

How can SMEs capitalise on supply chains to improve financial performance? A systematic review of the literature

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Abstract

This paper aims to establish causal relationships between performance drivers in the supply chain and the financial performance of SMEs. Based on 78 articles included in the systematic literature review, a conceptual model is established, which demonstrates that six performance drivers in the supply chain contribute to the financial performance of SMEs directly or indirectly: purchasing, production, transport, inventory management, internal integration, and external integration. Additionally, two performance drivers, outsourcing and sustainable supply chain management, are found ineffective for SMEs in terms of financial performance because of the associated hidden costs.

Keywords: Supply chain management, Performance measurement, SMEs

Introduction

Over the past decades, supply chain management (SCM) has risen to prominence because it has the potential to improve company's competitiveness and ultimately its financial performance (Gunasekaran et al., 2004). Practices of SCM have been widely used as drivers to improve the performance of companies and almost no company can succeed without managing its supply chain successfully.

However, compared to large companies, small and medium-sized enterprises (SMEs) lack the capabilities to take advantage of SCM due to limitations such as insufficient access to financial resources and limited business and management skills (Bourlakis et al., 2014; Hudson et al., 2001). Given that SMEs are usually resource-constrained, not every supply chain practice is suitable for them, but as future economic engines, SMEs inevitably adopt supply chain activities to enhance their success (Toledo-López et al., 2012). As a result, a robust causal relationship between supply chain activities and financial performance is crucial for SMEs.

Although there are a number of studies examining the impact of supply chain activities on corporate financial performance, there is no existing study that has a conclusive

overview in the context of SMEs. This study attempts to fill the mentioned gap among SCM, financial performance measurement and SMEs. The objective of this paper is to develop a model that specifies the causal relationship between performance drivers in the supply chain and financial outcome measures of SMEs through a systematic review of the literature. The research questions have been proposed accordingly:

- 1) What performance drivers in the supply chain can be adopted by SMEs to improve their financial performance?
- 2) How performance drivers in the supply chain influence the financial performance of SMEs?

Therefore, this paper contributes to the literature by developing a framework to explain financial performance of SMEs.

Methodology

To answer the proposed questions, the authors adopted the systematic literature review (SLR) methodology suggested by Tranfield et al. (2003). Keywords related to SCM and Financial Performance were obtained from a scoping study, conducted prior to the SLR to delimit research areas and generate an overview of the debates in the fields of study (Tranfield et al., 2003).

The search string (“*supply chain**” OR “*logistics*” OR “*value chain**” OR “*demand chain**” OR “*supply network**”) AND (“*financial performance*” OR “*financial measure**” OR “*financial management*” OR “*financial indicator**” OR “*financial metric**” OR “*financial ratio**” OR “*ratio analysis*” OR “*financial KPI**”) was used to search relevant articles in June 2017 in three databases, namely EBSCO, ABI/INFORM, and Scopus. Search fields included title, abstract, keywords, and subject of the study. Two exclusion criteria were defined in advance: only peer-reviewed English papers were eligible for further analysis considering the quality of papers and the capability of authors. The criteria of articles that can be included in the final literature pool, which were inclusion criteria, were defined as well and presented in Table 1.

Table 1 – Inclusion Criteria and Rationale

Inclusion Criteria	Rationales
Supply chain practices or supply chain activities	The focus of this study is performance drivers in the supply chain
Identifiable relationships between supply chain activities and corporate financial performance	This study aims to identify supply chain activities that can be used to drive firms’ financial performance

The findings of this review can be generalised to SMEs through revealing the SME focus of included papers during the full-text screening process. Based on a three-level rating criterion, each paper in the SLR was given a rating according to its extent of focus on SMEs. Specifically, papers that adopt SMEs as a research context and entirely centre on SMEs have the highest SME focus; those papers briefly discussing SMEs or including SMEs as a main part of their samples have medium level of SME focus, while articles that do not mention SMEs in the content but suggest meaningful performance drivers in the supply chain have the lowest SME focus. Although papers with the lowest rating do not address SMEs, they provide relevant supply chain performance drivers. Findings on the impact of those performance drivers can be compared with those in the SME context to further highlight the SME concentration of this study, so those articles also contribute to this research and should be included.

