkis (2004) describe how a developing economy such as China has legislated strict environmental rules that surpassed local and international stipulations, and how this has influenced manufacturers to execute green initiatives that impact environmental performance.

Competitor pressure stems from unpredictability in the business arena; when people in managerial positions are unsure about what action to take because of technological changeability, they have a tendency to mimic successful organisations, such as rival companies (Liang et al. 2007; Zhu, Sarkis & Lai 2013). By ‘benchmarking’, this aspect

of theory refers to cases where organisations imitate competitors because of their success in operations and manufacturing. The argument is that by mimicking the activities of successful rivals, an organisation will also become successful (Zhu & Sarkis 2007). Hart (1995) proposes that organisations should concentrate on coordinated activities so that their green activities become better than those of their rivals. Hart's research contends that a coordinated approach in pollution control, product stewardship and sustainability techniques is essential to attain a sustained competitive edge. In Malaysia, an emerging economy where green initiative implementation is growing at a rapid rate, it is observed that pressure from rivals related to environmental issues is so high that it has influenced companies to self-regulate. For example, although green purchasing by Malaysian consumers is behind that of their European counterparts, they do often opt for environmentally friendly products, and are thereby encouraging a deepened environmental consciousness.

Many large organisations in emerging economies that work with well-established organisations in advanced economies have been prompted to examine their suppliers throughout the whole production chain (Eltayeb & Zailani 2007). By initiating a proactive strategy on green purchasing processes, organisations can tackle present and developing environmental issues. Additionally, many firms that experience continuous pressure from their rivals are now compelled to include eco-design guidelines in their role as partners in the supply chain (Yalabik & Fairchild 2011). However, the development of such design requires cross-functional coordination within an organisation (within groups and across various departmental functions), and coordination with partners outside the organisation (Zhu, Sarkis & Geng 2005). Thus, many Malaysian organisations that work with their European and US counterparts are pressured to abide by green design guidelines to better deliver to these markets (Hsu et al. 2013). Customer pressure is a result of professionalisation. It is the way in which managers mobilise themselves to explain the conditions and work systems in their industry, normally within a professional context (Agarwal, Giraud-Carrier & Li 2018). It compels firms to comply in order to be viewed as more legitimate (Zhu & Sarkis 2007). Normally, external stakeholders who have an absolute interest in the firm induce this driver. Customer

pressure results in the coordination of operations across all industry players, including customers and suppliers (Agarwal, Giraud-Carrier & Li 2018).

In the contemporary environment, consumers are starting to query the environmental impact of the products that they purchase and expect organisations to have an environmental benchmark in place in the design of their products and processes (Tate, Ellram & Kirchhoff 2010). Studies also show that pressures from downstream supply chain partners and customers influence organisations to implement green practices (Wolf 2011). Zhu and Sarkis (2007) and Huang and Yang (2014) adopt institutional theory in explaining how institutional pressures moderate the relationship between green initiatives and green and economic performance. For instance, Zhu and Sarkis (2007) emphasise the vital role of institutional pressures in implementing GSCM practices and in firm performance among Chinese manufacturers. Discussing the increase in environmental awareness amongst these manufacturers, they explain that the government has imposed stringent environmental regulations, which have compelled the manufacturers to produce green products proactively, minimizing environmental impact. Various scholars contend that institutional pressure is crucial in helping firms to implement GSCIs (Huang, Huang & Yang 2017; Vanalle et al. 2017; Yang 2018). The Australian government, through its sustainable authority bodies such as the Northern Prawn Fishery, regularly enforces the development of better practices in order to curb negative effects on the environment. For instance, life-cycle indicators could enhance the assessments of seafood sustainability and improve the fishery value chain (Farmery et al. 2015).

2.8.2 Natural Resource Based View theory

Resource based view (RBV) theory focuses on the relevance of firm resources that are valuable, rare, inimitable and non-substitutable (VRIN) (Barney 1991; Grant 1996). These attributes help an organisation secure a competitive advantage (Acedo, Barroso & Galan 2006). In recent years, Hart (1995) has attempted to broaden the idea of RBV theory by including the opportunities that the natural environment can provide. Inclusion of the natural environment into RBV theory aims to achieve sustainability (Woo et al. 2016). Natural RBV (NRBV) states that organisations can maintain their competitive

edge by adopting green techniques such as pollution prevention, product stewardship and sustainable development (Cucciella et al. 2012; Hart 1995; Maryam Masoumi et al. 2015). These green strategies are regarded as complex and hard to imitate by rivals, thus helping to enhance green performance and economic performance (Vachon & Klassen 2008).

Pollution prevention involves minimising waste and emissions linked with an organisation's operations, and dealing with the origin of a product instead of its end, where its impact might be significant. Product stewardship is a more collaborative approach, as it extends green initiatives to include every member in the supply chain, from supplier to final consumer. It involves improving environmental initiatives throughout the life cycle of a product, ensuring that everyone involved in that cycle is helping to minimise the product's environmental impact. Sustainable development, also regarded as clean technology, is effective in addressing not just environmental impacts, but also economic and social issues. The incorporation of green initiatives enhances corporate image, by employing innovative ways to design eco-friendly products so as to not just reduce environmental pollution, but also to enhance new market opportunities and improve the welfare of society (Choi & Hwang 2015; Maryam Masoumi et al. 2015). The NRBV has successfully established a relationship between resource efficiency and sustainability (Cucciella et al. 2012; Koh, S et al. 2016). It has also been examined by scholars explaining the relevance of green initiatives as a strategic asset that improves organisational performance and sustains competitive advantage (Choi & Hwang 2015; Cucciella et al. 2012).

2.9 Critique of existing literature

Since gaining popularity in the early 2000s, the topic of GSCM has gained currency because of several drivers (Dubey, Gunasekaran & Ali 2015; Hsu et al. 2013; Huang, Tan & Ding 2015; Huang, Huang & Yang 2017; Lo & Shiah 2016; Wu, Ding & Chen 2012; Ye et al. 2013), barriers (Luthra et al. 2011; Mathiyazhagan, Kaliyan et al. 2013; Muduli et al. 2013), factors (Hu & Hsu 2010; Mumtaz et al. 2018; Wu, & Chang 2015), and performance dimensions (Ahmed, Najmi & Khan 2019; de Sousa Jabbour et al. 2017; Govindan, Khodaverdi & Vafadarnikjoo 2015; Habib & Bao 2019; Huang, Huang &

Yang 2017; Huang, & Yang 2014; Jawaad & Zafar 2020; Seman et al. 2019; Vanalle et al. 2017; Yang 2017; Younis & Sundarakani 2019; Zaid, Jaaron & Bon 2018; Zhu, Feng & Choi 2017). In examining studies on drivers, for instance, Huang, Huang and Yang (2017) discuss internal drivers as including a well-defined environmental vision and policy statement, support action for GSCIs, and commitment resource to the use of GSCIs. External drivers include pressures from regulatory authorities, customers and competitors. The barriers to GSCM implementation have been framed in various ways. For instance, Luthra et al. (2011) discuss various elements that have hindered GSCM implementation including expense, intense competition in the market, lack of support from senior management, lack of quality human resources, and supplier reluctance about green initiatives. Conversely, there have been various factors that have enforced the implementation of GSCM. Mumtaz et al. (2018) details these factors, including organisational commitment, supplier selection, and life-cycle management. In the contemporary environment, organisations are increasingly aware of the benefits that GSCM brings to performance.

Many studies have focused their attention on the relationship between green initiatives and performance (environmental, economic, operational and competitiveness) because of the importance of the profit motive. Yang (2018) finds that GSCIs have a positive impact on green performance where institutional pressure is enforced for GSCI implementation. Green et al. (2019), in their study within the US manufacturing context, argue that GSCIs with timely implementation and total quality management have a positive effect on environmental performance. Also, Saeed et al. (2018) establish that GSCIs conducted internally have a positive effect on green performance, while those conducted externally have a positive effect on economic performance. They also find that green performance enhances economic performance. In addition, Feng et al. (2018) find that GSCIs have a positive effect on green and operational performance and indirectly improve economic performance. Moreover, Kalyar, Shoukat and Shafique (2019) conclude that GSCIs have a positive impact on green performance. They also assert that environmental initiatives such as green manufacturing and design indirectly impact economic performance by enhancing green performance. Other scholars have a different perspective. For example,

Younis (2016) establishes that GSCIs have no impact on green performance, hence the relationship between GSCIs and performance has had a mixed outcome. Previous studies have focused on the environmental, economic and operational dimensions (Kalyar, Shoukat & Shafique 2019; Liu et al. 2020; Vanalle et al. 2017). The social aspect has been ignored, despite the substantial benefits to organisations (De Giovanni 2012). The study conducted by De Giovanni (2012) and Zaid, Jaaron and Bon (2018) includes social performance but the study has been limited in establishing the relationship between environmental and social performance.

Also, these studies have examined the performance dimensions concurrently (Agarwal, Giraud-Carrier & Li 2018; Huang, Huang & Yang 2017; Perotti et al. 2012; Vanalle et al. 2017; Zaid, Jaaron & Bon 2018). This research emphasises the immediate effect of green initiatives on environmental performance and its subsequent effect on economic and social performance. Green performance is regarded as a significant catalyst (Ahmed et al. 2019; Stefanelli, Jabbour & de Sousa Jabbour 2014) in determining the success of other dimensions, such as social and economic performance. Therefore, due emphasis should be given to the environmental and subsequently to other dimensions of sustainable performance. As mentioned, previous studies focused on assessing the impact of GSCIs on performance concurrently. For instance, Huang, Huang and Yang (2017) find that GSCIs positively impact environmental performance, economic performance and competitiveness. Vanalle et al. (2017) establish that GSCIs have a positive impact on environmental and economic performance, but its impact on operational performance could not be proven significant. Zhu, Sarkis and Lai (2013) conclude that GSCIs do not significantly affect economic performance, but improved environmental and operational performance can result in improved economic performance in the longer term. Zaid, Jaaron and Bon (2018) find that GSCIs positively impact sustainable performance concurrently. This research will examine sustainable performance in hierarchical order. In doing so, it will evaluate how green performance impacts social and economic performance. Hence the impact of GSCIs will be examined based on hierarchical sustainable performance.

The idea of incorporating human resource management practices into green initiatives has been widely accepted by organisations due to the assumption that newly recruited employees are environmentally conscious. Pro-environmental employees have been a catalyst in implementing GSCIs (Jabbour & de Sousa Jabbour 2016), in turn improving organisations' green performance (Yang 2017) and sustaining their corporate image (Mitra 2014) and competitive edge (Huang, Huang & Yang 2017; Rao & Holt 2005). These studies (Jabbour and de Sousa Jabbour (2016); Nejati, Rabiei and Jabbour (2017) Longoni, Luzzini and Guerri (2016) and Zaid, Jaaron and Bon (2018)) have investigated the role of green human resource initiatives in the successful implementation of GSCIs. Based on evaluation of previous studies, institutional pressures are regarded as having a significant role in the implementation of GSCIs (Vanalle et al. 2017; Yang 2017; Zhu, Sarkis & Lai 2013). The study has been limited in considering the impact of GHRMPs as an antecedent with external pressures in impacting GSCIs.

Institutional pressures play a critical role in GSCIs' ability to impact positively on organisational performance (environmental, economic, operational performance and competitiveness) (Huang, Huang & Yang 2017; Vanalle et al. 2017; Zhu, Sarkis & Lai 2013). For example, Huang, Huang and Yang (2017) establish that GSCIs have a positive outcome on environmental performance, economic performance and competitiveness under the influence of institutional pressure. The study has been limited in evaluating the impact of institutional pressures on the implementation of GSCIs, with a subsequent impact on sustainable performance.

Table 2.1 below summarises previous research with the variables, methodology and study outcomes.

Table 2.1: Summary of reviewed articles

Article	Variables	Methodology	Outcome
Vanalle et al. (2017)	GSCMPs, institutional pressures, environmental performance, economic	survey	The results show that economic and environmental performance is positively related to GSCMPs but no significant relationship could be observed in the

	performance, operational performance		relationship between operational performance and GSCMPs. Also, institutional pressure have a positive impact on the adoption of GSCMPs.
Feng et al. (2018)	GSCMPs, financial performance, environmental performance, operational performance	Mail and E-mail survey	The results suggest that GSCMPs as an integral supply chain strategy is significantly and positively related with both environmental and operational performance, which then indirectly leads to improved financial performance.
Yang (2018)	GSCMPs, institutional pressures, green performance	Mail survey	The results reveal that institutional pressures have positive effects on internal green practices; internal green practices positively influence external green collaborations; internal green practices and external green collaborations positively influence green performance but institutional pressure is not positively related with external green collaborations.
Zaid, Jaaron and Bon (2018)	GSCMPs, GHRMPs, environmental performance, economic performance, social performance	Web-based survey	The results show that both GSCMPs and GHRMP have a positive effect to sustainable performance.
Ahmed, Najmi and Khan (2019)	GSCMPs, institutional pressures, environmental performance, economic performance	Survey	The results reveal that internal GSCMPs and institutional pressure have a negative and insignificant impact on economic performance, whereas all the constructs are the significant contributors toward improving environmental per-

			formance.
Habib and Bao (2019)	GSCMPs, knowledge management capability, environmental performance, economic performance	Survey	The results show that internal GSCMPs have significantly positive effect on both economic and environmental performance while external GSCMPs have positive effect on environmental performance but negatively affect the economic performance.
Green et al. (2019)	GSCMPs, just in time practices, total quality management practices, environmental performance	Web-based survey	The results reveal that GSCMPs, just in time practices and total quality management practices combined result to positive impact on environmental performance. Also, just in time and total quality management practices are directly and positively related with green supply chain management practices.
Kalyar, Shoukat and Shafique (2019)	GSCMPs, institutional pressures, environmental performance, financial performance	Survey	The results show that GSCMPs have a significant direct impact on firms' financial performance directly and through environmental performance. Also, institutional pressures significantly moderate the nexus of GSCMPs-environmental performance and environmental performance-financial performance.
Younis and Sundarakani (2019)	Firm size, firm age, environmental management system certification, environmental performance, economic performance,	survey	The results show that there is a positive relationship between firm size and environmental performance, economic performance and social performance but not with operational performance. Also, certified environmental management

	social performance, operational performance		system within firms is having a positive impact on all four performance dimensions while firm age does not have any relationship with any of the four performance outcomes.
Jawaad and Zafar (2020)	GSCMPs, environmental performance, economic performance, operational performance	Self-administered survey	The results show that GSCMPs positively impact environmental, economic and operational performance of firms.

2.10 Food and Beverage Manufacturing SMEs: Context

The food industry is dynamic, with continuous evolution in consumer needs (Trienekens et al. 2012; Van der Vorst & Beulens 2002; Wiengarten, Pagell & Fynes 2012). This requires a capacity to rapidly adjust strategies and diversify its resource base (Barreto 2010; Foerstl et al. 2010; Zhu, Cordeiro & Sarkis 2013). In the food industry, industrialisation has become the centre of all processes characterised by large-scale production. Furthermore, production, financing, and marketing have become internationally consolidated to form worldwide food supply chains (Manning, Baines & Chadd 2005; Roth et al. 2008; Trienekens et al. 2012). Such food supply chains can be described as a group of interdependent firms that work collaboratively to control the flow of goods and services across the value-added chain of agricultural and food produce, so as to attain higher-level customer value at the lowest possible expense (Folkerts & Koehorst 1998). Globalisation, along with variation in market approaches, consumption shifts, and modern-day technology has brought with it concerns related to the economy, society, and the environment (Yakovleva 2007; Zanoni & Zavanella 2012). At the same time, safety and quality are of greatest significance within the industry and contribute to managing the entire supply chain (Manning, Baines & Chadd 2005), quality assurance (Manning, Baines & Chadd 2006) and improved tracking of activities, which is vital in this industry (Wang, Li & O'brien 2009). Collaboration (Matopoulos et al. 2007) and

coordination (Ziggers & Trienekens 1999) are emphasised and widely discussed within the industry in order to meet customer demands. Customers are increasingly conscious about the products they purchase; they are interested to know their origin, the inputs employed during production, the labour benchmarks actualised, and the environmental effects of the production process (Cross et al. 2009; Trienekens et al. 2012). Therefore, the sustainability of the food industry has been put under public scrutiny.

The food and beverage industry is Australia's largest manufacturing industry and contributes significantly to the economy (Australian Advanced Manufacturing Council 2015). The leading states in terms of employment include Victoria, New South Wales and Queensland, which account for 30.7%, 29.2% and 20.8% respectively of the total employment (Australian for Food and Beverage Processing 2014). The food and beverage industry's greenhouse gas emissions are the fourth highest within the manufacturing sector (Australia's National Greenhouse Accounts 2015). The industry is considered key within the manufacturing sector due to the considerable employment it generates compared to other sectors. It is therefore likely to destroy the country's economy if efforts to minimise the effects of climate change are not taken seriously. Carbon emissions reduction targets have been politicised, making it difficult to implement the necessary initiatives to achieve the objectives agreed during the Paris Agreement (United Nations Climate Change 2015). For instance, in Australia the federal Coalition government opposes stringent carbon emission reduction targets, while some believe that using renewables and committing to the Paris Agreement will help to minimise carbon emissions (Uwin 2019). Others assert that the country needs to withdraw from the Paris Agreement as the targets are statistically spurious and suggest a reduction of the previous agreed percentage (Henderson 2018).

These challenges indicate that the Australian government is not doing enough to ensure the reduction of carbon emissions or to combat the devastating effects of climate change. If these challenges continue, the food and beverage sector will be affected significantly, which will in turn jeopardise the country's economic development. Australian SMEs have seen continual growth in recent years (Food and Drink Business 2015). Despite this, SMEs have faced various setbacks in achieving green practices in their operations.

According to Bressan (2014), green practices are not effectively practised within Australian SMEs for various reasons, including the high cost of implementing green practices (Bressan 2014); inadequate knowledge and skill in executing green initiatives (Brammer, Hoejmosse & Marchant 2012; Co-Editors: Benn Lawson et al. 2006; Perrini, Russo & Tencati 2007; Sen & Cowley 2013); and time pressure causing owners, managers and employees – already so busy with daily operations – to regard green practices as unimportant (Brammer, Hoejmosse & Marchant 2012; Studer et al. 2008). However, the research provides an insight into the long-term benefits of adopting green initiatives in business operations, which will likely open the minds of business owners, managers and employees to the advantages of green practice adoption. The Australian government has launched diverse environmental friendly initiatives to minimise negative effects on the environment (Sustainable and Secure Food Systems for Victoria 2008). These initiatives include new production strategies (e.g. environmental management, diversification, reducing reliance on inputs), new distribution strategies (e.g. localisation, community supported agriculture, urban agriculture), and consumer choices (e.g. fair trade, reducing waste, eating seasonally, and choosing a sustainable diet). While some studies investigate environmental issues in the Australian food industry, these are mostly focused on system-wide sustainability and energy policy in terms of reducing carbon emissions (Farmery et al. 2015); a case study of a closed-loop supply chain influencing carbon footprint (Fahimnia et al. 2013); research on sustainable supply chain management within the wine industry (Varsei & Polyakovskiy 2017), and; a study on how life-cycle assessments could enhance the sustainability of white banana prawns (Farmery et al. 2015). Therefore, a limited study has been undertaken to address the carbon footprint of the food sector supply chain for production, distribution and disposal of waste in Australia.

2.11 Rationale for selection of the constructs

This study has employed GSCM practices, GHRMPs, institutional pressures, green performance, economic performance and social performance constructs. GSCM has emerged as a new competitive approach in our era, with the timely adoption of GSCM

practices being observed as the best way for organisations to thrive and sustain their competitive edge (Choi & Hwang 2015; Mitra & Datta 2014; Rao & Holt 2005; Zhu, Feng & Choi 2017). GHRMPs significantly help to facilitate GSCI implementation (Jabbour & de Sousa Jabbour 2016; Nejati, Rabiei & Jabbour 2017). This implies that greening employees is a vital requirement for effective adoption of GSCIs both internally and externally. These dimensions should be included within an organisation's environmental strategy and must work collaboratively to achieve the green agenda for the organisation.

Green human resource management and GSCM are disciplines within the fields of operations management and human resource management respectively. Recent studies have assessed how their integration can help organisations to thrive in a complex environment (Jabbour & de Sousa Jabbour 2016; Nejati, Rabiei & Jabbour 2017; Zaid, Jaaron & Bon 2018). The idea has been to equip employees with the environmental knowledge to facilitate smooth implementation of GSCIs. This begins with environmental recruitment, training, reward, and appraisal to ensure that senior management are committed (Jazairy & von Haartman 2020), environmental design (Geng, Mansouri & Aktas 2017) is conducted, and green manufacturing (Dubey, Gunasekaran & Ali 2015) is implemented. It further extends externally through environmental collaboration with customers and suppliers, implementing environmental packaging, purchasing, logistics and reverse logistics (de Sousa Jabbour et al. 2017; Geng, Mansouri & Aktas 2017; Mitra 2014; Yang 2018). Institutional pressure is another important and crucial dimension in GSCI implementation (Vanalle et al. 2017; Yang 2018). The institutional pressure imposed on companies helps to chart an organisation's move towards green initiatives. Regulatory authorities, customers and competitors all have a significant contribution to make in helping an organisation become environmentally responsible in its operations (Ahmed et al. 2019).

GSCM is regarded as a vital aspect in achieving sustainability (Rath 2013; Sarkis, Zhu & Lai 2011) and, therefore, as presenting solutions to the environmental challenges of our time. The sustainable performance dimensions (environmental, economic and social), explored in this study are important dimensions for discussion, especially in the current

era, where sustainability is part of regular discourse (Mangla, Sachin Kumar, Kumar & Barua 2016). These dimensions as they are collaboratively employed within organisations can significantly address the environmental crisis in real time. The 21st Century is characterised by complexity and uncertainty. Organisations are expected to become innovative in their operations in order to sustain their competitive edge. GSCM, GHRMPs, and sustainability are the new agenda in providing solutions in the contemporary environment. Also, as some organisations do not implement GSCIs proactively, institutional pressure can foster a reactive approach that significantly increases GSCI adoption among firms. This approach has enabled firms to effectively adopt GSCI and address environmental concerns. The focus of organisations in the technological era is not just profit maximisation, but also minimising environmental impact and enhancing the welfare of the society (Gunasekaran & Spalanzani 2012). These approaches will help to address environmental challenges facing both the country and the planet while enhancing the economic performance of organisations and improving societal well-being.

2.12 Environmental sustainability in the Australian food and beverage industry

The food and beverage industry contributes AU\$114 billion to the economy, which is about 1.28% of the GDP. It is the leading sub-sector within the manufacturing sector and four times larger than the automotive industry. It employs around 300,000 people – representing 2.6% of all employed people in Australia – with the leading states being Victoria, New South Wales and Queensland (Australian for Food and Beverage Processing 2014). Environmental practices are key to the health of the food and beverage industry. Including environmental practices in the production process is considered the best way to achieve a balance between environmental, economic and social performance. For instance, agricultural production encourages diversification in order to increase resilience in case of unprecedented weather conditions (Beske, Land & Seuring 2014; Larsen & Ryan 2008). The green manufacturing process for meat processing involves the use of technologies such as electrostatic precipitators and fabric filters in minimising

greenhouse gas emissions (Pathak et al. 2015). Technological developments have also supported enhanced efficiencies in transport by reducing environmental impact.

Furthermore, the localisation strategy of producing food where it is consumed has reduced energy use and the production of greenhouse gases involved in transportation (Larsen & Ryan 2008). Reverse logistics activities such as reusing and recycling have also contributed significantly to minimising negative environmental effects. The SME sector has faced diverse setbacks that have hindered its ability to achieve a sustainability agenda. GSCM is posed as a new competitive advantage that organisations can embrace in order to meet their sustainability objectives and sustain a competitive advantage (Govindan, Khodaverdi & Vafadarnikjoo 2015). SMEs have failed to attain these objectives due to issues such as the high cost of implementing green practices (Bressan 2014), and inadequate knowledge and skills in executing green initiatives (Brammer, Hoejmoose & Marchant 2012; Co-Editors: Benn Lawson et al. 2006; Perrini, Russo & Tencati 2007; Sen & Cowley 2013). Therefore, this research will help to reveal the dimensions of GSCM and benefit both academicians and practitioners. The SME sector can therefore thrive economically, minimise its negative effects on the environment, and meet its social obligations.

2.13 Industry 4.0 and firm sustainability

Industry 4.0 envisions cyber-physical systems (Taboada & Shee 2020) where sustainability of the manufacturing sector is vital, and the food and beverage manufacturing sector in particular can capitalise this opportunity (Stock & Seliger 2016). Industry 4.0 involves deployment of innovative systems in digital technologies that enable universal supply chain integration, rapid manufacturing, mass customization, employment of big data and artificial intelligence and enhance flexibility and cost reduction (Tjahjono et al. 2017). Besides, its importance in traditional value chain system, industry 4.0 provides significant contribution to the sustainability of the supply chain. Industry 4.0 emphasises on value creation where organisations, equipment, human resources, products and processes engage in minimising pollution. According to NRBV theory, Industry 4.0 ensures efficient allocation of products, materials, energy and water.

Further, the inclusion of Industry 4.0 has helped to realise closed-loop product life cycles, enabling re-use and re-manufacture, supporting environmental stewardship. Efforts to realise Industry 4.0 help to generate enormous opportunities in achieving sustainable manufacturing while improving green performance. Besides its positive contribution to the environment, Industry 4.0 generates immense opportunities for sustainable firms by adding value to three dimensions of the triple bottom line (i.e. environmental, economic and social sustainability) (Stock & Seliger 2016). These opportunities for sustainable manufacturing can be analysed from a macro and micro perspective. The macro perspective involves business models and value creation systems. Business models use smart data and therefore offer better innovative services. The use of smart data ensures sustainable business models which in turn minimise negative effects on the environment and society (Bocken et al. 2014). Industry 4.0 offers opportunities for value creation systems to foster closed-loop product life cycles (Chertow 2007).

From a micro perspective, the manufacturing equipment, human, organisation, process and product dimensions are involved in the shop floor operations. Manufacturing equipment can use retrofitting in a cost-effective way, and this is the best approach in improving sustainable performance (Spath et al. 2013). People in the contemporary environment can increase their training efficiency by integrating with information and communication technology (ICT) and thus increase their productivity sustainably (Stock & Seliger 2016). Organisations can be sustainably decentralised through a smart factory, which ensures efficient allocation of products, materials, energy and water (Kagermann, Lukas & Wahlster 2015). The process of employing new technologies can achieve sustainable process design and focus on resource efficiency (Swat, Brünnet & Bähre 2014). The final product can be designed sustainably by enabling reuse and re-manufacture, which helps to achieve the closed-loop life cycle of products (Stock & Seliger 2016). Employing Industry 4.0 is an avenue for ensuring sustainable manufacturing and increased productivity and efficiency, and improves the triple bottom line.

2.14 Summary

This chapter explored the literature on the aspects for investigation for this study; that is, GSCIs, GHRMPs, institutional pressure, environmental performance, economic performance and social performance. The two theories underpinning the research – institutional theory and NRBV theory – are also explored. The chapter then discussed previous studies undertaken and critiqued the literature by establishing the existing gap. The subsequent chapters explain the selected manufacturing sector and reasons for the chosen constructs for the research. The chapter concludes by discussing environmental sustainability in the sector and the inclusion of Industry 4.0.

Chapter 3

Conceptual framework and hypotheses

3.1 Introduction

This chapter examines the impact of GSCIs on green performance, and the subsequent impact on economic and social performance under institutional pressure. Section 3.2 presents a conceptual framework that was adapted from a study by Zhu, Sarkis and Lai (2013). Section 3.3 discusses hypotheses development. The chapter concludes with a summary.

3.2 Conceptual framework

The following conceptual model in Figure 1 incorporates the impact of institutional pressures and GHRMPs on emergent green supply chain practices and environmental performance, and subsequently on social and economic performance. This is developed after an earlier model suggested by Zhu, Sarkis and Lai (2013), who did not in fact examine GHRMPs or social performance as part of their framework. Green human resources are paramount in helping organisations to sustain their competitive advantage (Jabbour, CJC & de Sousa Jabbour 2016). Green performance in this research will be examined in terms of its impact on economic and social performance. Previous studies have considered the impact of green initiatives on dimensions of sustainable performance concurrently (Huang, Huang & Yang 2017; Huang & Yang 2014; Vanalle et al. 2017; Zhu, Sarkis & Lai 2013). In contrast, this research emphasises the immediate effect of green initiatives on environmental performance, and subsequently on the other two performance dimensions. Stefanelli, Jabbour and de Sousa Jabbour (2014) find a positive relationship between GSCM and environmental performance, and argue that environmental performance can act as an antecedent to the success of other performance dimensions such as social and economic. This research will therefore examine sustainable performance in a hierarchical context, and will evaluate how the achievement of green

performance has a positive impact on social and economic performance. The conceptual framework showing the inter-construct relationships is presented in Figure 3.1.

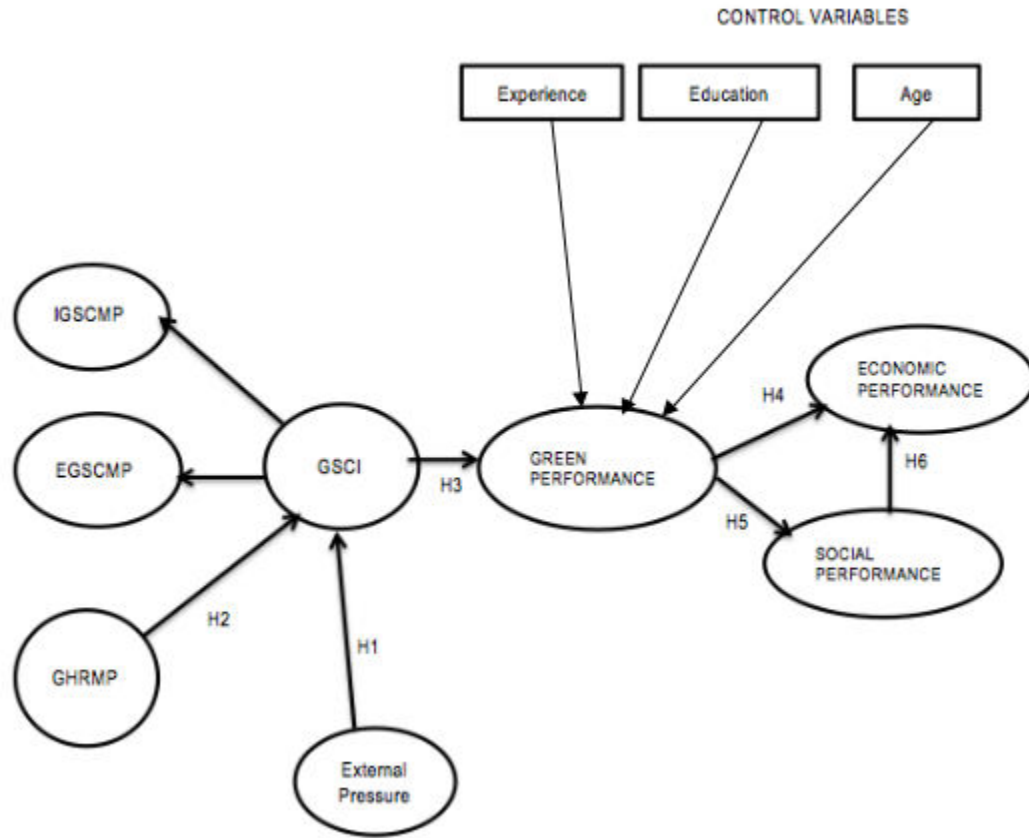


Figure 1: Conceptual framework

3.3 Hypotheses development

This section discusses the relationships between constructs, leading to hypothesis formulation. The seven relationships discussed will be: 1) external pressure and green supply chain initiatives implementation; 2) green human resource management practices and green supply chain initiatives; 3) green supply chain management practices and environmental performance; 4) environmental and economic performance; 5) environmental and social performance; 6) social and economic performance, and; 7) the mediating role of green supply chain initiatives on the relationship between external pressure and environmental performance.

3.3.1 The relationship between institutional (external) pressure and green supply chain initiatives

Institutional theory asserts that organisations experience significant pressure from institutions within the social contexts in which they operate. Responding to such pressure is essential for organisations to secure social license to operate and use scarce non-renewable resources. Breaches of such obligations may endanger firm performance (DiMaggio & Powell 1983; Kalyar, Shoukat & Shafique 2019) and long term progress (Teo 2003). Institutional theory sheds light on the ideal pattern of regulatory procedures, laying the foundation for the development and establishment of organisations (Dedoulis 2016; DiMaggio & Powell 1983). As a result, institutional isomorphism influences firms to assume similar systems, techniques and procedures (DiMaggio & Powell 1983) to face unpredictability and constructively respond to regulatory norms. These strategies help shape the internationally accepted structures of companies and management activities (Yang 2017). Several scholars incorporate institutional theory into studies of organisational environmental management (Cordeiro, Zhu & Sarkis 2009; Delmas & Toffel 2004; Jennings & Zandbergen 1995). However, there is scant empirical study on the effect of institutional pressures on the implementation of GSCI in the food and beverage industry. Having said that, some researchers have evaluated external drivers in the value chain domain of this industry (Huang, Huang & Yang 2017; Vanalle et al. 2017; Zhu, Sarkis & Lai 2013). This study investigates how institutional pressures through rules, public scrutiny, and the influence of competitors, play a key role in enabling SMEs in the food and beverage industry to fully implement their green activities internally and externally. According to DiMaggio and Powell (1983), coercive/regulator pressure comes from other firms on which the organisation relies (e.g. government authorities, key customers) and cultural presumptions in the communities where these operate (e.g. regulations and cultural rules on governance and the enforcement of operational guidelines) (Benders, Batenburg & Van der Blonk 2006; DiMaggio & Powell 1983). Legislation is often regarded to be the most significant external pressure on the GSCI of an organisation (Lai & Wong 2012); regulatory influence is often a key aspect that prompts implementation of green activities. New green regulations have arisen because of increased public environmental awareness, demand for conservation, and decline in

resources. Such regulation imposes regulatory pressure on organisations to execute GSCI, and can also be a driving force for creative green initiatives (Zhu, Sarkis & Lai 2007). Firms should conform to these green rules. Otherwise, they will encounter the danger of authorities imposing legal proceedings or expulsion from the market (Sarkis, Gonzalez-Torre & Adenso-Diaz 2010).

Normative pressure, on the other hand, originates from professional cultures and concomitant assumptions about how tasks should be performed (Yang 2017). Some professions have professional bodies that help manage their occupation by regulating access to the industry and establishing enforceable standards (DiMaggio & Powell 1983). This approach originates from the increased valuing of experts in contemporary societies. Academic organisations and industry associations are key avenues for the establishment of frameworks within such bodies, and are crucial to the dissemination of guidelines procedures to firms within relevant industries (Huang, Huang & Yang 2017; Tempel & Walgenbach 2007). To be regarded legitimate, organisations seek to implement initiatives that conform to the standards and principles in their relevant organisational domain (DiMaggio & Powell 1983; Vanalle et al. 2017). Customer pressure, however, prompts firms to exceed regulatory minimums (Powell & DiMaggio 2012). Customer pressure may also be exercised by external stakeholders and professional organisations that are increasingly concerned about the environment. By so doing, such pressure will prompt the food and beverage manufacturing to implement GSCI. The demand from the public, manufacturers has enforced organisation to strive hard in adhering to environmental guidelines at every stage of the supply chain in order to satisfy their customer, this has highly contributed to organisations increasingly implement GSCI (Yang 2018).

Uncertainty is a powerful force that leads to emulation. Under situations of unpredictability, managers observe how other firms design their systems and procedures. This happens when firms are unsure about their business potential, possess inadequate technological knowledge, or when the operational context generates significant unpredictability (DiMaggio & Powell 1983). In such cases, they emulate the processes and patterns of those firms that they consider ideal structures, or that have at least

conformed to environmental standards fairly well (Ahmed et al. 2019). The well-structured company acts as a foundational platform where other companies may learn and employ their initiatives. Competitive pressure is strongly encouraged, as it helps organisations lagging behind in their green agenda by fostering motivation to mimic successful organisations. Best practices in strategising for environmental initiatives can be achieved under competitive drivers. When key rivals that have implemented environmental initiatives are preferred by consumers, other firms in the same industry will also strive to implement environmental initiatives (Yang 2017). Competitive pressures happen when a firm emulates the processes of successful rivals in the same industry in an effort to replicate their achievement. Organisations may imitate rivals because of their accomplishment. The reason for this strategy is to adopt or imitate the processes of accomplished rivals to replicate their successful strategy (Christmann & Taylor 2001). The progress of these highly accomplished organisations, which are regarded exemplars in their sector, prompts other organisations in the similar sector to strive to be like them, as they encounter similar environmental requirements (Powell & DiMaggio 2012) and therefore encourage them to implement GSCI (Saeed et al. 2018). Previous studies have found a positive relationship between institutional pressure and GSCI (Ahmed et al. 2019; Huang, Huang & Yang 2017; Vanalle et al. 2017; Yang 2018). The following hypothesis is derived from discussion in this section: *H1: Institutional pressures are positively associated with green supply chain initiatives.*

3.3.2 The relationship between green human resource management practices and green supply chain initiative

The intensification of organisational greening research (Marcus & Fremth 2009) and goal of expanding green practices requires human resource practices such as training, performance evaluation, and reward initiatives (Daily & Huang 2001; Govindarajulu & Daily 2004). The idea of integrating human resource management practices into environmental practices was coined by Renwick, D, Redman and Maguire (2008) and has since led to multiple studies within the field of human resource management (Daily, Bishop & Massoud 2012; Graves, Sarkis & Zhu 2013; Jabbour 2013; Jackson et al. 2011; Jackson, Schuler & Jiang 2014). Renwick, Redman and Maguire (2008) termed this

integration as green human resource management (GHRM). GHRM is variously defined as the alignment of traditional human resource initiatives with environmental targets with strategic scope for human resource management (Jabbour, Santos & Nagano 2010), the new formation of work organisation (Longoni, Golini & Cagliano 2014) such as organisational culture (Gupta & Kumar 2013), teamwork (Jabbour et al. 2013) and workers' empowerment (Daily, Bishop & Massoud 2012). Another topic that has received increasing attention in the last decade in the field of operations management is green supply chain management (GSCM), a sub-component of a sustainable supply chain (Schaltegger et al. 2014; Seuring 2013). GSCM can be defined as the consolidation of green issues into the inter-company activities of supply chain management, including reverse logistics (Sarkis, Zhu & Lai 2011).

The incorporation of GHRMPs into GSCMPs is regarded as crucial factor to ensuring that organisations thrive within the contemporary environment (Jabbour & de Sousa Jabbour 2016). Green culture, teamwork, and empowerment are increasingly linked to traditional human resource initiatives, which encompass the mainstream of green human resource practices (Renwick, Redman & Maguire 2013). These more traditional green human resource undertakings are more substantial and may assure that green practices will be considered in the operation of firms (Jabbour & de Sousa Jabbour 2016). Green initiatives have a sequential execution, with internal initiatives at the beginning and external initiatives following (Green Jr, Zelbst, Bhadauria, et al. 2012). Internal green activities should be the first to be implemented, and is driven by the increasing influence of green culture within organisations, teams, and empowerment. Internal green actions initiate the platform for the implementation of other green supply chain undertakings. Because of this arrangement, management requires assistance from green human resource undertakings to motivate the greening behaviour of employees (Paillé et al. 2014). At this stage, employees are motivated to consider pollution prevention and waste control strategies, and all other possible green supply chain activities (Jabbour & de Sousa Jabbour 2016). The undertaking of green supply chain eco-design demands stronger linkages between organisations and other value chain participants to yield greener commodities. Achieving this requires considerable human resource development, as

asserted by Govindarajulu and Daily (2004). More specifically, focus should be given to the development of green teams (Jabbour et al. 2013), and to green works that call for technical green education to address the challenges posed by eco-design practices (Sarkis, Gonzalez-Torre & Adenso-Diaz 2010). Green purchasing and cooperation with consumers also demands specialised green education accessible through workshops on aspects of green supply chain concerns (Arantes, Jabbour & Jabbour 2014). Reverse logistics, because of their difficulty, also call for employees with solid external training, which in turn requires support from green human resource activities (de Sousa Jabbour et al. 2013; Ho et al. 2012).

The support of green human resource management practices becomes even more important as the competencies of organisations are stretched and green supply chain activities encompassing cooperation with consumers and suppliers start to be implemented through eco-design and reverse logistics (Jabbour & de Sousa Jabbour 2016). The activities of green supply chain and green human resource are inter-linked and synergistically associated (Schaltegger et al. 2014). Internal green supply chain activities are the first stage towards external green supply chain activities, and require considerable support from green human resource practices to realise a supply chain which is very sustainable (Jabbour & de Sousa Jabbour 2016). This point is further substantiated by Sarkis, Zhu and Lai (2011), who find that human resource practices are crucial to realising green supply chain improvements. GHRMPs include management of environmental practices into human resource management (Ashraf, Ashraf & Anam 2015), and links traditional human resource activities and environmental procedures. Jabbour and Santos (2008) identify various functions of human resource for management of the environment, such as support for environmental management programs and the establishment of organisational change. Every stage of an environmental management program needs targeted facilitation by human resource practices (Jabbour & de Sousa Jabbour 2016), including some of the aspects of green human resource practices. As shown by previous research, green human resource activities within companies fosters green empowerment (Daily, Bishop & Massoud 2012; Daily & Huang 2001; Gholami et al. 2016) and enhances the execution of green supply chain activities. Thus, green human

resource management practices can facilitate greater staff participation in sustainability (Teixeira et al. 2016), leading to enhanced management of green supply chain practices by a firm.

Several studies have confirmed the relationship between GHRM and GSCM practices. For example, Jabbour and de Sousa Jabbour (2016) propose a framework to explain the synergy between green human resource and green supply chain, which they assert facilitates understanding of the achievements of green supply chain initiatives practices supported by green human resource undertakings. Their integrated framework explains that green human resource practices are essential to set the foundation for the successful adoption of green supply chain practices. This finding strengthens the argument that organisations ought to incorporate them to improve their corporate image. Also, the study conducted by Nejati, Rabiei and Jabbour (2017) highlight the significance of green human resource activities to the implementation of green supply chain practices. In their study of manufacturing industries in Iran their findings deduce that, green training, empowerment and reward have most positive effect on green supply chain management initiatives. Moreover, Zaid, Jaaron and Bon (2018) in their study of the impact of green human resource on green supply chain practices and sustainable performance within the Palestinian manufacturing sector deduced that green human resource are at the centre in influencing positive outcome of green supply practices implementation. Building on these arguments, it is hypothesised that: *H2: Green human resource management practices are positively related to green supply chain management practices.*

3.3.3 The relationship between green supply chain initiative and green/environmental performance

Internal GSCM initiatives constitute the first GSCI dimension of practice where environmental practices are exercised internally within an organisation (Yang 2018). Incorporating environmental thinking into an organisation is a key phase in establishing environmental awareness, with support from top management crucial in influencing staff to execute environmental activities within a firm. Without encouragement from managers, environmental day-to-day activities within a company cannot be optimised (Jazairy &

von Haartman 2020). If managers are not concerned about the natural environment and do not encourage their employees to participate in green practices, employees will not wish to be involved in these practices, which may result in a loss of competitive edge and diminishing of the corporate image of the organisation. The top and mid-level managers have a very significant responsibility in ensuring that employees work collaboratively in executing green initiatives (Dai, Montabon & Cantor 2014) by communicating environmental goals, and through their interactions with other departmental units that can then collaborate, for instance in developing green commodities by recycling and regaining component materials and minimising the usage of toxic materials. Thus, the company can minimise manufacturing expenses by minimising waste, and can consequently improve its corporate image and reputation, resulting into enhanced green performance (Diabat & Govindan 2011; Zhu, Sarkis & Lai 2007).

In the early phase of the greening operations, organisations adopt internal green activities to minimise the effect of their internal procedures and practices (Rao 2002), leverage their own environmental objectives, and comply with the demands of supply chain management and legislation to enhance their green performance. In implementing internal green activities, firms achieve organisational objectives that are described by top and mid-level managers and stipulated in legislation (Rao & Holt 2005). organisations utilise the competencies obtained from environmental initiatives of suppliers and customers to green all phases of the supply chain by executing internal activities in coordination with their supply chain associates (Bowen et al. 2001). Van Hoek (1999) argues that every internal green undertaking impacts the environment by minimising the effects of waste and pollution. There are several studies that have explained the relationship between Internal GSCM practices and green performance (De Giovanni 2012; Feng et al. 2018; Green Jr, Zelbst, Meacham, et al. 2012; Laari, Töyli & Ojala 2018; Vanalle et al. 2017; Wang et al. 2018; Yang 2017; Yang et al. 2013; Zhu et al. 2010). The studies of Taiwanese shipping firms by Yang et al. (2013) and Yang (2017) concluded that internal green practices positively impact green performance. Another example is provided by a study conducted by Vanalle et al. (2017) of an automotive supply chain in Brazil (South America's leading economy), which revealed that internal green initiatives

had a positive impact on green and economic performance, but had no impact on operational performance. Further evidence from the automotive sector, this time from China, indicates a positive impact of internal green activities on green and operational performance, and an indirect link to economic performance (Feng et al. 2018).

Another dimension of GSCI practice comprises external GSCM initiatives. External GSCM undertakings involve activities that include business dealings with suppliers and consumers, such as green purchasing and cooperation with customers (Zhu, Sarkis & Lai 2008). Many places around the globe now emphasise external green practices more fully. For instance, businesses in developed economies consider green purchasing to be a major aspect of their green policies and therefore emphasise eco-design when cooperating with suppliers (Zsidisin & Hendrick 1998). To enhance relationships efficiently there are various green activities, such as cooperation with suppliers on green goals, green audits for suppliers, cooperation with consumers for environmentally friendly products, and green packaging. organisations can collaborate with suppliers and customers to discuss ideas on green issues, such as producing green friendly produce, producing eco-design commodities and innovating environmental packaging (Zhu & Sarkis 2004). In so doing, organisations may minimise diverse green challenges and eventually enhance green performance through minimisation of carbon emissions, solid and water wastes (Zhu & Sarkis 2004). Another area of action is to enhance green performance through green purchasing, which constitutes strategic procurement of environmentally friendly raw materials resulting in radical minimisation of waste and ultimate commodity disposal procedures (Youn et al. 2013). Also, according to the literature, green purchasing improves green performance because it minimises transaction expenditure (Mitra & Datta 2014), thus promoting access to new environmental technologies (de Sousa Jabbour et al. 2017).

Green supply chain activities are increasingly acknowledged as systematic and extensive channels to attain better green performance (Green Jr, Zelbst, Bhaduria, et al. 2012; Lai, Wong & Cheng 2012; Zailani et al. 2012; Zhu et al. 2010; Zhu, Sarkis & Lai 2008; Zhu et al. 2008). Green supply chain activities minimise environmental destruction because cooperation among suppliers and consumers assists in determining and confronting green

challenges within the supply chain (Wong et al. 2012). Through cooperation, the supply chain can minimise pollutants and emissions in manufacturing processes and transportation, as well as promoting the consumption of commodities characterised by environmentally friendly design and packaging. Some scholars also discuss customer cooperation, but do not systematically examine the responsibility of customers in processes of cooperation (de Sousa Jabbour et al. 2017). Govindan et al. (2013) concluded that in the organisational setting of Brazilian electrical and electronics industry, cooperating with customers in eco-design is paramount to enhancing green performance. Moreover, according to Chan et al. (2012), in an environment of high competition, if small businesses can manage to work collaboratively with their consumers to reduce the negative green effects of their distribution logistics practices, they will experience an even higher level of green performance. In a regulatory environment where there are extended roles, Lai, Wong and Lun (2014) perceive that the progress of extended tasks require cooperating with consumers for returned commodities and final disposal. Thus, extended functions may rely on how much consumers regard it to be their duty to engage in product redistribution plans.

There is much literature on environmental management discipline, which is related to the relationship between external GSCM practices and green performance (de Sousa Jabbour et al. 2017; Feng et al. 2018; Laosirihongthong, Adebajo & Choon Tan 2013; Mitra 2014; Wang et al. 2018; Yang et al. 2013). In their study conducted in Brazilian organisations, de Sousa Jabbour et al. (2017) conclude that external green supply chain practices such as cooperation with suppliers and customers, combined with green purchasing, have a positive impact on green performance. Also, Feng et al. (2018), examining automobile manufacturers in China, conclude that external green supply chain activities impact green and operational performance positively and indirectly contribute to enhanced economic performance.

