THE INFLUENCE OF SUPPLIER COLLABORATION ON GREEN SUPPLY CHAIN MANAGEMENT PRACTICES AND FIRM PERFORMANCE IN UK SMEs

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Abstract

Purpose: The purpose of this paper is to investigate the influence of supplier collaboration on Green Supply Chain Management (GSCM) practices and Sustainable firm performance in UK food supply chain SMEs. Supplier collaboration is the management of collaborative relationship with the key supply chain partners when sourcing products or services. There has been extensive research on SCM, SC collaboration and GSCM practices of large organisations. However, no research has been found on UK SMEs in particular and their performances due to Collaborating with suppliers and GSCM practices. Thus, this study attempts to fill this gap and contributes to the current academic research and practice.

Research Approach: A systematic literature review was undertaken to examine articles published in international journals during 2000-2016. SCOPUS database was used to collect information on articles and subsequently they were collected using various sources including EBSCOhost. For this study, supplier collaboration was drawn from previous literature in Supply chain collaboration and GSCM practices while performance measurement was adopted from the Triple Bottom Line Approach. From a comprehensive literature review, a conceptual framework was developed which will subsequently be empirically tested in the UK SMEs perspective.

Findings and Originality: The review of literature suggested that supplier collaboration is crucial for a firm to practice GSCM in their operations especially in SMEs. The literature also suggests that trust, dependence, knowledge and information sharing, risk and reward sharing between the firms are the major determinants of mutual collaboration. This study also suggests that collaborating with suppliers help firms practice GSCM which will bring sustainable firm performance. However, this is yet to be empirically tested.

Research Impact, Practical Impact and Limitations: This study should help enrich the existing theories on SCM, GSCM, SC collaboration and organisational performance. Furthermore, this study suggests trust, dependence, and sharing of information, knowledge, risk and reward are major determinants of supplier collaboration. As to practical impact, this study should also facilitate SMEs in assessing the necessity for them to collaborate with their suppliers. This study also suggests that for SMEs to practice GSCM, supplier collaboration is essential. Furthermore, it highlights that supplier collaboration affects firm performance. Moreover, as the UK government is campaigning for greener economy, it can only be possible when SMEs, which consists of 99% of UK businesses, are greening their operations for which the collaboration between the buyers and the suppliers are crucial. However, the findings of this study are limited because this is based on literature review and not empirically proved yet. Nevertheless, as this is an initial part of a bigger research project, it should help establish the foundation for further study.

Key Words: Green supply chain management, Supplier Collaboration, performance, SMEs, UK
Introduction:

The purpose of this study is to investigate the influences of Supplier collaboration on Green Supply Chain Management (GSCM) practices and sustainable firm performance in the UK Small and Medium Size Enterprises (SMEs). GSCM can be referred as the incorporation of ecological thinking into supply chains. Supply Chain Management (SCM) is the process to which upstream and downstream linkages of an organisations are interconnected for creating value as a form of goods and services for end consumers. Supplier collaboration is the management of collaborative relationship with the key supply chain partners when procuring products or services. Achieving sustainability or greening the supply chains are becoming ever increasing researched area in the academia (Laosirihongthong et al., 2013; Jabbour, 2015). Environmental concerns in corporate arena has been a focused issue for decades (Sarkis et al., 2011). It is well documented (Fernando Robles et al., 2013; Laosirihongthong et al., 2013; Laari et al., 2016) in the academia that GSCM practices improves firm performances. However, whether collaborating with suppliers can influence GSCM practices and firm performance has not been given proper attention. Moreover, whether SMEs are capable of harnessing collaborative advantages (Van Hoof and Thiell, 2014) with its counter parts remain relatively unexplored.

