

Green Supply Chain Management Practices in Sustainable Development on Hospitality Industry in Sri Lanka

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Thesis submitted in partial fulfilment of the requirements for the degree of
Master of Business Administration in Supply Chain Management

Department of Transport and Logistics Management

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Sri Lanka

28 February 2018

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ABSTRACT

Tourism is a fast-growing industry in worldwide & business volume of tourism equals or even surpasses that of oil exports, food products or automobiles. It has been identified that tourism is natural resource based industry. Sri Lanka has been recognized one of the most attractive designation mainly due to unique environmental, culture & history characteristics. At present the county is on the path to develop tourism industry as a main source of economic income which create direct and indirect many opportunities.

Day by day increasing awareness and demand of environmental concern sustainable tourism, country need to implement sustainability practices to being competitive among other countries in the long run. Further need to achieve sustainable development without generating significant environmental problems.

This study investigates Green Supply Chain Management practices available for service sector as general and particularly practical applicability for hospitality sector Sri Lanka. This study finds that (1) commonly practicing green practices in service sector worldwide; (2) green supply chain management practices in hospitality industry in Sri Lanka; (3) impact of green supply chain management practices for sustainable development of hospitality industry in Sri Lanka.

The importance of this research is identification, prioritization and validation of green practices, which influence hotel/resorts' performance in the industry. The theory of Green SCOR model was associated to describe GSCM. Based on a review of the extensive literature and response of in depth interview of industry expert an assessment framework is developed in this research, which consists of identification of green practices and relationship for impact of the firms' performance. Both deductive and inductive reasoning, the quality of the data gathering will improve significantly and the research will be less biased since the research strategy consists of a 'mixed method'.

Management will be benefited to implement green supply chain practices in sustainable manner in business operation and sharpen the competitive edge as a corporate citizen. This was proven by the practical example in two largest hotel chains in Sri Lanka & Maldives.

Key words: Tourism industry, green supply chain management practices, sustainable development, mixed method

ACKNOWLEDGEMENTS

It is my great pleasure to present my research report, which could not have been possible to fulfill, if not for those great people who were the backbone to my successful research. I wish to acknowledge them all!

First of all, I wish to thank my supervisor, Mr. Chinthaka Dharmasena Research Coordinator and Dr. Yapa Mahinda Bandara for their support, guidance and continued contribution of ideas and suggestions, which helped me to focus throughout the period of preparing this report.

A special thanks goes to all the respondents; the individuals who freely gave their time, knowledge and expertise, to the proper completion and return of the research questionnaire which resulted not only in some fascinating insights, but also some valuable contributions to the ideas in this thesis.

I am deeply indebted to my lecturers and to the Department of Transport and Logistics Management of University of Moratuwa and all the batch mates, and my friends who supported my effort with suggestions, advice, and reviews of drafts of the research throughout the study.

LIST OF ACRONYMS

GSCM	-	Green Supply Chain Management
SCM	-	Supply Chain Management
UNWTO	-	United Nation World Tourism Organization
SLTDA	-	Sri Lanka Tourism Development Authority

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1 CHAPTER – INTRODUCTION

This chapter emphasizes main areas and importance of the topic to the hospitality industry of in Sri Lanka. It will explain background of the industry, the reasons to selecting this area of study and also objectives of the study.

1.1. Background of the Research

1.1.1 Introduction

The Democratic Socialist Republic of Sri Lanka is an island in the Indian Ocean, which lies off the south-eastern tip of the Indian Subcontinent. The country has a growing tourism industry. Since gaining independence from the British in 1948, Sri Lanka has continued to attract foreign investors and tourists to the island. The country's important placement also enables it to attract transit visitors into the island. (Sri Lanka Tourism Development Authority - web site <http://www.sltda.lk/index.php>).

Sri Lanka, since the conclusion of the war has been recognized as one of the most attractive destination in the world with its unique offer of sun, sea, culture, history and mountainous which can be reached within a few hours of travel (Signature of Quality - Annual Report 2014/15 - Aitken Spence Hotel Holdings PLC).

The initial stages of hotels in Sri Lanka, have forced only customer satisfaction (conformability) and making profit out of that. Those days most of the hotels are located in western province and developed as business hotels and not planned for eco friendliness. At present industry has identified the importance of the concept and new hotel projects are coming up positively move toward that direction.

Tourism is a fast-growing industry worldwide and it faces lot of challenges such as credit crunch, fluctuating oil price result to high air ticket price, competition from other countries, people are concern about environmental aspects and more aware of their carbon footprint and may want to decrease this by taking fewer flights.

At present, the world context business volume of tourism equals or even surpasses that of oil exports, food products or automobiles. Over the decades, tourism has experienced continued growth and deepening diversification to become one of the fastest growing

economic sectors, one of the major players in international commerce, and represents at the same time one of the main income sources for many developing countries. (UNWTO, 2015).

According to the latest World Tourism Organization (UNWTO) Barometer, International tourist arrivals worldwide grew by 4% between January and June 2016 compared to the same period last year. Destinations worldwide received 561 million international tourists (overnight visitors), 21 million more than in 2015.

According to the World Travel and tourism Council, travel and tourism directly sustains more jobs than the financial services, banking, mining, and education sector, also directly contributes more to GDP than both the automotive and chemicals manufacturing industries in every region of the world.

The Central Bank of Sri Lanka reveals that tourism is the third largest export earner in the economy after remittance and textiles and garments. The government of Sri Lanka has developed a strategic plan for year 2017-2020 with mission of “to be a high-value destination offering extraordinary experiences that reflect Sri Lankan’s natural and cultural heritage, are socially inclusive and environmentally responsible, and provide economic benefits to communities and country.” (Ministry of Tourism Development and Christian Religious Affairs, 2017)

Hospitality industry is in most of countries believes that leadership in environmental sustainability has enabled to enhance business performance firstly by growing revenue due to increasing demand among travelers who like to offset their carbon footprint and contribute to uplift the natural environment and communities. Secondly, by reducing the cost of operation through green operations.

Analyzing the journey of Sri Lanka, the government tries to develop tourism industry as a main source of economic income and develop other areas such as employment, infrastructure, and manufacturing etc. along with hospitality industry. Increasing awareness and demand in sustainable tourism require country to implement sustainability practices to being more competitive than others.

Highlighted below are trends on the tourism sector which suggest Sri Lanka’s tourism sector is growing progressively and also experiencing positive changes. These trends

support the positive investment potential in the tourism related industries in Sri Lanka. See Figure 1-1

Tourism industry is undoubtedly the only industry continued to expand increasingly during post 2009 period, Sri Lanka is yet to find its niche in the fast-changing global tourist landscape as a culture and heritage based destination, city based entertainment hub or MICE (Meeting, Incentive, Conference and Exhibition) destination, or something else. (Hettiarachchi, 2015). However, Sri Lanka has significant growth potential with other comparable tourist destinations in Asia. Further, according to World Travel and Tourism Council, Sri Lanka's travel and tourism sector's long term growth ranks at 39th position among 184 countries.

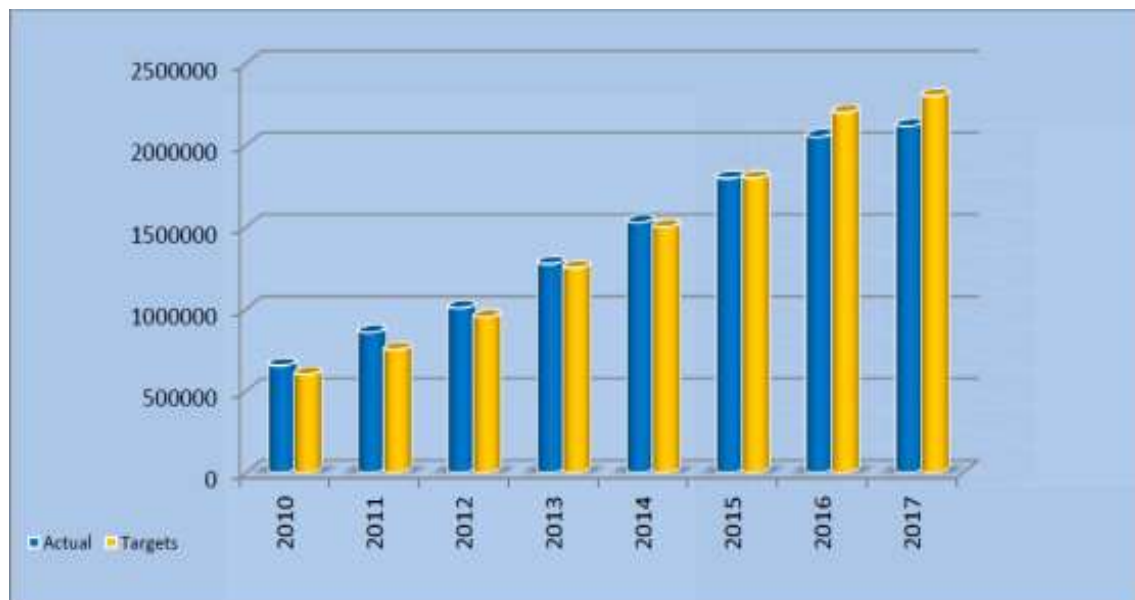


Figure 1-1: Tourist arrivals 2010-2017: Targets and Actuals

Source: Monthly Bulletin – December 2017, Research & International Relations Division, Sri Lanka Tourism Development Authority.

As an Island county government of Sri Lanka has to build global image of the country by developing attractive and long term stable political and economic policies and necessitates inter firm collaboration, collaborating with competitors, suppliers and customers in the supply chain is an imperative for surviving and developing sustainable destination. Sri Lanka was recognized as the 'Best Travel Destination' by the Travel and Leisure Magazine of China at the Annual Travel Award Ceremony held in 2014. And

also listed among the ‘Top 10 coolest countries’ in the world to visit in 2015, by the Forbes magazine. (Aitken Spence Hotel Holdings PLC Annual Report 2014/15).

Fundamentally, the intention of Tourism Strategic Plan of Sri Lanka is to increase revenue for the country, support local communities and increase tourism on a sustainable manner. Sri Lankan Government as a stakeholder must involve to ensure well-coordinated and consistent, prioritizing sustainability and reliable data to make decisions. (Ministry of Tourism Development and Christian Religious Affairs, 2017). Hospitality industry has a direct impact on Sri Lankan economy and sector has reportedly provided more than 319,000 local jobs in 2015.

When consider all above factors sustainability in hospitality industry has become a critical aspect.

Sustainable development is meeting the needs of the present without compromising the ability of future generations to meet their own needs. In general, it has been identified sustainability with three main aspects as follows.

- Economic Development
- Environmental Responsibility
- Social Progress

Sustainability aspects have increasingly gained importance in practice and in academic discussions over the last several decades, and as mentioned in UN publication “the Future We Want” is one of the outcomes of World Conference on Sustainability Development (Rio+20) held in 2012 (Leal Filho, Manolas, Pace, 2015).

According to Park et al. (2015) concerns about the planet’s sustainability have grown after the United Nation’s Conference on the Human Environment (a.k.a. Stockholm Conference) in 1972, which initiated the concept of sustainability development as a pathway for improving the quality of life for future generations (Caiado, Dias, Mattos, Quelhas, & Leal, 2017).

Environmental responsibility is one of the most important pillars of sustainability development & it empathize ecological sustainability. Companies around the world adopt green practices with the aim of reducing their environmental impact & improve

their financial performance. (Miroshnychenko, Barontini, & Testa, 2017). When people become more aware of environmental issues and global warming, consumers will be asking more questions about the products they are purchasing. Firms will have to expect questions about how green their manufacturing processes and supply chain are, how big their carbon footprint is, and how they recycle. Green practice is an important strategy for sustainable development in any industry. Common idea of green practice is lead to more environmentally friendly and ecologically responsible decisions and lifestyles, which can help to protect the environment and sustain its natural resources for current and future generations.

The supply chain refers to all the functions associated with the manufacturing and flow of goods and services, including finance and information flows, from the sources of materials to end users.” Such theory is no longer limited to the supply chains of manufacturing firms. Service supply chains (e.g., hospitality, healthcare, finance, education, etc.) can be also viewed and analyzed in a similar manner (Figure 1-2) (depicts the main components of a service supply chain). For example, a hotel supply chain is a network of organizations engaged in delivering different hotel services to customers. Such network functions through the flow of information (e.g., reservations), monetary transactions (e.g., payments and charges), and physical items (e.g., food and drinks). (Al-Aomar & Hussain, 2017)

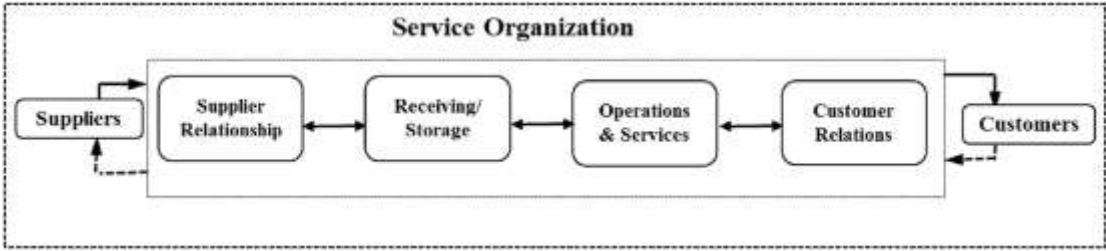


Figure 1-2: The main concepts of service supply chain

It is vital to understand integration of green practices and supply chain management aspects together when implementing Green Supply Chain Management practices to achieve firm’s objectives in long term. It extends the focus of greening efforts from the internal level of the firm to the activities conducted with upstream and downstream Supply Chain partners through the implementation of a number of environment-friendly practices such as practices oriented towards reducing wastes and energy consumption,

reusing, remanufacturing, or recycling the products, the eco-design and the reverse logistics both at the internal (functional and interfunctional) level of the company and at the external (inter-organizational) level (Zhu and Sarkis, 2004; Rao and Holt, 2005; Sarkis, 2012; Zhu et al., 2008, 2013; Azevedo et al., 2011)

Basic idea of GSCM is integrating environment thinking into supply chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers and end of life management of the products after its useful life.

Green supply chain management has been a developing and evolving topic from past few decades and people are more and more concentrate about Sustainable development. Intense competition forces firms to develop and enhance more agile and flexible supply chain practices and ecological pressure from a verity of institutional players including market, government, legal and competitive sources. To respond this ecological pressure most organizations are initiate Green Supply Chain Practices. Some firms have seen consumer interest in the environment as a plus, and have even been able to convert the public's interest in all things green into increased profits.

This study considers GreenSCOR model when developing green supply chain practices in service industry.

❖ Plan

This is the most important part. Every firm need a strategy on how to manage the resources in order to achieve green effect of supply chain while satisfying the customers demand.

Eg: Engage/collaboration with supply chain partners to develop & design/introduce environmental friendly supply chain.

❖ Source

To create green operation in hotels & resorts, firms need to be extra careful when sourcing suppliers to fulfill product and service requirements.

Eg: Biodegradable products - Possible ways to avoid using polythene, plastic products, chemicals that harmful to environment and force suppliers also to develop more biodegradable products.

❖ Make

In the manufacturing process, green effect of activities should be ensured for the production, packaging, testing and preparation for delivery. The most metric-intensive portion of the supply chain, production output and measure levels.

❖ Deliver

This part is mainly referred to as logistics by the supply chain management. Green effect of delivery methods and warehouse activities both suppliers and firms are used.

❖ Return/ Disposing activities

In many firms this is usually where the problem is in the supply chain. 3Rs is vital. Reduce the usage of scarce resources in sustainability. Reuse and Recycle of materials will be given value adding and contribute to environment.

1.2 Statement of the Problem

There is less literature done on this area to follow the guideline when implementing GSCM practices in hospitality industry on Sri Lankan context. And this study has identified that particular gap of limitation of set guideline in GSCM. Further this research is focusing to which GSCM practices available in practical manner, possibility of developing these practices with depleting natural resources for sustainable development of hospitality industry.

1.3 Research Objectives

There are three research objectives which are to be accomplished at the end of the project.

- 1) To identify commonly practicing green practices in service sector worldwide.
- 2) To identify green supply chain management practices in hospitality industry in Sri Lanka.
- 3) To identify impact of green supply chain management practices for sustainable development of hospitality industry in Sri Lanka.

