

# Green Supply Chain Management Practices and Organizational Performance: The Role of Buyer-Supplier Relationship

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## Abstract

To achieve competitive advantage in the global market, the manufacturing sector are now concern towards economic performance and environmental performance. The role of green supply chain management practices become a role of strategy to improve both economic and environmental performance. Nevertheless, lack of relationship between buyer and supplier caused the organization takes a long time to achieve the positive outcome even though the green supply chain management practices has been implemented. The main objective of this study is to perform the conceptual model to investigate the relationship between green supply chain management practices, buyer-supplier relationship, and organizational performance. The originality of the research is its investigation of buyer-supplier relationship as the moderator and predictor in the proposed conceptual framework, something that has been unnoticed in previous research. The results support extensive inputs into resource-based view theory, and expand the growing literature related to supply chain and firm performance in a developing country.

**Keywords:** Green Supply Chain Management Practices, Buyer-Supplier Relationship, Organizational Performance, Global Competitive Edge.

## Introduction

In this day and age, most of the companies realized and agreed about the advantages of implementing the green supply chain management practices. Green supply chain management practices are not only contribute for waste and pollution prevention, this

practice also is able to help the organization to gain high profit (Kumar & Chandrakar, 2012). In Malaysia, a green supply chain management was promoted indirectly through 8th Malaysia Plan since year 2001 until 2005 whereby, a government of Malaysia proposed to the organisation to produce green products and green services in supply and demand. Malaysia continues to promote a green practice by announcing in 9th Malaysia Plan and 10th Malaysia Plan with different initiatives. In 11th Malaysia Plan, green practice is focused as an important strategy to reduce environmental risk, emissions, and improve quality of life. However, lack of information and knowledge leads the organizations facing the problem on how to start the execution of green supply chain management practices and why should they apply the green supply chain management practices in the organization even though there are many literatures were discussed about the potential drivers that motivates organization to apply the green supply chain management practices (Eltayeb & Zailani, 2009; Hajikhani et al., 2012; Zailani et al., 2012; Tachizawa et al., 2015). Department of Statistic Malaysia (2015) reported that manufacturing sector is the highest sector in terms of environmental protection expenditure, compared to other sectors, whereby, this sector was spent RM 1328.5 million which is 59.4% from a total of RM 2236.7 million to protect environment, RM 553.5 million was expend for waste management, and 547.3 million was expend for pollution prevention. Since the issues of high cost involve to protect the environment, practitioners and academicians have to focus on how to improve the green supply chain management practices in order to reduce waste and pollution, and improve the organizational performance in terms of economic performance, and environmental performance. The rising cost of environmental expenditure of Malaysian manufacturing sector due to lack of information and knowledge among buyer and supplier on the execution of green supply chain management practices motivates this study to investigate the relationship of green supply chain management practices, buyer-supplier relationship and organizational performance. Having said so, this study is going to contribute to the body of knowledge of supply chain management on the role of buyer-supplier relationship to increase the efficiency of green supply chain management practices and improve firm performance.

Sanders (2012) explained the importance of buyer-supplier relationship in supply chain management. Poor buyer-supplier relationship causes the failure of supply chain management even though it has the best structure of supply chain or a good practice. By having strong relationship between buyer and supplier, it will helps the organization to support the execution of green supply chain management practices to improve the performance of the organization. It has been supported by Kumar and Chandrakar (2012) whereby they stated that “one of the key aspects to green supply chain is to improve both economic and environmental performance simultaneously throughout the chains by establishing long-term buyer-supplier relationship”. Besides that, Wang and Lin (2010) and Tanskanen (2016) also explained about having a long-term buyer-supplier relationship, it will contribute for the effectiveness of green supply chain management practices, as well as improve the economic and environmental performance.

