

Joining the Dots: Sustainability Impact on Operational Performance in Luxury Fashion Supply Chains

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Abstract

Recently, both researchers and practitioners have paid attention to sustainability issues in the fashion industry. Yet, in spite of the topic's significance, a structured analysis is missing. First and foremost, environmental and social aspects of sustainability have not been investigated simultaneously. Furthermore, the linkage between sustainability and operational performance is yet to be explored. This research thus aims at examining how sustainability could influence operational performance of a fashion company. Based on the resource-based view, a model has been developed to describe how an effective sustainability strategy could serve as a significant instrument that enable luxury fashion companies to improve their operational performance to act more competitively. To this end, some existing research needs are responded by providing a scientific exploration to the mixed results about the relationship of social and environmental sustainability practices and operational outcomes.

Keywords: Luxury fashion industry, Social sustainability, Environmental sustainability, Corporate sustainability strategy, Sustainable supply chain management, Operational performance, Case study research.

1. Introduction

Sustainability has become a topic of increasing interest in operations management (OM). Previous studies address that implementing sustainability practices could result in improved company performance (Ageron, Gunasekaran, & Spalanzani, 2012; Schoenherr, 2012; Seuring & Müller, 2008; Vachon & Klassen, 2008; Yu, Chavez, Feng, & Wiengarten, 2014). Similarly, Kleindorfer, Singhal, & Van Wassenhove (2005) stress that a proactive environmental management strategy and an improved health and safety performance could enrich plant-level productivity. Dües et al. (2013) articulate that sustainability could be a catalyst for successfully implementing lean practices. Relatedly, Godart & Seong (2014) emphasize that process efficiency can be ensured by fostering sustainability along SCs. Similarly, Azevedo et al. (2011) justify that the use of sustainably sound materials could help reduce storage which represent operational cost savings and waste reduction. Hence, there is escalating evidence that sustainability management practices provide companies with the opportunity to reduce the negative impact on the environment (Alexander, Walker, & Naim, 2014; P. de Brito, Carbone, & Blanquart, 2008) while contributing to the improvement of operational performance (Beske & Seuring, 2014; Blome, Paulraj, & Schuetz, 2014; Vachon & Mao, 2008; Varsei, Soosay, Fahimnia, & Sarkis, 2014).

Nevertheless, some other studies stress that a positive empirical relationship between sustainability management and company performance does not exist. Gimenez, Sierra, & Rodon (2012) argue that environmental and social management practices do not always lead to cost advantages. Similarly, King & Leonx (2009) argued that environmental management systems could be provoked by quality implementation, nevertheless those practices do not lead to either emission reduction or improvements on-site treatment. Correspondingly, cost

reduction would not have been achieved. Porter & Kramer (2006) further argue that sustainability –when not fully embarked- could jeopardize reputation and competitive advantage. Prior studies stress that an empirical investigation is needed to justify the impact of sustainability strategy on OM. Therefore, it could be stressed that negligible research has explored the mechanisms through which sustainability influences OM.

The previous concerns of OM thus need to be expanded into a threesome to incorporate social, environmental, and economical considerations, especially in energy intensive industries. Hence, it is important to drive the focus toward one specific industry to underline the relevance and the need of sustainability. In this sense, the textile and garment industry has always been big, significant and highly revolutionary. The worldwide fashion market still significantly grows and the global fashion industry is expected to account for €1,512 billion by 2018 (MarketLine, 2014). Nevertheless, this growth jeopardizes numerous patterns. The usage of wool and fibres has a high impact on the environment, production is massively depending on non-renewable energy resources, and the global context of the industry requires overseas production resulting in large social impacts. During the favourable economic situation of the 1990s, companies were relatively reluctant to respond to concerns over social and environmental needs, yet with today's global economic uncertainty, a renewed focus to sustainability is highly needed in fashion operations. However, there are several challenges to execute sustainable supply chain management (SSCM) in the fashion industry. The justification of sustainability is hard to quantify and ensuring compliance in global SCs, in particular when there are multi-tier suppliers, is difficult. Growingly scarce natural resources and rising commodity prices represent critical variables for fashion companies to improve the overall performance.

