

**SUSTAINABLE SUPPLY CHAIN MANAGEMENT (SSCM) PRACTICES:
ANTECEDENTS AND OUTCOMES ON SUSTAINABLE SUPPLY CHAIN
PERFORMANCE**

By

VENGADASAN GOVINDASAMY

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ABSTRAK

Degradasi alam sekitar, kemiskinan global, kelemahan dalam hak asasi manusia, defisit kesihatan yang melampau dan tata urus korporat telah membolehkan lestari pengurusan bekalan rantai menonjol sebagai pendorong utama untuk organisasi memberi tumpuan dalam mengurangkan masalah alam sekitar, membawa manfaat ekonomi dan sosial. Kajian ini menyelidik sejauh manakah pengamalan lestari pengurusan bekalan rantai wujud di Malaysia, apakah pendorong utama yang memotivasikan firma untuk melaksanakan inisiatif ini dan apakah hasil dari pelaksanaan inisiatif tersebut.. Pembelian berasaskan persekitaran dan lestari pembungkusan merupakan amalan utama lestari pengurusan bekalan rantai dan bagaimana amalan ini mempengaruhi keputusan lestari bekalan rantai tersebut. Daripada 400 borang kaji selidik yang dihantar melalui surat dan web laman kepada firma pembuatan di Pulau Pinang, sebanyak 105 borang yang lengkap diterima dan digunakan dalam analisa data. Keputusan kaji selidik menunjukkan bahawa pendorong mempengaruhi pembelian berasaskan alam sekitar secara positif manakala menyokong separa positif dalam lestari pembungkusan. Kajian juga menunjukkan bahawa pembelian berasaskan alam sekitar mempengaruhi hasil ekonomi, social dan operasi manakala lestari pembungkusan mempunyai pengaruh positif terhadap hasil alam sekitar, ekonomi dan sosial. Kajian ini telah membuktikan secara empirikal bahawan lestari pengurusan bekalan rantai menunjukkan kesan positif terhadap prestasi lestari bekalan rantai. Justeru itu, pengurus firma di Pulau Pinang harus mempromosikan lestari pengurusan bekalan rantai sebagai laluan untuk kejayaan firma dari segi komersial dan bukan hanya sebagai tanggungjawab moral.

ABSTRACT

Environmental degradation, global poverty, lack of human rights, far-reaching health deficits, and corporate governance resulted in sustainable supply chains management (SSCM) to emerge as key enabler that could push organization to focus on alleviating environmental issues, providing economic and social benefits. This study investigates the extent of existence of sustainable supply chain management practices in Malaysia, antecedents that motivate firms to adopt these initiatives, and the actual outcomes of adoption. Environmental purchasing and sustainable packaging were used as the key SSCM practices and how it influences the outcome of sustainable supply chain performance. Out of the 400 survey forms sent via mail and weblink to manufacturing firm in Penang, 105 completed responses were received and used in the data analysis. Factor analysis of the survey data resulted in four categories of outcomes (environmental, economic, social and operational). The results of the survey indicate that antecedents positively influence environmental purchasing and partially support sustainable packaging. The study found that environmental purchasing has positive effect on of economic, social and operational outcome, whereas sustainable packaging has positive effect on environmental, economic and social outcomes. The study result has empirically proven that SSCM practice shows positive affect towards sustainable supply chain performance, particularly on economic and social perspective. Thus, managers of Penang firms must advocate sustainable supply chain management (SSCM) practices as a route for firms' commercial success rather than as moral obligation.

CHAPTER 1

INTRODUCTION

1.1 Introduction

There is a rapid rise in industry awareness that today's world, supply chains are flawed. Until recently, most of the manufacturing companies create waste and pollution and are threatening the existence of life on earth. As a consequence, these challenges and pressures push firms need to seriously considering environmental impacts while doing their business. As the population of the world increases and resource availability decreases, companies are starting to realize that supply chains must be re-designed (Carter & Jennings, 2002). On the companies' perspective, they must portray the environmentally-friendly image of products, processes, systems and technologies, and the way business is conducted (Vachon & Klassen, 2006a).