1.4 Scope of the Research

Green supply chain practices are commonly discussing among most of economics in the world and to be identified on what extent and practical way to implement the same practices with Sri Lankan hospitality industry. This research

- Focus only on hospitality industry in Sri Lanka
- Consider only star class tourist hotels & resorts in Sri Lanka.

Based on Sri Lanka Tourism Development Authority there are five type of star class as Five star, Four star, Three star, Two star, One star tourist hotels as at December 2017. (Sri Lanka Tourism Development Authority, 2017)

1.5 Limitations of the Research

Number of respondent & less response rate is a main limitation of this project. Meanwhile lack of competent, knowledgeable and committed people is another limitation. To overcome the less respond rate from the hospitality industry, expect to get respond from more people in other firms in service sector (eg. Healthcare, finance, education etc.) And experts of environmental & sustainability aspects.

1.6 Significance of the Study

This study will help to simplify and understand GSCM complexities both practical and literature perspective. Following groups will be directly benefited from this project.

1. Members in hospitality industry and all SC stakeholders. Hotel organizations will be able to develop GSCP in commercial manner and get the competitive advantage.
2. Environmental organizations to develop policy and practices. Practicality of implementing policy and practices will push the hospitality industry to the next level.
3. Improve awareness among community. They will also protect the Mother Nature for future generation and use the resources in sustainable manner.

2 CHAPTER – LITERATURE REVIEW

This section provides a briefing on the literature of Green Supply Chain Management & sustainable development in general and in hotels in particular. The literature also presents a briefing on previous studies that outlines green practices across hotels supply chains. The objective is to identify gaps and link this paper to current research.

2.1 Tourism, hotel industry and the economy of Sri Lanka

According to the UNWTO, tourism denotes the temporary, short term movement of people to destination outside the place where they normally live and work and their activities during their stay at these destinations.

The contribution of tourism to employment, to economic growth, to the development of infrastructure, to the liberalization of air transport, to the establishment of intraregional cooperation, and to the growing number of Public-Private-Partnerships is substantial. (Charalambos, *Tourism Industry and Economic Growth: Time-Series Evidence from France*, 2013)

Tourism induces the local government to make infrastructure improvements such as better water and sewage systems, roads, electricity, telephone and public transport networks. This improve the quality of life for residents as well as facilitate tourism. Furthermore, tourism is a significant contributor to a nation's GDP. Foreign exchange earnings from tourism constitute a major percentage of gross receipts (Srinivasan, Kumar, & Ganesh, 2012).

Further Sri Lankan economy has a direct contribution of Travel & Tourism to GDP was LK631.8bn (USD4.4bn), 5.1% of total GDP in 2016 and is forecast to rise by 5.1% in 2017, and to rise by 6.6% pa, from 2017-2027, to LK1,255.0bn (USD8.7bn), 6.3% of total GDP in 2027. The total contribution of Travel & Tourism to GDP was LK1, 405.4bn (USD9.7bn), 11.4% of GDP in 2016, and is forecast to rise by 5.5% in 2017, and to rise by 6.1% pa to LK 2,686.9bn (USD18.6bn), 13.5% of GDP in 2027.

In 2016, the total contribution of Travel & Tourism to employment, including jobs indirectly supported by the industry was 10.7% of total employment (894,500 jobs). This

is expected to rise by 2.8% in 2017 to 919,500 jobs and rise by 2.7% pa to 1,201,000 jobs in 2027 (14.0% of total). (World Travel & Tourism Council, 2017)

WORLD RANKING (OUT OF 185 COUNTRIES):

Relative importance of Travel & Tourism's total contribution to GDP

62 ABSOLUTE Size in 2016	71 RELATIVE SIZE Contribution to GDP in 2016	54 GROWTH 2017 forecast	22 LONG-TERM GROWTH Forecast 2017-2027
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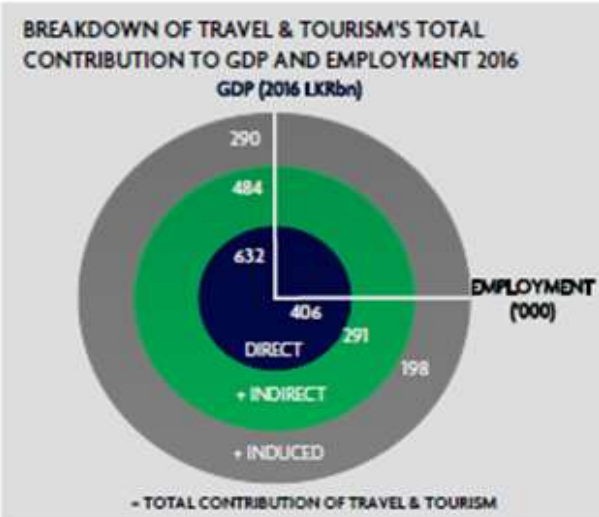
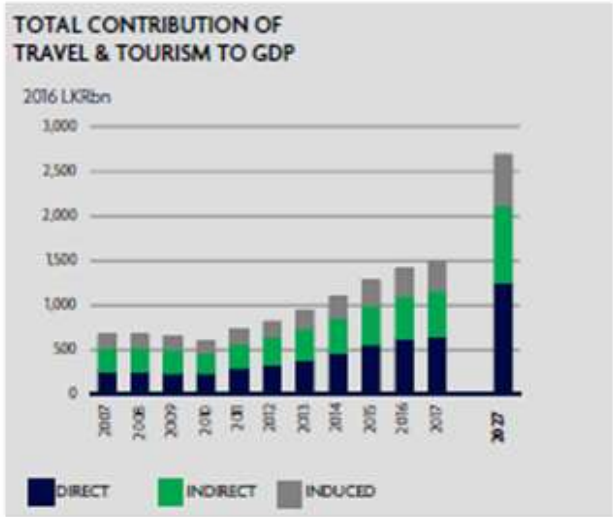


Figure 2-1: World Ranking (World Travel & Tourism Council, 2017)

According to Sri Lanka Tourism Development Authority (SLTDA) Annual Statistical Report in 2016 first time in history tourism in Sri Lanka has reached to a new milestone of over 2 million (2,050,832) arrivals which is increase of 14% over last year's (2015) 1,798,380. In 2016, When consider revenue point, the tourism sector was in the third level (Rs. 512.29 billion) as one of the main sources of Foreign Exchange Earners of the national economy. Foreign Remittances (Rs. 1,054.48 billion) and Textiles and Garments (Rs.710.76 billion) were the first two highest sources of foreign exchange. The portion of tourism's contribution to total Foreign Exchange earnings in 2016 amounted to 14.2 per cent.

The Sri Lankan hotel industry is concentrated around Colombo which is the economic and financial hub as well as the gateway to the rest of the country. The southern region comes next as hotel owners take advantage of Sri Lanka's beach attractions, followed by ancient historic cities with archaeological values in the south part of the country. The

newly liberated eastern and northern regions have the potential to grow and contribute more to this industry as this area too has historic archaeological sites and structures in tact yet to be seen by the tourists. The industry primarily consists of tourist hotels and other establishments that include boutique villas/hotels, guesthouses, inns and youth hostels approved by Sri Lanka Tourism Development Authority (SLTDA). According to SLTDA hospitality industry has following categories.

- | | |
|---------------------------------------|---------------------|
| # Tourist Hotels | # Boutique Hotels |
| # Boutique Villa | # Guest Houses |
| # Restaurants | # Travel Agencies |
| # Spa & Wellness Centers | # Rented Apartments |
| # Heritage Bungalows | # Rented Homes |
| # Bungalows | # Heritage Homes |
| # Home Stay Units | # Tourist Shops |
| # Spice Gardens | # Tourist Guides |
| # Water Bases Adventure Sport Centers | |

Source: <http://www.slt-da.lk/online-tourism-business-licensing-services>

A tourist hotel is a commercial establishment providing paid lodging on a short-term basis, meals and other guest services. Tourist hotels dominate tourist accommodation in Sri Lanka. The 249 tourist hotels approved by SLTDA have been categorized into two major types: classified and unclassified. Classified hotels are further categorized from 01Star to 05Stars based on criteria specified by World Tourism Organization (UNWTO). A large number of tourist hotels continue to be unclassified, as they do not meet these criteria. Unclassified properties cater to demand that cannot be accommodated by branded establishments, due to high rentals or non-availability. They form an important part of the hotel industry in the country.

According to the SLTDA Statistical Report 2016, Of the 382 tourist hotels, 142 hotels were classified and 240 unclassified. In the classified category, 17 were 05 Star hotels mainly concentrated in Colombo and greater Colombo regions (Table 2-1). Of the remaining, 18 were four star, 16 three star, 33 two star, and 34 one star hotels. See the Figure 2-2. These were spread across the country, but concentrated in Galle, Colombo, Kalutara, Kandy and Anuradhapura districts.

Class of accommodation	No. of units	
	Year 2015	Year 2016
5 Star	13	17
4 Star	18	18
3 Star	15	16
2 Star	33	33
1 Star	34	34
Butique hotels	24	24
Unclassified	217	240
Total	354	382

Table 2-1: Tourist hotels in 2016

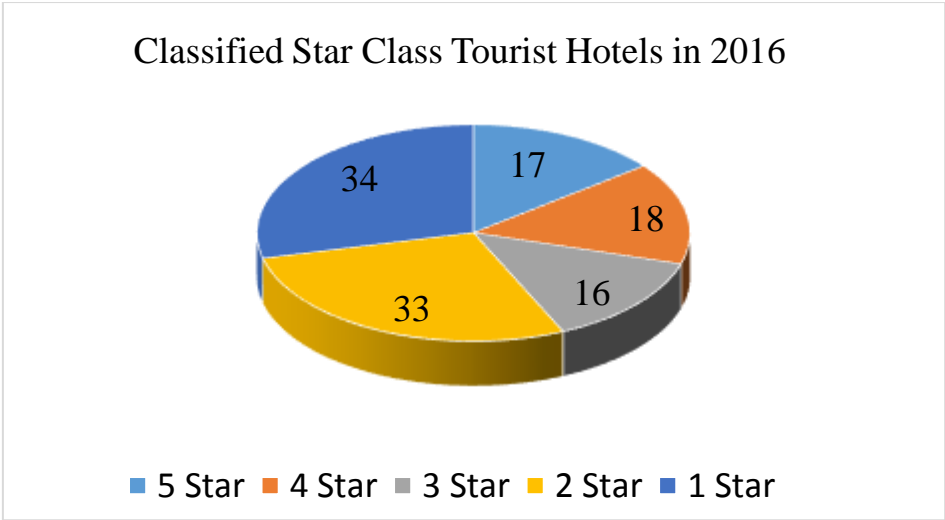


Figure 2-2: Classified star class tourist hotels in 2016

Source: SLTDA Statistical Report 2016

United Nation World Tourism Organization (UNWTO) highlighted that, ecotourism is recorded as the highest growing market in the tourism industry with an average annual growth rate of 5 per cent worldwide. Sri Lanka has tremendous ecotourism resources with great potential for further development in Southern Asia. At present tourism industry with ecotourism sector is a major foreign exchange generating industry in Sri Lanka. Remarkable biodiversity hot spot with the direct economic and environmental importance in the ecosystem and can be used in a sustainable way to contribute to the development of ecotourism in Sri Lanka (Fernando & Shariff, 2013). Sri Lanka is a country of great natural beauty with scenery varying from palm-fringed beaches, mist laden highlands of the interior and diverse natural environment with an equitable climate and altitudinal variation within short distances (Silva, 2004). Being competitive in ecotourism, hospitality sector has to contribute in many way. It is paramount important to implement/practice green supply chain management practices with the industry for long term sustainability and development as a island country.

A survey of 1,300 U.S. travelers by TripAdvisor.com shows that nearly two-thirds of travelers, 62 percent, often or always consider the environment when choosing hotels, transportation and meals (Andrew, 2013).

2.2 Sustainable Development

World Commission on Environment and Development (WCED) pointed out the threats of deteriorating natural resources to human beings, animals, and environment in the late 1980s. In recent years, sustainability concept has been introduced to many fields, including economics, technology, agriculture, and supply chain management also.

There are many sustainability development definitions made by organizations and individuals also. According to International Institute for Sustainable Development & United Nations General Assembly 1987 defined that “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” further they said that provides a framework for the integration of environment policies and development strategies.

Concerns about the planet's sustainability have grown after the United Nation's Conference on the Human Environment (a.k.a. Stockholm Conference) in 1972, which initiated the concept of sustainable development as a pathway for improving the quality of life for future generations.

Sustainable actions taken by firms which aim to use products in an environmentally friendly manner may not contribute much to sustainability efforts if those products were made from environmental threatening materials. This clearly explains the reason why companies need to implement sustainability actions from the upstream of the supply chain and, thus, sustainable supplier selection and cooperation remarkably contribute to sustainable supply chain management (Hollos, Blome, & Foerstl, 2012). Firm shows the path of corporate responsibility and social well-being in the long run of the business. Selection of suppliers have been mainly based on economic capabilities accordance with traditional approach but with the globalization of business it is not enough. Because of changing customers' demand/perception and competitive market situations, Organizations must add the environmental/ecological and social aspects to the traditional supplier selection criteria such as quality, cost, delivery, and service to remain in the sustainable supply chain (Amindoust, Ahmed, Saghafinia, & Bahreininejad, 2012).

There is strong evidence that developing and promoting socially and environmentally responsible business practices are likely to help businesses increase their profits because sustainable practices positively affect customers' perceptions and actions (Jayaraman, Singh, & Anandnarayan, 2012)

Example:

Marks & Spencer's is a London based retailer demonstrated in 2012 annual report that the financial benefits from environmentally conscious efforts in its stated goal to become the world's most sustainable retailer. The environmentally friendly tactics the company describes in its annual report include:

- Becoming carbon neutral in January 2012 across its stores, offices, warehouses and delivery fleets in the UK and the Republic of Ireland.
- Achieving in 2012 its goal to send no waste to landfills from stores, offices, warehouses and construction activity.

- Improving fuel efficiency of its food delivery fleet by 28% and its general merchandise delivery feet by 30%.

Marks & Spencer Chief Executive Marc Bolland said in the company's 2012 annual report that "Our environmental and ethical plan not only makes us a more efficient business, it contributed a net benefit of £105 million [about \$164 million] this year."

In addition, a survey revealed that 48% of companies have changed their business models as a result of environmental sustainability opportunities, an increase of 20 percentage points over the previous year (Accountants, 2018).

Companies are under increasing pressure from consumers, grassroots and community organizations, governments, and shareholders to develop and practice sustainable business practices. While individual companies' sustainability efforts are important, a true sustainability can be achieved only if all members of a supply chain participate in sustainable practices (Xu & Gursoy, 2014).

As stated by Erling Holden, Kristin Linnerud and David Banister, sustainable development which we claim to be the moral imperatives of satisfying needs, ensuring equity and respecting environmental limits – represent constraints on human activities, including our efforts to maximize economic value. This model is in conflict with the popular three-pillar model, which seeks to balance social, environmental and economic targets. Thus, sustainable development is essentially a strong ethical, or moral, pronouncement as to what should be done. The constraints define 'the sustainable development space' (Figure 2-3) (Holden, Linnerud, & Banister, 2016).