Based on the insights from resource-based view, this study attempts to synthesise both existing and new elements in a comprehensive model to demonstrate how a luxury fashion company's sustainability strategy could influence the operational performance. The impact on operations supposedly occurs via a process through which a fashion company implements social and environmental practices to develop solutions. Given that sustainability in OM has received limited attention (Ageron et al., 2012) and the luxury fashion industry is yet to be explored from OM perspective (Brun et al., 2008), these calls are responded to justify that distinctive resources such as sustainability strategy, collaboration with suppliers and proactive practices in the form of 3BL, could enable a luxury fashion company to improve its operational performance. Lastly, by illustrating the effective role of sustainability management within OM, this study extends the growing literature on SSCM (Caniato, Caridi, Crippa, & Moretto, 2012; Vachon, 2007; Yu et al., 2014; Zhu, Sarkis, & Lai, 2008). The paper is organized as follows: Next section highlights the theoretical background followed by research framework and design. Results are revealed in the following section that will be concluded with conclusion.

2. Theoretical Background

2.1. Sustainability and Luxury Fashion Supply Chains (FSCs)

During the last two decades, significant efforts have been made to increase the functional properties of FSCs (Vermeulen & Metselaar, 2015), however prior research fails to channel a rigorous perspective of OM linked with the luxury fashion industry. A typical FSC encompasses several activities such as inbound and outbound transportation management, inventory management, warehousing, sourcing and procurement, packaging, assembly, and customer service (Castelli & Brun, 2010) in which material and information flow take place at upstream and downstream levels. Due to the globalization, FSCs have become interrelated, and fashion companies handle a number of business functions outside their own countries. In order to advance the business performance, operations throughout the chain should be coordinated with other partners in the network, featuring material suppliers, manufacturers,

brand owners, retailers, and end-consumers. Henceforth, fashion companies should adopt a long-term horizon in which social movements, current changes, and environmental issues must be considered simultaneously. In this context, sustainability could be considered the most challenging issue since a holistic approach is required. The fashion industry is one of the most polluting industries because of globally dispersed SCs. For instance, cotton production is estimated to account for more than 10% of all synthetic pesticides used globally every year (Achabou & Dekhili, 2013). Similarly, one ton of fabric accounts for 200 tonnes of water pollution (Nagurney & Yu, 2012). Carbon dioxide (CO₂), produced by burning of fossil fuels in vehicles, is the most significant GHG emitted by fashion retailers (McKinnon & Edwards, 2014), and it has been estimated that trucking operations account for 15-20% of total CO₂ emissions. However, it is still controversial to what extent the majority of fashion companies would truly sacrifice their self-interest and big profit margins to invest in sustainability and produce ethically sound products.

An improved environmental performance could be a significant driver of superior quality (Pil & Rothenberg, 2003), similarly environmental collaboration with upstream suppliers leads to an improvement of quality performance in the context of product durability (Vachon & Klassen, 2008). Implementation of environmental technologies, on the other hand, could reduce operational costs and reduce long-term risks (Bourlakis, Maglaras, Gallear, & Fotopoulos, 2014; Schoenherr, 2012). It could be suggested that by implementing such practices, inefficiencies in existing SC processes could be recognized and then improvements could be accomplished. However, aforementioned studies were conducted within different industries, and the luxury fashion is untouched when it comes to sustainability within OM. The luxury fashion companies could substitute polluting inputs with more environmental friendly alternatives in the production process and further implement recycled and upcycled materials. Furthermore, companies could further meet growing customer demands for sustainability. For example, Stella McCartney is active on biodiversity and is currently utilizing 'Eco Alter Nappa' material with a coating composed of 50% vegetable oil. Saint Laurent Paris launched the 'New Vintage' collection created by the utilization of recycled fabrics from previous seasons. Hermes developed the 'Petit H' collection by using cast-offs. Burberry seeks advancements in leather traceability, while Bottega Veneta sources wood from sustainably managed forests. To this end, it is equally important to examine to what extent a luxury fashion company's operational performance could be affected by the execution of SSCM.