According to Carter and Jennings (2002), the supply chains need to be closed-looped, environmentally friendly and conserve and use as little resources as possible. Thus, many researchers claimed that the future of supply chain management is sustainability (Carter & Jennings, 2002, 2004; Murphy & Poist, 2002, Penfield, 2009). For example, the work of Murphy and Poist (2002) has explicitly studied on logistics social responsibility (LSR) and purchasing social responsibility (PSR). Carter and Jennings (2004), on the other hand, have studied issues on the environment, safety, and human rights in logistics and supply chain and the potential interrelationships among these and other aspects of social responsibility. Forward thinking companies are already taking steps to develop sustainability within their supply chains. The term sustainability, which increasingly refers to an

integration of social, environmental, and economic responsibilities, has begun to appear in the literature of business disciplines such as management and operations.

The study, therefore, is interested to know to what extent is the involvement of Malaysian companies in the sustainable supply chain. How can companies create a sustainable supply chain? What changes must companies make to supply chains in order to become “sustainable” in today’s business world? What practices must companies implement in order to achieve this goal of sustainability? Accordingly, this study starts with this introductory chapter which gives general idea about the research topic and problem of the study. The chapter starts with providing background of the study. The background includes also discussions on the evolution of sustainable supply chain. The chapter then followed by the problem of the study, the research questions and objectives. Next, the chapter portrays the significance of the study, expected contributions and its focus. The chapter ends with defining the key terms of the study and organization of the thesis.

1.2 Background of the study

Recent development on world economic climate creates uncertainty on business environment. Thus, this creates a necessity for organization to look into reconstruct, restructuring and enhance their strategy to sustain the business and profitability while remain competitive in marketplace. Additionally, organizations are facing rising global community inquiries through media and non-governmental organizations (NGOs) pertaining sustainability aspect of their developments (Sarkis, 2001). According to Porter and Kramer (2006), companies are increasingly expected to extend their sustainability efforts beyond their own operations to include those of their suppliers, and to meet their customers’ sustainability expectations.

McKone Sweet (2004) claimed that the companies are under pressure to improve the social and environmental standards wherever they can exert their influence for instance, at their suppliers and further along in the supply chain. Most of these pressures mainly focus on the outsourcing activities from large Western firms that source input from low cost manufacturers and service providers in developing countries by ignoring the social and environmental deteriorating issues with respects to support short term profitability to the organizations (Johnson, Leenders & Fearon, 2006). There are numerous definitions of the terms 'Sustainable' and 'Supply Chain'. Johnson et al (2006) stated that supply chain considers the interactions between a business and its customers and suppliers. The greatest benefits are derived by extending the focus as far as possible upstream towards the raw materials, downstream towards the consumer and then back again as the product and wastes are recycled. They urged that sustainable supply chain as management of raw materials and services from suppliers to manufacturer/ service provider to customer and back with improvement of the social and environmental impacts explicitly considered.

With regards to sustainable development, the World Commission on Environment and Development (WCED) defined sustainable development as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development, 1987). Graedel and Crutzen (1989) argued that the composition of the atmosphere are being rapidly altered more in the past 100 years through fossil fuel use, agricultural practices, and deforestation as compared to the previous 18, 000 years. Bagheri and Hjorth (2007) contended that sustainability calls

for proponents of human, economic, and environmental to rally together in providing an everlasting life for the human species in the global ecosystem.

Over the next few decades, sustainable development will become one of the biggest opportunities in the history of commerce (Hart, 1997). People expectation on environmental standards will rise together with the increase in income leading to increased sensitivity among people on environmental deterioration (Dowell, Hart & Yeung, 2000). These will create a new challenge to organizations supply chain to develop strategies that are perceived as new set of emerging capabilities such as waste minimization, green product design, and technology cooperation in the developing world (Gladwin, 1992; Schmidheiny, 1992). Therefore, the creation of a sustainable supply chain may prove to be an effective strategy for seeking competitive advantage and securing stakeholder approval in the future.

Currently, information and knowledge economies supply chains are highly dependent on coordinated efforts across several organizations, around the globe whereby improved understanding demands consideration of sustainability from a supply chain perspective. However, researches have ignored the potential development of a competitive advantage using a sustainable supply chain as a base (Markley & Davis, 2007). Environmental Protection Agency (EPA) recognized that sustainability efforts must include inventory management, materials handling, disposition and logistics as to further improve environmental and cost performance. In embracing future challenge of developing a sustainable global economy, it is utmost important for firms to evaluate the impact of sustainable supply chain strategy (Hart, 2000).