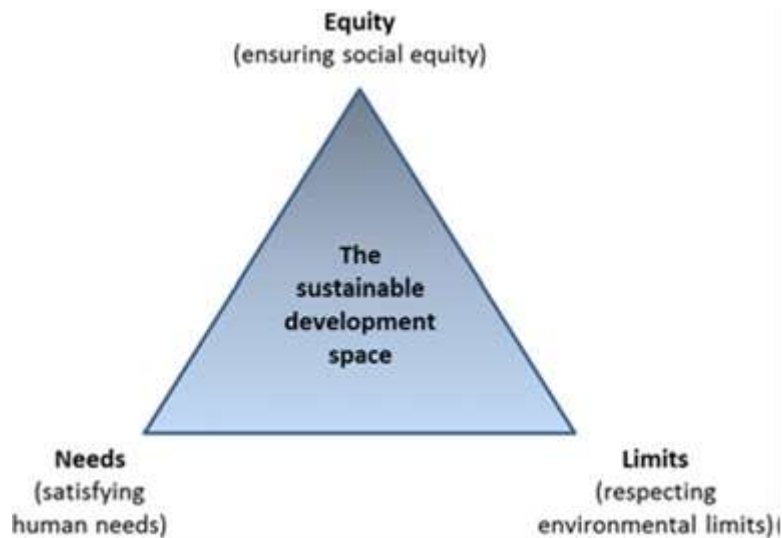


Figure 2-3: The sustainable development space

The overall goal of sustainable development is the long-term stability of the economy and environment; this is only achievable through the integration and acknowledgement of economic, environmental, and social concerns throughout the decision-making process. (Rachel, 2015)

As a first step start by mapping internal supply chain operations to identify where environmental and social responsibility problems or opportunities lie. Further this step will help to identify firm's strength and weakness. Evaluate alternative ways to make improvements that may require trade-offs between the two types of performance. As you weight your options, consider their potential social impact. After choosing and implement initiatives, continually measure their performance to ensure that you are achieved the right balance of environmental, social and conventional operational considerations (L., L. H. 2010).

Furthermore, this process will promote tourism practices in which managers are capable of aligning their strategic analysis to economic, environmental, social, political and cultural dimensions (Perez and Del Bosque, 2014).

Studies suggest that the size, management practices and location of companies influence their sustainable practices. For example, due to the leveraging economies of scale through uniform corporate practices, chain hotels are found to integrate more green

practices into their operations than individual hotels (Rahmana, Reynolds, & Svarena, 2012).

The green actions taken by hospitality businesses can have positive externalities, which could generate benefits all of the stakeholders in the hospitality supply chain, and even the whole society and posterity through protecting environment and keeping our planet green. All of the potential impacts could also be considered as motivators for hospitality businesses going green (Xu & Gursoy, 2014).

In discussing touristic sustainability, many managers emphasize the importance of actions capable of: (1) reducing energy and water costs; (2) promoting green marketing and attracting consumers concerned with environmental issues (Segarra-Oña María-del-Val, 2012). Within the tourism industry, hotels require the greatest amount of energy (Bohdanowicz, 2005) Sustainability is therefore necessary not only for the betterment of the natural environment but also for maintaining competitive hotel performance (Erdogan & Baris, 2007).

As a Example: Aitken Spence Hotel Holdings PLC Annual report 2015/16 stated that “Aitken Spence Hotels, as one of the pioneers in green focused tourism, has over the years adopted a two-pronged approach; of minimizing our environmental foot print on the one hand, and proactively seeking ways in which we can add value to enhance and sustain the natural capital on the other hand. The Group continues to make significant investments towards these efforts. Our green focus also has made excellent business sense and contribute to improved margins. Firstly, by reducing our costs of energy and other utilities. Secondly, by attracting an increasing number of environmentally conscious travelers. Clean air, clean water and biodiversity are constantly threatened by increasing populations, and spreading industrialization. However, with improving awareness of the dire consequences, and global warming looming before us, it is evident that stakeholders will increasingly demand accountability on environmental impacts” (Aitken Spence Hotel Holdings PLC, 2016). Sometime firms may have to invest in developing green/environmental friendly practice it can recover in the long run by reducing operation cost & increase the customer demand with the global trend.

Because businesses play a leading role in the global economy through the production of goods and services, their involvement is integral to increasing sustainability and to communicating its value. Increasingly, business enterprises have discovered that competitive advantages may be captured by measuring success in terms of the triple bottom line (TBL): social equity, ecological integrity, and financial profitability (Andriate & Fink, 2008). Many literatures were backed by the term triple bottom line in this research.

Therefore, this research aims to expand the analytic scope of the literature by introducing criteria for analyzing the economic development, environmental responsibility and social progress with which the tourism industry must comply to ensure that sustainability.

When consider the most of literature, sustainable development has three main aspects as follows.

- Economic Development
- Environmental Responsibility
- Social Progress

According to The University of Leicester's strategic plan mainly in public authorities making huge spend, expect to achieve border community benefits when undertaking procurement exercises and awarding contracts. These 'wider community benefits' (or 'social value') can be broken down into social, economic and environmental benefits, as shown in Figure 2-4 below (Univesity of Leicester, 2018). The same theory applicable developing the sustainability aspect in any firms as mention in above the right balance of three aspect is most important.



Figure 2-4: The three spheres of sustainable supply chain

According to Preschey 2005, above dimensions are highly rooted in political and social scenes, but they are also related to industrial fields. Any businesses to operate sustainably they need to be economic and environmentally viable and socially acceptable. The sustainability development to be cover all of these broad issues and present a comprehensive set of goals, targets and actions against which a company can develop its sustainability and self-evaluation strategies. Business entities are motivated to improve its competitive edge, comparative advantage, economic performance, social license to operate, and the public perceptions of the industry as a whole. (Fleming, M. Wisec, Hansen, & Sams, 2017).

To achieve a better corporate sustainable performance in products and services, government policies should determine rules and restrictions to put the eco-efficiency aligned with social responsibilities in a higher priority and incentive policies may encourage the organizations to invest more in sustainable improvement (Caiado, Dias, Mattos, Quelhas, & Filho, Towards Sustainable Development Through The Perspective Of Eco-Efficiency - A Systematic Literature Review, 2017). Although government is

imposing certain rules and regulation with regard to sustainable performance, it is a good corporate citizen responsibility and willingness to create better tomorrow.

In practice, sustainable development requires the integration of economic, environmental, and social objectives across sectors, territories, and generations. Therefore, sustainable development requires the elimination of fragmentation; that is, environmental, social, and economic concerns must be integrated throughout decision making processes in order to move towards development that is truly sustainable. (Rachel, *The Concept of Sustainable Development: Definition and Defining Principles*, 2015)

2.2.1 Economic Development

Economic development is very important factor in any economy. This could be analyzed based on GDP of the country.

The contribution of tourism to employment, to economic growth, to the development of infrastructure, to the liberalization of air transport, to the establishment of intraregional cooperation, and to the growing number of Public-Private-Partnerships is substantial. (Charalambos, 2014)

Thus, economic growth is neither inherently sustainable nor inherently unsustainable. It may be part of the solution, it may contribute to the problem, or both; it depends on the policies, the laws and regulations, and the institutions in place. Human activity is already exceeding environmental limits, income and wealth are unevenly distributed and extreme poverty exists. (Holden, Linnerud, & Banister, 2016)

Human capital plays a crucial role for national economies throughout the world. Nowadays in the world human capital represents the key element for achieving and securing an inclusive growth that aims to improve the quality of life and share the benefits of increased prosperity more evenly across social groups. All this represents a new approach to economic growth. Moreover, education plays the most important role in the production process of human capital and at the same time in its remuneration, since the enhancement of human capital, through education, is a continuous process (Olga, 2014). As an example in 2016, the total contribution of Travel & Tourism to employment,

including jobs indirectly supported by the industry was 10.7% of total employment (894,500 jobs). This is expected to rise by 2.8% in 2017 to 919,500 jobs and rise by 2.7% pa to 1,201,000 jobs in 2027 (14.0% of total) (World Travel & Tourism Council, 2017).

Human capital constitutes a valuable factor in the process of all aspects of global transformation, namely economic, political and social ones. However, the economic challenges because of the Eurozone and global economic crisis have wiped out years of economic and social progress and exposed structural weaknesses in the economy (European Commission, 2013). Classical perception of economic growth and to focus more on the empowerment of human capital as key element for achieving and securing an inclusive growth (a new approach to economic growth) aims to improve living standards and share the benefits of increased prosperity more evenly across social groups (Figure 2-5) (Organization for Economic Co-operation and Development, 2014)



Figure 2-5: Relationship between human capital, sustainable development and quality of life

The economic aspect of a sustainable hospitality supply chain focuses on enhancing the performance of businesses through revenue growth, cost control and market share growth while minimizing negative social and environmental impacts. Enhanced revenue can come from increased customer loyalty, improved operational efficiency and risk management (Xu & Gursoy, 2014).

2.2.2 Environmental Responsibility

Environment protection and sustainable development are the main hotspots at present. Ecosystem services are substantial elements for human society. The central challenge to meet the human needs from ecosystems while sustain the Earth's life support systems makes it urgent to enhance efficient natural resource management for sustainable ecological and socioeconomic development (Xiangzheng DENG, 2016)

Global concerns on environmental issues are shared by countries across the world, but there is a complex interlinking of the environment with development in different countries. Economic growth and development has adversely impacted the environment in some regions whereas environmental degradation has adversely affected economic growth and development in some regions. While it is evident that environmental problems vary depending on the degree of development and the structure of the economy, development and the environment, are global issues. (Kiran, 2013). Economic growth and development is essential in any nation while protecting environment for future generation. If any nation develop the economy without considering environmental factors they will have to face adverse effect of environment by losing human lives and capital also.

During recent years, the natural environment has become a challenging topic that business organizations must consider due to the economic and ecological impacts and increasing awareness of environment protection (Diabat, Khodaverdi, & Olfat, 2013). With the increase awareness customers are demanding more and more concern about what they purchase/use and only that disposing activities also. It has become a positive trend at the moment and firms has to comply with that requirement to sustain in the business in long run.

Nowadays, the majority of organizations are seeking to achieve sustainable development with respect to “green” concepts and one of the main criteria for assessing green performance is eco-efficiency (Rashidi and Farzipoor Saen, 2015). Eco-efficiency is an improved measure of sustainability because it links environmental impacts directly with some kind of economic performance (Müller et al., 2014) and it works as a valuable tool towards sustainable development (Charmondusit et al., 2013).

Environmental pressures add a new element of complexity to supply chain management, requiring a comprehensive response involving environmental operating models, operational objectives, and new supply chain processes. As environmental pressures grow more diverse and demanding, the quality of an individual company’s supply chain response may confer significant competitive advantage (Paquette, 2005).

Responsible and conscientious management of the environment is a pillar of the sustainable development concept (Mikulcic, Duic, & Dewil, 2017). Environment is an

essential pillar of the sustainable development which every nation should integrate together as a one global family. Eg. Due to some scientific nuclear test done by South Korea air pollution happened and it will affect to all other nations also on only one country.

Environmental management in the service sector can be challenging for several reasons. For instance, the process design of several organizations in the service sector requires large brick-and-mortar investments, hardly reversible, for which day-to-day operations are labour intensive (e.g. restaurants, hotels, resorts, health care, education, and airlines). Such designs make structural changes very time consuming and costly (Vachon, 2010).

In an industry such as hospitality, the importance of natural capital to the industry's value creation model is high. Moreover, the industry is depending on the enhancement and preservation of the natural capital rather than the extraction of natural resources, as a case of many other economic sectors. (Aitken Spence Hotel Holdings PLC 2016/17, 2017). Protecting the environment is a prime responsibility of each and every person and corporates. And improve the awareness among community, visitors will be positively affected.

Example: Heritage Kandalama works with a network of 39 schools located close to the hotel to disseminate knowledge about environmental conservation and sustainability. The purpose of this initiative is to empower the growth of the next generation with sustainable development as a core value to guide their decisions in whatever field they choose to be in. The Eco Park at the hotel is also used to educate school children and visitors alike on waste management, protection of biodiversity and on the successful coexistence with natural ecosystems. During the last financial year, about 9,304 visitors were educated at the Eco Park. The Plant Nursery won Heritage Kandalama the PATA Green Leaf Gold Award for Environmental Education in 2000. Today, the nursery also distributes plants for "Tree Growing Campaigns" to community organizations across the island. (Aitken Spence Hotel Holdings PLC 2016/17, 2017)

Biodiversity is a major asset for nature based tourism, which has been experiencing a rapid growth. It is clear that tourism has significant potential for contributing to biodiversity conservation, because biodiversity is a critical component of the natural environment that tourists enjoy. (World Tourism Organization, 2004). Sri Lanka is an

island country with rich biodiversity and can reach to these locations within few hours in a day. Eg: Some of the star class hotels in hospitality industry in Sri Lanka has already identified the importance of biodiversity and protecting them future generation. Heritance Kandalama takes necessary precautions to ensure that areas of high biodiversity are protected and preserved as is the case with the hotel which acts as a preservation agent in conserving the biodiversity and eco-systems in the area. In addition, the Hotel also conserves 58 acres of forest area, flora and fauna within the hotel. The hotel was built on a platform in order to let the water trails run free. Thus protecting the origins of 11 natural streams that provide irrigation water to 34 dry zone reservoirs (Aitken Spence Hotel Holdings PLC, 2016).

The hotel industry has faced increasing pressure to pay appropriate attention to environmental issues. As a result, some managers now understand that long-term economic sustainability and growth depend upon the nature of their environmental policies. A clean environment is a basic component of quality service and is thus important for the development of travel, tourism, and hotel industries. Sustainable prosperity of travel, tourism, and hotel businesses also calls for the inclusion of environmental protection components in every phase of their business venture, from the preparation and application of site plans and business programs and policies to daily routine practices. (Erdogan & Baris, 2007)

Environmental sustainability-related practices are perceived equally as important for hotel administrations. Consequently, possible preference on behalf of tourists for staying at hotels with an enhanced environmental profile could be well satisfied by hotels (Stylosa & Vassiliadis, 2015).

Companies must oblige to environment law and regulations with regard to environmental issues. The International Organization for standardization (ISO) is a worldwide federation of national standard bodies, preparing international standards. Among notable management standard series are ISO 9000 series for quality management, and ISO 14000 series for environmental management. ISO 14000 series were developed with the following main objects. (International Institute for Environment and Development IIED, 2009)

- Encouraging an internationally common approach to environmental management.

- Strengthening companies' abilities to improve and measure environmental performance, through continual system audits.
- Improving international trade and removing trade barriers.

Firms which are trying to comply with ISO 14000 standards are able to prove the environmental compliance and with international recognition.

Environmentally friendly and socially responsible actions taken by a hospitality business can improve its reputation and lead to better financial performance through increased customer satisfaction and loyalty. Furthermore, financial performance is often a prerequisite for implementing green or socially responsible actions that may be costly. (Xu & Gursoy, 2014).

2.2.3 Social Progress

Social progress is a key theme of sustainable development. The country or region successfully involves society in defining development and environmental targets, it is not necessarily sustainable if this involvement results in political aims and policies that are in conflict with planetary boundaries defined by natural scientists or in conflict with the needs of the poor. (Holden, Linnerud, & Banister, 2016)

Social Capital has been introduced as an indicator of sustainability in the past decade (Magis, 2010). A society needs high levels of trust, strong relationships and networks that function as a glue between members of a community in order to promote collective beneficial activities. Networks act in multiple social stages and widen their operation by collaborating with agencies and stakeholders. (Jones, 2009)

Compared with green actions, socially responsible actions benefit both the internal and external stakeholders more directly since its goal is to enhance people's welfare. Socially responsible actions are likely to positively influence hospitality companies' long-term development through strengthening their relationship with all stakeholders (Xu & Gursoy, 2014). Community engagement in hospitality industry plays a very important role and will lead to sustainable development of the industry.

Example:

Heritage Ayurveda Maha Gedara houses a resort crafts workshop, launched in 2011 with the objective of sustaining and promoting uniquely Sri Lankan crafts and skills and of providing them a link to markets overseas. The Centre aims to uplift indigenous arts and crafts by providing a platform for award-winning artisans and craftsmen and women to demonstrate their skills, knowledge and creativity in craft making. The craftsmanship being demonstrated include Palm weaving, Dumbara weaving, Lace making, Wood carving and Mask painting. Guests are also given the opportunity of trying out the making of these crafts under the guidance of the skilled craftsmen. The Arts and crafts produced at the center are available for purchase by guests, with all profits being credited to the craftsmen and women to promote their creations and livelihood (Aitken Spence Hotel Holdings PLC, 2016).

Aitken Spence Hotel Holdings PLC 2016/17 Annual Report stated that ‘Empowerment’ is the process of enhancing the capacity of individuals or groups to make choices and to transform those choices into desired actions and outcomes. An important aspect of strengthening social and relationship capital is building the necessary capacities of the stakeholders who are expected to uphold the systems and social and environmental governance frameworks of the Company.

2.3 Supply Chain Management (SCM)

The definition given by the Council for Supply Chain Management Professionals is, “Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies (Council of Supply Chain Management Professionals, 2013).