2.2. Sustainability Impact on Operations Management

Performance measurement is important to control and execute OM. Thus, any company in the SC, regardless of its position in the chain, could utilize performance measures to assess the impact of sustainability on overall SC performance. For example, Turker & Altuntas (2014) address that SSCM could help avoid risks and improve performance on speed and quality. Schoenherr (2012) similarly suggest that environmental initiatives could have a positive influence on a plant's quality and flexibility performance. Implementing green practices could have a positive impact on lean practices (Dües et al., 2013) while first mover advantage could be gained through sustainability (Beske & Seuring, 2014). Pookulangara & Shephard (2013) endorses brand reputation through ethical considerations. Pil & Rothenberg (2003), on the other hand, highlight the fundamental impact of product durability that is linked with superior environmental management performance. In this vein, sustainability, when fully embarked, could recuperate production flexibility, product customization and response times. Shorter lead times (Ageron et al., 2012; Azevedo et al., 2011; Carter & Rogers, 2012; Vachon & Klassen, 2008), on time delivery (Turker & Altuntas, 2014; Vachon & Klassen, 2008; Yu et al., 2014), process efficiency (Aakko & Koskenurmi-sivonen, 2013; Blome et al., 2014), innovation capabilities (McKinsey, 2009; P. de Brito et al., 2008; Seo, Dinwoodie, & Kwak,

2014), and stakeholder engagement (Dutta, Lawson, & Marcinko, 2012; Govindan, Diabat, & Madan Shankar, 2014) could be secured through sustainability integration into SCM. Yet, some other studies stress that a positive empirical relationship between sustainability management and operational performance does not always exist. Besides, it is questionable to what extent abovementioned facts are relevant in the context of luxury fashion. In this sense, this study provides an exploration and a novel contribution by providing fashion companies with a useful guidance in a balanced way. Accordingly, the next section specifically describes where this research is grounded in the theory.

2.3. Resource-Based View

The theoretical ground of this research is the resource-based view. This theory suggests that a company could secure the competitive advantage in the market since its internal resources are valuable, exceptional and hard to substitute (Grant, 1991). In the context of this research, it is proposed that a company's sustainability management strategy could be considered an important strategic resource.

Luxury fashion companies with a proactive sustainability management strategy could take steps to reduce the negative environmental and social impact, identify the competitive advantage linked with social and environmental sustainability practices, and enhance their operational performance outcomes. A company with a proactive sustainability management strategy has such distinguishing resources. These distinctive resources consist of physical assets, technology, human capital, organizational capabilities, and intangible capitals such as reputation and loyalty. Hence, implementing sustainability practices and using such significant resources could increase a company's capability to engage in continuous learning on the generation of new organizational and operational performance improvements.

The natural resource-based view (NRBV) has emerged as an extension of RBV by considering the natural environment. This theory is interesting for this study as it addresses that there are natural resources and capabilities to generate a sustainable competitive advantage (Grant, 1991). Following these perspectives, this research argues that a company's proactive corporate sustainability strategy is bound to improve the company's operational performance. The higher level of environmental and social integration would result in a stronger association with sustainability and operational performance.

3. Research Framework and Objectives

3.1. Research Questions

The literature review has already shown some gaps in research on sustainability in the fashion industry and its impact on operational performance. This study seeks to fill some of these gaps by including environmental and social sustainability, and the impact of sustainability strategy on OM in a complete model. Given the high complexity of the industry, the analysis must focus on more specific segments. Sustainability has been becoming a core business priority for many fashion companies for its significance in value proposition and for its relevance in competitive market conditions. In this vein, to determine to what extent operational performance is influenced by sustainability strategy, a luxury fashion company that expends great efforts toward sustainability has been examined. The company has implemented some incremental changes to their traditional business model and SC structure. From this point forward, the sample company is referred as 'Modest Green International Luxury' (MGIL), because it is an international luxury group, manages its well-known sub-brands, and pursues incremental practices to achieve better results. Even though the role of sustainability in SCM in the fashion industry has been investigated, due to the high complexity of SC structures, there is no complete framework addressing all possible sustainability practices. Finally, the impact of sustainability on operational performance has revealed mixed results thus far. To this end, following research questions were formulated.