A Sc is a network of activities among two or more firms where an individual firm cannot control the whole sc. That’s why it is crucial to have a healthy relationship with the key partners in the Scs. Once there is a relationship between the Sc partners, then firms can collaborate each to secure distinctive competitive advantages in market. Moreover, sustainability or green practices in the operations are critical components in the organisations long time survival because of the pressures from various stake holders (Laosirihongthong et al., 2013; Hoejmose et al., 2014). Attaining greenness in the supply chain is not feasible without collaborating with its partners. Firm can capitalise the strength of the partners and can get benefited through it. Gunasekaran et al. (2015) mentioned that collaboration relies on mutual benefit. To practice green in an organisation, getting the green suppliers is one of the crucial parts. How collaborating with suppliers help a firm GSCM practices and how it influences on firm performances are yet to be researched. The purpose of this study will be to find out the influences of supplier collaboration on GSCM practices and firm performance.

Multinational Enterprises (MNEs) are taking actions to green their supply chain as they have available resources, relational opportunities and collaborative capabilities whereas SMEs are lacking these resources or are yet to capitalise collaborative advantages. However, some SMEs are initiating to follow GSCM and there are suggestions that firm’s performance get improved in terms of efficiency, profitability, environmental sustainability and improved brand reputation across the society by following green supply chain (Bowen et al., 2001; Vachon and Klassen, 2008; Lee et al., 2012). SMEs in the UK have been selected as study sample for this research for several reasons. First of all, UK is targeting to green the Economy by reducing greenhouse gas (GHG) emission up to 80% by 2050. Secondly, UK is one of the highest top ten global CO₂ (per capita) producers (Guardian, 2011). Moreover, how SMEs in the UK can help in achieving this target and whether the SMEs are capable of collaborating with their suppliers and how it can influence their operations and performances have not been properly investigated in the academia. To practice GSCM in an organisation, suppliers play the key role. Therefore, this study takes the challenge of investigating suppliers influence GSCM practices and sustainable firm performances in the UK food supply chain SMEs.

In the academia, much of the debate on GSCM is to determine the drivers, motivations, or pressures in undertaking GSCM initiatives and its influences on organisational performances (Green Jr et al., 2012; Lee et al., 2012; Zhu et al., 2012; Laosirihongthong et al., 2013; Lee, 2015). There is also a growing research in the role of supply chain (Sc) collaboration on sustainability (Vachon and Klassen, 2008; Ramanathan et al., 2014; Grekova et al., 2015; Gunasekaran et al., 2015). However, there have been limited studies on GSCM practices of SMEs (Aragon-Correa et al., 2008; Lee, 2008; Lee et al., 2012; Bourlakis et al., 2014; Huang et al., 2015) and no research has been found on supplier collaboration and their influences on GSCM practices and firm performances. This reflects a substantial gap in the literature. This research attempts to fill the gap by identifying the influences of supplier’s collaborations in GSCM practices and their impact on the performance of UK SMEs.
The primary motivation of this research is to explore how SMEs in UK can understand their suppliers and capitalise the relationship, achieve competitiveness, maximise their profit and help their community without damaging the environment. Studying supplier collaboration in practicing GSCM is essential because SMEs have not been given proper attention to collaborate with their suppliers to enhance environmental practices. Moreover, how these collaborations with the supplier helps improve firm performance are yet to be well explored. This objective of this study are to:

I. Understand the impact of GSCM practices on SMEs performance

II. Find out the moderating effect of supplier collaboration on GSCM practices and firm performance.

In order to fulfil the research objectives, comprehensive literature review has been conducted. Based on the reviewed literature 4 hypotheses have been proposed and a conceptual framework has been developed which will subsequently be tested through collecting survey data. It is hoped that this study can help SMEs better understand GSCM practices, the importance of collaborating with suppliers and performance outcome. All this should facilitate them to join the green movement. Hopefully, this will accelerate the process of greening the economy and build a better planet for the future generation.

The rest of the paper is organised as follows: Section 2 highlights the review of previous research on GSCM, supplier collaboration and performance impact; Section 3 presents the hypotheses and the conceptual model; Section 4 present the discussion and the conclusion highlighting research implications; limitations and opportunities for further research.

**Literature Review:**

This section presents a review of literature including GSCM practices, supplier collaboration, GSCM and its performance implications. Based on the literature, hypotheses will be developed and a conceptual framework on the influence of supplier collaborator on GSCM practices and firm performance in UK food retail SMEs will be proposed.