Beyond innovating processes and products, supply management is helping the balance sheet by shifting not just material and packaging inventories but even noncore R&D to capable suppliers, thereby freeing up resources to invest in sales, marketing, distribution,

and higher margin products. (Weller & Niezen, 2006 September issue). “A recently released global study of nearly 2,000 publicly traded companies found that 69.9% of corporate revenue is directed toward externalized, supplier-driven costs. In the last three years alone, companies have increased their external spend as a percentage of revenue by nearly 4%. As a result, suppliers must now be viewed as an extension of the company, they must be incentivized, coached, sanctioned, and rewarded to help achieve corporate objectives” (Eatough, 2014).

Firms may be members of multiple supply chains simultaneously. The management and coordination are further complicated by global players spread across geographic boundaries and multiple time zones. The successful management of a supply chain is also influenced by customer expectations, globalization, information technology, government regulation, competition and the environment (Hervani, Helms, & Sarkis, 2005).

Supply management has as much and sometimes more impact on the success of non-manufacturing organizations as it does on manufacturing firms. The timely availability of reliable equipment, supplies, and services at the right total cost of ownership affects the ability of such organizations to provide timely quality services at a profit. (Burt & L., 2003)

Like all other Supply Chains, SCM in the hotel industry drives through business-to-business relationships and Supply Chain Management can be applied to deliver sustainable performance improvements together with financial performance, by working to improve the business operations of each supplier in the supply chain. “As a bidirectional flow of information, materials, services and money between the original suppliers and final customers. This internal and external transaction involves the hotel suppliers, the hotel and the hotel customers.” (Anon., 2014). Increasingly, the management of multiple relationships across the supply chain is being referred to as supply chain management (SCM). The supply chain is not a chain of businesses with one-to-one, business-to-business relationships, but a network of multiple businesses and relationships. (Lambert & C., 2000)

The main aim of SCM in the industry is to improve the customer services and eliminate waste like waiting time, in the process, that leads to preferred suppliers and to a bigger

turnover. “Looking ahead, procurement managers will have to change the way they approach suppliers and business peers; being a strategic business partner means so much more than negotiating a discount” (Hoek, 2013 August 02).

The concept of Supply Chains is similar to Porter’s definition of value chains. The value chain model describes a business as a series of inter connected activities, and the model clusters these activities as primary and support activities. Primary activities are directly related to the production of the business “product or service” and include production, marketing, logistics and after sales functions. Secondary activities provide support to the primary activities and include procurement, firm infrastructure, human resources management, and technology deployment. The supply chain expands on the value chain model by clearly acknowledging the inter dependency of several business entities carry out these activities to provide an end product or service.

Planning and control of operations are keys to moving an organization or supply chain in a desired direction. The extent of joint planning is expected to bear heavily on the success of the supply chain. Different components may be emphasized at different times during the life of the supply chain, but planning transcends the phases (Lambert & C., 2000).

2.4 Green Supply Chain Management (GSCM)

Basic idea of GSCM is integrating environment thinking into supply chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers and end of life management of the products after its useful life.

It is not surprising that GSCM finds its definition in supply chain management. Adding the “green” component to supply chain management involves addressing the influence and relationships of supply chain management to the natural environment.

Motivated by an environmentally-conscious mindset, it can also stem from a competitiveness motive within organizations (Hervani, Helms, & Sarkis, 2005). According to Hervani, Helms, & Sarkis, 2005 GSCM is defined as:

Green Supply Chain Management (GSCM) =
Green Purchasing + Green Manufacturing/Materials Management + Green
Distribution/Marketing + Reverse Logistics

An emerging area in supply chain practice is green supply chain management, which integrates environmental management with traditional supply chain management. (Logistic Management Institute, 2003)

Nowadays, environmental issues are one of the most important issues concerning human beings' life. In order to preserve our environment and resources for future generations, we need to change the way we are managing and operating our supply chains. From a financial viewpoint, GSCM is still advantageous. Along with the increase of awareness in environmental issues and environmental legislative constraints, Supply Chain (SC) managers are becoming more familiar with the advantages of GSCM.

Dependence, trust, and durability of the relationship with SC partners have a very high influence on the whole system. And management commitment is fundamental for the implementation of GSCM practices (Agi & Nishant, 2017).

Considerable improvements in supply chains can be achieved because environmental problems are mostly material-oriented. For industries with lower margins, GSCM can lead to lower supply chain related costs. These cost reductions can be translated into significant competitive advantages and profit. (Ehsan, 2009)

A major element within GSCM is concerned with inter-organizationally sharing responsibility for various aspects of environmental performance. GSCM should promote the sharing of environmental responsibility and lend itself to achieving a reduced environmental burden caused by industry (Hervani, Helms, & Sarkis, 2005).

The adoption of GSCM practices improves the organization's capabilities to sustain the environment and to strengthen the organization's economic viability (Green Jr, Zelbst, Meacham, & Bhadauria, 2012).

Following efforts of green management can improve cost saving, employee loyalty, customer retention, and help to meet short term operational targets. Firm can establish better networks with stakeholders, and exhibit improved social responsibility and good reputations as they reach for long term strategic targets (Chen, Zhang, & Xu, 2017).

While the service supply chains, including in the hospitality sector, continue to grow, they are facing several challenges that may limit their potential. These challenges mainly include the growing cost of supply chain operations, the stricter environmental regulations and legislation, and growing competition. Such challenges have forced service supply chains to minimize their wastes and improve their resources' efficacy in order to meet the requirements of environmental standards and regulations while remaining competitive and profitable (Al-Aomar & Hussain, An assessment of green practices in a hotel supply chain: A study of UAE hotels, 2017).

Green supply chain concepts manage environmental impacts where they occur, ideally before they occur. GSCM tries to minimize the undesirable environmental impacts of supply chain processes within the participating organizations and the whole supply chain as well (Ehsan, 2009). According to Ehsan Nikbakhsh due to many factors firm can initiate GSCM practices and there are four major groups as follows.

a) Customer requirement.

Green thinking lets the customers, especially major customers, use their influence on suppliers to adopt green practices. This demand has cascade effect and goes through the entire supply chain.

b) Governmental and International laws and regulations.

Governments, national standard institutes, industrial development bureaus, and local authorities have a great impact on industries by passing laws and regulations and controlling the industries to implement these regulations.

c) Organizational green awareness.

The economic impacts of using old and worn products for purposes such as repairing, reusing, reassembly, refurbishing and recycling on organizational

productivity and cost reduction is another important initiative for companies to develop GSCM practices.

d) Environmental activists and non-governmental organizations (NGOs).

These groups can create green awareness within both societies and industries as well. First, they can encourage people to buy green products instead of their nongreen counterparts. Despite the lack of expertise in technical fields, environmental activists, and NGOs can still have impact on industries by promoting green awareness among people and requiring industries to adopt green practices.

Although environmental management imposes higher initial costs and restrictions on design and manufacturing practices, implementing GSCM practices will lead to many advantages. GSCM advantages can be categorized based on costs, risk, productivity, property value, and environment. Some example of these advantages is summarized in Table 2-2

GrSCM practices advantage	Sample advantage
Reducing costs	Raw material and energy costs, insurance costs
Reducing risk	Waste bills and pollution fines, water and/or energy shortages
Improving productivity	Using natural light and ventilation
Increasing property value	Lowering operating costs
Improving public image	Increasing sales, better public perception and community support, proving the company seriousness
Creating healthier environments	Less toxins and cleaner air, less hazardous production processes

Table 2-2: Organizational advantages of GSCM practices

Source: Green Supply Chain Management by Ehsan 2009

The main barriers of GSCM can be divided into four main groups including environmental requirement costs, lack of green awareness, technological barriers, and lack of environmental information, knowledge and trainings. Concerning GSCM barriers, different organizations and institutions are responsible for eliminating these barriers (Ehsan, 2009).

Sustainable Supply Chain Management (SSCM) is concerned with internal and external management of supply chain, integrating the dimensions of sustainable development. Therefore, SSCM approach can be defined as considering environmental, economic and social issues in supply chain management. Although GSCM and SSCM are usually being used interchangeably in Supply Chain Management literature; one must note that these two concepts are slightly different. SSCM includes economic and social sustainability issues as well as environmental sustainability issues. Therefore, SSCM is a broader field which includes GSCM as a part of it (Ehsan, 2009).

Implementing a sustainable supply chain management could bring benefits to all members of a supply chain. This is particularly true in high-contact industries such as hospitality industry. Supply chain members' participation in sustainability activities can have profound effects on its success. It is extremely important for the success of sustainability efforts that companies make sure their managers and employees understand the reason behind sustainability initiatives, and have the knowledge necessary to implement, monitor and assess the outcomes of those initiatives. (Xu & Gursoy, 2014).

Customer requirements play an important role in SC design and specifications, and suppliers usually comply with these requirements. Green thinking lets the customers, especially major customers, use their influence on suppliers to adopt green practices. This demand has cascade effect and goes through the entire supply chain. Also, major customers should help suppliers achieve this goal by partnering in product and process design (Ehsan, 2009).

Customers' perceptions including satisfaction, loyalty and willingness to pay more are likely to be positively influenced by sustainable hospitality supply chain management actions and efforts because customers are being more conscious about businesses' reputation and their products and services' environmentally friendly and socially

responsible features. Further customers' positive perceptions towards hospitality businesses can have significant positive impact on their financial performance, which can be the main motivation for companies to implement a more advanced level of sustainable supply chain management (Xu & Gursoy, 2014).

To analysis Supply Chain Management, one generic SCOR model could be applied in this section based on green practices.

The Supply Chain Operations Reference (SCOR) is a state-of-the-art SCM tool developed by Supply Chain Council. SCOR drives an end-to-end view of Supply Chain performance. This model incorporates best practices from a variety of industries, hence making it suitable for different kinds of organizations. Currently, SCOR model consists of five main processes including Plan, Source, Make, Deliver, and Return. Figure 2-6



Figure 2-6: Basic supply chain management function

Source: The Supply Chain Response to Environmental Pressures by Paquette Julie 2005.

Plan:

The main variables that influence the environmental performance of a product or system are determined during the planning phase. Many number of processes may be used to aid environmental decision-making while planning the supply chain (Paquette, 2005).

According to Paquette the processes are:

- Environmental cost accounting
- Environmental life cycle analysis
- Design for environment

Source:

Sourcing professionals may consider the environmental attributes of materials, components, and products, as well as the environmental performance of the suppliers' direct activities using the following processes (Paquette, 2005).

- Environmental auditing
- Environmental certification

Make:

The manufacturing response to facility-focused regulatory directives has evolved from end-of-pipe pollution control to the implementation of environmental management systems (Paquette, 2005).

Deliver:

The environmental implications from transportation are growing, as materials, components, and finished products travel longer distances through production and distribution cycles. The total impact of delivery functions correlates to two variables that logistics professionals manage directly: transportation distance and mode (Paquette, 2005).

Return:

Return processes are gaining in strategic importance as companies compete further to maintain customers, recover assets, minimize liability, and meet extended producer responsibility regulatory requirements (Paquette, 2005).

Implementing GSCM practices requires the flow of material from the final customers back to retailers, collection points, manufacturers, and/or disposal sites. Therefore, reverse logistical activities are different from traditional logistical activities in which the flows of materials and products are from the suppliers to the customers (Ehsan, 2009).

Logistics Management Institute found that one of the effective way to ensure environmental analyses involve the entire supply chain and simultaneously ensure SC

analysis consider all environmental aspects, is to merge these two concepts. The GreenSCOR model is an integrated green supply chain management tool that will allow users to seamlessly manage their supply chain and environmental impacts, resulting in more efficient operations and lower costs. (Cash & Wilkerson, 2003). According to Cash & Wilkerson, 2003 table 2-3 show the potential environmental impact of the SCOR model.

SCOR process	Potential environmental impact
Plan	Plan to minimize energy and perilous material consumption Plan the handling and storage of perilous materials Plan for the disposal of ordinary and perilous waste Plan conformity of all supply chain activities
Source	Select suppliers with positive environmental records Select materials with environmentally friendly content Specify packaging requirements Specify delivery requirements to minimize transportation and handling requirements
Make	Schedule production to minimize energy consumption Manage waste generated during the make process Manage emissions (air and water) from the make process
Deliver	Minimize use of packaging materials Schedule shipments to minimize fuel consumption
Return	Schedule transportation and aggregate shipments to minimize fuel consumption; prepare returns to prevent spills of perilous materials (oils, fuels, etc.) from damaged products

Table 2-3: SCOR process environment impact

Source: GreenSCOR Developing a Green Supply Chain Analytical Tool

One of the main gaps in the SCOR model was lack of process for waste disposal during the production. Therefore, GreenSCOR added a new waste disposal process to every function of Make process. Also, as stated before, the return process does not completely

account for many of GSCM practices such as remanufacturing, refurbishing, reusing, recycling etc. (Ehsan, 2009).

SCOR metrics are mainly direct with five specific supply chain attributes which developed by the model. Because SCOR was developed as a supply chain model, these attributes not directly align with environmental factors. To effectively develop environmentally oriented metrics, need to be linked the performance attributes to environmental impacts. Table 2-4

Performance attribute	SCOR definition	Environmental definition
Reliability	Delivering correct product to correct customer, to correct place, at the correct time, in the correct condition and packaging and quantity, with correct documentation	Delivering the correct reduces waste, pollutions and fuel use from extra transportation for returned products; Proper documentation enables all of the supply chain entities to keep better track of perilous materials that are embedded in products; thus allowing to arrange for proper storage, handling, and disposal.
Responsiveness	The speed of providing products to the customers	The environmental impacts affecting the speed of material movement, including regulatory or pollution control steps within a process.
Flexibility	The agility in responding to market changes to gain or maintain competitive advantage	The extent to which a firm can meet the environmental demands of its customers. This refers to the products, their production, transportation and recyclability, etc.
Costs	Costs of operating supply chain	The costs of environmental conformity and cleanup as well as energy costs.
Asset management efficiency	Effectiveness of assets management in order to satisfy customers demand	Assets management in a way that mitigates environmental impacts and reduces internal costs.

Table 2-4: SCOR performance attributes environmental linkage.

Source: GreenSCOR Developing a Green Supply Chain Analytical Tool (Cash and Wilkerson 2003)

Cash and Wilkerson 2003 stated that implementing GreenSCOR will result the following benefits to the company.

➤ Improved environmental management performance.

The ultimate objective of green supply chain analysis is to identify often hidden environmental impacts and take appropriate steps to mitigate them. By using SCOR as an analysis tool, an organization can take a more complete view of the supply chain itself. This ability in turn allows possible identification of more environmental aspects and impacts. The GreenSCOR elements integrated into SCOR will highlight best practices that can mitigate those impacts. Environmental performance can ultimately improve because more aspects and solutions have been identified.

➤ Improved supply chain management performance.

Supply chain management improvements evolve directly from the improved identification of environmental aspects and impacts. With the GreenSCOR best practices and metrics, logisticians can directly see how improving environmental performance can improve the efficiency of their supply chain operations. Such awareness tends to spark innovation, resulting in dual benefits.

➤ Improved green supply chain initiatives.

With the benefits and performance of environmental factors organizations are more and more trend to initiate new green supply chain practices.

Sustainable/Green hospitality supply chain management, achieved by the efforts of each member in the hospitality supply chain, would benefit customers, employees and the business itself. Its benefit would even be extended to the whole society (Xu & Gursoy, 2014).

2.5 Green Practices

Based on extensive literature survey on green practices and in-depth interview from industry experts on face to face, the significant green practices have been identified in service industry in worldwide. Initially there were sixteen literatures have been completed for develop the following table 2-5.