RQ1: Which social and environmental practices form sustainability strategy in the luxury fashion industry?

RQ2: How is the operational performance influenced by sustainability strategy?

3.2. Research Model

Starting from an in-depth literature review, the different elements of the research framework was detailed. In order to further assess the sustainability impact on the operational performance, Figure 1 depicts the proposed research model. By putting ‘sustainability practices’ as a mediating factor, it examines how a proactive sustainability strategy could influence the operational performance of a luxury fashion company.

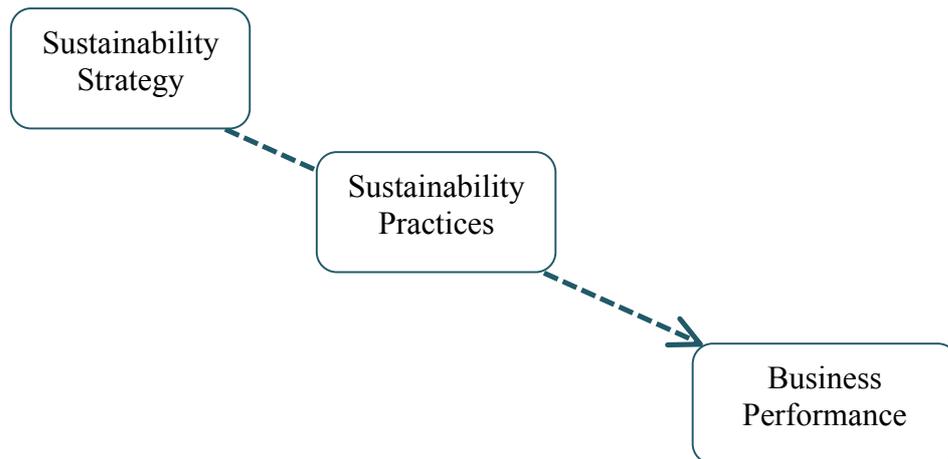


Figure 1 Proposed Research Model

Environmental and social sustainability practices have been formed based on the Three Dimensional Concurrent Engineering (3DCE) framework that was shown by Caniato et al. (2012) that it is suitable for examining sustainability issues. Earlier research stress the need to incorporate SC issues with product design and production planning, thus creating the 3DCE is important (Fine, Golany, & Naseraldin, 2005). For instance, Fisher (1997) suggests matching SC with the product structure. In this vein, listing sustainability practices of a luxury fashion company by encompassing product, process and SC is important to improve the decisions related to in-sourcing and outsourcing, sustainability assessment, logistic channels, supplier relations with all actors in the SCs. The analysis of performance has been focused on identifying the most relevant performance metrics that fashion companies are aiming to improve. Operational performance must be measured based on key performance indicators (KPIs) to monitor the progress. In order to test how sustainability practices influence operational performance outcomes, the main dimensions of SCOR model (Persson, 2011), and ISO 26000 Social Responsibility Guidance were considered.

3.3. Research Methodology

In this section, the adopted methodology is presented. Due to the exploratory nature of this research, the empirical research is based on a case study (Yin, 2009). According to Yin’s (2009) definition, a case study “investigates a contemporary phenomenon within its real-life context, especially when the boundaries between context and phenomenon are not clear”. The case study methodology was chosen as it is considered appropriate to describe and explore new phenomena to build new theories. Luxury fashion has always been associated with quality, high specialization and differentiation. Undoubtedly, Europe is an important

residence for luxury fashion industry. In this vein, Italy emerges as one of the most significant countries in luxury fashion given the importance of leather quality, craftsmanship and the heritage of Italian brands. Correspondingly, ‘Made In’ is considered an important merchandise mark indicating that a product is planned, manufactured and packed in a specific country. In this vein, ‘Made in Italy’ signature is widely used to specify the uniqueness of Italian luxury. Therefore, there are strong links to be observed among SC actors, and in order to fully grasp the body of knowledge and interpret what could be improved in luxury fashion SCs, examining a brand owning Italian luxury fashion company was extremely valuable. Determining some boundaries was crucial. It was decided to create a diverse sample by bringing different commodities together to analyse different contexts and to interpret convergent and contrasting results. However, the current study is focusing only one luxury BO, nonetheless this sample limitation will be overcome by enriching the number of cases to represent a comprehensive examination through a reliable number of companies.