Previous study involved the element of trust and commitment in order to enhance the implementation of green supply chain management practices (Abd Rahman et al., 2014). Besides, Zhu and Sarkis (2004) highlighted the element of Just-in-time and quality management to support this practice. Therefore, to ensure effective implementation of green supply chain management practices, this paper is going to make an extensive review on green supply chain management practices, buyer-supplier relationship, and organizational performance. The objective of this study are as follows:

- To investigate the effect of green supply chain management (GSCM) practices on organizational performance.
- To examine the moderating effect of buyer-supplier relationship on the relationship of green supply chain management GSCM practices towards organizational performance.

**Literature review**

**Green supply chain management (GSCM) practices**

A simple definition of GSCM practice was claimed by Zhu et al (2008), whereby GSCM practice is a simple green purchasing relationship between buyer and supplier. However, it was argued by Hajikhani et al (2012) that GSCM practice is not only a simple green purchasing, GSCM practice is a greening phase in all supply chain activities which through all parts which leads to a more integrated and co-operative supply chain for better production to be a competitive advantage in the global industry. GSCM practice is expected to contribute to organization by reduce air emission, reduce solid waste, and improves the environmental performance (Green et al., 2012).

The previous researches investigate the flow of green supply chain management implementation. According to Baojuan (2008), green purchasing was the first step of green supply chain management execution. After that, it has been continued by selecting raw material or purchasing part based on environmental standards. Therefore, Baojuan (2008) has provided the flow of green supply chain management implementation completely with the contents of each flow as Figure 2.1:

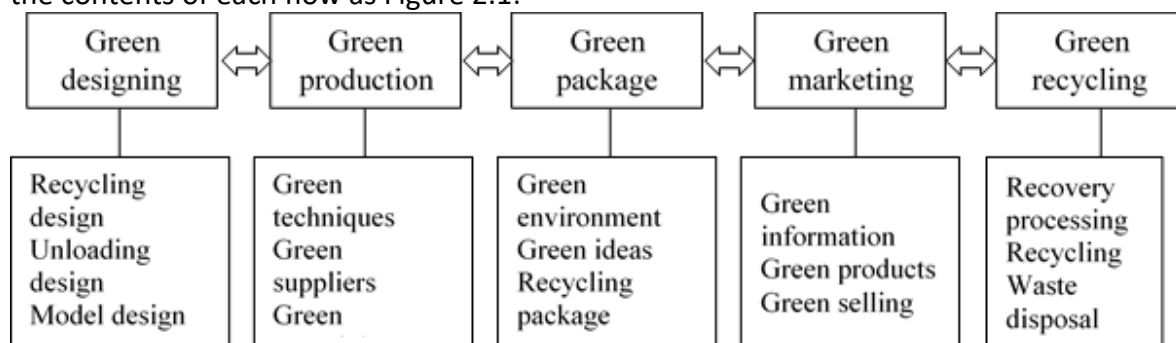


Figure 2.1: The flow of Green Supply Chain Management (Source: Boujuan, 2008; Hajikhani et al., 2012)

In this decade, consumers are demanding for products that have been designed to overcome the issue of waste disposal (Dowie, 1994). Based on the flow in Figure 2.1, the idea of green designing helps the production in the supply chain to optimize the function of the product design, as well for sustainable development and reduce waste designing (Baojuan, 2008). In the supply chain, besides design of the product, the production itself should be green for sustainable development in the supply chain network. As stated by Rao (2006), the production process is highly generated the pollution process compared to other processes in the industry. The implementation of green production is able to utilise the using of raw materials, reduce waste and pollution, and improves conservation of water and energy. Rundh (2009) explained a good design of packaging can be an advantage to meet new challenges in supply chain. Moreover, size and materials used for packaging are important in the supply chain for reducing logistic cost. Therefore, green package has been introduced and include in the GSCM flow for sustainable development. Baojuan (2008) agreed that a green

package is not only protect the environment, it also will reduce waste for package materials. As we all know, consumers are concern on the environment-friendly product. Marketing is one of the practice that easily to get closer with consumers about the product offer before they are buying the products. Because of that, according to Lu et al. (2013) , the green marketing practice is highly increasing as well as the growing number of consumers conscious on sustainability. That is why the green marketing is a part of the flow of GSCM implementation (Baojuan, 2008). Green recycling is very important as a phase in the green supply chain.