No	Year	Author/s	Topic	Highlighted Area
1	2017	Silu Chen, Kai Quan Zhang, Xin-long Xu, Hsing Hung Chen	Comprehensive theoretical framework for examining learning effects in green and conventionally managed hotels	Create an awareness among employees, green design & purchasing green products
2	2017	Rosangela Maria Vanalle, Gilberto Miller Devos Ganga, Moacir Godinho Filho, Wagner Cezar Lucato	Green supply chain management: An investigation of pressures, practices, and performance within the Brazilian automotive supply chain	Eco design & internal environmental management
3	2017	Pan Liu, Shu-ping Yi	Pricing policies of green supply chain considering targeted advertising	Use efficient machinery to cut down on emission and waste
4	2017	Raid Al-Aomar a, Matloub Hussain	An assessment of green practices in a hotel supply chain: A study of UAE hotels	Waste prevention
5	2016	Sini Laari, Juuso Toyli, Lauri Ojala	Supply chain perspective on competitive strategies and green supply chain management strategies	Collaboration with suppliers
6	2016	Sheetal Soda, Anish Sachdeva, Rajiv Kumar Garg	Implementation of green supply chain management in India	Use efficient machinery to cut down on emission and waste
7	2016	María-del-Mar Alonso-Almeida, Cristobal Fernandez Robin, María Soledad Celemin Pedroche, Paulina Santander Astorga	Revisiting green practices in the hotel industry: A comparison between mature & emerging destinations	* (Chile hotels) Create an awareness among employees & establishment of environmental policy * (Spanish hotels) Use of alternative energy sources.
8	2015	Niraj Kumar, Ravi P. Agrahari, Debjit Roy	Review of Green Supply Chain Processes	Green design & green manufacturing
9	2014	Oksana Seroka-Stolka	The development of green logistics for implementation sustainable development strategy in companies	Establishment of environmental policy
10	2013	Mariam Jamaludina, Zeenat Begam Yusoff	Best Practice of Green Island Resort	Green initiatives for their operation energy, waste & water
11	2013	Gizem Gogus , Ibrahim Sarper Karakadilar, Sinan Apak	Innovation and sustainable growth measurement in hotel industry	Renewable energy with waste minimization and recycling
12	2013	Qing Gua, Patricia Lagoa, Henry Muccinib, Simone	A Categorization of Green Practices used by Dutch Data Centers	Energy efficiency
13	2013	Ali Diabat & Roohollah Khodaverdi & Laya Olfat	An exploration of green supply chain practices and performance in an automotive industry	Emission reduction, resource reduction & product innovation
14	2012	Ray Wang	The investigation of Green Best Practices for Hotels in Taiwan	"Activating performance" and "human-oriented style" Green practices was preferred
15	2012	María del Mar Alonso-Almeida	Environmental management in tourism	Water & waste management is best practice & empowerment of women
16	2012	Mette Mosgaard, Henrik Riisgaard, Rikke Dorothea Huulgaard	Greening non-product-related procurement	Create an awareness among employees & general public

Table 2-5: Extensive literature survey

Further this research has identified 11 green practices in theoretical manner. See the table 2-6. This will meet the first objective of this research “To identify commonly practicing green practices in service sector worldwide”.

No	Reference	Green Practice	Area of Green Practice
1	A	Commitment to environmental practices	Environmental Committee that is responsible for developing an environmental green plan Green team that is responsible for ensuring that all the environmental practices
2	B	Reduce, Recycling & Reuse	Reduce the usage of resources. Recycle & Reuse the goods
3	C	Energy efficiency and conservation	Use energy efficient products, use renewable energy sources
4	D	Lighting	Reduce lighting in low traffic areas
5	E	Water efficiency and conservation	Reduce water usage
6	F	Landscape	Landscape the property with trees and plants that tolerate the climate, soil and water availability
7	G	Pest Management	Implement a green integrated-pest management (IPM) program
8	H	Hazardous and Toxic substance	Use the least toxic cleaning products and substances as possible.
9	I	Transpotation	*Encourage alternative modes of transportation via incentives. *Offer telecommuting opportunities or flexible work schedules
10	J	Purchasing	*Create an environmental purchasing policy *Purchase recycled content products
11	H	Green design	Building/site design

Table 2-6: Green practices

The greenness depends on how sensitive firms are to environmental pressures and how well managers follow environmental strategies. Specifically, a stronger favorable working attitude with loose management control will help hotels with green management to enhance absorptive capability and advance knowledge flows within the hotel and among the hotel industry (Chen, Zhang, & Xu, 2017).

2.5.1 Practice A - Commitment to environmental practices

Firm can build an environmental committee and that team is responsible for developing and implementing environmental green practices with integrating internal & external stakeholders. The team is basically representing of individuals from each department including top management of the firm. This team must ensure that the environmental practices, in which the firm is participating, are being performed timely and correctly. Conducting awareness programs and visibly communicating environmental efforts to stakeholders (Wang, 2012).

Hotel managers should try to build network ties to improve the quality of formal and informal relationships among hotel employees to enhance their green consciousness. These practices will improve the way their hotel is managed and to create an awareness of a continuous improvement. (Chen, Zhang, & Xu, 2017).

Example: Aitken Spence Hotel Holdings PLC Annual Report 2015/16 stated that “The communities in which we operate are the key stakeholders of our resorts in many different ways. Heritance Kandalama maintains relationships with over 30 schools within a 30km - 40km radius of the hotel and creates awareness amongst their students, of environmental sustainability. The long-term objective therein is to inculcate environmental conscientiousness in these students.”

2.5.2 Practice B – Reduce/Reject, Recycling & Reuse

Managing the limited natural resources is challenge aspect which whole world faced. Because of that, this is a one of important practice will affect to financial profitability and strengthen the competitive edge. Stakeholders must be encouraged to reduce or reject all non-biodegradable material such as packaging material and plastics wherever possible and reuse before recycling and is aimed at reaching zero waste to land fill status.

The hotel industry is resource intensive, and waste generation is one of its most visible effects. Proactive behaviors for improving environmental practices make good business sense (Chen, Zhang, & Xu, 2017).

María del Mar Alonso - Almeida in 2013 empathized that the hospitality industry can operate with adequate energy, water and waste management facilities (Alonso-Almeida, 2013).

Nowadays, waste management is a key business function in most hotels at different star level. This is mainly due to the increased amount of tangible such as solid waste, energy, water, emissions, etc. and intangible waste that is created by hotel services such as accommodation, dining, laundry, and hosted events (Al-Aomar & Hussain, 2017).

Waste Management is the management of waste generation and its impacts through activities such as source reduction, pollution prevention, and disposal (Ehsan, 2009).

The Waste Hierarchy – ranks waste management opportunities according to what is best for the environment. It gives top priority to reducing/preventing waste in the first place. When waste is created, it gives priority to preparing it for re-use, then recycling, recovery and last of all disposal (e.g. landfill). See Figure 2-7 below. (Univesity of Leicester, 2018)



Figure 2-7: The waste hierarchy

Example:

The hotels segregate waste by type, and thereafter different waste is dealt with the most effective and suitable manner. Food waste is either used for compost or handed over to pig farms as animal feed or converted to Bio-Gas. See the table 2-7

Waste Details Sri Lankan and Maldivian Hotels	Measurement	2015/16	2014/15	2013/14	Remarks
Waste type					
Paper	Kg	12,927	14,921	12,099	Segregated and sold/sent for recycling
Cardboard	Kg	17,990	32,172	29,517	Segregated and sold/sent for recycling
Plastic	Kg	12,069	13,840	12,358	Segregated and sold/sent for recycling
Polythene	Kg	4,800	5,015	3,168	Segregated and sold/sent for recycling, Supplier education on reducing packaging material planned
CFL Bulbs	Units/Kg	873	324/1021	360/773	Sent for recycling, Energy efficient LED lighting replacement program
Lead Acid Batteries	Units/Kg	572	6/595	6/706	Segregated and sold/Stored for later recycling
Alkaline Batteries	Units/Kg	485/223	485/223	20/186	Segregated and sold/Stored for later recycling
Tires	Units/Kg	-	36/856	16/1,116	Sent for Retreading/Sold to recycle
Scrap Metal	Kg	22,291	17,945	18,225	Segregated and sold
Glass	Kg	10,551/ 31,041	23,275	25,416	Segregated and sold/sent for recycling
Soiled Cotton	Kg	620	744	580	Sent to Thilafushi
Food Waste	Kg	2,306,754	2,456,781	1,108,355	Composted, Used in Bio Gas Generators, Sold/Given to piggery
Waste Oil	L	5,590	Previously not reported	Previously not reported	Sold to Soap manufacturer
E-Waste	Units/Kg	4/268.25	4/268	2/328	Sold/sent for recycling

Table 2-7: Waste management

Source: Aitken Spence Hotel Holdings PLC Annual Report 2015/16

Framework development is waste analysis across the hotel supply chain is impotent. This includes the identification of different types of waste and the allocation of these wastes at different stages/elements of the hotel supply chain. Once the supply chain structure and relationships are understood, green practices can be selected and deployed (Al-Aomar & Hussain, 2017). Figure 2-8

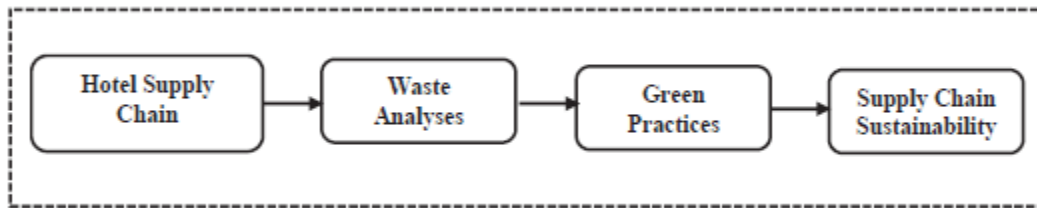


Figure 2-8: Analysis framework

According to Al-Aomar & Hussain, 2017 there are three key elements as

- Supply chain for hotels (structure and relationships)
- Waste analysis (identification and allocation)
- Green practices (assessment and adoption)

Further emphasized “waste prevention” as a key green practice. Evidently, it is most cost effective as less waste often leads to lower cost of recycling and waste disposal and less negative environmental impacts. Reuse and recycling techniques were also recommended especially for papers, amenities, and grey water. Environmental standards were also found to be useful in supporting the green practices of hotels.

Tin, can recycling was indicated as the most important practice in the reuse and recycle. Printing all information brochures and menus on recycled paper, as well as the reuse of towels/linen Bottle recycling to suppliers or collectors as a very important action (Stylosa & Vassiliadis, 2015).

2.5.3 Practice C & D – Energy efficiency, conservation & Lighting

Promote to use energy efficient products and methods, use renewable sources such as solar, bio gas etc. when possible and reduce lighting in low traffic areas. When initiating energy efficiency, conservation & lighting methods firm may have to high invest on the same and benefits can be enjoyed in long run not only the firm but also community as whole.

Example:

1). John Keells Hotels PLC Annual report 2015/16 mentioned that “Energy is one of key natural inputs and among one of our top expenses. We engage in a range of concerted

efforts across all our resorts to increase energy efficiency with mechanisms in place at all resorts to measure, track and report energy consumption on a consistent basis. As a policy, low energy consuming equipment is utilized when replacing higher energy consuming units across all our resorts whilst employees and guests are encouraged to contribute towards conserving energy through a range of ‘Go Green’ choices. Furthermore, energy audits are conducted at our resorts on a regular basis to identify areas for improving energy efficiency. Our key sources of energy are electricity, diesel, petrol and liquid petroleum gas” (John Keells Hotels PLC Annual report 2015/16, 2016). Further they highlighted that total energy consumption declined by 2% to 173594 GJ and energy consumption per guest night also declined from 219 MJ to 213 MJ during the financial year 2015/16. See the below table 2-8 to find their key energy initiatives.

Initiative	Resort	Estimated Annual Savings(in kWh)
<i>Energy efficient lighting:</i> Over the past few years, all Sri Lankan resorts have shifted towards using LED for all lighting purposes. During the year, we achieved 100% coverage and all our lighting requirements are now fulfilled through LED lighting.	All Resorts in Sri Lanka and Maldives	57,600
<i>Energy efficient cooling:</i> Split-type air conditioners are being replaced with more energy efficient inverter-type air conditioners in an ongoing programme.	All Resorts in Sri Lanka and Maldives	920,400
<i>Renewable Energy:</i> Waste energy is utilised through co-generation at Cinnamon Lodge Habarana which heats water for guest use through the waste heat from air conditioners and results in overall energy savings. Furthermore, solar heaters have been installed at most of our hotels to heat water for use by guests.	Cinnamon Lodge Habarana, Trinco Blu by Cinnamon	87,400

Table 2-8: Key energy initiatives

Source: John Keells Hotels PLC Annual report 2015/16

2). Aitken Spence Hotel Holdings PLC Annual Report 2015/16 stated that “the need for conservation of energy and sources of renewable energy in the world has been made more urgent today than ever. Closer to home, in our business, Energy costs (comprising electricity and fuel) account for 17% of our operating costs and reducing energy consumption is hence a Triple Bottom Line objective”.

Energy-saving light bulbs and the fine-tuning of air conditioning were reported as the most important power saving practices. And highlighted that installing automatic switches for lighting & ventilation (Stylosa & Vassiliadis, 2015).

Renewable & Sustainable Energy Reviews has gathered together some of the latest advances in the technical and policy spheres which can help to achieve the transition to reliable, low carbon energy systems for the benefit of local communities as well as helping to mitigate global climate change. From process improvements allowing greater efficiency in energy resource usage, through to energy transmission and end-use in heating, cooling, transportation and electricity systems, and finally, to controls on emissions and ensuring social sustainability and fairness (Elsevier Ltd, 2017).

2.5.4 Practice E & F - Water efficiency, conservation & Landscape

Consumable water is very limited resource and stakeholders must be encouraged to reduce water usage, increase efficiency in usage and recycle where as possible. Hospitality sector is having high water consumption as an industry, few of the initiatives are:

- Invest in water efficient appliance - Slow flow shower heads, low flow toilets and water less urinals.
- Regularly check for leaks and repairs
- Post signs in restrooms, restaurants, and kitchen areas encouraging water conservation.
- Clothes washers, dryers and dishwashers are filled to recommend capacity for each cycle.
- Landscape the property with trees and plants that tolerate the climate, soil and water availability.
- Use organic fertilizers and soil amendments for landscaping.

Routine check to insure boilers are functioning properly is the most significant action that can be undertaken to improve use of water resources. (Stylosa & Vassiliadis, 2015).

Example:

1). John Keells Hotels PLC Annual report 2015/16 stated that “water management policy aims to minimize water withdrawal from surface and ground water sources through re-

cycling water wherever possible and engaging employees and guests in water conservation. Sub-divisional metering systems have been installed at all properties enabling the continuous monitoring and tracking of water usage and identification of areas of inefficiency. We continued to achieve efficiencies in water consumption, with the Group's water withdrawal declining by 3% (or 22458 m³) during the financial year. This translated to a 5.5% reduction in water consumption per guest night".

2). Aitken Spence Hotel Holdings PLC Annual Report 2015/16 stated that "water conservation is an important area of focus in our sustainability strategy with the medium to long term in mind, and we continue to improve the efficiency of our operations in water usage and to understand water conditions of the localities in which we operate. Reducing laundry has been a key area through which we reduce water consumption. Through friendly messages on how one can be environment friendly and make a contribution to reducing carbon footprint, the Housekeeping and Guest relations associates have been successful at encouraging guests to reduce their laundry requirements".

María del Mar Alonso - Almeida in 2013 stated that European Union to protect natural resources, and water in particular, more efforts are required. Given that water is a vital resource for life and prosperity, it is necessary to continue investing in water and wastewater technologies. In addition, the Spanish Government should make the introduction of waste recycling systems for companies a mandatory requirement. Consequently, the Government should develop training programs at all educational levels to focus on the importance of ensuring an ample supply of water for the future.

2.5.5 Practice G - Pest Management

According to Ray Wang 2012, following activates are mainly included under this topic.

- Implement a green integrated-pest management (IPM) program that allows less reliance on chemical treatments.

- Use organic insecticides and biocides or IPM techniques for the interior and exterior of the hotel property.

- Monitor pests and identify them accurately so that appropriate control decisions can be made.
- Use organic cleaners in drains to eliminate the grease and grime that some flies and insects use as a food source and breeding area.
- Use traps, containerized baits, gels and/or barriers for ants and cockroaches.

(Wang, 2012).

Example:

In 2014 Heritage Tea Factory Hotel was awarded the first organic certification in Sri Lanka by the Sri Lanka Standards Institute (SLSI) for the cultivation and processing of tea. After eight years of refining the processes used to cultivate and process organic black tea, green tea and herbal tea, the hotel emerged pioneers in achieving the organic certification. The mission to achieve 100% organic status was first realized in the year 2005 when the hotel discontinued the use of all forms of chemical fertilizer, pesticides or weedicides in the tea plantation. Artificial material was replaced with greener substitutes such as compost manure that is produced at the Hotel's in-house composting project. The growth of gotukola as an under layer in the tea plantation was encouraged to prevent the growth of weeds and aid in nourishing the soil.