**GSCM practices:**

Green Supply Chain Management (GSCM) which takes environmental issues into consideration is the extension of traditional SCM. Slack et al. (2009) defined Supply Chain (SC) as the linked operations to source and provide goods and services to the end users. GSCM follows similar activities but in a way that is more innovative, profitable, widely acceptable, socially and environmentally responsible (Sarkis et al., 2011; Zhu et al., 2012). So, GSCM is the combination of environmental, societal and economic consideration in a SC process which operates as a linked activities starting from sourcing raw materials to post consumption activities of products or services by the customers. The reviewed literature indicates that many scholars have tried to define GSCM from various perspectives. For example, from three different strategic perspectives, Testa and Iraldo (2010) illustrate GSCM as reputation related, efficiency related and innovation related while Azevedo et al. (2011) recommended GSCM practices as greening the supply process, product based practices, delivery process and green practices through cooperating with suppliers and customers. Though their views are not identical, their notions are similar. Evaluation of GSCM is historical. Its dimensions, definitions and level of acceptance have changed significantly since it first emerged in the practical and academic domain. There are some subtle and few obvious differences among the terminologies used to denote GSCM or SSCM including the definitions, scopes and characteristics of the practices.

Organisations practice GSCM proactively or reactively (Laosirihongthong et al., 2013). Whatever the way they practice, there are some driving forces behind them. Those driving forces can be from within the organisation (internal) or from outside the organisation (external). Many researchers (Testa and Iraldo, 2010; Zailani et al., 2012; Fernando Robles et al., 2013) maintain the view that internal drivers and external pressures induce organisations to practice GSCM. However, Laosirihongthong et al. (2013) mentioned reactive pressures and proactive drivers instead of internal drivers and external pressures that drive firms practicing GSCM.
Some of the organisational theories such as resources based view, resource dependence theory, and institutional theory have been used to understand how firms succeed in implementing certain operations strategies (Sarkis et al., 2011; Lee et al., 2012; Fernando Robles et al., 2013; Laosirihongthong et al., 2013). Businesses receive pressures from regulatory bodies and increased influence from customers for a cleaner, transparent, socially and environmentally responsible supply chain (Zailani et al., 2012). Due to these pressures from outside and driving forces from within the organisation, companies are institutionalising environmental practices in their operations. In this sense, institutional theory is suitable for understanding the phenomena. Moreover, several studies (Zhu and Sarkis, 2007; Sarkis et al., 2011) have identified institutional theory as a key factor in identifying influencing factors to practice GSCM. Hence, this study is guided by the institutional theory to understand the motivating factors of GSCM practices. Based on institutional theory (Dimaggio and Powell, 1983), Sarkis et al. (2011) highlighted three isomorphic drivers of GSCM namely Coercive pressures – governments, environmental interest groups, and industrial associations; Normative pressures - social pressures, consumer expectation, communities and wider stakeholders (Seuring and Müller, 2008); and Mimetic - coping the activities of a successful organisation i.e. competitive benchmarking. The higher the coercive pressure is, the higher the tendency of the firm to practice GSCM (Zhu and Sarkis, 2007; Testa and Iraldo, 2010). For instance, in order to avoid legislative hassles and to comply with current rules and regulations, firms accept certain level of green practices in their operations including reduced CO2 emission, design eco-friendly products, and try to avoid environmentally hazardous substances during their procurement and production process.

Nonetheless, Testa and Iraldo (2010) argued that the pressures can be from inside the organisation for instance strategic motivation (Laosirihongthong et al., 2013). In contrast, normative drivers are the social reaction towards GSCM whereas the companies who follow market leaders to survive in the market face mimetic pressures. In contrast, internal drivers are company’s commitment from the top executives (Zhu and Sarkis, 2004; Laosirihongthong et al., 2013) in line with organisational values (Testa and Iraldo, 2010), support from mid-level managers as well as senior employees (Zhu and Sarkis, 2007) and long term vision for expected business gains. Moreover, organisational aspiration to achieve cost leadership (cost minimization) and differentiation (innovation) strategy as well as to secure confidence, trust and respect from stakeholders all contribute to shaping SCM strategies. All these pressures stimulate firms to practice green in their operations. This is why collaboration with suppliers become critical.