As shown in Figure 1, after applying the title and abstract screening and full-text screening, a snow-balling search was conducted by screening the reference lists of included articles to ensure the comprehensiveness of the literature search. Afterwards, all qualified articles followed a quality appraisal process (Pittaway et al., 2004), in which each article was rated on a Likert scale from zero to three in terms of theoretical background, methodology, findings, and contribution. Finally, 78 articles that had an average quality score of no less than 1.5 or had high relevance with our research topics were included in the final literature pool. References of all reviewed articles are excluded from the paper due to space limit but are available from the corresponding author upon request.

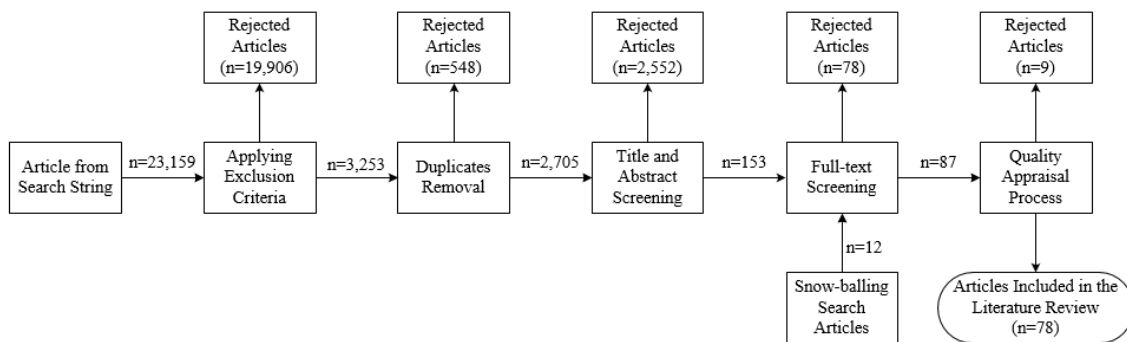


Figure 1 – Building the Literature Pool

Content analysis, which is a research technique for an objective and systematic description of the content of literature (Gold et al., 2010), was adopted to analyse and synthesise the reviewed studies. In this paper, the analytic categories which are the primary components of content analysis were obtained inductively by summarising the reviewed articles.

Descriptive Findings

The descriptive findings of the literature review are presented in this section. Table 2 shows the number of papers allocated to different descriptive categories. There is an increasing number of articles focusing on the relationship between SCM and corporate financial performance, indicating this is a field of great research potential and requires further research. The included papers are a mixture of analytical and empirical studies. Statistical sampling (60) is the dominant study type and the quantitative method (60) is the dominant research methodology in empirical studies.

Most included studies focus on developed countries, especially North America, so their generalisability to developing countries may be constrained. Furthermore, those studies mainly emphasise the manufacturing industry, while very few address the service industry. Regarding the SME focus, more than half of the articles are assigned with the high or medium level of SME focus (44), suggesting the high generalisability of this research to SMEs. The small number of papers with the high level of SME focus provides a direction for future research.

Table 2 – Number of Papers Allocated to Each Descriptive Category

Descriptive Category	Sub-category	Number of Papers
Paper type	<i>Analytical</i>	
	Conceptual	11
	Mathematical	–
	Statistical	2

Descriptive Category	Sub-category	Number of Papers
	<i>Empirical</i>	
	Experimental design	–
	Statistical sampling	60
	Mixed method	3
	Case studies	2
Studies over time	Before 1990	–
	From 1990 till 1994	2
	From 1995 till 1999	4
	From 2000 till 2004	8
	From 2005 till 2009	24
	From 2010 till 2017	40
Methodology	Quantitative	60
	Qualitative	2
	Mixed methods	3
Geographical location	Europe	9
	North America	30
	Multiple	10
	Other	16
Industry sector	Manufacturing	42
	Service	6
	Both	17
SME focus	High level	5
	Medium level	39
	Low level	34

Table 3 presents a list of the top five journals based on the number of publications in the final literature pool. According to the Chartered Association of Business Schools (<https://charteredabs.org/>), all the top five journals are classified into the academic area of *Operations and Technology Management*, which reveals that this topic is still operation-oriented despite the financial performance focus.