2.5.6 Practice H - Hazardous and Toxic substance

In the hotel operation following actions considered under this section.

- Use the least toxic cleaning products and substances where as possible.
- Use products that are lead free, biodegradable, have low toxicity, mercury free, recyclable, less hazardous, and durable.
- Utilize a household hazardous waste drop off site for materials that cannot be thrown in the trash or poured down the drain, such as aerosol cans, electronics, paint, batteries, toner cartridges, chemicals, and compact florescent lights/LED /CFL bulbs.

- Use rechargeable batteries instead of disposable alkaline battery

Supply chain management is proactively and positively source suppliers who are capable enough to meet the firm's above requirements.

2.5.7 Practice I - Transportation

Hotel operators should encourage and provide incentives for both guests and staff to support environmentally friendly forms of transport, such as walking, cycling, bus and coach travel, and eco-friendly fuelled vehicles. They should also provide sufficient information of public transportation or low carbon emission transportation facilities to help guests adopt greener travel habits (Teng, Horng, Hu, Chien, & Shen, 2012).

As mentioned under GreenSCOR implications from transportation are growing day by day as materials, components, and finished products travel longer distances through production and distribution cycles. The total impact of delivery functions correlates to two variables that logistics professionals manage directly: transportation distance and mode (Paquette, 2005).

Example:

Giving priority to local suppliers when sourcing goods and services as much as possible. This practice lead to reduce carbon foot print and build community engagement. See the table 2-9.

Food and beverage operators should be aware and reduce their carbon footprint by adopting local, in-season, or organic food and beverage ingredients. Restaurant and food and beverage operators can move forward in supporting sustainable, organic, and local family farms to mitigate many of the detrimental effects of factory farming, meat production, pesticide use, and transporting food (Teng, Horng, Hu, Chien, & Shen, 2012).

Hotel	% of Procurement Expenditure for Local Suppliers
Hotel Hilltop	45
Turyaa, Kalutara	45
Heritance Kandalama	30
Heritance Ahungalla	30
Amethyst Resort	30
Heritance Ayurveda Maha Gedara	26
Heritance Tea Factory	10

Table 2-9: Procurement expenditure for local suppliers

Source: Aitken Spence Hotel Holdings PLC Annual Report 2015/16

2.5.8 Practice J – Green Purchasing/Procurement Policy

Green procurement tries to minimize the environmental impacts of selected products and services. Unlike green design and green operations, green procurement refers to activities which most of them happen outside the organization boundaries. Hence, greening procurement processes and system is a major start point in greening SC, because procurement processes are usually the first place in which an organization and its suppliers encounter. Customers usually try to persuade their suppliers to meet their requirements during contract negotiation meetings. Therefore, incorporating green criteria in this process can lead to greening the whole SC (Ehsan, 2009). Procurement managers should check the conformity of suppliers to environmental practices by examining/evaluating certificates they have (ISO, HACCP, SLS etc), their premises and corporate image and customer references etc.

According to Ray Wing in 2012, Implement an environmental procurement policy, communicate the same policy with internal and external stakeholders is important. Employees must be trained & aware about the policy.

Due to governments' large amount of purchases, government purchasing and procurement behavior is very important. In some industrial and service sectors such as computers, transportation, packaging, the impacts of government procurement behavior on industries behaviors can be significant. Governments can create strong incentives for industries to develop more green practices (Ehsan, 2009).

Includes activities that aim to make sure that the purchased items have desirable environmental attributes such as reusability, recyclability, and the absence of hazardous materials (Rostamzadeh, Govindan, Esmaili, & Sabaghi, 2014).

2.5.9 Practice K – Green Design

When addressing the environmental impacts of products, one cannot just consider the product design and production stages, but s/he must consider the product from its combining raw materials to end of its life. The approach considering this fact is life cycle assessment. The main idea of life cycle assessment is that designers and companies must not only look at their own direct environmental burdens, but also look at the indirect burdens as well (Ehsan, 2009).

Green design includes the integration of all environmental dimensions with the design process of a product through the entire flow of supply chain (Rostamzadeh, Govindan, Esmaili, & Sabaghi, 2014).

When consider the hospitality industry green buildings pursue long term performance through cost saving. These types of building allows natural lighting during date time hours and design itself provide energy saving in the operation.

There are global & local bodies which are certify green building.

Example:

US green building certification (LEED), have provided green hotel certifications.

World Green Building Council

Green Building Council Sri Lanka (GBCSL)

There are internationally recognized bodies who are eco-rating systems have been developed specifically for the hotel industry. These include Green Key, Green Seal for greening lodging industry, European Eco-Label for tourist accommodation service, British Green Tourism Business Scheme, Canada Green Key Eco-Rating System, Ecotourism Australia, and Taiwan Green Mark Hotel, and many others (Teng, Horng, Hu, Chien, & Shen, 2012). Obtaining this type of eco rating certificate will move the hotel for extra millage in competitive edge. And able to build customer perception. See the table 2-10

Criteria	Certification programs							
	European Eco-label	Green Key	Green Seal	China Green Hotel	Ecotourism Australia	Green Tourism Business Scheme	Green Key Eco-rating System	Green Mark Taiwan
Water	✓	✓	✓	✓	✓	✓	✓	✓
Energy	✓	✓	✓	✓	✓	✓	✓	✓
Waste	✓	✓	✓	✓	✓	✓	✓	✓
Corporate environmental management		✓	✓	✓	✓		✓	✓
Staff involvement	✓	✓	✓	✓	✓			✓
Guest information	✓	✓		✓	✓			✓
Indoor environment quality	✓	✓		✓			✓	
Hazardous substances	✓		✓				✓	✓
Social involvement and communication		✓		✓	✓	✓	✓	✓
Purchasing	✓	✓			✓	✓		✓
Transport	✓	✓			✓	✓		
Food and beverage		✓		✓				

Table 2-10: Comparison of criteria among green hotel certification programs

Source: Developing energy conservation and carbon reduction indicators for the hotel industry in Taiwan

2.6 SWOT analysis for green practices in hospitality industry

Strength: Financial benefits of green practices, profitability growth, employee loyalty, build up corporate image, positive public attention/perception and ISO/ECO certifications.

Weakness: Huge cost for energy efficient and water efficient appliance. Operating cost may increase to purchase environmental friendly products and customers may not be willing to pay extra amount for these products. Additional effort to train staff and communicate to other stakeholders.

Opportunities: Comply with legal environmental rules and regulations, community development and mutual satisfaction.

Treats: Social gaps within social interaction and customer network tie. Hard to work with its suppliers to develop environmental friendly/biodegradable products and implementing in some organisation cultures.

(Chen, Zhang, & Xu, 2017).

3 CHAPTER – METHODOLOGY

The development of the research design and the research methods used for this dissertation will be discussed in detail, within this chapter. Prior to this chapter, the background of the industry and the problem statement (under chapter 1.0 – Introduction) was explained in depth. The literature review (under chapter 2.0) cover hospitality industry, sustainable development & green supply chain management practices. Since the background and literature review has laid the foundation in creating awareness and building knowledge, the research methodology can now be presented.

3.1 Research methodology flow chart

- Working experience with the industry, identify research problem and background knowledge of the study.
- Develop & define research objectives.
- In depth interview from industry experts on face to face and identify commonly use green practices in service sector. Semi-structured questioner will be used for interview.
- Extensive literature survey on sustainable development, green practices, supply chain management & hospitality industry. Identify significant green practices in service industry in worldwide and develop the Meta analysis of theoretical aspects. (Appendix I: Meta Analysis)
- According to meta-analysis, and industry expert's opinion, prepare the questionnaire and do the pilot survey with few industry professionals in hospitality industry.
- Preparation of main online survey questionnaire. Select the valid responses.

- Analyzed the gathered data, recommendation & conclusion.

See the flow chart Figure 3-1

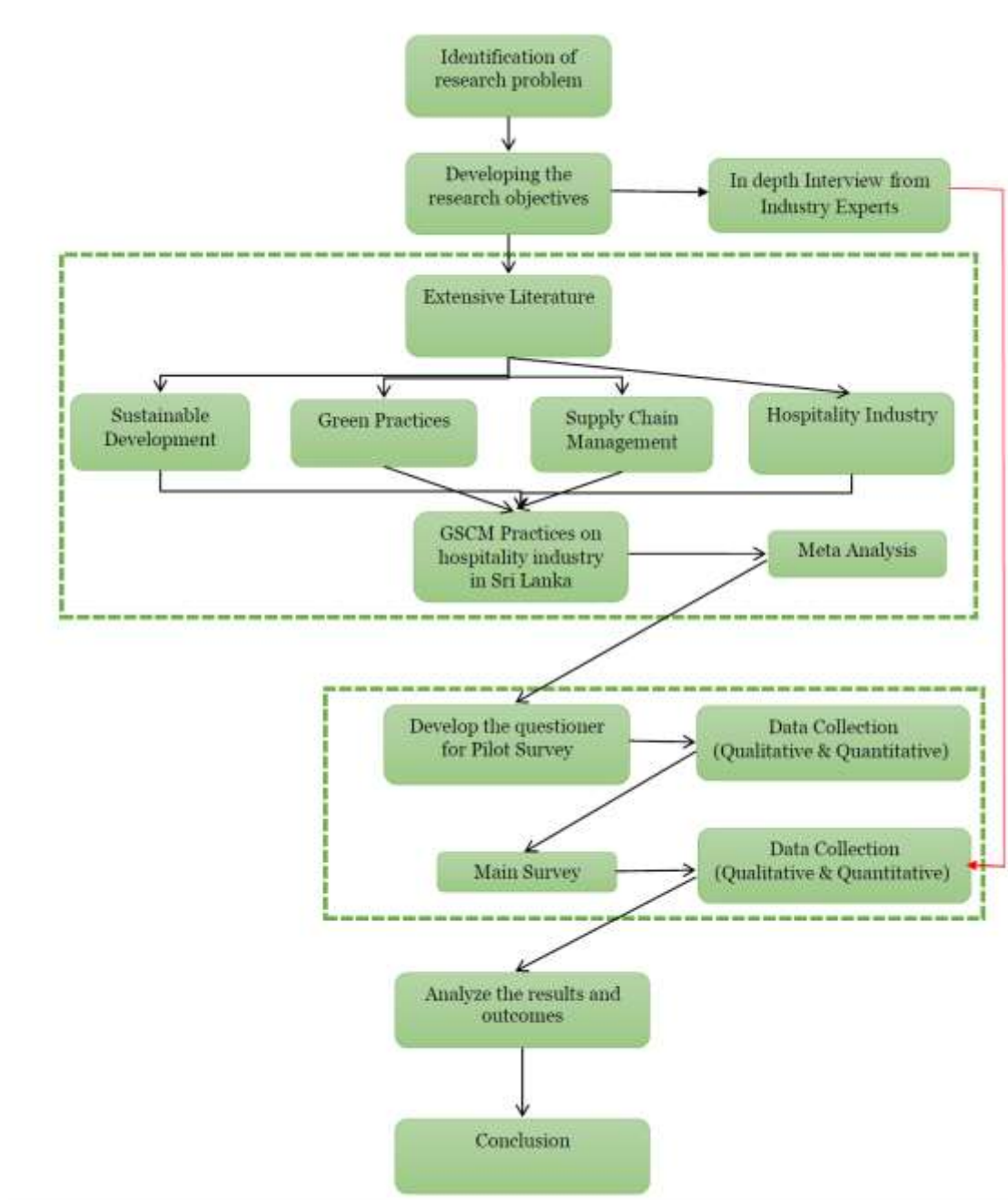


Figure 3-1: Research methodology flow chart

The research Onion indicated in Figure 3-2, narrate six layers i.e. philosophies, approaches, strategies, choices, time horizons, techniques and procedures of the research

design. Consequently, this research will apply the research onion as a key guideline model to create an effective research design.

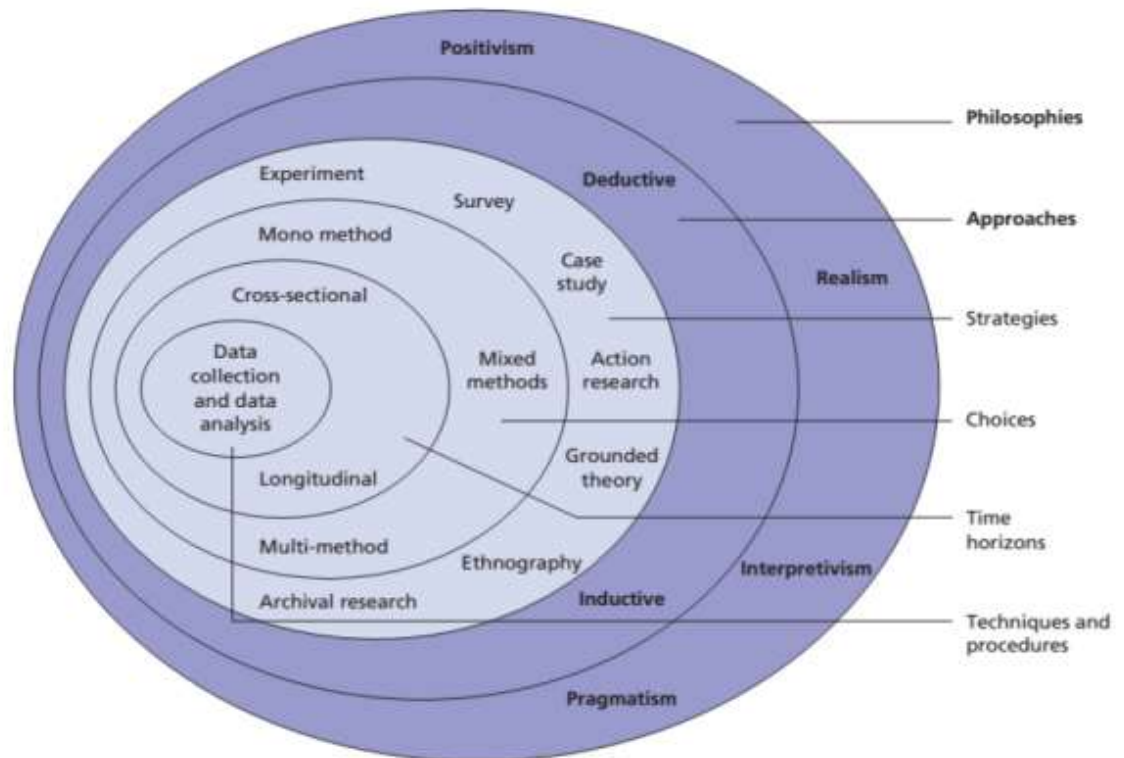


Figure 3-2: The research 'Onion'

Source: Mark Saunders, Philip Lewis and Adrian Thornhill 2008.

3.2 Research Philosophy

“As business and management researchers we need to be aware of the philosophical commitments we make through our choice of research strategy since this has significant impact not only on what we do but we understand what it is we are investigating” (Phil & Murray, 2006)

The research philosophy is an important element where it enhances knowledge in this subject area. The philosophical direction for any research is therefore important for a number of reasons as it helps to clarify the research design, it helps to recognise which designs will work and which will fail, and it helps the researcher identify and even create new designs that maybe outside of his experience. Research philosophies promote a

structured approach when carrying out any dissertation/thesis. first, it helps to clarify research designs; second, knowledge of the philosophy can help the researcher to recognize which designs work best; finally, knowledge of philosophy helps the researcher to identify and adapt research designs according to the constraints of different subject or knowledge structures (Easterby-Smith, Thorpe, & Lowe, 2002).

It is included the three additional elements outside of the main onion i.e. ontology, epistemology and axiology.

This research will adopt the positivist perspective; based on the researcher's ontology, epistemology and axiology, as 'positivism' is the highly appropriate perspective as it proceeds through a process of hypothesizing (or research questioning) fundamental laws that can be tested and then deducing what kinds of observations will demonstrate the truth or falsity of the hypotheses (or questions).