Although large multinational enterprises (MNEs) are quickly moving towards greening their SCs through collaborating with their suppliers and some have started to have positive social, environmental and economic impacts. SMEs, due to their limited resources, lack of relational capabilities, lack of interest, or understanding the long term rewards, are lagging behind significantly. Consequently, SMEs are losing competitive advantage for not practicing GSCM (Seuring and Müller, 2008). So in order to achieve competitive advantage, GSCM practices are becoming unavoidable reality for SMEs (Huang et al., 2015). However, it is argued that SMEs are having difficulties in practicing GSCM as they are in short of knowledge, technologies, lack of collaborative capabilities, expertise, financial and human resources (Lee et al., 2012; Huang et al., 2015). It is also an argumentative topic in literature as to whether GSCM fits with SMEs. Vaalander and Heide (2007) stated that in spite of having substantial benefits of SCM, SMEs are not fully capable of harnessing the advantage of SCM and face difficulties when implementing SCM initiatives especially those for GSCM. The fact that SMEs in the UK are diverse and heterogeneous in nature (Hillary, 2004), which may have hindered them to practice GSCM in a structured way. However, in order to achieve competitive edge, gain consumer attention, and keep sustainable growth, SMEs need to be brought on-board and seek new opportunities and innovation in GSCM. GSCM practices can provide good innovative opportunities for SMEs to enhance production, reduce costs and minimise environmental damages (Zhu and Sarkis, 2007). Some SMEs have started to develop initiatives such as green design, green production, green distribution, and reverse logistics as their GSCM practices, and there are a few studies on SMEs’ GSCM
practices. Laosirihongthong et al. (2013) proposed pro-active and reactive environmental practices but implied that SMEs do not have adequate proactive environmental strategies, green awareness and environmental controlling systems. Zhu and Sarkis (2007) mentioned a set of practices in their study on GSCM, including internal environmental management, green purchasing, investment recovery, cooperation with customers and eco-design. Practicing these initiatives in isolation is not possible. This has to be with the collaboration with the suppliers because for internal practices organisation has to procure products from suppliers, to cooperate with customers and to meet their needs, organisation has to depend on it suppliers, to design its products organisation has to depends on its suppliers. In a nutshell, GSCM practices in SMEs significantly depends on their collaborative capability with suppliers.

**Supplier collaboration:**
Collaboration is the joint activities between the partners in the supply chains. Gunasekaran et al. (2015) referred Supply chain collaboration as the relationship developed for a long time between supply chain members with a view to lowering cost and risk as well as improving quality and market value. In a basic supply chain upstream partners of a focal company are suppliers and downstream partners are customers. Supplier collaboration are the activities of collaborative relationship between the focal firm and its suppliers in order to maximise SC related performance. Buyers to a great extent depends on its supplier’s resources including advanced know-how, manufacturing competence, engineering expertise and financial backing (Yan and Dooley, 2014). Simultaneously, suppliers also depend on buyer firms for product knowledge, market needs, customer expectation and so on. So, it become critical for firms to collaborate each other to obtain access and exploit mutual resources to initiate certain practices. Yan and Dooley (2014) claimed that collaboration facilitates knowledge creation through internalising partner’s knowledge. To enhance environmental sustainability partner firms influence each other’s resources and activities to exploit learning and knowledge sharing opportunities (Grekova et al., 2015). Supplier collaboration however are not always effective for improved performance (Kopfer et al., 2005; Yan and Dooley, 2014) due to lack of communication, mutually supportive environment and mutual decision making.

Whether supplier collaboration helps improve GSCM practices is inconclusive in the literature. However, suppliers are the crucial entity to green an organisation’s SC. To initiate environmental practices in operations, it become essential to collaborate with suppliers. Chiou et al. (2011) claimed that long time strategic benefits can be secured through collaborating with suppliers. Kopfer et al. (2005) found that supplier collaboration has positive effect on firm performance in terms of innovative capability and financial results considering relational constructs trust and dependence as the key elements for supplier relationships. Chiou et al. (2011) highlighted that firm supplier’s integration in the product innovation can enhance firm performance. However, establishing a relationship requires time, resources, information and knowledge sharing ability from both parties.