Table 3 – Ranking of Journals by Number of Publications

Journal Title	Publications
International Journal of Production Economics	9
Supply Chain Management: An International Journal	8
Journal of Operations Management	7
International Journal of Operations and Production Management	6
International Journal of Logistics Management	6

Thematic Findings

Eight performance drivers in the supply chain are identified from the reviewed articles, which are purchasing, production, transport, inventory management, internal integration, external integration, outsourcing, and sustainable SCM.

Purchasing

Purchasing is a key function within a company, which is also an integrator that interfaces intensively with other areas of a company (Tracey et al., 2005). Normally, purchases account for approximately 60 percent of a company's revenues (Steele and Court, 1996, p.8), so enhanced purchasing capabilities and efficient purchasing management offers

great potential for profit improvement. Through lowering the cost of goods sold and other relevant costs, purchasing can directly increase the profit of firms. Enhancing purchasing skills of a company contributes to its financial performance regardless of firm size (Carr and Smeltzer, 2000), which suggests that SMEs can also improve their financial performance through improving their purchasing skills.

However, purchasing cannot be treated as a cost reduction function only, as it is capable of promoting sales resulting from enhanced quality of raw materials, less production downtime, and faster time to market (Steele and Court, 1996, p.10). Indeed, improved purchasing capabilities of a firm can result in higher customer loyalty and better market performance (Tracey et al., 2005), which are measured by sales growth and market share respectively. As a result, SMEs can take advantage of purchasing to improve their financial performance through improved and more efficient purchasing management.

Production

To improve firms' financial performance which is measured by shareholder values, companies of any size should compress the total end-to-end pipeline time, because the shorter the pipeline, the less working capital is tied up and the more responsive the company can be to changing market conditions (Christopher and Ryals, 1999; Lambert and Burduroglu, 2000). Production is a function that can help shorten the total supply chain cycle time by reducing the production cycle time. Companies can compress their production cycles by eliminating non-value-adding activities, which reduces their total operating costs (Christopher and Ryals, 1999). Moreover, production cycle time compression can also enhance the customer service, which further promotes sales (Christopher and Ryals, 1999). In addition, the supply chain lead-time variance, which is defined as the level of changes in a firm's cycle related processes including production and transport, is detrimental to firm financial performance regardless of firm size (Christensen et al., 2007). Variance reduction is associated with cost reduction because any lead-time variance can generate social costs (Christensen et al., 2007), and a common practice to reduce variance is just-in-time (JIT). JIT can improve production efficiency by reducing production cycle times, personnel, and man-hours, which then reduces total operating costs (Mistry, 2005).

On the other hand, although flexible production leads to high profitability in the long-term, any production improvement requires an initial investment, so the short-term profitability is contingent upon the trade-off between improved sales and associated costs with new production systems (Olhager, 1993).

Transport

Transport is another function that has the potential to shorten the supply chain cycle time. The same as production, transport lead-time compression can help reduce operating costs, improve cash flows, and increase sales (Christopher and Ryals, 1999; Lambert and Burduroglu, 2000). The decrease in transport lead-time variance contributes to reducing operating costs as well (Christensen et al., 2007). Therefore, to enhance the financial performance, SMEs should reduce the transport lead-time average as well as the variance by improving their transport management efficiency. Moreover, transport is a function that interacts with customers and influences customer service levels. Superior transport performance in terms of reliability and responsiveness can strengthen the likelihood that customers remain loyal to a company, which increases sales of the firm (Christopher and Ryals, 1999; Lambert and Burduroglu, 2000; Tracey et al., 2005).

Inventory Management

The main objective of inventory management is to reduce the overall inventory level without interrupting the daily production and customer services (Koumanakos, 2008). Papers classified in this theme mainly focus on how inventory reduction influences corporate financial performance. There are two distinct views on the relationship between inventories and firm financial performance: some researchers treat inventory as a fundamental driver of costs, while others treat it as only an option to balance supply with demand, advocating no relationship between inventories and firm financial performance (Cannon, 2008).

However, given that inventory is an asset that requires capital investments and administration, it is reasonable to believe that inventory reduction can contribute to financial performance improvement. High inventory level is significantly associated with low rate of returns (Koumanakos, 2008). Three inventory types, namely, raw materials, work-in-process, and finished goods are all negatively associated with firms' profitability and the level of raw materials has the strongest correlation with profitability among the three components, implying that the primary focus of inventory reduction should be related to raw materials (Capkun et al., 2009).

