



Managing omni-channel reverse logistics risk during supply chain disruption recovery in the South African fashion industry

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Dates:

Received: 28 Mar. 2023
Accepted: 22 June 2023
Published: 11 Sept. 2023

How to cite this article:

Ermes, T. & Niemann, W., 2023, 'Managing omni-channel reverse logistics risk during supply chain disruption recovery in the South African fashion industry', *Journal of Transport and Supply Chain Management* 17(0), a932. <https://doi.org/10.4102/jtscm.v17i0.932>

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Background: Omni-channel retailing is blurring the lines between online and physical stores for consumers as it provides consumers with more choices, convenience and a seamless shopping experience. An integral aspect of implementing an omni-channel retail strategy is having an efficient reverse logistics process. However, retailers seem reluctant to implement omni-channel reverse logistics because of the various risk types that affect the economic wellbeing of a firm, especially during supply chain disruption recovery (SCDR) when the firm is in distress. Prior research primarily examines the risks associated with reverse logistics in a single channel. While the existing findings are promising, there is a lack of understanding regarding the specific risks involved in omni-channel reverse logistics and how to mitigate these risks in the context of SCDR.

Objectives: The purpose of this study was to explore omni-channel reverse logistics risks and mitigation strategies during SCDR in the South African fashion retail industry.

Method: The study employed a generic qualitative design using purposive sampling methods. Fourteen semi-structured interviews were conducted to collect data. The data were analysed using a thematic analysis approach.

Results: The study identified specific types of omni-channel reverse logistics risks. The findings indicate that omni-channel reverse logistics risk during SCDR is managed through proactive and reactive strategies such as technology implementation, collaborative relationships, quality insurance inspections, customised policy changes and disruption-specific reverse logistics teams. The findings show that mitigating omni-channel reverse logistics risk can help create a competitive advantage because of increasing customer loyalty, value recovery and profits.

Conclusion: The findings provide valuable insight on how to manage omni-channel reverse logistics risk during SCDR and, if mitigated correctly, can contribute to a competitive advantage.

Contribution: This study expands on the current literature by identifying multiple types of omni-channel reverse logistics risks and strategies used to manage omni-channel reverse logistics risk in a SCDR context.

Keywords: omni-channel; reverse logistics risk; disruption recovery; fashion retail industry; generic qualitative research; South Africa.

Introduction

Recent external global events, such as the coronavirus pandemic, trade wars and Brexit, have shown how vulnerable supply chains are in today's world (Gerschel, Martinez & Mejean 2020:7). Supply chain vulnerability often stems from internal events, including strikes, unexpected equipment failures and implementing an incorrect omni-channel strategy (Deloitte 2015:3; Nel, De Goede & Niemann 2018:7). These events can create supply chain disruptions (SCDs) that are unplanned events that can disrupt the standard flow of resources and can generate short- and long-term risks in the supply chain (DuHadway, Carnovale & Hazen 2019:180; He et al. 2019:134). Supply chain disruptions may cause financial losses, a decrease in service levels and supply chain operations coming to a halt (Han & Shin 2016:136).

In a recent survey, Deloitte reports that customers return more than \$573 billion of goods annually. Less than 50% can be resold at full price (Deloitte 2019:9). The fashion retail industry has an average of 16% returns from brick-and-mortar stores, while online sales have a 25% return that is

the highest among all retail segments (Achieme & Amed 2020:43). The challenge here is that the industry is not focused on omni-channel reverse logistics. Therefore, firms absorb the cost of reverse logistics activities into business costs, potentially leading to reduced profit margins (KPMG 2017:6).

Reverse logistics is the process of moving goods from the end customer to the point of origin to recreate value or dispose of the goods in the correct manner (Peretti et al. 2015:254). A firm that implements the process correctly, by using the original network or a reverse logistics provider, can create a competitive advantage (Nikolaou, Evangelinos & Allan 2013:173). Efficient reverse logistics is needed in the fashion retail industry as customers return goods from 'bracketing', which is purchasing a good with the intention of returning it once a customer has used it (Deloitte 2019:3). Other reasons for returning goods include poor fit and unmet expectations (Angel & Tan 2018:523). The increase in returns from fashion consumers poses a risk for firms using an omni-channel strategy (Angel & Tan 2018:520). An omni-channel strategy allows a customer to order goods from multiple platforms; therefore, orders can be fulfilled by any location the firm owns (Taylor et al. 2019:864). This results in a seamless shopping experience where the distinction between an online platform and brick-and-mortar becomes amalgamated (Taylor et al. 2019:864). However, goods can be returned to any distribution channel, creating complexity, as a firm needs to identify where the goods are before the reverse logistics process can start. Therefore, goods can be lost, leading to potential profit losses (De Borba et al. 2020:124). Other issues include receiving goods directly from customers' locations, increasing transportation costs (Pishvaei, Kianfar & Karimi 2010:270).