MGIL was considered progressive in terms its attitude toward sustainability and market presence. Table 1 illustrates the main characteristics of the sample company. A semi-structured interview tool was developed to collect data on key variables of the research framework. The subjects had the possibility to freely describe the company through the answers to open questions. However, an adaptive process was followed since some questions were formulated during the interview, and irrelevant questions were dropped. The research team conducted interviews that were recorded and then reports were prepared. After the data collection, data analysis was conducted by aggregating the questions into main groups, corresponding to the main sections of the protocol, i.e. company characteristics, sustainability strategy, and operational performance. The results obtained through the case analysis have been used to fill the tables and discussed in the next section.

<i>Case Study</i>	<i>A</i>
Product Typology	Luxury fashion, leather, outdoor
Revenue (Million €)	> 1000
No of Employees	> 1000
Country of Origin	Italy
Basic Description	International luxury fashion brand

Table 1 The Sample Characteristics

4. Results and Discussion

In this section, the results obtained through the empirical analysis are described. Table 2 displays what MGIL deploys in terms of social and environmental practices in product, process and SC levels in accordance with 3DCE.

<i>Product</i>	<i>Process</i>	<i>Supply Chain</i>
Product LCA	Low energy consumption	Supplier assessment (1 st tier)
Sustainable packaging	Cleaner production	Restricted substance list policy
Low chemical substances		Direct control of suppliers
Natural raw materials		Development programs
Labour practices		Training activities
Training activities		Education

Table 2 Social and Environmental Practices throughout the SC

Results revealed that MGIL performs a life cycle assessment for its top-selling product. During the interviews, it was revealed that this application was the first in the market through which a first mover advantage was gained. Furthermore, understanding the environmental impact resulted in further improving packaging materials. Foremost, the company has been working on a strict monitoring of chemical substances. First tier suppliers are strictly monitored to comply with the list of restricted substances list. However, in order to improve the overall sustainability performance of the entire SC, this action is suggested to penetrate into further stages.

The company does not outsource services from low cost operating countries. In this sense, sourcing and production is handled within Europe. In terms of social aspects, due to the European regulations, situation is not as problematic as it is in the fast fashion segment, however improvements are required. Training activities are provided to enhance health and safety performance. Yet, it was observed that social aspects are less rigorous compared to what is accomplished in the environmental categories. In terms of process, a company pays a good attention to low energy consumption facilities. It could be thus suggested that cleaner production must be further endorsed within the industry by transforming good practices through further communication.

Lastly, SC level was investigated to suggest the best practices and leave the room for some improvements. Supplier assessment is employed to a great extent, however the biggest limitation was observed due to the fact that monitoring is done only for the direct suppliers. However, considering the length of fashion SCs, such assessment must be introduced in further stages. Development programs to improve sustainability performance are deployed by the company. This could suggest that training activities and education must be ensured to embark sustainability in the industry where SC encompasses multiple actors. Chemical usage emerges as an essential topic, which is strictly monitored and pushed beyond the regulations. Earlier research highlights that integrating suppliers could also facilitate outsourcing and external acquisition possibilities that could ease the internal complexity. In this vein, collaboration with suppliers is justified to bring financial and non-financial benefits.

Table 3 depicts what emerge as operational outcomes subsequent to sustainability implementation. Case study results suggest that a proactive sustainability strategy could have a direct and positive effect on a luxury fashion company’s operational performance. Thus, it could be stressed that win-win opportunities could exist for companies taking measures for environmental and social management. It also appears that when fashion companies pursue a proactive sustainability management strategy, supplier engagement could be better improved.