By reducing inventories, the cash tied up will be liberated and the operating costs associated with holding inventories can be reduced (Johnson and Templar, 2011). Furthermore, less storage space is required due to inventory reduction, which decreases required investments into fixed assets and administration costs (Johnson and Templar, 2011; Mistry, 2005)

Internal Integration

The success of a business depends on how well the combined capabilities of firms can be integrated rather than the perfect performance of a single function (Pohlen and Coleman, 2005). Therefore, internal integration, defined as the interaction and collaboration between functions within an organisation, mainly purchasing, manufacturing, and logistics (Foerstl et al., 2013; Liu and Lai, 2016), plays a vital role in driving firms' financial performance. Based on a meta-analysis of the extant literature, Ataseven and Nair (2017) conclude that internal integration is positively related to firms' operational performance as well as financial performance, but because of the limitation of the methodology, this study does not suggest the causality.

By contrast, other research work indicates an indirect link between internal integration and firm financial performance. By examining the extent to which purchasing and supply management is integrated with other business functions, Foerstl et al. (2013) identify that cross-functional integration can positively affect firm financial performance through firms' purchasing performance. On the basis of data from 617 Chinese manufacturing firms including SMEs, Huo (2012) empirically advocates for the indirectly positive relationship between internal integration and firm financial performance.

It is worth noting that internal integration is a prerequisite for external integration, which is measured by customer integration and supplier integration (Huo, 2012; Yu et al., 2013). This is also consistent with the resource-based theory, which argues that a company will be more capable of integrating with its external partners only when it has a high level of internal communication and collaboration capabilities (Huo, 2012). As a result, to improve financial performance, SME owner-managers should focus on not only the efficiency of internal functions, but also the integration of them.

External Integration

In contrast to internal integration, external integration refers to the degree to which an organisation partners with its key supply chain members, including suppliers and

customers, to structure their daily businesses into a collaborative process to satisfy customers' requirements (Huo, 2012). Two practices that accomplish external integration are supplier partnering and close customer relationships (Lambert and Pohlen, 2001; Vickery et al., 2003). Research has found that as an integral part of SCM, external integration can benefit large companies' as well as SMEs' financial performance indirectly by establishing close relationships with their suppliers and customers.

In the light of a literature review covering SCM and financial performance, Shi and Yu (2013) argue that firms' external relationships are a critical performance driver in the supply chain because they are unique resources and valuable assets for organisations and are inimitable by other firms. Both supplier integration and customer integration enhance companies' profitability through the improvement of responsiveness (Ralston et al., 2015). In line with the resource-based view, Liu and Lai (2016) address the importance of external integration capabilities for third party logistics (3PL) providers. Based on the structural equation modelling approach, they posit that companies' external integration capabilities do not influence their financial performance directly but indirectly through the improvement of operational performance measured by resource efficiency and cost competitiveness.

Kim (2006) conducts a research on measuring the effect of supplier development on corporate financial performance based on a sample of restaurants in the US, among which most are SMEs. He finds that firms' effective communication with suppliers and involvement in supplier management improve suppliers' delivery performance and product quality, which further improves buying firms' financial performance.

Outsourcing

It is argued that organisations can improve their asset utilisation either by generating additional sales with the level of assets unchanged or by maintaining the same level of sales with fewer assets employed (Johnson and Templar, 2011). This is one of the main drivers behind the prevalence of outsourcing, such as 3PL, where fixed assets appear "off-book" (Christopher and Ryals, 1999). It is argued that outsourcing can generate positive contributions to firms' financial performance and there is an optimal level of outsourceability that can maximise the benefits (Shi and Yu, 2013), but many empirical studies do not support this assertion, especially in the SME context.

After distinguishing peripheral outsourcing and core outsourcing, Gilley and Rasheed (2000) hypothesise that firms extensively outsourcing peripheral business activities tend to have better financial performance, while core outsourcing is negatively associated with financial performance. However, based on the regression analysis of survey data from 94 US manufacturing companies, they find neither type of outsourcing is related to financial performance.

