Agility in a South African fashion industry supply chain

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Abstract

With growing competition from international brands and increasing market volatility, South African apparel companies continue to seek ways to improve the flexibility and responsiveness of their supply chains. This article reviews the evolution of fast fashion (FF) as an application of agile supply chain management. A conceptual framework was synthesised from the work of leading researchers in this field, incorporating three enablers of supply chain agility: information technology, knowledge management and collaborative networks. The objectives of the study were to assess the market responsiveness, level of supply chain integration, extent of collaborative network development and perceived need to improve agility in South African fashion supply chains.

An exploratory case study approach was used to investigate a large Southern African apparel fashion retailer. The results indicate that the company communicates effectively across its supply chain and emphasises close engagement with customers, supply chain collaboration and development of the retailer as a network coordinator. However, speed-to-market of new products is significantly less than the fast fashion benchmark and unforeseen delays occur. There is a need for increased agility and improved transfer of real-time information.

This article contributes to a better understanding of the supply chain management challenges faced by South African apparel retailers and provides a tested framework that may be used to improve the agility of the fashion industry in South Africa.

1.   INTRODUCTION

Supply chain agility is achieved by using information from the end-customer to align the operations and logistics activities of all supply chain partners (Harrison, Van Hoek & Skipworth 2014:262). The fashion industry is highly volatile: it is characterised by short-lived products and highly variable demand, resulting in a need for reduced lead times and manufacturing flexibility. Many international retail brands, such as Zara, have implemented agile supply chain practices that enable them to stock a larger variety of collections and hence become more responsive to an impulsive market (Caro & Martínez-de-Albéniz 2015:241).

The fashion industry has become increasingly reliant on global sourcing. As a result, it is exposed to risks such as longer lead times and it is vulnerable to international uncertainties (Christopher, Lowson & Peck 2004:368). South African retailers are facing the challenge of managing geographically extended supply chains, with clothing imports from China into South Africa increasing by over 600% between 2000 and 2016 (United Nations 2017:Internet).

Agility has recently been recognised as a vital business strategy in South Africa (Ambe 2014:287; Knoblauch, Van Eeden & Edwards 2016:156; Nel & Badenhorst-Weiss 2011:302). Some large apparel companies are seeking ways to increase their responsiveness to customer needs in the face of competition from internationally successful retailers such as Zara, Top Shop and H&M (Games 2015:148).

This study used an agile framework to assess the extent to which current practices in the South African fashion industry's supply chain facilitate agility. The literature on fashion supply chains is reviewed below, with particular attention given to the evolution of fast fashion as an application of agile supply chain management. A conceptual framework for the assessment of agility in supply chains is developed from the literature.

The research objectives of this study are listed, indicating its focus on the South African fashion industry. The case study methodology is described and the findings from the semi-structured interviews are summarised under the headings suggested by the conceptual framework. In conclusion, the article suggests a possible path to greater agility.

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DHET accredited
ISSN 1815-7440

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This article contributes to a better understanding of the supply chain management challenges of South African apparel retailers and develops a framework to contribute to improvements in the agility of the fashion industry.

2.   LITERATURE REVIEW

Studies by Bhardwaj and Fairhurst (2010:165), Gereffi and Frederick (2010:157) and Bruce and Daly (2006:329) described changes in the fashion industry that have led to increasing demand volatility. These factors, and the need to manage numerous widely distributed outlets and geographically dispersed suppliers, have contributed to a focus on the management of supply chain networks.

2.1   The fashion supply chain

The fashion industry's value chain is driven by retailers that also provide the intangible services of design and marketing (Fernie & Sparks 2014:6). Manufacturers in the fashion trade do not have much bargaining power and are largely dominated by these downstream stakeholders (Gereffi & Frederick 2010:11).

Traditionally, the lead time for fashion products was as much as a year, with two seasonal ranges produced according to styles dictated by designers (Barnes & Lea-Greenwood 2006:266). During this period, the process of reviewing designs, the negotiation of supplier contracts and the production and transportation of the final product to outlets took place.

2.1.1   Characteristics of the 21st century fashion supply chain

Christopher *et al.* (2004:367) characterised the modern fashion market as follows: short product life-cycles, high volatility, low predictability, high impulse purchasing and competitiveness. Similar themes have been identified in other studies (Bhardwaj & Fairhurst 2010; Chan, Ngai & Moon 2017:486; Čiarnienė & Vienažindienė 2014; Lam & Postle 2006; Mihm 2010).

Many companies have added mid-seasons to their fashion calendars, supplying customers with new styles and trends every few weeks (Shephard & Pookulangara 2014:10). Retailers stock smaller quantities of products and replace them frequently (Perry, Fernie & Wood

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2014:80). This strategy encourages consumers to visit stores often, in order to purchase trendy items before they are out of stock (Mihm 2010:58). This also enables firms to keep the risks of overstocking low.

The complexity and volatility of the demand for fashion products is generated by a number of forces. Events such as fashion and trade shows, the desire for uniqueness, the trend towards "throwaway" fashion (Bhardwaj & Fairhurst 2010:170), music and other media, the obsession with celebrities and even trends seen in clubs influence demand (Barnes & Lea-Greenwood 2006:268). Technology allows this knowledge to be available immediately (Nenni, Giustiniano & Pirolo 2013:2).

Cook and Yurchisin (2017:146) described the consumers of fashion products, particularly young people, as highly impulsive. Price was also found to be important to this segment, as were brand names. Retailers targeting these consumers must provide a large proportion of new styles in the ranges they offer. Mafini, Dhurup and Mandhlazi (2014:1) confirmed these findings in a South African context.

The international fashion industry has become more competitive with globalisation and the removal of some protective trade policies (Macchion, Moretto, Caniato, Caridi, Danese & Vinelli 2015:175). The phasing out of import quotas, as regulated by the Agreement on Textiles and Clothing (ATC) of the WTO, was completed by the beginning of 2005. South Africa implemented its own quotas on Chinese clothing and textiles for the years 2007 and 2008, but these were not extended and the value of imports continued to rise after this period (Van Eeden 2009:Internet).

Global sourcing has been stimulated by the cost-savings that are achieved through outsourcing to developing countries, often because of their less rigid regulations and low wages (Bruce & Daly 2006:329). South Africa became more exposed to international competition when it came out of isolation and became a member of the World Trade Organisation (WTO) in 1994. Previously, the country's clothing and textile industry was built solely to serve the local market and did not have to meet global standards of efficiency and quality (Vlok 2006:227).

Retailers and their supply chain partners can no longer focus only on achieving low cost operations, but need also to focus on becoming more responsive to customers, providing new trends and styles and extending the range of products offered at any given time

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(Bhardwaj & Fairhurst 2010:167). These authors argue that the use of real-time demand management is needed and this requires immediate and accurate information flow in the supply chain.

2.1.2 Fast fashion

The need for speed and responsiveness has led to the emergence of Fast Fashion (FF) as a supply chain strategy that reduces lead times and streamlines processes (Shephard & Pookulangara 2014:10). Initially popularised by retailers such as H&M and Zara (Gabrielli, Baghi & Codeluppi 2013:207), this approach decreases the time between the exhibitions of new styles on the runways and the availability of these designs to consumers in retail outlets (Bhardwaj & Fairhurst 2010:169).

Fashion industry supply chains have moved away from a "push" strategy or "supplier-driven approach", to a "pull" strategy also referred to as a "consumer-driven approach" (Taplin 2014:253). An efficient FF model not only enables the continuous introduction of new trends as demanded by the market, but it also ensures that these are presented and offered to consumers at affordable prices (Gabrielli *et al.* 2013:207). This encourages impulse buying as consumers may also feel less fearful of making errors in their selection of items to purchase, and they know that items may not be there if they come back later (Divita & Yoo 2014:25).

While European companies initially used FF to establish a competitive advantage in local markets, Moeng (2012:2) notes that this strategy is now recognised globally as a necessity for fashion retailer supply chains to satisfy their markets and maintain competitiveness. Zara, H&M and Top Shop are some international FF retailers that are now present in South Africa.

In response, South African company The Foschini Group reduced its time to transform concepts into clothing items to be sold in retail stores from 180 to 100 days. It attributed its 19.5 % increase in sales and 15.5 % increase in turnover in 2011 to its implementation of FF strategies (Moeng 2012:1). However, South African companies still lag behind their international competitors and further research is needed to identify opportunities for increased efficiency within the regional context.

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2.2   Supply chain practices for fast fashion

FF requires supply chain strategies such as quick response and agility in order to meet the demands of the volatile market (Caro & Martínez-de-Albéniz 2015:241). Regular production runs and efficient transportation and logistics structures provide support for these time-based strategies.

Quick Response (QR) was devised to counter inefficient supply chain practices that cause increases in inventory, extended lead times and inaccurate forecasts, leading to stock-outs or excess stock and the associated markdowns in retail outlets (Fernie 2014:40). QR seeks to match supply with demand by updating forecasts as the size of the market for items becomes apparent and by communicating this information throughout the supply chain. Information technologies including point-of-sale (POS) data collection and electronic data interchange (EDI) facilitate this information flow (Harrison *et al.* 2014:248). Production must be fast enough to meet the demand (Cachon & Swinney 2011:783). This requires manufacturers to produce smaller batches and to improve materials handling and workplace design, hence moving away from mass production (Taplin 2014:247).

While QR has speed as its primary focus, flexibility is also needed to meet the requirements of the customers in highly volatile markets (Chan *et al.* 2017:487). Supply chain agility is "the ability of an organization to respond rapidly to changes in demand, both in terms of volume and variety" (Christopher 2000:38). Unlike functional products that have forecast-driven, inventory-based supply chains, fashion products need demand-driven supply that is based on real-time information.

An agile supply chain framework was developed as an appropriate theoretical basis for this study. This framework was based on that of Christopher *et al.* (2004:370) which highlighted four characteristics of the agile supply chain: virtual integration, market sensitivity, process integration and network based management.

Also incorporated were the enablers of a responsive supply chain suggested by Gunasekaran, Lai and Cheng (2008:551): a collaborative network of partners, information technology (IT) and systems, and knowledge management (KM). The framework is shown in Figure 1 and the rationale for the restructuring follows.
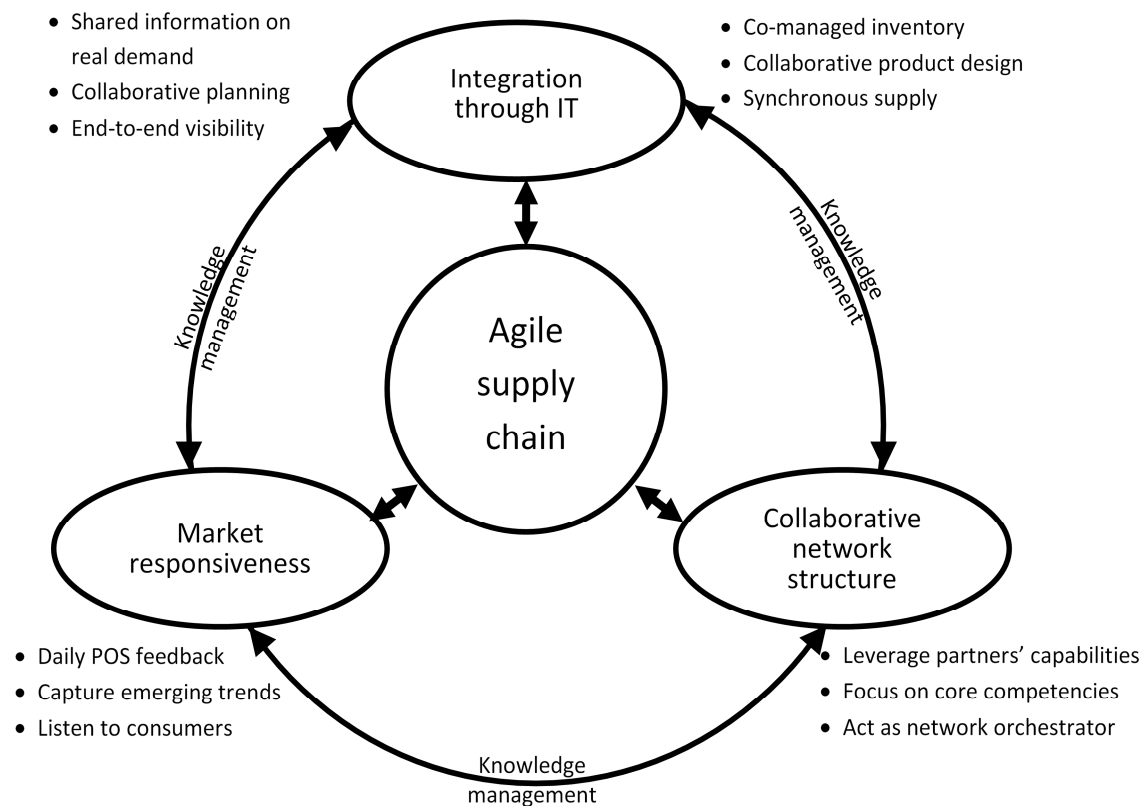
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- Shared information on
  real demand
- Collaborative planning
- End-to-end visibility

- Co-managed inventory
- Collaborative product design
- Synchronous supply

Integration
through IT

Agile
supply
chain

Knowledge management

Knowledge management

Market
responsiveness

Collaborative
network
structure

- Daily POS feedback
- Capture emerging trends
- Listen to consumers

- Leverage partners' capabilities
- Focus on core competencies
- Act as network orchestrator

Knowledge
management

FIGURE 1:   Agile supply chain framework

Source: Authors' synthesis from Christopher *et al.* 2004:370 and Gunasekaran *et al.* 2008:551

Using the definition of knowledge management as "the process of capturing, distributing, and effectively using knowledge" (Meihami & Meihami 2014:81), this concept links all the characteristics and provides the overarching capability of the agile supply chain.

In the context of the fashion industry, it became clear that the four dimensions of Christopher *et al.* (2004:370) are no longer clearly separated but are converging, as suggested by Stank, Autry, Daugherty and Closs (2015:30).

The virtual supply chain, which replaces the inventory-based, vertically integrated organisation with an information-based collaboration of supply chain partners, is based on process integration between these partners as well as within organisations. Both these dimensions emphasise collaboration, information sharing and synchronisation with end-to-

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end visibility. This is sometimes called the "glass pipeline" with the connotation of transparency (Lyons, Mondragon, Piller & Poler 2012:101). Qrunfleh and Tarafdar (2014:340) note that agile supply chain stakeholders are integrated through the exchange of real-time information, and that this is facilitated by technology. The close relationship between internal and external integration suggests that these can be examined together for an extended supply chain, with information technology as the enabler for these activities (Gunasekaran *et al.* 2008:551).

Market responsiveness is commonly facilitated by the use of point-of-sale information (Christopher *et al.* 2004:370), Efficient Consumer Response (ECR) which focuses on the integration of marketing channels with the application of technologies such as radio frequency identification (RFID) (Fernie & Sparks 2014:25) and the deployment of human resources including fashion scouts and salespeople (Mihm 2010:57). Social media have allowed firms to interact directly with customers and receive feedback on their desired products.

The complexity of supply chains has required focal companies (retailers in the case of the fashion industry) to become the coordinators of their networks of partners, many of which are widely distributed geographically (Christopher *et al.* 2004:372). These networks may be constantly reconfigured to include different groups of suppliers to produce different products but the retailer retains close links with all these sub-contractors (Christopher, Harrison & Van Hoek 2016:63).

3.   RESEARCH OBJECTIVES

The following research objectives were formulated using the *agile supply chain framework* (see Figure 1):

- *Market responsiveness:* to assess the fashion industry's current sensitivity and responsiveness to market changes.
- *Supply chain integration:* to identify the level of integration of stakeholders in a South African fashion supply chain and to evaluate the extent to which existing technologies, used in the South African fashion industry, facilitate this integration.
- *Collaborative network development:* to investigate how efficiently strategic relationships are presently coordinated in a complex fashion supply chain in South Africa.

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- *Need for more agility:* to assess whether there is a perceived need to improve the agility of South African fashion industry supply chains.

4. METHODOLOGY

Since existing literature on agility in the South African fashion industry is limited, this study seeks to explore a relatively new area and to generate locally appropriate theory (Ketokivi & Choi 2014:234). Therefore, the research design took the form of an exploratory case study (Sekaran & Bougie 2016:43). This was considered appropriate since the contextual conditions are considered important and are different from those pertaining to the European situation (Yin 2003:13).

The data were qualitative and collected in semi-structured interviews (Sekaran & Bougie 2016:113). The study focused on an individual retail organisation which plays a significant and competitive role in the South African fashion industry (referred to in the rest of this article as "the company"). Although the primary research took place in the KwaZulu-Natal region where the company's main distribution centre is located, this company has an online-store presence and over 1 100 outlets across South Africa and almost 100 in the rest of Africa. The company's policies and supply chain practices are consistent throughout the country.

4.1 Study population

The population for this study consisted of all the companies having the following characteristics:

- based in South Africa, with head-office in the country;
- actively selling apparel fashion products;
- retail outlets available across South Africa;
- some form of online or social media presence and
- presence of an internal supply chain and logistics department.

4.2 Sampling method

Purposive sampling was used for the study because only certain companies met the criteria in section 4.1 (Sekaran & Bougie 2016:248). A list of seven companies was compiled from

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publicly available company information. The researcher proceeded to make contact with each of these to enquire about their possible participation in the study. One company was selected as suitable and willing to take part in the study. The supply chain of this major South African based apparel retailer was investigated in accordance with the constructs of the agile supply chain framework (Figure 1). Its e-commerce Third Party Logistics Provider (3PL) was identified as a representative of the retailer's supply chain stakeholders.

Judgment sampling was used to choose the participants in the chosen retail company, whose strategic positions in the organisation meant that they were better able to provide suitable information to address the research objectives (Sekaran & Bougie 2016:255).

The human resources manager and the logistics director identified staff members who were best positioned to provide the information required for the study. The sample comprised eight participants drawn from senior management:

- logistics director
- human resources manager
- 3PL managing director
- resources director
- marketing director
- supply chain manager
- supply chain planner
- e-commerce manager.

4.3   Data collection

Information for this study was gathered using in-depth, face-to-face interviews. In these semi-structured interviews, the researcher used lists of not more than twenty-five questions to guide the discussion. Different questions were included in the interview guides for the different departments.

The entire interview process lasted between thirty minutes and forty-five minutes with each of the individual participants. The lengths of the interviews depended on the extent to which participants explained or elaborated on answers. A benefit of using semi-structured interviews was that the interviewer had the flexibility to ask additional questions that were

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raised by the answers given by the participants. This provided more detailed information for a more in-depth analysis.

In order to further ensure that the information was credible and trustworthy, the researcher focused on familiarising herself with the organisation's culture before conducting the interviews, so that the interview questions were relevant to the company and its supply chain (Shenton 2004: 66). The semi-structured nature of the interviews also allowed the researcher to clarify the concepts being probed with the participants to ensure that, as far as possible, their understanding of the questions and terminology was congruent with that found in the literature.

After each of the interviews, the interviewer collated the recordings and notes written during the interviews. The researcher then proceeded to transcribe, code and analyse the data collected.

4.4   Data analysis

Content analysis was used to analyse the data collected (Sekaran & Bougie 2016:350). Codes were developed from the preliminary investigation of the literature and the raw information suggested further themes, with codes (words or ideas) arising repeatedly in the data.

The researcher identified explicit (manifest or directly observable) and implicit (latent) categories and codes that occurred within the data (Dooley 2016:244). The researcher identified recurring ideas. This information was used to construct the findings of the study by induction.

5.   RESEARCH FINDINGS

The company and its supply chain are moving towards more agile and responsive practices. According to the resources director, the basic concept of fast fashion is centred on "getting the trend into the store faster to delight your customer".

"...if you are not doing that or don't have some process to get your fashion to your customer faster, we are aware that you are not leading the pack. You will be dwindling and the customer will go somewhere where they can get that catwalk fashion or emerging trend

faster. From that point of view, having people who do that very well, trading in the same retail space as we do, increases the pressure to do that better" (Resources director).

He explained that there is a gap between the company's agility and that of competitors such as Zara, the international fashion chain which is owned by the Spanish company Inditex. This brand represents the benchmark for agile practices in the fashion industry. In order to bridge this gap, it is necessary that all supply chain stakeholders ensure that their operations are more flexible and responsive to changes in the market. The retailer has implemented a system-wide approach to improving the agility of its supply chain, involving its network partners in the enhancement process.

"So we have been investing more heavily with our manufacturers in understanding how to do that better. So how to be a fast fashion retailer, a quick response retailer when you are trading alongside the likes of Zara whom we know do it best in the world" (Resources director).

The theme of current agile practices was divided into three sub-themes as presented in Table 1: market responsiveness, integration through information technology and collaborative network management.

TABLE 1: Current agile practices

Theme	Sub-themes	Sample excerpts
Market responsive-ness	Profile of consumers served by retailer	"It's about you ensuring that you are catering for everybody in the curve of a product lifecycle and understanding that the majority will sit somewhere in the middle." Resources director
	Sensitivity to global trends	"...Our suppliers are a great source of information. It is really a combination of expertise." Resources director
	Speed-to-market	"When we earmark products, they are manufactured locally and we will buy additional fabric to work on a quick response type of methodology." Supply chain manager

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Theme	Sub-themes	Sample excerpts
	Consumer behaviour	"Through the interactive shopping experience the company is able to manage their journey from start to finish and really unpack the feedback that they have given." Marketing director
	Sensitivity to market changes	".. strategically, as a consequence of the growth of online shopping, is that we have invested in a small part of the business that focuses on small parcel consumer deliveries." 3PL director
Integration through IT	Value-adding information-sharing	"It's critical. It has to be. Without information, you are blind. And it has to be the right information, valuable information. You have to have it." Logistics director "Emails are still the major form of communication. We have integrations with most of our customers, so there are server level communications for data, but emails are still predominant." 3PL director
	End-to-end visibility	"There could be 50 people in the chain that you don't know about.... We want to go all the way back to the supplier." Logistics director "No, we don't know every single supplier used by our suppliers." Supply chain planner
	Response to disruptions	"Your freight forwarder or 3PL. They notify you as quickly as they know. And they will notify you 99.99% via email and…it is just another email." Logistics director "For large customers there is integrated communications. So there will be updates as to what you are expected to receive, predefined times and times of arrival. But in the South African context, that time of arrival is not an effective measure yet. It is something we are still working on." 3PL director "Just by the fact that we handle our own supply chain and handle our own imports, we are able to route that stock and to plan with our merchants and advise them that stock will be delayed and plan for that stock to come in." Supply chain planner

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Theme	Sub-themes	Sample excerpts
	Process integration	"Our suppliers are supposed to log into the tool (Supply-IT) everyday so if there is a disruption the notification is placed on the tool and as soon as they log on they have to view the message ...in order for them to proceed and view their orders." Supply chain planner
Collaborative network management	Location of stakeholders	"Your lead time is only as good as your upfront communication and prep-work." Resources director
	Development of supply base	"So we have built long-term relationships with them and we tend to stick to the same external stakeholders based on the fact that we use the systems quite closely with ours." Supply chain planner "So a supplier is very rarely going to say to you, "You have given me too many orders, I only want 60% of what you have given me". They are going to see the orders and they are going to try. They want to do their best and they want to deliver the orders but maybe they are not capable of it." Resources director "We run courses with our suppliers. When we do a quick response and when we are looking to improve the lead time, we would run those workshops with suppliers. We choose strategic suppliers to increase their learning." Resources director

Source: Authors' synthesis of research objectives and interview responses

Codes were identified for each of these categories according to the literature and the recurrent words or phrases in the responses given by the participants.

5.1 Market responsiveness

The interviews probed the ways in which the company uses various sources of information to understand their market and to improve the speed with which it responds to market volatility.

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5.1.1 Profiling consumers

Three types of consumers were identified:

- *Early adopters:* seek edgy and new fashion trends that are still in the initial stages of the trend cycle and are not yet widely accepted by the masses.
- *Mass market:* purchase trends when they are more popular and widely accepted.
- *Late adopters:* purchase products as they reach the end of their lifecycle.

The company further segments its consumers based on other factors such as their geographical location and demographics.

5.1.2 Sensitivity to global trends

To improve trend forecasts and predictions, the organisation's trend, design, resourcing and merchandising teams make reference to a variety of sources: they travel to fashion shows, attend lectures from educational service providers such as the Gordon Institute of Business, read articles and trend websites (e.g. McKinsey, WGSN) and also reference global trend masters (e.g. Li Edelkoort) and collaborate with suppliers.

5.1.3 Speed-to-market

The company's products are manufactured mainly in countries such as India and China, and this affects how quickly designs can be brought to market. However, for certain products that the organisation identifies as requiring quick response, local manufacturing takes place. The supply chain manager estimated a period of eight weeks for the time between concept and store for locally manufactured products.

However, he noted that the company's ability to respond quickly to market needs is not at the level of its European competitors.

5.1.4 Consumer behaviour

Consumers' responses to products that are already being sold in the company's outlets are examined. Marketing's involvement in this process was described as representing "the voice of the customer inside the room". A number of information sources exist for the company's marketing team to engage with consumers and gain insight into their behaviours, including

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social media, the company's call centre, E-commerce feedback, point-of-sale information and the analysis of product returns. In some circumstances returns information is conveyed to the supply chain and logistics department where quality issues are raised. Sales information is used to determine whether to increase the volumes of certain items and to decrease those of others that are not performing as well in stores. It also indicates at which point various trends are in their lifecycle.

5.1.5   Sensitivity to market changes

A structural change in the market has been the growing movement towards online shopping. In response, the company developed an e-commerce purchasing channel and a separate section of its organisation to focus on meeting the needs of this market. Online sales for the company increased by 64% in the 2015/2016 tax year.

The apparel online store introduces about 400 new fashion items each week. A third-party logistics (3PL) company was contracted to deliver the various purchases to customers. In order to be more effective and cost-efficient while meeting these new needs of the final customers, the 3PL also made changes to its operations.

5.2   Integration through enabling technology

The organisation's Information Technology department is responsible for implementing new technologies that increase efficiency within the company. An example of these initiatives is the recent introduction of a Human Resources Management automated system, VIP, which facilitates the easy access to staff records. In addition, the training of staff members has also been extended to electronic learning (e-learning), through an initiative called "Your Journey".

The 3PL also revealed how receptive its company is towards implementing new technologies. Its recent adoption of Evernote, an IT tool for task management, showed that the 3PL also has initiatives to implement technologies that help improve its operations.

5.2.1   Value-adding information-sharing

Participants noted that information-sharing is imperative to achieve co-ordination of the supply chain through transparency within the organisation and in the value chain.

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The type of information-sharing tool is chosen based on the information that is to be shared. Process-oriented information to be sent to external stakeholders is facilitated through EDI, while information required to provide updates for both internal and external stakeholders in a less structured manner is sent through WhatsApp. Email is used for a range of communications.

The organisation has also introduced a communication tool called "Link". This was described by a respondent as resembling a "pop-up chat". Link is used internally, as an alternative to emails.

5.2.2   End-to-end visibility

The initiative to determine which indirect stakeholders are partners in the retailer's extended value chain was referred to as a *"key driver"*. Being aware of whom the suppliers' suppliers are is essential for also understanding and determining the types of cost drivers involved in the supply chain.

Furthermore, through identifying such stakeholders, the company is also able to determine if all these indirect partners are meeting the retailer's standards in terms of sustainable and ethical business practices.

Four participants were asked if their organisation was aware of its suppliers' suppliers and their responses seemed largely connected to their role within the organisation. Two participants at the senior management level noted that they were aware of their extended network of suppliers, while two others on the operational level noted that that they were not aware of all the stakeholders in the extended supply chain. However, it was acknowledged that the retailer was making an effort to ensure visibility of its extended value chain.

The logistics director discussed the implementation of the glass pipeline approach, in which the company hopes to facilitate end-to-end visibility through technology.

Software implemented in 2015 provides information about partners including processes used and changes in ownership. This information is necessary for the organisation to begin the process of identifying potential risks that the company may be exposed to through its network.

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5.2.3   *Response to disruptions*

There are various types of delays that the retailer and its stakeholders experience: port delays due to legislation and administrative paperwork, delays *en route* due to vehicle breakdowns and traffic congestion, delays when customers are not available to take delivery of online purchases and queuing of products at warehouses and distribution centres.

The methods used to communicate this real-time information were found to vary with the respondent. Emails and telephones were a more common method of coordinating responses to disruptions for the retailer, while the 3PL indicated WhatsApp Messenger and telephones as the modes of choice.

Participants gave the impression that updates about delivery delays were not always immediate or accurate and there was a need to improve communication. While emails had been noted as the least responsive option, they were still the most widely used method of communication for the retailer and its supply chain partners. During situations that require a quick response, the group feature of WhatsApp Messenger provides a platform for senior management to be aware of how their teams are progressing in terms of responding to the disruption. Emails are normally re-sent when receivers do not respond. A lack of response, after re-sending an email, is normally followed up with a telephone call.

5.2.4   *Process integration*

Supply-IT is a web-based application that contributes to the integration of the processes of the retail operation with those of its supply network. Suppliers are able to see the movement of stock and orders made by the retailer. From this they determine when the retailer will require a replenishment of stock and can manage and plan their production lines accordingly. They can determine if they are able to produce the orders required by the retailer and communicate this to the retailer through Supply-IT. This tool also enables the retailer to communicate with its suppliers about disruptive events that may affect them by sending a notification to the supplier's Supply-IT dashboard.

5.3   Network management

Previously, the management of the company's supply chain and the delivery of products were the responsibility of suppliers but recently the retailer has taken a more active

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coordinating role. This has enabled the focal company to be better positioned to have more visibility of stock as it moves across the supply chain and to coordinate responses to disruptions that are a result of the geographical location of partners.

The retailer maintains close relationships with its suppliers and other strategic supply chain stakeholders. The company views the relationships with stakeholders as partnerships, stating that the retailer's ability to remain competitive both locally and internationally is an outcome of the quality of these partnerships. In order to develop and maintain these relationships, the retailer engages in open forums and workshops with its suppliers. These give suppliers an opportunity to discuss any developments that they believe should be implemented to improve the competitiveness of the partnership.

5.3.1   *Location of stakeholders*

According to one respondent, sourcing from local suppliers has increased by 30–35%. Three reasons were identified for this movement: the devaluation of the South African currency, the increased speed-to-market, flexibility and responsiveness provided by local stakeholders and pressure from stakeholders external to the retailer's supply chain.

The Department of Trade and Industry (DTI) and the South African Revenue Service (SARS) encourage the development of the South African Cut, Make and Trim (CMT) industry as well as the cotton industry and the company has been involved in these job-creation initiatives.

While the retailer has a growing number of local partners, it still has a larger network of international partners, with the furthest situated in China. Lead-time is compromised when shipping products from international partners. An average of four to six weeks for delivery of products manufactured outside South Africa was recorded. Pre-planning (e.g. of fabric deliveries) and communication amongst supply chain stakeholders were seen as ways to minimise delays.

5.3.2   *Development of supply base*

In order to monitor the performance of suppliers, the retailer has the following initiatives in place:

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- *Supplier grading project:* The retailer monitors the performance of its supply base to determine which suppliers are not delivering to the required standards. This information is reviewed monthly.

- *Supplier Ethical Data Exchange (SEDEX):* This electronic resource is used for the supplier selection process and for monitoring the performance of selected suppliers. It is compulsory for all suppliers in the company's network to be members of SEDEX and to upload information such as their social and compliance audits, along with their government certifications and information about their operations.

The resources director emphasised the need for the maintenance of transparent relationships with suppliers. This allows easier identification of the reasons for sub-standard performance. Targeted "continuous improvement plans" are established with strategic suppliers who are not performing.

Strategic suppliers were recognised as those that have access to the retailer's trade and design information and those that the retailer has more collaboration with through frequent meetings. The reasons for underperformance vary from cash-flow problems to strikes that may prevent the supplier from meeting orders. Underperformance is sometimes a result of the retailer increasing its orders to the supplier, without a clear recognition of the supplier's capacity constraints.

While the retailer generally expects its supply chain partners to be aware of the best industry practices, the company does share articles and conducts courses and workshops with its strategic suppliers on issues such as improving agility.

6.   DISCUSSION

The results are discussed in terms of the four research objectives.

6.1   Market responsiveness

In order to be agile and competitive, a supply chain needs to be responsive and aware of the needs and wants of final consumers. It has been shown that the company has a detailed knowledge of the types of consumers that it serves and is able to forecast the demand for each of the trends and the volumes that should be delivered to each of its outlets.

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Due to the volatility of the fashion industry, early identification of trends is important. The Resources Director identified sources other than fashion shows that influence the retailer and acknowledged the role that suppliers and other supply chain stakeholders play in the determination and forecasting of trends. This open channel of communication amongst stakeholders facilitates responsiveness and flexibility.

Due to the short lifespan of fashion products, penetrating the market when a product has reached a maturation level in its lifecycle may mean that there is not enough time for a retailer to generate profits from that trend. Speed-to-market is therefore very important. The company stated that it takes eight weeks from concept to store. This is considerably longer than the fast fashion benchmark of 15 days, set by Zara (Li, Kang & Guan 2016:238).

The 3PL, as a bulk deliverer, had to reposition itself in order to improve its capabilities for delivering the smaller packages for E-commerce customers. The responses of this E-commerce 3PL revealed that this market sensitivity was not limited to the focal company.

Using feedback channels such as E-commerce, point-of-sale information, analysis of product returns and social media, the company is able to gain an insight into the response of customers to trends that are delivered in stores and to the quality of products and services delivered to them by the retailer and its network of supply chain stakeholders.

6.2   IT-enabled integration

The Resources Director emphasised that the organisation views its supply chain stakeholders as its partners and as valuable contributors to the company's competitiveness. The company has improved information-sharing and supply chain network integration, including its globally dispersed stakeholders, with the implementation of Supply-IT.

In addition, the retailer and its strategic partners collaborate in the trend capturing processes. The retailer further shares knowledge of best practices with its suppliers and all parties are open to learning from one another. However, while the company has integrated systems with its first-tier suppliers, the extent to which these integrated systems facilitate real-time information sharing was not established. While suppliers are encouraged to log on to Supply-IT daily, this is not guaranteed. Furthermore, it was not clear how effectively information flows to indirect suppliers.

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The company and its network use both more traditional (emails and EDI) and unconventional information-sharing tools (WhatsApp Messenger and WeChat). However, there is potential for improved communication with the most commonly used form of communication, email, being the most unresponsive. This study suggests that the retailer and its supply chain stakeholders are open to adopting new tools.

With stakeholders, including indirect suppliers, situated in countries such as China and India, the company has an extended supply chain. This makes the organisation vulnerable to unforeseen events which can result in delivery delays. Although the four participants involved in the retailer's supply chain department provided varying answers in response to whether the organisation is aware of all its extended supply chain partners, the retailer has implemented technologies, including the glass pipeline to improve its visibility of all direct and indirect supply chain stakeholders and their operations.

Using Supply-IT, the retailer and its suppliers are able to have visibility of inventory as it moves along the supply chain. This allows its stakeholders to manage inventory efficiently and to facilitate speed-to-market. The retailer has open channels of communication with stakeholders to ensure that suppliers are aware of slow-selling trends and can stop their production, reduce the volumes produced or hold stock for sale at a later date. This allows the suppliers to determine the replenishment needs of the company better.

The company therefore, has a high level of collaboration with its supply chain partners and has a continuous drive towards ensuring that it improves this integration.

6.3   Co-ordination of strategic relationships

The company is managing a complex and extended supply chain. It focuses on its core competency, fashion retail, and outsources other functions. For example, after developing a new online store, the company outsourced its e-commerce deliveries to the 3PL thus extending its network.

The company's supply chain includes partners in countries such as China and India. The retailer needs to manage and coordinate its value chain and thus takes the position of network orchestrator. According to the Supply Chain Planner, this has been effective in ensuring the efficient management of the network and protecting the retailer from unforeseen events that may affect lead times.

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The company leverages strategic suppliers but ensures that they also grow as the retailer expands. In order to do this, the retailer shares best practices with its strategic suppliers and holds workshops and open conversations with them to encourage collaborative efforts towards the improvement of their performance and the improvement of the entire system.

6.4   Need for greater agility

For each of the above objectives, participants mentioned or implied the need for improvements. According to the Supply Chain Manager, while the retailer is responsive to the needs of its customers, it is yet to reach the standards and benchmarks for agility that have been set by international retailers, particularly European ones.

Zara was identified as a competitive, agile retailer and benchmark for quick response. Increasing competition for local market share has heightened the pressure for the network to improve their agility in order to maintain their strategic position in the market. The 3PL Director also explained that the time factor is not particularly prioritised in the South African market, especially when it comes to deliveries.

Another aspect of agility that participants identified was the need to improve some tools, such as emails, used for communication. Supply-IT was deemed more useful for communication with suppliers about disruptions because all suppliers are required to log into the tool every day. In addition, when notifications of critical information are sent, the tool ensures that suppliers cannot proceed to view orders unless they have viewed the notifications.

The social media messenger applications, WhatsApp Messenger and WeChat were used in a fairly informal, unstructured manner. Participants commonly compared the effectiveness of this tool to that of emails. The comparisons showed that this social media tool was more favoured as a responsive, flexible and adaptable tool.

Participants therefore implied that there was a need for new technological developments in the supply chain in order to facilitate better responsiveness. The Logistics Director also gave the impression that there was a need for more tools that can facilitate real-time information-sharing amongst stakeholders.

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7.   RECOMMENDATIONS

Further improvements to the agility of the supply chain could be facilitated by improved integration of stakeholders. A key aspect of this and one regarding which participants raised concerns, is the flow of real-time information. Compatible and fully integrated information systems are not in place at present and could be beneficial to this supply chain. Extending these to the suppliers' suppliers in a glass pipeline will also improve accountability and allow monitoring of sustainability in the supply chain.

While social media tools continue to grow in popularity, their use by companies is mainly in marketing, due to their ability to facilitate engagement and collaboration with consumers (Sánchez-Franco, Villarejo-Ramos & Martín-Velicia 2011:256; Uzunoğlu & Öksüz 2014:272).

Other studies provide optimistic reviews on social media's implementation in the supply chain (Carr 2017; Gonzalez 2013; O'Leary 2011; Xu, Zhao, Shan & Huang 2014). Carr (2017:31) uses the term *whole enterprise social media* to describe the application of social media to business. He lists its benefits for supply chain as: data mining for supply chain planning and control, data sharing among supply chain partners for better decision making and collaboration for groups working together across the supply chain.

Social media has the potential to improve speed, flexibility and response and the use of these communication tools is under investigation by the current researchers. These recommendations are therefore subject to further findings on the most suitable social networking tools for South African fashion supply chains.

With the concern for security and the reservations expressed regarding the potential for time wasting inherent in the use of public social media applications such as Facebook and Twitter, the preliminary recommendation is that Enterprise Social Network software is a better option for businesses. This is what Leonardi, Huysman and Steinfield (2013:2) term integrated Enterprise Social Media (ESM). They describe the software used in private systems including open source social software and platforms developed specifically for business: Yammer (owned by Microsoft), Social Network (Oracle), Connections (IBM) and Chatter.

They distinguish these from software developed by tech companies for in-house use (IBM's Beehive and HP's Water Cooler), but these distinctions are purely on the basis of ownership

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rather than functionality. ESM may comprise add-on modules for existing enterprise resource planning (ERP) software or may require the phasing in of a new, integrated system which combines more conventional, structured systems with social networking capabilities. The system's ability to mine data from the informal communications and make this available in the ERP component and vice versa will be critical considerations.

8. LIMITATIONS

The empirical investigation was limited to one retailer's supply chain and mostly senior management were interviewed for the study, thus the opinions of operational and tactical staff members were not equally consulted.

Furthermore, only one of the retailer's supply chain partners was included in the sample; therefore the opinions of this stakeholder may not be representative of the retailer's entire network.

In spite of these limitations and the exploratory nature of this study, it did uncover challenges which are likely to be applicable to other retailers in this market. The need for agility in the fashion industry and difficulties posed by international sourcing and the local business environment are common to apparel retailers worldwide as evidenced by the literature.

This study indicated that a leading South African company is still lagging behind international competitors. Further research is warranted to investigate how these challenges can be overcome.

9. CONCLUSION

South African clothing retailers have not realised fully the potential of agile supply chain strategies. They face increasing competition from international companies and will need to reduce lead times and improve responsiveness if they are to maintain profitability. Fast fashion targets the younger generation of consumers and offers an opportunity to attract them into stores for frequent purchases. However, the feedback from this segment must travel efficiently through the supply chain and this requires the integration of all stakeholders and the effective deployment of technology to support collaboration.

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The company which was studied for this research demonstrated an awareness of the principles of fast fashion but has not yet succeeded in achieving the very short lead times associated with this strategy. Participants are aware of the importance of communication and collaboration and some technological innovations have improved these practices.

However, the company was found to have the potential for further gains in speed and responsiveness. It was recommended that information technology innovations, such as the incorporation of ESM, might contribute to improved information flow, closer relationships with geographically dispersed supply chain partners and better response to changing customer needs.

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