Though, in the past, supply chain management only focuses on the efficient and responsive system of production and delivery from raw material stage to final

consumer but currently environmental issues in supply chain are significantly growing partly due to wider debate on how industry meets the challenges of sustainability (Seitz & Wells, 2006). Pressures from various stakeholder, posed a great challenge for supply chain managers in integrating sustainable practices in managing their supply chains. Sustainable supply chain demands that practices like environmental friendly packaging, return of end-of-life and used products to the producer as well as the eco friendly handling of returns, recycling, remanufacturing and adequate waste disposal are enabled and deemed as important elements (Zhu, Sarkis & Geng, 2005). However, some of the key challenges in adopting the sustainable practices are related to issues such as price competition and responsiveness are of prime importance making adoption of sustainable practices a daunting task. For example, a clothing chain store could not go beyond Europe, as agents and factory tailors refused to provide information or to cooperate. Similarly, a top quality shoe producer, sourcing leather in Europe and India, met severe reluctance from an Indian supplier who resisted the efforts to assess its environmental performance. Carter and Mol (2006) stated that Asia is emphasizing heavily on sustainability despite the differences of views on corporate social responsibility and sustainability between Europe and Asia.

In Malaysia context, Zailani, Krishnaswamy, Nasruddin and Zainal (2009) published a conceptual paper which focuses on the sustainable supply chain management in terms of key drivers and consequences of sustainable supply chain management (SSCM) towards organization from environmental, economic and social perspective. Among the key SSCM practices conceptualized in the paper are employer practices, environmental practices and supplier management as SSCM practices. On the other hand, Eltayeb (2009) researched on the level of adoption of

green supply chain among ISO 14001 certified manufacturing firms within Malaysia. This study will focus on antecedents of sustainable development within an organization and the relationship between the antecedents and Sustainable Supply Chain Management Practices and how this practices effects the sustainable supply chain performance of the organization.

1.3 Problem Statement

Over the years, Malaysia has moved from an agriculture-based economy, focusing on rubber and palm oil, to industrialized economy focusing on electronics and heavy industries (Rao, 2004). Penang, considered one of the key manufacturing hub for Malaysia has been growing rapidly despite economic slowdown in first half of 2009 whereby for December 2009 alone, the sales value of the Manufacturing sector posted a year-on-year double digit growth of 16.2% (RM6.0 billion) to record RM43.3 billion as compared to RM37.3 billion reported in December 2008 (<http://www.seri.com.my>). Though, the growth of manufacturing sectors results in economic and social benefits, but its negative environmental implication cannot be denied.

Malaysia Department of Environment, DOE(2008) stated that manufacturing is the highest contributor towards environmental concerns such as land, water, and air pollution in addition to degradation of natural resources. Thus, it is important for Malaysia to achieve a balance between high standard of living and environmental protection. Hassan, Awang and Jaafar (2006) stated that “the challenge for the new millennium is to develop an industrial system that has minimal socio-ecological impacts, without compromising quality of life.”

According to Rao (2004), environmental issues have become very important issue of concern for the Malaysian government and the public. The Environmental Quality Act was established in 1974 and has been amended a number of times to encompass 18 sets of regulations related to clean air, sewage and industrial effluent assessment (Rao, 2004). However, despite government efforts and growing public awareness of environmental issues, environmental problems continue to persist.

Solid wastes are composed of end-of-life or 'consumed' products and the growing level of industrialization and consumption has increased the generation and types of solid waste and is one of the most important issues of local authorities, where much money and efforts are spent in the collection and disposal of solid waste (Hassan et al., 2006). The 2008 environmental quality report highlighted that scheduled wastes produced by the manufacturing industry is increasing and according to (Hassan et al.,2006), bulks of solid waste are transferred to without treatment and within the nearest future capacity limit of the nation's disposal sites will be hit. Municipal Council of Penang Island (MPPPP) stated that the amount of solid waste disposed at the dumpsite has increased by 52 per cent to 768 tonnes per day in 2006 from 505 tonnes per day in 2005. Approximately 30 per cent of all waste that is discarded is recyclable, which implies that Penang has an opportunity to financially benefit from recyclable materials valued at RM16.6 million per year, based on current value of recyclable materials, which is 20 sen per kg (www.undp.org.my).