Zhu, Feng and Choi (2017), also focusing on China, also find that external green initiatives such as green purchasing have positive impact on green performance among manufacturers from diverse sectors. Yang (2017), in a survey study among 129 shipping container companies in Taiwan, also finds that external green practices such as

collaboration with suppliers, partners and customers impact green performance positively. Based on such available evidence, the hypothesis for this study is: *H3: Green supply chain management practices are positively related to environmental/green performance.*

3.3.4 The relationship between environmental and economic performance

According to environmental management literature, adoption of GSCM actions by organisations indicates that they are concerned about the environmental impacts of their production and business and supply chain processes. Organisations seek to minimize the negative impacts of their activities (Rao 2002; Zhu & Sarkis 2004; Zhu, Sarkis & Geng 2005) and comply with regulatory requirements. Porter and Van der Linde (1995) contend that there are governmental regulatory pressures for organisations to engage in environmental innovation. Thus, firms seek to reduce environmentally hazardous elements within their industries. To attain this aim, organisations seek to maximise materials efficiencies and simultaneously utilise more recyclable resources. For example, the International organisation for Standardisation (ISO) established ISO 14000, which acts as a blueprint on green performance indicators for firms (Masoumik, Abdul-Rashid & Udoncy Olugu 2014). Thus, beyond the demands of top-level management's goals, firms also have to comply with broader regulations to green the entire supply chain. As firms try to gain differentiation by making innovative products, they also enhance and/or sustain their competitive edge (Hart 1995) and achieve environmental and economic performance (Ambec et al. 2013). In the current environment, most firms are attentive to environmental issues, which is attested to by innovation in their latest products. A business which has established product innovation can enhance its performance (Zhang & Duan 2010), secure a competitive advantage over its competitors, and achieve enhanced profitability.

To enhance innovation and improvement, firms can bring about changes both in their products and their business dealings. There are many approaches to innovate the resources of firms, such as reusing and recycling materials or finished products. Recycling and reusing can minimise materials used and waste (e.g. solid waste and

water). Recycling refers to waste material improvement and reprocessing for utilisation in new products (Cucciella et al. 2012). The fundamental recycling stage involves the collection of waste materials and their incorporation into the manufacturing of new products with the same functions and initial designs (Dubey, Gunasekaran & Ali 2015) . In contrast, reuse of material is not essentially to reprocess; it can possess the same functions or different functions from its primary design (Cucciella et al. 2012). Consequently, both recycling and reusing can reduce the amount of materials used in production and minimise waste going to landfill. As a result, the organisation will enhance its image, particularly its environmental reputation. By minimising waste and utilising recycled materials, the organisation can reduce waste production and controlling and material costs, thereby increasing its profitability.

In addition, organisations that pay considerable attention to environmental issues, such as energy efficiency, try to initiate environmental management techniques in their business policies to establish green manufacturing procedures that communicate their commitment to reduction, reuse, recycling and re-manufacturing (Sarkis 2001). By so doing, firms can enhance internal productivity and attain competitive advantage over those firms which do not have display equal commitment to the environment (Esty & Winston 2009). Additionally, contemporary consumers are more concerned with environmental impacts than in the past, and will often purchase products from organisations that have environmental plans even if the products cost more than their alternatives. Thus, companies can enhance environmental performance, which can result in more efficient processes, improved productivity, minimisation of cost of compliance, and increased new market opportunities (Ambec et al. 2013; Porter & Van der Linde 1995). Consequently, green performance such as carbon emissions minimisation, solid waste, and wastewater discharge minimisation have an impact on economic performance in terms of profit, return on investment (ROI), and market acquisition (Cucciella et al. 2012; Zhu & Sarkis 2004; Zhu, Sarkis & Lai 2013).

Other scholars investigate the relationship between green and economic performance. For instance, there are studies that find that green performance has a positive effect on economic performance (Álvarez-Gil et al. 2007; De Giovanni 2012; Green Jr, Zelbst,

Bhadauria, et al. 2012). By contrast, other scholars find that green performance has a negative or neutral impact on economic performance (Link & Naveh 2006; Rao 2002; Wagner et al. 2002). According to Álvarez-Gil et al. (2007), there is a positive link between green actions and economic performance. Also, Moneva and Ortas (2010), De Giovanni (2012) and Green Jr, Zelbst, Bhadauria, et al. (2012) conclude that green performance is positively related to economic performance. Furthermore, Al-Tuwaijri, Christensen and Hughes Ii (2004) argue that there is significant positive link between green performance, involving ratio of harmful waste, recycled to total harmful waste produced and economic performance. They also indicate that organisations that perform well report pollution-related environmental data more than those that do not perform well. Given the findings in the literature discussed above, a further hypothesis of the relationship between green performance and economic performance is: *H4: Green performance is positively related to economic performance.*

3.3.5 The relationship between green and social performance

The social performance dimension of sustainability has been ignored despite its importance within the supply chain (De Giovanni 2012) and to achieving the triple bottom line (Carter & Rogers 2008). In contrast, the environment and economic performance dimensions of sustainability have attracted greater attention within the GSCM literature (Huang, Huang & Yang 2017; Huang & Yang 2014; Zhu & Sarkis 2004; Zhu, Sarkis & Lai 2013). There are several reasons for this. Winter and Knemeyer (2013) assert that measuring social performance poses as a great challenge, a point that Hall and Matos (2010) explain by pointing out that the social aspect of sustainability engages a variety of stakeholders with diverse objectives, needs and perspectives, all of which could perceive the situation differently. Other scholars continue to debate why the social dimension has not been given more attention, although a common finding among commentators is that studies focused on the social dimension tend to emphasise a particular area or activity (e.g. Fair Trade), instead of adopting a holistic approach. The environmental dimension, instead, tends to be more closely aligned with considerations relating to supply chains, since the benefits of action in this area can be measured

quantitatively; benefits across the social dimension of the sustainability agenda, on the other hand, are viewed as more subjective and complex (Banerjee 2003).

Furthermore, meaningful consideration of social dimensions of sustainability by companies has suffered because of there is no consensus on the list and definitions of the social dimensions to be considered, unlike those environmental and economic dimensions traditionally grounded in the natural sciences. As such, it is challenging to attain an extensive categorisation of social issues (Clarkson 1995). According to Gao and Zhang (2006), social dimensions of sustainability rely on the subjective priorities and standards of the individuals concerned, unlike the more objective variables measured in relation to environmental and economic aspects.

In a critical review of 191 papers in this area, find that 73.3% of research discusses the economic and environmental elements of the supply chain. However, because the social dimension is regarded to be more complex to measure, many scholars argue that organisations have not realised the range of social benefits that result from green action (Laosirihongthong, Adebajo & Choon Tan 2013). Although they highlight that scant consideration has been given to social dimensions, Hollos, Blome and Foerstl (2012) and Lee (2008) affirm that environmental and economic dimensions have nevertheless yielded substantial progress within economies. Few papers discuss ethical and social matters (De Giovanni 2012; Laosirihongthong, Adebajo & Choon Tan 2013; Younis 2016). Although the challenge of incorporating the social dimension is recognised within the literature, it is paramount that this dimension be regarded as critically important and be given equal consideration to the environmental and economic dimensions (Mitra 2014). Positively, many organisations are publishing corporate social responsibility reports focusing on social dimensions, and the ISO recently established the ISO26000 international standard on social responsibility (Mitra & Datta 2014).

In recent years, the social dimension has become more widely discussed than previously (Carter & Liane Easton 2011). This is in part due to the realisation that social performance is a requirement for organisational sustainability and that its consideration has helped organisations to thrive over the longer term (Carter & Rogers 2008). Through

green packaging, reduced emissions and waste, and reuse and recycling, organisations enhance the health and safety of employees, reduce workplace accidents, and decrease staff turnover and absenteeism. Such evidence further illustrates that green performance is vital for success across the economic and social dimensions of the triple bottom line (Ahmed et al. 2019). By minimising environmental impacts, the health and safety of workers, their job satisfaction, and engagement in employment is improved. Furthermore, the health and safety of communities and their social commitment is also enhanced (De Giovanni 2012; Younis 2016; Zaid, Jaaron & Bon 2018).

Such arguments are supported by Carter and Rogers (2008) and Zailani et al. (2012), who investigate the impact of green performance on social performance. According to Carter and Rogers (2008), investment in pollution-free activities minimises carbon emissions and waste, which in turn enhance social performance by improving the health and safety of employees, and reducing absenteeism and staff turnover. Confirming the findings of Carter and Rogers (2008), Zailani et al. (2012) emphasise that sustainable actions are essential to minimising negative environment impacts and maximising positive social outcome such as increased satisfaction and competence among workers. Based on the findings from this body of literature, the following hypothesis on the relationship between green performance and social performance is proposed: *H5: Green performance is positively related to social performance.*

3.3.6 The relationship between social and economic performance

The social contributions of organisations impact their economic performance (Boyd & Kimmet 2005). Success in social performance is vital to enhancing economic performance (Boyd & Kimmet 2005). The social bench-marking to be undertaken includes: health and safety, stakeholder relations, community engagement, occupier satisfaction and productivity, cultural issues and local impact (Bakshi & Fiksel 2003; Sayce & Ellison 2003). These social benchmarks have increased return on investment, thereby ensuring growth of economic performance. Further, when organisations seek to actively play a significant part in society, people earn trust, feel safe, included and eventually purchase the products of such organisations, thereby enhancing their economic

performance (De Giovanni 2012). According to Carter and Rogers (2008), companies should examine their performance in the social dimension of the triple bottom line strategically, as it could yield long-term economic profit. A company's social responsibility and its strategy must be closely interlinked, even if they may function as distinctly administered programs (Shrivastava 1995). Companies have realised enormous progress in terms of return on investments through the integration of social obligations and strategies. Packard (2006), for example, finds that organisations that opt for a global citizenship strategy and business strategy secure greater return on their investments. A company like Nike has adopted this approach and has realised great profits (Nike 2005). Another approach adopted by companies entails changing their culture and the mindset of employees (Savitz 2013). For example, Hamel and Prahalad (1989) observe that a shared, company-wide long-term vision is essential to leveraging internal organisational aggression and enthusiasm to prompt creativity and transformation. Similarly, in their research of visionary organisations that have performed better than their competitors over time, Collins and Hussey (2003) establish that maximisation of financial gain is not the key motivation for the companies they investigate. Instead, these are driven by essential codes of conduct and organisational cultures, including explicit goals beyond merely securing financial returns.

In addition, it is paramount that a business should manage its social capital to achieve its social responsibility (Dyllick & Hockerts 2002). Social capital is categorized into human and societal capital (Dyllick & Hockerts 2002). According to Gladwin, Kennelly and Krause (1995), the realisation of a socially sustainable business demands the internalisation of social expenditure, retention and increase of capital stock, promotion of democracy, effort to enhance the scope of people's preferences and allocate assets and property rights equitably. According to this view, a company handles social capital sustainably when its stakeholders understand and broadly accept the rationale for the actions of the organisation, rather than doing so because they evaluate a certain action as an inherently good thing (Dyllick & Hockerts 2002). In terms of social sustainability, therefore, any firm therefore that shuts down and lays off its employees cannot be regarded as a good thing (De Giovanni 2012). However, if a company explains such an

action on the grounds of its closure, explains to employees why it had no alternative, and helps them transition to new jobs, such an organisation would be considered socially sustainable. This, in turn, would enhance its image and eventually impact the economic performance (Dyllick & Hockerts 2002).

Other studies evaluate the impact of social performance to financial performance through the application of instrumental stakeholder theory (Orlitzky, Schmidt & Rynes 2003). This theory suggests that meeting the demand of diverse stakeholders groups is essential for the economic performance of firms (Donaldson & Preston 1995; Jones 1995). This is so, the theory claims, because the implicit and explicit arrangement, contracting procedures, and stakeholders alliance function as detectors and enforcement channels that restrain executives from diverting focus from overarching economic objectives of companies (Jones 1995). Moreover, by communicating and resolving issues of various stakeholders, managers can foster the efficiency of their firms in meeting external demands and thereby increase the likelihood of their expansion (Freeman & Evan 1990). Additionally, high corporate performance results not only from the fulfilment of bilateral links (Hill & Jones 1992), but also from the synchronised collaboration and prioritisation of multilateral stakeholders interests. High corporate social performance boosts the economic performance of an organisation by evaluating and communicating the claims of diverse constituents in a justified, logical approach. These arguments are been supported by various empirical studies. For example, scholars confirm that social performance is positively correlated to economic performance (De Giovanni 2012). Improvement in social performance also enables organisations to minimise operational costs, venture into new markets, increase profits, and dominate the market (Green Jr, Zelbst, Meacham, et al. 2012; Zhu, Sarkis & Lai 2013). The fulfilment of these dimensions ensures the economic performance of a firm. Based on these findings from the scholarship, a further hypothesis on the relationship between social performance and economic performance is: *H6: Social performance is positively related to economic performance.*

3.3.7 The mediating effect of GSCI on the relationship between external pressure and environmental performance

Institutional/external pressures play a crucial role in pushing organisations to implement GSCI effectively, and indirectly enable firms to attain positive environmental outcomes (Huang, Huang & Yang 2017; Vanalle et al. 2017; Yang 2017). Regulations imposed on organisations assist them to become environmentally compliant. By complying to all environmental regulations in their operations, organisations minimise disastrous effects that may result from pollution, thus improving their environmental performance (Yang 2018). The quest to imitate their competitors so as to sustain their competitive advantage and dominate the market has also driven firms to implement GSCI and thus improve environmental outcomes (Zhu, Sarkis & Lai 2013), as has pressure from customers to comply with environmental standards. Customers are nowadays typically knowledgeable and aware of the importance of consuming eco-friendly products, and subsequently pressure organisations to adopt green initiatives in their operations. Through such pressure, firms have implemented GSCI and improved their environmental performance. Overall, organisations seem to follow a reactive (Saeed et al. 2018), rather than proactive approach in implementing GSCI, with organisations often reacting to institutional pressure for GSCI implementation rather than proactively adopting it of their own initiative. The evidence discussed here indicates that institutional pressure plays a significant role in GSCI implementation, and that this enhances environmental outcomes. The evidence further indicates that external pressure can indirectly influence environmental performance through GSCI. Therefore, a further hypothesis for this research is that: *H7: External pressure can indirectly affect environmental performance in a positive manner through green supply chain initiatives.*

3.4 Control variables

According to Wiersema and Bantel (1992), the age of participants can influence strategic decisions within firms. Age determines the flexibility of people and their willingness to take risks. This is particularly relevant in relation to senior managers, whose risk-taking effort decreases as they age. Younger managers also appear more willing to undertake

corporate change and are more amenable to adopting novel approaches such as green initiatives in search of firm performance improvements (Wiersema & Bantel 1992). The experience of executives is expected to influence firm processes and choices (Goll & Rasheed 2005). According to Goll and Rasheed (2005), for example, there is a correlation between the extent of the experience of top executives and their effectiveness in making decisions that improve organisational policies, processes and procedures. Further, educational attainment serves as another indicator of the values and cognitive preference of executives (Hambrick & Mason 1984). This findings is consistent with the finding that level of education is strongly linked to creativity and innovation (Kimberly & Evanisko 1981). Ultimately, education assists executives in improving the operations of green initiatives. Therefore, demographics such as age, experience and education can control the outcome.

3.5 Summary

This chapter presented the conceptual framework that represents the impact of GSCIs on its effect on green performance and how it subsequently impacts economic and social performance under the influence of institutional pressure and green human resource management practices. In the process of examining the framework, seven hypotheses were developed which were further substantiated in the analysis chapter.

Chapter 4

Research Methodology

4.1 Introduction

This chapter explains the research paradigm and the methodology employed to examine the research hypotheses and research questions. These are examined through a survey questionnaire (n=168) to capture the views of enterprises representing the food and beverage sector. The quantitative data collected by employing this method was used to gain an understanding of the relationships between GSCI, institutional pressures, GHRMP and performances.

The chapter explains the research paradigm underpinning this study (Section 4.2); its research philosophy (Section 4.3); overall approach (Section 4.4), and; the construct measurement development process (Section 4.5). The subsequent sections explain the data collection processes and data analysis techniques employed to reach the study findings. Finally, conclusions are outlined.

4.2 Research Paradigm

McCormack, Dorin and Innocent (2004) explain a paradigm as a whole constellation of ideology, conducts and strategies and so on, that are exercised by members of a certain society, while Bryman and Bell (2015) define a paradigm as a collection of ideology and directives which for scientists in a specific field motivate what should be examined, how a study should be conducted and how outcomes should be analysed. In practice, there is no right or wrong paradigm. However, it is important that a researcher reflect critically on their own judgements as paradigmatic choices (Bryman & Bell 2015). Generally, a should consider the most appropriate research paradigm for her/his study based on the research questions guiding the project (Saunders 2011a). Based on an objective-subjective outlook, Burrell and Morgan (1982) recommend the structure that concentrates on the distinction between the paradigms of positivism and interpretivism. According to

the positivist paradigm, the researcher should treat his/her objectively knowable subjects. Research in this vein is typically administered in the physical environment or using objective methods such as questionnaires (Bryman & Bell 2015). For instance, a survey by mailing a questionnaire to a large sample of managers will be an appropriate method to quantify and test what variables are used in their manufacturing industry (Creswell 2009). To do so, a researcher must understand which variables are employed and he/she can test the link between measured items.

Conversely, interpretivism claims that the epistemological stance appropriate to investigating phenomena in the social sciences should be focused on the subject, rather than the object. According to this paradigm typology, the study of the physical and social worlds demand different methods (Bryman & Bell 2015), with an interpretivist researcher typically employing exploratory methods such as case studies, in-depth interviews, focus groups, observation and ethnography, methods that are tuned to measuring subjective experience (Bryman & Bell 2015; Saunders 2011b). This stance can assist a researcher access comprehensive knowledge of what he/she would like to pursue. The present study is grounded in a positivist approach, since it investigates supply chain management research (Mentzer et al. 2001). The aim of science is to provide solutions to issues so as to respond to the researcher's questions of interest. To answer the questions from a scientific standpoint, objective methods were used such as a questionnaire to garner credible data (Bryman & Bell 2015). According to Saunders (2011a), the objective standpoint was normally employed by positivist researchers in ontology, whereby he/she assumes a value-free method in his/her study, exhibiting that scholars do not impact and are not impacted by the subject of the research. For this reason, the paradigm employed for this research is positivism.

4.3 Research Philosophy

This section discusses the theoretical and paradigmatic matters that are related to management research, particularly supply chain management research. Generally, different researchers have different objectives and views. Therefore, there are diverse ways in which individuals perceive the world, which influence their research not only in

terms of strategy, but also in the selection of method, techniques, and procedures. The worldview of a researcher is a prospective gateway to a research philosophy or paradigm of thought (Bryman & Bell 2015). Kuhn (1996) explains a paradigm as a whole constellation of ideology, conducts and strategies exercised by members of a particular society. Bryman (1988) extends the idea of paradigm by asserting that it is a cluster of ideology and directives which for scientists in a specific field determine what should be researched, how the research should be conducted, and how outcomes should be presented and discussed. Paradigms function as structures by which to make sense of social occurrences, and from which knowledge about such occurrences can be elicited and descriptions of it attempted (Saunders 2011a). Before critically discussing the paradigm of this research, however, it is vital to comprehend the assumptions employed in this project's research philosophy. These crucial assumption encompass the issues associated to epistemology, ontology and axiology (Saunders 2011a).

4.3.1 Epistemology, Ontology and Axiology

There are three key research dimensions that a researcher must consider to clearly delineate their research philosophy: epistemology, ontology and axiology (Saunders 2011a). Each dimension involves key variations, which will impact the way in which a researcher views the research. First, epistemology is concerned with the researcher's perspective in regards to what accounts for adequate knowledge in a field (Bryman & Bell 2015; Saunders 2011a). Epistemology takes into account the study of knowledge and what a researcher acknowledges as being reliable and sufficient knowledge, implying that it is concerned with how a researcher perceives the world and the link between him/her and knowledge (Bryman & Bell 2015). Epistemology is traditionally characterised by the dichotomy of positivism and interpretivism (Bryman & Bell 2015). Second, ontology is interested with a researcher's perspective of the nature of reality (Saunders 2011a), and is typically characterised by the dichotomy of objectivism and subjectivism. Objectivism entails the view that social phenomena happen in the real world, external to the perceptions of individuals interested with their being. A researcher who adopts a positivist standpoint is likely to perceive reality as an objective view. By contrast, the subjective outlook views phenomena as produced from the perspectives of individuals. A

researcher who adopts an interpretive standpoint is likely to perceive reality as subjective and socially constructed (Saunders 2011a).

These different standpoints impact the researcher's judgements, activities, and the nature of their social associations. Last, axiology is the dimension of philosophy that examines decisions about values (Saunders et al 2009). Generally, the researcher's selection of philosophical approach is mirrored in his/her principles. In addition, axiology determines the responsibilities of the researchers' principles in research procedures and data collection strategies. These decisions can lead to conclusions that may be different from those of other researchers that embrace different philosophical principles. Positivist researchers undertake their research by having confidence in a value-free strategy, indicating that the researchers are independent of the information or objects they are examining and that the objects are not affected by their research actions. In contrast, interpretivist researchers assert that their principles assist to evaluate subjective realities and explanations that derived from them (Collins & Hussey 2003). Unlike positivists, interpretivists seek to obtain knowledge of a particular context in detail. Therefore, the suitable method for an interpretivist approach includes using exploratory tools, such as case studies, focus groups, in-depth interviews, and ethnography; such methods are appropriate to gathering in-depth data from the inside of a phenomenon, rather than the outside, as typically dictated by positivism (Saunders 2011a).

4.4 Research approach

Research philosophy can affect the approach that a researcher selects for his/her study (Creswell 2009), which can fall into two categories: deductive and inductive approaches (Bryman & Bell 2015). These are appropriate for research paradigms (Cooper, Schindler & Sun 2006). Deduction is most closely linked to positivism, and induction to interpretivism (Saunders 2011a). The deductive approach includes testing a theory through hypotheses (Bryman & Bell 2015), and is considered the vital research approach in the natural sciences because it is focused on measuring discrete phenomena (Collins & Hussey 2003). Conversely, the inductive approach is focused on the entire context in which phenomena occur (Bryman & Bell 2015; Saunders 2011a). In inductive research,

theory is the outcome of the research; the procedure of induction entails extracting generalisable findings from research, typically by collecting qualitative data from a small sample of subjects . Deductive research, on the other hand, is more suitable when the research includes a large sample and typically employs quantitative methods of data collection and analysis (Bryman & Bell 2015).

Many scholars of operations and supply chain management collect empirical data through field observation from industries to establish and test theoretical hypotheses (Forza 2002). Furthermore, to minimise the gap between management theory and practice and enhance scientific supply chain management knowledge, this study employs an empirical survey research approach (Forza 2002). Survey research is the most appropriate method to collect data amenable to generalisation (Bryman & Bell 2015). This thesis establishes a conceptual framework through which to develop and test theoretical hypotheses through a survey. To accomplish this, the deductive approach is the most appropriate to evaluate causal relationships among the main research constructs. The deductive approach is the most suitable and relevant because the primary aim of this study is to test its theoretical hypotheses by establishing a causal relationship between GSCI and sustainability performance.

4.5 Construct measurement development

Construct measurement is a key aspect in research. In order to obtain accurate data in a study, it is essential that a researcher construct valid and reliable measurement variables. For socioeconomic phenomena, such as in this research, a single measurement variable cannot assess constructs accurately and comprehensively (Spector 1992). There is a need, therefore, to establish multiple measurement variables to accurately estimate latent variables (Field & Sroufe 2007). Multi-item measurement is needed to measure complex constructs, evaluate research constructs, and enhance the reliability of measurement (Stevens 2012). Based on these considerations, this study adopts the construct evaluation process recommended by Churchill (1979).

The establishment of measurable constructs entails four phases: 1) evaluating the scholarly literature informing all constructs; 2) establishing measurement items by evaluating the literature and/or adjusting variables from scales already in existence; 3) having established measurement items, confirmation should be sought by way of measurement refinement (Moore & Benbasat 1991), and finally; 4) these items can be examined in the context of validity and reliability.

4.5.1 Specifying Domain of the Constructs

4.5.1.1 Sustainable performance

Green performance (Yang 2017) is defined as the measurement of the association between a business and the environment (Olsthoorn et al. 2001). Green performance can be determined in terms of diverse indicators that involve energy use, pollution, waste, greenhouse gas emissions, complying with legislation, and organisational green reputation (Daugherty, Myers & Richey 2002). The validity of green performance has been confirmed in various empirical studies (Huang, Huang & Yang 2017; Vanalle et al. 2017; Yang 2017; Zhu & Sarkis 2004). Economic performance, on the other hand, generally refers to profitability and is key reason why organisations adopt GSCIs (Geng, Mansouri & Aktas 2017). It is the most important aspects of businesses performance, especially among businesses in emerging economies, as asserted by Zhu and Sarkis (2004). The validity of economic performance has been confirmed in various empirical studies (Huang, Huang & Yang 2017; Vanalle et al. 2017; Zaid, Jaaron & Bon 2018). Third, social performance entails the standards and rules of social responsibility, procedures of social responsiveness, and strategies, plans and observable results as they link to an organisation's societal relations (Wood 1991). The validity of social performance has been confirmed in various empirical studies (De Giovanni 2012; Younis 2016; Zaid, Jaaron & Bon 2018).

4.5.1.2 GSCM practices and green human resource management practices

There are three types of GSCM practices related to human resource management practices. First, GSCM comprises dimensions such as top management involvement and green-design (Geng, Mansouri & Aktas 2017; Zaid, Jaaron & Bon 2018). Among these

are internal green SCM practices (IGSCMP), which have been used in various empirical studies (De Giovanni 2012; Luthra, Garg & Haleem 2016; Yang 2018; Zhu, Sarkis & Lai 2013). Furthermore, green management initiatives require coordination with suppliers and customers regarding their environmental coordination, green purchasing and reverse logistics (Zaid, Jaaron & Bon 2018; Zhu, Sarkis & Lai 2013). These are referred to in the literature as external green SCM practices (EGSCMP) (De Giovanni 2012; de Sousa Jabbour et al. 2017; Govindan, Khodaverdi & Vafadarnikjoo 2015; Yang 2018). Last, initiatives that involve the integration of traditional human resource initiatives (e.g. recruitment, empowerment, reward, training and appraisal) with green goals (Jabbour & de Sousa Jabbour 2016). These are known as green human resource management practices (GHRMP), and are found in various empirical studies (Longoni, Luzzini & Guerri 2016; Masri & Jaaron 2017; Nejati, Rabiei & Jabbour 2017; Teixeira et al. 2016).

4.5.1.3 Institutional pressures

There are three primary forms of institutional pressure. First, regulatory pressure entails the formal and informal drivers pressuring organisations to adhere with requirements originating from cultural, political and legal contexts, such as the implementation of pollution management equipment in response to government directives (Popp 2010). This institutional pressure has been validated in various empirical studies (Huang, Huang & Yang 2017; Saeed et al. 2018; Vanalle et al. 2017; Yang 2017; Zhu, Sarkis & Lai 2013). Second, competitor pressure stems from unpredictable business environments. When people in managerial positions are unsure about which actions to adopt because of technological changes, they have a tendency to mimic successful organisations such as rival companies (Liang et al. 2007; Zhu, Sarkis & Lai 2013). Competitor pressure has been used in various empirical studies (Huang, Huang & Yang 2017; Saeed et al. 2018; Vanalle et al. 2017; Yang 2017; Zhu, Sarkis & Lai 2013). Third, customer pressure is a result of professionalisation; it is the way in which people in managerial positions mobilise themselves to explain the conditions and work systems in their industry, normally within the context of professional companies (Agarwal, Giraud-Carrier & Li 2018). Normally, this driver is induced by external customers who have an absolute interest in the firm. Customer pressure has been confirmed in various studies (Huang,

Huang & Yang 2017; Saeed et al. 2018; Vanalle et al. 2017; Yang 2017; Yang et al. 2013; Zhu, Sarkis & Lai 2013).

4.5.2 Generation of construct measurement items

4.5.2.1 Green performance

Green performance is defined as the result of a firm's effort to institute compatible links between stakeholders who take an interest in green matters (Gimenez & Ventura 2005). The evaluation benchmark that most companies are required to consider in this domain is their carbon emissions (Shaw et al 2010). However, Defra (2010) offers a further four key green performance benchmarks: 1) emission into air; 2) water; 3) land, and; 4) resource deployment. In this thesis, green performance is assessed in terms of minimisation of airborne emissions and minimisation of waste water and solid waste (Cucciella et al. 2012; Vachon & Klassen 2008; Zhu, Sarkis & Lai 2013).

Furthermore, diverse green directives prevent the use of environmentally harmful materials with negative health impacts, e.g. the Restriction of Hazardous Substance (RoHS) Regulation (Hu & Hsu 2010). Consequently, green performance also is assessed in the context of minimisation of hazardous substances (Zhu, Sarkis & Lai 2013). In addition, organisations focused on green matters should have a highly participatory group of employees that can work enthusiastically toward the minimisation of green challenges (Perotti et al. 2012).

Finally, to evaluate the improvement in the green performance of a company, firms are required to assess their reputation on environmental matters. By doing so, they will ensure that whenever they execute environmental initiatives with the aim of sustaining their green reputation, this will help them improve their overall green outcome (Tachizawa, Gimenez & Sierra 2015).

Due to the aforementioned reasons, this thesis defines green performance according to six measurement items: 1) reduction of air emission; 2) waste water; 3) solid waste; 4) decreased consumption for hazardous materials; 5) decreased environmental accidents, and; 6) improvement of overall green performance. The six items were established using

a 5-point Likert scale. Table 4.1 presents the item details within the construct of green performance.

Table 4.1: Items for Green Performance

Construct	Item No.	Green performance items	Source
Green performance	EVP1	Reduction of air emission	(Green Jr, Zelbst, Meacham, et al. 2012; Perotti et al. 2012; Younis 2016; Zhu, Sarkis & Geng 2005; Zhu, Sarkis & Lai 2013)
	EVP2	Reduction of waste waster	
	EVP3	Reduction of solid wastes	
	EVP4	Decrease of consumption for hazardous/harmful/toxic materials	
	EVP5	Decreased of environmental accidents	
	EVP6	Improved of overall green/environmental performance	

The second sustainable dimension is economic performance. Economic performance is the most vital catalyst for businesses to evaluate profitability (Green Jr, Zelbst, Meacham, et al. 2012; Zhu, Sarkis & Lai 2013). In this thesis, economic performance includes both financial and marketing performance (Green Jr, Zelbst, Meacham, et al. 2012; Zhu, Sarkis & Lai 2013). The profitability of firms has been broadly assessed through the analysis of the difference between sales made in a given period of time and costs incurred. The ability of the firm to minimise costs is an indicator of an expectation of increased profits (Zhu, Sarkis & Lai 2013). Green actions are regarded as the best approach in helping firms minimise their costs and ensure increased profits, which strengthens their competitiveness (Zhu, Sarkis & Lai 2013).

Also, in practice, when firms execute green initiatives, these result in improved green outcomes, marketing gains, maximised revenue and enhanced market share (Rao & Holt 2005). The economic performance dimension of operational efficiency and the profitability of a company are determined by average return on investment, average profit, profit growth, and average return on sales over preceding three years (Green Jr, Zelbst, Meacham, et al. 2012). In addition, from a marketing perspective, economic performance is evaluated by average market share growth and average sales volume growth over preceding three years. These measures are used to approximate the market

competitiveness of a company (Green Jr, Zelbst, Meacham, et al. 2012). Economic performance will also include market share growth over preceding three years (Green Jr, Zelbst, Meacham, et al. 2012). In summary, economic performance is measured in terms of seven items: 1) decrease in cost for materials purchase; 2) energy consumption; 3) waste treatment and discharge; 4) fines for environmental accidents; 5) average profit growth; 6) average return on sales, and; 7) average market share growth over preceding three years. The seven measurement items were established using a 5-point Likert scale. Table 4.2 presents the item details within the construct economic performance.

Table 4.2: Items for Economic Performance

Construct	Item No.	Economic performance items	Source
Economic performance	ECP1	Decreased cost for materials purchase	(Green Jr, Whitten & Inman 2008; Green Jr, Zelbst, Meacham, et al. 2012; Zhu & Sarkis 2007; Zhu, Sarkis & Lai 2013)
	ECP2	Decreased cost for energy consumption	
	ECP3	Decreased fee for waste treatment and discharge	
	ECP4	Decreased fine for environmental accidents	
	ECP5	Average profit and profit growth rate over the last three years	
	ECP6	Average return on sales over the last three years	
	ECP7	Average market share growth over the last three years	

The third dimension of sustainability measurement is social performance. This is defined as the standards and rules of social responsibility, procedures of social responsiveness, and strategies, plans and observable results as they link to an organisation's social relations (Wood 1991). According to Zailani et al. (2012) and Ashby, Leat and Hudson-Smith (2012), social performance refers to the quantitative results of green initiatives seeking to enhance product and corporate image, safeguard employee health and safety, and guarantee customer loyalty and fulfilment. Social performance is vital for firms to ensure that their manufacturing activities include social initiatives that can improve the effects of plant operations on the local community (Roth et al. 2008). Renwick, Redman and Maguire (2013) and Mandip (2012) further state that implementation of green human resource practices considerably improves the health and safety of workers, enhances their satisfaction levels, drives their social commitment, and ensures their active participation in the day-to-day operations of the business. Together, these dimensions contribute to enhancing social performance.

Ultimately, social performance can be achieved by incorporating green initiatives in day-to-day business operations. The implementation of green initiatives is said to improve working conditions and also bring further benefits to employees by enhancing the living conditions of local communities in which they live (Rani and Mishra 2014). Particularly, the execution of green manufacturing activities that produce less environmental pollution positively influences the social lives of employees and communities (Elkington, Henriques & Richardson 2004). De Giovanni (2012) emphasises that the social dimension is strengthened by the implementation of green initiatives, including fostering customer commitment; improving healthcare; employee satisfaction; safe goods and working environment, and; greater community participation towards sustainability.

Thus, social performance comprises six items: 1) enhanced health and safety of employees; 2) enhanced employee job satisfaction; 3) improved community health and safety; 4) improved social commitment; 5) lowered adverse impact of products and processes on the local community, and; 6) enhanced incentives and engagement for local employment. Table 4.3 presents the item details within the construct social performance.

Table 4.3: Items for Social Performance

Construct	Item No.	Social performance items	Source
Social performance	SP1	Enhanced health and safety of employees	(De Giovanni 2012; Younis 2016; Zaid, Jaaron & Bon 2018)
	SP2	Enhanced employee job satisfaction	
	SP3	Improved community health and safety	
	SP4	Improved social commitment	
	SP5	Lowered the adverse impact of products and processes on the local community	
	SP6	Enhanced incentives and engagement for local employment.	

4.5.2.2 GSCM practices

IGSCM practices refer to intra-company initiatives such as top managerial support, green compliance schemes and inter-departmental collaboration for green development (Cheng, Yang & Sheu 2014; Feng et al. 2016; Huang, Tan & Ding 2012). Among these, top management involvement is vital for successful execution of innovations, projects and green initiatives (Hamel & Prahalad 1989). Initiatives emanating from this tier of management can be an internal force for green initiative programs and help reinforce

cooperation within and across company departments (Jazairy & von Haartman 2020). Feng et al. (2018) find that assistance from personnel in the mid-management level is also vital to successful execution of green activities, while Aslam, Waseem and Khurram (2019) establish a link between mid-level managers' perspectives of organisational proactivity and green management.

The support from top- and mid-management green programs for environmental initiatives seeks to improve awareness of green matters among staff across different departments through green training (Zhu et al. 2011), with the aim of improving green aspects across functional areas. Furthermore, to attain sustained green progress, a company should deliver compliance reports and carry out audits to ensure that all materials and goods adhere to directives, especially green directives (Green Jr, Zelbst, Meacham, et al. 2012; Lee, Tae Kim & Choi 2012).

Companies are required to consider green matters by including them in new product development programs, such as eco-design, which is increasingly implemented to minimise negative environmental impacts of products and procedures (Eltayeb, Zailani & Ramayah 2011). Eco-design entails a formational procedure to embed environmentally friendly features in products and services alongside features demanded by relevant stakeholder (Chan et al. 2016; Lin 2013; Wong et al. 2014). Companies are working towards minimising the use of materials and energy, reprocessing and reclaiming components (Zhu, Sarkis and Lai (2012b), and abstaining from using harmful items in manufacturing processes (Eltayeb, Zailani & Ramayah 2011).

Additionally, investment in recovery operations helps extend the life of materials or goods by reusing or reclaiming excessive stock and/or used items into other goods or components (Cucciella et al. 2012). Investment in recovery can be termed as a primitive business undertaking. However, it can also be considered an environmental initiative, since it can minimise pollutants that may have otherwise been discharged. Although investment in recovery may not be the most sustainable activity, it does nevertheless extend the product's life and increase the likelihood that it can be reprocessed into other products (Zhu & Sarkis 2004).

In this thesis, IGSCM initiatives consist of seven measurement items: 1) participation and encouragement of senior managers in the implementation of environmental initiatives; 2) encouraging cross-functional cooperation for environmental improvements; 3) conducting environmental compliance and audit programs; 4) designing products with reduced materials and energy consumption; 5) using state-of-the-art equipment with minimal carbon dioxide/pollutant emission; 6) reducing the use of hazardous products in the manufacturing process, and; 7) reusing, recycling and recovering materials. The reference details are provided in the Table 4.4.

Table 4.4: Items for Internal Green Supply Chain Management Practices

Construct	Item No.	IGSCM items	Source
IGSCM practices	IGSCM1	Senior managers of our company participate and encourage the implementation of environmental initiatives	(Green Jr, Zelbst, Meacham, et al. 2012; Perotti et al. 2012; Zhu & Sarkis 2007; Zhu, Sarkis & Geng 2005; Zhu, Sarkis & Lai 2013)
	IGSCM2	Our company encourages cross functional cooperation for environmental improvements	
	IGSCM3	Our company practices environmental compliance and audit programs	
	IGSCM4	Our company designs/uses products with reduced materials and energy consumption	
	IGSCM5	Our company uses state of the art equipment/machinery with minimal carbon dioxide/pollutant emission	
	IGSCM6	Our company reduces/discourages the use of hazardous products and their manufacturing process	
	IGSCM7	Our company reuses, recycles, and practices recovery of materials	

EGSCM practices consist of unifying green thinking with other companies across the value chain, such as suppliers and customers. This is an important means to address the negative effect of pollutants on the environment, of which there is increasing awareness and regulation. For example, the Restriction of Hazardous Substance (RoHS) regulation prohibits the utilisation of harmful substances in goods (Hu & Hsu 2010). Therefore, to guarantee that suppliers comply with such regulation, companies are required to: a) establish green goals with their suppliers, and; b) incorporate a collaborative commitment on green quality development by issuing environmental design guidelines for suppliers

(Zhu & Sarkis 2007). These measures assist in motivating suppliers to make their activities greener (Zhu, Sarkis & Lai 2013).

Furthermore, a company should audit the green initiatives of internal suppliers to guarantee that these are environmentally friendly (Zhu & Sarkis 2004). As recommended by Handfield, Sroufe and Walton (2005), green value chain context encompasses cooperation on green aspects of the value chain through audits of suppliers through green performance measures. Companies can foster and strengthen long-term relations with their suppliers by auditing their green actions (Hu & Hsu 2010). Additionally, motivating suppliers to attain ISO14001 certification can assist a company in obtaining materials or goods that fulfil green regulations and consumer demands (Zhu, Sarkis & Lai 2013). Apart from the point of view of the supplier, the customer perspective should also be taken into account in external green actions (Zhu & Sarkis 2004). In this way, external green initiatives are regarded as greening the outbound, which Rao and Holt (2005) discuss in relation to green packaging, which is linked to green practices with consumers (Rao & Holt 2005). Green friendly packaging and supply help enhance the green result of a company and its entire value chain (Rao 2003). Accordingly, the indicator for external green activities in the context of the perspective of customers is collaboration with customers for environmental design.

Presently, consumers are more concerned about the environment and strive to conserve it for their and future generations (Zhu & Sarkis 2007). As a result, green action can assist companies attain their objectives and demands (Mitra 2014). In the contemporary environment, diverse regulations are pressuring companies to consider green issues (Huang, Huang & Yang 2017). The Waste Electrical and Electronic Equipment (WEEE) Directive of the European Union (EU), for example, was imposed to ensure that manufacturers and importers to EU economies utilise environmental goods and ensure the environmental standards of their manufacturing processes (Hu & Hsu 2010). Similarly, the RoHS regulation prohibits the use of harmful materials in the manufacture of goods (Zhu & Sarkis 2004).

Therefore, collaboration with consumers depends on the institution of green initiatives in every stage of manufacturing by incorporating green directives alongside consumer demands (Zhu, Sarkis & Lai 2013). As the majority of the goods are packaged for smooth handling (Mitra 2014), companies should think about implementing green packaging. Most states have imposed rules and directives to minimise the quantity of packaging which gets into the waste stream (Mitra & Datta 2014), such as the packaging directive in the EU. Suppliers and customers have a vital role to play in ensuring environmentally friendly packaging, with organisations prompting suppliers to maintain responsibility for their packaging materials and encouraging customers to recycle and reuse their packaging material.

EGSCM initiatives are measured across seven dimensions: 1) cooperating with suppliers to achieve environmental objectives; 2) auditing suppliers' environmental management practices; 3) encouraging suppliers with ISO14001 certification; 4) cooperating with customers for cleaner operations; 5) cooperating with customers for green packaging; 6) requiring suppliers to collect their packaging materials, and; 7) encouraging customers to help collect packaging materials after delivery. The details with references are provided in Table 4.5.

Table 4.5: Items for EGSCM Practices

Construct	Item No.	EGSCM practices items	Source
EGSCM practices	EGSCM1	Our company cooperates/works with suppliers to achieve environmental objectives.	(Laosirihongthong, Adebajo & Choon Tan 2013; Younis 2016; Zailani et al. 2012; Zhu, Sarkis & Lai 2013)
	EGSCM2	Our company audits/assesses suppliers' environmental management practices.	
	EGSCM3	Our company encourages/rewards suppliers' ISO 14001 certification.	
	EGSCM4	Our company cooperates with customers for cleaner operations.	
	EGSCM5	Our company cooperates with customers for green packaging.	
	EGSCM6	Our company requires suppliers to collect their packaging materials.	
	EGSCM7	Our company encourages customers to help collect packaging materials after delivery.	

4.5.2.3 Green human resource management practices

GHRMPs involve incorporating environmental initiatives into all human resource functionalities, including training, recruitment, appraisal, rewards, empowerment, and education (Jabbour & de Sousa Jabbour 2016). Among these, environmental education trains workers to understand the relevance of green management, educates them about energy conservation, minimisation of waste, promotes green consciousness within the firm, and provides a platform for workers to engage in providing solutions to green problems (Zoogah 2011). Environmental education also enhances the skills of workers so that they can tackle various green matters. Another element of GHRMPs is environmental recruitment, which is the practice of hiring people with the knowledge, abilities, strategies, and attitude associated with green corporate approaches. According to Wehrmeyer (2017), recruitment can facilitate efficient green management by ensuring that new entrants are conversant with a company's green culture and have the capability of sustaining its green standards. More specifically, environmental recruitment is an approach where the environment is placed at the centre of staffing decision-making within the company. Recruiting applicants with green credentials enables the leveraging of professionals who are conscious about sustainable procedures and are already conversant with fundamentals like reusing and reverse logistics, thereby contributing to the organisation becoming an environmental pioneer (Ahmad 2015).

Another key aspect of GHRMPs is environmental appraisal, a practice that assesses the contribution of workers towards the achievement of the organisation's green objectives (Ahmad 2015). Environmental appraisal guarantees the efficiency of environmental operations and their long-term sustainability (Jackson et al. 2011). For organisations to sustain their reputation, they must adopt organisation-wide metrics for evaluating their material resourcing, utilisation, and waste, including by developing green information systems to monitor resource movement and facilitate green audits (Arulrajah, Opatha & Nawaratne 2015; Jackson & Seo 2010). For this reason, modern companies have established organisation-wide green guidelines that are integrated with environmental information systems (Marcus & Fremth 2009). Human resource management should thus contribute to measuring green performance by incorporating green management goals

and functions into its worker evaluation models, including by tracking green management actions and measuring the success of green goals (Kapil 2015; Sharma & Gupta 2015).

Employee engagement is another aspect in greening the human resource of companies, which improves the likelihood of good environmental management by integrating worker objectives, abilities, aspirations and perspectives with environmental management initiatives and structures (Ahmad 2015). Including workers in green activities to enhance green operations can lead to effective resources utilisation (Yang 2017), minimise waste (Yang et al. 2013), and reduce pollutant production (Zhu, Sarkis & Lai 2013). Renwick, D, Redman and Maguire (2008) assert that employee empowerment ensures productivity, enables critical thinking, and facilitates the application of problem-solving techniques. A further strategy to foster employee engagement entails welcoming their environmental suggestions, which can enhance their interest in green matters and create opportunities for them to contribute their capacities towards the achievement of the organisation's green goals (Ahmad 2015). It is also important for top-level management to ensure that employees collaborate as a team in providing suggestions and solutions for the development of the company (Nejati, Rabiei & Jabbour 2017).

The final element of GHRMPs is environmental rewards, which entail incentives given to staff that contribute to greening the organisation by meeting and exceeding their targets (Jabbour & de Sousa Jabbour 2016). Rewards programs should be designed to reflect the dedication of the administration to green initiatives while also promoting and encouraging the green activities of workers (Daily & Huang 2001). This dedication is likely to improve the engagement, commitment and loyalty of employees with regard to green practices (Daily & Huang 2001; Renwick, Redman & Maguire 2013). Calia, Guerrini and de Castro (2009) indicate that rewards should be linked with environmental pipeline outcomes within the company.

Therefore, in this thesis the dimensions of GHRMPs comprise seven measurement items: 1) selection and recruitment of applicants with green knowledge, concern, and attitude; 2) providing employees with formal environmental training programs; 3) covering topics during green training that are appropriate and current for contemporary business

operations; 4) encouraging employee suggestions for environmental performance improvement; 5) recognising employees for taking initiative for environmental management through environmental awards to individuals and/or teams, and; 6) using the achievement of environmental goals as one of the criteria in employee performance appraisal, and; 7) using teamwork to solve environmental management systems problems. The details with references are provided in Table 4.6.

Table 4.6: Items for Green Human Resource Management Practices

Construct	Item No.	GHRMPs items	Source
GHRMPs	GHRMP1	Our company selects and recruits applicants with environmental knowledge, concern and attitude.	(Jabbour & de Sousa Jabbour 2016; Nejati, Rabiei & Jabbour 2017)
	GHRMP2	Our company provides its employees with formal environmental training programs.	
	GHRMP3	Our company ensures that topics covered during green training are appropriate and current for today business operations.	
	GHRMP4	Our company encourages employee suggestions for environmental performance improvement by setting up employee environmental suggestion schemes.	
	GHRMP5	Our company recognizes employees for taking initiative for environmental management through environmental awards to individuals or teams.	
	GHRMP6	Our company uses the achievement of environmental goals as one of the criteria in employee performance appraisal.	
	GHRMP7	Our company frequently uses teamwork to solve environmental management systems problems.	

4.5.2.4 Institutional pressures

Regulatory pressure originates from green directives, including those of local and international authorities. Companies that are confronted by substantial government regulation such as the RoHS, WEEE and other similar frameworks (Hu & Hsu 2010; Jabbour, ABLdS, Frascareli & Jabbour 2015) are mostly likely to embrace green friendly practices. Governments develop strong institutions that may forcefully determine the operations of a company (Rivera, De Leon & Koerber 2006). Kilbourne, Beckmann and Thelen (2002) assert that regulatory pressures are a vital push for firms to implement green management activities, a point further evidenced by Sarkis, Zhu and Lai (2011), who demonstrate how in advanced economies such as the USA, regulatory pressure through rules and directives enhances green consciousness. Clemens and Douglas (2006)

also demonstrate that directives in advanced economies can serve as a form of institutional pressure upon organisations in emerging economies to enhance their green initiatives. In some contexts, such pressures have driven companies in emerging economies to develop green practices that have exceeded expectations (Zhu & Sarkis 2007). For example, Zhu and Sarkis (2004) show how China legislated tough green directives that surpassed domestic and international demands and how this has prompted manufacturers to execute environmental supply chain activities that impact the performance of a business.

There is also an issue of potential conflict between products and environmental regulations on the green environmental management of firms. Taiwan, for example, is an industrialised Asian economy where the imposition of WEEE and RoHS directives impact the export of goods to EU (Hu & Hsu 2010). In such cases, organisations become motivated to address regulatory barriers to selling their goods internationally by undertaking a sequence of green-friendly initiatives (Huang & Huang 2016). Based on the preceding discussion, this thesis identifies six regulatory pressure measurement items: 1) imposition of environmental regulations by the federal government; 2) imposition of state environmental regulations; 3) imposition of resource saving and conservation regulations by the federal government; 4) imposition of resource-saving and conservation regulations by the state; 5) effect of potential conflicts between products and environmental regulations on company's green environmental management, and; 6) effect of cost pollution prevention practices on green environmental management. These items are presented in Table 4.7.

Table 4.7: Items for Regulatory (Coercive) Pressure

Construct	Item No.	Regulatory Pressure items	Source
Regulatory Pressure	R1	The environmental regulations were imposed by the federal government on my company.	(Vanalle et al. 2017; Wu, Ding & Chen 2012; Zhu, Sarkis & Lai 2013)
	R2	State/Regional environmental regulations were imposed on my company.	
	R3	The resource saving and conservation regulation were imposed by federal government on my company.	
	R4	State/Regional resource saving and conservation regulation were imposed on my company.	
	R5	Potential conflicts between products and environmental regulations will affect our	

		company's green environmental management.	
	R6	The green environmental management of our firm will be affected by cost of pollution prevention practices.	

Customer pressures stem from end consumers and downstream value chain members (Ye et al. 2013; Zhu, Sarkis & Lai 2013). Existing studies indicate that pressures from downstream value chain partners and customers compel organisations to implement green practices (Blumberg 1999, Wolf 2011). Customers can impact businesses through their choices when buying services and goods with minimum pollution effect (Chavez et al. 2016; Huang & Huang 2016; Maryam Masoumi et al. 2015). Furthermore, environmental operations strengthen cooperation among businesses, suppliers and consumers to reduce the ecological impacts of their specific products and processes (Mathiyazhagan et al. 2015; Tseng & Chiu 2013). Hoejmoose, Grosvold and Millington (2014) contend that green activities are influenced by consumer requirements and expectations. In other words, when establishing an efficient and green value chain, businesses must include suppliers and buyers to meet the green expectations of their consumers (Chavez et al. 2016; Laari et al. 2016). For example, due to a high demand for green products in EU countries, Taiwan ensures that sales of electronic products to foreign customers are environmentally friendly. It is also important to note that new media is a platform increasingly used to inform customers about organisations that comply with green manufacturing standards. In the present corporate environment, pursuit of green production is viewed as an essential driving force from customers that want to be assured that the companies they are supporting are environmentally reputable and trustworthy (Sarkis, Zhu & Lai 2011).

Based on the preceding discussion, it is possible to identify six customer pressures measurement items: 1) level of response to green environmental protection as indicated by consideration of foreign markets; 2) level of response to green environmental protection depends as indicated by consideration of domestic market; 3) influence of customers on GSCI implementation; 4) importance of establishing green image to expand customer base; 5) follow-up of the news media so as to inform on green implementation progress, and; 6) environmental consciousness among consumers spurring implementation of green supply chain initiatives. Table 4.8 presents the items with

references.

Competitor pressure entail instances when businesses attempt to copy the successful environmental initiatives of their industry rivals (Zhu & Sarkis 2007). Such competitive drivers allow businesses to understand the green activities of their rivals and to subsequently commit to crucial environmental improvements (Wu, Ding & Chen 2012). In other words, the pressures from rivals can assist businesses to examine their existing green initiatives and improve their green management programs. Zhu, Sarkis and Lai (2013) find that competitor pressures influence manufacturers to copy the green operations of their successful rivals, and that doing so can enhance or sustain their competitive edge. Wu, Ding and Chen (2012) found this to be the case in their study of the Taiwanese textile industry, where export-focused manufacturers are forced to compete with global brands. In such cases, globalised competition functions as a motivator for the Taiwanese organisations to acquire operational knowledge from their counterparts. Huang and Yang (2014) further contend that when confronted with competitive pressure, businesses include the green initiatives of their rivals into their operational undertakings so as to secure a competitive advantage within the market. In the contemporary environment, organisations are striving to learn from the strategies of their competitors and thereby become more competitive (Yang 2017).

Table 4.8: Items for Customer (Normative) Pressure

Construct	Item No.	Customer Pressure items	Source
Customer Pressure	C1	In order to respond to the green environmental protection, our firm will consider its effect on sales to foreign customers.	(Hsu et al. 2013; Wu, Ding & Chen 2012; Ye et al. 2013; Zhu, Sarkis & Lai 2013)
	C2	In order to respond to the green environmental protection initiative, our firm will consider its effect on domestic customers.	
	C3	Consumers have a strong influence on our company's GSCI implementation.	
	C4	For our firm, establishing enterprise's green image is extremely important in order to expand our customer base.	
	C5	The news media follows our Industry closely in order to inform about our green implementation progress.	
	C6	The increasing environmental consciousness of consumers have spurred our company to implement green supply chain initiatives.	

Industrial professional associations have also assumed significant responsibilities in facilitating the implementation of green initiatives among manufacturers to enhance the corporate image and improve the sustainability performance of their members (Huang & Yang 2014). Based on the preceding discussion, six competitor pressure items are identified: 1) effect of competitors' green environmental protection strategy on green environmental management; 2) level of favourability of competitors who adopt green strategy by our customers; 3) level of benefit to competitors who adopt green strategy; 4) level of competitiveness of competitors who adopt green strategy; 5) consideration of environmental friendliness as a competitive differentiator, and; 6) influence of professional environmental protection groups on green environmental management initiatives. Table 4.9 presents the measurement items.

Table 4.9: Items for Competitor (Mimetic) Pressure

Construct	Item No.	Competitor Pressure items	Source
Competitor Pressure	CP1	The green environmental management of our firm will be affected by competitors' green environmental protection strategy.	(Wu, Ding & Chen 2012; Yang 2017; Ye et al. 2013; Zhu, Sarkis & Lai 2013)
	CP2	Our main competitors that have adopted a green strategy are perceived favourably by customers.	
	CP3	Our main competitors that have adopted a green strategy benefit greatly.	
	CP4	Our main competitors that have adopted a green strategy are more competitive.	
	CP5	Environment friendly is considered as a competitive differentiator in my company.	
	CP6	Professional environmental protection groups will influence the green environmental management initiative of our company.	

4.6 Target population and sampling frame

This study used surveys as its data collection method, while its target is SMEs, which are defined as business entities with 199 employees or less (Australian Bureau of Statistics 2002). SMEs in food and beverage processing enterprises in Australia were the target respondents for this study, with participants recruited from the Chartered Institute of Logistics Australia (CILA), which has a database of over 3000 members from the logistics industry. Food and beverage SMEs comprise 11% of CILA's membership, totalling approximately 350 firms. The food and beverage sector was selected due to its

status as the largest contributor to the Australian economy after the auto manufacturing sector, contributing AU\$114 billion, or 1.28% of the economy (Australian for Food and Beverage Processing 2014). Another reason for selecting the sector is that it demonstrates an inadequate adherence to environmental sustainability.

Selected respondents needed to possess expert knowledge about food processing and supply chain processes. Therefore, the respondents targeted in this study were Chief Executive Officers, logistics/purchasing managers, supply chain managers, human resource managers, operations/production managers, and plant managers with knowledge of green initiatives and involvement in sustainability programs. The Australian government is faced with the issues of climate change, which has become a regular feature of environmental discourse. This includes an increase in public demands for the government to act on the challenging issue of climate change. SMEs, being the largest food processing sector, seem not to be doing enough to deal with such environmental issues, although the sector has a significant negative impact to the environment. If the sector does not effectively tackle environmental issues, this failure will ultimately take a toll on the economy.

4.7 Data collection

4.7.1 Pre-testing, reliability assessment, refinement

Pre-testing of the questionnaire is vital to ensuring its sentence structure, clarity, content coverage and response time. Two professionals, two academics and two PhD scholars with equivalent research were asked to provide critical feedback on the design, with their comments incorporated into the final version of the questionnaire. The objective of this step was to ascertain possible issues with the survey questions (Dillman, Smyth & Christian 2014), with necessary modifications possible before the final version being distributed (Saunders 2011a; Slavec & Drnovsek 2012). Pre-testing was also performed with 15 food and beverage manufacturing participants contacted through personal and professional contacts. In this case, an email was circulated with an online Qualtrics link. Five completed questionnaires were returned within the first four days, a further two

were returned in the week after that, and another four responses were obtained in response to email reminders, totalling eleven responses for the pre-test (Dillman, Smyth & Christian 2014; Hoonakker & Carayon 2009). Pre-test data was also examined for construct reliability, a measure of a construct that represents the quality of its scale items (DeVellis 2016). The internal consistency of the scale was confirmed by computing Cronbach's alpha by employing SPSS 23 (Cronbach 1951). The outcomes showed values above 0.8, indicating an excellent degree of reliability for all constructs (Kline, P 2013). The Cronbach alpha values are shown in Table 4.10.

Table 4.10: Reliability tests for pre-testing

Construct	No. of items	Mean	SD*	Cr. Alpha*
Internal green supply chain management practices	7	4.558	1.290	0.902
External green supply chain management practices	7	4.702	1.269	0.931
Green human resource management practices	7	4.534	1.379	0.942
Regulatory pressure	6	4.653	1.339	0.929
Customer pressure	6	4.721	1.424	0.855
Competitor pressure	6	4.417	1.256	0.913
Environmental performance	6	3.987	1.179	0.876
Economic performance	7	4.879	1.262	0.971
Social performance	6	3.452	1.226	0.854

*Note: Cr. Alpha=Cronbach's alpha; SD=Standard deviation

At the embryonic phase of research, low Cronbach's alpha were acceptable (Nunnally & Bernstein 1978). Regardless, values lower than 0.6 are considered poor (DeVellis 2016). Due to the fact that Cronbach's alpha values were very good at above 0.8, further improvements were not required. The survey instrument was regarded to be reliable.

4.7.2 Questionnaire distribution: first attempt

The online questionnaire was first sent via email to 350 participants identified by CILA, and included consent information. The email subject line is considered to be an important means by which to gain the attention of respondents, inspire them to open the email and encourage their participation (Hoonakker & Carayon 2009). The email subject line was set to: "Do green practices influence the performance of an SME better than others?" The email explained that only managers with in-depth knowledge of green initiatives in their

firms should participate. The questionnaire was distributed in accordance with the conduct of responsible research (Roberts & Allen 2015). Following similar studies (Zhao et al. 2011), a number of methods were used to minimise response bias and maximise the response rate. Participants were advised of the research procedures, associated risks, potential benefits of participation, their right to decline or withdraw, confidentiality parameters, incentives and the contact details of the researchers (Varnhagen et al. 2005). Participation in the research was voluntary (Whiteman 2012).

Anonymity and confidentiality were assured throughout the process (Frankel & Siang 1999). Furthermore, a summary report of the responses was promised to those who provided their email address as an incentive to encourage participation (Couper 2000). Another two strategies adopted to improve response rates were: a) sending follow-up reminder emails three weeks after initial contact (Stern, Bilgen & Dillman 2014), and; b) sending the questionnaires to randomly selected informants via businesses directories. Following the procedure followed in the first data collection, the survey link was sent to 200 respondents using their email (Dillman 2011).

4.7.3 Response collection

Thirty respondents returned their questionnaires in the first distribution phase, with a further 25 doing so after the sending of email reminders. These numbers were considered to be very low. Therefore, a third distribution phase was initiated, garnering a further 19 responses. Although initially intended to cease after the third phase, the low response rates led the researcher to send a fourth reminder, which garnered a further 11 responses. In total, 85 responses were received. However, the researcher adopted the strategy of contacting potential respondents through the business directory to further improve the response rate. Subsequently, a further 55 questionnaires were completed within three weeks. After sending email reminders, a further 38 participants completed the questionnaires, totalling 93 responses. In total, 178 responses from a sample of 550 targeted respondents was secured. This resulted in a response rate of 32%, which was regarded to be very good (Bryman & Bell 2015). The data collection occurred in the months of May to October 2019.

4.8 Non-response bias

Non-response bias is the error of approximating a population feature depending on a sample of questionnaire data in which certain categories of questionnaire responses are not well illustrated because of non-response (Berg 2005). Hence, non-response bias assessments were performed to examine the significant variations between the questionnaire responses and non-responses (Clottey & Grawe 2014). An evaluation of any significant variation between the early and late waves of the questionnaire respondents is an approach of assessing non-response bias (Clottey & Grawe 2014). Clottey and Grawe (2014) observe that a comparison can be made between late respondents and non-respondents. The presumption is that the late respondents are treated as non-respondents (Armstrong & Overton 1977). Therefore, non-response bias was evaluated by making a comparison of demographic variables of early and later implementers at a 60% to 40% division through an independent sample t-test assessment (Qrunfleh & Tarafdar 2014). The outcomes showed no significant variation between early and late respondents among the demographic variables at $p < 0.05$. Thus, non-response bias was not an issue in this research.

4.9 Quantitative data analysis

The data assessment software employed in this research was SPSS 23 and AMOS 23 packages, with some support from Microsoft Excel. Structural equation modelling (SEM) by employing AMOS 23 was used to examine the suitability of the conceptual framework by assessing the link between the constructs (Byrne 2001). Before performing statistical evaluation, the data was initially cleaned and refined. At this phase, insufficient responses were eliminated, missing values evaluated and listed, and distribution normality assessed.

Anderson and Gerbing (1992) suggest a two-step method to SEM that evaluates the measurement framework before assessing the structural framework. This two-step method to model assessment is widely employed (Hair, Black & Babin 2010). The measurement framework confirms the uni-dimensionality, consistency and reliability of the latent variables, and the structural framework confirms the structural link employing

variance-covariance method (Hair et al. 2014). The following discussion provides a detailed step-by-step description of the process employed in the statistical evaluation phase.

4.9.1 Preliminary analysis

The aim of this phase was to change the raw information gathered from the questionnaire distribution into a structure appropriate to performing multivariate statistical evaluation (Pallant 2020). The procedure involved cleaning the data, dealing with missing values, and assessing for outliers.

4.9.1.1 Data screening

Data screening is the procedure of making sure that the data set is cleaned and ready to progress to further statistical analysis (Field 2013). Hence, it is regarded as a vital stage prior to SEM assessment. Tabachnick and Fidell (2012) stipulate a standard procedure for data cleaning, which was followed in this study. When the questionnaire was completed, the answers gathered through Qualtrics were exported to SPSS. Qualtrics exported items tagged with numerical codes as per the Likert scale, while non-responded questions were unmarked. First, the IP address was deleted, the optional personal description that was issued was separated before the assessment, and each survey answer was allocated a case number. Each case was evaluated for its acceptability to progress for assessment.

The survey was specifically addressed to the unit of analysis in this research: managerial personnel in the food and beverage manufacturing sector. Data was cleaned to verify that all the answers conformed to this unit of analysis. Question 68 on the segment of organisational position was employed as the screening question for this aim. Personnel working in non-managerial positions selected “Other” in response to this question, indicating that they did not qualify for participation in this study. Respondents recording this response were thus eliminated.

The next stage was to verify that no survey questions were either responded invariably or through mechanical means. To this end, a visual screening was initially performed to ascertain any such cases and delete them. Then, the standard deviation of the

measurement variables of every survey questions was examined to investigate any likely invariability. Cases with a standard deviation below 0.5 were flagged as items for further investigation for invariability, and if found to be invariable, were subsequently rejected as unengaged answers.

4.9.1.2 Missing value analysis and treatment

Missing information generates serious issues for the approximations in SEM (Pallant 2020). Hence, the approach adopted towards missing data prior to performing statistical evaluation is vital (Pallant 2020). Less than 10% of missing information for a person's case can normally be accepted and progressed to missing value handling, with the exception being cases where the missing information occurs on a particular non-random structure (Hair et al. 2014).

Having confirmed whether the missing values are missing completely at random (MCAR) or missing at random (MAR) structures, an appropriate missing value management approach or the imputation approach can be ascertained (Hair et al. 2014). However, this Qualtrics questionnaire was designed to force responses, resulting in no missing values. However, missing values were present in all incomplete responses that were deleted.

4.9.1.3 Establishment of outliers

The data-set was assessed for outliers. Outliers are observations with special integration of features that are clearly dissimilar from other observations (Hair et al. 2014). Such outliers were evaluated using Mahalanobis distance, which shows the distance of every case in a multi-dimensional space from the intersection of the means of all observations in a single value (Pallant 2020). The recommended moderate standards of significance for Mahalanobis distance is at $p = 0.001$ (Pallant 2020). The outlier should be maintained, unless completely uncommon and not illustrative of any observations in the population, since deleting outliers minimises the generalisation of the research (Hair et al. 2014).

4.9.2 Statistical Analysis

Having confirmed the acceptability of the data for multivariate statistical evaluation, the analysis steps for SEM were employed to evaluate the theoretical model. According to the two-step approach for model examination for SEM, the measurement model was examined before examining the structural model (Hair et al. 2014). The measurement model describes the correlation rules among manifest variables and latent variables (Hair et al. 2014). It focuses on the relationship between factors and their measured variables (Byrne 2013). The whole model that constitutes both measurement and structural model acknowledges the description of the regression structure of constructs (latent variables) (Byrne 2013). The structural model stands for the associations and the causal direction between the constructs (Byrne 2013). These constructs can also be termed factors.

Maximum Likelihood (ML), the most common method employed in SEM, was used to examine the measurement and structural models (Byrne 2013). Although the ML method assumes the multivariate normality of the data-set, the results are considered reasonably unbiased if the data is fairly non-normal (Bollen 1989). The ultimate data was determined after preliminary evaluation through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) (Yu 2015). EFA, CFA, or both can be used to evaluate dimensionality (Slavec & Drnovsek 2012). Dimensionality of a measure represents the homogeneity of variables and signifies the correlation between variables (Netemeyer, Bearden & Sharma 2003). Homogeneity relates to whether the items assess one reclusive fundamental factor or a latent variable (Byrne 2013). A uni-dimensional measure has one dimension only, which indicates that its items control one factor (Netemeyer, Bearden & Sharma 2003).

4.9.2.1 Exploratory factor analysis

EFA is suitable for situations where links connecting observed and latent variables are unknown or uncertain. In such cases, the analyses explore how and to what magnitude the observed variables are connected to their primary factors (Byrne 2013). The aim is to ascertain any constructs that make the items co-vary by assessing common variance, thereby refraining from the inflation of estimations of variance considered (Osborne &

Costello 2009). EFA is usually undertaken in the preliminary phase of the establishment of measurement (Slavec & Drnovsek 2012), the presumption being that a researcher is likely to possess only partial knowledge of the recently developed measurement's dimensionality at this stage (Netemeyer, Bearden & Sharma 2003).

When valid and reliable measurement items are adapted from previous studies, undertaking an EFA is not essential (Netemeyer, Bearden & Sharma 2003). Although the use of this analysis technique is optional (Hair et al. 2014), this study employs EFA for unidimensionality checking because the adapted questionnaire was used in different contexts with different sample respondents. The nine constructs comprising the theoretical model of this research were proposed to be: 1) internal green supply chain management practices; 2) external green supply chain management practices; 3) green human resource management practices; 4) regulatory pressure; 5) customer pressure; 6) competitor pressure; 7) environmental performance; 8) economic performance, and; 9) social performance. EFA was also used to validate loadings of construct items on their specified latent variables. Before advancing further, the data was assessed for adequacy through EFA, as the data type determines the suitability of the sample (Osborne & Costello 2009). Considering subjectivity based on the data quality, even small samples can yield correct outcomes (Costello & Osborne 2005). Excellent data should have variables yielding more than 0.8 communalities while not having variables with 0.3 or above factor loadings on two or more factors (Costello & Osborne 2005).

It can be challenging to meet the aforementioned benchmark; the item-to subject ratio was exercised to approximate the sample size, whereby a higher sample ratio per item is suggested to reduce the chances of over-fitting the data-set (Costello & Osborne 2005). Kline (2015) suggests a 2:1 ratio for a sample of at least 100 cases to be employed as the bottom standard to initiate the tolerable sample size to undertake EFA. The sample suitability was then confirmed with the Kaiser-Meyer-Olkin (KMO) measurement (Hair et al. 2014). Kaiser (1974) asserts that a KMO number of 0.6 or above implies the factor is suitable for analysis. Bartlett's test of sphericity was subsequently employed to confirm the existence of adequate correlations in the data matrix for factor analysis. Bartlett's test of sphericity yielded statistical significance ($\text{sig.} < 0.05$), confirming that the correlation

matrix has significant correlations between some of the variables (Hair et al. 2014). If a sufficient number of correlations go below 0.3 or if the partial correlations are above 0.7, factor analysis is not suitable (Tabachnick & Fidell 2012).

The anti-image matrices were employed to assess partial correlations (Hair, Black & Babin 2010). EFA was undertaken with the data established by choosing Principal Axis Factoring (PAF) as the factor extraction procedure and direct oblimin oblique rotation as the rotation procedure (Hair, Black & Babin 2010). The oblique rotation procedure was selected as it puts the correlation of factors into consideration in extracting the factors (Hair, Black & Babin 2010). The number of maintained factors was determined by the most regularly employed eigenvalue benchmark, the Kaiser (1974) benchmark, which argues that factors should be maintained if their eigenvalues are above one (Beavers et al. 2013). Despite its widespread use, the Kaiser benchmark has been critiqued for not defining the number of factors to be chosen (Kline 2013). Hence, the result of the Kaiser benchmark was confirmed in conjunction with the use of scree plots. A scree plot charts eigenvalues of the number of factors that can be employed to ascertain the clear mark where the graph is bending (Kline 2013). The number of data points over the bend presents the number of factors that should be maintained (Osborne & Costello 2009). The uni-dimensionality of the factor is formed if one factor with an eigenvalue above one is created and a single data point above the bend in the scree plot is shown (Kline 2013).

If factor analysis ascertained more than one factor, the factor loading of each variable was examined applying the pattern matrix, where it helps to identify the factor structure in the oblique rotation (Costello & Osborne 2005). The variables with factor loadings of above 0.3 display the factor structure well (Costello & Osborne 2005), even though Hair et al. (2014) argue that factor loadings of 0.3 are not ideal and suggest values above 0.5. Items with cross loading issues were eliminated (Costello & Osborne 2005). However, restraint was exercised in relation to forming factors that measured below three items, as these do not accurately represent the data structure (Costello & Osborne 2005). EFA ascertained the items, which represent the constructs (Hair, Black & Babin 2010). The communalities were employed to confirm the outcomes. Communality is the accounted degree of variance by the factor solution for each item (Hair et al. 2014). A minimal

communality implies a low common variation of the variable in comparison to the total variance of all items in the factor (Hair et al. 2014). Hair, Black and Babin (2010) suggest a communality value of above 0.5 for a variable to be maintained. The value of 0.3 was regarded as the lowest allowable level, subjective to CFA. Nevertheless, lower values closer to 0.3 were retained if theoretically proven (Kline 2015).

4.9.2.2 Confirmatory factor analysis

The result of the EFA was then put through CFA to confirm its factorial validity (Byrne 2013). CFA evaluates how well measured items illustrate the latent variables (Hair, Black & Babin 2010). Hence, CFA is employed to verify the link between observed variables and their latent factors (Byrne 2013). The number of factors, the factor framework and the link among factors are formally established in CFA (Byrne 2013), which evaluates whether the theorised factor framework suits the data (Netemeyer, Bearden & Sharma 2003). CFA brings measurement variables and factors together into account with path analysis to evaluate the hypothesised statements (Hair et al. 2014).

CFA, unlike EFA, is appropriate when some understanding of underlying construct patterns is reached through empirical study (Byrne 2001). Measurement models were substantiated in two phases through employment of CFA. All nine distinct constructs were first assessed concurrent to EFA, followed by assessment of the complete model that illustrates the relationships among the constructs. The single-factor measurement model is ascertained as a congeneric framework, while the complete model is regarded as the full CFA model (Byrne 2013). The measurement model verified the pattern in which the items illustrate the constructs and the link between the constructs (Byrne 2013). The CFA models were assessed employing the goodness of fit statistical methods to confirm the model fit (Byrne 2013).

4.9.2.3 Preliminary evaluation

A preliminary analysis is essential prior to evaluating the global fit. In this phase, the criteria assess the models for any irregularities that result in inaccurate outcomes (Bagozzi & Yi 1988). The most usual irregularities examined are negative error

differences, correlations near to or above one, extensive or insignificant parameter estimations, and massive standard errors (Bagozzi & Yi 1988; Byrne 2013). So as to confirm the appropriateness of the model, it is paramount to evaluate path estimations and their importance (Schumacker & Lomax 2004). The signal, robustness and the importance of path estimations are vital (Byrne 2013). Among these, the signal is the direction of the link, which shows the positive or negative link of items to the construct (Byrne 2013), while robustness is the importance of the parameter estimations (Byrne 2013). Statistically significant parameter estimations show the link of the items to the construct (Byrne 2013). Standardized values above 0.6 are suggested for factor loading (Bagozzi & Yi 1988).

Nevertheless, values above 0.5 can be maintained (Hair, Black & Babin 2010). As the standard errors of the path estimations show the consistency of the parameters, they must be less significant (Shah & Goldstein 2006). Standard errors lower than 0.4 are acceptable (Bagozzi & Yi 1988). Inconsequential parameters should be removed (Byrne 2001). These irregularities can happen due to model identification errors and model specification issues of inaccurate details (Bagozzi & Yi 1988). Feasible reasons were evaluated before assessing the universal fit indices, and specific group of parameters conforming to the information was established (Byrne 2013). The number of uncertain parameters to be approximated must be equivalent to or above the number of distinctive variances and covariances to meet this standard (Byrne 2013).

4.9.2.4 Model fit assessment and global measures of fit indices used

The crucial aspect of SEM analysis is the verification of measurement model reliability; creating a suitable level of goodness-of-fit (GOF) for the measurement model is important (Hair, Black & Babin 2010). The GOF indicates how well the model replicates the observed covariance matrix between the indicator variables. It does so by comparing the uniformity between the observed and estimated covariance matrices (Hair, Black & Babin 2010). Hence, the model fit is established by comparing the sample covariance matrix and an approximated population covariance matrix (Ullman & Bentler 2003).

The model fit was confirmed employing three categories of model fit indices: 1) absolute; 2) incremental, and; 3) parsimonious indices (Hair et al. 2014; Schumacker & Lomax 2004). Absolute fit indices are a straightforward computation of the magnitude to which the particular model replicates observed data (Hair et al. 2014); it shows how well the approximated model reproduces data (Hu & Bentler 1999). In doing so, absolute fit indices yield the most fundamental evaluation of the level to which the theory suits the sample data (Schumacker & Lomax 2004). In contrast, incremental fit indices examine the magnitude to which the approximated model suits compared to an alternative baseline model. As such, it is regarded a null model that supposes that all observed items are not correlated (Hair et al. 2014). It thus shows a model fit enhancement compared with a baseline model (Hair et al. 2014; Hu & Bentler 1998; Schumacker & Lomax 2004). Incremental fit indices are also known as comparative fit indices (Hu & Bentler 1998). Third, parsimonious indices regard suitability relative to capacity to yield data to establish the model that fits very well among competing models (Schumacker & Lomax 2004). The measure is enhanced by an improved fit (Hair et al. 2014). Parsimonious indices enable the choice of a better model with fewer free parameters (Blunch 2012; Hu & Bentler 1995). Parsimony unfolds the number of approximated coefficients needed to attain a particular degree of fit (Hair, Black & Babin 2010). Ultimately, parsimonious indices are not useful for the assessments of one model, although they are useful for comparing the fit of two models with dissimilar complexities (Hair et al. 2014). Some absolute, incremental and parsimonious fit indices were chosen to assess the model fit (Hu & Bentler 1999).

Fit indices that reveal a greater degree of model mis-statement and are impacted at the minimum level by sample size, distribution and the approximation method are more appropriate (Hu & Bentler 1999). Out of the fit indices considered, GOF index (GFI) and adjusted GOF (AGFI) can be excessively driven by sample size (Fan, Thompson & Wang 1999). Likewise, Normed fit index (NFI) underrates fit in smaller data samples (Iacobucci 2010). Since Comparative fit index (CFI) is an improved form of NFI, the former was used (Byrne 2013). Ultimately, given the existence of more established and significant fit indices, GFI, AGFI and NFI are nowadays seldom used (Hair et al. 2014);

GFI, AGFI and NFI were assessed as inappropriate fit indices in the model assessment, particularly for the complex full model due to their poor performance in small samples ($n < 250$) (Hu & Bentler 1999).

Accordingly, recent scholarship in the supply chain management field has limited use of the aforementioned fit indices (Flynn, Barbara, Huo & Zhao 2010). The aim of assuring an improved model fit may diminish the clarity of model description. This is not a good outcome, because a reduction in the number of items per construct can jeopardise the evaluation of theory (Hair et al. 2014). Hair et al. (2014) assert that 3-4 indices yield sufficient justification for a model fit. Employing various fit indices of different index categories and modifying index suggested values relying on model features are recommended strategies to ensure a good fit (Hair et al 2014). Hair, Black and Babin (2010) also recommend χ^2 , CFI or TLI, Standardized root mean square residual (SRMR) and Root mean square error of approximate (RMSEA), which respectively constitute an absolute fit index, an incremental fit index, a GOF index and a badness-of-fit index. An acceptable integration of fit indices is useful to assess a model involving less than 30 measurement variables and with a sample of less than 250 cases.

The χ^2 test is the only statistical index of the variation between the matrices in the structural equation modelling that indicates the correctness of the model (Schumacker & Lomax 2004). However, the χ^2 is affected by the size of the sample and number of measure items (Gerbing & Anderson 1985). Since various reasons drive the χ^2 test, it is feasible to have reservations about almost any outcome (Hair et al. 2014). In addition, the utility of the χ^2 test for examining model fit has been questioned, since it lead to model rejection when the data digresses from multivariate normality (Hu, Bentler & Kano 1992; Schumacker & Lomax 2004). The sample in this study is multivariate non-normal. Hence, the Bollen-Stine bootstrap χ^2 test was regarded as useful.

Bootstrap techniques (Efron 1992) can be an alternative when one fits covariance structures in events of non-normal data (Bollen & Stine 1992). Simulation studies recommend that the bootstrap works better in diverse distribution format and larger samples (Enders 2002). These can empirically yield sampling distribution by re-sampling

without substitution from the actual data (Tomarken & Waller 2005). Employing bootstrap samples, researchers can approximate correct significance degree (Bollen & Stine 1992). However, the bootstrap also yields incorrect outcomes for covariance formats in small samples ($n < 100$), (Tomarken & Waller 2005). Schumacker and Lomax (2004) explain that an insignificant p-value should not be anticipated for a model with less than 30 measurement variables if the observed items are less than 250. The Bollen-Stine p-value was taken into consideration in such a situation (Bollen & Stine 1992). Nevertheless, an insignificant p-value must be anticipated in a circumstance of less than 250 observed variables if the itemised number is below 12 (Hair et al. 2014). Both situations were relevant in this research, since the measurement models of every latent variable (< 12 items) were evaluated in segregation before assessing the entire measurement model (< 30 items) with all nine constructs. The result from the full CFA model was then assessed for reliability and validity (Schumacker & Lomax 2004).

4.9.2.5 Reliability assessment

Reliability is a sign of convergent validity (Hair et al. 2014), and verifies the steadiness of the measures of an examined theory (Sekaran 2006). Internal reliability is the most indicative benchmark of stability for diverse-item benchmarks (Bryman 2015; Clark & Watson 1995), and recommends uniformity of measurement variables (DeVellis 2016). If the variables on a scale thoroughly inter-correlated, the scale is considered internally stable, since the variables are measuring the same latent variable (DeVellis 2016). There are multiple probable reliability estimations (DeVellis 2016), with Coefficient alpha the most regularly employed (Slavec & Drnovsek 2012). The Cronbach's (1951) alpha internal reliability criterion assesses reliability by determining all likely divided-half reliability coefficients of the measurement variables of a concept (Slavec & Drnovšek 2012). It shows the average of all divided-half coefficients generated from the various divisions of an evaluation (Slavec & Drnovšek 2012). Cronbach's alpha reliability estimations greater than 0.7 illustrate very good reliability (Nunnally & Bernstein 1978). However, some scholars recommend an alpha value greater than 0.8 as a reliable indicator (Clark & Watson 1995). The construct reliability (CR) values were also

calculated for every latent variable. The formula below was applied to compute CR. A CR greater than 0.7 indicates good reliability (Hair et al. 2014).

$$CR = \frac{(\sum_{i=1}^n L_i)^2}{(\sum_{i=1}^n L_i)^2 + (\sum_{i=1}^n e_i)}$$

Li = Squared sum of factor loading.
ei = Sum of error variance terms.

Internal stability can be evaluated with inter-construct correlations. The correlations between latent variables were also examined for multicollinearity problems between latent variables. Correlations less than 0.8 imply no multicollinearity problems (Hair et al. 2014). The extent of the factor loading is also an important aspect to consider. Therefore, variable reliability was further verified by evaluating factor loadings. The standardised factor loadings had to be at least 0.5, although values greater than 0.7 were considered excellent (Hair et al. 2014). The measurement variables with factor loadings greater than 0.71 have a higher common variance with the latent variable than the error variance (Hair et al. 2014; Jöreskog & Sörbom 1982).. The reliability values must be statistically significant (Anderson & Gerbing 1992; Hair, Black & Babin 2010).

4.9.2.6 Construct validity assessment

Validity is an indicator of the magnitude to which the research is correct (Hair et al. 2014), particularly in relation to the measurement benchmarks used to clarify theory (Sekaran & Bougie 2016). A number of validity types, including content and construct validity, were evaluated at various phases in this research. Content validity is the sufficiency of the measurement scale, and involves variables related to adequate pertinence and representativeness of the latent variables (Haynes, Richard & Kubany 1995). Assessing face validity can confirm the content validity of measures of unobservable latent variables (Sekaran & Bougie 2016). Face validity confirms the capacity of measurement variables to capture the idea (Sekaran & Bougie 2016). The opinions and knowledge of specialists were employed to maximise face validity during the establishment of measurement scale (Sekaran & Bougie 2016). Construct validity

verifies whether measured variables actually measure the construct and variables the study seeks to evaluate (Hair et al. 2014).

Convergent and discriminant validity of latent variables were examined to verify latent variable validity. Convergent validity evaluates whether the items of the latent variable share a significant variance (Fornell & Larcker 1981). Factor loadings must be statistically significant, and standardised loadings estimations are supposed to be greater than 0.5, and preferably greater than 0.7 (Hair et al. 2014). The average variance extracted (AVE) value for every latent variable was calculated to evaluate convergent validity. The AVE is a brief assessment for convergence between variables describing a construct. This is indicated by the average % of deviation among construct variables (Fornell & Larcker 1981). AVE represents the magnitude of manifest variable discrepancy described by the latent variable, which is computed by dividing an aggregate of squared factor loadings by the number of items (Fornell & Larcker 1981). An AVE value above 0.5 verifies convergent validity (Fornell & Larcker 1981). A construct with an AVE value lower than 0.5 implies that there are more errors in the variables than variance described by the latent factor pattern (Fornell & Larcker 1981).

In contrast to convergent validity, discriminant validity assesses the magnitude to which each latent variables distinctly captures occurrences (Hair et al. 2014) by searching for lack of correlation between unconnected latent variables (DeVellis 2016). The existence of cross-loadings reveals discriminant validity issues among certain items, which are subsequently removed (DeVellis 2016). Discriminant validity was confirmed by examining the correlations between the constructs of the measurement benchmarks through two common CFA techniques (Hair et al. 2014). First, a comparative nested model was conducted (Anderson & Gerbing 1992); a comparison was made for a sequence of CFA models by restraining the correlations between every pair of latent variables equivalent to 1.

Discriminant validity is confirmed if the χ^2 variation is significant between the models in which the latent variables were approximated and restrained to 1 (Bagozzi & Yi 1988). In actual fact, the comparative nested model does not constitute strong justification of

discriminant validity, as even correlations as high as 0.9 can occasionally generate a significant fit variation (Hair et al. 2014). Hence, to strengthen the evidence for the discriminant validity of the latent variables, these were evaluated by comparing the AVE value of every construct against the squared correlations of the other constructs.

The AVE must be greater than correlation estimations (Fornell & Larcker 1981). If the AVE for a construct is greater than the squared correlation of the other constructs, this indicates that the construct describes more of the differences in its items than the difference it is sharing with other constructs (Fornell & Larcker 1981). Applying this demanding test can yield strong confirmation of discriminant validity (Hair et al. 2014).

$$AVE = \frac{\sum \lambda^2}{\sum \lambda^2 + \sum var(ei)}$$

λ^2 = Sum of squared multiple correlation
 ei = Sum of error variance terms

4.9.2.7 Common method bias

The validity peril proposed by the common method bias is generally high for SEM-based value chain research designs depending on single sources (Hazen, Overstreet & Boone 2015). Common method variance (CMV) is the scope of inaccurate covariance distributed between items due to a common method being employed in the data collection (Buckley, Cote & Comstock 1990). It is important to convey the risk generated by common method bias to improve the validity of variables (Hazen, Overstreet & Boone 2015; Malhotra, Kim & Patil 2006). Common method bias overemphasises the links between items assigned to the variance created by data collection techniques (Conway & Lance 2010), while method prejudices can diminish the validity of the questionnaire outcomes by generating measurement inaccuracy (Podsakoff et al. 2003). CMV tests were employed to convey common method biases that could stem from the gathering of data from respondents with diverse perspectives through a self-reporting survey (Podsakoff et al. 2003). Common method bias can impact self-administered surveys with non-cognitive benchmarks (Chang, Van Witteloostuijn & Eden 2010). The type of questions can also influence social desirability partiality, as the questions are based on the best technological initiatives, performance impacts, and on occasion social and

environmental results (Chang, Van Witteloostuijn & Eden 2010). Diverse strategies are recommended at different phases of the research to address method bias (Chang, Van Witteloostuijn & Eden 2010). Particularly in situations where SEM is applied to the data gathered through one approach, common method bias should be communicated and the proof of absence of bias must be disclosed (Hazen, Overstreet & Boone 2015).

The survey was formulated with particular attention to minimising social desirability partiality, such as by incorporating both positively and negatively worded questions to prevent patterned responses (Baumgartner & Steenkamp 2001; MacKenzie & Podsakoff 2012). While some studies discourage the incorporation of negatively worded items due to their lower correlations with other items (DeVellis 2016; Podsakoff et al. 2003), other scholars support negatively formatted formulated items as an effective means to counteract method partiality (Churchill Jr 1979). Negatively worded items were therefore intentionally included in the questionnaire (MacKenzie & Podsakoff 2012). As the scale design impacts the partialities, a five-point Likert scale was employed (Weijters, Cabooter & Schillewaert 2010). In spite of having the counteract benchmarks at the plan phase, statistical methods to examine the common method partialities were imposed. Podsakoff et al. (2003) recommend undertaking the Harman (1967) one factor test employing both EFA and CFA (Malhotra, Kim & Patil 2006). In the EFA approach, common method bias is presumed to be prevalent if the outcomes show one factor solution for the major part of the variance in the items (Podsakoff et al. 2003). In the CFA approach, all the items are put into one construct; common method bias is presumed to be prevalent if the one factor model suits better than the actual conceptual framework (Malhotra, Kim & Patil 2006).

4.9.2.8 Structural analysis

Once the measurement model is confirmed, the Anderson and Gerbing (1992) two-step technique for SEM recommends examining the structural model (Huo 2012). Structural model evaluation applies to the theoretical model previously hypothesised in connecting the items to constructs, and also associating constructs to one another (Byrne 2013). The aim of this evaluation is to verify the link among the constructs and to decline or fail to decline the model (Byrne 2013). By evaluating how well the observed data is fitting the

constrained hypothesised framework, it is possible to clarify the described and non-described variance in the conceptual framework (Byrne 2013).

Taking the fact that the structural model is nested within the measurement model, it is not possible that the structural model would fit more than the entire complete model (Byrne 2013). The standardised β (beta) coefficients of the path estimations together with the p values were assessed. Value explained estimation of endogenous latent variables were also evaluated to determine the magnitude by which the framework describes the variation in every latent variable (Byrne 2013; Hair et al. 2014).

4.9.2.9 Hypotheses testing

The hypotheses suggested in Chapter 3 were examined by employing the outcomes of the structural path model. A t value greater than 1.96 implies significant path at $p < 0.05$ (Byrne 2013). Nevertheless, $p < 0.001$ implies that the hypothesis is highly confirmed (Hair et al. 2014). R^2 values were also evaluated to determine the degree to which the items describe the variance in constructs (Byrne 2013).

4.9.2.10 Testing the effect of control variables

Having verified the structural framework, the structural model was then assessed for the likely staggering impacts of the control variables, since these can impact links. Experience, education and age were the control variables employed in this study. Experience was employed as a control variable because the greater the experience of individuals, the more effectively they were assumed to initiate the environmental implementation process.

Education was another aspect considered a control variable, since it was assumed that the more educated individuals become, the greater their influence in instituting better and more creative approaches to instituting green activities. Age was also taken as a control variable, since the older individuals are, the more likely it is that they have accumulated adequate work ethics to enable them to have a better approach to implementing green actions. Whether the control variables have a significant impact ($p < 0.05$) was confirmed (Byrne 2001).

4.9.2.11 Post-hoc analysis and model re-specification

Post-hoc evaluation is follow-up analysis after theory assessment to examine the associations where the actual theory does not have a path (Hair, Black & Babin 2010). This step constitutes evaluation and re-statement of recursive structural frameworks in SEM (Shah & Goldstein 2006). Investigation of at least one non-trivial competing path with a possibility of representing the present literature on which the structural framework is founded upon is recommended to ensure proof of development (Hair et al. 2014). The models are regarded for re-statement if there are any observed mis-statements ascertained through the standardised residual values and modification indices (Hair et al. 2014). Standardized residuals contribute to the undefined variation in a hypothesised framework. Residual values greater than 2.58 ($p < 0.005$) are too large for consideration (Hair et al. 2014). Modification indices above 4 (3.84) ($p < 0.05$) can considerably enhance the model by freeing the correspondent path (Hair, Black & Babin 2010). While offering the examined path is not backed up by theory, links ascertained post-hoc are not as reliable as the actual theoretical associations (Hair et al. 2014; Jöreskog & Sörbom 1982). Hence, any framework re-statement should have solid empirical and theoretical bases (Bagozzi & Yi 1988). In spite of model re-statement being recommended by representative measures in SEM, post-hoc evaluation should not lead to model development without first cross-validating the progress employing new data from the same sample population, and establishing a strong theoretical rationale (Hair et al. 2014).

4.10 Summary

This chapter explained the methodology employed in this study. The study philosophies, epistemologies, ontologies and methodologies were discussed. The measurement development items for the constructs were discussed and data collection through a quantitative approach was also explained. The online questionnaire was sent to a random sample of food and beverage SMEs, and 178 responses were received. After initial screening, the remaining data set of 168 cases were tested using the two-step approach of structural equation modelling, where the measurement model was tested before the

structural model. The chapter detailed the SEM methodology, the model fit, reliability and validity tests and hypothesis testing.

Chapter 5

Quantitative research findings

5.1 Introduction

This chapter discusses the outcomes of the quantitative survey by describing the step-by-step analysis process employed to reach the conclusions. It concentrates on the measurement and structural frameworks in SEM to confirm the hypotheses established in Chapter 3. The preliminary assessment in Section 5.2 explains in detail the screening of questionnaire information for insufficient, unengaged, mechanical or pending answers, before identifying the missing value assessment. The evaluation of univariate and multivariate distribution normality and outliers for every measurement variable is also described in detail, before outlining the steps in the preliminary analysis. The descriptive statistics for the measurement variables are described in Section 5.3, and the process for assessing the measurement model is explained in Section 5.4.

The measurement frameworks for every latent variable were separately confirmed by employing EFA and CFA prior to assessing the entire complete measurement model. CFA and employing GOF indices were then used to assist in evaluating measurement model-fit. The verification of the reliability and validity of the final measurement model are discussed in Section 5.5, while the evaluation of the conceptual framework is discussed in Section 5.6.

The structural model was also confirmed by the goodness-of-fit indices before confirming the research hypotheses. In the last steps of validation of the conceptual framework, the impact of control variables on the structural model was examined to eliminate any confounding impacts and post-hoc evaluation was performed to deduce that no model re-statement was likely. The chapter concludes with a summary of the key survey findings.

5.2 Preliminary analyses

This section describes the suitability of the data and explores the processes to be adhered to transform the raw data into a structured quantitative evaluation. The survey yielded 178 responses. The data-set was initially investigated for its suitability for multivariate statistical evaluation (Pallant 2020).

5.2.1 Data screening

Sample information was screened to determine responses that might have been answered in an unengaged or mechanical approach, such as by ticking all the higher order responses. Furthermore, question 68 on the segment of organisational level was used to exclude respondents from non-managerial positions. However, all survey questions were found to have been completed by respondents from managerial/senior positions. The surveys were exclusively distributed to food and beverage manufacturing SME candidates, which is the unit of analysis of this research. A visual assessment showed that no survey questions were either responded to invariably or mechanically. There were also no missing values found in the responses. The sample of 178 survey questions was then tested for missing information.

5.2.2 Missing value analysis and treatment

The data set was evaluated for missing values. Although no missing values were expected due to forced response set up within the Qualtrics, ten questionnaires were found to have more than 80% missing values due to responses being left incomplete. These were automatically collected in the database after a week, after which they were deleted, thereby resulting in a final sample of 168 questionnaires. Therefore the methods applied for missing values were not applicable to this study. The sample of 168 was then progressed to univariate/multivariate normality and outliers tests.

5.2.3 Establishment of outliers

Removing outliers is one method in managing non-normal data (Pallant 2020). However, it is important to note that the generalisation of study outcomes is minimised by the

elimination of outliers. If outliers authentically illustrate the sample population, retaining these is suggested. Regardless of this consideration, the univariate and multivariate outliers drive the factor solution (Pallant 2020; Tabachnick & Fidell 2012). Hence, Mahalanobis distance was employed to segregate outliers. AMOS estimation of Mahalanobis distance is not highly relevant in this circumstance, as it presumes that the information is multivariate normal (Pallant 2020). Therefore, Mahalanobis distances were computed with the use of SPSS 23.

The multiplication of Mahalanobis distance and degree of freedom was subtracted from one to deduce the p value for each Mahalanobis distance. Cases where Mahalanobis distance were found to have a value $p < 0.001$ would be classified as outliers (Pallant 2020). However, there were no cases found to have $p < 0.001$ for each Mahalanobis distance within the dataset, hence the data had no outliers. The sample size thus remained at 168 cases, which proceeded to the final statistical evaluation.

5.3 Descriptive statistics

Small enterprises constitute 42% of company respondents who engaged in responding to the questionnaire. More than half of the respondents came from medium enterprises consisting of 58%. Business which were longer established constituted 35.1% ranging from eleven to twenty years. Male respondents were the majority with 80.1% of all respondents.

The qualification of respondents was mainly respondents with bachelors constituting 44.6% and the age range was predominantly between 31-45 years and 46-60 years, which constituted 44.6% and 41.1% respectively. The descriptive statistical data on demographics of the sample is listed in Table 5.1.

Table 5.1: Demographic profiles of surveyed organisations

Demographic Information	Frequency	%
<i>Number of employees</i>		
1 to 4 employees	16	9.5
5 to 19 employees	55	32.7
20-199 employees	97	57.7
<i>Total</i>	<i>168</i>	<i>100</i>

Demographic Information	Frequency	%
<i>Annual turnover</i>		
\$0 to less than \$50K	1	0.6
\$50K to less than \$200K	11	6.5
\$200K to less than \$2M	52	31.0
\$2M to less than \$5M	56	33.3
More than \$5M	48	28.6
<i>Total</i>	<i>168</i>	<i>100</i>
<i>ISO 9000 certification</i>		
Yes	123	73.2
No	45	26.8
<i>Total</i>	<i>168</i>	<i>100</i>
<i>ISO 14001 certification</i>		
Yes	137	81.5
No	31	18.5
<i>Total</i>	<i>168</i>	<i>100</i>
<i>Duration of certification/non certification</i>		
Less than a year	5	3.0
1-2 years	7	4.2
3-5 years	32	19.0
More than 5 years	101	60.1
Not at all certified	23	13.7
<i>Total</i>	<i>168</i>	<i>100</i>
<i>Duration of business</i>		
1 to 5 years	15	8.9
6 to 10 years	37	22.0
11 to 20 years	59	35.1
More than 20 years	57	33.9
<i>Total</i>	<i>168</i>	<i>100</i>
<i>organisational level</i>		
CEO	22	13.1
Logistics Manager	22	13.1
Supply Chain Manager	44	26.2
Human Resource Manager	5	3.0
Production/Operations Manager	55	32.7
Plant Manager	14	8.3
Other	6	3.6
<i>Total</i>	<i>168</i>	<i>100.0</i>
<i>Length of experience</i>		
1 to 5 years	73	43.5
6 to 10 years	46	27.4
11 to 14 years	20	11.9
> 15 years	29	17.3
<i>Total</i>	<i>168</i>	<i>100.0</i>
<i>Gender</i>		
Male	135	80.4
Female	33	19.6
Transgender	-	-
<i>Total</i>	<i>168</i>	<i>100.0</i>
<i>Educational qualification</i>		
Secondary school	1	0.6
VCE/High school	5	3.0
Certificate	3	1.8

Demographic Information	Frequency	%
Diploma	26	15.5
Bachelors	75	44.6
Masters	55	32.7
Other	3	1.8
<i>Total</i>	<i>168</i>	<i>100.0</i>
<i>Age</i>		
18 to 30 years	7	4.2
31 to 45 years	75	44.6
46 to 60 years	69	41.1
> 60 years	17	10.1
<i>Total</i>	<i>168</i>	<i>100.0</i>

The descriptive statistics of the manifest variables of the central tendency and dispersion evaluated using SPSS 23 are displayed in Table 5.2.

Table 5.2: The Mean and Standard Deviation of manifest variables

Item No	Measure	Mean	Standard Deviation
	<i>Internal Green Supply Chain Management Practices</i>		
2	Senior managers of our company participate and encourage the implementation of environmental initiatives	4.87	1.046
3	Our company encourages cross functional cooperation for environmental improvements	3.97	1.005
4	Our company practices environmental compliance and audit programs	3.98	1.104
5	Our company designs/uses products with reduced materials and energy consumption	3.62	0.947
6	Our company uses state of the art equipment/machinery with minimal carbon dioxide/pollutant emission	3.51	1.016
7	Our company reduces/discourages the use of hazardous products and their manufacturing process	3.50	1.055
8	Our company reuses, recycles, and practices recovery of materials	3.52	0.944
	<i>External Green Supply Chain Management Practices</i>		
9	Our company cooperates/works with suppliers to achieve environmental objectives.	3.33	0.950
10	Our company audits/assesses suppliers' environmental management practices.	4.29	0.993
11	Our company encourages/rewards suppliers' ISO 14001 certification.	3.28	0.981
12	Our company cooperates with customers for cleaner operations.	3.56	0.943
13	Our company cooperates with customers for green packaging.	3.25	1.024
14	Our company requires suppliers to collect their packaging	3.10	1.054

Item No	Measure	Mean	Standard Deviation
	materials.		
15	Our company encourages customers to help collect packaging materials after delivery.	2.98	1.010
	<i>Green Human Resource Management Practices</i>		
16	Our company selects and recruits applicants with environmental knowledge, concern and attitude.	3.10	0.854
17	Our company provides its employees with formal environmental training programs.	3.43	0.909
18	Our company ensures that topics covered during green training are appropriate and current for today business operations.	4.01	1.118
19	Our company encourages employee suggestions for environmental performance improvement by setting up employee environmental suggestion schemes.	3.74	0.956
20	Our company recognises employees for taking initiative for environmental management through environmental awards to individuals or teams.	3.53	1.035
21	Our company uses the achievement of environmental goals as one of the criteria in employee performance appraisal.	3.36	1.035
22	Our company frequently uses teamwork to solve environmental management systems problems.	3.49	0.966
	<i>Regulatory Pressure</i>		
24	The environmental regulations were imposed by the federal government on my company.	3.89	1.568
25	State/Regional environmental regulations were imposed on my company.	4.29	1.061
26	The resource saving and conservation regulation were imposed by federal government on my company.	3.11	0.926
27	State/Regional resource saving and conservation regulation were imposed on my company.	5.41	1.437
28	Potential conflicts between products and environmental regulations will affect our company's green environmental management.	4.48	1.285
29	The green environmental management of our firm will be affected by cost of pollution prevention practices.	3.68	1.058
	<i>Customer Pressure</i>		
30	In order to respond to the green environmental protection, our firm will consider its effect on sales to foreign customers.	4.12	1.275
31	In order to respond to the green environmental protection initiative, our firm will consider its effect on domestic customers.	3.69	1.102
32	Consumers have a strong influence on our company's green supply chain initiatives implementation.	3.80	1.086
33	For our firm, establishing enterprise's green image is	5.79	1.366

Item No	Measure	Mean	Standard Deviation
	extremely important in order to expand our customer base.		
34	The news media follows our Industry closely in order to inform about our green implementation progress.	3.10	0.975
35	The increasing environmental consciousness of consumers have spurred our company to implement green supply chain initiatives.	3.65	0.974
	<i>Competitor Pressure</i>		
36	The green environmental management of our firm will be affected by competitors' green environmental protection strategy.	4.16	0.891
37	Our main competitors that have adopted a green strategy are perceived favourably by customers.	3.13	0.934
38	Our main competitors that have adopted a green strategy benefit greatly.	3.16	1.037
39	Our main competitors that have adopted a green strategy are more competitive.	3.13	1.137
40	Environment friendly is considered as a competitive differentiator in my company.	5.38	0.978
41	Professional environmental protection groups will influence the green environmental management initiative of our company.	3.07	1.012
	<i>Environmental Performance</i>		
43	Reduction of air emission	3.82	0.953
44	Reduction of waste water	3.87	0.868
45	Reduction of solid wastes	5.11	1.191
46	Decrease of consumption for hazardous/harmful/toxic materials	4.96	0.979
47	Decreased of environmental accidents	3.77	1.112
48	Improved of overall green/environmental performance	5.99	1.375
	<i>Economic Performance</i>		
49	Decreased cost for materials purchase	3.29	0.973
50	Decreased cost for energy consumption	3.38	1.066
51	Decreased fee for waste treatment and discharge	3.42	0.908
52	Decreased fine for environmental accidents	4.31	1.541
53	Average profit and profit growth rate over the last three years	4.17	0.837
54	Average return on sales over the last three years	3.24	0.838
55	Average market share growth over the last three years	3.59	1.387
	<i>Social Performance</i>		
56	Enhanced health and safety of employees	4.08	1.007
57	Enhanced employee job satisfaction	3.76	0.838

Item No	Measure	Mean	Standard Deviation
58	Improved community health and safety	3.76	0.873
59	Improved social commitment	5.38	1.377
60	Lowered the adverse impact of products and processes on the local community	3.92	0.987
61	Enhanced incentives and engagement for local employment.	3.50	0.966

It is evident that senior managers actively participate in and encourage the implementation of green initiatives within their organisations. Such efforts include working to ensure that the supply chain processes of their companies are eco-friendly, that the products made available to their customers adhere to green principles, and that they ensure that their suppliers are rigorously audited for environmental compliance. As part of green initiatives, GHRMPs are initiated to train staff on up-to-date environmental management topics. In pressuring companies to adhere to green practices, state resource saving and conservation is observed to have the highest mean, indicating that within respective states, regulations are strictly enforced to ensure enterprises comply with environmental regulations. In an increasingly volatile and complex environment, the embedding of green principles in business operations has become a new narrative the importance of which is evidenced by increasing pressure from customers for environmentally friendly products and services. In light of this shift, green image is crucial for firms to expand their customer base and thereby sustain competitiveness. This is further confirmed by the presence of significant competitor pressure, where environmentally friendly practices are regarded as a competitive differentiator for enterprises. Improving environmental performance is an important goal for companies, resulting in a reduction in environmental accident fines. In so doing, social commitment has been tremendously enhanced.

5.4 The measurement model

Once the data for the undertaking of the multivariate statistical evaluation was accepted and verified, the next phase was to employ the steps for SEM. First, the measurement models for each latent variable were verified by undertaking EFA and CFA in sequence

on every construct in order to evaluate the fitting of their measurement variables. EFA and CFA were used on the final data-set of 168 cases (Byrne 2013). EFA assists to determine how well the observed variables relate to their fundamental factors (Hair et al. 2014). While EFA examines the data and generates information on how various factors best illustrate the data, CFA evaluates how well the measured items illustrate the conforming latent variables (Byrne 2013). Hence CFA was ultimately employed to verify the relationship between observed variables and their fundamental factors (Hair et al. 2014).

The smallest sample size needed to provide logical answers in an EFA is around 100 cases (Byrne 2013). Similarly, when ML estimate is employed, a sample set of at least 100 cases is vital to deduce reliable responses from a CFA (Anderson & Gerbing 1992). In accordance with the classical measurement concept, the measurements of a latent variable are unidimensional (DeVellis 2003). Hence, the measurement models for every latent variable were separately examined for unidimensionality before all the latent variables were jointly examined in an integrated measurement model (Byrne 2013). The measurement variables in this research were indicative for every latent variable. Therefore, the measurement variables for every latent variable had to be unidimensional, on top of maintaining a positive correlation between the variables of every latent variable and retaining a positive correlation between the latent variables (Iacobucci 2010). Since the evaluation undertaken previously revealed that the data is multivariate non-normal, the Principal Axis Factoring (PAF) process was selected as the most appropriate factor extraction approach for EFA (Costello & Osborne 2005). Apart from the global fit indices, Bollen-Stine's bootstrap χ^2 assessment was also conducted in CFA to evaluate the p-value (Bollen, KA & Stine 1992).

The fit indices and their cut-off value were considered suitable for model assessment of this research. Fit indices were chosen to include 3 categories: absolute, incremental and parsimonious measures. The χ^2 statistic, root mean square error of approximation (RMSEA), standardised root mean square residual (SRMR), goodness-of-fit index (GFI) and normed χ^2 were evaluated for the absolute fit assessment (Hair et al 2014). Comparative fit index (CFI), normed fit index (NFI) and Tucker-Lewis index (TLI) were

chosen to evaluate incremental fit, and the adjusted goodness-of-fit (AGFI) was employed for parsimonious fit index (Hair et al 2014). Normed χ^2 can also be employed as a parsimonious fit index (Hair et al. 2014). Because of their bad performance in small samples ($n < 250$), the GFI, AGFI and NFI were not regarded in model assessment, particularly in a complex model (Hu & Bentler 1999).

GFI and AGFI can be excessively driven by sample size (Hair et al. 2014). NFI underrates fitting in small samples (Hair et al. 2014). Employing CFI over NFI is suggested as an index of selection as CFI is an advanced version of NFI (Hu & Bentler 1998). Hence, GFI, AGFI and NFI have seldom been employed in recent times, in support of the current progress of far important fit indices (Hair et al. 2014). Generally, having 3 to 4 indices generates sufficient justification of a model fit (Hair et al. 2014). Employing many indices of various categories and modifying index cut-off values formed on model features is suggested to determine a suitable fit (Byrne 2013). Hair et al. (2014) suggest GFI for such a model and numbers of cases are χ^2 , CFI or TLI, SRMR, RMSEA, which involves an absolute fit index, an incremental fit index, a GFI index and a badness of fit index.

Nevertheless, the χ^2 is responsive to sample size and number of measurement items (Anderson & Gerbing 1988). As various factors affect the χ^2 significance, any outcome can be cross-examined (Hu & Bentler 1999). Moreover, the use of χ^2 assessment to examine model fit has been critiqued when the data diverge from multivariate normality (Hair et al. 2014). The sample was previously determined as multivariate non-normal. Therefore, Bollen-Stine bootstrap χ^2 assessment was conducted (Bollen & Stine 1990). In a situation where the data-set is less than 250 observed items and less than 30 measurement variables, insignificant p-value should not be anticipated (Hair, Black & Babin 2010). In such a circumstance, Bollen-Stine p-value will be used. Nevertheless, in a situation where the data-set has less than 250 observed items if the number of variables is less than 12, an insignificant p-value should be anticipated (Hair, Black & Babin 2010). Both incidences were relevant in this research, given that every latent variable (<12 variables) was examined before assessing the full measurement model (<30 variables). The analysis followed a two-stage approach, which involved dropping items to create

better model fit. The initial step was based on the item loadings and square multiple correlation (SMC) obtained in CFA (i.e. congeneric model) of each individual construct. For example, an item with SMC $< .3$ was dropped to improve the model fit. There were some exceptions to this rule. The second step was taken at the full measurement model analysis that included all the constructs (with their items dropped in the initial stage) in a single model. There were no other items dropped at this stage until the model was found to fit. Alternatively, the full measurement model could be carried out directly by using all the constructs with the original items to see if the items dropped are the same as above. Further items can be dropped at the stage of path modelling to fit with the data and satisfy the specified parameters, i.e. GFI indices. It is equally important to check the content of the item(s) before deleting.

5.4.1 Measurement model for Internal Green Supply Chain Management Practices

An EFA was performed with the calibration sample ($n = 168$) by selecting the principal axis factoring as the extraction method and direct oblimin as rotation method. Small coefficients with an absolute value below 0.4 were suppressed. In all, there were 21 correlations. The findings showed that all correlations were greater than 0.4 and all partial correlations were less than 0.8. The Kaiser-Meyer-Olkin (KMO) sampling adequacy test was 0.854 and the Bartlett's sphericity test was significant at ($\chi^2 = 481.383$, $p < 0.001$), indicating that the data set was suitable for the EFA. All items had communalities greater than 0.5. The communality minimum item was 0.539. Item communalities suggested that these items could explain a reasonable degree of variance in the construct of IGSCM capability.

EFA showed a single-factor solution by producing only one factor with eigenvalue greater than 1. The total variance explained in this single-factor solution was 54.392%. The scree plot also shows a clear break after the first factor as shown in Figure 5.1. Factor matrix showed that all loaded items had values greater than 0.624. The results affirmed the unidimensionality of the measurement items selected for the IGSCM capability.

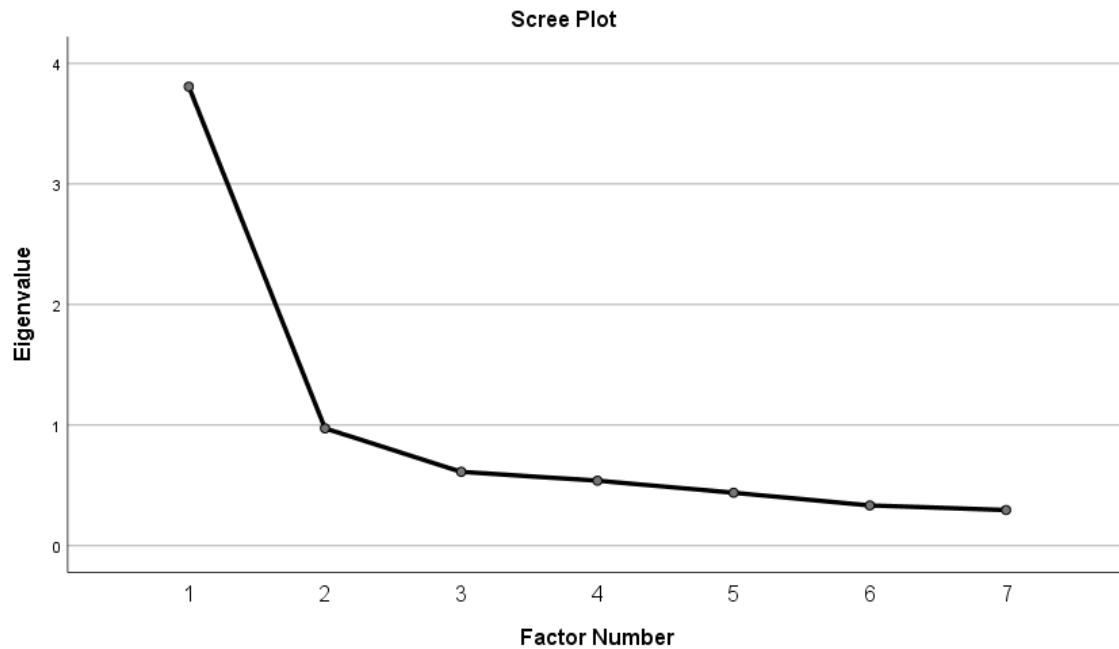


Figure 5.1: Scree plot for eigenvalues on internal green supply chain management practices

The EFA structure was then validated with the sample ($n = 168$) using CFA. The results indicated a poor model fit with $\chi^2(14) = 169.506$, $p = 0.000$. The model fit indices were $\chi^2/df = 12.108$, SRMR=0.080, RMSEA=0.264, NFI=0.789, GFI=0.735, AGFI=0.469, CFI= 0.801 and TLI=0.702. In order to increase the model fit items Q3 and Q4 were dropped. This led to a better model fit $\chi^2(5) = 6.771$, $p=0.23$, $\chi^2/df = 1.354$, SRMR=0.02, RMSEA=0.05, NFI=0.985, GFI=0.981, AGFI=0.943, CFI=0.996, and TLI=0.992. The factor loadings were significant ($p < 0.001$) and ranged from 0.70 to 0.91. The derived measurement model via CFA for IGSCM capability is exhibited in Figure 5.2. The results of the EFA and CFA for the measurement model for IGSCM capability are shown in Table 5.3.

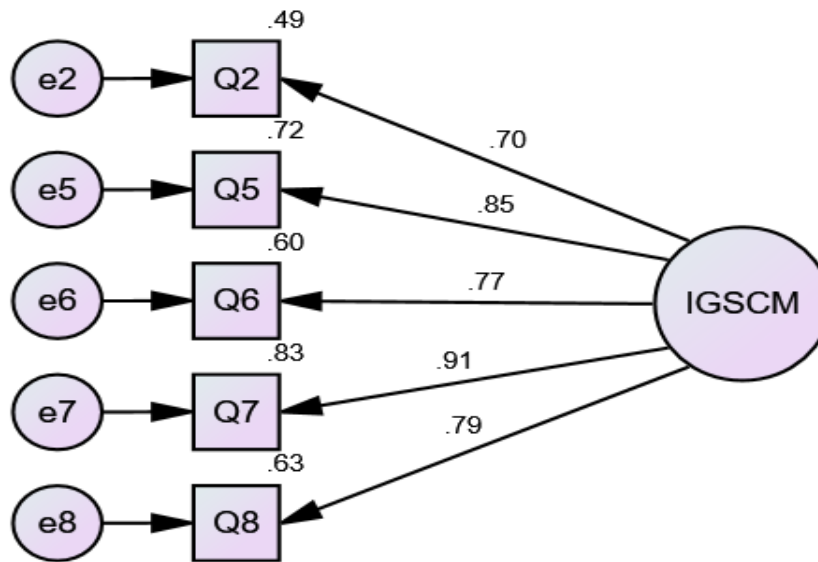


Figure 5.2: Measurement model for internal GSICs

Table 5.3: EFA and CFA of internal green supply chain management practices

Item		EFA		CFA*	
Item no	Item Description	Loading	Variance Explained	SFL	SMC
Q2	Senior managers of our company participate and encourage the implementation of environmental initiatives	3.807	54.392%	0.70	0.49
Q3	Our company encourages cross functional cooperation for environmental improvements	0.973		ITEM DROPPED IN CFA	
Q4	Our company practices environmental compliance and audit programs	0.612		ITEM DROPPED IN CFA	
Q5	Our company designs/uses products with reduced materials and energy consumption	0.539		0.85	0.72
Q6	Our company uses state of the art equipment/machinery with minimal carbon dioxide/pollutant emission	0.439		0.77	0.60
Q7	Our company reduces/discourages the use of hazardous products and their manufacturing process	0.334		0.91	0.83
Q8	Our company reuses, recycles, and practices recovery of materials	0.296		0.79	0.63

*p<0.001

5.4.2 Measurement model for External Green Supply Chain Management Practices

An EFA was performed with the calibration sample ($n = 168$) by selecting the principal axis factoring as the extraction method and direct oblimin as rotation method. Small coefficients with an absolute value below 0.4 were suppressed. In all, there were 21 correlations. The findings showed that all correlations were greater than 0.4 and all partial correlations were less than 0.7. The Kaiser-Meyer-Olkin (KMO) sampling adequacy test was 0.858 and the Bartlett's sphericity test was significant at ($\chi^2 = 572.775$, $p < 0.001$), indicating that the data set was suitable for the EFA. All items had communalities greater than 0.4. The communality minimum item was 0.475. Item communalities suggested that these items could explain a reasonable degree of variance in the construct of EGSCM capability.

EFA showed a single-factor solution by producing only one factor with eigenvalue greater than 1. The total variance explained in this single-factor solution was 59.128%. The scree plot also shows a clear break after the first factor as shown in Figure 5.3. Factor matrix showed that all loaded items had values greater than 0.613. The results affirmed the unidimensionality of the measurement items selected for the EGSCM capability.

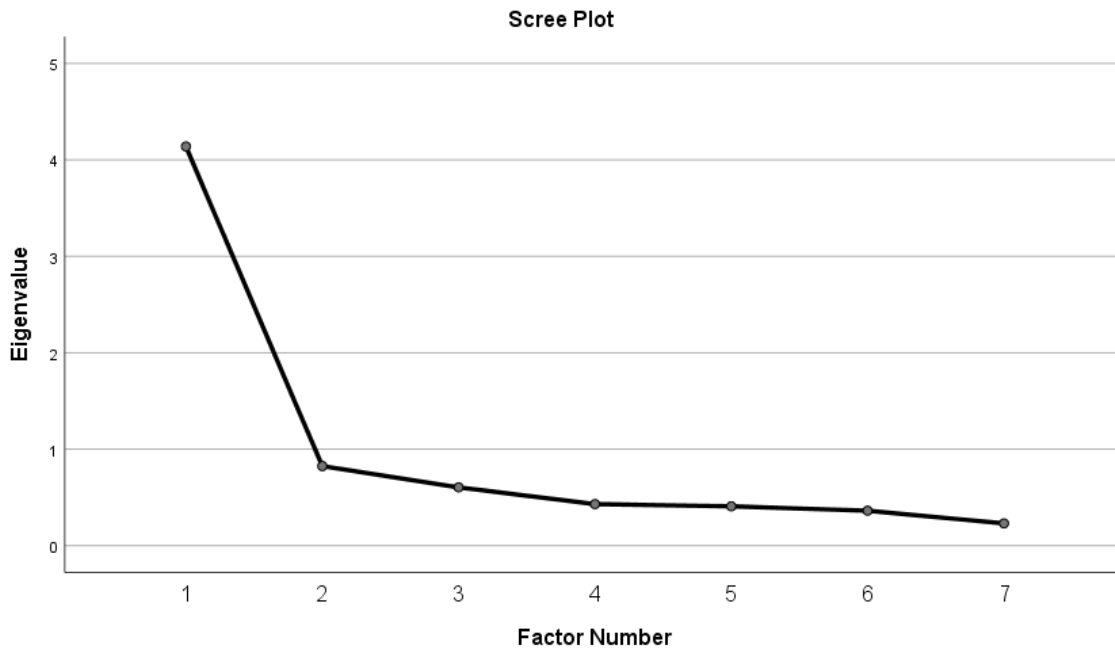


Figure 5.3: Scree plot for eigenvalues on external GSCIs

The EFA structure was then validated with the sample ($n = 168$) using CFA. The results indicated a poor model fit with $\chi^2(14) = 103.611$, $p = 0.000$. The model fit indices were $\chi^2/df = 7.401$, SRMR=0.055, RMSEA=0.201, NFI=0.870, GFI=0.839, AGFI=0.677, CFI=0.885 and TLI=0.827. In order to increase the model fit items Q11, Q12 and Q13 were dropped. This led to a better model fit $\chi^2(2) = 2.790$, $p=0.248$, $\chi^2/df = 1.395$, SRMR=0.021, RMSEA=0.053, NFI=0.989, GFI=0.990, AGFI=0.951, CFI=0.997, and TLI=0.990. The factor loadings were significant ($p < 0.001$) and ranged from 0.64 to 0.93. The derived measurement model using CFA for EGSCM capability is presented in Figure 5.4. The results of the EFA and CFA for the measurement model for EGSCM capability are shown in Table 5.4.

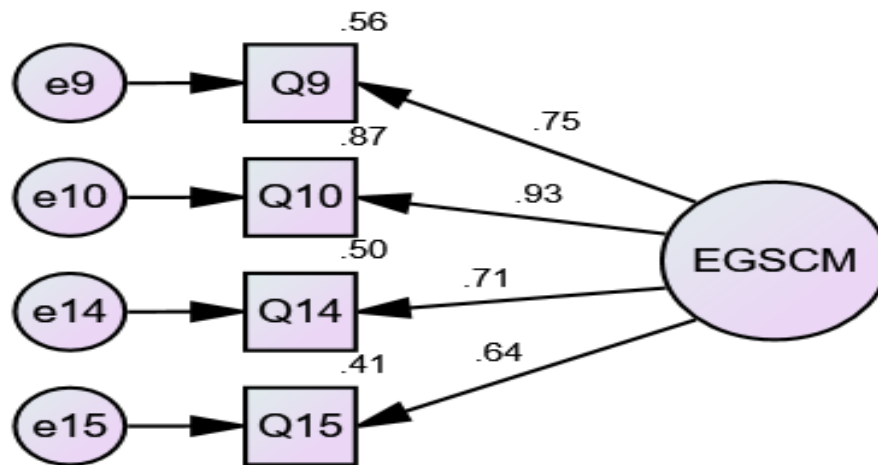


Figure 5.4: Measurement model for external GSCIs

Table 5.4: EFA and CFA of external green supply chain management practices

Item		EFA		CFA*	
Item no	Item Description	Loading	Variance Explained	SFL	SMC
Q9	Our company cooperates/works with suppliers to achieve environmental objectives.	4.139	59.128%	0.75	0.56
Q10	Our company audits/assesses suppliers' environmental management practices.	0.825		0.93	0.87
Q11	Our company encourages/rewards suppliers' ISO 14001 certification.	0.604		ITEM DROPPED IN CFA	
Q12	Our company cooperates with customers for cleaner operations.	0.430		ITEM DROPPED IN CFA	
Q13	Our company cooperates with customers for green packaging.	0.408		ITEM DROPPED IN CFA	
Q14	Our company requires suppliers to collect their packaging materials.	0.362		0.71	0.50
Q15	Our company encourages customers to help collect packaging materials after delivery.	0.231		0.64	0.41

*p<0.001

5.4.3 Measurement model for Green Human Resource Management Practices

An EFA was performed with the calibration sample ($n = 168$) by selecting the principal axis factoring as the extraction method and direct oblimin as rotation method. Small coefficients with an absolute value below 0.4 were suppressed. In all, there were 21 correlations. The findings showed that all correlations were greater than 0.49 and all partial correlations were less than 0.8. The Kaiser-Meyer-Olkin (KMO) sampling adequacy test was 0.873 and the Bartlett's sphericity test was significant at ($\chi^2 = 470.362$, $p < 0.001$), indicating that the data set was suitable for the EFA. All items had communalities greater than 0.4. The communality minimum item was 0.408. Item communalities suggested that these items could explain a reasonable degree of variance in the construct of GHRM capability.

EFA showed a single-factor solution by producing only one factor with eigenvalue greater than 1. The total variance explained in this single-factor solution was 55.319%. The scree plot also shows a clear break after the first factor as shown in Figure 5.5. Factor matrix showed that all loaded items had values greater than 0.543. The results affirmed the unidimensionality of the measurement items selected for the GHRM

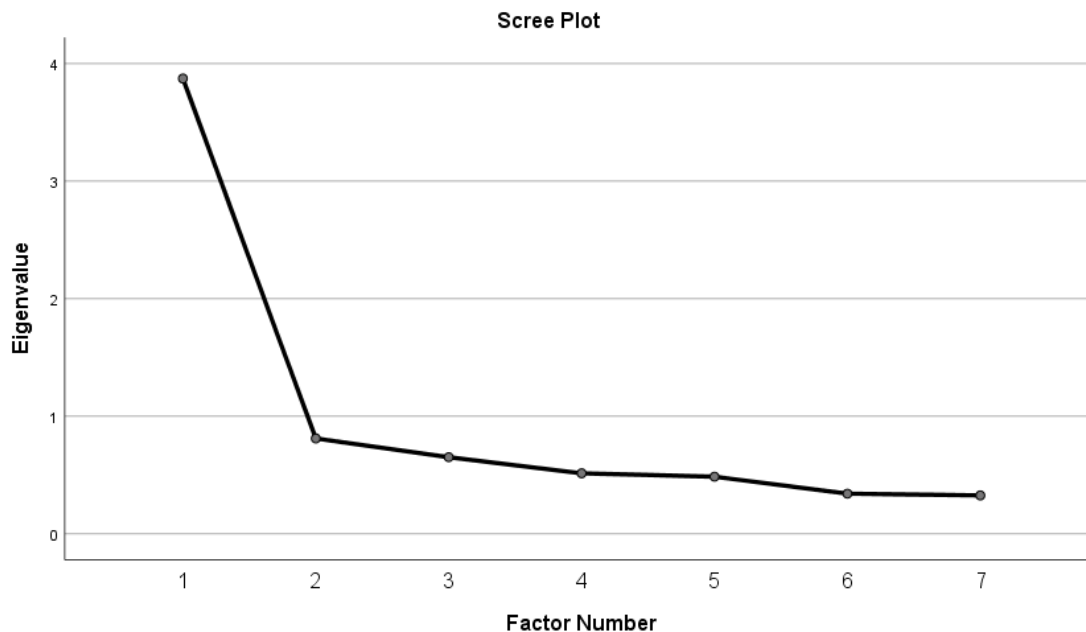


Figure 5.5: Scree plot for eigenvalues on GHRM practices

capability.

The EFA structure was then validated with the sample ($n = 168$) using CFA. The results indicated a poor model fit with $\chi^2(14) = 110.357$, $p = 0.000$. The model fit indices were $\chi^2/df = 7.883$, SRMR=0.047, RMSEA=0.208, NFI= 0.880, GFI= 0.828, AGFI= 0.655, CFI=0.893 and TLI=0.839. In order to increase the model fit, items Q19, Q20 and Q21 were dropped. This led to a better model fit $\chi^2(2) = 2.574$, $p=0.276$, $\chi^2/df= 1.287$, SRMR=0.015, RMSEA=0.045, NFI=0.992, GFI=0.991, AGFI=0.957, CFI=0.998, and TLI=0.994. The factor loadings were significant ($p<0.001$) and ranged from 0.74 to 0.93. The derived measurement model via CFA for GHRM capability is exhibited in Figure 5.6. The results of the EFA and CFA for the measurement model for GHRM capability are shown in Table 5.5.

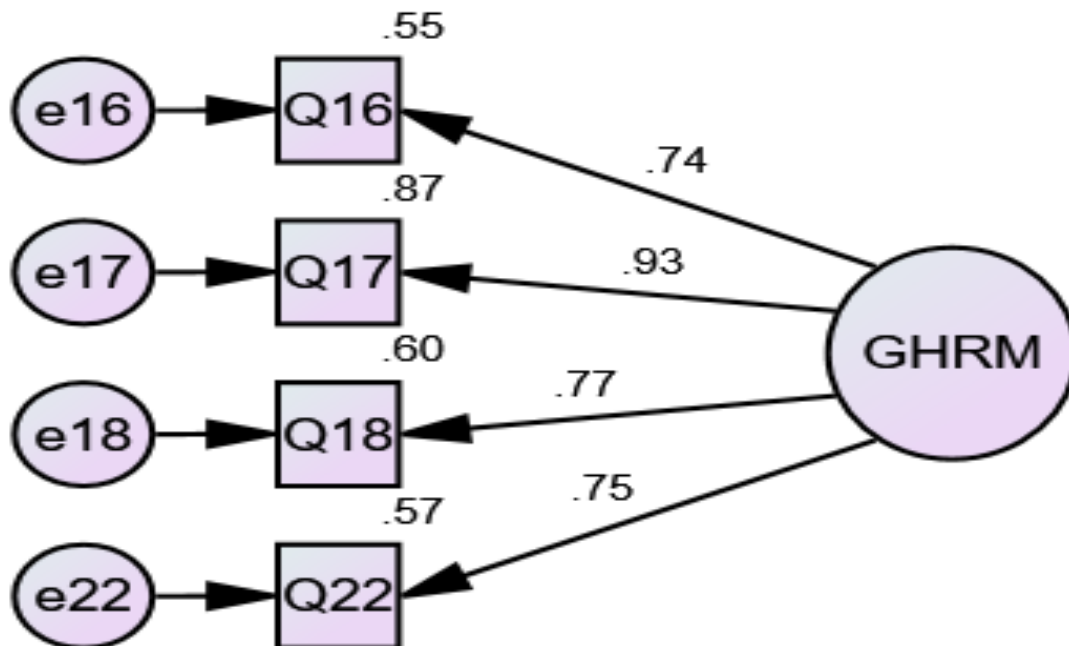


Figure 5.6: Measurement model for GHRM practices

Table 5.5: EFA and CFA of GHRMPs

Item		EFA		CFA*	
Item no	Item Description	Loading	Variance Explained	SFL	SMC
Q16	Our company selects and recruits applicants with environmental knowledge, concern and attitude.	3.872	55.319%	0.74	0.55
Q17	Our company provides its employees with formal environmental training programs.	0.810		0.93	0.87
Q18	Our company ensures that topics covered during green training are appropriate for the current business operations.	0.651		0.77	0.60
Q19	Our company encourages employee suggestions for environmental performance improvement by setting up employee environmental suggestion schemes.	0.514		ITEM DROPPED IN CFA	
Q20	Our company recognises employees for taking initiative for environmental management through environmental awards to individuals or teams.	0.485		ITEM DROPPED IN CFA	
Q21	Our company uses the achievement of environmental goals as one of the criteria in employee performance appraisal.	0.341		ITEM DROPPED IN CFA	
Q22	Our company frequently uses teamwork to solve environmental management systems problems.	0.326		0.75	0.57

*p<0.001

5.4.4 Measurement model for regulatory pressures

An EFA was performed with the calibration sample (n = 168) by selecting the principal axis factoring as the extraction method and direct oblimin as rotation method. Small coefficients with an absolute value below 0.4 were suppressed. In all, there were 15 correlations. The findings showed that all correlations were greater than 0.3 and all partial correlations were less than 0.8. The Kaiser-Meyer-Olkin (KMO) sampling adequacy test was 0.787 and the Bartlett's sphericity test was significant at ($\chi^2 = 456.223$, $p < 0.001$), indicating that the data set was suitable for the EFA. All items had communalities greater than 0.3. The communality minimum item was 0.315. Item communalities suggested that these items could explain a reasonable degree of variance for the regulatory capability construct.

EFA showed a single-factor solution by producing only one factor with eigenvalue greater than 1. The total variance explained in this single-factor solution was 56.180%. The scree plot also shows a clear break after the first factor as shown in Figure 5.7. Factor matrix showed that all loaded items had values greater than 0.464. The results affirmed the unidimensionality of the measurement items selected for the regulatory capability construct are shown in Table 5.6.

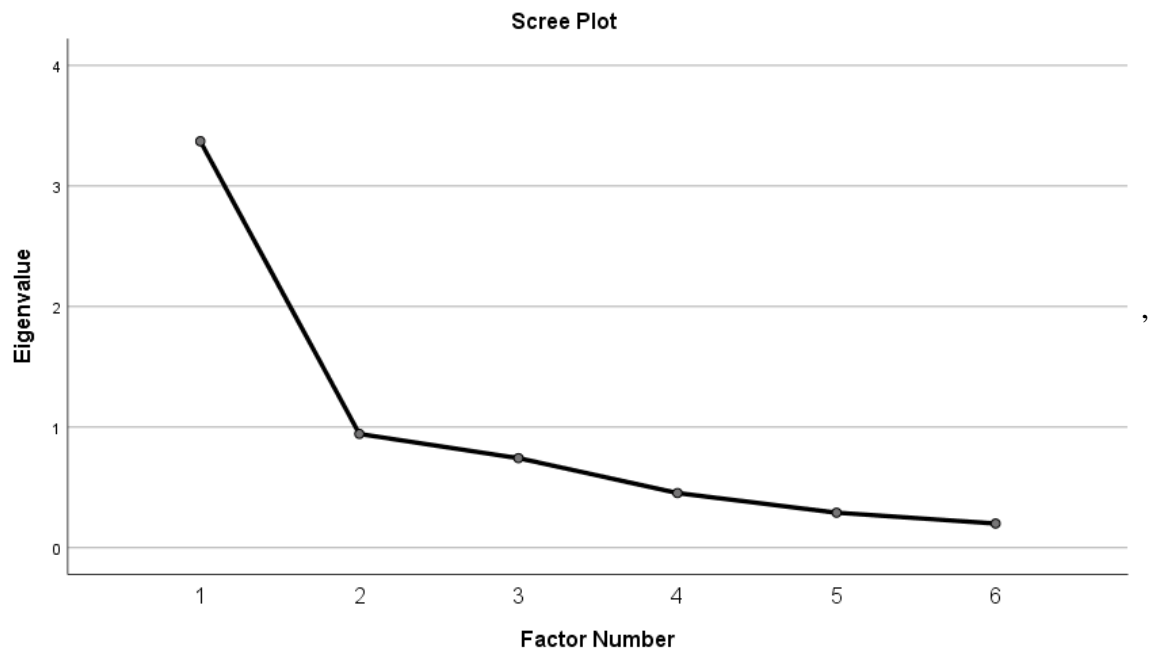


Figure 5.7: Scree plot for eigenvalues on regulatory pressure

The EFA structure was then validated with the sample ($n = 168$) using CFA. The results indicated a poor model fit with $\chi^2(9) = 344.860$, $p = 0.000$. The model fit indices were $\chi^2/df = 38.318$, SRMR=0.090, RMSEA=0.484, NFI=0.658, GFI=0.711, AGFI=0.327 CFI=0.662 and TLI=0.436. In order to increase the model fit items Q26 and Q29 were dropped. This led to a better model fit $\chi^2(2) = 3.929$, $p = 0.140$, $\chi^2/df = 1.964$, SRMR=0.016, RMSEA=0.072, NFI=0.990, GFI=0.987, AGFI=0.936, CFI=0.995, and TLI=0.985. The factor loadings were significant ($p < 0.001$) and ranged from 0.43 to 0.98.

The derived measurement model via CFA for regulatory capability is exhibited in Figure 5.8. The results of the EFA and CFA for the measurement model for regulatory capability are shown in Table 5.6.

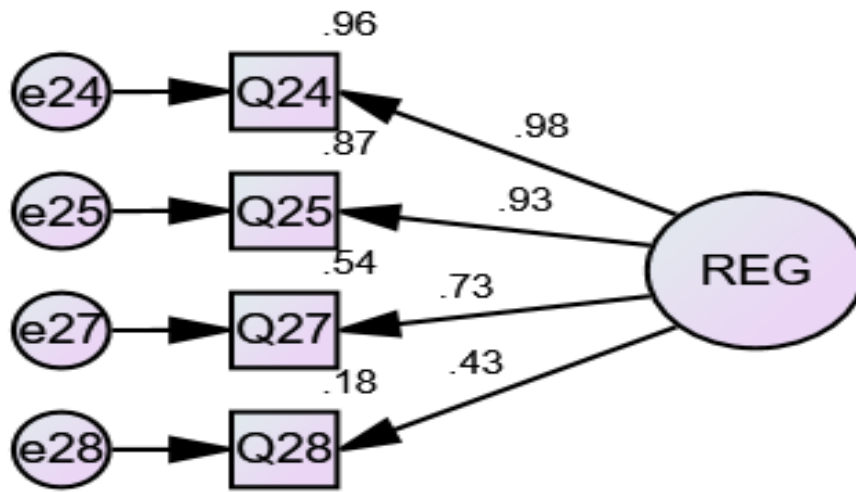


Figure 5.8: Measurement model for regulatory pressure

Table 5.6: EFA and CFA of regulatory pressure

Item		EFA		CFA*	
Item no	Item Description	Loading	Variance Explained	SFL	SMC
Q24	The environmental regulations were imposed by the federal government on my company.	3.371	56.180%	0.98	0.96
Q25	State/Regional environmental regulations were	0.943		0.93	0.87

	imposed on my company.				
Q26	The resource saving and conservation regulation were imposed by federal government on my company.	0.743	ITEM DROPPED IN CFA		
Q27	State/Regional resource saving and conservation regulation were imposed on my company.	0.453		0.73	0.54
Q28	Potential conflicts between products and environmental regulations will affect our company's green environmental management.	0.290		0.43	0.18
Q29	The green environmental management of our firm will be affected by cost of pollution prevention practices.	0.200	ITEM DROPPED IN CFA		

*p<0.001

5.4.5 Measurement model for customer pressures

An EFA was performed with the calibration sample (n = 168) by selecting the principal axis factoring as the extraction method and direct oblimin as rotation method. Small coefficients with an absolute value below 0.4 were suppressed. In all, there were 15 correlations. The findings showed that all correlations were greater than 0.4 and all partial correlations were less than 0.7. The Kaiser-Meyer-Olkin (KMO) sampling adequacy test was 0.836 and the Bartlett's sphericity test was significant at ($\chi^2 = 279.622$, $p < 0.001$), indicating that the data set was suitable for the EFA. All items had communalities greater than 0.4. The communality minimum item was 0.406. Item communalities suggested that these items could explain a reasonable degree of variance for the customer capability construct.

EFA showed a single-factor solution by producing only one factor with eigenvalue greater than 1. The total variance explained in this single-factor solution was 51.347%. The scree plot also shows a clear break after the first factor as shown in Figure 5.9. Factor matrix showed that all loaded items had values greater than 0.574. The results affirmed the unidimensionality of the measurement items selected for the customer capability construct.

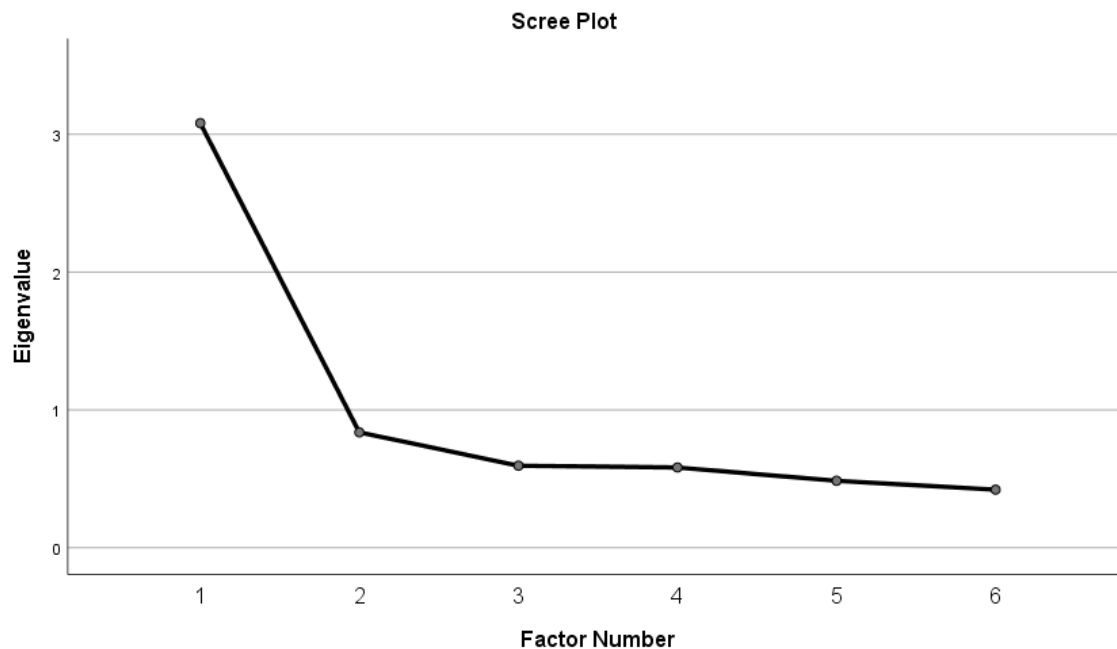


Figure 5.9: Scree plot for eigenvalues on customer pressure

The EFA structure was then validated with the sample ($n = 168$) using CFA. The results indicated a poor model fit with $\chi^2(9) = 119.252$, $p = 0.000$. The model fit indices were $\chi^2/df = 13.250$, SRMR=0.079, RMSEA=0.293, NFI=0.819, GFI=0.791, AGFI=0.513, CFI=0.829 and TLI=0.714. In order to increase the model fit, items Q30 and Q35 were dropped. This led to a better model fit $\chi^2(2) = 2.193$, $p = 0.334$, $\chi^2/df = 1.096$, SRMR=0.020, RMSEA=0.026, NFI= 0.993, GFI=0.992, AGFI=0.962, CFI=0.999, and TLI=0.998. The factor loadings were significant ($p < 0.001$) and ranged from 0.40 to 0.99. The derived measurement model via CFA for customer capability is exhibited in Figure 5.10. The results of the EFA and CFA for the measurement model for customer capability are shown in Table 5.7.

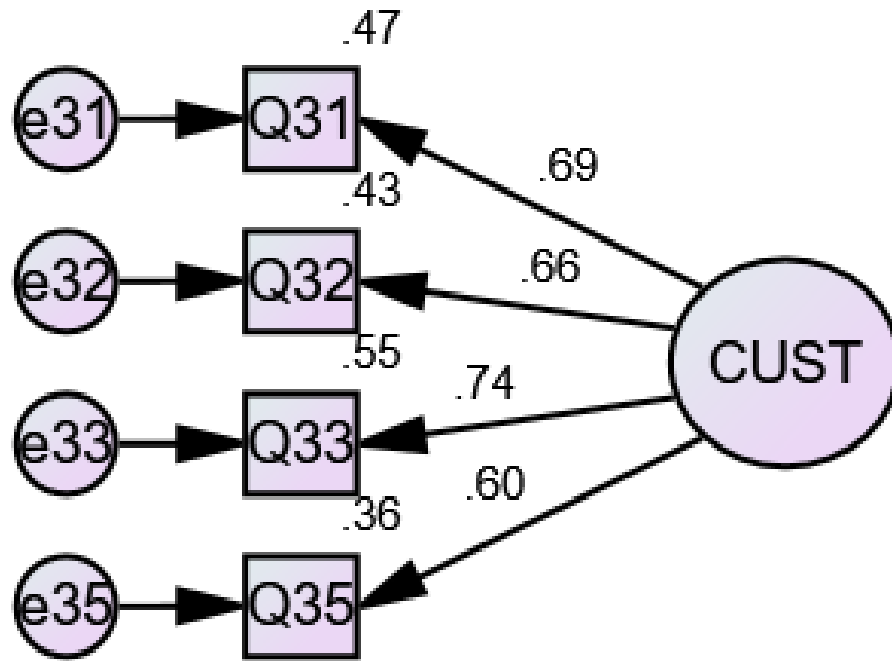


Figure 5.10: Measurement model for customer pressure

Table 5.7: EFA and CFA of customer pressure

Item		EFA		CFA*	
Item no	Item Description	Loading	Variance Explained	SFL	SMC
Q30	In order to respond to the green environmental protection, our firm will consider its effect on sales to foreign customers.	3.081	51.347%	ITEM DROPPED IN CFA	
Q31	In order to respond to the green environmental protection initiative, our firm will consider its effect on domestic customers.	0.837		0.69	0.47
Q32	Consumers have a strong influence on our company's GSCI implementation.	0.595		0.66	0.43
Q33	For our firm, establishing enterprise's	0.582		0.74	0.55

	green image is extremely important in order to expand our customer base.				
Q34	The news media follows our industry closely in order to communicate our green implementation progress.	0.485		ITEM DROPPED IN CFA	
Q35	The increasing environmental consciousness of consumers have spurred our company to implement GSCIs.	0.421		0.60	0.36

*p<0.001

5.4.6 Measurement model for competitor pressures

An EFA was performed with the calibration sample (n = 168) by selecting the principal axis factoring as the extraction method and direct oblimin as rotation method. Small coefficients with an absolute value below 0.4 were suppressed. In all, there were 15 correlations. The findings showed that all correlations were greater than 0.5 and all partial correlations were less than 0.8. The Kaiser-Meyer-Olkin (KMO) sampling adequacy test was 0.813 and the Bartlett's sphericity test was significant at ($\chi^2 = 493.639$, $p < 0.001$), indicating that the data set was suitable for the EFA. All items had communalities greater than 0.3. The communality minimum item was 0.305. Item communalities suggested that these items could explain a reasonable degree of variance for the competitor capability construct.