This research primarily focusses on what are the green supply chain management practices in sustainable development on hospitality industry in Sri Lanka. The objectives of the research will be achieved by means of a questionnaire based survey and in-depth interviews which will demonstrate the practical availability of the industry.

3.3 Research Approach

The number of literature is limited in relations to the Sri Lankan hospitality industry, therefore this research will focus not only on 'inductive' approach but also on 'deductive' approach in order to create a better understanding of the questions to create better argument. According to Colin, deductive research moves from general ideas/theories to specific particular and situations. While inductive research moves from particular situations to make or infer broad general ideas/ theories (Colin, 2007)

3.4 Research strategy

Your choice of research strategy will be guided by your research question(s) and objectives, the extent of existing knowledge, the amount of time and other resources you have available, as well as your own philosophical underpinnings (Mark, 2009).

Often allocating strategies to one approach or the other is unduly simplistic. Choice of research strategy will be guided by your research question(s) and objectives, the extent of existing knowledge, the amount of time and other resources available, as well as your own philosophical underpinnings (Mark, 2009).

The research approach for this paper includes both inductive theory and deductive theory since the research involves a mix of philosophies. According to Earl Inductive reasoning, moves from the particular to the general, from a set of specific observations to the discovery of a pattern that represents some degree of order among all given events (Babbie, 2012). Deductive research develops theories and hypothesis and then test out these theories or hypothesis through empirical observation (Geoff & David, 2005)

It is possible to combine both research approaches and this can be advantageous. Since there is less research done in reference to green supply chain management practices in hospitality industry in Sri Lanka, it is vital to use both approaches to strike a balance. With both deductive and inductive reasoning, the quality of the data gathering will improve significantly and the research will be less biased since the research strategy consists of a ‘mixed method’

3.5 Choice

For this study, the selected choice is ‘mixed method’, as the researcher uses quantitative and qualitative research methods in the process of the study.

3.6 Time Horizon

For this study, ‘cross-functional’ time horizon was selected as researcher use qualitative and quantitative research and measure an aspect of individuals at a single point in time considering the limited time allocated for the research

3.7 Techniques & Procedures

Both qualitative and quantitative techniques will be applied to complete this research.

Quantitative research begins with theory; from theory prior research is reviewed and from the theoretical frameworks, hypothesis and generated; these hypothesis lead to data collection and the strategy needed to test them in order to conceptualise a framework/model for a research (Sadore & Carolyn R, 1998).

However, the quality of the outcome data depends on an effective sample which a researcher would deploy when carrying out research.

Qualitative research is an approach for exploring and understanding the meaning of individuals or groups assigned to a social or human issue (Creswell, 2014).

Due to lack of sufficient publications on the Sri Lankan green practices in hospitality industry supply chain, it is important to share the knowledge/experience of industry experts. Thereby supporting to assist other researchers to further scrutinise elements of the hospitality industry supply chain in the country.

3.8 Primary Data Collection (Quantitative) - Online Survey – Questionnaire

The data for primary research have been collected through pilot questionnaire & structured online questionnaire from the professionals, industry experts, and executive level of staff in the field of hospitality industry management, sustainability & supply chain. The survey was limited to 12 questions in order to gather more respondents.

3.9 Primary Data Collection (Qualitative) – In depth Interview

The project includes assessing what are the green practices available in practical manner and impact of green supply chain management practices for sustainable development of hospitality industry in Sri Lanka. In-depth interviews were carried out to identify green practices & impact of particular practices for hospitality industry in Sri Lanka. A semi-

structured process was followed during the conversations with the industry experts in order to offer more flexibility.

Semi-structured interviews are designed to have a number of interview questions prepared in advance, but such prepared questions are designed to be sufficiently open that the subsequent questions of the interviewer cannot be planned in advance, but must be improvised in a careful and theorized way (Wengraf, 2001). A fixed set of sequential questions are applied as an interview guide, however additional questions can be presented to facilitate further exploration of concerns brought up by the interviewee (Cachia & Millward, 2011).

In-depth interviews were carried out with industry experts who have been working within the industry for the last 10 to 25 years. The sample taken for in-depth interviews consists of industry experts from established organisations/consultant within the service industry particularly in hospitality sector in Sri Lanka. The elite panel are members who are involved in organisations at a strategic level. Face-to-face interviews were conducted in order to gather information. Expert knowledge of participants is a key success factor for this research.

3.10 Secondary Data Collection (Qualitative)

Secondary data will be grounded on academic sources, i.e. Books, academic journals, reliable web sites, magazines, annual reports in order to build up the literature review.

3.11 Research Method

This research will be design to identify & effect of green supply chain management practices in sustainable development on hospitality industry in Sri Lanka. To achieve the above-mentioned objectives, mixed method choice will be used as qualitative data and quantitative data will be gathered when required.

3.12 Population and Sample size

The population refers to the entire group of people which the researcher wants to make inferences. Sample was selected in random and in total 70 executive level professionals were selected as a sample who is in the industry assigning direct or indirect sustainable functions.

Respondents for the online survey was chosen randomly in order to identify the green supply chain management practices. Twelve number of participants for the in-depth interviews were chosen based on their industry experience and expertise.

3.13 Research Focus

As sustainable development in the hotel industry impacts many factors, it is necessary to ensure the focus of his study. This study focused on the perception on the green supply chain management (GSCM) practices, Current direct and indirect GSCM practices, Factors hindering effective GSCM practices, understanding on green practices, and impact GSCM, benefits/transformations resulting from implementing GSCM practices. It was ensured to gather research that will contribute to address the research question, aim and objectives. Hence, participants for the questionnaire were targeted based upon their expertise within the focus of this project in the respective industry.

3.14 Confidentiality and Privacy

This project will ensure to maintain confidentiality and privacy of all respondent's through this study. The participants were informed that personal details would not be used at any point, and any company they represent will not be published. Sensitive information regarding organisations and other institutes have been omitted in order to protect the privacy and confidentiality of those respective institutions. The data which was gathered for this research has been securely stored where only the researcher has access to the information.

4 CHAPTER – RESEARCH FINDINGS

4.1 Introduction

This chapter presented and analyzed the primary and secondary research findings from the web version of the research questionnaire to statistically summarize the findings. Primary data were gathered an online questionnaire with 12 sections (Appendix 7-1) was developed and issued the web link through the emails among the sample audience of 70 professionals. Thirty-six respondents completed the questionnaire within the allocated time. Findings of the online survey through the questionnaire is analyzed in this chapter with the use of Google Form to interpret the data. Qualitative primary data were collected via In-depth interviews were carried out with industry experts.

4.2 Data analyst

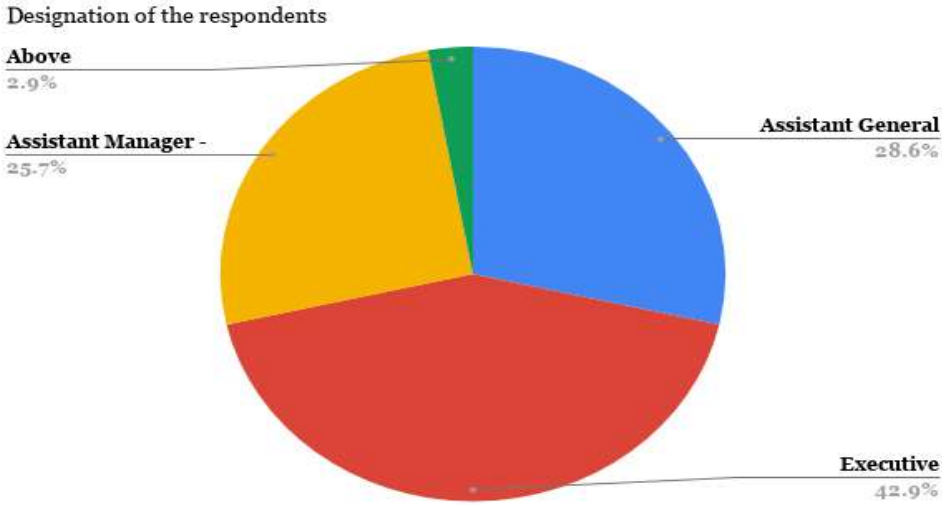


Figure 4-1: Designation distribution of the respondents

Executives and above levels in hospitality industry were selected for the sample. When consider the industry, executive percentage is higher and it represent received responses also which is 42.9%. While Assistant General Manager - General Manager Level 28.6%, assistant manager – manager level contributed 25.7% as indicated in the above figure 4-1.

Participants were questioned to identify validity of answers. Further considering the experience of respondents more than 65% are having more than 5 years' experience in the industry. It revealed that the responses are valid & justifiable. And 20% are 3 to 5-year experience in the field. All together 88.6% respondents are more than 3 years' experience in the field as per below figure 4-2. This shows that majority of respondents are well experienced in the field.

Working experience in the hospitality industry

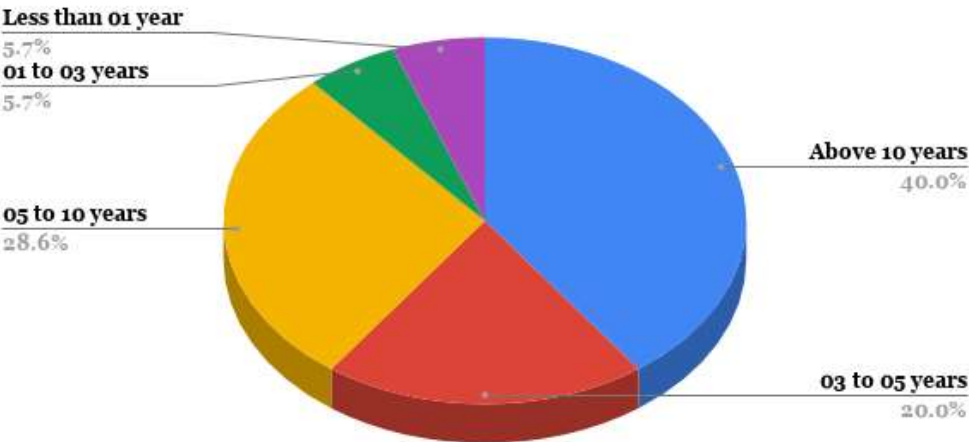


Figure 4-2: Working experience in the hospitality industry

This research scope limited to Star category hotel and reports in Sri Lanka. Due to this it is important to identify the respondents are from which category of the hotel, Out of 118 star class hotels & resorts in 2016, 85.7% respondents are working in the star category of hotels/resorts which is justifiable representation of population. See the figure 4-3

Star category of the hotel/resort respondents are working at present

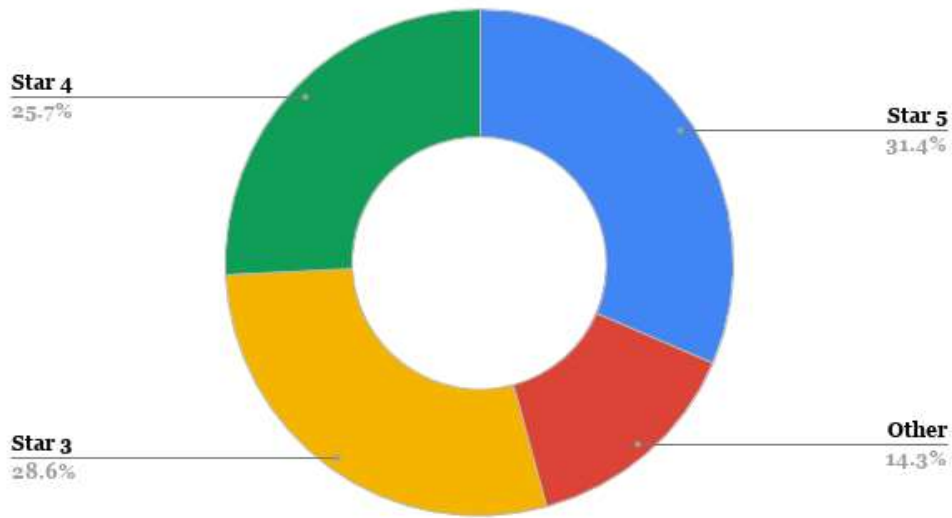


Figure 4-3: Star category of the hotel/resort which respondents represent

100% star class hotels/resorts are own/manage by the private firms by end of 2016. When considering the sample respondents are more than 90% are represent the private sector. See the figure 4-4.

Legal status of firm

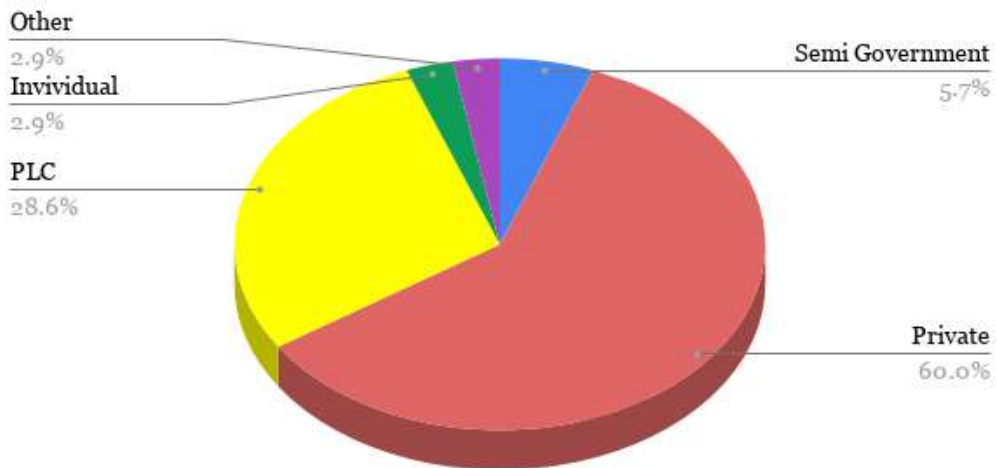


Figure 4-4: Legal status of firm

Majority of star hotels are based in western province and sample represent the same identity as shown in figure 4-5

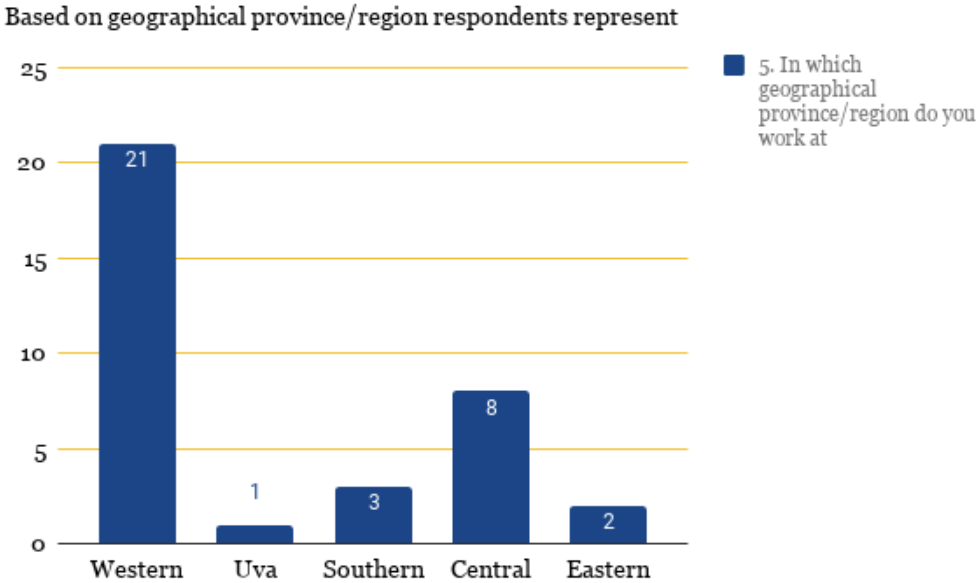


Figure 4-5: Distribution of geographical provinces

Figure 4-6 shows that how many respondents are involve with decision making on sustainable development in their operations.