In the academia it is demonstrated that the most vital source of novel ideas and information are the relationships. Collaborative relationship helps firm share their tacit and explicit knowledge and enhance knowledge creation and innovation with the suppliers (Kopfer et al., 2005; Yan and Dooley, 2014; Grekova et al., 2015). Collaboration can reduce buying cost through minimising contracting cost, instant communication, enhanced coordination and mutual operational problem solving approach. Key suppliers can have significant impact on overall wellbeing of focal firm (Kopfer et al., 2005). As knowledge sharing become more frequent and inevitable in supplier collaboration; so trust, openness and transparency become fundamental. Supplier opportunistic behaviour is minimised when mutual trust exists and thus reduce purchasing cost through enhanced coordination, information sharing and process dependence. In Collaboration, dependence between the firms are inevitable. However, over dependence may weaken focal firm’s innovative capability (Kopfer et al., 2005). Theoretical arguments in the previous research and empirical findings do not portray a transparent picture whether supplier collaboration influence firm’s activities and under what conditions their performances get improved. Dissimilar results lead focal firms in dilemma whether to collaborate or not? Why collaboration with
suppliers is essential and how much to collaborate? This research will try to shed some light in this complex relationship.

**Firm performance:**
The relationship between practicing GSCM and organisational performance is divisive in the literature. Some scholars (Bowen et al., 2001; Zailani et al., 2012; Zhu et al., 2012) found that GSCM practices improve environmental, operational, economic and overall organisational performance, but Fernando Robles et al. (2013) claimed that there is an indirect relationship. Rao and Holt (2005) held the perception that GSCM practices enhance efficiency and bring synergy among strategic business units which minimize waste, save costs and improves environmental efficiency. In the view of Tseng et al. (2015), the association between GSCM practices and business performance has been comprehensively researched and it is argued that they will not perform well if the capabilities are applied in isolation without collaborating with suppliers. In order to balance triple bottom line performance, organisations are aggressively integrating green practices within their operations (Wu et al., 2015). Large businesses often find GSCM profitable through collaborating with their suppliers in reducing waste including reduction of plummeting buffer stocks; illuminating obsolescence cost, warehousing costs, energy reduction and minimizing defects directly impact on profitability. Simultaneously, following the 5 R’s (recycling, reusing, redesigning, refurbishing and reverse logistics) indirectly influences profitability by reducing production costs.

However, collaboration with suppliers enhance some challenges for the firm including level information sharing, level of dependence, organisation size and location, organisational values, cultural diversity and goal congruence between the firms. For this reasons, many organisations have tried to solve this type of SCM related strategic problems through mutual collaboration with its suppliers. That is why Resource Dependence Theory (RDT) is a related theory to underpin the research on its relationship between GSCM practices and performances because it can describe the surroundings of an organisation and its domain implying that individual firms can barely achieve sustainable growth without the help of its suppliers. Therefore, organisations rely on a mutual relationship among the partners through their SC collaboration. Sarkis et al. (2011) also highlighted that the success of implementing GSCM rely on the interdependency of partners in the SC as well as the collaborative approach and its quality. Based on RDT, firms that do not have necessary resources can build up relationship with others and obtain resources though SC collaboration. Tseng et al. (2015) supported this by saying that firms that are able to select from a wide variety of suppliers and leverage resources throughout the firm can eliminate the environmental impacts using the GSCM practices. By doing so, all partners involved can not only reduce the negative impact on environment, but also enhance their business performance and build a stronger customer-supplier relationship (Carter and Rogers, 2008; Cao and Zhang, 2010).