EFA showed a single-factor solution by producing only one factor with eigenvalue greater than 1. The total variance explained in this single-factor solution was 60.417%. The scree plot also shows a clear break after the first factor as shown in Figure 5.11. Factor matrix showed that all loaded items had values greater than 0.551. The results affirmed the unidimensionality of the measurement items selected for the competitor capability construct.

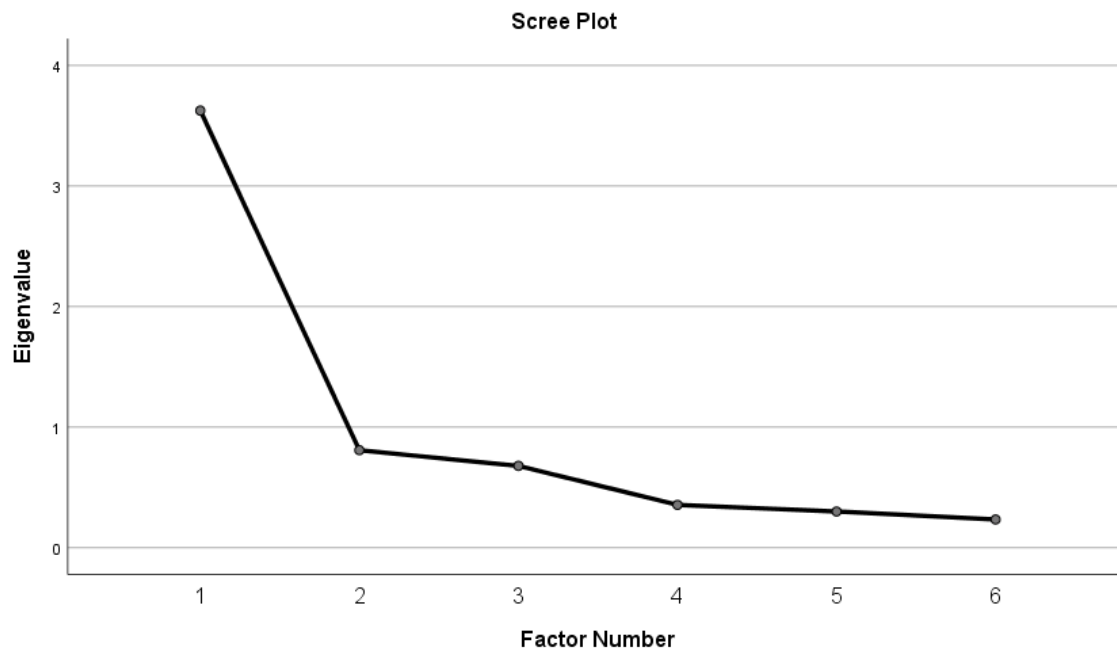


Figure 5.11: Scree plot for eigenvalues on competitor pressure

The EFA structure was then validated with the sample ($n = 168$) using CFA. The results indicated a poor model fit with $\chi^2(9) = 136.662$, $p = 0.000$. The model fit indices were $\chi^2/df = 15.185$, SRMR=0.065, RMSEA=0.299, NFI=0.854, GFI=0.783, AGFI=0.493, CFI=0.861 and TLI=0.768. In order to increase the model fit items Q39 and Q41 were dropped. This led to a better model fit $\chi^2(2) = 2.930$, $p = 0.231$, $\chi^2/df = 1.465$, SRMR=0.013, RMSEA=0.057, NFI=0.994, GFI=0.990, AGFI=0.948, CFI=0.998, and TLI=0.994. The factor loadings were significant ($p < 0.001$) and ranged from 0.82 to 0.96. The derived measurement model via CFA for competitor capability is exhibited in Figure 5.12. The results of the EFA and CFA for the measurement model for competitor capability are shown in Table 5.8.

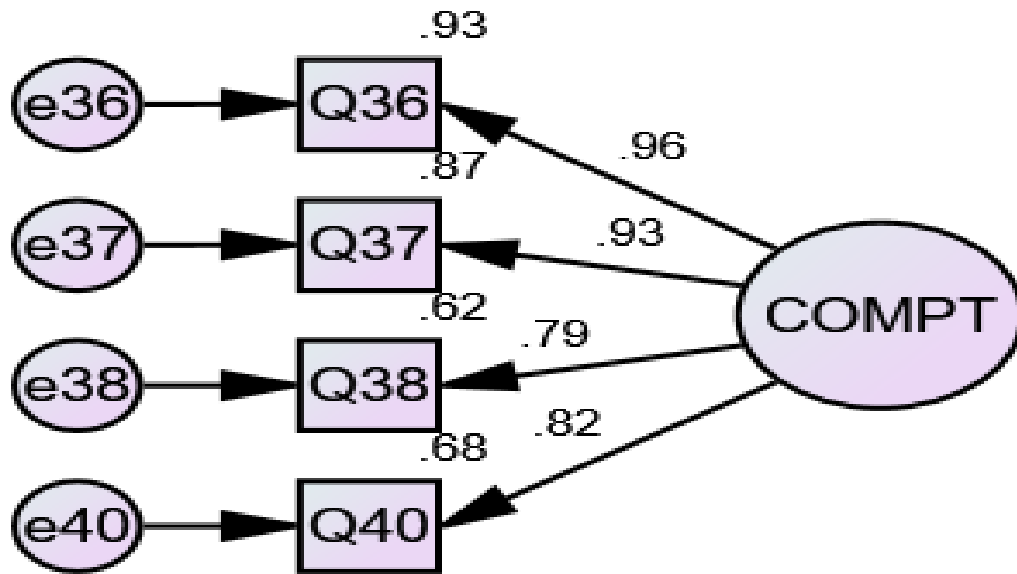


Figure 5.12: Measurement model for competitor pressure

Table 5.8: EFA and CFA of competitor pressure

Item		EFA		CFA*	
Item no	Item Description	Loading	Variance Explained	SFL	SMC
Q36	The green environmental management of our firm will be affected by competitors' green environmental protection strategy.	3.625	60.417%	0.96	0.93
Q37	Our main competitors that have adopted a green strategy are perceived favourably by customers.	0.808		0.93	0.87
Q38	Our main competitors that have adopted a green strategy benefit greatly.	0.678		0.79	0.62
Q39	Our main competitors that have adopted a green strategy are more competitive.	0.355		ITEM DROPPED IN CFA	
Q40	Being environmentally friendly is considered a competitive differentiator in my company.	0.300		0.82	0.68
Q41	Professional environmental protection groups will influence the green management initiative of our company.	0.234		ITEM DROPPED IN CFA	

*p<0.001

5.4.7 Measurement model for environmental performance

An EFA was performed with the calibration sample ($n = 168$) by selecting the principal axis factoring as the extraction method and direct oblimin as rotation method. Small coefficients with an absolute value below 0.4 were suppressed. In all, there were 14 correlations. The findings showed that all correlations were greater than 0.2 and all partial correlations were less than 0.8. The Kaiser-Meyer-Olkin (KMO) sampling adequacy test was 0.751 and the Bartlett's sphericity test was significant at ($\chi^2 = 535.191$, $p < 0.001$), indicating that the data set was suitable for the EFA. All items had communalities greater than 0.3. The communality minimum item was 0.317. Item communalities suggested that these items could explain a reasonable degree of variance for the environmental capability.

EFA showed a single-factor solution by producing only one factor with eigenvalue greater than 1. The total variance explained in this single-factor solution was 57.335%. The scree plot also shows a clear break after the first factor as shown in Figure 5.13. Factor matrix showed that all loaded items had values greater than 0.534. The results affirmed the unidimensionality of the measurement items selected for the environmental

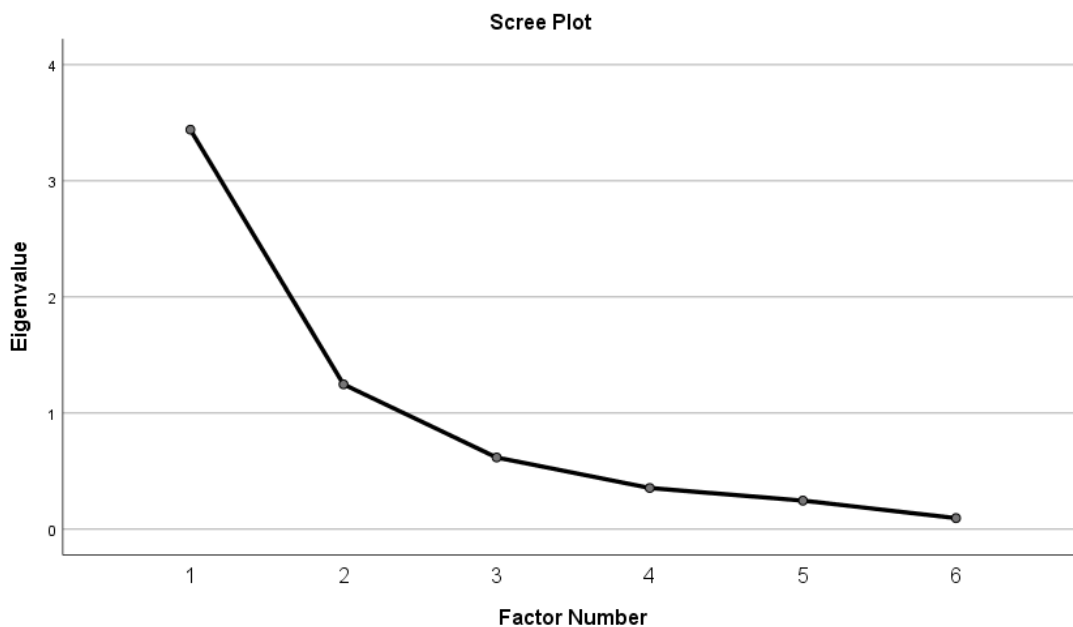


Figure 5.13: Scree plot for eigenvalues on environmental performance

capability construct.

The EFA structure was then validated with the sample ($n = 168$) using CFA. The results indicated a poor model fit with $\chi^2(9) = 166.089$, $p = 0.000$. The model fit indices were $\chi^2/df = 18.454$, SRMR=0.135, RMSEA=0.331, NFI=0.710, GFI=0.694, AGFI=0.285, CFI=0.718 and TLI=0.530. In order to increase the model fit items Q45 and Q48 were dropped. This led to a better model fit $\chi^2(2) = 3.336$, $p = 0.189$, $\chi^2/df = 1.668$, SRMR=0.026, RMSEA=0.068, NFI=0.977, GFI=0.988, AGFI=0.941, CFI=0.991, and TLI=0.972. The factor loadings were significant ($p < 0.001$) and ranged from 0.46 to 0.84. The derived measurement model via CFA for environmental capability is exhibited in Figure 5.14. The results of the EFA and CFA for the measurement model for environmental capability are shown in Table 5.9.

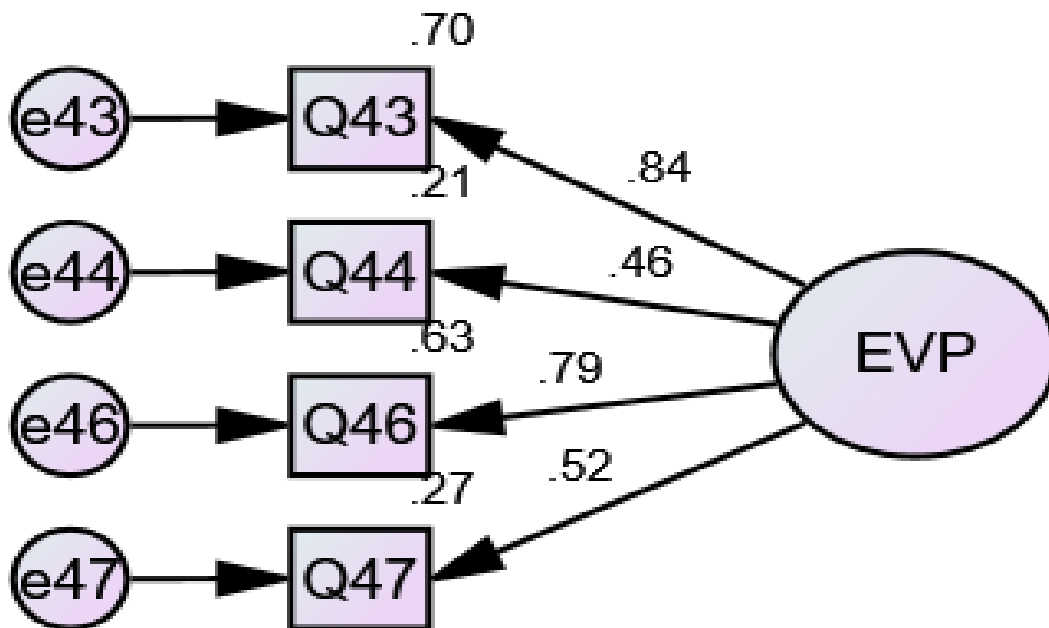


Figure 5.14: Measurement model for environmental performance

Table 5.9: EFA and CFA of environmental performance items

Item		EFA		CFA*	
Item no	Item Description	Loading	Variance Explained	SFL	SMC
Q43	Reduction of air emission	3.440	57.335%	0.84	0.70
Q44	Reduction of waste water	1.247		0.46	0.21
Q45	Reduction of solid waste	0.617		ITEM DROPPED IN CFA	
Q46	Decrease of consumption of hazardous/harmful/toxic materials	0.354		0.79	0.63
Q47	Decrease of environmental accidents	0.246		0.52	0.27
Q48	Improved overall green/environmental performance	0.095		ITEM DROPPED IN CFA	

*p<0.001

5.4.8 Measurement model for economic performance

An EFA was performed with the calibration sample (n = 168) by selecting the principal axis factoring as the extraction method and direct oblimin as rotation method. Small coefficients with an absolute value below 0.4 were suppressed. In all, there were 21 correlations. The findings showed that all correlations were greater than 0.3 and all partial correlations were less than 0.8. The Kaiser-Meyer-Olkin (KMO) sampling adequacy test was 0.826 and the Bartlett's sphericity test was significant at ($\chi^2 = 574.117$, $p < 0.001$), indicating that the data set was suitable for the EFA. All items had communalities greater than 0.3. The communality minimum item was 0.387. Item communalities suggested that these items could explain a reasonable degree of variance for the economic capability construct.

EFA showed a single-factor solution by producing only one factor with eigenvalue greater than 1. The total variance explained in this single-factor solution was 55.597%. The scree plot also shows a clear break after the first factor as shown in Figure 5.15. Factor matrix showed that all loaded items had values greater than 0.424. The results affirmed the unidimensionality of the measurement items selected for the economic capability construct.

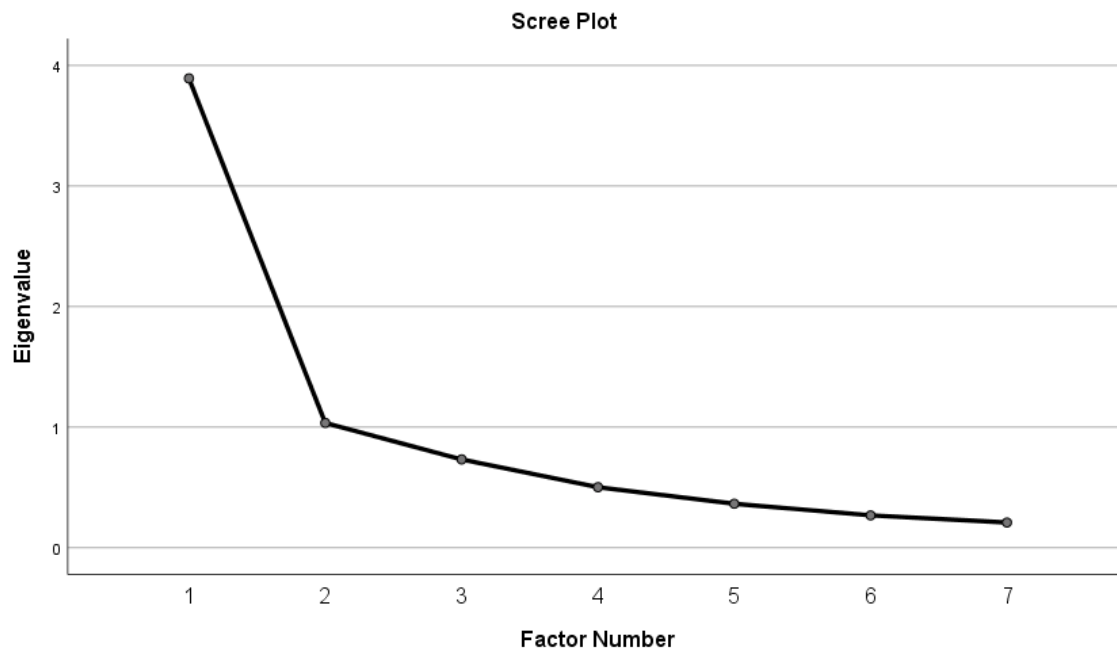


Figure 5.15: Scree plot for eigenvalues on economic performance

The EFA structure was then validated with the sample ($n = 168$) using CFA. The results indicated a poor model fit with $\chi^2(14) = 224.829$, $p = 0.000$. The model fit indices were $\chi^2/df = 16.059$, $SRMR=0.082$, $RMSEA=0.325$, $NFI=0.727$, $GFI=0.707$, $AGFI=0.415$, $CFI=0.737$ and $TLI=0.606$. In order to increase the model fit items Q49, Q53, and Q54 were dropped. This led to a better model fit $\chi^2(2) = 0.768$, $p=0.681$, $\chi^2/df = 0.384$, $SRMR=0.014$, $RMSEA=0.000$, $NFI=0.997$, $GFI=0.997$, $AGFI=0.987$, $CFI=1.000$, and $TLI=1.016$. The factor loadings were significant ($p<0.001$) and ranged from 0.59 to 0.94.

The derived measurement model via CFA for economic capability is exhibited in Figure 5.16. The results of the EFA and CFA for the measurement model for economic capability are shown in Table 5.10.

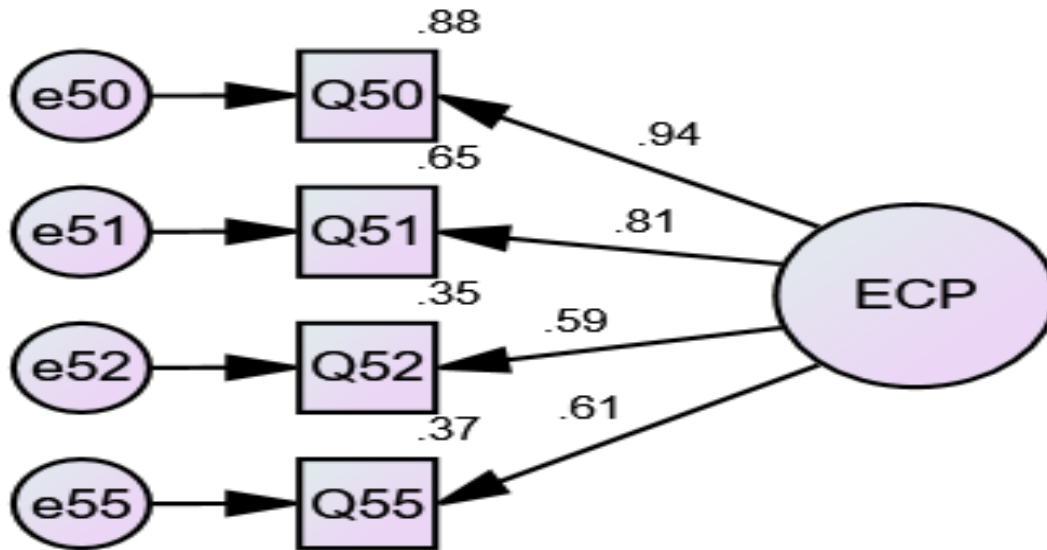


Figure 5.16: Measurement model for economic performance

Table 5.10: EFA and CFA of economic performance

Item		EFA		CFA*	
Item no	Item Description	Loading	Variance Explained	SFL	SMC
Q49	Decreased cost for materials purchased	3.892	55.597%	ITEM DROPPED IN CFA	
Q50	Decreased cost for energy consumption	1.034		0.94	0.88
Q51	Decreased fee for waste treatment and discharge	0.732		0.81	0.65
Q52	Decreased fine for environmental accidents	0.501		0.59	0.35
Q53	Average profit and profit growth rate over the last three years	0.364		ITEM DROPPED IN CFA	
Q54	Average return on sales over the last three years	0.268		ITEM DROPPED IN CFA	
Q55	Average market share growth over the last three years	0.209		0.61	0.37

*p<0.001

5.4.9 Measurement model for social performance

An EFA was performed with the calibration sample (n = 168) by selecting the principal axis factoring as the extraction method and direct oblimin as rotation method. Small

coefficients with an absolute value below 0.4 were suppressed. In all, there were 15 correlations. The findings showed that all correlations were greater than 0.3 and all partial correlations were less than 0.8. The Kaiser-Meyer-Olkin (KMO) sampling adequacy test was 0.817 and the Bartlett's sphericity test was significant at ($\chi^2 = 393.049$, $p < 0.001$), indicating that the data set was suitable for the EFA. All items had communalities greater than 0.3. The communality minimum item was 0.385. Item communalities suggested that these items could explain a reasonable degree of variance in the construct of social performance capability.

EFA showed a single-factor solution by producing only one factor with eigenvalue greater than 1. The total variance explained in this single-factor solution was 56.026%. The scree plot also shows a clear break after the first factor as shown in Figure 5.17. Factor matrix showed that all loaded items had values greater than 0.534. The results affirmed the unidimensionality of the measurement items selected for the social performance capability construct.

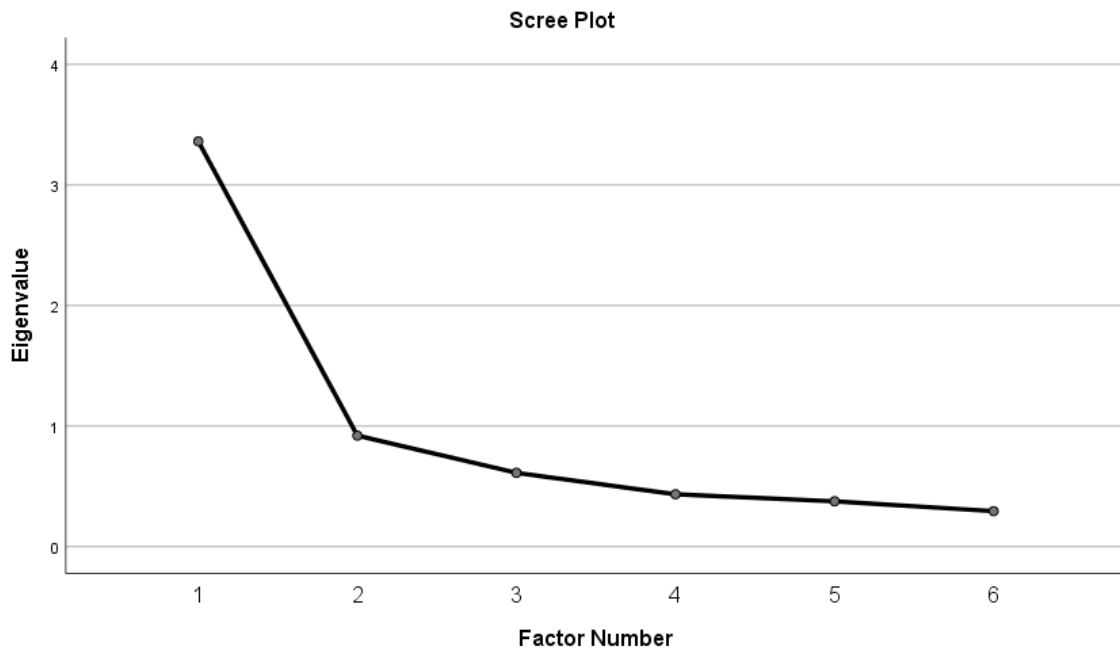


Figure 5.17: Scree plot for eigenvalues on social performance

The EFA structure was then validated with the sample ($n = 168$) using CFA. The results indicated a poor model fit with $\chi^2(9) = 140.617$, $p = 0.000$. The model fit indices were $\chi^2/df = 15.624$, SRMR=0.069, RMSEA=0.303, NFI=0.797, GFI=0.788, AGFI=0.506 CFI=0.806 and TLI=0.677. In order to increase the model fit items Q58, Q59, and Q60 were dropped. This led to a better model fit $\chi^2(1) = 0.541$, $p=0.462$, $\chi^2/df = 0.541$, SRMR=0.027, RMSEA=0.000, NFI=0.997, GFI=0.997, AGFI=0.985, CFI=1.000, and TLI=1.008 The factor loadings were significant ($p<0.001$) and ranged from 0.61 to 0.88.

The derived measurement model via CFA for social capability is exhibited in Figure 5.18. The results of the EFA and CFA for the measurement model for social capability are shown in Table 5.11.

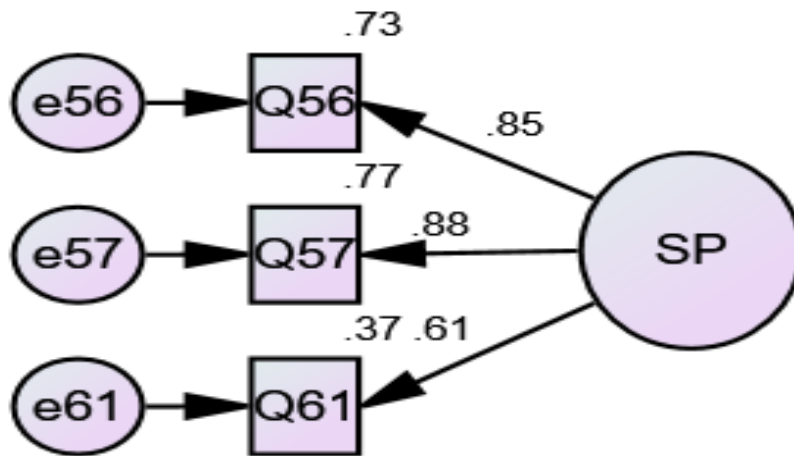


Figure 5.18: Measurement model for social performance

Table 5.11: EFA and CFA of social performance

Item		EFA		CFA*	
Item no	Item Description	Loading	Variance Explained	SFL	SMC
Q56	Enhanced health and safety of employees.	3.362	56.026%	0.85	0.73
Q57	Enhanced employee job satisfaction.	0.921		0.88	0.77
Q58	Improved community health and safety.	0.612		ITEM DROPPED IN CFA	

Q59	Improved social commitment.	0.434		ITEM DROPPED IN CFA	
Q60	Lowered the adverse impact of products and processes on the local community.	0.376		ITEM DROPPED IN CFA	
Q61	Enhanced incentives and engagement for local employment.	0.295		0.61	0.37

* $p < 0.001$

5.4.10 The full measurement model

After developing the measurement models on a case-by-case basis for each construct, the measurement model was combined by merging all the constructs into a single CFA model evaluated with a complete sample ($n=168$) (Tanaka 1987). The findings showed a poor model fit with $\chi^2 (1559)=3685.59$, $p=0.00$. The model fit indices were $\chi^2/df=2.36$, SRMR=0.10, RMSEA=0.09, NFI=0.54, GFI=0.53, AGFI=0.49, CFI=0.67 and TLI=0.65. Items were deleted on the basis of both the lowest figures, which were less than 0.2, and the lowest standardised factor loading. This resulted in the following full measurement model with improved model fit indices. The findings showed that the model fits well with $\chi^2 (194)=271.71$, $p=0.00$. Bollestone- $p=0.23$. The model fit indices were $\chi^2/df=1.40$, SRMR=0.05, RMSEA=0.05, NFI=0.87, GFI=0.88, AGFI=0.83, CFI=0.96 and TLI=0.95.

Considering that the number of observed variables was <30 and $n < 250$, significant p -value and noncompliance of the GFI, AGFI and NFI indices were expected and tolerable (Hair et al. 2014; Hu & Bentler 1998; Hu & Bentler 1999). As argued earlier in the section, GFI, AGFI and NFI were ignored due to their poor performance in small samples and were rejected in favor of more relevant contemporary fit indices (Fan, Thompson & Wang 1999; Hair et al. 2014; Iacobucci 2010; Maiti & Mukherjee 1991). Nevertheless, the chi-square value is observed to be a poor model fit due to the p -value being below 0.05 (Hair et al. 2014). However, when the model has fewer than 30 items and the sample is less than 250, the p -value below 0.05 was satisfactory. It was resolved that the χ^2 assessment was not the most suitable model fit test for this sample as it was small and multivariate non-normal (Hu, Bentler & Kano 1992; Nevitt & Hancock 2001; Schumacker & Lomax 2004).

Thus, Bollen-Stine bootstrap was carried out and Bollen-Stine p value (i.e. greater than $p > 0.05$) was taken into account (Bollen & Stine 1992). Previous researchers do not appear to have recorded p-value, but are found to employ bootstrapping measures in assessing smaller samples to fit the model (Qrunfleh & Tarafdar 2014; Rai, Patnayakuni & Seth 2006; Ralston et al. 2015). Thus, the model fit is asserted to be suitable and acceptable. This is why researchers have argued for the application of diverse fit indices to assess the model fit (Byrne 2013; Hair et al. 2014; Hu & Bentler 1998; Iacobucci 2010). The fit indices taken into account for this research recommended a good model fit.

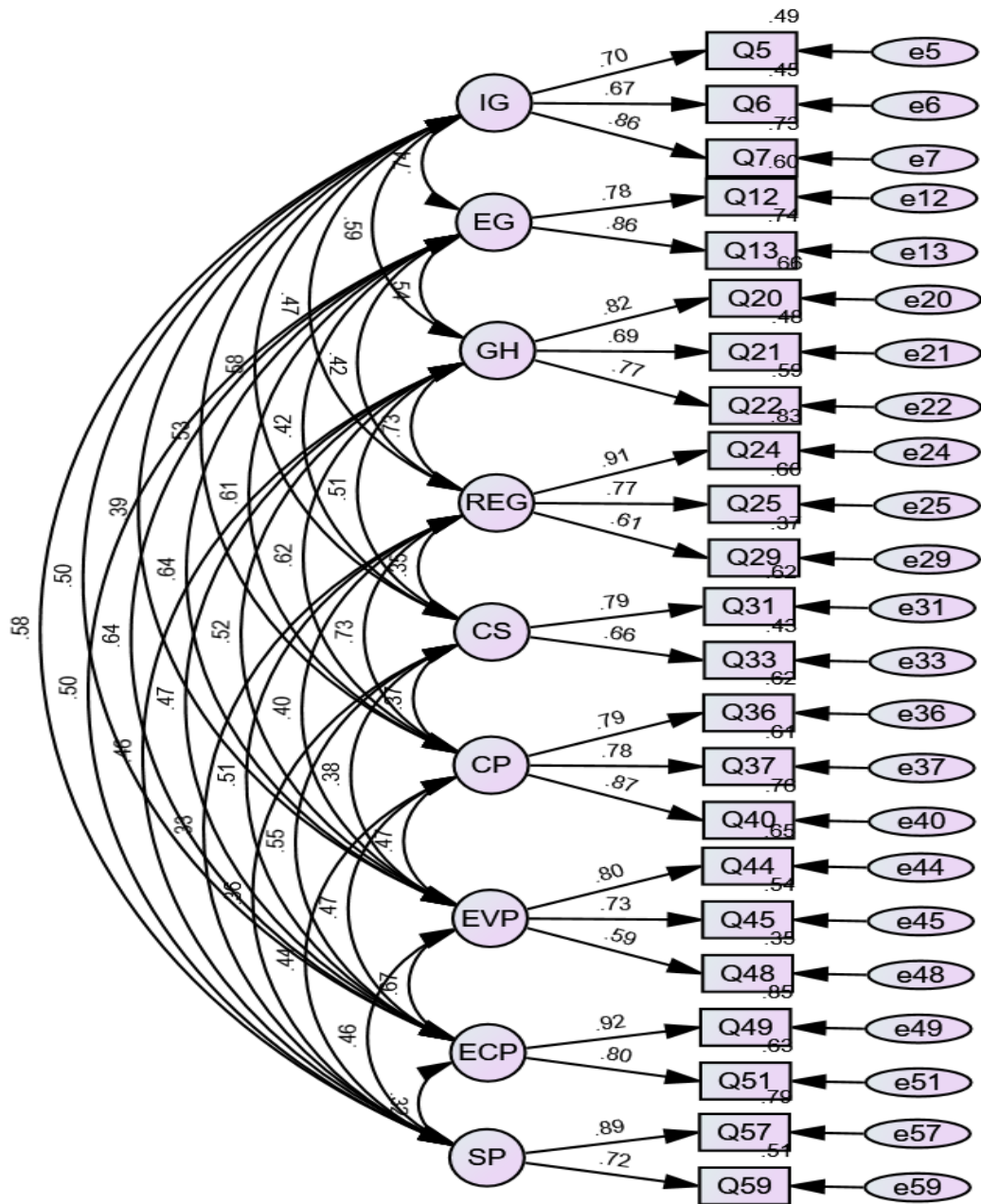


Figure 5.19: Full measurement model

Table 5.12: CFA Results of the full measurement model

Item	Description	SFL	t-value	SMC
	IGSCMPs			
Q5	Our company designs/uses products with reduced materials and energy consumption.	0.70	7.598*	0.49
Q6	Our company uses state of the art equipment/machinery with minimal carbon dioxide/pollutant emission.	0.67	7.814*	0.45
Q7	Our company reduces/discourages the use of hazardous products and their manufacturing process.	0.86	9.603*	0.73
	EGSCMPs.			
Q12	Our company cooperates with customers for cleaner operations.	0.78	10.271*	0.60
Q13	Our company cooperates with customers for green packaging.	0.86	9.913*	0.74
	GHRMPs.			
Q20	Our company encourages employee suggestions for environmental performance improvement by setting up employee environmental suggestion schemes.	0.82	9.642*	0.66
Q21	Our company recognises employees for taking initiative for environmental management through environmental awards to individuals or teams.	0.69	8.254*	0.48
Q22	Our company uses the achievement of environmental goals as one of the criteria in employee performance appraisal.	0.77	9.442*	0.59
	Regulatory Pressure			
Q24	The environmental regulations were imposed by the federal government on my company.	0.91	a	0.83
Q25	State/Regional environmental regulations were imposed on my company.	0.77	11.837*	0.60
Q29	The green environmental management of our firm will be affected by cost of pollution prevention practices.	0.61	7.752*	0.37
	Customer Pressure			
Q31	In order to respond to the green environmental protection initiative, our firm will consider its effect on domestic customers.	0.79	7.628*	0.62
Q33	For our firm, establishing enterprise's green image is extremely important in order to expand our customer base.	0.66	6.989*	0.43
	Competitor Pressure			
Q36	The green environmental management of our firm will be affected by competitors' green environmental protection strategy.	0.79	a	0.62
Q37	Our main competitors that have adopted a green strategy are	0.78	10.771*	0.61

Item	Description	SFL	t-value	SMC
	perceived favourably by customers.			
Q40	Being environmentally friendly is considered a competitive differentiator in my company.	0.87	10.655*	0.76
	Environmental Performance			
Q44	Reduction of waste water.	0.80	6.154*	0.65
Q45	Reduction of solid waste.	0.73	5.799*	0.54
Q48	Improved of overall green/environmental performance.	0.59	6.578*	0.35
	Economic Performance			
Q49	Decreased cost for materials purchase.	0.92	a	0.85
Q51	Decreased fee for waste treatment and discharge.	0.80	11.175*	0.63
	Social Performance			
Q57	Enhanced employee job satisfaction.	0.89	8.676*	0.79
Q59	Improved social commitment.	0.72	7.633*	0.51

*p<0.001,

'a' represent the coefficient fixed at 1

5.5 Assessment of the measurement model

The CFA was tested for construct reliability and validity (Hair et al. 2014). The variables were then tested by the use of reliability and validity checks. It is vital to verify the reliability and validity of the measurement model before assessing the structural model as it impacts the outcomes of the structural analysis (Blunch 2012; Hair et al. 2014). After that, statistical steps were employed to test common method bias.

5.5.1 Reliability assessment

Latent variables and the manifest variables in the final model were tested for reliability by examining their Cronbach's alpha and composite reliability values. Cronbach's alpha was determined using SPSS 23 (Cronbach 1951). The results revealed values greater than 0.7, corroborating a very good level of reliability for all constructs except one. Customer pressure construct also revealed a good degree of reliability at 0.68 (Bernstein & Nunnally 1994; DeVellis 2016; Hair et al. 2014; Kline 2013; Nunnally 1978). The composite reliability values (construct reliability CR) were computed by taking squared

sum of factor loading divided by sum of error variance terms. All but one of the CR values were greater than 0.7, which illustrated very good levels of construct reliability, with the exception of the customer pressure latent variable which illustrated a good degree of reliability at 0.69 (Hair et al. 2014). The results demonstrated the consistency of the variables, representing the latent variables and their reliability in evaluating the latent variables. Also, the correlation between latent variables less than 0.8 shows that there are no multicollinearity problems between latent variables (Hair et al. 2014). The

Table 5.13: Reliability test

No. of items	IG	EG	GH	REG	CUS	COMP	EV	EC	SP	Mean	SD	Cr. Alpha	CR	AVE
3	1									3.51	1.05	0.78	0.79	0.57
2	0.74	1								3.48	0.95	0.80	0.80	0.67
3	0.41	0.54	1							3.56	1.07	0.80	0.80	0.58
3	0.47	0.42	0.73	1						3.62	1.14	0.81	0.81	0.60
2	0.57	0.42	0.51	0.35	1					3.83	1.17	0.68	0.69	0.53
3	0.53	0.61	0.62	0.72	0.37	1				3.35	0.92	0.86	0.86	0.66
3	0.38	0.64	0.52	0.40	0.37	0.47	1			4.02	0.91	0.74	0.76	0.51
2	0.50	0.64	0.47	0.51	0.55	0.47	0.66	1		3.50	0.92	0.85	0.85	0.74
2	0.57	0.50	0.46	0.33	0.36	0.44	0.46	0.32	1	3.92	0.94	0.77	0.79	0.65

results of the reliability assessment are shown in Table 5.13.

CR Formula

$$CR = \frac{(\sum_{i=1}^n L_i)^2}{(\sum_{i=1}^n L_i)^2 + (\sum_{i=1}^n e_i)}$$

Li = Squared sum of factor loading.
ei = Sum of error variance terms.

AVE Formula

$$AVE = \frac{\sum \lambda^2}{\sum \lambda^2 + \sum var(ei)}$$

λ^2 = Sum of squared multiple correlation
ei = Sum of error variance terms

The magnitude of the factor loading is a crucial aspect. The estimated factor loadings should at least be above 0.5 and ideally above 0.7 (Hair et al. 2014). The measurement variables that show factor loadings above 0.7 maintain a higher shared variance with the latent variable than the error variance (Hair et al. 2014; Jöreskog & Sörbom 1982). The reliability values were statistically significant as the majority were greater than the acceptable scale of 0.7 and the remaining were closer to the acceptable parameter. This further verified the reliability of the variables (Anderson & Gerbing 1988; Hair et al. 2014).

5.5.2 Validity assessment

The average variance extracted (AVE) for every latent variable was examined to verify convergent validity. AVE signifies the level of item variance explained by the latent variable (Hair et al. 2014). It is a summary indicator for convergence, which is computed by dividing the aggregate of squared factor loadings (squared multiple correlations) by the number of items (Fornell & Larcker 1981; Hair et al. 2014).

The AVE of every latent variable was 0.57 for IGSCM, 0.67 for EGSCM, 0.58 for GHRM, 0.60 for regulatory pressure, 0.53 for customer pressure, 0.66 for competitor pressure, 0.51 for environmental performance, 0.74 for economic performance and 0.65 for social performance. Values over 0.5 recommended that all of the item variances were explained by the latent factor structures (Bagozzi & Yi 1988; Fornell & Larcker 1981; Hair et al. 2014). The AVE value for the environmental performance construct was the lowest but was still greater than 0.5, conforming to the lowest adequate convergence point (Fornell & Larcker 1981; Hair et al. 2014). Thus, the convergent validity of all latent variables was satisfactory.

To further verify the outcomes, the discriminant validity of latent variables was examined by comparing the AVE value of the latent variables with the squared correlations of the remaining latent variables. The AVE should be more than the estimations of the squared correlation (Fornell & Larcker 1981; Hair et al. 2014). If the AVE for a latent variable is more than the squared correlations of the rest of the latent variables, it means that the latent construct can describe more of the variations in its variables than the variation it

has in common with other constructs (Fornell & Larcker 1981; Hair et al. 2014). The AVE values and the squared correlations are shown in Table 5.14. AVE values are highlighted in bold along the diagonal, and the squared correlations, as shown in Figure 5.19, are displayed below the diagonal.

Table 5.14: Testing discriminant validity

CONSTRUCT	IGSCM	EGSCM	GHRM	REG	CUST	COMPT	EVP	ECP	SP
IGSCM	0.57								
EGSCM	0.54	0.67							
GHRM	0.17	0.29	0.58						
REG	0.22	0.18	0.53	0.60					
CUST	0.33	0.18	0.26	0.12	0.53				
COMPT	0.28	0.37	0.38	0.52	0.14	0.66			
EVP	0.15	0.41	0.27	0.16	0.14	0.22	0.51		
ECP	0.25	0.41	0.22	0.26	0.30	0.22	0.44	0.74	
SP	0.33	0.25	0.21	0.11	0.13	0.19	0.21	0.10	0.65

Note: the diagonal values are the AVE; values below diagonal are squared correlations

Table 5.14 shows that all the constructs had AVE values more than the squared correlations. Discriminant validity of the constructs was, hence, verified. It shows no evidence of discriminant validity (Hair et al. 2014).

5.5.3 Common method bias

In this segment, the discussion regards the absence of common method bias in our study. Common method bias was statistically examined with Harman's single-factor test. The Harman (1967) single-factor test was conducted using both EFA and CFA (Flynn, Barbara, Huo & Zhao 2010; Podsakoff et al. 2003). At first, the EFA model generated more than 11 factors in total with eigenvalues more than 1. These resultant 11 factors contributed to the 69.816% of the aggregate variance, with the first factor contributing to 34.108% of the aggregate variance, which does not form the larger number of the variance.

When the number factors were set to one, EFA obtained one factor describing 33.008% of aggregate variance. Thereafter, the CFA relying on Harmon's single factor test was performed. The model in which all the items were established as measures of one factor illustrated a poor model fit with $\chi^2(230)=878.54$, $p=0.00$ and Bollen-Stine $p=0.01$, $\chi^2/df=3.82$, SRMR=0.10, RMSEA=0.13, NFI=0.58, GFI=0.65, AGFI=0.58, CFI= 0.64 and TLI= 0.61. It was significantly worse than the measures of the measurement model. The poor model fit exhibited the nonexistence of common method bias.

5.6 Structural path model and hypotheses testing

The path model analysis was undertaken and comparison was made with the GFI indices of the full measurement model. The parameters of the path model were found to be the same as those of the full measurement model, verifying the accurate development from measurement model to structural model (Hair et al. 2014). The analysis offered $\chi^2(219) = 452.62$, $p=0.00$ and Bollen-Stine $p=0.09$, $\chi^2/df=2.01$, RMSEA=0.08, and TLI=0.90 (0.852), CFI=0.90 (0.872), IFI= 0.9 (0.874), GFI=0.82, AGFI= 0.80, NFI=0.80. The model fit indices were not considerably worse than the measurement model (Anderson & Gerbing 1992). They are noticeably close or below the threshold values even after rounding off to double digits. However, the refinement of the model was stopped at this stage considering the fact that the indices GFI, AGFI and NFI did not meet the threshold values because they were reportedly dependent on sample size (Hair et al. 2014; Hu & Bentler 1998; Hu & Bentler 1999). Moreover, further drop of items will lead to minimisation of items per construct which may risk the examination of theory (Hair et al. 2014; Kenny & McCoach 2003; Marsh et al. 1998). Also, the model refinement was stopped at this stage to retain critical constructs such as economic and social performance (Shee et al. 2018) resulting in a moderately fit model. Further, the indices for CFI, IFI and TLI equal 0.9 which is reasonably acceptable following the analysis in previous articles by Yu et al. (2019) and Hsu et al. (2013) who suggest acceptable value greater or equal to 0.9. The values can still be regarded as good fit values even with slightly less than 0.9 (Kim et al. 2016).

As contended previously, GFI, AGFI and NFI were not taken into account because of the small sample size in support of research relevant fit indices (Fan, Thompson & Wang 1999; Hair et al. 2014; Iacobucci 2010; Maiti & Mukherjee 1991). Multivariate non-normality of the data was another argument to consider the χ^2 -test unacceptable (Hu, Bentler & Kano 1992; Schumacker & Lomax 2004). Therefore, Bollen-Stine p value was evaluated. The values of fit indices of the path model were very weak but could be compared to the outcomes of the complete measurement model. The structural path model for this research is displayed in Figure 5.20.

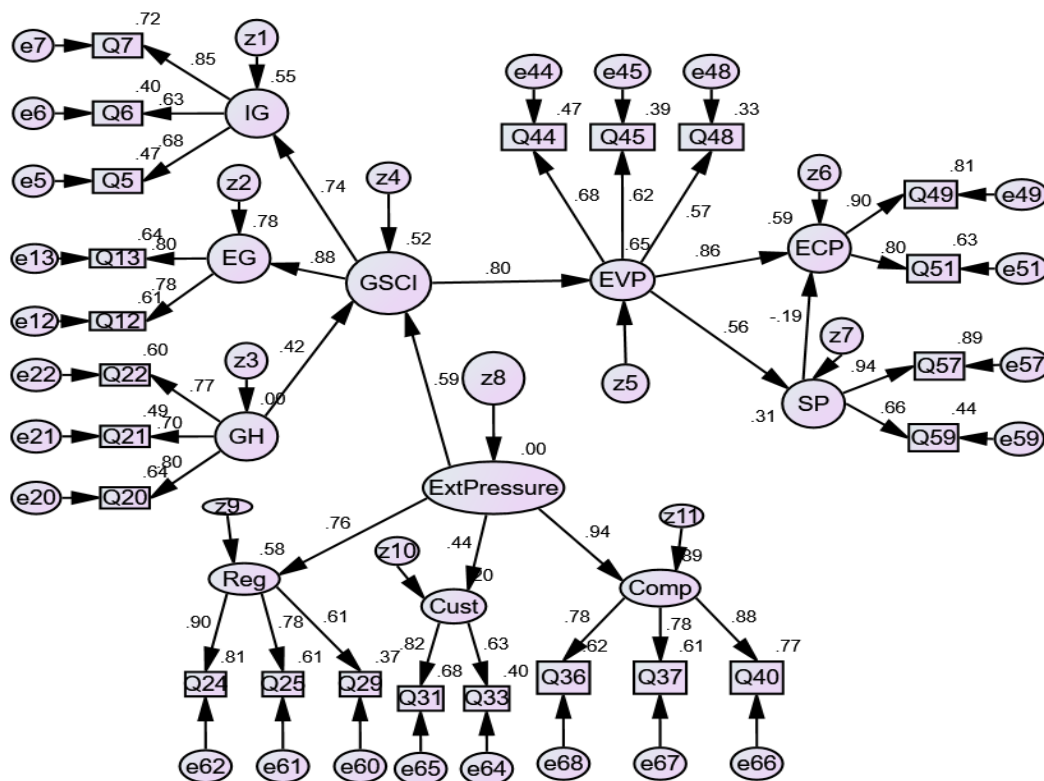


Figure 5.20: Structural path model

The R^2 values of the endogenous latent variables also demonstrate the explanatory power of the model (Hair et al. 2014). The R^2 values described 52% of the variation in GSCI, 65% variation in environmental performance, 59% variation in economic performance, and 31%

variation in social performance. The path analysis showed all significant paths excluding one as non-significant. The estimated β coefficients of the path estimations along with the p values and the respective hypotheses are outlined in Table 5.15.