The above discussion signifies that Penang is facing serious challenge regarding how to balance economic development with environmental sustainability, coupled with challenges to achieve the three components of "triple bottom line" of sustainability: social, economic, and environmental performance especially in the

context of sustainable supply chain management (Carter & Rogers, 2008). According to (Bowen, Cousins, Lamming & Faruk, 2001), organizations will be willing to adopt sustainable supply chain management practices if they are assured that this will result in specific financial and operational benefits.

However, Handfield, Melnyk, Calantone, and Curkovic (2001) summarized the obstacles facing by managers in adopting sustainable supply chain initiatives as follows:

1. Managers believe that minimal environmental performance is sufficient, since the environment does not have a direct impact on competitive priorities and considered as costly deterrent to productivity,
2. Managers are unsure how to improve their environmental performance and what is meant by being “sustainable”.
3. With severe competition and shorter product life cycle, managers are under pressure to improve quality, reduce costs, and improve flexibility to satisfy customer requirements

With these obstacles in mind, questions arise about to what extent sustainable supply chain management (SSCM) practice exists? What are the antecedents that motivate organizations to adopt these (SSCM) practices? And what are the actual outcomes realized by the adopting organizations? According to Srivastava (2007), there is a lack of studies that try to answer above questions. With the exception of conceptual paper by Zailani et al. (2009) on driver and consequences of sustainable supply chain management practices and Eltayeb (2009) on drivers for green purchasing within Malaysia context, there is very limited empirical research specific to level of adoption on sustainable supply chain practice among the manufacturing firms in Malaysia.

However, Carter, Kale and Grimm (2000), Rao and Holt (2005), and Zhu and Sarkis (2004) found that green supply chain initiatives leads to positive relationship with environmental and economic performance of the organizations. On other hand, Vachon and Klassen (2006b) and Zhu, Sarkis and Lai (2007a), found no significant relationships between green supply chain initiatives and such performance outcomes. This inconclusive result raises the question of what are the actual outcomes that can be realized from the adoption of sustainable supply chain initiatives.

Sustainable Penang Initiative is a pilot “community indicators project” coordinated by the Socio-economic and Environmental Research Institute (SERI) of Penang aimed to establish a broad set of indicators to monitor development in Penang that can be used in integrated development planning and to educate the public about sustainable development and the ways by which it could be achieved (Hasan & Adnan 2006). Thus, in accordance with above initiative, it is highly imperative to conduct an empirical research on level of adoption of sustainable development by the manufacturing sectors in Penang and the level of adoption of Sustainable Supply Chain practices and its implication towards sustainable supply chain performance.

1.4 Research Objectives

This study will investigate the effect of Sustainable Supply Chain Management (SSCM) practices towards the organization supply chain performance. Specifically, the study aims to fulfill the following objectives:

1. To study the extent of SSCM practices being adopted by manufacturing firms in Penang.

2. To examine the relationship between antecedents and Sustainable Supply Chain Management (SSCM) practices of an organization.
3. To investigate outcomes that results from Sustainable Supply Chain Management (SSCM) practices.

1.5 Research Questions

In order to achieve above-mentioned objective, this study would answer the following research questions:

1. What extent Sustainable Supply Chain Management practices are adopted among manufacturing firms in Penang?
2. What are the antecedents for manufacturing firms to adopt sustainable supply chain management practices?
3. What are the outcomes on Sustainable Supply Chain performance that results from the Sustainable Supply Chain Management Practices?

1.6 Scope of Study

This study is mainly exploratory and explanatory in nature. Aaker and Day (1986): quoted that “exploratory research is used when one is seeking insights into the general nature of a problem, the possible decision alternatives, and relevant variables that need to be considered. There is typically little prior knowledge upon which to build.” Since sustainable supply chain management practices can be considered a new area of study with limited research in this area, especially within Malaysia context. Exploratory part of this study is required to explore and describe sustainable supply chain management practices in Malaysia.

From the exploratory part, variables of the study were identified and the relationships between these variables are depicted in a form of theoretical framework. Statistical techniques are used to test the relationships stated in the framework. The study consists of qualitative and quantitative parts whereby qualitative part serves mainly as the basis of the quantitative part of the study only. Thus, the quantitative part of the study determines the main findings and conclusion.