<i>Sustainability Strategy</i>	<i>Outcomes</i>	
	<i>Direct</i>	<i>Indirect</i>
Corporate governance	Improved corporate culture	Higher response rate to demand
Labour practices	Employee loyalty	Improved product quality
Environment	Compliance with laws	Process improvement
Supplier assessment	Enhanced supplier relations	Increased productivity
Restricted substances list		Risk reduction
Product assessment		Customer satisfaction

Table 3 Sustainability Impact on Business and Operational Performance

It could be highlighted that environmental collaboration with suppliers, assessment of social aspects, and training activities could form an effective strategy to increase know-how and knowledge sharing procedures. Product life cycle assessment and low energy consumption facilities could advance the performance. Thus, a luxury fashion company is suggested to focus on developing innovative yet sustainable solutions based on their internal resources. If a

luxury fashion company has limited resources in terms of human capital and organizational capabilities, it could implement some minor adjustments in already existing products and/or management processes to further performance improvement. Yet, if a company has significant resources to implement further techniques, a more thorough approach into sustainability management is suggested to improve operational performance. This suggestion takes place due to the fact that greater benefits could be achieved by introducing more radical changes in sustainable products and processes. It could be concluded that achieving a high level of sustainability integration along the SC is critical and requires the development of a consolidated information flow, the optimization of logistics, the know-how transfer, and a reliable relationship among members.

Through quality and heritage, luxury brands could effectively offset some of the sustainability related issues. While quality is a critical success factor for luxury, a long history and heritage of luxury fashion could create a better value for a holistic ecology by fulfilling societal and environmental needs. Furthermore, results support the previous findings (Pil & Rothenberg, 2003; Schoenherr, 2012; Vachon & Klassen, 2008) suggesting that sustainability could enhance product and process quality. Case results proved that sustainability must be embarked through a holistic approach during the main phases of product, process and SC. Product design is an important stage where the impact on natural resources is determined. Thus, sustainability practices and fair trade principles must be introduced from such early stages to gain performance improvements. Sourcing is an essential step during which environmental impact is heavily generated. Thus, sustainable sourcing must be further endorsed in the industry and supplier assessment must be strictly ensured. Production, on the other hand, must be enhanced to reduce energy use and greenhouse gases emissions.

Utilizing verified materials and sustainable sourcing strategies could ensure value creation and risk reduction along the value chains. This result supported the previous findings of (Alexander et al., 2014; P. de Brito et al., 2008; Satam, 2012; Vachon, 2007). Nonetheless, some contradictory results were also obtained. Earlier research stress that SSCM could improve on-time delivery and shorter lead times (Ageron et al., 2012; Azevedo et al., 2011; Carter & Rogers, 2012; Vachon & Klassen, 2008); however, the case of a luxury fashion company showed that supplier assessment, audits and training activities take longer time than expected (compared with other industries), therefore suppliers mostly fail to provide on-time delivery and advance response time. This interesting result suggests that sustainability integration in the luxury fashion SC has not brought an improvement in the area of responsiveness and flexibility. Yet, this result could be linked with the limitation of the study, that is, a single case study. Thus, other cases must be conducted to elaborate the results to achieve a consensus. Waste reduction, efficiency and emission reduction could be enlisted important outcomes that could be gained out of sustainability implementation. Process improvement was justified to achieve this way. On the whole, significant paybacks would come from sustainability alignment and the utilization of fair trade and environmentally sound principles. Luxury fashion could activate some direct and indirect benefits from which competitive advantage; value creation and customer satisfaction could be further reached.

5. Conclusion

This study shows how a luxury fashion company's proactive sustainability strategy could influence performance outcomes. The results contribute to the literature by broadening the understanding of the relationship between corporate strategies and operational performance areas of SCs. Social and environmental practices suggested here could be considered intermediating factors for a company's performance improvement. Thus, the first contribution of this study is made by examining the process as a way to explore and channel a better understanding to the mixed results of the relationship between sustainability strategy and operational performance. In this vein, a solid contribution was made to the growing SSCM

literature by joining the dots between sustainability and OM. On the whole, luxury fashion industry, which has widely been investigated from marketing point of view, was examined from an SCM perspective. The notion that environmental and social management, supplier collaboration, assessment and knowledge sharing are distinctive resources that enable a company to improve the performance is explored and further elaborated within this study. Such findings provide managerial as well as theoretical insights to the understanding of the nature of the relationship between sustainability management and operations. Several research needs are responded by justifying how sustainability could be a significant resource for the fashion industry to increase the competitive advantage.

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