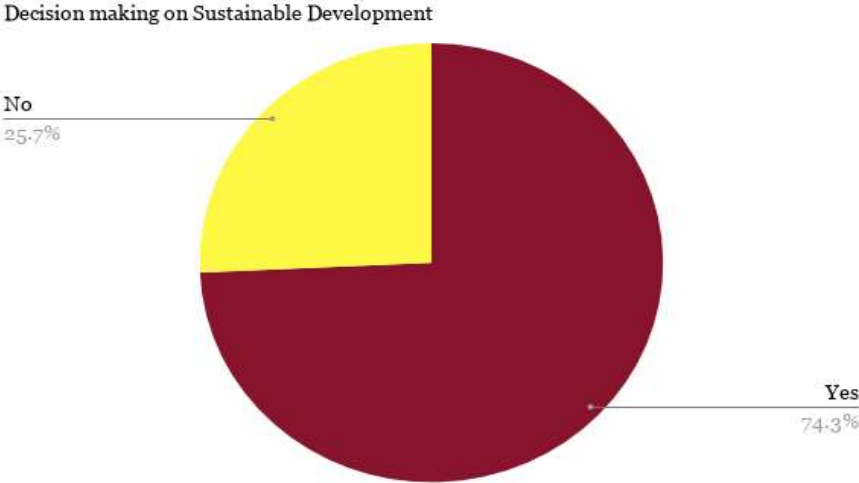


Figure 4-6: Decision making on sustainable development

According to above (figure 4-6) chart, 74.3% of sample population are involve with decision making on sustainable development in their operations. This can be interpreted that majority of executives in hospitality industry in Sri Lanka are involve with sustainable development decisions. It is indicated that research findings are viable to bring up to the industry. It has been proven as below testing on Minitab.

Test and CI for One Proportion: C1 =Response

Test of p = 0.5 vs p > 0.5

Event = 1

Variable	X	N	Sample p	95%	
				Lower Bound	Exact P-Value
C1	26	36	0.742857	0.594182	0.003

P value of Minitab calculation is 0.003 and it can be concluded with 95% confidence level that the proportion is greater than 0.5. Null hypothesis can be rejected and that shows that sample result (figure 4-6) are viable with population.

Further rest of the 25% respondents are not involve with same decision process they empathized that economy, environment & social (Triple bottom line) has an impact for sustainability development. See the figure 4-7

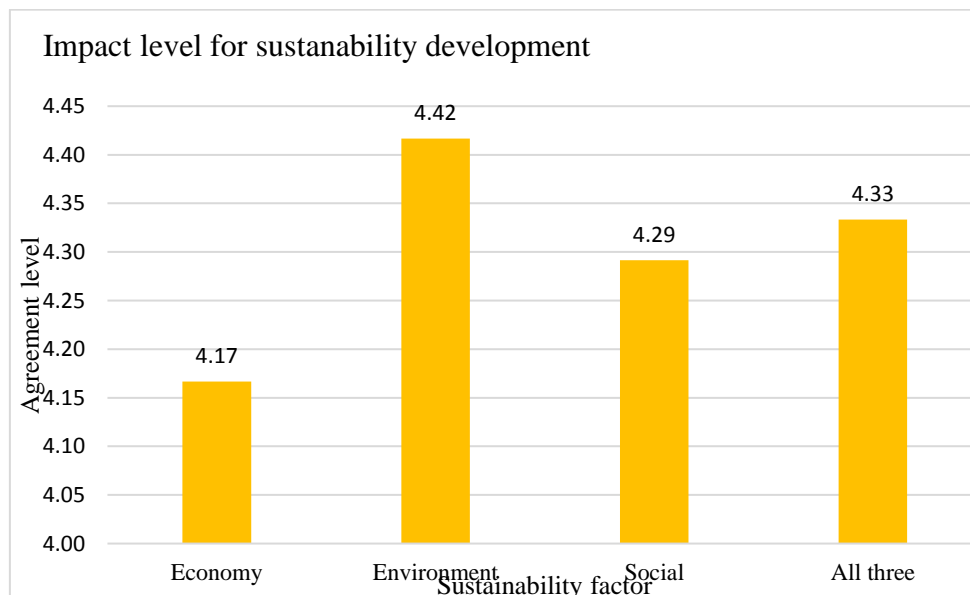


Figure 4-7: Impact level for sustainability development

It is important to understand the level of awareness about green practices due to research is focusing to particularly this area. 77% of sample aware about the green practices and illustrated that answers justifiable. See the figure 4-8

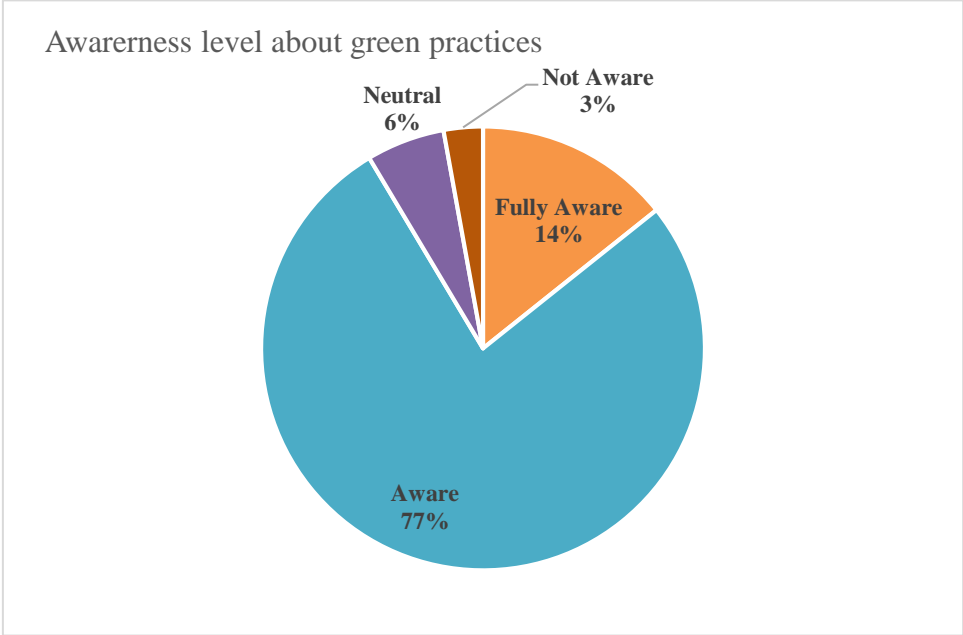


Figure 4-8: Awareness level about green practices

Values of all the practices are more than 3, which indicates that all given environmental practices are accepted by the respondents and highest value indicates by “Reduce Lighting in low occupancy areas” which scored 4.20 points under this category as per above figure 4-9 below.

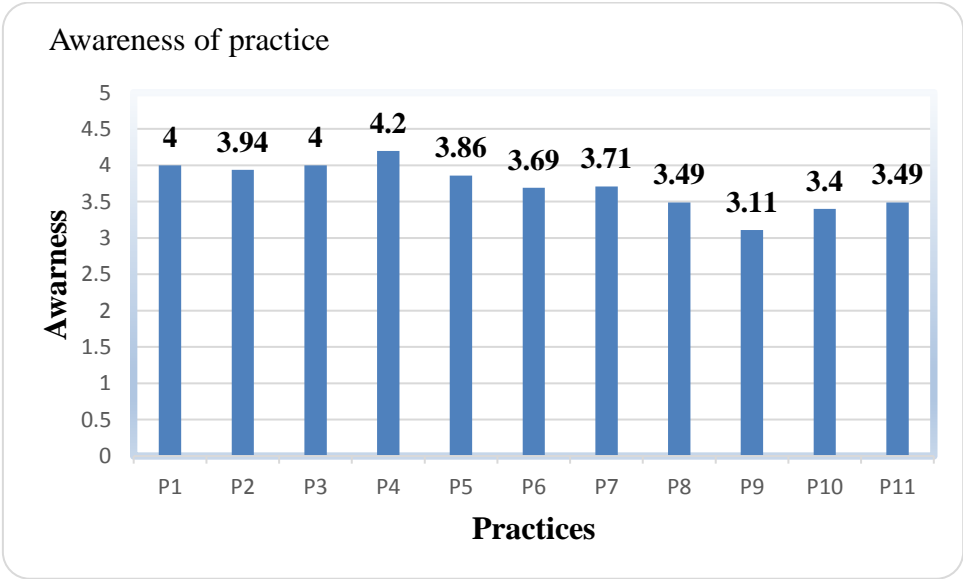


Figure 4-9: Awareness of environmental practices

Practices

- P1 Our hotel has a Commitment to good environmental practices in our operation.
- P2 Our hotel is all ways practicing Reduce, Recycling & Reuse methods.
- P3 Our hotel has implemented energy efficiency and conservation methods.
- P4 We always Reduce Lighting in low occupancy areas.
- P5 Our hotel has implemented water efficiency and conservation methods.
- P6 We Landscaped our property with trees and plants that tolerate the climate, soil and water availability.
- P7 We have Implemented green integrated-pest management (IPM) program for pest control.
- P8 We use the least/free toxic cleaning products and substances as possible in our operation.
- P9 Encourage our staff with alternative modes of transportation via incentives.
- P10 Our hotel has created an environmental purchasing policy.
- P11 We have built our hotel with green design.

When consider the impact level of above environmental practices most of respondents are empathized that practices mostly affected to improve corporate image by adapting to CSR activities which is 4.03. Further all the hotels expect to achieve positive outcome by implementing environmental practices. See figure 4-10

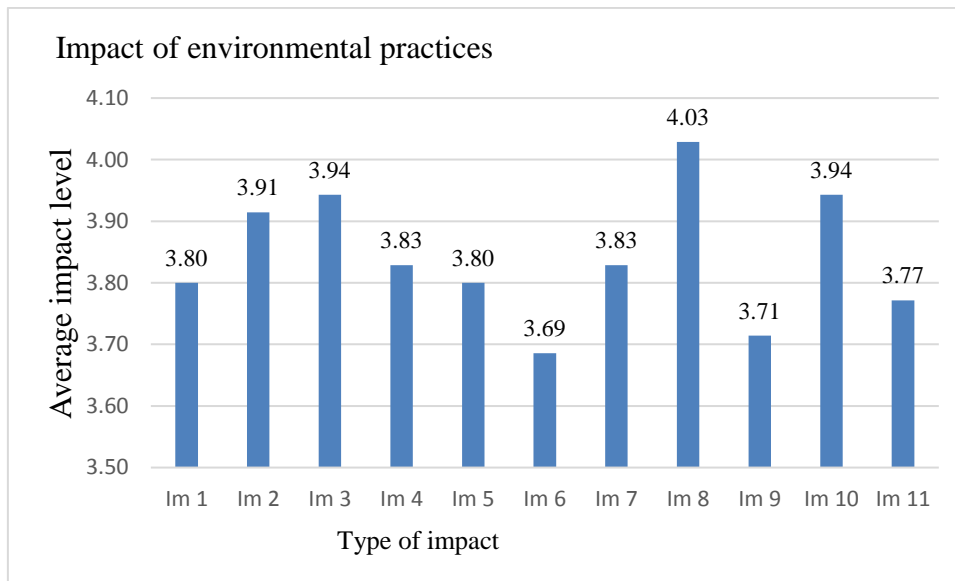


Figure 4-10: Impact of environmental practices

Type of impact:

- Im 1 Firm is able to deliver customer compliance to the fullest
- Im 2 Firm can match with all the government environmental regulations
- Im 3 Firm is able to setup a system to create sustainable tourism
- Im 4 Firm leadership always give direction to develop environmental concern
- Im 5 Firm leadership is able to give direction to strategic decision making related to environmental practices.

- Im 6 Firm is able to reduce the operational cost
- Im 7 Firm is able to get the competitive advantage on attractiveness
- Im 8 Firm is able to Improve corporate image by adapting to CSR activities
- Im 9 Firm is able to seek for opportunities to innovate in sustainable tourism/eco-tourism
- Im 10 Firm is able look for new market opportunities in sustainable aspects
- Im 11 Firm is able to strategus to mitigate the risk of goodwill/business failure

Chi-Square test was done to identify whether there is a relationship between green supply chain practices and impact of these factors. Mini Tab calculated following results.

Chi-Square Test: C1, C2

C1 - Practice

C2 - Impact

Expected counts are printed below observed counts
Chi-Square contributions are printed below expected counts

	C1	C2	Total
1	4	4	8
	3.81	4.19	
	0.010	0.009	
2	4	4	8
	3.81	4.19	
	0.010	0.009	
3	4	4	8
	3.81	4.19	
	0.010	0.009	
4	4	4	8
	3.81	4.19	
	0.010	0.009	
5	4	4	8
	3.81	4.19	
	0.010	0.009	
6	4	4	8
	3.81	4.19	
	0.010	0.009	
7	4	4	8
	3.81	4.19	
	0.010	0.009	
8	3	4	7
	3.33	3.67	
	0.033	0.030	
9	3	4	7
	3.33	3.67	
	0.033	0.030	
10	3	4	7
	3.33	3.67	
	0.033	0.030	

11	3	4	7
	3.33	3.67	
	0.033	0.030	
Total	40	44	84

Chi-Sq = 0.382, DF = 10, P-Value = 1.000
 22 cells with expected counts less than 5.

5 CHAPTER – CONCLUSION & RECOMENDATIONS

The aim of this study was implement green supply chain management practices in sustainable development on hospitality industry in Sri Lanka. Based on the reviewed literature & expert's ideas, developed the Meta analysis and identified green practice in service industry. According to the Meta analysis, highest number of literatures were ranked "Energy efficiency and conservation practices" are commonly practicing in world wide. The online questioner also empathized the same practice, reduce lighting in low occupancy areas & energy efficiency, conservation is the highest prioritized.

The outcome from the findings indicate that there is a positive impact of Green Supply Chain Management to improve corporate image by adapting to CSR activities, able look for new market opportunities in sustainable aspects, and able to setup a system to create sustainable tourism as highest. Sample shows that there is a comparably low impact of GSCM practices to reduce the firm operational cost.

Anyhow most of five star branded franchise hotels are in main city Colombo have been developed as business hotels and they have narrow possibility for implementing most GSCM practices due to limited space they have. But Energy efficiency and conservation practices which we identified as most ranked practice can be implemented even in city hotels. Eg: Installing solar panels, energy efficient equipments, reduce lighting in low occupancy area etc.

Moreover, it has been indicated that Green Supply Chain Management practices are paramount important to sustainable development of hospitality industry and should be achieved as a one country. Since the whole world is moving to ecofriendly practices, sustainability of tourism industry depend on GSCM practice. Few experts of industry and respondents are highlighted that planning stage of hotel projects should be focused to develop eco friendliness & implementation of GSCM practices begin from the positive thinking of top management of the firm, motivation, commitment and individual persons' responsibility for sustainable tomorrow. Further Sri Lankan government and ministry of tourism have a vital role to play in transforming to green concepts.

5.1 Emerging trends in green hospitality industry in Sri Lanka

Sustainability has been a hot topic in the hospitality industry in the last few years, and it will continue to be. If you've been ignoring or putting off until now, it's worth having a more serious look at it (Gourmet marketing, 2017). When carrying out this research I have observed that there are emerging trends in green/sustainable concepts in the industry. These businesses are running with environmental sustainability as its core focus and offers a unique real experience of Sri Lankan life & interesting rural splendor.

Example:

Food: Sri Lankan traditional meals are prepared the traditional way, using clay pots and firewood. And guests can learn how to cook these meals and practically engaged also.

Farm: own organic farm where a variety of rice grains, vegetables, herbs, spices and fruits are grown. As much of the produce used in the kitchen as possible is grown here. Guests are also experience any stages of the process.

Wildlife: The hotel and it's all activities surrounded by nature and wildlife.

Local Life: The outskirts of a typical, rural, Sri Lankan village. Majority of the people are farmers and the area is surrounded by acres of paddy fields/other agricultural lands.

Even some Colombo city hotels with their limited natural resources also have identified the importance and demand of these trends. Eg. Nuga Gama at Cinnamon Grand – Colombo.

5.2 Areas for possible further works

This study is a milestone for further research in this area, particularly in Sri Lankan hotel industry. The finding emphasized the identification and impact of GSCM practices in the hotel industry in Sri Lanka, Further research will need to be carried in other functions. Selected research opportunities include the following;

- I. A top priority should be research to develop a model guideline to develop and manage green supply chain in the hospitality industry.
- II. What are the potential barriers to overcome in implementing GSCM practices?
- III. What are the legal controls, government supports when implementing ecofriendly hotels/resorts?

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7 CHAPTER - APPENDICES

7.1 Appendix: Online survey questioner

7.2 Appendix: Meta-Analysis

7.3 Appendix: Items of Green Practices