The study focuses on manufacturing firms in Penang. The primary reason of selecting manufacturing sector in Penang, as it is the largest sector in terms of sales, employment, and contribution to the Penang economy (www.investpenang.com.my). According to (DOE, 2008) manufacturing sector is one of the highest contributors to the environmental problems within Malaysia. Thus, efforts to improve the sustainable supply chain performance of manufacturing sectors can reap substantial benefits.

This is an Antecedent-Outcome based study whereby the antecedents emanates mainly from the internal environment of an organization (organizational integrative practices, eco efficiency practices, employee centered practices and supplier management). Based on literature review, two sustainable supply chain management (SSCM) practices were selected, Environmental Purchasing and Sustainable Packaging and subsequently the study focuses on the possible outcomes derived from this SSCM practices towards the organization.

1.7 Significance of Study

Supply chains are critical links that connect an organization's inputs to its outputs. Conservative supply chain challenges encompasses enforcement of just in time delivery while reducing the transit time of products with ultimate goal of lowering

costs in order to prepare better reaction to move further on business development. On the other hand, growing concern on environmental costs of these set of connections, added with rising consumer demand for eco-friendly products has driven many organizations to focus at supply chain sustainability as a new measure of profitable logistics management. In another word, the transformation to sustainable supply chain reflecting perceptive of profitable supply chains. The significance of this study, therefore, emanates from its expected theoretical contribution to knowledge and practical contributions to business and public organizations. Following are the discussions on the theoretical and practical contributions.

1.7.1 Theoretical Contribution

This study is expected to add to the following areas of knowledge about sustainable supply chain management practices:

1. The study identifies the extent of sustainable supply chain management practices adopted among Penang manufacturing firms. In general, knowledge about existence of sustainable supply chain management practices in Malaysia and developing countries is still lacking. Thus, the study can add considerable knowledge in this are and provide a base for future researches on this issue.
2. The study identifies the influence of each type of sustainable supply chain management practices towards the organization sustainable supply chain performance. This can add to the knowledge about the value and importance of sustainable supply chain management practices to the organization and society at large. This study attempt to integrate Resource Base View (RBV)

and Transaction Cost (TC) theories in deriving the theoretical framework. Thus, the study can enrich theories from sustainable supply chain management (SSCM) perspective.

1.7.2 Practical Contribution

From a practical contribution perspective, the study is expected to enhance the knowledge and performance of managers in business and public organization in the following ways:

1. The study discloses the concept, significance and outcomes of sustainable supply chain management practices, thus it can advance manager's understanding on the importance and value of sustainable supply chain management practices. This is very crucial in view of the increasing environmental and economic importance of sustainable supply chain management in addition to their role in enhancing competitive power for companies in international markets.
2. The study may help policy makers in developing countries in general and Malaysia in particular, in setting appropriate policies and strategies for improving environmental performance of business firms. The Malaysian National Policy on the Environment gives special emphasis to pollution problems of the Malaysian firms and encourages large firms to establish partnership with smaller firms to exchange experience in EMS (National Policy on the Environment, 2002, Sections 4.3 and 4.4). Thus, concepts and results of sustainable supply chain management practices from this study may be utilized by policy makers to improve environmental performance of business firms.

1.8 Definition of Key Terms

Following are definition for some of the key terms that are frequently used in this study:

Sustainable Development- development that meets the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development, 1987).

Organizational Integrative Practices- mentioned that organization integration practices focuses on the existence of a unified practices and cultures which assumes that organization-wide consensus among employees around a set of shared assumptions, values and beliefs (Martin, 2002).

Eco Efficiency Practices – Eco-efficiency is reached by the delivery of competitively- priced goods and services that satisfy human needs and bring quality life, while progressively reducing environmental impacts and resource intensity throughout the life cycle, to a level at least in line with the earth's estimated carrying capacity (WBSCD).

Employee Centered Practices- practices that involves looking after the well-being of employees, and their ethical treatment adopted by the organization to increase the social capital of an organization (Turner, Huemann & Keegan, 2008).

Supplier Management – defined as the long-term relationship between the organization and its suppliers. The primary role of supplier management is designed to leverage the strategic and operational capabilities of individual participating

organizations to help them achieve significant ongoing benefit (Li, Nathan & Rao, 2004).

Sustainable Supply Chain Management - the strategic, transparent integration and achievement of an organization's social, environmental, and economic goals in the systemic coordination of key inter organizational business processes for improving the long-term economic performance of the individual company and its supply chains (Carter & Rogers, 2008).

Environmental Purchasing – for an individual firm is the set of purchasing policies held, actions taken, and relationships formed in response to concerns associated with the natural environment. These concerns relate to the acquisition of raw materials, including supplier selection, evaluation and development; suppliers' operations; in-bound distribution; packaging; recycling; reuse; resource reduction; and final disposal of the firms products (Zsidisin & Siferd, 2001)

Sustainable Packaging- definition takes into consideration the role packaging plays in our social and economic systems and the need to strive to meet environmental goals. It aims to differentiate between macro levels of society associated to prosperity and well-being, the functional performance level (efficiency and effectiveness) of the product/packaging system, the environmental performance level of materials (impact and waste prevention) to the micro level of human and ecotoxicological soundness of the packaging components (James, Fitzpatrick, Lewis and Sonneveld (2005a)

Sustainable Supply Chain Performance – focuses on how well does the a supply chain activity or practices undertaken by the organization cut across the three facets of Sustainability which are Economic, Environmental and Social aspects. The social and environmental supply chain activities that lie at the intersection with the economic bottom line are defined as sustainable refers (Carters & Roger, 2008).

1.9 Organization of Remaining Chapters

This research been organized in current chapter as introduction. The rest of the thesis is structured as follows: The second chapter covers literature review on factors relating to this research. Theoretical issues and hypotheses which were developed based on the literature review are also presented in this study. Chapter 3 is analytical framework and research procedures which illustrate the data and variable used for study. Chapter 4 is finding and interpretation. This chapter presents tables with the entire data obtained showing finding on each question. Lastly, chapter 5 presents summary as part of discussion on the results. The findings of the research are discussed in context of its implication, limitation of the study, suggestion for future research and conclusion.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter is structured to further deep dive the understanding of research on Sustainable Supply Chain Management (SSCM) Practices and its effect on sustainable supply chain performance. The chapter begins with definition of Sustainability, followed with some explanations on Supply Chain Management and the link between Sustainability and Supply Chain Management (SSCM). This is followed with an introduction on key Sustainable Supply Chain Management Practices and its linkage with Sustainable Supply Chain Performance. The final section discusses the hypotheses that are formulated to be evaluated in this research.

2.2 Theoretical Foundations

This study attempts to integrate two distinct but complementary theories of Resource Based View (RBV) and Transaction Cost (TC) as to position the conceptualization of sustainable supply chain management practices. RBV emphasizes the integration of resources to achieve competitive advantage which can be linked to proposed antecedents of this study. While, TC focuses on vertical integration within the firm which can be linked with the sustainable supply chain management practices within the firm and how the vertical integration affects the outcome in the context of sustainable supply chain. The following section discusses the two theories in more detail.

2.2.1 Resourced Based View Theory of the Firm (RBV)

Barney (1991) mentioned that resource-based view (RBV) can be applied to both internal and external elements of a firm's supply chain. While, Rugman and Verbeke (2002) stated that RBV is typically applied to manage companies strategically. RBV examines those resources and capabilities of the firm as to generate above normal rates of return and achieve a sustainable competitive advantage. Resources can be divided as tangible and intangible resources categorized as human, information technology, capital, equipment and knowledge resources. In order to achieve sustainable competitive advantage resources need to be (i) valuable, (ii) rare, (iii) not substitutable, and (iv) imperfectly imitable. Hence, according to RBV, resources that are valuable and costly to copy provide a source of sustained competitive advantage (Grant, 1996).

This is also advocated by Ray and Barney (2005), who mentioned that valuable, rare and costly-to-imitate resources can influence the performance and success of the programs. On the other hand, Schroeder, Bates and Junttila (2002) mentioned that inter-organizational learning occurring through the supply chain management leads to problem solving routine involving suppliers and customers enabling additional capabilities to organizations. Dyer and Singh, (1998) mentioned that process of capability development through the supply chain is often referred as the relational view of supply chain management which advocates that organizational capabilities can be developed through combining existing resources across the different organizations in a supply chain. This is also referred as a complementary perspective of RBV. Eisenhardt and Martin, (2000) stated that ability of managers to make ongoing adjustments in resource allocation and build new organizational

which often includes activities for resource integration, resource reconfiguration, acquisition and release of resources can be deemed as dynamic capabilities.

In this study, the antecedents identified require utilization and integration of the company resources to enable the key variables identified. Thus, the RBV theory aligns well the antecedents of this study.

2.2.2 Transaction Cost Theory (TC)

Transaction costs are costs of carrying out any exchange. It could occur between firms in a marketplace or a transfer of resources between stages in a vertically integrated firm. Transaction cost considers the movement of a finished product from a production line to the loading dock as a transaction because it is co-ordinated within the firm by managerial direction. The transaction cost approach treats this as a “within-firm” transaction. Unlike the “frictionless” economic system implied by neoclassical theory, TC recognizes that transactions do not occur without friction and labels the costs which arise from the interaction between and within firms as transaction costs (Hobbs, 1996).

According to Mighell and Jones (1963), vertical co-ordination includes all ways of harmonizing the successive vertical stages of production and marketing. The market-price system, vertical integration, contracting, cooperation singly or in combination are some of the alternative means of coordination. Williamson (1975) stated that transaction costs are important because it affects the organization of economic activity or “vertical co-ordination” and firms attempt to acquire resources in a low cost and stable manner. In addition to above, Arminas (2004) stated that when firms become increasingly dependent on scarce and valued resources, will result in tendency to increase coordination with other members of the supply chain

such as acquiring access to strategic supplier technologies and knowledge by forming supplier partnerships and strategic alliances. Thus, in the context of supply chain management there is always some kind of vertical co-ordination for any activities to take place.

Therefore, it is possible to establish a theoretical link between based on RBV focus on resource dependence and Transaction Cost (TC) focus on vertical integration within the firm. This can be related to sustainable development and the different supply chain practices leading to sustainable supply chain management practices which are highly dependent on resource management and level of vertical integration as to enable firms to achieve competitive advantage.

2.3 Sustainable Development

2.3.1 Introducing Sustainability

Brundtland Commission (1987) published the first literature on Sustainability, commonly coined as sustainable development, in the book titled "Our Common Future: The World Commission on Environment and Development" which also defined Sustainability as "ensuring that humanity meets the needs of the present without compromising the ability of future generations to meet their own needs". Subsequently, United Nations, individual countries, organizations, and business associations initiated Earth Summits to foster on global cooperation for sustainability. It was through this Earth Summit, which enabled formation of World Business Council for Sustainable Development (WBCSD) whose mission is to incorporate sustainable development values into the global business community.

Hay (1996) found that industry leaders had very limited or no awareness on sustainable development and its related matters. Thus, when Hart (1997) published

article on “Strategies for a Sustainable World” outlining few strategies for companies to reduce their environmental impact eventually resulted in sparked interest on sustainable development. Later on, Elkington (2001) mentioned that business leaders and CEO has the greatest capability and power to create organizational change toward sustainability leading to the sustainability revolution. However, Starik and Rands (1995) argues that the broad definition of sustainability resulted in difficulty to organization in identifying future needs against present needs, in determining the technologies, resources that are required to meet those needs or even understand on how to effectively balance organizational responsibilities to stakeholders society and the environment. Thus, Sustainable Development can still be considered as new development which requires changes from a people centered value to the value of mutual coordinated growth for human being and nature. Following are some of fundamental aspects in relation to sustainable development strategy (Chungquang, Xiaojuan, Kexi & Pan 2008):

- 1) To modify the traditional development pattern which focuses only on economic growth and ignore protection of ecological environment
- 2) Transit economy from a resource point of view to technology based perspective and systematically embed benefits to society, economy resource and environment
- 3) Integrate and coordinate the relationship between environment and economic development and ensure that the development plans is not limited to satisfy needs of current population but also of our future generation and eventually achieved the sustained and stable development of the society, economic, resources and the environment

Asif, Berujin, Fisscher and Steenhuis (2008) stated Sustainable Development in terms of “Triple Bottom Line” which means that sustainability efforts need to be assessed in terms of impact on social, economic and environmental aspects. This concept also coined as “Triple P (planet, people and profit) which implies company that synergistically focuses on the environment (planet), social (people) and financial (profit) aspects creates more value in the long run as compared to companies which focuses merely on profits.

2.3.2 Sustainable Development and Organizational Sustainability Strategy

According to Shrivastava (1995a), to achieve sustainability, organizations need to ensure that its sustainability initiatives and corporate strategy are interwoven closely instead of being managed independently of one another. For organizations to be considered as a sustainable enterprise, it has to go through changes in the context of company cultures and mindsets (Savitz & Weber, 2006). On other hand, Hamel and Prahalad (1989), stated a shared, organization-wide long range vision is significant in creating internal drive and passion to promote innovation and change.

In an empirical research titled, Comparative Analysis of Organizational Sustainability Strategy, Harmon, Fairfield and Behson (2009) identified sustainable practices such as organization integrative practices, eco-efficiency practices, employee centered ethical practices as key sustainability practices that were proven to be positively linked with organization performance improvement. In designing strategy for organizational change towards sustainability, organization needs to consider the needs of affected people first (e.g., customers, employees, and other stakeholders) while second consideration is on the inherent role and impact towards the environment. Besides, every level of the organization and every business unit

must be accountable in integrating sustainability into the organization, which includes committee for sustainability with member from the senior level of the organization and working groups within each business unit (Holliday, 2004). In addition, Epstein and Roy (2001) based on their extensive research over years had proven a framework which dictates a significant relationship among Corporate and business unit strategy, sustainability actions, sustainability performance, stakeholders' reactions and Corporate financial performance. The framework identified organizations workforce, environmental contribution, sourcing, policy on human rights, bribery, corruption, products attributes and focusing on shareholders, customers, suppliers, employees and communities as key sustainable actions that shapes an organization towards a sustainable enterprise. Geffen and Rothenberg (2000) suggested that interaction with customer, suppliers, and by working on partnership agreements or joint research and development can lead to improvements in environmental performance towards sustainability.

Studies on sustainable development and organizational sustainable strategy found the there are numerous antecedents that promotes sustainability within an organization. Table 2.1 presents summary of these studies showing the antecedents that were found to be significantly linked to organizational sustainability strategy.

Table 2.1

Antecedents/Drives of Organization Sustainability Based on the Literature

Authors	Study	Antecedents/Drivers
Harmon, Fairfield and Behson (2009)	Organization Sustainability Strategy	<ul style="list-style-type: none"> • Organization Integrative Practices • Eco-Efficiency Practices • Employee Centered Practices
Epstein and Roy (2001)	Sustainability in Action: Identifying and Measuring the Key Performance	<ul style="list-style-type: none"> • Organizations Workforce, • Environmental Contribution, • Sourcing • Policy On Human Rights • Bribery/Corruption

	Drivers	<ul style="list-style-type: none"> • Products Attributes • Shareholders • Customers • Suppliers • Employees And Communities
Holliday(2004)	A Case Study of How DuPont Reduced Its Environment Footprint: The Role of Organizational Change in Sustainability	<ul style="list-style-type: none"> • Organizational Transformation • Influence of stakeholders such as people, customers and suppliers • Role of senior management • Environmental policy and practices
Geffen and Rothenberg (2000)	Sustainable development across firm boundaries: the critical role of suppliers in environmental innovation	<ul style="list-style-type: none"> • Collaboration with customer • Collaboration with suppliers
Linnenluecke and Griffiths(2009)	Corporate sustainability and organizational culture	<ul style="list-style-type: none"> • Organizational Culture • Employees value/beliefs

Based on Table 2.1, the antecedent of organizational sustainability strategy can be broadly classified into four categories as follows and will be used as the antecedents in this study.

1. Organizational Integrative Practices (Harmon, et al.(2009); Epstein & Roy (2001); Holliday(2004); Linnenluecke & Griffiths (2009).
2. Eco Efficiency practices (Harmon, et al.(2009); Epstein & Roy (2001); Holliday(2004).
3. Employee Centered Practices (Harmon, et al.(2009); Epstein & Roy (2001); Holliday(2004); Linnenluecke & Griffiths (2009).
4. Supplier Management Epstein & Roy (2001); Holliday(2004); Linnenluecke & Griffiths (2009).

More explanation of these antecedents is given in the following subsections.