Given the most frequently outsourced business function in SMEs is logistics, Solakivi et al. (2011) analyse self-reported data regarding the intensity of logistics outsourcing and the secondary financial data of 223 Finnish SMEs. They empirically contend that logistics outsourcing has no significant relationship with SMEs' logistics costs, logistics performance, and the overall financial performance measured by profitability. This insignificant relationship can be explained by hidden costs associated with outsourcing which tend to be overlooked by managers, including additional transport costs, communication charges, risk costs, and costs arising from incompatible organisation cultures and systems (Meixell et al., 2014). Because of the small production and sales volumes, the financial benefits reaped by SMEs from outsourcing can hardly offset the additional costs generated.

Sustainable Supply Chain Management

Sustainable SCM refers to an initiative “which manages the material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements” (Seuring and Müller, 2008, p.1700). The main objective of sustainable SCM is to achieve a balance among firms’ economic, environmental, and social performance. Although many studies have demonstrated the positive relationship between sustainable SCM and the financial performance of large companies (e.g., Carter et al., 2000; Ortas et al., 2014; Wang and Sarkis, 2013), this relationship is inconclusive in SMEs.

Through analysing the data from 312 SMEs in a province in South Africa, Mafini and Muposhi (2017) identify that environmental SCM, including green procurement, green logistics, and green manufacturing, positively influences SMEs’ financial performance through environmental collaboration. However, the single geographic focus and the convenience sampling approach adopted in this study constrain its reliability and generalisability. Sueyoshi and Goto (2010) collect data from 220 Japanese manufacturing firms and find a positive linkage between environmental performance and financial performance of large firms, while this association is insignificant in SMEs. Thus, they argue that environmental performance is currently not the priority for SMEs and SMEs also lack the ability to yield financial benefits from their environmental investments.

Conclusion

Based on the discussion, a model that summarises the performance drivers in the supply chain that influence SMEs’ financial performance is established and shown in Figure 2.

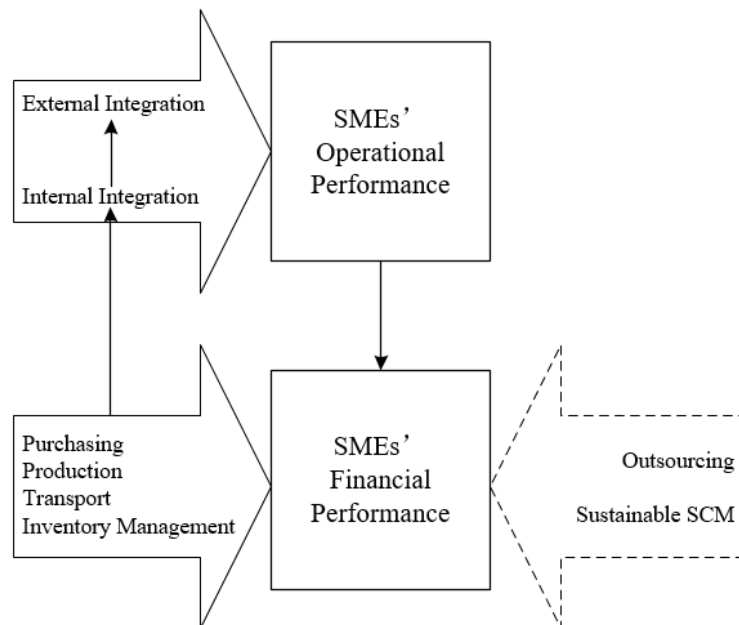


Figure 2 – Model of Performance Drivers in the Supply Chain for SMEs

In conclusion, SMEs can capitalise on their internal functions and management to improve their financial performance directly, including purchasing, production, transport, and inventory management. Moreover, internal integration and external integration can also enhance SMEs’ financial performance indirectly through operational performance, highlighting the importance of supplier as well as customer relationship management for

SMEs. However, because internal integration is a prerequisite for external integration (Huo, 2012; Yu et al., 2013), it is suggested that SMEs do not rely on their external supply chain members to improve their financial performance until those SMEs fully take advantage of their internal functions and have adequate levels of internal integration. On the other hand, it is found that SMEs can hardly benefit from outsourcing and sustainable SCM because of some hidden costs associated. Therefore, SME owner-managers should be careful when making decisions regarding outsourcing and sustainable practices. The next step is to empirically validate the above proposed model of performance drivers for supply chains of SMEs.

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