**Hypothesis development and Conceptual framework:**
The reviewed literature also demonstrates that there is a relationship between GSCM practices and organisational performance. In this study, overall organisational performance will be measured using sustainability performance- environmental, economic and social performance. Organisations are dependent on specific resource to its suppliers for improved performance. It is evident in the literature that many organisations are solving their SCM related strategic problems through mutual collaboration. GSCM practices enhance environmental practices and environmental performance alike through reduced Co2 emission and environment friendly practices. GSCM practices mean an organisation with environmentally friendly, socially and ethically bound fair policy practiced organisation. These practices send messages to the stakeholders about its activities and the organisation, and show that they are doing well by doing good to the society. Through green practices in the operations, a firm can reduce waste by eliminating obsolescence cost, plummeting buffer stocks and reducing cost through practicing reverse logistics. In this way, a firm can reduce cost and enhance profitability. When organisation practice GSCM they create positive image in the society (Testa and Iraldo, 2010; Azevedo et al., 2011), customers are more satisfied and loyal as they are engaged with the organisation. So, GSCM practices help reduce cost and enhance profitability through increased
sales and market share. All this contributes to the financial gains of the firm (Rao and Holt, 2005; Cao and Zhang, 2011). So, the following hypothesis can be proposed.

\[H_1: \text{GSCM practices have a positive impact on organisational performance.}\]

It is evident in the literature that Supplier collaboration enhance GSCM practices and it also improve organisational performances. So the following hypotheses can be proposed.

\[H_2: \text{Supplier collaboration have a positive impact on GSCM practices}\]

\[H_3: \text{Supplier collaboration have a positive impact on organisational performances.}\]

In the literature it is evident that supplier collaboration moderates the relationship between GSCM practices and firm performances. So the following hypothesis can be proposed.

\[H_4: \text{Supplier collaboration moderates the relationship between GSCM practices and firm performance.}\]

With the above hypotheses the following framework can be posited:

![Figure: GSCM, supplier collaboration and performance framework](image)

**Discussion and Conclusion:**

Based on the reviewed literature, it is obvious that GSCM practices enhances organisational performances. As noted from the literature that majority of the previous studies support this notion. However, collaborating with suppliers in GSCM practices and its impact on firm performances are yet to be researched. In this research Supplier collaboration has been proposed as a moderator between GSCM practices and firm performance. Supplier collaboration is expected to facilitates GSCM practices which will enhance firm performance. The proposed conceptual model underpins the institutional theory and resource dependence theory. Because of various pressures, firms institutionalise GSCM practices and GSCM practices can be implemented through interfirm dependence or mutual collaboration. To conclude, based on the reviewed literature the proposed model is an indication which is yet to be empirically tested. As a next step, based on the reviewed literature and proposed hypothesis questionnaire to be developed to collect empirical data from the UK SMEs in order to test the model.

GSCM practices can be a costly endeavour and for SMEs it can be more difficult due to their small sizes, lack of expertise, financial constraints, and so on. However, literature suggests that SMEs that have implemented GSCM practices get improved performance in longer term. This study should help enrich the existing theories on SCM, supplier collaboration, GSCM Practices and organisational performance. Moreover, deploying Institutional Theory to understand drivers and collaborative capabilities from suppliers in GSCM practices and Resource Dependence Theory to understand performance implications should enhance the theoretical applications. As to practical impact, this study should also facilitate SMEs in assessing the necessity for them to practice GSCM. It should also highlight the importance of collaboration with the suppliers in order to green the operation and get improved performance.

It is indispensable for managers to understand the role of collaboration in GSCM practices and firm performances. Moreover, as the UK government is campaigning for greener economy, it is only
possible when SMEs, which consists 99% of UK businesses, are greening their operations, and working in collaboration with their supply chain partners. One of the key contributions of this study is the determination of supplier collaboration as a moderating factor for GSCM practices and firm performances. Another contribution of this study is to the body of GSCM literature. Although this study makes important contributions to both theory and practice, its findings are based on the literature review and is not supported with empirical findings. Nevertheless, this study contributes to the existing theories on Supplier collaboration, GSCM practices and organisational performance. It should also facilitate SMEs in assessing the necessity for collaborating with its suppliers for practicing GSCM. This research should help establish a foundation for further study in this domain.

References:


