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# Exploring replenishment in the luxury fashion Italian firms: evidence from case studies

Luxury  
fashion  
Italian firms

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## Abstract

**Purpose** – The purpose of this paper is to investigate how luxury Italian fashion companies manage the replenishment process, and how they leverage supply chain (SC) to be able to match supply and demand of fashion products.

**Design/methodology/approach** – Literature review was the first step performed; then, a case study research has been conducted in order to have a comprehensive view of the real context of luxury Italian fashion companies concerning merchandise planning and replenishment processes. After the sample was individuated, a questionnaire has guided the interviews and then data have been collected. Analysing data has concerned a primary case analysis and then cross-case patterns have been searched. Finally, several variables coherent to the aim of the study have been pinpointed and a framework has been designed.

**Findings** – The paper provides a characterization of the luxury Italian fashion industry concerning merchandise planning constraints and the replenishment processes. To guarantee the flexibility required to match supply and demand when there is a high percentage of seasonal products in the collection, companies leverage on both downstream and upstream SC alignment.

**Originality/value** – The enhancement of performance within the fashion SC is a topic not too much examined in depth, in particular referring to the luxury fashion companies and to the Italian context. Aligning upstream and downstream activities, information sharing between vendor and retailer and securing strategic alliances with the suppliers constitute important steps to reach flexibility and reactivity and to be in step with the market needs. The paper provides valuable insights to companies that are trying to decrease their lost sales and to increase their sell-out and customer service through a review of their SC processes.

**Keywords** Luxury, Fashion, Alignment, Supply chain management, Replenishment

**Paper type** Case study

## 1. Introduction

Managing fashion products is challenging, not only for creative and stylists, but also for supply chain (SC) managers. Customers are more and more demanding high product variety and innovative products (Caniato *et al.*, 2013), and competition in the fashion industry is more and more centred on the ability to react timely to changes in customers desires. Therefore, fashion companies have to balance the need to reduce lead times of the collections, while minimizing stocks and the obsolescence risk. In this context, being able to manage the SC, e.g., by achieving partnership between all the SC players, is becoming a strategic imperative in the fashion industry.

These represent highly ambitious objectives, given the key characteristics of the fashion product (Christopher *et al.*, 2004): short life-cycles, high volatility



(the demand for these products is rarely stable or linear), low predictability and high impulse purchasing.

To be able to cope with such challenges, fashion companies have to make the SC more flexible, by changing the way they manage their processes. Flexible SCs are able to adapt effectively to disruptions in supply and changes in demand whilst maintaining customer service levels (Stevenson and Spring, 2007). Moreover, increasing collaboration, both inside and among SC partners, is often seen as a powerful instrument in achieving effective and efficient SC management (de Leeuw and Fransoo, 2009), as well as higher SC agility (van Hoek *et al.*, 2001).

Being replenishment the process that encompasses all the activities related to the fulfilment of stores during the selling season, it is the one key process to be managed to increase company ability to be closer to the customers and ready to the new emerging trends. Researchers have proposed different approaches to redesign and automate it (Iannone *et al.*, 2013), e.g., identifying the variables influencing the replenishment process.

The paper presents a case study research conducted in a sample of Italian luxury fashion companies with the aim to study the replenishment process in the fashion luxury industry, and how they coordinate with the other partners of their SCs to be more effective and demand driven.

Many classifications concerning the fashion industry exist in literature. Saviolo and Testa (2005) distinguish five market segments basing on price and quality of the products: Couture (or High Fashion), Prêt-à-porter, Diffusion, Bridge and Mass. Moving from the high fashion to the lower segments companies sell products having less quality and a lower price. High fashion companies favour style and premium quality and their products are often unique pieces (Brun and Castelli, 2013). The most important critical success factors (CSF) are brand image, innovation and quality (Bandinelli *et al.*, 2013).

François Pinault (founder of the Kering holding company) identifies three different market segments, basing on price: high luxury, accessible luxury and mass market. The first one is based on exclusivity and unaffordable price and firms belonging to this category are almost trendsetters. The accessible luxury companies focuses on the availability of the product to the customer and the price is still high, but affordable. Finally, the mass market is centred on low price and its companies are essentially trend followers.

Another important classification that will be a leitmotiv within the paper is that one concerning the product classification, distinguishing from basic, seasonal and fashion (Şen, 2008). Fashion products, with a ten-week product life (approximately 35 per cent of the market); seasonal products, with a 20-week product life (approximately 45 per cent of the market) and basic products, sold throughout the year (approximately 20 per cent of the market).

Given this background, the paper is arranged as follows. Section 2 presents a literature review about the fashion merchandise planning, showing also the main characteristics of the replenishment process. Section 3 better outline the research questions whilst in Section 4 the methodology is presented, introducing the main features of the companies involved in the performed case studies. Section 5 regards the findings of the research, as an analysis of the results. Finally, Section 6 presents some concluding remarks and suggests further developments.

## 2. Literature review

In this section a presentation of the main literature about replenishment process is provided. It should be noted that replenishment process is highly connected to the merchandise planning process. In fact, on the one hand, variables, e.g., the planned overproduction, defined during the merchandise planning process influence how the

replenishment process has to be managed. On the other hand, the merchandise plan definition and the percentage of the OTB used by the companies, derived from the product's characteristics (e.g. seasonable or not) and the characteristic of the SC (e.g. production offshored or outsourced) can determine several constraints to the replenishment process.

Moreover, both replenishment and merchandise planning are processes specific of fashion companies: authors like Şen (2008) and Jacobs (2006) wrote about their main characteristics and implication in the fashion companies.

The merchandise planning process includes all the activities of planning the delivery of finished products to retailers before the beginning of the season and the continuous improvement of the delivery plan during the season (Şen, 2008). At this level, every item is defined uniquely through a code named Stock Keeping Unit (SKU). Main actors of this process are the merchandise manager and the buyers of the stores. Buyers are in charge to decide what (the SKUs) and how much (the quantities) have to be delivered to the stores. The merchandise manager, supported by the operation manager, has the responsibility to ensure the production and the delivery of the products to stores. The buyer's decisions are controlled by a budget set by the merchandise managers. A buyer's budget is usually updated each season based on his performance and consumer trends in the apparel line she/he is buying.

The replenishment process encompasses all the activities carried out by the retailers and the brand owning companies to issue and gather orders, allocate and delivery products from the company warehouse to the stores, within a season. Replenishment programmes can be also used in order to reduce merchandise planning process errors (Castelli and Brun, 2010).

### 2.1 *The merchandise planning process and the open-to-buy*

Şen (2008) provided a comprehensive analysis of the main processes carried out within the upstream and downstream SC. Within the second one, merchandise planning process and a particular metric known as OTB (Goodwin, 1992; Fiorito *et al.*, 1998), mostly used to in the in-season ordering, are described.

Merchandise planning process is performed by the brand owning company, and consists of planning finished product availability at the retailers, with the aim to offer consumers a balanced assortment of merchandise in the right store, at the right time, trying to meet corporate financial goals. In fact, merchandise plan errors result in either stock outs, thus margin lost, or excessive inventory levels (Abernathy *et al.*, 1999). Two different planning periods may be distinguished:

- (1) Pre-season planning: plans are developed at least six months before the selling season. Even if historical data are used to identify trends and seasonality, a proactive approach to management is crucial. The planner, in fact, must be farsighted and look to the future (e.g. planning promotional activities much time early), without renouncing to the opportunities to maximize profits and return on investment. In fact, since production and distribution lead times usually exceed the length of the delivery times expected by customers, production planning and procurement of raw materials have to start before the end of the order gathering period, using forecasts of total demand, thus increasing the complexity of planning (Ait-Alla *et al.*, 2014).
- (2) In-season planning: it ensures accurate management of the business through continuous comparison between current and planned pre-season performance.

Planner updates forecasting using data extracted from in-season sales and determines whether or not stocks are enough to support the demand. In this phase, planners use the abovementioned metric called OTB, which measures the deviation between planned stock and the stock on-hand, giving indications on whether or not to buy more merchandise.

In addition to pre-season and in-season planning, a third period should be considered (e.g. the post-season), in which analyses are conducted to evaluate the real performance during the selling season and the objectives previously determined.

The OTB represents the availability of funds for a given period, in order to reach the planned stock level. Therefore, the maximum amount of funds the buyer can allocate for new purchases OTB. OTB is calculated using the following formula (Şen, 2008):

$$\text{OTB} = \text{budgeted closing stock} + \text{budgeted sales} + \text{budgeted reductions (markdowns, thefts)} - \text{opening inventory} - \text{purchases already received} - \text{purchase orders placed but not yet received.}$$

The goal in using OTB as a control instrument is to align orders and loads to ensure the maximum result in selling with a minimum investment in merchandise.

The main goal of the entire planning in-season process is to control trends in a proactive way, optimizing inventory levels in order to maximize margins. In practice, OTB tries to maintain a minimum level of liquidity to enable purchasing activities or as a safety buffer, when sales do not reach the planned level.

The budgeted components of OTB, developed before the start of any season, comes from the corporate merchandising budget. First, demand forecasts are used to determine budgeted sales, which are then used to calculate the budgeted closing stock level. During the season, the opening inventory is updated by the flow of merchandise that occurred since the beginning of the season. This updates the OTB formula, which drives the new purchases, sales or reductions.

Such a system has two potential criticalities. First, the calculation of OTB uses only the predicted market demand (i.e. budgeted sales), without taking into consideration the uncertain nature of the fashion industry. Second, most retailers do not update their budgeted sales (thus budgeted closing stocks) during the season. Therefore, especially when the preseason forecast is conservative, the service level deteriorates, because of the fact that new orders can be placed only if OTB becomes available.

At soon as the season starts, some buyers choose to spend all of their OTBs, some others choose to hold back some of their OTBs for opportunistic buying placed after a more understanding of popular styles, colours and trends of the current season. Initial orders constitute between 60 and 100 per cent of the total order for a given product category (Bandinelli *et al.*, 2012).

Another important aspect of merchandise planning process is assortment planning, i.e., the process conducted by a retailer to decide how many and which products to include in the product line (Rajaram, 2011). Merchandise is grouped in various levels and each level is comprised of product subsets. The questions of how many and which products to include at each level relate to other basic issues such as determining the mix between basic and fashion products and the level of inventory depth and variety breadth for a given level of budgetary constraint.

## 2.2 *The replenishment process*

Replenishment management is one of the most critical tasks in the downstream SC in fashion industry (Castelli *et al.*, 2010). Literature supports that replenishment systems are used to mitigate merchandise planning errors, by employing demand estimation

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and multiple deliveries along the selling period to adjust merchandise volume and assortment (Hunter *et al.*, 1996; Kunz, 2005).

To this aim, replenishment process can be differently managed (Bandinelli *et al.*, 2012). In particular, during the selling season, brand owning companies may decide to develop and then sell other items than the one already launched into the market, or to replenish the products already presented to the customers. The first one is the case of fast-fashion companies (Bhardwaj and Fairhurst, 2010), that generate mini-collection during the selling season, such as Zara. They need a partnership with the upstream company able to create quickly new items, having massive raw materials stock. A fast fashion system is able to both design “hot” products that capture the latest consumer trends and exploit minimal production lead times to match supply with uncertain demand (Cachon and Swinney, 2011). In the latter case, brand owning companies have already developed their collection during pre-season and they react to retailers order for new quantities of the same item. This is the case for example of the companies producing Prêt-à-porter products. A mix of the two cases is also possible.

Because most fashion firms rely on other partners for an important part of their value systems, shortening the SC requires increased fine-tuning with these partners. From the moment that re-ordering becomes an important part of the business model, make more agile the pipelines is the main issue to be addressed (Jacobs, 2006).

Since 1990s, many authors focused their attention on automatic replenishment (AR), as a system enabling the improvement of collaboration and partnership among the main actors along the entire SC. In fact, AR systems trigger inventory restocking by immediately identifying what has been sold and the actual needs of the store, rather than relying on long-range forecasts and layers of safety stock (Bandinelli *et al.*, 2012). Nowadays a number of AR programmes are in use. The most common type includes Vendor-Managed Inventory and Continuous Replenishment Programs. Industry-specific programmes such as Efficient Consumer Response in the grocery industry and Quick Response (QR) in the apparel industry have also been developed.

**Q2** QR has been widely adopted by fashion retailers (Al-Zubaidi and Tyler, 2004; Birtwistle *et al.*, 2006) and their suppliers in response to the fast fashion trend, and it is focused on the possibility for retailers to store and replenish stock using customer demand rather than forecasts. This is done by applying an industry standard in information technologies (e.g. barcode, EDI, shipping container marking, roll ID, etc.) and contractual procedures among the SC members (Ferne and Azuma, 2004).

The most significant difference between QR and more traditional apparel SCs is the focus on collaboration and vertical integration in order to improve efficiency in the SC. Like agile SCs QR SCs are considered to be information driven, but rely on a measure of trust in sharing information. Within the fashion industry, QR is centred on the notion of minimal pre-season ordering, taking advantage of improved speed and flexibility in the SC by placing more frequent, in-season, small orders (Bruce and Daly, 2006). Production may be pre-booked, but final product specification is not confirmed until nearer delivery time: the proportion of OTB budget may increase significantly.

Several case study researches suggest that these programmes have been widely used in the Australian textile, clothing and footwear industry (McMichael *et al.*, 2000; Perry and Sohal 2001) and in the US apparel industry (Ko *et al.*, 2000).

The replenishment process is affected by several variables, related to upstream SC, downstream SC and structure of the collection offered by the brand owning company. Lead-times in the apparel industry are traditionally long (Mattila *et al.*, 2002). To reduce lead time, thus allowing for fast and frequent replenishment during selling period,

the SC should be changed. For example, shortening of the supply pipeline can be achieved by moving onshore production facilities, thus choosing local suppliers, by improving information exchange, and collaborative relationships between organizations along the SC (Ernst and Whinney, 1988; Al-Zubaidi and Tyler, 2004; Caridi *et al.*, 2010). Merchandise assortment has been found to affect the ability of replenishment strategies in mitigating merchandise planning errors (Yu and Kunz, 2010).

### 3. Research questions

Literature review has provided an overview of replenishment management-related issues. Different approaches emerged, due to the peculiarities related to the considered geographical area and businesses. In particular, literature has mainly focused on the management of replenishment process in the Australian and US companies. However, the specificity of Italian fashion luxury industry structure may show other approaches and solutions to the replenishment process management problem. Therefore, two research questions emerge:

*RQ1.* How do Italian fashion brand owning companies manage the replenishment processes in order to meet customer's demand?

Replenishment process can be differently managed, by mixing and matching the following elements: first, mini collections: replenishment of new item developed during the selling season; second, replenishment of all the product range already developed in the pre-selling season; third, replenishment of part of the product range already developed in the pre-selling season. Replenishment process is tightly linked to merchandise planning. Merchandise planning can be done both in pre-season and in-season, with a certain percentage of OTB, or only pre-season:

*RQ2.* How do these companies coordinate upstream and downstream SC in the replenishment process?

Coordination with upstream and downstream SC seems fundamental for assuring replenishment process efficiency and effectiveness. We aim at investigating how Italian companies manage the upstream and downstream SC in the replenishment process. In particular, as far as the upstream SC is concerned, literature suggests the following variables:

- (1) Degree of upstream SC alignment: it is measured against the level of vertical integration and the degree of information sharing with suppliers (Christopher *et al.*, 2004).
- (2) Degree of local sourcing: offshoring does not help the replenishment process, due to the costs of using suppliers that are inflexible and unresponsive to changes in demand (Christopher *et al.*, 2004).
- (3) Strength of suppliers' relationships: it measures the width of the supplier base and the strength of the relationships with suppliers. Replenishment is more suitable in case of single sourcing and the propensity for strategic alliances (Christopher *et al.*, 2004).

As far as the downstream SC, replenishment process is affected by the degree of downstream SC alignment (Castelli and Brun, 2010). In line with Castelli and Brun (2010), this variable encompasses several items presented in Table I. To measure the variable, a score has been assigned to each item according to Table I.

Finally, the percentage of basic products over the whole collection determines the frequency of replenishment: the longer the products' shelf-life is, the more frequent replenishments are (Jacobs, 2006).

This preliminary list has been integrated with the results coming out of the interviews and reported in Section 4.

#### 4. Methodology

In order to achieve the aim of the research, a case study research has been conducted to describe the SC of the luxury Italian fashion companies and to identify links between variables related to organization, process, information and management choices. In fact, case studies are normally used to gain a more in-depth understanding of the research, often in an effort to answer "how" and "why" questions (Yin, 1984).

**Q3** Multiple-case sampling was used to increase confidence in the findings (Miles and Huberman, 1984) and supports their external validity. The research involved a sample of seven fashion companies (Table II), belonging to the luxury fashion industry, internationally recognized and facing the challenge of competing globally. In order to be included in the sample, the fashion firms considered must have some key features: have at least a business unit in Italy, an international profile, to be medium or large fashion companies in different market segments and have been established in the fashion business for several years.

The cases investigated regard medium and large firms, who usually face great challenges in designing their collection and replenish products in their retail channels. In the fashion industry the number of SKUs treated by a company may be an indicator of its dimensions: companies interviewed manage at least 500 SKUs per season.

Most of the firms considered manage their own brands in Europe and Asia through Direct Operated Stores and franchising mono brand: the research is focused on brand owner companies. They belong to the higher segments of the fashion market and their core business is mainly based on apparel and accessories. This homogeneity is due to the features of the industrial area in which the case study has been conducted: the Tuscan-Emilian district includes especially apparel- and leather-based firms.

The sample appears more heterogeneous in the percentage of basic, seasonal and fashion product treated: in two cases, more than 50 per cent of basic product is managed, while in the other cases the seasonal product predominates. The companies' market segment is clearly reflected in the low percentage of products having a ten-week shelf life: high fashion companies generally launch two collections per year, differing by the mass cases such as H&M or Zara.

Items	Instances	Points (%)
Kind of information exchanged between retailer and manufacturer	Orders	25
	Sales information	25
	Inventory information	25
	Demand forecast	25
Communication tools	Telephone/fax	25
	Internet	25
	Barcodes	25
	Integrated information systems	25
Alignment through	Incentives	33.3
	Contract obligations	33.3
	Vertical integration	33.3

**Table I.**  
Items explaining the degree of downstream alignment

**Table II.**  
Sample

Case study	Employees	Turnover (Million €)	No of SKU	Interviewees' role	Fashion market segment	Main product	Percentage of basic product/seasonal/fashion	Assortment width	Channels
1	≈250	150	500-1,000	ICT Manager	Prêt-à-porter	Apparel	10/80/10	Low	R+F
2	> 100	100	500-1,000	ICT and Retail Managers	Diffusion	Apparel	0/90/10	High	R+F
3	≈120	45	> 1,000	ICT and Retail Managers	Diffusion	Apparel, Accessories	60/30/10	Low	R+F+W
4	≈394	230	> 1,000	ICT, Retail Managers and buying team	Prêt-à-porter	Apparel, Accessories	3/97/0	Medium	R+F
5	> 3000	625	> 1,000	SC Manager	High Fashion	Leather accessories	90/10/0	Medium	R+F
6	≈625	204	500-1,000	SC and Retail Managers	High Fashion	Apparel	0/100/0	Low	R+F
7	≈700	160	> 1,000	ICT Manager	Prêt-à-porter	Accessories, Apparel	20/80/0	Medium	R+F+W

**Notes:** R, retailer; W, wholesale; F, Franchisers

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The case study is a research strategy, which focuses on understanding the dynamics present within single settings. According to Eisenhardt (1989) a number between four and ten cases usually works well in these researches, so the considered sample is sufficient to give an accurate account in an empirical research.

A questionnaire has been designed in order to support the interviews conducted. The direct contact to SC and ICT managers allowed us to carry out structured interviews, often backed up by unstructured interviews and interactions. Multiple methods such as questionnaires, direct observations and content analysis of document has been used to perform data triangulation. The latter, through the employment of different methods of data collection, has been used in order to strengthen the validity of the research (Voss *et al.*, 2002). Data collected have been recorded and then analysed.

The interviews were carried out basing on a questionnaire divided into three sections. In the first one, general information about the companies have been gathered, e.g., the competitive context and the organizational structure; the second section is devoted to describe the features of upstream and downstream SC. Finally, the third section aims to understand how the companies decide to manage the replenishment process and consequently the OTB.

In order to become familiar to each case as a standalone entity a primary within case analysis has been performed. Then a comparison between the cases has been conducted and a cross-case analysis has been carried out. Moreover, qualitative and quantitative evidences have been combined: the qualitative data are useful in the understanding the rationale of theory, underlying relationships revealed in the quantitative data, or may suggest directly theories, which can then be strengthened by quantitative support (Eisenhardt, 1989).

#### 4.1 Case studies

Before reporting the case studies, it is important to present the full set of variables used in order to analyse the replenishment process. As introduced in Section 2, variables coming from the literature have been validated and, during the interviews, other ones have been introduced:

- enabling technologies implementation: the kind of technologies used to manage replenishment and coordinate with upstream and/or downstream SC partners;
- production restart of fashion collection: companies manage differently the production of fashion items during selling period;
- order frequency: the interval between and order from a store and the following one;
- trans-shipment: the movement of a good to a store and then to another store at the same level of the SC; and
- lead time: the replenishment lead time, i.e., the time needed from the re-order to the delivery of the product to the store.

This way, the full set of variables considered in this paper is reported in Table III. Any other alternative approaches has to be considered depending from the specific business and its needs and therefore not to be included in this list.

Case 1 sells basically apparel products, belonging to the high fashion segment. In season, replenishment of both retailers and wholesales is done by using goods stored in a central warehouse, both already produced before the selling season and

**Table III.**  
Case studies data

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7
Replenishment process management	Mimi collections and replenishment of all the fashion items during selling season	No replenishment, except for transhipment and substitution	Replenishment of part of the fashion collection	Mini collections	No replenishment, except for transhipment and substitution	Replenishment of part of the fashion collection	Replenishment of part of the fashion collection
Merchandise planning management	Pre-season planning and overproduction	Pre-season planning	Pre-season planning and overproduction	Pre-season planning and overproduction	Pre-season planning and overproduction	Pre-season planning	Pre-season planning
Degree of upstream alignment	Medium: the firm is vertically integrate	Medium: the firm is not vertically integrated and information sharing is not completely achieved	Medium: the firm is not vertically integrated and information sharing is not completely achieved	Medium: the firm is not vertically integrated and information sharing is not completely achieved	Low: the firm is not vertically integrated and information sharing is not achieved	Low: the firm is not vertically integrated and information sharing is not achieved	Medium: the firm is not vertically integrated and information sharing is not completely achieved
Degree of local sourcing	Medium: offshore for seasonal products, onshore for fashion ones	Low: offshore is a consolidated practice	Low: offshore is a consolidated practice	Low: offshore is a consolidated practice	Low: offshore is a consolidated practice	Medium: near shore	Low: offshoring is a consolidated practice
Strength of suppliers' relationships	Low: multiple suppliers without drawing up strategic alliances	Low: multiple suppliers without drawing up strategic alliances	Low: multiple suppliers without drawing up strategic alliances	Low: multiple suppliers without drawing up strategic alliances	Medium: several strategic alliances	Medium: several strategic alliances with skilled suppliers	Low: multiple suppliers without drawing up strategic alliances

(continued)

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7
Percentage of basic products	Low: majority of seasonal products High: ERP integrated to EDI	Low: majority of seasonal products High: ERP integrated to EDI	Medium: coexistence of basic, seasonal and fashion products High: ERP integrated to EDI	Low: majority of seasonal products Medium: ERP	High Medium: ERP	Low: majority of seasonal products Low: spreadsheets	Low: majority of seasonal products High: ERP integrated to EDI
Enabling technologies implementation	High: ERP integrated to EDI	High: ERP integrated to EDI	High: ERP integrated to EDI	Medium: ERP	Medium: ERP	Low: spreadsheets	High: ERP integrated to EDI
Kind of information exchanged between retailer and manufacturer	Orders, sales information, inventory information, demand forecast	Orders and sales information	Orders	Orders	None	Orders	Orders
Communication tools	Telephone, internet, barcode, IIS	Telephone, internet, barcode, IIS	Telephone, internet and barcode	Telephone, internet, barcode, IIS	Telephone and internet	Telephone and internet	Telephone, internet, barcode, IIS
Alignment through Production restart of fashion collection	Contract obligations Restart the entire collection	None	None	None	None	Contract obligations Restart part of the collection	Contract obligations Replacement campaign
Order frequency	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly
Trans-shipment	Yes	Yes	Yes	Yes	Yes	Yes	No
OTB percentage	≈20%	0	≈20%	≈20%	≈20%	0	0
Lead time	> 4 months (but shorter for fashion products manufactured onshore)	> 4 months	2-3 months	> 4 months	2-3 months	2-3 months	2-3 months

Table III.

manufactured during the season. The firm manages replenishment orders coming from all the stores, that are different in terms of shop dimensions (e.g. assortment), its geographic area and its flagship importance. A structured process for managing replenishment does not exist. Buyers use forecasts, trends and their experience without a standardized approach to pre-define the quantities to replenish. Retail manager makes the final decisions regarding replenishment. The configuration of the SC (e.g. production sites located outside Italy) does not permit to reduce lead times. Nonetheless, some suppliers are able to manufacture the entire collection within the season.

Case 2 sells apparel product and belongs mostly to the diffusion segment. The company has just opened its own retail channel. This innovation is the cause of lots of changes within the company. Each store (either retail or wholesale) makes a first order, at the beginning of the selling seasons, considering the entire new collection according to its demand forecast. The head of retail manages the replenishment process, analysing the top seller, the selling capability of the stores and the merchandise available in the central warehouse. In fact, stores are replenished with goods produced before the beginning of the season (based on a forecast), and then stored in a central warehouse.

Case 3 sells both apparel and accessories mostly for the diffusion sector. The company has both the retail than the wholesale channels, where is able to replenish goods in season, picking them from a central warehouse. Part of items of the collection can be manufactured again during the season, to be used for replenishment. A merchandise plan during the season supports the replenishment decisions: sell-out is weekly analysed to understand the product trend. The orders of the stores are coordinated: the store manager decides the replenishment quantities of the single store, whereas the district manager coordinates the overall orders, to be sent to the central warehouse.

Case 4 is a competitor of Case 1, since it sells the same kind of products in the same fashion segment (apparel in the high fashion segment). Orders depend from several variables, including the typology of store, (e.g. its number of shop windows), geographic area and selling performance. Store managers and buyers takes decision regarding the replenishment process without a structured process, according to the availability of products in the central warehouse composed by substituted items and a portion of overproduction decided before the selling season. Several replacement campaigns are also possible among the owned stores.

Case 5 sells leather accessories for the Prêt-à-porter sector. The replenishment process of this company differs from the previous ones, because it is managed locally by boutique managers. They have in fact the responsibility to decide which items to replenish. Items are replenished using merchandise available in the central warehouse. Orders are satisfied using first in first served rule: the first replenishment order arrived at the central warehouse is the first that is satisfied. When there is no more good in the central warehouse, replenishment orders are not satisfied any more.

Case 6 sells apparel product and belongs to the high fashion segment. The company owns a small part of flagship stores, taking advantage mostly of the wholesale channel. For each store, a list of “must have” has been decided. Based on it, during the season, the retail manager and the buyer together define whether and how much to replenish. Stores are replenished using good available in the central warehouse. The SC manager, together with the retail manager, may decide to restart the production of some items, if their lead time is compatible with market needs.

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Case 7 sells high fashion accessories and apparel products for the Prêt-à-porter sector. They do not restart the production during the selling season and replenishment orders are satisfied using overproduction of pre-season or replacement campaigns among the owned stores. Buyers and retail managers use the stores' sell-out information to monitor trends, to improve the replenishment process and to draw up the merchandise plan for the same season of the next year.

Table III summarizes the gathered data.

## 5. Findings

The seven case studies examined allowed us to identify the main characteristics of the sample in order to describe the Italian context and how Italian companies manage the merchandising and replenishment process. With the purpose to obtain comparable descriptions of the different firms, data obtained during the interviews has been organized in defining, as a first step, the typology of product sold by the firm and describing its SC structure. In the following sub-section several variables influencing the replenishment process are presented in order to perform a cross-case analysis and answer to the *RQ1*. Then, variables influencing the coordination between upstream and downstream SC have been deepened in relationship with the replenishment process, answering to the *RQ2*.

### 5.1 *The SC in the analysed sample*

The majority of the firms interviewed manages seasonal product. In fact, the Italian luxury fashion industry is based mostly on two seasonal collections (F/W and S/S); just in two cases the majority of product is basic because of the presence of accessories sold throughout the entire year. This evidence is coherent to the CSF that the firms choose as the most important: time to market and quality. These are two opposed factors because it is not easy to reach, at the same time, the maximum velocity in the market and a superior product quality. Time to market is the most critical time that has to be managed by an organization that seeks to compete successfully in fashion markets (Christopher *et al.*, 2004) and expresses the necessary time for the business to recognize a market opportunity and to translate it into a product to bring on the shelves. An agile SC and an automatized replenishment process may help companies who choose time to market as their CSF to be more efficient and effective.

Given this primary information about the firms, the case study research allowed us to investigate the SC structure of the companies interviewed. Even if each firm defines its pipeline according to its needing and strategy, it is possible to describe a generalized SC configuration. During the first interviews, we realized that the players and roles were almost the same in each organization.

The upstream SC is represented by the suppliers, who manufacture the merchandise. In fact, by analysing the collected data from the case studies, on average the companies in the sample are not vertically integrated. The consequence in the outsourcing of the manufacturing process is that the suppliers are often really far from the retailing zone (Asia and North Africa). The effect is a long lead time and the difficulty to restart production during the selling season. Consequently, the analysis of the sample reveals that the analysed companies seems to be not strongly integrated with suppliers neither. Coming to the variables related to management of onshore processes, companies tend to avoid strategic alliances with suppliers.

A set of central warehouses ensures to stock the end product; then, company-specific rules decide to assign products to retail stores or to the wholesaler. The downstream SC is dominated by the retailer, who sells in his owned stores, and by the wholesaler: both allow

the product to reach the final customer. Warehouses are present both in the central warehouses than in the stores.

Additionally, the case studies showed the importance of product development and style in the fashion industry: product design can make the product unique and the customer is really able to recognize it. In the fashion companies, style is the department that mostly influences the downstream SC: during the merchandise planning, managers have to respect the choices of the style department. Therefore, product development is an activity that is not outsourced in the companies interviewed. Instead, production is the most outsourced task in the sample considered: the rationale is that the firms prefer to take advantage of the cheap labour and to retain in house their know-how contained in the ideation and development of the product.

*RQ1.* How do Italian fashion brand owning companies manage the replenishment processes in order to meet customer's demand?

All the interviewed companies perform similarly the merchandise planning process. Interestingly, it is not as structured as literature suggests, nor it is divided into three phases. In fact, all the companies perform it only in pre-season. This might be due also the predominance of seasonal products in the merchandise assortment, and the length of the lead time (always more than two weeks). On the other side, the OTB is not applied in season, in fact it is low in all the cases, but retailers and store managers can resort on the planned (in pre-season) overproduction or transshipment. It should be noted that the cases resorting to overproduction, are those where an OTB is 20 per cent, with the only exception of Case 5 that also operates changes and return among retail stores in order to increase the OTB.

The pervasive role of style department in the process, normally used to more qualitative and creative approaches, make standardization of the same process difficult. Their decisions have an impact also on the other departments, which cannot define a budget independently. In the buying teams, the figure of the buyer emerges compared to the planner and the controller. Also the definition of OTB never follows the mathematic formula, but it is indeed treated as the amount of funds that the buying team decides to allocate for a particular SKU or collection.

Despite they share the same value of OTB (e.g. Cases 1, 3, 4 and 5 have 20 per cent), the same merchandise planning management approach and same lead time (less than four months), the interviewed companies show different approaches to replenishment.

The following main different approaches have been observed:

- (1) *No replenishment, except for transshipment and substitution:* this is the case of Cases 2 and 5. Case 5 manages mainly basic products, while updates every year its products with the main trends. In case of transshipment, it up to the store manager and retail manager to ask for the product availability to another store, and then the merchandise is exchanged among the stores. In case of substitution, merchandise is instead requested to the central warehouse. Then a change between different products having the same value is performed.
- (2) *Replenishment through mini collections or replenishment of part of the fashion collection:* Case 4 proposes several new mini-collections within the selling season in order to satisfy the needs of a customer more and more exigent. While Cases 3, 6 and 7 are able to replenish stores during the selling season, only with a part of the fashion collection. In these cases, store managers request the "best seller" products to the retail manager. This request is shared with production manager. If it is feasible, then, part of the fashion collection is manufactured again.

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- (3) *Replenishment through Mini collections and replenishment of all the fashion collection*: only Case 1 is able to replenish all the fashion collection during the season. As it happens for the case described above, store managers request products to the retail manager. If the demand of replenishment is higher than the availability in the warehouse, the retail manager, together with the production manager, can decide to manufacture the product again within the season. This process can be done for every SKU of the actual season, up to the entire collection.

As a result for *RQ1* it is possible to observe a general lack of use among the interviewed Italian fashion companies, differently from the experience reported in literature in Australia and USA, of frequent and in season replenishments by small orders. Therefore, it seems there is a difficulty in applying QR approaches in Italian fashion companies. This is exacerbated also by the fact that these companies, as it emerge from the case studies, have to manage a merchandise assortment made up mainly of seasonal and fashion products.

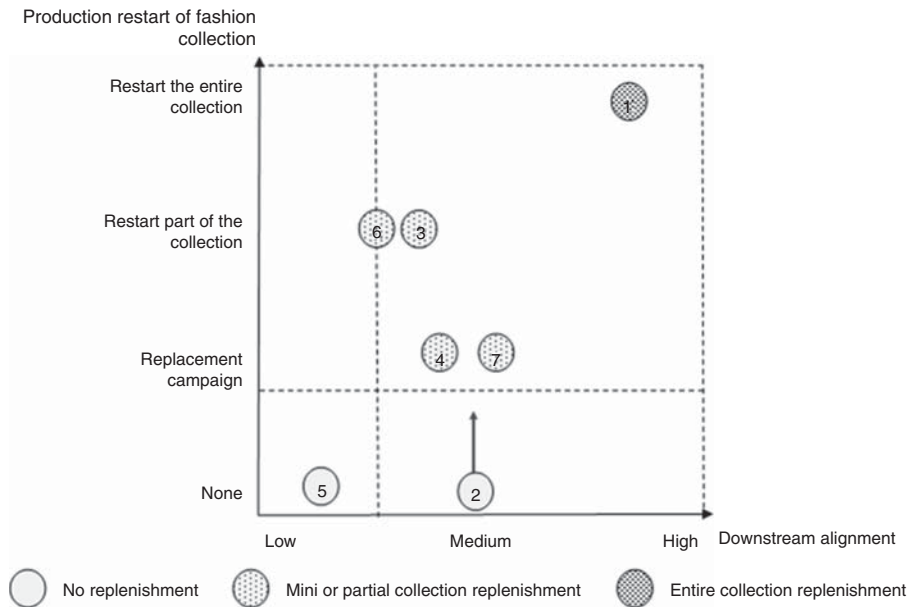
*RQ2*. How do these companies coordinate upstream and downstream SC in the replenishment process?

By comparing the different ways of managing the replenishment processes, it can be observed that Case 1 is, differently from the other cases, able to propose mini collections along the selling season and to replenish all the fashion items. The opposite apply for Cases 2 and 5. Seeking to find the variables that might help in understanding such a difference, a comparison between the ways in which the analysed cases coordinate the downstream and upstream SC has been done, by considering upstream and downstream alignment. Additionally to the listed drivers, during the interviews, we observed that a major recurrent topic, outlined by the SC managers and merchandise planners, as a relevant element shaping the replenishment process, is the production restart of fashion collection.

This refers to the ability of the company to leverage on suppliers able to manufacture, during the selling season, part of or the whole collection. In particular, four situations apply:

- (1) None: the company's suppliers are not able to produce again, during the season, the items of the fashion collection.
- (2) Replacement campaign: the company does not restart the production during the selling season, but it is able to move products to the stores where they are required.
- (3) Restart of part of the collection: the suppliers are able to produce again part of the collection. The brand owning company decides to restart just a part of its collection, following the recommendations of the style department.
- (4) Restart of the entire collection: the suppliers are able to produce again the entire collection during the selling season.

By comparing Cases 1, 2 and 4, we noticed that one of the main differences among them is that their ability to follow market trends is limited by both their ability to gather information from the downstream SC (e.g. trends and sales) and their ability to restart the whole collection production. Therefore, we have plotted the case studies in a matrix (see Figure 1) composed of two axes: downstream alignment and production restart of fashion collection.



**Figure 1.**  
Matrix alignment/  
production restart:  
the cases analysed

### 5.2 Characteristics of cases of “no replenishment, except for transshipment and substitution”

Case 5 and 2 are both not able to leverage on production restart and share no or limited information with downstream SC. In fact Case 5 sells mainly basic products, and, differently from all the other cases in the analysed sample, resorts mainly on strong upstream alignment (as strategic alliances with its suppliers), without leveraging on production restart and downstream alignment for following demand. Vice versa, in all the other cases the percentage of basic products is low, and the companies, with different levels, are able to restart production and/or exchange information with downstream SC. Case 2 represents a company that is not fully exploiting the potential of having medium alignment in the SC; at the moment, it controls a small number of owned stores: the retail channel is grown recently. Even if these stores are able to exchange information through advanced systems, there is a lack in the alignment with upstream SC that impedes the firm to restart the production and to manage an in-season planning. In the near future the company will improve its policy to restart the production (moving up in the matrix), given the increasing importance of the retail channel.

### 5.3 Characteristics of cases of replenishment through mini collections or replenishment of part of the fashion collection

Case 3, 4, 6 and 7 are similar in terms of strategies in responding to market needs. Moreover they are trend setter or trend follower companies. Therefore, they either restart part of the collection or only perform replacement campaigns. In particular, Case 6 represents a company that sells a luxury niche product. Its merchandise planning process is not structured and the company owner forces to restart partly the production only based on qualitative considerations. Hence, a high alignment through the SC is not needed. In Case 7, overproduction is used to satisfy the in-season orders. The company takes advantage of wholesale and retail channel. While the first does not

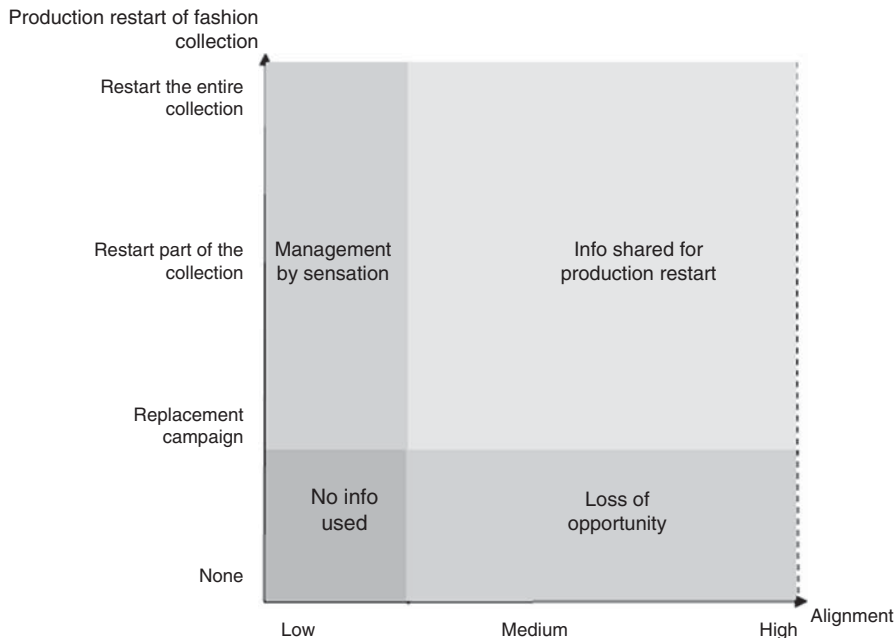
manage trans-shipment and production restarting, alignment with the owned stores is leveraged to manage replacement campaign. As for as Case 3, it shows good performance in the organizational activities, such as the possibility to conduct trans-shipment and to manage OTB; however, medium skills in the policy adopted to restart the production correspond to a medium alignment through the SC. Finally, Case 4 is able to successfully follow market trends but it is limited to mini collections and to sporadic replacement campaign, since it shows a lack in advanced communication tools and information exchanged.

*5.4 Characteristics of cases of replenishment through mini collections and replenishment of all the fashion collection*

Case 1 can propose mini collections and replenish all fashion products of the collection leveraging on: the one hand, the ability to restart production of the whole collection resorting on onshore suppliers with which information sharing is high; and on the other, its strong connection with downstream SC, with which Case 1 shares information to plan the production replenishment. For example, the company uses data regarding sell-out per item to decide whether a production restart is necessary.

It is interesting to observe that the characteristics of the distribution channel (retail, franchising or wholesale) do not affect the way companies manage the replenishment process. For instance, Case 3 and 7 have the same behaviour of the others, even if they distribute through wholesales. In the same way, companies having the same distribution channel show different behaviour.

Summarizing, based on the matrix presented in Figure 2, it can be argued that the companies having a lack in advanced communication tools and information exchanged with downstream SC are not able to restart the production of the entire fashion collection because of the dearth of integration within the SC. On the other hand, despite



**Figure 2.**  
Matrix alignment/  
production restart:  
four main areas

they do not use AR systems, companies that resort on communication tools with downstream SC, as well as on local suppliers with whom information exchange is high, succeed to manage to replenish the collection during the selling season.

## 6. Conclusion and further developments

In this paper, replenishment strategies of a sample of Italian fashion companies have been investigated. A literature review has been conducted concerning the topics of merchandise planning and replenishment process. Given the results obtained, a case study research has been designed and several interviews have been addressed to retail managers, SC managers, buying teams and ICT managers.

It is possible to underline one of the main gap in the literature and how we sought to fill it through our case study research. The papers analysed in the state-of-the-art mostly present cases from Australia and USA. Our sample is composed by Italian fashion firms, that have shown particular features and often unique needs different from the ones already deeply studied in the literature.

Furthermore, the merchandise planning process discussed in literature has been presented as a structured process. The companies of our sample behave differently. In fact, most of the planning process is conducted pre-season with an unstructured approach, and OTB is not calculated using the formula.

The research has revealed that the replenishment process is not yet automatized, due to the difficulties in aligning processes within the entire SC and to the kind of product sold by the companies. Nevertheless, there are companies able to propose customers mini collections and replenish fashion products during the selling season. These are resorting on a complete alignment along the SC, obtained by strong communication with downstream channels, as well as with upstream local suppliers. In fact, being able to exchange information with downstream SC is by itself not enough: this information should be used to activate upstream SC.

In particular, four different situations might happen (see Figure 2): the bottom left area represents the situation of misaligned companies in which information is completely unused. Therefore, companies cannot replenish any item during selling season, but should resort on available stock through overproduction or transshipment, to satisfy demand. In the bottom right area, we find companies that have information regarding downstream SC, but they are not able to use the information. They are not able to communicate with their supplier in order to speed the production process. The opportunities to use information to support the replenishment process are lost. Companies in the upper left are still not able to gather proper information from the downstream SC, but they have understood the importance to restart the production in season and to have strategic alliances with the suppliers. Therefore, replenishment decisions are based on “sensations” coming of the managers. This is unluckily – based on the experience in the sector of the authors – a common situation in the fashion industry: processes are mostly managed by sensation, basing just on qualitative decisions. Finally, the upper right area stands for the context in which information from retailers really supports the decision to restart the production during the selling season.

The matrix can support companies in defining in which direction to move to increase their ability to match supply and demand. In fact, companies can find their positioning in the matrix, to have a preliminary insight on their weak points in terms of downstream and upstream alignment. Along the  $x$ -axis, they can see whether they need to rethink the replenishment process, leveraging on information sharing with their suppliers and distribution channels or, along the  $y$ -axis, whether they need to improve their capability to

restart the production within the season. Moreover, we believe that companies might need to improve their ability to perform in-season planning, also by adopting OTB as a quantitative metric. This could improve the overall planning and replenishment processes, supporting the already used qualitative analyses.

The present study has also provided implications for researchers, analysing the current situation of the fashion luxury segment in Italy, deepening its SC configuration, criticalities faced in managing replenishment and implementing ARPs that are, instead, adopted in other countries (according to the relevant literature).

A further emerging issue is to extend the case study research to other kind of fashion products, in order to understand the different approaches to replenishment deriving from the product typology sold. A research may be conducted in a context of companies, which are able to restart the production in order to understand how much the alignment of processes permits to reach an optimization of the replenishment process. In fact, it is expected that renouncing to offshoring, a major partnership between vendor and retailer might be triggered and the replenishment process may be optimized. The development of tools and algorithms optimizing merchandise planning and OTB management may represent the future research being carried out as a result of this first study. Finally, an investigation of the main KPIs used by the luxury fashion firms may be an interesting insight. In fact, a correlation between an organized replenishment process and the consecutive improvement of performance could be carried out in order to understand the different capabilities linked to strategic choices concerning SC management.

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