There is much evident shows that recycling gives positive effect to the community's economy (Ramayah & Rahbar, 2013). Green recycling is able to reduce waste of using raw materials. Over production is the one of the wastes in the supply chain process (Su, 2012). By applying green recycling, it can be reduce the cost of operation resources and the materials in the production. The highest returned value can be obtained by using lowest cost (Baojuan, 2008).

Besides of GSCM implementation's flow (green designing, green production, green package, green marketing, green recycling), there are many articles explained on the dimension of the GSCM practices. The dimensions of GSCM practices have been highlighted in the Table 2.1 as the empirical evidence in order to help the practitioners in implementing this practice, and the academicians to understand the details on the GSCM practices.

Table 2.1

*Dimensions of green supply chain management (GSCM) practices*

<b>GSCM practices</b>	<b>Description</b>	<b>Author(s) (Years)</b>
Internal environmental management	The practice of emerging GSCM as an important strategic organizational completed and supported by the imperative senior manager and mid-level managers.	Zhu and Sarkis (2004); Abd Rahman et al (2014); Green Jr. et al (2012); Zhu et al. (2012); Baresel-Bofinger et al (2012); Lee et al (2012); Ninlawan et al (2010); Hajikhani et al (2012)
Eco-design	Manufacturers has designed the product that considered on minimal usage of energy and materials, using 3R (reuse, recycle, recovery) the components and part of the product, and reduce hazardous during manufacturing process.	Green Jr. et al (2012); Zhu and Sarkis (2004); Kumar and Chandrakar (2012); Abd Rahman et al (2014); Laosirihongthong et al (2013); Zhu et al (2012); Hsu et al (2012); Eltayeb and Zailani (2009); Chien and Shih (2007); Lee et al (2012); Ninlawan et al (2010); Al-Khidir and Zailani (2006); Agi (2015); Srivastava (2007); Hajikhani et al (2012)
Green purchasing	Collaboration with suppliers in order to develop products that free from waste and	Green Jr. et al (2012); Abd Rahman et al (2014); Laosirihongthong et al (2013); Zhu et al (2012); Hsu

<b>GSCM practices</b>	<b>Description</b>	<b>Author(s) (Years)</b>
	pollution or environmental-friendly product.	et al (2012); Eltayeb and Zailani (2009); Gupta et al (2013); Lee et al (2012); Ninlawan et al (2010); Al-Khidir and Zailani (2006); Agi (2015); Hajikhani et al (2012)
Cooperation with customers	This dimension focuses on the cooperating with the customers in terms of 'design cleaner production processes' in order to produce green product and green packaging.	Green Jr. et al (2012); Abd Rahman et al (2014); Zhu et al (2012); Lee et al (2012); Ninlawan et al (2010); Al-Khidir and Zailani (2006); Barasel-Bofinger et al (2012)
Investment recovery	This dimension includes scrap and used material, the sale of inventory surplus and excess capital equipment.	Green Jr. et al (2012); Ninlawan et al (2010); Zhu and Sarkis (2004); Kumar and Chandrakar (2012); Abd Rahman et al (2014); Zhu et al (2012); Agi (2015); Hajikhani et al (2012)
Reverse logistic	Reverse logistic involves upstream and downstream activities in the supply chain. This practice involves final product (remanufacturing, redistribution, product return and 3Rs).	Agi (2015); Abd Rahman et al (2014); Laosirihongthong et al (2013); Al-Khidir and Zailani (2006); Ninlawan et al (2010); Eltayeb and Zailani (2009); Srivastava (2007); Mutingi (2013); Barasel-Bofinger et al (2012); Gupta et al (2013); Hsu et al (2012); Hajikhani et al (2012)
Green manufacturing	This practice applies to use low environmental impact for production process, highly productive and generate zero waste or minimal waste or pollution	Gupta et al (2013); Ninlawan et al (2010); Srivastava (2007)
Green distribution	This practice includes green packaging and green logistics either done by the companies or by the distribution companies or logistic companies.	Gupta et al (2013); Ninlawan et al (2010); Mutingi (2013); Harvani et al (2005); Baresel-Bofinger et al (2012)

### Buyer-supplier Relationship

The fast changing in business practices need the development and sustainable relationship between buyer and supplier. The research conducted by Doran et al (2005) stressed that the buyer-supplier relationship is important in commercial engagement and as a strategic partnership in organization. Buyer-supplier relationship also plays a significant role to maximize the value creation in the supply chain and contribute to the organizational performance (Ambrose et al., 2010). Besides that, the long term relationship between buyer and supplier is the key and a foundation to obtain the business success (Mohanty & Gahan, 2012). Hsu et al (2008) in their study highlight on the failure in the supply chain management when the organization ignores the relationship between both parties. This failure is comes from unwillingness to share information and inability to have a good collaboration. Having said so, it is assure that the buyer-supplier relationship contributes to the long-term cooperative relationship in the organization (Adams et al., 2012) and it is important for the organization who wants to success in the global business to have a strong relationship between buyer and supplier. Mohanty and Gahan (2012) explained about the buyer-supplier relationship has giving benefits to the operational level and strategic level. At an operational level, the buyer-supplier relationship helps to improve the quality of product, delivery time, and cost reduction, while at a strategic level, these relationships enhance the competitiveness, improve in market share and sustainable development in quality of product (Adams et al., 2012). Sometimes, after there is some unpredictable changing in supply chain activities between both partners, the decision-making become more challenging (Oosterhuis et al., 2010). Nevertheless, it has been argued by Chouan (2013) that a buyer-supplier relationship does not automatically protect the relationship from difficulties. Even so, this relationship is bringing the benefits for both parties in terms of business operation and it is an advantage for the company who is managing a good buyer-supplier relationship (Lv & Xiu, 2010) which able to strengthen the existing business activities as well as becomes added value to the organizational performance (Hsu et al., 2008; Kannan & Tan, 2006; Tantoush et al., 2009).

Since 1994, Morgan and Hunt had discussed on the important of buyer-supplier relationship in order to have a long-term benefits in business industry. Besides that, many researches talk about the involvement of trust and commitment in buyer-supplier relationship (Steinle et al., 2014; Lv & Xiu, 2010; Tantoush et al., 2009; Kannan & Tan, 2006; Morgan & Hunt, 1994). A good relationship between both parties can be described based on certain level of transparency about trust and commitment (Steinle et al., 2014). In a simple meaning, both parties always expect trust and commitment in their relationship in order to achieve long-term relationship in the organization (Mohanty & Gahan, 2012). Hussein et al (2015) stated that trust is a major requirement in order to have a successful relationship between buyer and supplier. Steinle et al (2014) focuses on opportunism in buyer-supplier relationship. Their study discussed on the relationship failure because of dishonesty and misrepresentation.

Abd Rahman et al (2014) show the significant effect of the value of trust and commitment between supply chain members in order to achieve the effectiveness of organization practice. A new practice in the organization especially for supply chain management needs a good collaboration among all members to achieve it. In doing so, an excellence buyer-supplier relationship is important to encourage all members to have a quick response of sharing new practice and accurate information between the relationships (Abd Rahman et al., 2014). Besides that, Abd Rahman et al (2014) highlight on the value of trust and commitment in



buyer-supplier relationship that reduce transaction cost, reduce production cost, and improve the profit margin in the organization. Since a high-quality of buyer-supplier relationship is a nature of having trust and commitment among buyer and supplier, this study concern to highlight the important of establishing a long-term buyer-supplier relationship in order to enhance the supply chain practice as well as the organizational performance. Agi (2015) further to identify the inter-organizational factors that contributing the success of organization in implementing green supply chain management practices, and he found that 7 from 19 factors are focusing on buyer-supplier relationship. The seven factors are 1) "cooperation and support from supply chain partners", 2) "information and knowledge sharing with supply chain partners", 3) "assessing and monitoring supplier performance and practicing supplier selection", 4) "integration with supply chain partners and formation of cross-functional and cross-companies team", 5) "trustful relationships with supply chain partners", 6) "dependence relationships with buyer and supplier", 7) "long-term relationship with supply chain partners".

Interestingly, the buyer-supplier relationship has been viewed with the different context by the academicians. But the truly is, a long-term buyer-supplier relationship intends only to improve the organizational performance. Hence, the articles on buyer-supplier relationship have been summarized as Table 2.2.

Table 2.2

*Summarized of buyer-supplier relationship's articles from year 2010 until 2015*

<b>Author</b>	<b>Main variable</b>	<b>Main objective of the study</b>	<b>Research outcome</b>
Husseini et al (2015)	Trust, buyer-supplier relationship, e-procurement system	To highlight trust decision in buyer-supplier relationship and e-procurement environment.	This study comes out with the comprehensive structure for trust evaluation process in order to improve trust decision in buyer-supplier relationship.
Steinle et al (2014)	Ex ante information asymmetries, ex post information asymmetries, moral hazards in buyer-supplier relationship.	Buyer-supplier relationship plays as principal-agent situation in order to improve the performance. Hence, this study aims to identify the opportunism in buyer-supplier relationship. This study also test whether ex ante and ex post information asymmetries influence moral hazards in buyer-supplier relationship.	The study founds ex ante and ex post information asymmetries are significant to the occurrence of moral hazard in buyer-supplier relationship. This study also revealed the amount of direct meeting has no significant relationship with the length of relationship between buyer and supplier.

Author	Main variable	Main objective of the study	Research outcome
Hölttä et al (2013)	Buyer-supplier relationship, design communication	To identify different types of communication's design in buyer-supplier relationship.	This study finds four types of communication's design in buyer-supplier relationship which are awareness, problem handling, brief communication, and continuous improvement of operations.
Chouan (2013)	Buyer-supplier relationship, trust, commitment, power.	To investigate the factors of asymmetrical partners to develop long-term beneficial relationship in the business.	The results shows that the importance of having an establish trust relationship as a business strategy and designing dyadic partnership in order to reduce asymmetric and develop commitment between buyer and supplier.
Adams et al (2012)	Buyer specificity, supplier specificity, buyer-supplier relationship, organizational performance	To analyse the relationship between buyer and supplier specificity and buyer-supplier relationship and its impact to performance of small business organization.	The result indicates buyer and supplier increased specificity to further long-term relationship between buyer and supplier and indirectly improves the organizational performance.
Mohanty and Gahan (2012)	Trust, power and dependency, capacity and capability of supplier, communication, partnership, buyer-supplier relationship.	To explore the attributes in buyer-supplier relationship that consider as healthy buyer-supplier relationship in buyer's perspective.	The results shows there are four main aspects that encourage healthy buyer-supplier relationship which are supplier performance, personal factors, strategic requirement by the organization, and operation's mode.
Raskovic et al (2012)	Business network context, selected elements of buyer-supplier relationship, business performance.	To analyse the impact of the functional aspect in business network context on buyer-supplier relationship's element, towards business performance.	The result shows there are positively significant relationship between business network context and buyer-supplier relationship's elements, and business performance.
Oosterhuis et al (2011)	Communication frequency, supplier	To investigate the relationship between communication	The results finds that the relationship between communication frequency and



Author	Main variable	Main objective of the study	Research outcome
	perceived technology uncertainty, buyer perceived technology uncertainty, supplier performance	frequency and supplier performance, and the involvement of buyer and supplier perceived technology.	supplier performance is positive only when buyer and supplier has high level of perceived technology.
Lv and Xiu (2010)	Buyer-supplier relationship, theory of inventive problem solving (TRIZ)	To explore the conflicts between buyer-supplier relationship of Toyota company in China.	The finding shows that there are three key points to establish the long-term relationship between buyer and supplier which are suppliers should foster the competitive environment, suppliers should support a foreign investment, and develop trust and commitment system. By applying TRIZ theory, it will help to reduce the conflict between buyer and supplier of this company.
Mugarura (2010)	Trust, commitment, adaptation, buyer-supplier collaboration, relationship continuity.	To examine the relationship between buyer-supplier collaboration and relationship of continuity of private manufacturing in Kampala.	The result shows that buyer-supplier collaboration is significantly positive with relationship continuity. Hence, there are a significant relationship between adaptation, trust, commitment towards relationship continuity and buyer-supplier collaboration.
Wan and Chen (2010)	Inter-organizational citizenship behavior, social capital, buyer-supplier relationship, performance.	To investigate the relationship between social capital in buyer-supplier relationship inter-organizational citizenship behavior, and performance.	This study is comes out with the theoretical model of buyer's performance and integrate the inter-organizational citizenship behavior and social capital theories in the supply chain management context.

### Organizational Performance

Organizational performance is claimed as the ultimate dependent variable as the interest for the researches who concerned about any area of management (Richard et al., 2008). Khor (2013) highlighted the importance of performance measurement will help the organization in order to set objectives, analyses and evaluate performance, and preparation for future action. Richard et al (2008) has identified the differences between organizational performance and organizational effectiveness whereby the organizational effectiveness is the broader concept

and captures the organizational performance as a part of organizational effectiveness. Richard et al (2008) clarified that from over three years period, 23% from 439 articles in Strategic Management Journal, the Academy of Management Journal and Administrative Science Quarterly appointed organizational performance as a dependent variable. The organizational performance has been used since 1950's with the specific indicators as the function to measure the performance even though this performance was judged with many different understanding and the different interpretation's outcome (Carton, 2005).

Many literatures study on the organizational performance in the manufacturing sector as a dependent variable (Valmohammadi, 2011; Padma et al., 2008; Danlami, 2011; Watson Jr., 2006; Tuanmat & Smith, 2011; Khor, 2013) using financial performance (Danlami, 2011) or both financial and non-financial performance (Valmohammadi, 2011; Padma et al., 2008; Watson Jr., 2006; Tuanmat & Smith, 2011; Khor, 2013). Table 2.2 shows the previous literatures on organizational performance indicators in manufacturing sectors: Table 2.2: Previous literatures on organizational performance indicator in manufacturing sector

Author	Indicators	
	Financial	Non-financial
Kafetzopoulos and Psomas (2015)	Sales growth, net profit margin, cash flow	Operational performance (Productivity, efficiency and effectiveness of company's operation), product quality (performance, reliability, durability, perceived quality, conformance to specification)
Khor (2013)	Profitability, sales growth	Environmental outcome
Zhao et al (2013)	-	Schedule attainment, competitive performance, customer satisfaction
Valmohammadi (2011)	Profitability, sales growth, market share	Customer satisfaction, employee morale
Danlami (2011)	Growth rate of sales or revenue, financial strength, return on equity, return on assets, profitability	-
Green Jr. et al (2008)	Average return on investment, average profit, profit growth, average return on sales, marketing performance	Logistic performance
Padma et al (2008)	Profitability, overall financial performance	Customer satisfaction, employee morale, overall operational performance, overall productivity, growth in exports, environmental desirable impact of product or service, saving in energy

Watson Jr (2006)	Cost	Quality, response time
Li et al (2004)	Market share, return on investment, the growth of market share, the growth of sales, growth in return on investment, profit margin on sales, marketing performance	-
Zhu and Kraemer (2002)	Profitability, cost reduction	Inventory efficiency

The organization that achieves better financial results than its competitors with a long time period is categorized as high organizational performance (De Waal, 2007). It means that the financial performance is important for the organization to know the level of achievement by comparing the financial performance with the competitors. This perspective also has been supported by Adams et al (2012) whereby the organization performance can be highly achieved if the organization has an ability to maintain the long-term financial performance which consists of profitability and market share as well as having relative competitiveness with other related competitors. There are many indicators that have been used by different literatures to measure the financial performance. Because of that, it creates an argument between the academicians to measure the performance using financial indicator. According to Hamann et al (2013), there are four dimensions involved in measuring organizational performance which are profitability, stock market performance, liquidity, and growth. Wells (2003) stated that profitability itself does not completely explain the level of organizational performance, the cash flow and rates of return also play the important roles as the indicator to achieve the level of performance. Richard et al (2008) convinced that there are four indicators involved to achieve the best relative measurement for organizational performance which are operating ratios collection, return on equity, net profit after tax (NPAT), and other relative measurement. In term of non-financial performance, Wang et al (2015) briefly clarified that non-financial performance supports the success of financial performance.

In the supply chain context, Li et al (2004) stated that the performance should be consists of short-term and long-term performance. The short-term performance supports the long-term performance as the indicators to achieve high organizational performance. The short-term performance also known as non-financial performance includes level of productivity, level of inventory (the less inventory, the higher performance of organization), and the cycle time (as much as cycle time can be reduced, the level of organization performance is high) which support the long-term performance that includes the level of market shares, and profits which obtained by all supply chain involvement.

Upon derived from the resource-based view (RBV) theory introduced by Wernerfelt (1984) and Barney (1991) and the review from the literature of this study, the proposed conceptual framework are shown in Figure 2.1.

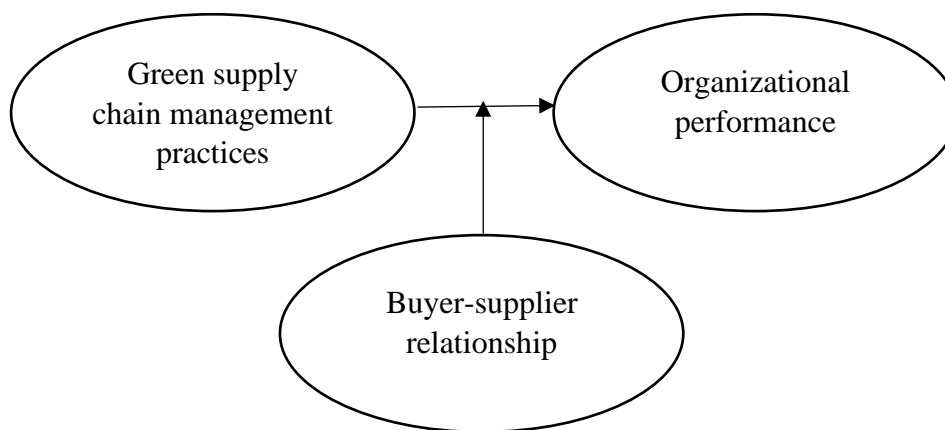


Figure 2.1 Proposed conceptual framework

### Conclusion

In the global competitive edge, most of the companies realised on the important of implementing green practice in order to reduce the environmental impact that comes from the business activity, as well as from the supply chain activity. Even though there are a number of practitioners are already applied green supply chain management practices, lack of knowledge and information will be disrupted to the successfulness of the practices. Having said so, the relationship between buyer and supplier should be considered by the organization to enhance the green supply chain management practices in order to improve both financial and non-financial performance of the organization. The details of green supply chain management practices, buyer-supplier relationship, and organizational performance have been reviewed to explore the connection within these constructs. Therefore, an extensive research framework should be developed for future research regarding to these constructs in order to highlight the relationship between green supply chain management practices, buyer-supplier relationship, and organizational performance.

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