Table 5.15: Results of the path analysis

Hypotheses	Path	Std. β	p-value	Results
H1	External pressure \rightarrow GSCI	0.585	$p < 0.001$	Supported
H2	GHRMP \rightarrow GSCI	0.420	$p < 0.001$	Supported
H3	GSCI \rightarrow EVP	0.803	$p < 0.001$	Supported
H4	EVP \rightarrow ECP	0.857	$p < 0.001$	Supported
H5	EVP \rightarrow SP	0.557	$p < 0.001$	Supported
H6	SP \rightarrow ECP	-0.192	$p > 0.05$	Unsupported
H7	External pressure \rightarrow GSCI \rightarrow EVP (total effect)	0.467	$p < 0.001$	Supported

*** $p < 0.001$, * $p > 0.05$

5.6.1 Hypotheses testing

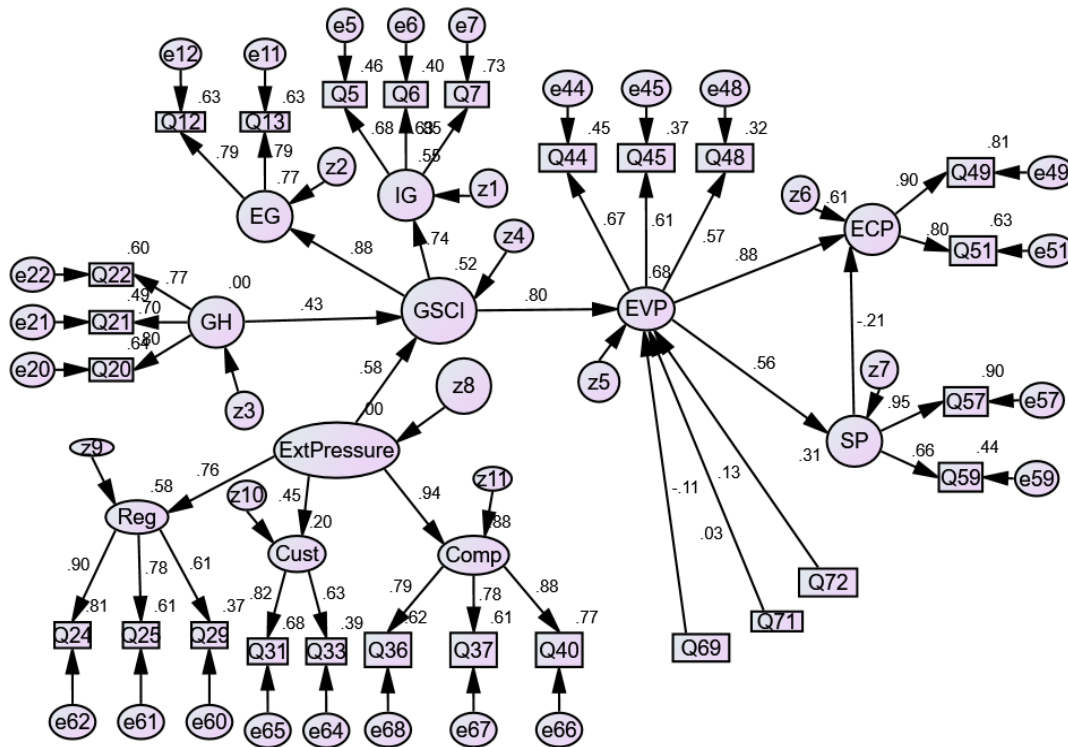
1. Hypothesis 1 (H1) states that institutional pressure has a positive effect on GSCIs. Results indicate that external pressure has a positive and significant effect on GSCIs ($\beta = 0.607$, $t = 3.697$, $p < 0.001$).
2. Hypothesis 2 (H2) states that GHRMPs have a positive effect on GSCIs. Results indicate that GHRMPs have a positive and significant effect on GSCIs ($\beta = 0.427$, $t = 3.385$, $p < 0.001$).
3. Hypothesis 3 (H3) states that GSCIs have a positive effect on environmental performance. Results indicate that GSCIs have a positive and significant effect on environmental performance ($\beta = 0.835$, $t = 3.545$, $p < 0.001$).

4. Hypothesis 4 (H4) states that environmental performance has a positive effect on economic performance. Results indicate that environmental performance has a positive and significant effect on economic performance ($\beta = 0.855$, $t = 6.142$, $p < 0.001$).
5. Hypothesis 5 (H5) states that environmental performance has a positive effect on social performance. Results indicate that environmental performance has a positive and significant effect on social performance ($\beta = 0.554$, $t = 5.557$, $p < 0.001$).
6. Hypothesis 6 (H6) states that social performance has a positive effect on economic performance. Results indicate that social performance has a negative effect on economic performance and were unsupported ($\beta = -0.194$, $t = -1.968$, $p > 0.05$). This implies that utilization of company's funds for social activities may cripple the economic performance of SMEs, whose main concern is financial inadequacy.
7. Hypothesis 7 (H7) states that external pressure can indirectly affect environmental performance through GSCIs. Results indicate that the effect of External Pressure on GSCI (0.58), and GSCI on EVP (0.803) resulting in a total positive and significant effect of External Pressure on EVP as $0.466 (p < 0.001)$. This is calculated by multiplying 0.58 with 0.803 $= 0.467$.

5.6.2 Testing the effect of control variables

The path model was examined to investigate whether the control variables such as experience, education and age of those respondents representing the SMEs could have a confounding impact on the green performance. The experience variable was controlled because the more experience the individuals had, the more initiative they took in the environmental implementation process. Education was controlled because the more educated the individuals became, the greater their influence in determining better and more creative green activity procedures. Age was also controlled because older individuals have accumulated adequate work ethics that enable them to have a better approach in implementing green actions. The structural model involving control variables

was examined, but none of the control variables had any significance on environmental performance as exhibited in Figure 5.21.



Note: Q69= Experience, Q71=Education, Q72= Age

Figure 5.21: Path model with control variables

The results showed that experience had no significant effect on environmental performance ($p=0.103$). Also, education had no significant effect on environmental performance ($p=0.637$). In addition, age had no significant effect on environmental performance ($p=0.066$). Therefore, the three control variables were not found to be significant.

5.6.3 The post-hoc analysis for competing model

The control variables were not included for the post-hoc analysis as their results were insignificant. A post-hoc analysis was undertaken to confirm if any model re-specification was desirable. External (institutional) pressures are viewed to help minimise

the effects on the environment (Majid et al. 2019). Thus, a direct link between external pressures and green performance was drawn and analysed. The alternative model with a direct path between external pressures and green performance was found insignificant ($B=0.145$, $t=1.329$, $p=0.184$). That is, external pressure was negatively associated with environmental performance. Any model re-specification must have strong theoretical support (Hair et al. 2014).

Literature suggests that external pressure facilitates the implementation of GSCI (Huang, Huang & Yang 2017; Vanalle et al. 2017; Zhu, Sarkis & Lai 2013). This is supported by institutional theory (DiMaggio & Powell 1983). The institutional theory does not support a direct path from external pressure to environmental performance. Also, with external pressure being insignificant at $p>0.05$, this implies that external pressure is negatively associated with environmental performance. It requires GSCI in order to have a positive

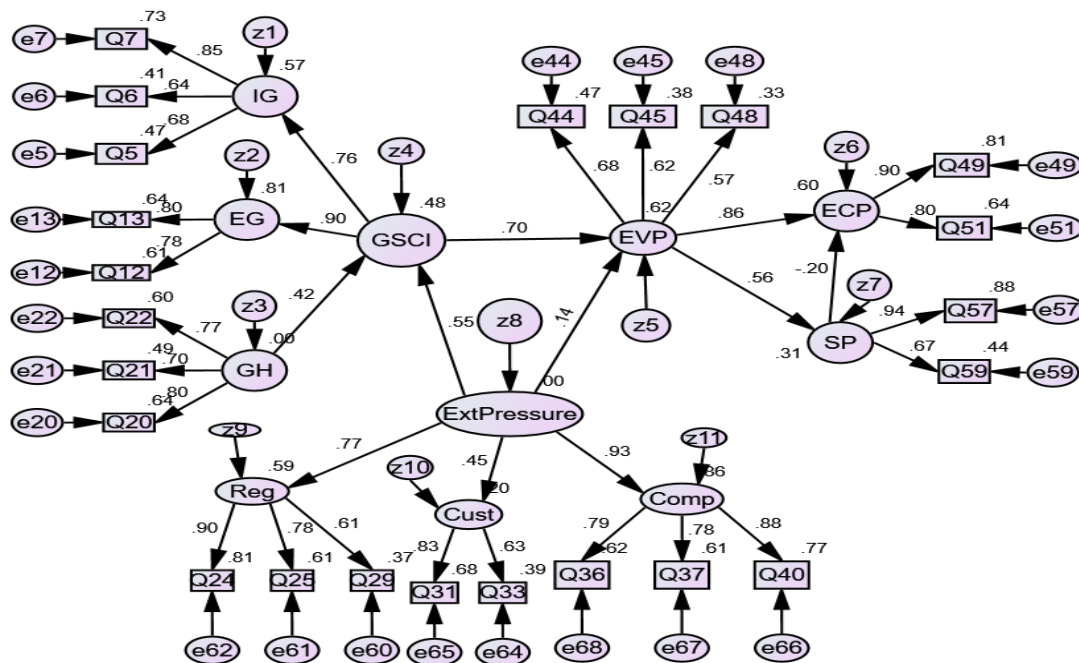


Figure 5.22: The competing model

effects on environmental performance. Given that there is no theoretical justification or significant effect from adding a direct path from external pressure to environmental performance, the competing model was overruled.

5.6.4 Mediation analysis

As established, green initiatives acting as a mediator on the relationship between external pressures and green performance were found to be significant. This implies that external pressures imposed on organisations facilitate the adoption of GSCIs which in turn improve the environmental performance of organisations (Huang, Huang & Yang 2017; Vanalle et al. 2017; Yang 2018).

5.7 Summary

This chapter illustrated the quantitative findings of the survey data. To begin with, the procedures that were applied to clean survey results were discussed. These were undertaken to modify the original sample to a sample suitable for SEM analysis. Then, the descriptive statistics were analysed to explain the range of respondents' demographics. The two-stage approach to SEM was applied. Initially, the measurement model was established before testing the structural model. Both exploratory and confirmatory factor analyses were conducted to determine the measurement items for each construct. Then the structural model was tested to confirm the hypotheses of the study.

The results confirmed the proposed theoretical model with all hypotheses (H1, H2, H3, H4, H5 and H7) being confirmed, but for H6, which was found to be insignificant. All except H6 were confirmed at $p < 0.001$. H6 was confirmed at $p > 0.05$. The findings demonstrate that GSCIs have a positive impact on green performance; also, that green performance has positive effect on economic and social performance. It is also deduced that institutional pressures indirectly influence the positive impact of environmental performance through GSCI implementation. Institutional pressures and GHRMPs both positively impact GSCI implementation. However, of all the hypothesised relationships, the link between social performance and economic performance was observed to be negative. The findings confirm all hypotheses except the relationship between social and

economic performance and thus confirm the proposed theoretical model for the study. The testing of the effect of three control variables on the theoretical model excluded any confounding effect to confirm the internal validity of the study. The post-hoc analysis concluded that no model re-specification was possible given that there was no theoretical justification. Thus, the theoretical model was further reinforced.

Chapter 6

Discussion

6.1 Introduction

This chapter discusses the quantitative approach of this study concerning the hypothesised relationships within the conceptual framework. Except for H6, the empirical survey findings supported all the hypothesised relationships in the conceptual framework. That is, this study demonstrates that GSCIs positively impact environmental performance and environmental performance positively impacts economic and social performance. Also, it demonstrates that institutional pressure and GHRMPs positively impact GSCI implementation, which in turn creates a positive outcome on green performance.

The chapter is structured as follows. Sections 6.2, 6.3, 6.4, 6.5, 6.6, 6.7 and 6.8 discuss the key findings of the tested conceptual framework, each focused on the hypothesised relationship. Section 6.9 details the contribution of this study to the existing literature on how GSCI can effect environmental performance and subsequently on economic and social performance. The drivers impacting these shifts include pressures from external forces and human initiatives that comply with environmental standards. Section 6.10 outlines the implications of the study's findings for managers and decision makers.

6.2 Relationship between external pressures and GSCIs

The findings show that external pressure has a positive effect on GSCIs. The external pressure was operational using three dimensions: regulatory pressure, customer pressure and competitor pressure. This implies that regulatory bodies put pressure on organisations to implement green practices. The innovation required to find more eco-friendly products compels organisations to be competitive in the face of complex environmental and customer pressures. Hence, these pressures on Australian small and medium manufacturing firms ensure the continuous implementation of green actions. This is consistent with previous studies (Huang, Huang & Yang 2017; Huang, Yang & Wong

2016; Vanalle et al. 2017; Yang 2017; Zhu, Sarkis & Lai 2013). Environmental regulations enforced by the government can significantly enable firms to implement GSCIs. The regulations are often imposed on organisations to make them become environmentally compliant in their operations. This in turn enhances the implementation of GSCI. Customers have become increasingly aware of the importance of consuming environmentally friendly products. This knowledge has made them put pressure on firms to comply with environmental practices. By pushing organisations to produce eco-friendly products, customers play a significant role in making sure organisations implement GSCIs. Implementation of GSCI is regarded by firms as a way to enhance their corporate image which in turn increases their customer base. Hence, organisations continually pay attention to the environmental concerns of their customers. As a result, they implement GSCI which is paramount for organisations in the contemporary context.

Organisations have a significant role to play in determining the direction of their competitors. The successful implementation of a green protection strategy can encourage competing organisations to emulate a similar strategy. Adoption of green initiatives is considered a vital attribute for organisations to thrive in the contemporary context, which is volatile, uncertain, complex and ambiguous and demands that organisations remain competitive. Through the adoption of green initiatives, organisations are perceived favourably by their customers; they can attain a dominant market share and thus benefit from increased profits. Their competitors are then compelled to mimic their strategy to enjoy the same benefits. This study supports the institutional theory by demonstrating that regulatory, customer and competitive pressures are linked and that they influence the implementation of GSCIs (DiMaggio & Powell 1983). Our study has further addressed the impact of institutional pressure on GSCI implementation and its subsequent impact on hierarchical sustainable performance.

6.3 Relationship between GHRMPs and GSCMPs

The findings show that GHRMPs have a positive effect on GSCIs. GHRMPs include environmental appraisal, green rewards and empowerment. This is consistent with previous studies (Jabbour & de Sousa Jabbour 2016; Nejati, Rabiei & Jabbour 2017;

Teixeira et al. 2016; Zaid, Jaaron & Bon 2018). Green reward is a great incentive and is granted to SMEs who not only comply with green standards but surpass them. Some SMEs adopt these practices to encourage employees who have provided outstanding contributions to the implemented green initiatives, which in turn motivates employees who are lagging behind. Environmental rewards recognise the effort of employees in initiatives such as the minimisation of hazardous consumption in the manufacturing process, the use of machinery with minimal carbon dioxide emission and the use of products with minimised energy and material consumption. They go further in recognising external green initiatives such as cooperation with customers for cleaner operations and green packaging. This engenders increased commitment to the adoption of GSCI.

Green empowerment is paramount to ensuring the successful implementation of GSCI. Through setting up employee environmental suggestion schemes, employees will feel empowered because their suggestions for environmental performance improvement are appreciated and taken into account. Therefore, this will make employees strive to recommend optimal approaches for green initiatives and help improve implementation of GSCI. Working collaboratively as a team will also empower employees to better solve environmental management systems problems. By encouraging teamwork, an organisation is assured to achieve and improve its GSCI implementation.

Green appraisal is also important in positively influencing GSCI. For the SMEs that are striving to incorporate green initiatives in their supply chain processes, environmental appraisal has been a way to achieve that objective. Balanced score card has been used as a measurement tool for promoting employees within the organisation. Through this measurement tool, environmental initiatives are included as a benchmark in evaluating an employee's performance. Those who excel in complying with green standards are assessed to have not only met but exceeded their objectives and as a result, they may be promoted. This incentive helps to further promote the adoption of GSCI. A synchronised evaluation of institutional pressures and GHRMP on GSCI is unique. It reveals how these two key aspects can help enhance the GSCI and generate effective implementation that will assist firms in tackling their environmental challenges.

6.4 Relationship between GSCMP and environmental performance

The findings show that GSCMPs have a positive effect on environmental performance. The GSCMPs were operational using IGSCMPs and EGSCMPs. These include the use of products with minimised material and energy consumption, employing state of the art equipment for reduced pollutant emission, and discouraging use of harmful products in the manufacturing process. The findings imply that such IGSCMPs play a critical role in ensuring a firm achieves success in minimising its negative environmental impacts by reducing water and solid waste. EGSCMPs are important in enabling an organisation to generate minimal environmental waste. Cooperation with customers for cleaner operations and environmental packaging can significantly reduce environmental pollution and assist firms in improving their environmental performance. This is consistent with several studies that have discussed the positive impact of green supply chain practices on environmental performance (Huang, Huang & Yang 2017; Saeed et al. 2018; Vanalle et al. 2017; Yang 2017; Zhu, Sarkis & Lai 2013).

Comprehensive implementation of GSCI both internally - through commitment from senior managers and other environmental initiatives - and externally - by complying with green activities initiated by external parties, can effectively enable organisations to extensively minimise their environmental pollution and improve their green performance. This study has employed NRBV theory, which supports the relationship between GSCMP and environmental performance. Introducing environmental aspect in the firms' operations as a new approach in enabling firms enhance their performance and sustain their competitive advantage (Hart 1995). Climate change is posing a critical challenge to Australia and to the globe. This is why the implementation of GSCI within organisations is vital in the contemporary context. As GSCI implementation is seen as the best approach in tackling environmental challenges, food and beverage processing SMEs such as Oceania meat processors, Hoyt food manufacturing are urged to comply with green initiatives in their supply chain to contribute to managing the climate change crisis. Our study has further addressed how implementation of GSCI can influence the

environmental performance and its subsequent effect on economic and social performance.

6.5 Relationship between environmental performance and economic performance

The findings show that environmental performance has a positive effect on economic performance. Minimisation of waste, such as solid and water waste, help firms thrive economically. An organisation, which complies with environmental standards and has minimum negative impacts on the environment, will significantly reduce operation costs. These include a reduction in material purchases and a decrease in fees for waste treatment and discharge. Logically minimised costs help organisations improve their profits which in turn provides an opportunity to leverage new markets. As organisations thrive economically as a result of improved environmental performance, this will help them sustain their competitive edge in this complex context. This is consistent with previous studies (Abdallah & Al-Ghwayeen 2019; De Giovanni 2012; Feng et al. 2018; Green Jr et al. 2012; Saeed et al. 2018; Zhu, Sarkis & Lai 2013).

The positive link between environmental performance and economic performance is a clear indication of how an organisation can achieve economic success by minimising its negative environmental impacts. Stories of companies going green have been widespread due to the competitive advantages that this transition presents. By minimising their negative impacts on the environment, organisations can leverage new market opportunities, increase their market share and remain competitive in the ever volatile and uncertain market. SMEs, which make a significant contribution to the broader economy, are expected to comply with green initiatives to a high degree. The benefits of complying with environmental practices within their supply chains will enable SMEs to reduce negative environmental impacts, sustain their competitive edge and in turn improve their economic performance. Therefore SMEs are encouraged to adopt green initiatives in order to improve their environmental performance and leverage the economic benefits that will in turn enable them to significantly contribute to the country's gross domestic

product. Also, as sustainability is of such importance in the 21st century, our study has further addressed the hierarchical sustainable performance. This has been done by evaluating the subsequent impact of environmental performance on economic and social performance.

6.6 Relationship between environmental performance and social performance

The findings show that environmental performance has a positive effect on social performance. Assessments have been made on how social performance has been overlooked, but there are benefits to be gained within the social performance of an organisation by keenly implementing environmental practices. Green actions help firms to reduce pollution, such as waste to landfill and water pollution, which help the environment. Good environmental performance positively impacts the social dimension of an organisation by increasing workers' job satisfaction and strengthening their commitment to society more broadly. Success in environmental performance is therefore a significant factor in ensuring the wellbeing of workers and society at large. The direct impact of the environment to society has been witnessed in Australia with incidents such as bushfires and droughts. The intense smoke caused by the bushfires endangered peoples' lives to the point of death; houses were destroyed and the safety of the community was jeopardised.

Manufacturing organisations within the SME sector should further implement environmental actions, as they minimise waste and in turn improve the social welfare and commitment of the society at large. This explains how environmental performance has a direct influence on the social performance dimension. This study incorporates the social performance dimension, which has been ignored despite its benefits to sustainable performance (Carter & Rogers 2008). Organisations haven't realised the enormous benefits that social sustainability can bring to firms (Laosirihongthong, Adebajo & Choon Tan 2013) and how it can help them thrive in the longer term (Carter & Rogers 2008). It is paramount that this dimension is regarded as equally crucial as the

environmental and economic dimensions. It must demand the same attention (Mitra 2014). This is demonstrated by the fact that many organisations are currently publishing corporate social responsibility reports. Furthermore, there are initiatives by the ISO for the establishment of the ISO26000 international standard on social responsibility (Mitra & Datta 2014). In recent years, the social dimension has been acknowledged although it is yet to be given its due relevance (Carter & Liane Easton 2011). A few organisations have gradually started to realize that the inclusion of the social performance dimension has helped them to thrive for a longer term of 20 years and beyond (Carter & Rogers 2008).

Environmental performance is crucial for the improvement of social performance. These arguments have been supported by researchers such as Carter and Rogers (2008) and Zailani et al. (2012) who have explained the importance of environmental performance to social performance. According to Carter and Rogers' (2008), investment in pollution-free activities minimises carbon emissions and waste, which in turn enhances social performance by improving employees' health and safety and reducing absenteeism and turnover rates. Zailani et al. (2012) confirmed the Carter and Rogers (2008) study which emphasised that sustainable actions are crucial in minimising negative environmental effects which in turn ensure positive social outcomes, such as increased workers' satisfaction and competency.

The study is limited in assessing the impact of environmental performance on social performance. The study is also limited in looking at the impact of environmental performance on social performance in hierarchical order. Firms need to strategise on regularly improving their environmental performance as the minimisation of emissions and other forms of pollution will not only help improve the health and safety of employees, but also increase their productivity in the workplace and help them to be flexible enough to participate in corporate social responsibility (CSR) activities. This will in turn help to enhance their corporate reputation and their social performance will radically increase.

6.7 Relationship between social performance and economic performance

The findings show that social performance has a negative effect on economic performance. There are various reasons that can be deduced for a negative relationship between social and economic performance. The investment in CSR attracts a lot of funds, which can impact the liquidity of organisations. As firms increase their eco-friendly products, by adhering to environmental operations within their supply chain processes, they increase their popularity within the market and enhance their corporate image. An improved corporate image helps firms to attract new market opportunities, increase their market share and thus improve their financial position.

Within the contemporary context, investment in CSR is required for organisations to thrive, just like green actions. The social norm in Australia is to reach out to those less privileged to make a positive social impact; and thus Australian firms invest in meeting social obligations. However, as SMEs have more limited financial resources, investing in meeting social obligations may result in a decline in profits and weaken their financial position. Given investment in social obligations requires substantial funds, it is likely that such an investment will diminish the economic performance of SMEs.

SMEs should critically consider environmental initiatives, as they will help enhance their corporate image, which will in turn assist in increasing their sales. This will provide them with adequate resources to meet their social obligations. Society will become more aware of them, which will lead to increased consumption of their product, which will ultimately improve their economic growth. This result is in contrast with previous literature that found a positive relationship between social and economic performance. Some studies such as De Giovanni (2012) established a positive link between social and economic performance. Although our study indicates a negative relationship, the social performance dimension should not be ignored as its benefits are essential for an organisation to thrive. Also, an emphasis is made on the hierarchical nature of the study. Where studies such as Zaid, Jaaron and Bon (2018) assessed the sustainable performance

concurrently, this study examined the sustainable performance dimension in the hierarchical order.

6.8 Mediating effect of GSCIs between institutional pressures and environmental performance

The relationship between institutional pressures and environmental performance is positively mediated by GSCI. That is to say, coercive, normative, mimetic actions indirectly influence environmental performance through GSCI. Such actions include the enforcement of external regulations on firms, customer demand for green actions, and the environmental innovations of competitors. These are all drivers towards the minimisation of environmental pollution, like water pollution and landfill waste. But all these environmental impacts can be attained after the regulatory, customer and competitive pressures have been enforced on organisations for GSCI implementation. Through the enforcement of regulations on organisations, customer demand for eco-friendly products and competitor's innovative approaches to environmental initiatives, organisations can become greener. They can use products with minimised material and energy consumption, discourage the use of hazardous products and implement manufacturing processes which produce minimal pollutant emission by using the appropriate machinery. Externally, they will collaborate with customers on actions that call for cleaner operations, like green packaging. All these initiatives will enable an organisation to reduce its negative impact on the environment. Hence, GSCI acts as a link in ensuring the external drivers help in reducing the negative effects to the environment. This is consistent with previous studies (Huang, Huang & Yang 2017; Vanalle et al. 2017; Yang 2018; Zhu, Sarkis & Lai 2013).

Huang, Huang and Yang (2017) established the positive impact of GSCI on firm performance (environmental, economic, competitiveness) under the influence of institutional pressures. Also, Vanalle et al. (2017) found positive impacts of GSCI on firm performance (environmental, economic and operational) under the influence of institutional pressures. Yang (2018) considered the environmental performance dimension where the GSCI had a positive influence on the environment through

enforcement of institutional pressure. These studies emphasise how vital it is for organisations to comply with the regulations enforced on them in order for GSCIs to ultimately attain their environmental goals. Also, it shows the role of customers, the final users of the products, is very important. In the contemporary context, they have put immense pressure on firms to adopt green actions for the sake of a better environment. Moreover, emulating the successful strategies adopted by competitors may be the best approach for organisations to become environmentally orientated in their operations. In turn, they achieve a positive outcome in their environmental performance. The prevalence of strong institutional pressure within Australia is a catalyst in enabling the food and beverage SMEs comply with GSCI and ultimately effect positive outcome to the environment, which is vital for the country, which strives to deal with the critical challenge of climate change.

6.9 Theoretical implications

1. The study adds new insights to the growing literature on GSCM as it addresses the intersection of green supply chain and firm sustainability by detailing a comprehensive understanding of the impact of green initiatives on green performance and their subsequent impact on economic and social performance. Inclusion of antecedents such as institutional pressures and GHRM practices that can influence GSCIs is new in this study. Earlier studies have investigated the impact of GSCM on environment and economic performance (Green Jr, Zelbst, Meacham, et al. 2012; Huang, Huang & Yang 2017; Vanalle et al. 2017; Zhu, Sarkis & Lai 2013) but its effect on social performance has been under investigated.
2. Organising the research framework in a hierarchical order to examine the differential effect of green performance on social and economic performance is new in this study. The environmental performance dimension is given due relevance along with its subsequent impact on economic and social performance in hierarchical order.

3. Further, in evaluating the impact of green initiatives in the context of SMEs, this study highlights the critical role that GHRM practices play. Limited studies have considered the human aspect in green initiatives barring a few (Jabbour, CJC & de Sousa Jabbour 2016; Nejati, Rabiei & Jabbour 2017), which have evaluated the integration of GHRM practices with firms' internal and external green initiatives. The overarching model in this study incorporates GHRM practices and institutional pressures to first investigate their effects on GSCIs comprising of internal and external green initiatives.
4. The study has used NRBV theory to support the fact that natural environment can be incorporated with RBV theory to protect the environment and improve sustainable performance. In terms of advancing the theory, this study has explored GSCIs on a more in-depth level by incorporating NRBV theory, which is novice.

6.10 Practical implications

1. The findings assist managers in their decision-making process and formulate policies that guide the firms towards attaining their green objectives. Comprehensive policies in relation to green agenda from the perspective of NRBV theory can help improve the corporate image which in turn increases firms' competitive advantage by simultaneously reducing their environmental impact and increasing their economic growth and social well-being. The proposed model can also be employed as a decision-making tool by practitioners to manage their green initiatives and to identify strategies to improve their current practices.
2. Results will make the SME owners and managers achieve greater understanding about their employees who are ideally at the core of green initiatives and implementation. The orientation and training of employees (Jabbour & de Sousa Jabbour 2016) will likely improve both their mindset and their skills for efficient execution of green initiatives. The research will help SMEs to enhance their suppliers' knowledge of raw materials and component parts that must adhere to green standards. The customers, who are the end users in the value chain process,

will largely benefit from these initiatives by increasing their knowledge of green standards and prompt them to consume green products.

3. Embracing GSCMPs has become the new normal for organisations that want to sustain their competitive edge within the market. Environmental initiatives are seen to assist firms in minimising negative environmental impacts; in turn, these practices curb the disastrous effects of climate change. Therefore, managers can benefit from this study by knowing how to strategise and collaborate with other stakeholders who want to tackle climate change challenges. Contemporary Australia has faced catastrophic climate change challenges. The bushfire crisis resulted in the deaths of almost one billion animals (Elsworthy 2020); the drought has been extremely intense, impacting the agricultural sector and the economy at large (Ketchell 2020); and tropical cyclones have hit the Northern Territory (Martin 2019). All these climatic turmoils have been disastrous to the country's development. The supply chain system is also highly affected by these disasters. The government has politicised climate change and lacks a comprehensive policy. These aspects should be viewed critically, not just by the government but also by managers within organisations who can assist the government in formulating better policies and strategies. This will be the best approach in tackling the climate change challenges which are of crucial concern to organisations and to the nation as a whole, to make the new decade a revolutionary decade.
4. The study will assist managers to monitor and evaluate the impact of GSCIs on environmental performance and to assess their impact on economic and social performance. This is made possible by evaluating the level of intensity the environment has on other dimensions of the triple bottom line. Also, it will underline the crucial importance of the environment, and of its protection, due to its enormous significance to the economic and social well-being of society. Industry associations can educate their members about the new normal of GSCI adoption through workshops and conferences. They can also educate members about GHRMPs, (Nejati, Rabiei & Jabbour 2017) institutional pressures (Ahmed, Najmi & Khan 2019) and their significance for effective implementation of GSCI (Vanalle et al. 2017).

5. It will assist managers to respond to the demands of the third decade of the 21st century and to ensure the minimisation of the effects of climate change. The SMEs do not seem to keep abreast of what is required to effectively adopt GSCIs. The influence of institutional pressure and GHRMPs are not achieved at the expected level; this results in the ineffective adoption of GSCIs, which negatively impacts the environment. This study has shown the roles of institutional pressures and GHRMPs in influencing the comprehensive adoption of GSCIs and the impact on the environment. Therefore, this will demonstrate to managers how critical it is to embrace GSCI at every stage of the supply chain. It will demonstrate how crucial it is to conform to the external pressures, which are required to implement GSCIs (Huang, Huang & Yang 2017) and to enforce GHRMPs (Zaid, Jaaron & Bon 2018) at every level of the firm.

6.11 Summary

This chapter discussed the findings of quantitative research on the hypothesised relationships within the conceptual framework. The chapter discussed the finding that GSCIs positively impact green performance by being positively impacted by institutional pressures and GHRMP. Also, the environmental performance positively impacts economic and social performance. The theoretical contribution helped to reveal the hierarchical effect of GSCI on environmental, economic and social performance under the influence of external pressures and GHRMP. This is a departure from previous studies. The chapter also presented the practical implications of the findings that encourage practitioners to implement GSCI/GSCMP. The implications to decision makers and industry associations were also discussed. The next chapter summarises the study, delivers a conclusion to the thesis, and outlines the limitations of the study and future directions.

Chapter 7

Conclusion and Limitations

7.1 Conclusion

Green supply chain management (GSCM) has emerged as another competitive priority besides cost, quality, delivery, flexibility and innovation (Mitra 2014). The contemporary environment is regarded to be very volatile, uncertain, complex and ambiguous. Organisations are expected to quickly adopt any new innovations that emerge in order to remain competitive in the market. Sustaining competitive edge in the contemporary market indicates that an organisation is resilient and ready to deal with the current challenges. In recent years, there has been an increase of industrialisation among economies. Advanced nations have forged ahead in this regard. Industrialisation has been a primary catalyst of environmental pollution. This is one of the main reasons for an increased popularity of GSCM which helps firms to address the environmental challenges and minimise the effects of environmental pollution.

The increased popularity and importance has drawn the attention of academics and industry professionals to undertake research that investigates the impact of GSCM on sustainable performance. However, the implementation of GSCIs when driven by institutional pressure and the impacts of GHRMPs on the environmental performance need further investigation to reveal the status quo of food and beverage processing firms. Therefore, this study aimed to address the research question “Can GSCIs under the influence of institutional pressures and GHRMPs impact environmental and subsequently economic and social performance?” This study used survey data of 168 Australian food and beverage manufacturing SMEs and the analysis used SEM to verify the hypothesised relationship between the constructs in the conceptual framework. The findings reveal a positive and significant relationship between GSCI acting under institutional pressures and GHRMPs. Furthermore, environmental performance is positively impacted by a comprehensive implementation of GSCI, which subsequently positively impacts economic and social performance.

This study adds to the literature by integrating the influence of institutional pressures and GHRMPs on GSCIs, and shows how GSCIs impact environmental performance which ultimately affects the economic and social performance. Previous studies explain the link between GHRMP and GSCI and the institutional pressures on GSCI that impact either environmental performance, social or economic performance. Importantly, the GSCIs were not covered comprehensively and the performance dimensions were assessed concurrently. The social performance, which is a critical sustainable dimension, has always been ignored, and that makes this study unique. Also, in this study the environmental performance dimension has been given its due weight by assessing it separately before analysing its effect on the other dimensions of the triple bottom line in hierarchical fashion. The study is unique within the Australian context. It is especially timely for SMEs who have recently been struggling to manage the effects of climate change given the continued uncertainty from government in this area. It also helps all other stakeholders to manage environmental issues.

The study findings will help practitioners in decision-making processes and in the formulation of policies to improve their implementation of GSCIs. The SMEs have been observed to have inadequate knowledge to comply with GSCI at every stage of the supply chain. Due to lack of adoption of GSCI, they are not able to minimise the environmental effects. The research findings have detailed the relevance of having all the initiatives (internal and external) incorporated within the firms' operations. The highlighted benefits indicate that such firms will attain a green corporate image, which is vital for contemporary organisations in sustaining their competitive advantage.

The findings will also assist firms to regularly monitor their environmental performance, meet their regulatory obligations, and facilitate the recruitment and training of staff to drive green initiatives. The industry associations will help their members maintain a competitive edge by educating them on the compliance of institutional pressures. This will ensure GHRMPs and the adoption of GSCIs are at the core of the organisation's green agenda. This is key for a greener environment and a thriving economy. This study is extremely important and timely in addressing the essence of GSCI implementation, GHRMPs and the compliance with institutional pressures among the firms. The

Australian environment has experienced disastrous effects of climate change and it seems that organisations have had a critical role to play in protecting the environment. The SMEs, for instance, are known not to comply with the environmental initiatives in their daily operations, which results in a reduced positive impact to the environment. This study helps to reveal the importance of a comprehensive GSCI implementation and to reveal the influence that both institutional pressures and GHRMPs have on minimising negative environmental impacts. It also shows how the environment can influence the direction of economic and social performance and shows how crucial it is for organisations to always pay attention to the outcome of environmental performance. It is through a clean environment that an economy can thrive and that society's well-being can be ensured.

7.2 Limitations and future research

This study has some limitations, which generate opportunities for future research. The model has used external pressure as an antecedent to the GSCI. Future research may use external pressure as a moderator where the combined effect of external pressure and GSCI will likely have a positive effect on sustainable performance. Also, the future study may consider the hierarchical effect of environmental performance on economic and operational performance. This will be a study in contrast to the previous studies such as those conducted by Vanalle et al. (2017) and Huang, Huang and Yang (2017) who looked into the effect of GSCI on the performance dimensions (environmental, economic and operational) concurrently. As the success of other dimensions highly depend on the performance of environment, environmental performance needs to be given its due weight. This study considered manufacturing firms, particularly in food and beverage processing. Therefore, future studies should consider other Australian manufacturing sector such as the textile, clothing, chemical, petrochemical, and electronic sectors. This study only considered the Australian context. Future studies can consider other nearby countries in South East Asia since they are emerging economies and are expected to industrialise and thus produce higher emissions which would not only impact the environmental dimension, but also the social and economic. Also, cross-countries and

comparative studies can be considered for future research. Finally it is also recommended that future research replicate this model and undertake a longitudinal study.

References

- Abdallah, AB & Al-Ghwayeen, WS 2019, 'Green supply chain management and business performance', *Business process management journal*.
- Abdullah, N, Ab Halim, N & Yaakub, S 2014, 'Reverse logistics: pressure for adoption and the impact on firm's performance', *International Journal of Business & Society*, vol. 15, no. 1.
- Acedo, FJ, Barroso, C & Galan, JL 2006, 'The resource-based theory: dissemination and main trends', *Strategic management journal*, vol. 27, no. 7, pp. 621-36.
- Agarwal, A, Giraud-Carrier, FC & Li, Y 2018, 'A mediation model of green supply chain management adoption: The role of internal impetus', *International journal of production economics*, vol. 205, pp. 342-58.
- Agi, MA & Nishant, R 2017, 'Understanding influential factors on implementing green supply chain management practices: An interpretive structural modelling analysis', *Journal of environmental management*, vol. 188, pp. 351-63.
- Ahmad, S 2015, 'Green human resource management: Policies and practices', *Cogent Business & Management*, vol. 2, no. 1, p. 1030817.
- Ahmed, W & Najmi, A 2018, 'Developing and analyzing framework for understanding the effects of GSCM on green and economic performance', *Management of Environmental Quality: An International Journal*.
- Ahmed, W, Najmi, A, Arif, M & Younus, M 2019, 'Exploring firm performance by institutional pressures driven green supply chain management practices', *Smart and Sustainable Built Environment*.
- Ahmed, W, Najmi, A & Khan, F 2019, 'Examining the impact of institutional pressures and green supply chain management practices on firm performance', *Management of Environmental Quality: An International Journal*.
- Al-Tuwaijri, SA, Christensen, TE & Hughes II, K 2004, 'The relations among environmental disclosure, environmental performance, and economic performance: a simultaneous equations approach', *Accounting, organisations and society*, vol. 29, no. 5-6, pp. 447-71.
- Allison, PD 2003, 'Missing data techniques for structural equation modeling', *Journal of abnormal psychology*, vol. 112, no. 4, p. 545.
- Álvarez-Gil, MJ, Berrone, P, Husillos, FJ & Lado, N 2007, 'Reverse logistics, stakeholders' influence, organisational slack, and managers' posture', *Journal of business research*, vol. 60, no. 5, pp. 463-73.

- Ambec, S, Cohen, MA, Elgie, S & Lanoie, P 2013, 'The Porter hypothesis at 20: can environmental regulation enhance innovation and competitiveness?', *Review of environmental economics and policy*, vol. 7, no. 1, pp. 2-22.
- Anderson, JC & Gerbing, DW 1984, 'The effect of sampling error on convergence, improper solutions, and goodness-of-fit indices for maximum likelihood confirmatory factor analysis', *Psychometrika*, vol. 49, no. 2, pp. 155-73.
- Anderson, JC & Gerbing, DW 1988, 'Structural equation modeling in practice: A review and recommended two-step approach', *Psychological bulletin*, vol. 103, no. 3, p. 411.
- Anderson, JC & Gerbing, DW 1992, 'Assumptions and comparative strengths of the two-step approach comment on Fornell and Yi', *Sociological Methods & Research*, vol. 20, no. 3, pp. 321-33.
- Arantes, AF, Jabbour, ABLdS & Jabbour, CJC 2014, 'Adoption of Green Supply Chain Management practices: mechanisms of induction and the role of focal companies', *Production*, vol. 24, no. 4, pp. 725-34.
- Armstrong, JS & Overton, TS 1977, 'Estimating nonresponse bias in mail surveys', *Journal of marketing research*, pp. 396-402.
- Arulrajah, AA, Opatha, H & Nawaratne, N 2015, 'Green human resource management practices: A review', *Sri Lankan Journal of Human Resource Management*, vol. 5, no. 1.
- Ashby, A, Leat, M & Hudson-Smith, M 2012, 'Making connections: a review of supply chain management and sustainability literature', *Supply Chain Management: An International Journal*, vol. 17, no. 5, pp. 497-516.
- Ashraf, F, Ashraf, I & Anam, W 2015, 'Green HR for businesses', *International Journal of Academic Research in Business and Social Sciences*, vol. 5, no. 8, pp. 149-56.
- Aslam, MMH, Waseem, M & Khurram, M 2019, 'Impact of green supply chain management practices on corporate image: Mediating role of green communications', *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, vol. 13, no. 3, pp. 581-98.
- Australian Advanced Manufacturing Council 2015, Food Manufacturing Continues to grow, viewed 2 November 2019, <http://www.aamc.org.au/food-manufacturing-continues-to-boom/>
- Australian Bureau of Statistics 2002, Small Business in Australia, viewed 27 June 2019, <http://www.abs.gov.au/ausstats/abs@.nsf/mf/1321.0>

- Australian for Food and Beverage Processing 2014, Brisbane Australia's New World City, viewed 21 October 2019, <<https://www.choosebrisbane.com.au/~media/choose/investment/factsheets/food-and-beverage-processing.ashx>>
- Australia's National Greenhouse Accounts 2015, National Inventory by Economic Sector, viewed 19th December 2018, <<https://publications.industry.gov.au/publications/climate-change/system/files/resources/gas-group/national-inventory-economic-sector-2015>>
- Azevedo, SG, Carvalho, H & Machado, VC 2011, 'The influence of green practices on supply chain performance: a case study approach', *Transportation Research Part E: Logistics and Transportation Review*, vol. 47, no. 6, pp. 850-71.
- Bacon, DR, Sauer, PL & Young, M 1995, 'Composite reliability in structural equations modeling', *Educational and psychological measurement*, vol. 55, no. 3, pp. 394-406.
- Bagozzi, RP & Yi, Y 1988, 'On the evaluation of structural equation models', *Journal of the academy of marketing science*, vol. 16, no. 1, pp. 74-94.
- Baines, T, Brown, S, Benedettini, O & Ball, P 2012, 'Examining green production and its role within the competitive strategy of manufacturers', *Journal of Industrial Engineering and Management (JIEM)*, vol. 5, no. 1, pp. 53-87.
- Bakshi, BR & Fiksel, J 2003, 'The quest for sustainability: Challenges for process systems engineering', *AIChE Journal*, vol. 49, no. 6, pp. 1350-8.
- Banerjee, SB 2003, 'Who sustains whose development? Sustainable development and the reinvention of nature', *organisation studies*, vol. 24, no. 1, pp. 143-80.
- Bansal, P 2005, 'Evolving sustainably: A longitudinal study of corporate sustainable development', *Strategic management journal*, vol. 26, no. 3, pp. 197-218.
- Baraldi, AN & Enders, CK 2010, 'An introduction to modern missing data analyses', *Journal of school psychology*, vol. 48, no. 1, pp. 5-37.
- Barney, J 1991, 'Firm resources and sustained competitive advantage', *Journal of management*, vol. 17, no. 1, pp. 99-120.
- Barreto, I 2010, 'Dynamic capabilities: A review of past research and an agenda for the future', *Journal of management*, vol. 36, no. 1, pp. 256-80.
- Baumgartner, H & Steenkamp, J-BE 2001, 'Response styles in marketing research: A cross-national investigation', *Journal of marketing research*, vol. 38, no. 2, pp. 143-56.

- Beamon, BM 1999, 'Designing the green supply chain', *Logistics information management*, vol. 12, no. 4, pp. 332-42.
- Beavers, AS, Lounsbury, JW, Richards, JK, Huck, SW, Skolits, GJ & Esquivel, SL 2013, 'Practical considerations for using exploratory factor analysis in educational research', *Practical assessment, research & evaluation*, vol. 18, no. 6, pp. 1-13.
- Beddows, E 2008, 'The methodological issues associated with Internet-based research', *International Journal of Emerging Technologies and Society*, vol. 6, no. 2, pp. 124-39.
- Benders, J, Batenburg, R & Van der Blonk, H 2006, 'Sticking to standards; technical and other isomorphic pressures in deploying ERP-systems', *Information & Management*, vol. 43, no. 2, pp. 194-203.
- Bentler, PM 1990, 'Comparative fit indexes in structural models', *Psychological bulletin*, vol. 107, no. 2, p. 238.
- Bentler, PM & Bonett, DG 1980, 'Significance tests and goodness of fit in the analysis of covariance structures', *Psychological bulletin*, vol. 88, no. 3, p. 588.
- Bernstein, IH & Nunnally, J 1994, 'Psychometric theory', *New York: McGraw-Hill. Oliva, TA, Oliver, RL, & MacMillan, IC (1992). A catastrophe model for developing service satisfaction strategies. Journal of Marketing*, vol. 56, pp. 83-95.
- Berry, MA & Rondinelli, DA 1998, 'Proactive corporate environmental management: A new industrial revolution', *Academy of Management Perspectives*, vol. 12, no. 2, pp. 38-50.
- Beske, P, Land, A & Seuring, S 2014, 'Sustainable supply chain management practices and dynamic capabilities in the food industry: A critical analysis of the literature', *International journal of production economics*, vol. 152, pp. 131-43.
- Blunch, N 2012, *Introduction to structural equation modeling using IBM SPSS statistics and AMOS*, Sage.
- Bocken, NM, Short, SW, Rana, P & Evans, S 2014, 'A literature and practice review to develop sustainable business model archetypes', *Journal of cleaner production*, vol. 65, pp. 42-56.
- Boiral, O & Paillé, P 2012, 'organisational citizenship behaviour for the environment: Measurement and validation', *Journal of Business Ethics*, vol. 109, no. 4, pp. 431-45.

- Bollen, K & Lennox, R 1991, 'Conventional wisdom on measurement: A structural equation perspective', *Psychological bulletin*, vol. 110, no. 2, p. 305.
- Bollen, K & Stine, RA 1992, 'Bootstrapping goodness-of-fit measures in structural equation models', *Sociological Methods & Research*, vol. 21, no. 2, pp. 205-29.
- Bollen, KA 1989, 'A new incremental fit index for general structural equation models', *Sociological Methods & Research*, vol. 17, no. 3, pp. 303-16.
- Bowen, FE, Cousins, PD, Lamming, RC & Farukt, AC 2001, 'The role of supply management capabilities in green supply', *Production and operations management*, vol. 10, no. 2, pp. 174-89.
- Boyd, T & Kimmet, P 2005, 'The triple bottom line approach to property performance evaluation', in *11th PRRES Conference, Melbourne*, pp. 23-7.
- Brammer, S, Hoejmose, S & Marchant, K 2012, 'Environmental management in SMEs in the UK: practices, pressures and perceived benefits', *Business Strategy and the Environment*, vol. 21, no. 7, pp. 423-34.
- Bressan, A 2014, 'Environmental and social responsibility within SMEs: managerial perspectives from Western Sydney, Australia', University of Western Sydney (Australia).
- Bristol-Alagbariya, ET 2020, 'The UN Global Compact as a Soft Law Business Regulatory Mechanism Advancing Corporate Responsibility towards Business Sustainability and Sustainable Development Worldwide', *JL Pol'y & Globalization*, vol. 94, p. 27.
- Brown, G 2006, All great quotes,
<http://www.allgreatquotes.com/gordon_brown_quotes.shtml>, viewed 12 November 2018
- Bryman, A 1988, *Doing research in organisations*, Routledge London.
- Bryman, A 2015, *Social research methods*, Oxford university press.
- Bryman, A & Bell, E 2015, *Business research methods*, Oxford University Press, USA.
- Buchanan, EA & Hvizdak, EE 2009, 'Online survey tools: Ethical and methodological concerns of human research ethics committees', *Journal of Empirical Research on Human Research Ethics*, vol. 4, no. 2, pp. 37-48.
- Buckley, MR, Cote, JA & Comstock, SM 1990, 'Measurement errors in the behavioral sciences: The case of personality/attitude research', *Educational and psychological measurement*, vol. 50, no. 3, pp. 447-74.

- Byrne 2001, 'Structural equation modeling with AMOS, EQS, and LISREL: Comparative approaches to testing for the factorial validity of a measuring instrument', *International journal of testing*, vol. 1, no. 1, pp. 55-86.
- Byrne, BM 2013, *Structural equation modeling with AMOS: Basic concepts, applications, and programming*, Routledge.
- Calia, RC, Guerrini, FM & de Castro, M 2009, 'The impact of six sigma in the performance of a pollution prevention program', *Journal of cleaner production*, vol. 17, no. 15, pp. 1303-10.
- Çankaya, SY & Sezen, B 2019, 'Effects of green supply chain management practices on sustainability performance', *Journal of Manufacturing Technology Management*.
- Carter, CR, Ellram, LM & Ready, KJ 1998, 'Environmental purchasing: benchmarking our German counterparts', *Journal of Supply Chain Management*, vol. 34, no. 3, pp. 28-38.
- Carter, CR & Jennings, MM 2004, 'The role of purchasing in corporate social responsibility: a structural equation analysis', *Journal of Business Logistics*, vol. 25, no. 1, pp. 145-86.
- Carter, CR, Kale, R & Grimm, CM 2000, 'Environmental purchasing and firm performance: an empirical investigation', *Transportation Research Part E: Logistics and Transportation Review*, vol. 36, no. 3, pp. 219-28.
- Carter, CR & Liane Easton, P 2011, 'Sustainable supply chain management: evolution and future directions', *International journal of physical distribution & logistics management*, vol. 41, no. 1, pp. 46-62.
- Carter, CR & Rogers, DS 2008, 'A framework of sustainable supply chain management: moving toward new theory', *International journal of physical distribution & logistics management*, vol. 38, no. 5, pp. 360-87.
- Chan, HK, Yee, RW, Dai, J & Lim, MK 2016, 'The moderating effect of environmental dynamism on green product innovation and performance', *International journal of production economics*, vol. 181, pp. 384-91.
- Chan, RY, He, H, Chan, HK & Wang, WY 2012, 'Environmental orientation and corporate performance: The mediation mechanism of green supply chain management and moderating effect of competitive intensity', *Industrial Marketing Management*, vol. 41, no. 4, pp. 621-30.

- Chang, S-J, Van Witteloostuijn, A & Eden, L 2010, 'From the editors: Common method variance in international business research', *Journal of International Business Studies*, vol. 41, no. 2, pp. 178-84.
- Chavez, R, Yu, W, Feng, M & Wiengarten, F 2016, 'The effect of customer-centric green supply chain management on operational performance and customer satisfaction', *Business Strategy and the Environment*, vol. 25, no. 3, pp. 205-20.
- Cheng, CC, Yang, C-I & Sheu, C 2014, 'The link between eco-innovation and business performance: a Taiwanese industry context', *Journal of cleaner production*, vol. 64, pp. 81-90.
- Cherian, J & Jacob, J 2012, 'A study of green HR practices and its effective implementation in the organisation: A review'.
- Chertow, MR 2007, "'Uncovering" industrial symbiosis', *Journal of industrial Ecology*, vol. 11, no. 1, pp. 11-30.
- Chin, TA, Tat, HH & Sulaiman, Z 2015, 'Green supply chain management, environmental collaboration and sustainability performance', *Procedia Cirp*, vol. 26, pp. 695-9.
- Choi, D & Hwang, T 2015, 'The impact of green supply chain management practices on firm performance: the role of collaborative capability', *Operations Management Research*, vol. 8, no. 3-4, pp. 69-83.
- Christmann, P & Taylor, G 2001, 'Globalization and the environment: Determinants of firm self-regulation in China', *Journal of international business studies*, vol. 32, no. 3, pp. 439-58.
- Churchill, GAJ 1979, 'A paradigm for developing better measures of marketing constructs', *Journal of marketing research*, pp. 64-73.
- Clark, LA & Watson, D 1995, 'Constructing validity: Basic issues in objective scale development', *Psychological assessment*, vol. 7, no. 3, p. 309.
- Clarkson, ME 1995, 'A stakeholder framework for analyzing and evaluating corporate social performance', *Academy of management review*, vol. 20, no. 1, pp. 92-117.
- Clemens, B & Douglas, TJ 2006, 'Does coercion drive firms to adopt 'voluntary' green initiatives? Relationships among coercion, superior firm resources, and voluntary green initiatives', *Journal of business research*, vol. 59, no. 4, pp. 483-91.
- Clottey, TA & Grawe, SJ 2014, 'Non-response bias assessment in logistics survey research: use fewer tests?', *International journal of physical distribution & logistics management*.

- Co-Editors: Benn Lawson, PDC, Squire, B, Vachon, S & Klassen, RD 2006, 'Extending green practices across the supply chain: the impact of upstream and downstream integration', *International Journal of Operations & Production Management*, vol. 26, no. 7, pp. 795-821.
- Collins, J & Hussey, R 2003, 'Business research', *A practical guide for undergraduate and postgraduate students*, Polgrave Macmillan, New York.
- Conway, JM & Lance, CE 2010, 'What reviewers should expect from authors regarding common method bias in organisational research', *Journal of Business and Psychology*, vol. 25, no. 3, pp. 325-34.
- Cook, C, Heath, F & Thompson, RL 2000, 'A meta-analysis of response rates in web-or internet-based surveys', *Educational and psychological measurement*, vol. 60, no. 6, pp. 821-36.
- Cooper, DR, Schindler, PS & Sun, J 2006, *Business research methods*, vol. 9, McGraw-Hill Irwin New York.
- Cordeiro, JJ, Zhu, Q & Sarkis, J 2009, 'International and domestic pressures and Chinese organisational responses to greening', in *Academy of Management Proceedings*, vol. 2009, pp. 1-6.
- Costello, AB & Osborne, J 2005, 'Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis', *Practical assessment, research, and evaluation*, vol. 10, no. 1, p. 7.
- Couper, MP 2000, 'Review: Web surveys: A review of issues and approaches', *Public opinion quarterly*, pp. 464-94.
- Creswell, JW 2009, *Mapping the field of mixed methods research*, Sage Publications Sage CA: Los Angeles, CA, 1558-6898.
- Cronbach, LJ 1951, 'Coefficient alpha and the internal structure of tests', *Psychometrika*, vol. 16, no. 3, pp. 297-334.
- Cross, P, Edwards, RT, Opondo, M, Nyeko, P & Edwards-Jones, G 2009, 'Does farm worker health vary between localised and globalised food supply systems?', *Environment international*, vol. 35, no. 7, pp. 1004-14.
- Cucchiella, F, Koh, L, Björklund, M, Martinsen, U & Abrahamsson, M 2012, 'Performance measurements in the greening of supply chains', *Supply Chain Management: An International Journal*.

- Cucciella, F, Koh, L, Guang Shi, V, Lenny Koh, S, Baldwin, J & Cucchiella, F 2012, 'Natural resource based green supply chain management', *Supply Chain Management: An International Journal*, vol. 17, no. 1, pp. 54-67.
- Dai, J, Montabon, FL & Cantor, DE 2014, 'Linking rival and stakeholder pressure to green supply management: Mediating role of top management support', *Transportation Research Part E: Logistics and Transportation Review*, vol. 71, pp. 173-87.
- Daily, BF, Bishop, JW & Massoud, JA 2012, 'The role of training and empowerment in environmental performance: A study of the Mexican maquiladora industry', *International Journal of Operations & Production Management*, vol. 32, no. 5, pp. 631-47.
- Daily, BF & Huang, S-c 2001, 'Achieving sustainability through attention to human resource factors in environmental management', *International Journal of Operations & Production Management*, vol. 21, no. 12, pp. 1539-52.
- Daugherty, PJ, Autry, CW & Ellinger, AE 2001, 'Reverse logistics: the relationship between resource commitment and program performance', *Journal of Business Logistics*, vol. 22, no. 1, pp. 107-23.
- Daugherty, PJ, Myers, MB & Richey, RG 2002, 'Information support for reverse logistics: the influence of relationship commitment', *Journal of Business Logistics*, vol. 23, no. 1, pp. 85-106.
- De Giovanni, P 2012, 'Do internal and external environmental management contribute to the triple bottom line?', *International Journal of Operations & Production Management*, vol. 32, no. 3, pp. 265-90.
- de Sousa Jabbour, ABL, de Souza Azevedo, F, Arantes, AF & Jabbour, CJC 2013, 'Green supply chain management in local and multinational high-tech companies located in Brazil', *The International Journal of Advanced Manufacturing Technology*, vol. 68, no. 1-4, pp. 807-15.
- de Sousa Jabbour, ABL, Vazquez-Brust, D, Jabbour, CJC & Latan, H 2017, 'Green supply chain practices and environmental performance in Brazil: Survey, case studies, and implications for B2B', *Industrial Marketing Management*, vol. 66, pp. 13-28.
- Dedoulis, E 2016, 'Institutional formations and the Anglo-Americanization of local auditing practices: The case of Greece', in *Accounting Forum*, vol. 40, pp. 29-44.
- Delmas, M & Toffel, MW 2004, 'Stakeholders and environmental management practices: an institutional framework', *Business Strategy and the Environment*, vol. 13, no. 4, pp. 209-22.

- DeVellis, RF 2003, *Scale development: Theory and applications*, Sage publications, Thousand Oaks, California.
- DeVellis, RF 2016, *Scale development: Theory and applications*, vol. 26, Sage publications, Thousand Oaks, California.
- Diabat, A & Govindan, K 2011, 'An analysis of the drivers affecting the implementation of green supply chain management', *Resources, conservation and recycling*, vol. 55, no. 6, pp. 659-67.
- Diabat, A, Kannan, D & Mathiyazhagan, K 2014, 'Analysis of enablers for implementation of sustainable supply chain management—A textile case', *Journal of cleaner production*, vol. 83, pp. 391-403.
- Dillman, DA 2011, *Mail and Internet surveys: The tailored design method--2007 Update with new Internet, visual, and mixed-mode guide*, John Wiley & Sons, New York.
- Dillman, DA, Smyth, JD & Christian, LM 2014, *Internet, phone, mail, and mixed-mode surveys: the tailored design method*, John Wiley & Sons, New York.
- Dillon, PS & Fischer, K 1992, *Environmental management in corporations: Methods and motivations*, Center for Environmental Management, Tufts University.
- DiMaggio, P & Powell, WW 1983, 'The iron cage revisited: Collective rationality and institutional isomorphism in organisational fields', *American Sociological Review*, vol. 48, no. 2, pp. 147-60.
- Donaldson, T & Preston, LE 1995, 'The stakeholder theory of the corporation: Concepts, evidence, and implications', *Academy of management review*, vol. 20, no. 1, pp. 65-91.
- Dubester, KA & Braun, BG 1995, 'Psychometric properties of the Dissociative Experiences Scale', *The Journal of nervous and mental disease*, vol. 183, no. 4, pp. 231-5.
- Dubey, R, Gunasekaran, A & Ali, SS 2015, 'Exploring the relationship between leadership, operational practices, institutional pressures and environmental performance: A framework for green supply chain', *International journal of production economics*, vol. 160, pp. 120-32.
- Dües, CM, Tan, KH & Lim, M 2013, 'Green as the new Lean: how to use Lean practices as a catalyst to greening your supply chain', *Journal of cleaner production*, vol. 40, pp. 93-100.

- Dyllick, T & Hockerts, K 2002, 'Beyond the business case for corporate sustainability', *Business Strategy and the Environment*, vol. 11, no. 2, pp. 130-41.
- Efron, B 1992, 'Bootstrap methods: another look at the jackknife', in *Breakthroughs in statistics*, Springer, pp. 569-93.
- Elkington, J 1998, 'Partnerships from cannibals with forks: The triple bottom line of 21st-century business', *Environmental Quality Management*, vol. 8, no. 1, pp. 37-51.
- Elkington, J, Henriques, A & Richardson, J 2004, 'The triple bottom line, does it all add up?: assessing the sustainability of business and CSR', *Edited by Adrian Henriques and Julie Richardson. Earthscan Publications. London*, pp. 1-16.
- Elsworthy, E 2020, NSW bushfires mean more than a billion animals 'dead or displaced', experts say, viewed 8 February 2020, <<https://www.abc.net.au/news/2020-01-09/nsw-bushfires-kill-over-a-billion-animals-experts-say/11854836>>
- Eltayeb, T & Zailani, S 2007, 'The implementation of green supply chain management practices: a conceptual framework'.
- Eltayeb, TK, Zailani, S & Ramayah, T 2011, 'Green supply chain initiatives among certified companies in Malaysia and environmental sustainability: Investigating the outcomes', *Resources, conservation and recycling*, vol. 55, no. 5, pp. 495-506.
- Enders, CK 2002, 'Applying the Bollen-Stine bootstrap for goodness-of-fit measures to structural equation models with missing data', *Multivariate behavioral research*, vol. 37, no. 3, pp. 359-77.
- Epstein, MJ & Roy, MJ 1997, 'Using ISO 14000 for improved organisational learning and environmental management', *Environmental Quality Management*, vol. 7, no. 1, pp. 21-30.
- Esty, D & Winston, A 2009, *Green to gold: How smart companies use environmental strategy to innovate, create value, and build competitive advantage*, John Wiley & Sons.
- Fabrigar, LR, Wegener, DT, MacCallum, RC & Strahan, EJ 1999, 'Evaluating the use of exploratory factor analysis in psychological research', *Psychological methods*, vol. 4, no. 3, p. 272.
- Fahimnia, B, Sarkis, J, Dehghanian, F, Banihashemi, N & Rahman, S 2013, 'The impact of carbon pricing on a closed-loop supply chain: an Australian case study', *Journal of cleaner production*, vol. 59, pp. 210-25.

- Fan, X, Thompson, B & Wang, L 1999, 'Effects of sample size, estimation methods, and model specification on structural equation modeling fit indexes', *Structural Equation Modeling: A Multidisciplinary Journal*, vol. 6, no. 1, pp. 56-83.
- Farmery, A, Gardner, C, Green, B, Jennings, S & Watson, R 2015, 'Life cycle assessment of wild capture prawns: expanding sustainability considerations in the Australian Northern Prawn Fishery', *Journal of cleaner production*, vol. 87, pp. 96-104.
- Farmery, AK, Gardner, C, Green, BS, Jennings, S & Watson, RA 2015, 'Domestic or imported? An assessment of carbon footprints and sustainability of seafood consumed in Australia', *Environmental Science & Policy*, vol. 54, pp. 35-43.
- Farstad, FM 2019, 'Does size matter? Comparing the party politics of climate change in Australia and Norway', *Environmental Politics*, vol. 28, no. 6, pp. 997-1016.
- Feng, M, Yu, W, Wang, X, Wong, CY, Xu, M & Xiao, Z 2018, 'Green supply chain management and financial performance: The mediating roles of operational and environmental performance', *Business Strategy and the Environment*, vol. 27, no. 7, pp. 811-24.
- Feng, T, Cai, D, Wang, D & Zhang, X 2016, 'Environmental management systems and financial performance: The joint effect of switching cost and competitive intensity', *Journal of cleaner production*, vol. 113, pp. 781-91.
- Field, A 2013, *Discovering statistics using IBM SPSS statistics*, sage.
- Field, JM & Sroufe, RP 2007, 'The use of recycled materials in manufacturing: implications for supply chain management and operations strategy', *International Journal of Production Research*, vol. 45, no. 18-19, pp. 4439-63.
- Finkelstein, S & Hambrick, DC 1996, 'Strategic leadership: Top executives and their effects on organisations, Minneapolis/St', *Paul: West*.
- Flynn, BB, Huo, B & Zhao, X 2010, 'The impact of supply chain integration on performance: A contingency and configuration approach', *Journal of Operations Management*, vol. 28, no. 1, pp. 58-71.
- Flynn, BB, Sakakibara, S, Schroeder, RG, Bates, KA & Flynn, EJ 1990, 'Empirical research methods in operations management', *Journal of Operations Management*, vol. 9, no. 2, pp. 250-84.
- Foerstl, K, Reuter, C, Hartmann, E & Blome, C 2010, 'Managing supplier sustainability risks in a dynamically changing environment—Sustainable supplier management in the chemical industry', *Journal of Purchasing and Supply Management*, vol. 16, no. 2, pp. 118-30.

- Folkerts, H & Koehorst, H 1998, 'Challenges in international food supply chains: vertical co-ordination in the European agribusiness and food industries', *British Food Journal*, vol. 100, no. 8, pp. 385-8.
- Food and Beverage 2015, Australian SMEs to watch, viewed 11 September 2019, <<http://www.foodanddrinkbusiness.com.au/news/2015-rising-stars-10-australian-smes-to-watch>>
- Fornell, C & Larcker, DF 1981, 'Evaluating structural equation models with unobservable variables and measurement error', *Journal of marketing research*, pp. 39-50.
- Forza, C 2002, 'Survey research in operations management: a process-based perspective', *International Journal of Operations & Production Management*.
- Frankel, MS & Siang, S 1999, 'Ethical and legal aspects of human subjects research on the Internet', *Published by AAAS online*.
- Freedman, M & Jaggi, B 1988, 'An analysis of the association between pollution disclosure and economic performance', *Accounting, Auditing & Accountability Journal*, vol. 1, no. 2, pp. 43-58.
- Freeman, RE & Evan, WM 1990, 'Corporate governance: A stakeholder interpretation', *Journal of behavioral economics*, vol. 19, no. 4, pp. 337-59.
- Frosch, RA 1994, 'Industrial ecology: Minimizing the impact of industrial waste', *Physics Today*, vol. 47, no. 11, pp. 63-8.
- Ganster, DC, Hennessey, HW & Luthans, F 1983, 'Social desirability response effects: Three alternative models', *Academy of Management Journal*, vol. 26, no. 2, pp. 321-31.
- Gao, SS & Zhang, JJ 2006, 'Stakeholder engagement, social auditing and corporate sustainability', *Business process management journal*, vol. 12, no. 6, pp. 722-40.
- Geffen, CA & Rothenberg, S 2000, 'Suppliers and environmental innovation: the automotive paint process', *International Journal of Operations & Production Management*, vol. 20, no. 2, pp. 166-86.
- Geng, R, Mansouri, SA & Aktas, E 2017, 'The relationship between green supply chain management and performance: A meta-analysis of empirical evidences in Asian emerging economies', *International journal of production economics*, vol. 183, pp. 245-58.
- Gerbing, DW & Anderson, JC 1985, 'The effects of sampling error and model characteristics on parameter estimation for maximum likelihood confirmatory factor analysis', *Multivariate behavioral research*, vol. 20, no. 3, pp. 255-71.

- Gholami, H, Rezaei, G, Saman, MZM, Sharif, S & Zakuan, N 2016, 'State-of-the-art Green HRM System: Sustainability in the sports center in Malaysia using a multi-methods approach and opportunities for future research', *Journal of cleaner production*, vol. 124, pp. 142-63.
- Gil, MA, Jiménez, JB & Lorente, JC 2001, 'An analysis of environmental management, organisational context and performance of Spanish hotels', *Omega*, vol. 29, no. 6, pp. 457-71.
- Gimenez, C & Ventura, E 2005, 'Logistics-production, logistics-marketing and external integration: their impact on performance', *International Journal of Operations & Production Management*, vol. 25, no. 1, pp. 20-38.
- Gladwin, TN, Kennelly, JJ & Krause, T-S 1995, 'Shifting paradigms for sustainable development: Implications for management theory and research', *Academy of management review*, vol. 20, no. 4, pp. 874-907.
- Goll, I & Rasheed, AA 2005, 'The relationships between top management demographic characteristics, rational decision making, environmental munificence, and firm performance', *organisation studies*, vol. 26, no. 7, pp. 999-1023.
- Gonzalez-Torre, PL, Adenso-Díaz, B & Artiba, H 2004, 'Environmental and reverse logistics policies in European bottling and packaging firms', *International journal of production economics*, vol. 88, no. 1, pp. 95-104.
- Gopalakrishnan, K, Yusuf, YY, Musa, A, Abubakar, T & Ambursa, HM 2012, 'Sustainable supply chain management: A case study of British Aerospace (BAe) Systems', *International journal of production economics*, vol. 140, no. 1, pp. 193-203.
- Govindan, K, Azevedo, S, Carvalho, H & Cruz-Machado, V 2015, 'Lean, green and resilient practices influence on supply chain performance: interpretive structural modeling approach', *International Journal of Environmental Science and Technology*, vol. 12, no. 1, pp. 15-34.
- Govindan, K, Kannan, D, Mathiyazhagan, K, Jabbour, ABLdS & Jabbour, CJC 2013, 'Analysing green supply chain management practices in Brazil's electrical/electronics industry using interpretive structural modelling', *International Journal of Environmental Studies*, vol. 70, no. 4, pp. 477-93.
- Govindan, K, Khodaverdi, R & Vafadarnikjoo, A 2015, 'Intuitionistic fuzzy based DEMATEL method for developing green practices and performances in a green supply chain', *Expert Systems with Applications*, vol. 42, no. 20, pp. 7207-20.

- Govindan, K, Muduli, K, Devika, K & Barve, A 2016, 'Investigation of the influential strength of factors on adoption of green supply chain management practices: An Indian mining scenario', *Resources, conservation and recycling*, vol. 107, pp. 185-94.
- Govindan, K, Sarkis, J, Jabbour, CJC, Zhu, Q & Geng, Y 2014, 'Eco-efficiency based green supply chain management: Current status and opportunities', *European Journal of Operational Research*, vol. 2, no. 233, pp. 293-8.
- Govindarajulu, N & Daily, BF 2004, 'Motivating employees for environmental improvement', *Industrial Management & Data Systems*, vol. 104, no. 4, pp. 364-72.
- Grant, RM 1996, 'Toward a knowledge-based theory of the firm', *Strategic management journal*, vol. 17, no. S2, pp. 109-22.
- Graves, LM, Sarkis, J & Zhu, Q 2013, 'How transformational leadership and employee motivation combine to predict employee proenvironmental behaviors in China', *Journal of Environmental Psychology*, vol. 35, pp. 81-91.
- Green Jr, KW, Whitten, D & Inman, RA 2008, 'The impact of logistics performance on organisational performance in a supply chain context', *Supply Chain Management: An International Journal*, vol. 13, no. 4, pp. 317-27.
- Green Jr, KW, Zelbst, PJ, Bhaduria, VS & Meacham, J 2012, 'Do environmental collaboration and monitoring enhance organisational performance?', *Industrial Management & Data Systems*, vol. 112, no. 2, pp. 186-205.
- Green Jr, KW, Zelbst, PJ, Meacham, J & Bhaduria, VS 2012, 'Green supply chain management practices: impact on performance', *Supply Chain Management: An International Journal*, vol. 17, no. 3, pp. 290-305.
- Green, KW, Inman, RA, Sower, VE & Zelbst, PJ 2019, 'Impact of JIT, TQM and green supply chain practices on environmental sustainability', *Journal of Manufacturing Technology Management*.
- Guide, JV & Van Wassenhove, LN 2002, 'The reverse supply chain', *Harvard business review*, vol. 80, no. 2, pp. 25-6.
- Gunasekaran, A, Lai, K-h & Cheng, TE 2008, 'Responsive supply chain: A competitive strategy in a networked economy', *Omega*, vol. 36, no. 4, pp. 549-64.
- Gunasekaran, A & Spalanzani, A 2012, 'Sustainability of manufacturing and services: Investigations for research and applications', *International journal of production economics*, vol. 140, no. 1, pp. 35-47.

- Gupta, S & Kumar, V 2013, 'Sustainability as corporate culture of a brand for superior performance', *Journal of World Business*, vol. 48, no. 3, pp. 311-20.
- Habib, A & Bao, Y 2019, 'Impact of knowledge management capability and green supply chain management practices on firm performance', *International Journal of Research in Business and Social Science (2147-4478)*, vol. 8, no. 6, pp. 240-55.
- Hair, JF, Black, WC & Babin, BJ 2010, *RE Anderson Multivariate data analysis: A global perspective*, New Jersey, Pearson Prentice Hall,).
- Hair, JF, Black, WC, Babin, BJ & Anderson, RE 2014, *Multivariate data analysis*, vol. 7, Pearson Upper Saddle River, NJ.
- Hall, J & Matos, S 2010, 'Incorporating impoverished communities in sustainable supply chains', *International journal of physical distribution & logistics management*, vol. 40, no. 1/2, pp. 124-47.
- Hambrick, DC & Mason, PA 1984, 'Upper echelons: The organisation as a reflection of its top managers', *Academy of management review*, vol. 9, no. 2, pp. 193-206.
- Hamel, G & Prahalad, C 1989, 'Strategic intent, harvard business rewiev', *Tekst dostupan na: [http://hbr.org/1989/05/strategic-intent/ar/\(25.oktobar2012.godine\)](http://hbr.org/1989/05/strategic-intent/ar/(25.oktobar2012.godine))*.
- Hamner, B 2006, 'Effects of green purchasing strategies on supplier behaviour', in *Greening the supply chain*, Springer, pp. 25-37.
- Handfield, R, Sroufe, R & Walton, S 2005, 'Integrating environmental management and supply chain strategies', *Business Strategy and the Environment*, vol. 14, no. 1, pp. 1-19.
- Hardesty, DM & Bearden, WO 2004, 'The use of expert judges in scale development: Implications for improving face validity of measures of unobservable constructs', *Journal of Business Research*, no. 2, p. 98.
- Harman, D 1967, 'A single factor test of common method variance', *Journal of Psychology*, vol. 35, no. 1967, pp. 359-78.
- Hart, SL 1995, 'A natural-resource-based view of the firm', *Academy of management review*, vol. 20, no. 4, pp. 986-1014.
- Harvey, G, Williams, K & Probert, J 2013, 'Greening the airline pilot: HRM and the green performance of airlines in the UK', *The International Journal of Human Resource Management*, vol. 24, no. 1, pp. 152-66.

- Haynes, SN, Richard, D & Kubany, ES 1995, 'Content validity in psychological assessment: A functional approach to concepts and methods', *Psychological assessment*, vol. 7, no. 3, p. 238.
- Hazen, BT, Overstreet, RE & Boone, CA 2015, 'Suggested reporting guidelines for structural equation modeling in supply chain management research', *The International Journal of Logistics Management*, vol. 26, no. 3, pp. 627-41.
- Henderson, A 2018, 'Tony Abbott wants Australia to pull out of the Paris Climate deal, <<https://www.abc.net.au/news/2018-07-04/tony-abbott-says-pull-out-of-paris-climate-agreement/9937972>>
- Hervani, AA, Helms, MM & Sarkis, J 2005, 'Performance measurement for green supply chain management', *Benchmarking: An international journal*, vol. 12, no. 4, pp. 330-53.
- Ho, G, Choy, K, Lam, C & Wong, DW 2012, 'Factors influencing implementation of reverse logistics: a survey among Hong Kong businesses', *Measuring Business Excellence*, vol. 16, no. 3, pp. 29-46.
- Hoejmose, SU, Grosvold, J & Millington, A 2014, 'The effect of institutional pressure on cooperative and coercive 'green' supply chain practices', *Journal of Purchasing and Supply Management*, vol. 20, no. 4, pp. 215-24.
- Hollos, D, Blome, C & Foerstl, K 2012, 'Does sustainable supplier co-operation affect performance? Examining implications for the triple bottom line', *International Journal of Production Research*, vol. 50, no. 11, pp. 2968-86.
- Hoonakker, P & Carayon, P 2009, 'Questionnaire survey nonresponse: A comparison of postal mail and internet surveys', *Intl. Journal of Human-Computer Interaction*, vol. 25, no. 5, pp. 348-73.
- Hsu, C-C, Choon Tan, K, Hanim Mohamad Zailani, S & Jayaraman, V 2013, 'Supply chain drivers that foster the development of green initiatives in an emerging economy', *International Journal of Operations & Production Management*, vol. 33, no. 6, pp. 656-88.
- Hu & Hsu, C-W 2010, 'Critical factors for implementing green supply chain management practice: an empirical study of electrical and electronics industries in Taiwan', *Management Research Review*, vol. 33, no. 6, pp. 586-608.
- Hu, L-T & Bentler, PM 1995, 'Evaluating model fit', in RH (ed.) (ed.), *Structural equation modeling: concepts, issues, and applications*, Sage Publications, Thousand Oaks, CA, pp. 76-99.

- Hu, L-t, Bentler, PM & Kano, Y 1992, 'Can test statistics in covariance structure analysis be trusted?', *Psychological bulletin*, vol. 112, no. 2, p. 351.
- Hu, LT & Bentler, PM 1998, 'Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification', *Psychological methods*, vol. 3, no. 4, p. 424.
- Hu, LT & Bentler, PM 1999, 'Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives', *Structural Equation Modeling: A Multidisciplinary Journal*, vol. 6, no. 1, pp. 1-55.
- Huang, Huang, C-H & Yang, M-L 2017, 'Drivers of green supply chain initiatives and performance: Evidence from the electrical and electronics industries in Taiwan', *International journal of physical distribution & logistics management*, vol. 47, no. 9, pp. 796-819.
- Huang & Yang 2014, 'Reverse logistics innovation, institutional pressures and performance', *Management Research Review*, vol. 37, no. 7, pp. 615-41.
- Huang, Yang, M-L & Wong, Y-J 2016, 'Institutional pressures, resources commitment, and returns management', *Supply Chain Management: An International Journal*, vol. 21, no. 3, pp. 398-416.
- Huang, X, Tan, BL & Ding, X 2012, 'Green supply chain management practices: An investigation of manufacturing SMEs in China', *International Journal of Technology Management & Sustainable Development*, vol. 11, no. 2, pp. 139-53.
- Huang, X, Tan, BL & Ding, X 2015, 'An exploratory survey of green supply chain management in Chinese manufacturing small and medium-sized enterprises: Pressures and drivers', *Journal of Manufacturing Technology Management*, vol. 26, no. 1, pp. 80-103.
- Huang, Y-C & Huang, C-H 2016, 'Research on Relationships Among Institutional Pressure, Stewardship Behavior, Green Supply Chain Management, and organisational Performance: The Case of Electrical and Electronics Industries in Taiwan', *Journal of Computing and Information Science in Engineering*, vol. 16, no. 4, p. 041010.
- Huang, Y-C, Rahman, S, Wu, Y-CJ & Huang, C-J 2015, 'Salient task environment, reverse logistics and performance', *International journal of physical distribution & logistics management*, vol. 45, no. 9/10, pp. 979-1006.
- Huang, Y-C & Yang, M-L 2014, 'Reverse logistics innovation, institutional pressures and performance', *Management Research Review*, vol. 37, no. 7, pp. 615-41.

- Huo, B 2012, 'The impact of supply chain integration on company performance: an organisational capability perspective', *Supply Chain Management: An International Journal*, vol. 17, no. 6, pp. 596-610.
- Iacobucci, D 2010, 'Structural equations modeling: Fit indices, sample size, and advanced topics, Sample Size, and Advanced Topics', *Journal of Consumer Psychology*, vol. 20, no. 1, pp. 90-8.
- Jabbour & de Sousa Jabbour, ABL 2016, 'Green human resource management and green supply chain management: Linking two emerging agendas', *Journal of cleaner production*, vol. 112, pp. 1824-33.
- Jabbour, ABLdS, Frascareli, FCdO & Jabbour, CJC 2015, 'Green supply chain management and firms' performance: Understanding potential relationships and the role of green sourcing and some other green practices', *Resources, conservation and recycling*, vol. 104, no. Part B, pp. 366-74.
- Jabbour, CJC 2013, 'Environmental training in organisations: From a literature review to a framework for future research', *Resources, conservation and recycling*, vol. 74, pp. 144-55.
- Jabbour, CJC & Santos, FCA 2008, 'Relationships between human resource dimensions and environmental management in companies: proposal of a model', *Journal of cleaner production*, vol. 16, no. 1, pp. 51-8.
- Jabbour, CJC, Santos, FCA, Fonseca, SA & Nagano, MS 2013, 'Green teams: understanding their roles in the environmental management of companies located in Brazil', *Journal of cleaner production*, vol. 46, pp. 58-66.
- Jabbour, CJC, Santos, FCA & Nagano, MS 2010, 'Contributions of HRM throughout the stages of environmental management: methodological triangulation applied to companies in Brazil', *The International Journal of Human Resource Management*, vol. 21, no. 7, pp. 1049-89.
- Jackson, SE, Renwick, DW, Jabbour, CJ & Muller-Camen, M 2011, 'State-of-the-art and future directions for green human resource management: Introduction to the special issue', *German Journal of Human Resource Management*, vol. 25, no. 2, pp. 99-116.
- Jackson, SE, Schuler, RS & Jiang, K 2014, 'An aspirational framework for strategic human resource management', *The Academy of Management Annals*, vol. 8, no. 1, pp. 1-56.
- Jackson, SE & Seo, J 2010, 'The greening of strategic HRM scholarship', *organisation Management Journal*, vol. 7, no. 4, pp. 278-90.

- James, N & Busher, H 2015, 'Ethical issues in online research', *Educational Research and Evaluation*, vol. 21, no. 2, pp. 89-94.
- Jawaad, M & Zafar, S 2020, 'Improving sustainable development and firm performance in emerging economies by implementing green supply chain activities', *Sustainable Development*, vol. 28, no. 1, pp. 25-38.
- Jazairy, A & von Haartman, R 2020, 'Analysing the institutional pressures on shippers and logistics service providers to implement green supply chain management practices', *International Journal of Logistics Research and Applications*, vol. 23, no. 1, pp. 44-84.
- Jennings, PD & Zandbergen, PA 1995, 'Ecologically sustainable organisations: An institutional approach', *Academy of management review*, vol. 20, no. 4, pp. 1015-52.
- Jones, TM 1995, 'Instrumental stakeholder theory: A synthesis of ethics and economics', *Academy of management review*, vol. 20, no. 2, pp. 404-37.
- Jöreskog, KG & Sörbom, D 1982, 'Recent developments in structural equation modeling', *Journal of marketing research*, pp. 404-16.
- Jose Chiappetta Jabbour, C 2011, 'How green are HRM practices, organisational culture, learning and teamwork? A Brazilian study', *Industrial and Commercial Training*, vol. 43, no. 2, pp. 98-105.
- Kagermann, H, Lukas, W & Wahlster, W 2015, 'Abschotten ist keine Alternative', *VDI nachrichten*, vol. 16.
- Kaiser, HF 1974, 'An index of factorial simplicity', *Psychometrika*, vol. 39, no. 1, pp. 31-6.
- Kalyar, MN, Shoukat, A & Shafique, I 2019, 'Enhancing firms' environmental performance and financial performance through green supply chain management practices and institutional pressures', *Sustainability Accounting, Management and Policy Journal*.
- Kapil, P 2015, 'Green HRM-Engaging Human Resource in reducing carbon footprint and enhancing environment sustainability: A case study based approach', *Int. J. Eng. Technol. Sci. Res*, vol. 2, pp. 5-14.
- Kenny, DA & McCoach, DB 2003, 'Effect of the number of variables on measures of fit in structural equation modeling', *Structural equation modeling*, vol. 10, no. 3, pp. 333-51.

- Kessler, EH & Chakrabarti, AK 1996, 'Innovation speed: A conceptual model of context, antecedents, and outcomes', *Academy of management review*, vol. 21, no. 4, pp. 1143-91.
- Ketchell, M 2020, A rare natural phenomenon brings severe drought to Australia. Climate change is making it common, viewed 9 April 2020, <<https://theconversation.com/a-rare-natural-phenomenon-brings-severe-drought-to-australia-climate-change-is-making-it-more-common-133058>>
- Khan, SAR & Qianli, D 2017, 'Impact of green supply chain management practices on firms' performance: an empirical study from the perspective of Pakistan', *Environmental Science and Pollution Research*, vol. 24, no. 20, pp. 16829-44.
- Kilbourne, WE, Beckmann, SC & Thelen, E 2002, 'The role of the dominant social paradigm in environmental attitudes: A multinational examination', *Journal of business research*, vol. 55, no. 3, pp. 193-204.
- Kim, H, Ku, B, Kim, JY, Park, Y-J & Park, Y-B 2016, 'Confirmatory and exploratory factor analysis for validating the phlegm pattern questionnaire for healthy subjects', *Evidence-Based Complementary and Alternative Medicine*, vol. 2016.
- Kimberly, JR & Evanisko, MJ 1981, 'organisational innovation: The influence of individual, organisational, and contextual factors on hospital adoption of technological and administrative innovations', *Academy of Management journal*, vol. 24, no. 4, pp. 689-713.
- Kittleson, MJ 1997, 'Determining effective follow-up of e-mail surveys', *American Journal of Health Behavior*, vol. 21, no. 3, pp. 193-6.
- Klassen, RD & Vachon, S 2003, 'Collaboration and evaluation in the supply chain: The impact on plant-level environmental investment', *Production and operations management*, vol. 12, no. 3, pp. 336-52.
- Kleindorfer, PR, Singhal, K & Van Wassenhove, LN 2005, 'Sustainable operations management', *Production and operations management*, vol. 14, no. 4, pp. 482-92.
- Kline, P 2013, *Handbook of psychological testing*, Routledge.
- Kline, RB 2015, *Principles and practice of structural equation modeling*, vol. 4th edition, The Guilford Press.
- Koh, S, Morris, J, Ebrahimi, SM & Obayi, R 2016, 'Integrated resource efficiency: measurement and management', *International Journal of Operations & Production Management*.

- Koh, SC, Gunasekaran, A & Tseng, C 2012, 'Cross-tier ripple and indirect effects of directives WEEE and RoHS on greening a supply chain', *International journal of production economics*, vol. 140, no. 1, pp. 305-17.
- Kopicki, R, Berg, MJ & Legg, L 1993, 'Reuse and recycling-reverse logistics opportunities'.
- Krause, DR, Vachon, S & Klassen, RD 2009, 'Special topic forum on sustainable supply chain management: introduction and reflections on the role of purchasing management', *Journal of Supply Chain Management*, vol. 45, no. 4, pp. 18-25.
- Kumar, S, Teichman, S & Timpernagel, T 2012, 'A green supply chain is a requirement for profitability', *International Journal of Production Research*, vol. 50, no. 5, pp. 1278-96.
- Laari, S, Töyli, J & Ojala, L 2018, 'The effect of a competitive strategy and green supply chain management on the financial and environmental performance of logistics service providers', *Business Strategy and the Environment*, vol. 27, no. 7, pp. 872-83.
- Laari, S, Töyli, J, Solakivi, T & Ojala, L 2016, 'Firm performance and customer-driven green supply chain management', *Journal of cleaner production*, vol. 112, pp. 1960-70.
- Lai, K-h & Wong, CW 2012, 'Green logistics management and performance: Some empirical evidence from Chinese manufacturing exporters', *Omega*, vol. 40, no. 3, pp. 267-82.
- Lai, K-h, Wong, CW & Cheng, T 2012, 'Ecological modernisation of Chinese export manufacturing via green logistics management and its regional implications', *Technological forecasting and social change*, vol. 79, no. 4, pp. 766-70.
- Lai, K-h, Wong, CW & Lun, YV 2014, 'The role of customer integration in extended producer responsibility: a study of Chinese export manufacturers', *International journal of production economics*, vol. 147, pp. 284-93.
- Lai, K-h, Wu, SJ & Wong, CW 2013, 'Did reverse logistics practices hit the triple bottom line of Chinese manufacturers?', *International journal of production economics*, vol. 146, no. 1, pp. 106-17.
- Lambert, DM & Cooper, MC 2000, 'Issues in supply chain management', *Industrial Marketing Management*, vol. 29, no. 1, pp. 65-83.
- Laosirihongthong, T, Adebajo, D & Choon Tan, K 2013, 'Green supply chain management practices and performance', *Industrial Management & Data Systems*, vol. 113, no. 8, pp. 1088-109.

- Larsen, K & Ryan, C 2008, 'Sustainable and Secure Food Systems for Victoria: What do we know? What do we need to know?'.
 Lee, S-Y 2008, 'Drivers for the participation of small and medium-sized suppliers in green supply chain initiatives', *Supply Chain Management: An International Journal*, vol. 13, no. 3, pp. 185-98.
 Lee, SM, Tae Kim, S & Choi, D 2012, 'Green supply chain management and organisational performance', *Industrial Management & Data Systems*, vol. 112, no. 8, pp. 1148-80.
 Leenders, M & Fearon, H 1997, 'Purchasing and supply management 11 th', *Ed. Irwin, Chicago, IL*.
 Lei, M & Lomax, RG 2005, 'The effect of varying degrees of nonnormality in structural equation modeling', *Structural equation modeling*, vol. 12, no. 1, pp. 1-27.
 Leire, C & Mont, O 2010, 'The implementation of socially responsible purchasing', *Corporate Social Responsibility and Environmental Management*, vol. 17, no. 1, pp. 27-39.
 Liang, H, Saraf, N, Hu, Q & Xue, Y 2007, 'Assimilation of enterprise systems: the effect of institutional pressures and the mediating role of top management', *MIS quarterly*, pp. 59-87.
 Liebowitz, J 2010, 'The role of HR in achieving a sustainability culture', *Journal of sustainable development*, vol. 3, no. 4, pp. 50-7.
 Lin, B, Jones, CA & Hsieh, C-t 2001, 'Environmental practices and assessment: a process perspective', *Industrial Management & Data Systems*, vol. 101, no. 2, pp. 71-80.
 Lin, R-J 2013, 'Using fuzzy DEMATEL to evaluate the green supply chain management practices', *Journal of cleaner production*, vol. 40, pp. 32-9.
 Lindell, MK & Whitney, DJ 2001, 'Accounting for common method variance in cross-sectional research designs', *Journal of applied psychology*, vol. 86, no. 1, p. 114.
 Link, S & Naveh, E 2006, 'Standardization and discretion: does the environmental standard ISO 14001 lead to performance benefits?', *IEEE transactions on engineering management*, vol. 53, no. 4, pp. 508-19.
 Little, RJ 1988, 'A test of missing completely at random for multivariate data with missing values', *Journal of the American Statistical Association*, vol. 83, no. 404, pp. 1198-202.

- Little, RJ & Rubin, DB 2014, *Statistical analysis with missing data*, John Wiley & Sons.
- Liu, J, Hu, H, Tong, X & Zhu, Q 2020, 'Behavioral and technical perspectives of green supply chain management practices: Empirical evidence from an emerging market', *Transportation Research Part E: Logistics and Transportation Review*, vol. 140, p. 102013.
- Lo, SM & Shiah, Y-A 2016, 'Associating the motivation with the practices of firms going green: the moderator role of environmental uncertainty', *Supply Chain Management: An International Journal*, vol. 21, no. 4, pp. 485-98.
- Longoni, A, Golini, R & Cagliano, R 2014, 'The role of New Forms of Work organisation in developing sustainability strategies in operations', *International journal of production economics*, vol. 147, pp. 147-60.
- Longoni, A, Luzzini, D & Guerri, M 2016, 'Deploying environmental management across functions: the relationship between green human resource management and green supply chain management', *Journal of Business Ethics*, pp. 1-15.
- Luo, Z, Gunasekaran, A, Dubey, R, Childe, SJ & Papadopoulos, T 2017, 'Antecedents of low carbon emissions supply chains', *International Journal of Climate Change Strategies and Management*, vol. 9, no. 5, pp. 707-27.
- Luthra, S, Garg, D & Haleem, A 2013, 'Identifying and ranking of strategies to implement green supply chain management in Indian manufacturing industry using Analytical Hierarchy Process', *Journal of Industrial Engineering and Management*, vol. 6, no. 4, pp. 930-62.
- Luthra, S, Garg, D & Haleem, A 2015, 'An analysis of interactions among critical success factors to implement green supply chain management towards sustainability: An Indian perspective', *Resources Policy*, vol. 46, pp. 37-50.
- Luthra, S, Garg, D & Haleem, A 2016, 'The impacts of critical success factors for implementing green supply chain management towards sustainability: an empirical investigation of Indian automobile industry', *Journal of cleaner production*, vol. 121, pp. 142-58.
- Luthra, S, Kumar, V, Kumar, S & Haleem, A 2011, 'Barriers to implement green supply chain management in automobile industry using interpretive structural modeling technique: An Indian perspective', *Journal of Industrial Engineering and Management*, vol. 4, no. 2, pp. 231-57.
- MacKenzie, SB & Podsakoff, PM 2012, 'Common method bias in marketing: causes, mechanisms, and procedural remedies', *Journal of Retailing*, vol. 88, no. 4, pp. 542-55.

- Madsen, H & Ulhøi, JP 2001, 'Greening of human resources: environmental awareness and training interests within the workforce', *Industrial Management & Data Systems*, vol. 101, no. 2, pp. 57-65.
- Maiti, SS & Mukherjee, BN 1991, 'Two new goodness-of-fit indices for covariance matrices with linear structures', *British Journal of Mathematical and Statistical Psychology*, vol. 44, no. 1, pp. 153-80.
- Majid, A, Yasir, M, Yasir, M & Javed, A 2019, 'Nexus of institutional pressures, environmentally friendly business strategies, and environmental performance', *Corporate Social Responsibility and Environmental Management*.
- Malhotra, NK 1987, 'Analyzing marketing research data with incomplete information on the dependent variable', *Journal of marketing research*, pp. 74-84.
- Malhotra, NK, Kim, SS & Patil, A 2006, 'Common method variance in IS research: A comparison of alternative approaches and a reanalysis of past research', *Management Science*, vol. 52, no. 12, pp. 1865-83.
- Mandip, G 2012, 'Green HRM: People management commitment to environmental sustainability', *Research Journal of Recent Sciences*, ISSN, vol. 2277, p. 2502.
- Mangla, SK, Kumar, P & Barua, MK 2014, 'A flexible decision framework for building risk mitigation strategies in green supply chain using SAP-LAP and IRP approaches', *Global Journal of Flexible Systems Management*, vol. 15, no. 3, pp. 203-18.
- Mangla, SK, Kumar, P & Barua, MK 2016, 'An integrated methodology of FTA and fuzzy AHP for risk assessment in green supply chain', *International Journal of Operational Research*, vol. 25, no. 1, pp. 77-99.
- Manning, L, Baines, R & Chadd, S 2005, 'Deliberate contamination of the food supply chain', *British Food Journal*, vol. 107, no. 4, pp. 225-45.
- Manning, L, Baines, R & Chadd, S 2006, 'Quality assurance models in the food supply chain', *British Food Journal*, vol. 108, no. 2, pp. 91-104.
- Marcus, A & Fremth, A 2009, *Green Management Matters Regardless*, Academy of Management Perspectives, August.
- Mardia, KV 1970, 'Measures of multivariate skewness and kurtosis with applications', *Biometrika*, pp. 519-30.
- Mardia, KV 1974, 'Applications of some measures of multivariate skewness and kurtosis in testing normality and robustness studies', *Sankhyā: The Indian Journal of Statistics, Series B*, pp. 115-28.

- Margaretha, M & Saragih, SR 2012, 'Developing new corporate culture through green human resource practice'.
- Marsh, HW, Hau, K-T, Balla, JR & Grayson, D 1998, 'Is more ever too much? The number of indicators per factor in confirmatory factor analysis', *Multivariate behavioral research*, vol. 33, no. 2, pp. 181-220.
- Martin, L 2019, Cyclone Trevor lashes Northern Territory coast with destructive winds, viewed 7 November 2019, <<https://www.theguardian.com/australia-news/2019/mar/23/cyclone-trevor-lashes-northern-territory-coast-with-destructive-winds>>
- Maryam Masoumi, K, Abdul-Rashid, SH, Olugu, EU, Ghazilla, R & Ariffin, R 2015, 'An integrated framework-for designing a strategic green supply chain with an application to the automotive industry', *International Journal of Industrial Engineering*, vol. 22, no. 1.
- Masri, HA & Jaaron, AA 2017, 'Assessing green human resources management practices in Palestinian manufacturing context: An empirical study', *Journal of cleaner production*, vol. 143, pp. 474-89.
- Massoud, JA, Daily, BF & Bishop, JW 2011, 'Perceptions of environmental management systems: an examination of the Mexican manufacturing sector', *Industrial Management & Data Systems*, vol. 111, no. 1, pp. 5-19.
- Mathiyazhagan, K, Diabat, A, Al-Refaie, A & Xu, L 2015, 'Application of analytical hierarchy process to evaluate pressures to implement green supply chain management', *Journal of cleaner production*, vol. 107, pp. 229-36.
- Mathiyazhagan, K, Govindan, K, NoorulHaq, A & Geng, Y 2013, 'An ISM approach for the barrier analysis in implementing green supply chain management', *Journal of cleaner production*, vol. 47, pp. 283-97.
- Matopoulos, A, Vlachopoulou, M, Manthou, V & Manos, B 2007, 'A conceptual framework for supply chain collaboration: empirical evidence from the agri-food industry', *Supply Chain Management: An International Journal*, vol. 12, no. 3, pp. 177-86.
- McCormack, J, Dorin, A & Innocent, T 2004, 'Generative design: a paradigm for design research', *Proceedings of Futureground, Design Research Society, Melbourne*.
- Mehta, K & Chugan, PK 2015, 'Green HRM in pursuit of environmentally sustainable business', *Pursuit of Environmentally Sustainable Business (June 1, 2015). Universal Journal of Industrial and Business Management*, vol. 3, no. 3, pp. 74-81.

- Mentzer, JT, DeWitt, W, Keebler, JS, Min, S, Nix, NW, Smith, CD & Zacharia, ZG 2001, 'Defining supply chain management', *Journal of Business Logistics*, vol. 22, no. 2, pp. 1-25.
- Mentzer, JT & Flint, DJ 1997, 'Validity in logistics research', *Journal of Business Logistics*, vol. 18, no. 1, p. 199.
- Millsap, RE & Everson, H 1991, 'Confirmatory measurement model comparisons using latent means', *Multivariate behavioral research*, vol. 26, no. 3, pp. 479-97.
- Min, H & Galle, WP 2001, 'Green purchasing practices of US firms', *International Journal of Operations & Production Management*, vol. 21, no. 9, pp. 1222-38.
- Mitra, S 2014, 'A Framework for Research on Green Supply Chain Management', in *Supply Chain Forum: An International Journal*, vol. 15, pp. 34-51.
- Mitra, S & Datta, PP 2014, 'Adoption of green supply chain management practices and their impact on performance: an exploratory study of Indian manufacturing firms', *International Journal of Production Research*, vol. 52, no. 7, pp. 2085-107.
- Moneva, JM & Ortas, E 2010, 'Corporate environmental and financial performance: a multivariate approach', *Industrial Management & Data Systems*, vol. 110, no. 2, pp. 193-210.
- Moore, GC & Benbasat, I 1991, 'Development of an instrument to measure the perceptions of adopting an information technology innovation', *Information systems research*, vol. 2, no. 3, pp. 192-222.
- Muduli, K, Govindan, K, Barve, A & Geng, Y 2013, 'Barriers to green supply chain management in Indian mining industries: a graph theoretic approach', *Journal of cleaner production*, vol. 47, pp. 335-44.
- Mumtaz, U, Ali, Y, Petrillo, A & De Felice, F 2018, 'Identifying the critical factors of green supply chain management: Environmental benefits in Pakistan', *Science of the Total Environment*, vol. 640, pp. 144-52.
- Muthén, B, Kaplan, D & Hollis, M 1987, 'On structural equation modeling with data that are not missing completely at random', *Psychometrika*, vol. 52, no. 3, pp. 431-62.
- Nejati, M & Ahmad, NH 2015, 'Job seekers' perception of Green HRM', *CGHRM*, p. 92.
- Nejati, M, Rabiei, S & Jabbour, CJC 2017, 'Envisioning the invisible: Understanding the synergy between green human resource management and green supply chain management in manufacturing firms in Iran in light of the moderating effect of employees' resistance to change', *Journal of cleaner production*, vol. 168, pp. 163-72.

- Netemeyer, RG, Bearden, WO & Sharma, S 2003, *Scaling procedures: Issues and applications*, Sage Publications.
- Nevitt, J & Hancock, GR 2001, 'Performance of bootstrapping approaches to model test statistics and parameter standard error estimation in structural equation modeling', *Structural equation modeling*, vol. 8, no. 3, pp. 353-77.
- Nunnally, J 1978, 'crPsychometric theory', *Auflage, New York ua: Mc Graw-Hill*.
- Nunnally, J & Bernstein, I 1978, 'Psychometric Theory McGraw-Hill New York Google Scholar'.
- Olsthoorn, X, Tyteca, D, Wehrmeyer, W & Wagner, M 2001, 'Environmental indicators for business: a review of the literature and standardisation methods', *Journal of cleaner production*, vol. 9, no. 5, pp. 453-63.
- Opatha, H 2013, 'Green Human Resource Management A Simplified Introduction'.
- Opatha, HHP & Arulrajah, AA 2014, 'Green human resource management: Simplified general reflections', *International Business Research*, vol. 7, no. 8, p. 101.
- Orlitzky, M, Schmidt, FL & Rynes, SL 2003, 'Corporate social and financial performance: A meta-analysis', *organisation studies*, vol. 24, no. 3, pp. 403-41.
- Osborne, JW & Costello, AB 2009, 'Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis', *Pan-Pacific Management Review*, vol. 12, no. 2, pp. 131-46.
- Packard, H 2006, 'Global citizenship report', *Hewlett Packard Development Company, Palo-Alto, CA*.
- Paillé, P, Chen, Y, Boiral, O & Jin, J 2014, 'The impact of human resource management on environmental performance: An employee-level study', *Journal of Business Ethics*, vol. 121, no. 3, pp. 451-66.
- Pallant, J 2020, *SPSS survival manual: A step by step guide to data analysis using IBM SPSS*, Routledge.
- Pathak, N, Hagare, P, Guo, W & Ngo, H-H 2015, 'Australian food processing industry and environmental aspect—a review', in *International conference on biological civil and engineering (BCEE-2015) Feb*, pp. 3-4.
- Peng, Y-S & Lin, S-S 2008, 'Local responsiveness pressure, subsidiary resources, green management adoption and subsidiary's performance: Evidence from Taiwanese manufactures', *Journal of Business Ethics*, vol. 79, no. 1, pp. 199-212.

- Perotti, S, Zorzini, M, Cagno, E & Micheli, GJ 2012, 'Green supply chain practices and company performance: the case of 3PLs in Italy', *International journal of physical distribution & logistics management*, vol. 42, no. 7, pp. 640-72.
- Perrini, F, Russo, A & Tencati, A 2007, 'CSR strategies of SMEs and large firms. Evidence from Italy', *Journal of Business Ethics*, vol. 74, no. 3, pp. 285-300.
- Podsakoff, PM, MacKenzie, SB, Lee, J-Y & Podsakoff, NP 2003, 'Common method biases in behavioral research: a critical review of the literature and recommended remedies', *Journal of applied psychology*, vol. 88, no. 5, p. 879.
- Popp, D 2010, 'Exploring links between innovation and diffusion: adoption of NO x control technologies at US coal-fired power plants', *Environmental and Resource Economics*, vol. 45, no. 3, pp. 319-52.
- Porter, ME & Kramer, MR 2006, 'The link between competitive advantage and corporate social responsibility', *Harvard business review*, vol. 84, no. 12, pp. 78-92.
- Porter, ME & Van der Linde, C 1995, 'Green and competitive: ending the stalemate', *Harvard business review*, vol. 73, no. 5, pp. 120-34.
- Powell, WW & DiMaggio, PJ 2012, *The new institutionalism in organisational analysis*, University of Chicago press.
- Prahinski, C & Kocabasoglu, C 2006, 'Empirical research opportunities in reverse supply chains', *Omega*, vol. 34, no. 6, pp. 519-32.
- Prajogo, D, Chowdhury, M, Yeung, AC & Cheng, TCE 2012, 'The relationship between supplier management and firm's operational performance: A multi-dimensional perspective', *International journal of production economics*, vol. 136, no. 1, pp. 123-30.
- Prasad, RS 2013, 'Green HRM-partner in sustainable competitive growth', *Journal of Management Sciences and Technology*, vol. 1, no. 1, pp. 15-8.
- Primo, MA & Amundson, SD 2002, 'An exploratory study of the effects of supplier relationships on new product development outcomes', *Journal of operations management*, vol. 20, no. 1, pp. 33-52.
- Qrunfleh, S & Tarafdar, M 2014, 'Supply chain information systems strategy: Impacts on supply chain performance and firm performance', *International Journal of Production Economics*, vol. 147, no. 1, pp. 340-50.
- Ragatz, GL, Handfield, RB & Scannell, TV 1997, 'Success factors for integrating suppliers into new product development', *Journal of Product Innovation*

- Raghunathan, TE 2004, 'What do we do with missing data? Some options for analysis of incomplete data', *Annu. Rev. Public Health*, vol. 25, pp. 99-117.
- Rai, A, Patnayakuni, R & Seth, N 2006, 'Firm performance impacts of digitally enabled supply chain integration capabilities', *MIS quarterly*, vol. 30, no. 2, pp. 225-46.
- Ralston, PM, Blackhurst, J, Cantor, DE & Crum, MR 2015, 'A Structure-Conduct-Performance Perspective of How Strategic Supply Chain Integration Affects Firm Performance', *Journal of Supply Chain Management*, vol. 51, no. 2, p. 47.
- Rao & Holt, D 2005, 'Do green supply chains lead to competitiveness and economic performance?', *International Journal of Operations & Production Management*, vol. 25, no. 9, pp. 898-916.
- Rao, P 2002, 'Greening the supply chain: a new initiative in South East Asia', *International Journal of Operations & Production Management*, vol. 22, no. 6, pp. 632-55.
- Rao, PH 2003, *Greening of the supply chain: a guide for managers in Southeast Asia*, AIM publication.
- Rath, RC 2013, 'An impact of green marketing on practices of supply chain management in Asia: emerging economic opportunities and challenges', *International Journal of Supply Chain Management*, vol. 2, no. 1, pp. 78-86.
- Razab, M, Udin, ZM & Osman, WN 2015, 'Understanding the role of GHRM towards environmental performance', *Journal of Global Business and Social entrepreneurship (GBSE)*, vol. 1, no. 2, pp. 118-25.
- Renwick, D, Redman, T & Maguire, S 2008, 'Green HRM: A review, process model, and research agenda', *University of Sheffield Management School Discussion Paper*, vol. 1, pp. 1-46.
- Renwick, DW, Redman, T & Maguire, S 2013, 'Green human resource management: A review and research agenda', *International journal of management reviews*, vol. 15, no. 1, pp. 1-14.
- Rice, S 2003, 'Commitment to excellence: practical approaches to environmental leadership', *Environmental Quality Management*, vol. 12, no. 4, pp. 9-22.
- Rivera, J, De Leon, P & Koerber, C 2006, 'Is greener whiter yet? The sustainable slopes program after five years', *Policy Studies Journal*, vol. 34, no. 2, pp. 195-221.

- Roberts, LD & Allen, PJ 2015, 'Exploring ethical issues associated with using online surveys in educational research', *Educational Research and Evaluation*, vol. 21, no. 2, pp. 95-108.
- Rogers, DS & Tibben-Lembke, R 2001, 'An examination of reverse logistics practices', *Journal of Business Logistics*, vol. 22, no. 2, pp. 129-48.
- Rostamzadeh, R, Govindan, K, Esmaeili, A & Sabaghi, M 2015, 'Application of fuzzy VIKOR for evaluation of green supply chain management practices', *Ecological Indicators*, vol. 49, pp. 188-203.
- Roth, AV, Tsay, AA, Pullman, ME & Gray, JV 2008, 'Unraveling the food supply chain: strategic insights from China and the 2007 recalls', *Journal of Supply Chain Management*, vol. 44, no. 1, pp. 22-39.
- Saeed, A, Jun, Y, Nubuor, SA, Priyankara, HPR & Jayasuriya, MPF 2018, 'Institutional pressures, green supply chain management practices on environmental and economic performance: A two theory view', *Sustainability*, vol. 10, no. 5, p. 1517.
- Sarkis, J 1998, 'Evaluating environmentally conscious business practices', *European Journal of Operational Research*, vol. 107, no. 1, pp. 159-74.
- Sarkis, J 2001, 'Manufacturing's role in corporate environmental sustainability-Concerns for the new millennium', *International Journal of Operations & Production Management*, vol. 21, no. 5/6, pp. 666-86.
- Sarkis, J, Gonzalez-Torre, P & Adenso-Diaz, B 2010, 'Stakeholder pressure and the adoption of environmental practices: The mediating effect of training', *Journal of operations management*, vol. 28, no. 2, pp. 163-76.
- Sarkis, J, Helms, MM & Hervani, AA 2010, 'Reverse logistics and social sustainability', *Corporate Social Responsibility and Environmental Management*, vol. 17, no. 6, pp. 337-54.
- Sarkis, J, Zhu, Q & Lai, K-h 2011, 'An organisational theoretic review of green supply chain management literature', *International journal of production economics*, vol. 130, no. 1, pp. 1-15.
- Saunders, MN 2011a, *Research methods for business students*, Pearson Education India.
- Saunders, MN 2011b, *Research methods for business students*, 5/e, Pearson Education India.
- Savitz, A 2013, *The triple bottom line: how today's best-run companies are achieving economic, social and environmental success-and how you can too*, John Wiley & Sons.

- Sayce, S & Ellison, L 2003, 'Integrating sustainability into the appraisal of property worth: identifying appropriate indicators of sustainability', in *AREUEA conference, August*, pp. 21-3.
- Schaefer, A 2004, 'Corporate sustainability—integrating environmental and social concerns?', *Corporate Social Responsibility and Environmental Management*, vol. 11, no. 4, pp. 179-87.
- Schaltegger, S, Burritt, R, Beske, P & Seuring, S 2014, 'Putting sustainability into supply chain management', *Supply Chain Management: An International Journal*.
- Schmidt, CG, Foerstl, K & Schaltenbrand, B 2017, 'The supply chain position paradox: Green practices and firm performance', *Journal of Supply Chain Management*, vol. 53, no. 1, pp. 3-25.
- Schoenherr, T & Talluri, S 2012, 'Environmental sustainability initiatives: A comparative analysis of plant efficiencies in Europe and the US', *IEEE transactions on engineering management*, vol. 60, no. 2, pp. 353-65.
- Schumacker, RE & Lomax, RG 2004, *A beginner's guide to structural equation modeling*, Psychology Press.
- Sekaran, U 2006, *Research methods for business: A skill building approach*, John Wiley & Sons.
- Sekaran, U & Bougie, R 2016, *Research methods for business: A skill building approach*, John Wiley & Sons.
- Seman, NAA, Govindan, K, Mardani, A, Zakuan, N, Saman, MZM, Hooker, RE & Ozkul, S 2019, 'The mediating effect of green innovation on the relationship between green supply chain management and environmental performance', *Journal of cleaner production*, vol. 229, pp. 115-27.
- Sen, S & Cowley, J 2013, 'The relevance of stakeholder theory and social capital theory in the context of CSR in SMEs: An Australian perspective', *Journal of Business Ethics*, vol. 118, no. 2, pp. 413-27.
- Seuring, S 2013, 'A review of modeling approaches for sustainable supply chain management', *Decision Support Systems*, vol. 54, no. 4, pp. 1513-20.
- Seuring, S & Müller, M 2008, 'From a literature review to a conceptual framework for sustainable supply chain management', *Journal of cleaner production*, vol. 16, no. 15, pp. 1699-710.

- Shah, R & Goldstein, S 2006, 'Use of structural equation modeling in operations management research: Looking back and forward☆', *Journal of Operations Management*, vol. 24, no. 2, pp. 148-69.
- Shaharudin, MR, Govindan, K, Zailani, S & Tan, KC 2015, 'Managing product returns to achieve supply chain sustainability: an exploratory study and research propositions', *Journal of cleaner production*, vol. 101, pp. 1-15.
- Sharma, S & Gupta, N 2015, 'Green HRM: an innovative approach to environmental sustainability', in *Proceeding of the Twelfth AIMS International Conference on Management*, pp. 2-5.
- Sharma, S & Ruud, A 2003, 'On the path to sustainability: integrating social dimensions into the research and practice of environmental management', *Business Strategy and the Environment*, vol. 12, no. 4, pp. 205-14.
- Shee, H, Miah, SJ, Fairfield, L & Pujawan, N 2018, 'The impact of cloud-enabled process integration on supply chain performance and firm sustainability: the moderating role of top management', *Supply Chain Management: An International Journal*.
- Shrivastava, P 1995, 'The role of corporations in achieving ecological sustainability', *Academy of management review*, vol. 20, no. 4, pp. 936-60.
- Slavec, A & Drnovsek, M 2012, 'A perspective on scale development in entrepreneurship research', *Economic and Business Review for Central and South-Eastern Europe*, vol. 14, no. 1, p. 39.
- Song, M & Di Benedetto, CA 2008, 'Supplier's involvement and success of radical new product development in new ventures', *Journal of operations management*, vol. 26, no. 1, pp. 1-22.
- Spath, D, Ganschar, O, Gerlach, S, Hämmerle, M, Krause, T & Schlund, S 2013, *Produktionsarbeit der Zukunft-Industrie 4.0*, vol. 150, Fraunhofer Verlag Stuttgart.
- Spector, PE 1992, 'Summated Rating Scale Construction: An Introduction Sage', *Newbury Park, CA*.
- Srivastava, SK 2007, 'Green supply-chain management: a state-of-the-art literature review', *International journal of management reviews*, vol. 9, no. 1, pp. 53-80.
- Stefanelli, NO, Jabbour, CJC & de Sousa Jabbour, ABL 2014, 'Green supply chain management and environmental performance of firms in the bioenergy sector in Brazil: An exploratory survey', *Energy Policy*, vol. 75, pp. 312-5.

- Stern, MJ, Bilgen, I & Dillman, DA 2014, 'The state of survey methodology: Challenges, dilemmas, and new frontiers in the era of the tailored design', *Field Methods*, vol. 26, no. 3, pp. 284-301.
- Stevens, JP 2012, *Applied multivariate statistics for the social sciences*, Routledge.
- Stock & Seliger, G 2016, 'Opportunities of sustainable manufacturing in industry 4.0', *Procedia Cirp*, vol. 40, pp. 536-41.
- Stock, J, Speh, T & Shear, H 2002, 'Many happy (product) returns'.
- Stock, JR 1998, 'Development and implementation of reverse logistics programs', in *Annual Conference Proceedings, Council of Logistics Management*.--.
- Studer, S, Tsang, S, Welford, R & Hills, P 2008, 'SMEs and voluntary environmental initiatives: a study of stakeholders' perspectives in Hong Kong', *Journal of environmental planning and management*, vol. 51, no. 2, pp. 285-301.
- Su, Y-f & Yang, C 2010, 'A structural equation model for analyzing the impact of ERP on SCM', *Expert Systems with Applications*, vol. 37, no. 1, pp. 456-69.
- Sudin, S 2011, 'Strategic green HRM: A proposed model that supports corporate environmental citizenship', in *International Conference on Sociality and Economics Development, IPEDR*, vol. 10, pp. 79-83.
- Sustainable and Secure Food Systems for Victoria 2008, Food print Melbourne, viewed 6 August 2019, <<https://fvas.unimelb.edu.au/research/projects/foodprint-melbourne/publications/past-publications/sustainable-and-secure-food-systems-for-victoria>>
- Swat, M, Brünnet, H & Bähre, D 2014, 'Selecting manufacturing process chains in the early stage of the product engineering process with focus on energy consumption', in *Technology and Manufacturing Process Selection*, Springer, pp. 153-73.
- Swink, M 2003, 'Completing projects on-time: how project acceleration affects new product development', *Journal of Engineering and Technology Management*, vol. 20, no. 4, pp. 319-44.
- Tabachnick, B & Fidell, L 2012, *Using multivariate statistics (6th edn.)*. Old Tappan, NJ: Allyn & Bacon.
- Tabachnick, BG & Fidel, LS 2013, *Using multivariate statistics*, vol. 6th edition. , Boston Pearson.
- Taboada, I & Shee, H 2020, 'Understanding 5G technology for future supply chain management', *International Journal of Logistics Research and Applications*, pp. 1-15

- Tachizawa, EM, Gimenez, C & Sierra, V 2015, 'Green supply chain management approaches: drivers and performance implications', *International Journal of Operations & Production Management*, vol. 35, no. 11, pp. 1546-66.
- Tanaka, JS 1987, "'How big is big enough?': Sample size and goodness of fit in structural equation models with latent variables', *Child development*, pp. 134-46.
- Tate, WL, Ellram, LM & Kirchoff, JF 2010, 'Corporate social responsibility reports: a thematic analysis related to supply chain management', *Journal of Supply Chain Management*, vol. 46, no. 1, pp. 19-44.
- Teixeira, AA, Jabbour, CJC, de Sousa Jabbour, ABL, Latan, H & de Oliveira, JHC 2016, 'Green training and green supply chain management: Evidence from Brazilian firms', *Journal of cleaner production*, vol. 116, pp. 170-6.
- Tempel, A & Walgenbach, P 2007, 'Global standardization of organisational forms and management practices? What new institutionalism and the business-systems approach can learn from each other', *Journal of Management studies*, vol. 44, no. 1, pp. 1-24.
- Teo, W-B 2003, 'Predicting intention to adopt IO linkages', *MIS quarterly*, vol. 27, no. 1.
- Theyel, G 2006, 'Customer and supplier relations for environmental performance', in *Greening the supply chain*, Springer, pp. 139-49.
- Tjahjono, B, Esplugues, C, Ares, E & Pelaez, G 2017, 'What does industry 4.0 mean to supply chain?', *Procedia manufacturing*, vol. 13, pp. 1175-82.
- Tomarken, AJ & Waller, NG 2005, 'Structural equation modeling: Strengths, limitations, and misconceptions', *Annu. Rev. Clin. Psychol.*, vol. 1, pp. 31-65.
- Trienekens, JH, Wognum, P, Beulens, AJ & van der Vorst, JG 2012, 'Transparency in complex dynamic food supply chains', *Advanced Engineering Informatics*, vol. 26, no. 1, pp. 55-65.
- Tseng, M-L & Chiu, AS 2013, 'Evaluating firm's green supply chain management in linguistic preferences', *Journal of cleaner production*, vol. 40, pp. 22-31.
- Tseng, M-L, Islam, MS, Karia, N, Fauzi, FA & Afrin, S 2019, 'A literature review on green supply chain management: Trends and future challenges', *Resources, conservation and recycling*, vol. 141, pp. 145-62.
- Ullman, JB & Bentler, PM 2003, *Structural equation modeling*, Wiley Online Library.

- United Nations Climate Change 2015, The Paris Agreement, viewed 2 November 2019, <<https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>>
- Unwin, J 2019, Renewables energy tales hit in Australian 'climate election' viewed 4 December 2019, <<https://www.power-technology.com/news/australia-election-renewable-energy/>>
- Vachon, S & Klassen, RD 2006, 'Extending green practices across the supply chain: the impact of upstream and downstream integration', *International Journal of Operations & Production Management*, vol. 26, no. 7, pp. 795-821.
- Vachon, S & Klassen, RD 2007, 'Supply chain management and environmental technologies: the role of integration', *International Journal of Production Research*, vol. 45, no. 2, pp. 401-23.
- Vachon, S & Klassen, RD 2008, 'Environmental management and manufacturing performance: The role of collaboration in the supply chain', *International journal of production economics*, vol. 111, no. 2, pp. 299-315.
- Van der Vorst, JG & Beulens, AJ 2002, 'Identifying sources of uncertainty to generate supply chain redesign strategies', *International journal of physical distribution & logistics management*, vol. 32, no. 6, pp. 409-30.
- Van Hoek, RI 1999, 'From reversed logistics to green supply chains', *Supply Chain Management: An International Journal*, vol. 4, no. 3, pp. 129-35.
- Van Hoof, B & Lyon, TP 2013, 'Cleaner production in small firms taking part in Mexico's Sustainable Supplier Program', *Journal of cleaner production*, vol. 41, pp. 270-82.
- Vanalle, RM, Ganga, GMD, Godinho Filho, M & Lucato, WC 2017, 'Green supply chain management: An investigation of pressures, practices, and performance within the Brazilian automotive supply chain', *Journal of cleaner production*, vol. 151, pp. 250-9.
- Varnhagen, CK, Gushta, M, Daniels, J, Peters, TC, Parmar, N, Law, D, Hirsch, R, Sadler Takach, B & Johnson, T 2005, 'How informed is online informed consent?', *Ethics & Behavior*, vol. 15, no. 1, pp. 37-48.
- Varsei, M & Polyakovskiy, S 2017, 'Sustainable supply chain network design: A case of the wine industry in Australia', *Omega*, vol. 66, pp. 236-47.
- Wagner, M, Van Phu, N, Azomahou, T & Wehrmeyer, W 2002, 'The relationship between the environmental and economic performance of firms: an empirical analysis of the European paper industry', *Corporate Social Responsibility and Environmental Management*, vol. 9, no. 3, pp. 133-46.

- Walker, DA & Smith, TJ 2016, 'Computing Robust, Bootstrap-Adjusted Fit Indices for Use With Nonnormal Data', *Measurement and Evaluation in Counseling and Development*, p. 0748175616671365.
- Wang, X, Li, D & O'brien, C 2009, 'Optimisation of traceability and operations planning: an integrated model for perishable food production', *International Journal of Production Research*, vol. 47, no. 11, pp. 2865-86.
- Wang, Z, Wang, Q, Zhang, S & Zhao, X 2018, 'Effects of customer and cost drivers on green supply chain management practices and environmental performance', *Journal of cleaner production*, vol. 189, pp. 673-82.
- WCED, U 1987, 'Our common future', *World Commission on Environment and Development* Oxford University Press.
- Wehrmeyer, W 2017, *Greening people: Human resources and environmental management*, Routledge.
- Weijters, B & Baumgartner, H 2012, 'Misresponse to reversed and negated items in surveys: A review', *Journal of marketing research*, vol. 49, no. 5, pp. 737-47.
- Weijters, B, Cabooter, E & Schillewaert, N 2010, 'The effect of rating scale format on response styles: The number of response categories and response category labels', *International Journal of Research in Marketing*, vol. 27, no. 3, pp. 236-47.
- Welker, GA, van der Vaart, T & van Donk, DP 2008, 'The influence of business conditions on supply chain information-sharing mechanisms: a study among supply chain links of SMEs', *International journal of production economics*, vol. 113, no. 2, pp. 706-20.
- Whiteman, N 2012, *Undoing Ethics*, Springer.
- Wiengarten, F, Pagell, M & Fynes, B 2012, 'Supply chain environmental investments in dynamic industries: Comparing investment and performance differences with static industries', *International journal of production economics*, vol. 135, no. 2, pp. 541-51.
- Wiersema, MF & Bantel, KA 1992, 'Top management team demography and corporate strategic change', *Academy of Management journal*, vol. 35, no. 1, pp. 91-121.
- Winter, M & Knemeyer, AM 2013, 'Exploring the integration of sustainability and supply chain management: Current state and opportunities for future inquiry', *International journal of physical distribution & logistics management*, vol. 43, no. 1, pp. 18-38.

- Wolf, J 2011, 'Sustainable supply chain management integration: a qualitative analysis of the German manufacturing industry', *Journal of Business Ethics*, vol. 102, no. 2, pp. 221-35.
- Wong, CW, Lai, K-h, Shang, K-C, Lu, C-S & Leung, T 2012, 'Green operations and the moderating role of environmental management capability of suppliers on manufacturing firm performance', *International journal of production economics*, vol. 140, no. 1, pp. 283-94.
- Wong, CWY, Cheng, TCE & Lai, K-h 2011, 'Value of information integration to supply chain management: Roles of internal and external contingencies', *Journal of Management Information Systems*, vol. 28, no. 3, pp. 161-200.
- Woo, C, Kim, MG, Chung, Y & Rho, JJ 2016, 'Suppliers' communication capability and external green integration for green and financial performance in Korean construction industry', *Journal of cleaner production*, vol. 112, pp. 483-93.
- Wood, DJ 1991, 'Corporate social performance revisited', *Academy of management review*, vol. 16, no. 4, pp. 691-718.
- Wu, Ding, J-H & Chen, P-S 2012, 'The effects of GSCM drivers and institutional pressures on GSCM practices in Taiwan's textile and apparel industry', *International journal of production economics*, vol. 135, no. 2, pp. 618-36.
- Wu, H-H & Chang, S-Y 2015, 'A case study of using DEMATEL method to identify critical factors in green supply chain management', *Applied Mathematics and Computation*, vol. 256, pp. 394-403.
- Wu, H-J & Dunn, SC 1995, 'Environmentally responsible logistics systems', *International journal of physical distribution & logistics management*, vol. 25, no. 2, pp. 20-38.
- WY Wong, C, Lai, KH, Shang, KC & Lu, CS 2014, 'Uncovering the value of green advertising for environmental management practices', *Business Strategy and the Environment*, vol. 23, no. 2, pp. 117-30.
- Yakovleva, N 2007, 'Measuring the sustainability of the food supply chain: a case study of the UK', *Journal of Environmental Policy & Planning*, vol. 9, no. 1, pp. 75-100.
- Yalabik, B & Fairchild, RJ 2011, 'Customer, regulatory, and competitive pressure as drivers of environmental innovation', *International journal of production economics*, vol. 131, no. 2, pp. 519-27.
- Yang, C-S 2017, 'An analysis of institutional pressures, green supply chain management, and green performance in the container shipping context', *Transportation Research Part D: Transport and Environment*.

- Yang, C-S 2018, 'An analysis of institutional pressures, green supply chain management, and green performance in the container shipping context', *Transportation Research Part D: Transport and Environment*, vol. 61, pp. 246-60.
- Yang, C-S, Lu, C-S, Haider, JJ & Marlow, PB 2013, 'The effect of green supply chain management on green performance and firm competitiveness in the context of container shipping in Taiwan', *Transportation Research Part E: Logistics and Transportation Review*, vol. 55, pp. 55-73.
- Ye, F, Zhao, X, Prahinski, C & Li, Y 2013, 'The impact of institutional pressures, top managers' posture and reverse logistics on performance—Evidence from China', *International journal of production economics*, vol. 143, no. 1, pp. 132-43.
- Youn, S, Yang, MGM, Hong, P & Park, K 2013, 'Strategic supply chain partnership, environmental supply chain management practices, and performance outcomes: an empirical study of Korean firms', *Journal of cleaner production*, vol. 56, pp. 121-30.
- Younis, H 2016, 'The impact of the dimensions of green supply chain management practices on corporate performance'.
- Younis, H & Sundarakani, B 2019, 'The impact of firm size, firm age and environmental management certification on the relationship between green supply chain practices and corporate performance', *Benchmarking: An international journal*.
- Yu, W 2015, 'The effect of IT-enabled supply chain integration on performance', *Production Planning & Control*, vol. 26, no. 12, pp. 945-57.
- Yu, W, Jacobs, MA, Chavez, R & Yang, J 2019, 'Dynamism, disruption orientation, and resilience in the supply chain and the impacts on financial performance: a dynamic capabilities perspective', *International journal of production economics*, vol. 218, pp. 352-62.
- Yu, W, Jacobs, MA, Salisbury, WD & Enns, H 2013, 'The effects of supply chain integration on customer satisfaction and financial performance: An organisational learning perspective', *International journal of production economics*, vol. 146, no. 1, pp. 346-58.
- Zaid, AA, Jaaron, AA & Bon, AT 2018, 'The impact of green human resource management and green supply chain management practices on sustainable performance: An empirical study', *Journal of cleaner production*.

- Zailani, S, Jeyaraman, K, Vengadasan, G & Premkumar, R 2012, 'Sustainable supply chain management (SSCM) in Malaysia: A survey', *International journal of production economics*, vol. 140, no. 1, pp. 330-40.
- Zanoni, S & Zavanella, L 2012, 'Chilled or frozen? Decision strategies for sustainable food supply chains', *International journal of production economics*, vol. 140, no. 2, pp. 731-6.
- Zhang, F, Rio, M, Allais, R, Zwolinski, P, Carrillo, TR, Roucoules, L, Mercier-Laurent, E & Buclet, N 2013, 'Toward a systemic navigation framework to integrate sustainable development into the company', *Journal of cleaner production*, vol. 54, pp. 199-214.
- Zhang, J & Duan, Y 2010, 'Empirical study on the impact of market orientation and innovation orientation on new product performance of Chinese manufacturers', *Nankai Business Review International*, vol. 1, no. 2, pp. 214-31.
- Zhang, Y 2000, 'Using the Internet for survey research: A case study', *Journal of the American Society for Information Science*, vol. 51, no. 1, pp. 57-68.
- Zhao, X, Huo, B, Selen, W & Yeung, JHY 2011, 'The impact of internal integration and relationship commitment on external integration', *Journal of operations management*, vol. 29, no. 1-2, pp. 17-32.
- Zhu, Q, Cordeiro, J & Sarkis, J 2013, 'Institutional pressures, dynamic capabilities and environmental management systems: Investigating the ISO 9000–Environmental management system implementation linkage', *Journal of environmental management*, vol. 114, pp. 232-42.
- Zhu, Q, Feng, Y & Choi, S-B 2017, 'The role of customer relational governance in environmental and economic performance improvement through green supply chain management', *Journal of cleaner production*, vol. 155, pp. 46-53.
- Zhu, Q, Geng, Y, Fujita, T & Hashimoto, S 2010, 'Green supply chain management in leading manufacturers: Case studies in Japanese large companies', *Management Research Review*, vol. 33, no. 4, pp. 380-92.
- Zhu, Q, Geng, Y, Sarkis, J & Lai, K-h 2011, 'Evaluating green supply chain management among Chinese manufacturers from the ecological modernization perspective', *Transportation Research Part E: Logistics and Transportation Review*, vol. 47, no. 6, pp. 808-21.
- Zhu, Q & Sarkis, J 2004, 'Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises', *Journal of operations management*, vol. 22, no. 3, pp. 265-89.

- Zhu, Q & Sarkis, J 2007, 'The moderating effects of institutional pressures on emergent green supply chain practices and performance', *International Journal of Production Research*, vol. 45, no. 18-19, pp. 4333-55.
- Zhu, Q, Sarkis, J & Geng, Y 2005, 'Green supply chain management in China: pressures, practices and performance', *International Journal of Operations & Production Management*, vol. 25, no. 5, pp. 449-68.
- Zhu, Q, Sarkis, J & Lai, K-h 2007, 'Green supply chain management: pressures, practices and performance within the Chinese automobile industry', *Journal of cleaner production*, vol. 15, no. 11, pp. 1041-52.
- Zhu, Q, Sarkis, J & Lai, K-h 2008, 'Confirmation of a measurement model for green supply chain management practices implementation', *International journal of production economics*, vol. 111, no. 2, pp. 261-73.
- Zhu, Q, Sarkis, J & Lai, K-h 2012a, 'Examining the effects of green supply chain management practices and their mediations on performance improvements', *International Journal of Production Research*, vol. 50, no. 5, pp. 1377-94.
- Zhu, Q, Sarkis, J & Lai, K-h 2012b, 'Green supply chain management innovation diffusion and its relationship to organisational improvement: An ecological modernization perspective', *Journal of Engineering and Technology Management*, vol. 29, no. 1, pp. 168-85.
- Zhu, Q, Sarkis, J & Lai, K-h 2013, 'Institutional-based antecedents and performance outcomes of internal and external green supply chain management practices', *Journal of Purchasing and Supply Management*, vol. 19, no. 2, pp. 106-17.
- Zhu, Q, Sarkis, J, Lai, Kh & Geng, Y 2008, 'The role of organisational size in the adoption of green supply chain management practices in China', *Corporate Social Responsibility and Environmental Management*, vol. 15, no. 6, pp. 322-37.
- Ziggers, GW & Trienekens, J 1999, 'Quality assurance in food and agribusiness supply chains: Developing successful partnerships', *International journal of production economics*, vol. 60, pp. 271-9.
- Zoogah, DB 2011, 'The dynamics of green HRM behaviors: A cognitive social information processing approach', *German Journal of Human Resource Management*, vol. 25, no. 2, pp. 117-39.
- Zsidisin, GA & Hendrick, TE 1998, 'Purchasing's involvement in environmental issues: a multi-country perspective', *Industrial Management & Data Systems*, vol. 98, no. 7, pp. 313-20.

Zsidisin, GA & Siferd, SP 2001, 'Environmental purchasing: a framework for theory development', *European Journal of Purchasing & Supply Management*, vol. 7, no. 1, pp. 61-73.

Appendices

Appendix A: Ethical approval

Dear DR HIMANSHU SHEE,

Your ethics application has been formally reviewed and finalised.

» Application ID: HRE18-219

» Chief Investigator: DR HIMANSHU SHEE

» Other Investigators: DR THARAKA DE VASS GUNAWARDENA, Ms Adeline K Benjamin

» Application Title: Green supply chain initiatives on green sustainable performance: Australian food and beverage SMEs

» Form Version: 13-07

The application has been accepted and deemed to meet the requirements of the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007)' by the Victoria University Human Research Ethics Committee. Approval has been granted for two (2) years from the approval date; 12/12/2018.

Continued approval of this research project by the Victoria University Human Research Ethics Committee (VUHREC) is conditional upon the provision of a report within 12 months of the above approval date or upon the completion of the project (if earlier). A report proforma may be downloaded from the Office for Research website at: <http://research.vu.edu.au/hrec.php>.

Please note that the Human Research Ethics Committee must be informed of the following: any changes to the approved research protocol, project timelines, any serious

events or adverse and/or unforeseen events that may affect continued ethical acceptability of the project. In these unlikely events, researchers must immediately cease all data collection until the Committee has approved the changes. Researchers are also reminded of the need to notify the approving HREC of changes to personnel in research projects via a request for a minor amendment. It should also be noted that it is the Chief Investigators' responsibility to ensure the research project is conducted in line with the recommendations outlined in the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007).'

On behalf of the Committee, I wish you all the best for the conduct of the project.

Secretary, Human Research Ethics Committee

Phone: 9919 4781 or 9919 4461

Appendix B: Information to Participants form

Green supply chain initiative on green sustainable performance: Australian food and beverage SMEs

Why this survey?

While Australian food and beverage SMEs play important role in the economy, little is known about the crucial role that green practices play in achieving sustainable performance of these firms. You are therefore invited to participate in this research that examines the impact of green supply initiatives on green sustainable performance. This project is being conducted by a student researcher Ms Adeline Benjamin, as part of a Doctor of Business Administration study at Victoria University under the supervision of Dr. Himanshu Shee and Dr. Tharaka De Vass Gunawardena from the College of Business, Victoria University, Melbourne, Australia.

Who should fill in this questionnaire?

This survey is intended to be completed by SME owners, chief executive officers, logistics/purchasing managers, supply chain managers, human resource managers, operations/production managers, and plant managers. Although participation in this survey is voluntary, we will greatly appreciate your cooperation to complete the survey. Only the researchers involved in the project will have access to the responses in this survey. All information will be stored in compliance with the Victoria University data protection guidelines.

What do you do?

Most questions simply require you to choose an answer from a list of options and then tick the option corresponds to your choice. In some instances we require you have quick read of short text to develop an understanding before ticking the option. You could expect this survey to take about 15 minutes.

Any questions?

For more information, contact: Dr Himanshu Shee (3) 9919 4077,

or email Himanshu.Shee@vu.edu.au. Also can contact Adeline Benjamin, Email: adeline.benjamin2@live.vu.edu.au.

This project has received clearance from the Victoria University Human Research Ethics Committee vide letter no HRE18-219, Dated 12/12/2018. If you have any concerns

about the conduct of this project, please contact the Secretary, Victoria University Human Research Ethics Committee, Victoria University, PO Box 14428, Melbourne, VIC, 8001, phone (03) 9919 4781 or 9919 4461; Email: researchethics@vu.edu.au

Obtaining copy of research related to this project

If you would prefer an electronic copy of the research report and from future research in this series, please write your email in the space provided below.

☐Email:

Appendix C: Participant consent form

I understand that:

1. My participation in the project is entirely voluntary
2. I am free to withdraw from the project at any time without any disadvantage.
3. This project involves an online survey. The questions will ask me about my perceptions of green initiatives (e.g., internal, external and human resource practices) in green sustainable performance. If I feel hesitant or uncomfortable about any survey questions, I may decline to answer any particular question and may withdraw from the project without any disadvantage of any kind.
4. There are no physical or psychological risks.
5. Unfortunately no incentives are attached for my participation.
6. The results of the project will be published but my anonymity will be preserved.

☐ I do Accept

☐ I do not accept

Appendix D: Survey questionnaire

Q1 PART A: GREEN SUPPLY CHAIN MANAGEMENT PRACTICES

What extent do you agree/disagree regarding green practices implementation occurred in your company?

Choose one of the options below.

(Rest of the questionnaire items are dependent on the choice you made here.)

- ☐ No implementation yet
- ☐ Planning for some potential implementation
- ☐ Currently considering implementation
- ☐ Implementation in progress
- ☐ Implemented fully

Internal green supply chain management (IGSCM) practices within your company.

What extent you agree or disagree with the option below in relation to the questions on green supply chain practices within your organisation.

Q2 IGSCM1. Senior managers of our company participate and encourage the implementation of environmental initiatives.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q3 IGSCM2. Our company encourages cross-functional cooperation for environmental improvements.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q4 IGSCM3. Our company practices environmental compliance and audit programs.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q5 IGSCM4. Our company designs/uses products with reduced materials and energy consumption.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q6 IGSCM5. Our company uses state-of-the-art equipment/machinery with minimal carbon dioxide/pollutant emission.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q7 IGSCM6. Our company reduces/discourages the use of hazardous products and their manufacturing process.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q8 IGSCM7. Our company reuses, recycles, and practices recovery of materials.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

External green supply chain management (EGSCM) practices within your company

What extent you agree or disagree with the option below in relation to the questions on green supply chain practices external (e.g., suppliers and customers) to your organisation.

Q9 EGSCM1. Our company cooperates/works with suppliers to achieve environmental objectives.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q10 EGSCM2. Our company audits/assesses suppliers' environmental management practices.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q11 EGSCM3. Our company encourages or rewards suppliers' ISO 14001 certification.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q12 EGSCM4. Our company cooperates with customers for cleaner operations.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q13 EGSCM5. Our company cooperates with customers for green packaging.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q14 EGSCM6. Our company requires suppliers to collect their packaging materials.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q15 EGSCM7. Our company encourages customers to help collect packaging materials after delivery.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

PART B: GREEN HUMAN RESOURCE MANAGEMENT (GHRM) PRACTICES

What extent you agree or disagree with the option below in relation to the questions on green human resource management practices in your organisation.

Q16 GHRM1. Our company selects and recruits applicants with environmental knowledge, concern, and attitude.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q17 GHRM2. Our company provides its employees with formal environmental training programs.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q18 GHRM3. Our company ensures that topics covered during green training are appropriate and current for today business operations.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q19 GHRM4. Our company encourages employee suggestions for environmental performance improvement by setting up employee environmental suggestion schemes.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q20 GHRM5. Our company recognizes employees for taking initiative for environmental management through environmental awards to individuals or teams.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q21 GHRM6. Our company uses the achievement of environmental goals as one of the criteria in employee performance appraisal.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q22 GHRM7. Our company frequently uses teamwork to solve environmental management systems problems.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

PART C: INSTITUTIONAL PRESSURES

Q23 What extent are institutional pressures (e.g. Regulatory pressure, customer pressure and competitors' pressure) relevant to the adoption of green practices in your company?

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Regulatory(R) pressures (Pressures as a result of environmental regulations)

What extent are regulatory pressure relevant to the adoption of green practices in your company?

Q24 R1. The environmental regulations were imposed by the federal government on my company.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q25 R2. State/Regional environmental regulations were imposed on my company.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q26 R3. The resource saving and conservation regulation were imposed by federal government on my company.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q27 R4. State/Regional resource saving and conservation regulation were imposed on my company.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q28 R5. Potential conflicts between products and environmental regulations will affect our company's green environmental management.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q29 R6. The green environmental management of our firm will be affected by cost of pollution prevention practices.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Customer(C) pressures (Pressures that stem from consumers)

What extent are customer pressure relevant to the adoption of green practices in your company?

Q30 C1. In order to respond to the green environmental protection, our firm will consider its effect on sales to foreign customers.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q31 C2. In order to respond to the green environmental protection initiative, our firm will consider its effect on domestic customers.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q32 C3. Consumers have a strong influence on our company's green supply chain initiatives implementation.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q33 C4. For our firm, establishing enterprise's green image is extremely important in order to expand our customer base.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q34 C5. The news media follows our Industry closely in-order to inform about our green implementation progress.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q35 C6. The increasing environmental consciousness of consumers have spurred our company to implement green supply chain initiatives.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Competitor (CP) pressures (Competitors green practices put pressure on firm)

What extent are competitor pressure relevant to the adoption of green practices in your company?

Q36 CP1. The green environmental management of our firm will be affected by competitors' green environmental protection strategy.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q37 CP2. Our main competitors that have adopted a green strategy are perceived favorably by customers.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q38 CP3. Our main competitors that have adopted a green strategy benefit greatly.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q39 CP4. Our main competitors that have adopted a green strategy are more competitive.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q40 CP5. Environment-friendly is considered as a competitive differentiator in my company.

- ☐ Not at all

- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q41 CP6. Professional environmental protection groups will influence the green environmental management initiative of our company.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q42 PART D: SUSTAINABLE PERFORMANCE

What extent do you agree or disagree regarding sustainable performance of your company?

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Environmental performance (EVP)

What extent do you agree or disagree with the environmental performance of your company?

Q43 EVP1. Reduction of air emission.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q44 EVP2. Reduction of waste water.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q45 EVP3. Reduction of solid wastes.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree

☐ Relatively significant

☐ Significant

Q46 EVP4. Decrease of consumption for hazardous/ harmful/toxic materials.

☐ Not at all

☐ A little bit

☐ To some degree

☐ Relatively significant

☐ Significant

Q47 EVP5. Decreased our environmental accidents.

☐ Not at all

☐ A little bit

☐ To some degree

☐ Relatively significant

☐ Significant

Q48 EVP6. Improved our overall environmental performance.

☐ Not at all

☐ A little bit

☐ To some degree

☐ Relatively significant

☐ Significant

Economic performance(ECP)

What extent do you agree or disagree with the economic performance of your company?

Q49 ECP1. Decreased cost for materials purchase

☐ Not at all

☐ A little bit

☐ To some degree

☐ Relatively significant

☐ Significant

Q50 ECP2. Decreased cost for energy consumption.

☐ Not at all

☐ A little bit

☐ To some degree

☐ Relatively significant

☐ Significant

Q51 ECP3. Decreased fee for waste treatment and discharge.

☐ Not at all

☐ A little bit

☐ To some degree

☐ Relatively significant

☐ Significant

Q52 ECP4. Decreased fine for environmental accidents.

☐ Not at all

☐ A little bit

☐ To some degree

☐ Relatively significant

☐ Significant

Q53 ECP5. Average profit and profit growth rate over the last three years.

☐ Not at all

☐ A little bit

☐ To some degree

☐ Relatively significant

☐ Significant

Q54 ECP6. Average return on sales over the last three years.

☐ Not at all

☐ A little bit

☐ To some degree

☐ Relatively significant

☐ Significant

Q55 ECP7. Average market share growth over the last three years.

☐ Not at all

☐ A little bit

☐ To some degree

☐ Relatively significant

☐ Significant

Social performance (SP)

What extent do you agree or disagree with the following statement on social performance?

Q56 SP1. Enhanced health and safety of employees.

☐ Not at all

☐ A little bit

☐ To some degree

☐ Relatively significant

☐ Significant

Q57 SP2. Enhanced employee job satisfaction.

☐ Not at all

☐ A little bit

- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q58 SP3. Improved community health and safety.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q59 SP4. Improved social commitment.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q60 SP5. Lowered the adverse impact of products and processes on the local community.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

Q61 SP6. Enhanced incentives and engagement for local employment.

- ☐ Not at all
- ☐ A little bit
- ☐ To some degree
- ☐ Relatively significant
- ☐ Significant

PART E: COMPANY DESCRIPTION AND BACKGROUND INFORMATION

This part is about the description and background information of your company. Please select the correct option or fill in the blank to best describe your company's information.

Q62 D1. How many employees does your company have?

- ☐ 1-4 employees
- ☐ 5-19 employees
- ☐ 20-199 employees

Q63 D2. What is your annual turnover?

- ☐ \$0-less than \$50K
- ☐ \$50K-less than \$200K
- ☐ \$200K-less than \$2M

☐ \$2M-less than \$5M

☐ More than \$5M

Q64 D3. Is your company ISO 9000 certified?

☐ Yes

☐ No

Q65 D4. Is your company ISO 14000 certified?

☐ Yes

☐ No

Q66 D5. How long has your organisation been environmental management system (EMS) certified? [If your answer is NO to D3 and D4 above, move to D6 below]

☐ Less than a year

☐ 1-2 years

☐ 3-5 years

☐ More than 5 years

☐ Not at all certified

Q67 D6. How long has your organisation been in the business?

☐ 1-5 years

☐ 6-10 years

☐ 11-20 years

☐ More than 20 years

Q68 D7. What is your current organisational position level?

☐ CEO

☐ Logistics/Purchasing Manager

☐ Supply Chain Manager

☐ Human Resource Manager

☐ Production/Operations Manager

☐ Plant Manager

☐ Other (Please Identify)

Q69 D8. What is your length of experience (Years) in this position?

☐ 1-5

☐ 6-10

☐ 11-14

☐ >15

Q70 D9. What's your gender?

☐ Male

☐ Female

☐ Transgender

Q71 D10. Tell us your educational qualification.

- ☐ Secondary school
- ☐ VCE/High school
- ☐ Certificate
- ☐ Diploma
- ☐ Bachelors
- ☐ Masters

☐ Other (please identify) _____

Q72 D11. What is your age range (years)?

- ☐ 18-30
- ☐ 31-45
- ☐ 46-60
- ☐ >60

PART F: ADDITIONAL COMMENTS

Thank you very much for your participation.

F1: If you wish to add any comments or further observations, please use the space below.

F2: Would you like to receive the summary of the results from this study for your personal use within your organisation?

- ☐ Yes
- ☐ No

F3: If yes to the above question (F2) add your email below.