Supply chain disruptions can affect the upstream and downstream flow of goods in the supply chain (Hatefi & Jolai 2014:231). An omni-channel strategy may expose firms to various SCDs, such as incorrect fulfilment processes, strikes stemming from change resistant employees and technology issues (Ye, Lau & Teo 2018:663). These SCDs can cause an inadequate reverse logistics process, resulting in profit loss and unsatisfied customers leading to an increase in returns. To combat omni-channel reverse logistics risks, SCDs need to be managed proactively and reactively. The problem with SCDs is that these disruptions are inexorable and sometimes unanticipated, needing to be recovered reactively after the SCD has occurred (Ali, Mahfouz & Arisha 2017:14). The literature on SCDs focuses on the immediate impact of a SCD, without considering the reactive approaches needed to restore operations to normal (He et al. 2019:134). To create an optimum reverse logistics process during a SCD, fashion retail firms must implement omni-channel reverse logistics risk management practices that are overlooked in literature (Hall et al. 2013:783).

Previous studies focus on how to implement reverse logistics and the success factors and barriers that need to be overcome to create a competitive advantage (Mangla, Govindan & Luthra 2016:609; Özçelik, Faruk Yılmaz & Betül Yeni 2021:246).

Less attention has been given to reverse logistics risk (Mavi, Goh & Zarbakhshnia 2017:2403). A notable exception in literature is a study by Panjehfouladgaran and Lim (2020:1449–1467), which identifies factors of reverse logistics risks, categories and mitigation strategies. Although these findings are encouraging, little is known about omni-channel reverse logistics risk (Weber & Badenhorst-Weiss 2018:10).

The supply chain risk management (SCRM) literature on developed countries is abundant compared to the limited research conducted in developing countries (Prakash, Soni & Rathore 2017:78). Therefore, a developing country such as South Africa differs in terms of a poorly structured economic system, lack of road infrastructure and a less educated workforce. These factors make South African firms more susceptible to SCDs (Gereffi & Luo 2015:56). The fashion retail industry experiences distinct SCDs because of the goods' short life cycle, uncertainty in demand or supply and a high impulse buying behaviour (Wen, Choi & Chung 2019:34). This can result in inefficiencies in the reverse logistics process leading to negative effects on value recovery (Verstrepen et al. 2007:306). Currently, no studies are investigating omni-channel reverse logistics risk in SCDR. Therefore, a theoretical gap is evident in the body of knowledge.

This generic qualitative study explored omni-channel reverse logistics risks during SCDR in the South African fashion retail industry. Firstly, this study attempted to identify the risks stemming from omni-channel reverse logistics during SCDR. Secondly, the study tried to identify what management strategies are used to mitigate omni-channel reverse logistics risk. Thirdly, the study explored the role of omni-channel reverse logistics risk mitigation in creating a competitive advantage for the firm.

This generic qualitative study aims to answer the following research questions:

- What are the omni-channel reverse logistics risks during SCDR?
- Which risk management strategies are used to mitigate omni-channel reverse logistics risk during SCDR?
- What is the role of omni-channel reverse logistics risk mitigation in creating a competitive advantage for the firm?

The study contributes to both academia and practice. This study expands on the current literature by identifying multiple types of omni-channel reverse logistics risks in a SCDR context. This study creates awareness of the importance of managing omni-channel reverse logistics risks among the different channels from market during SCDR. Additionally, the study expands on the literature by identifying multiple strategies used to manage omni-channel reverse logistics risk in a SCDR context. Therefore, managers can actively mitigate omni-channel reverse logistics risk in the SCDR process by having proactive and reactive strategies in place, allowing for a more effective SCDR process. Lastly, the study contributes to literature by explaining how mitigating omni-channel

reverse logistics risk can help a firm create a competitive advantage that will help managers understand what needs to be done to help a firm create a competitive advantage.

The remainder of the article is structured as follows: Firstly, an overview of the relevant literature is provided. Secondly, this is followed by a discussion of the methodology and the study's findings are explained. Thirdly, managerial and theoretical implications are discussed in the conclusion. Finally, proposed directions for future research and the study's limitations are explained.

Literature review

The fashion retail industry

The South African fashion retail industry is the third-largest contributor to spending in South Africa and employs the second largest number of employees in the retail industry (Statistics South Africa 2018). There are three main segments, luxury, functional apparel, fast fashion and products including, apparel, footwear and accessories (Wen et al. 2019:34). The industry has a high markdown ratio stemming from demand uncertainty and personal preferences. The average markdown ratio is 50% meaning that firms are not achieving full profit margins (Jin & Shin 2020:302). Supply chains in this industry are demand driven by consumer trends, meaning that forecasts are difficult to create (Giri, Thomassey & Zeng 2019:349). Other unique characteristics are short product lifecycles because of seasonal trends and a large variety of products (Martino et al. 2017:140). Customers are now more informed about goods from internet channels, and they are challenging the way fashion retailers are doing business. Customers do not want a simple product but a personalised service (Giri et al. 2019:349). A further challenge in this industry is the excessive amount of damaged goods that may need to be collected from the customer's location, which can be expensive and time-consuming (Pishvaei et al. 2010:270). Customers order multiple goods that vary in size and colour and only keep a few goods and return the rest, creating an influx of stock at stores and warehouses and increasing transportation costs to achieve customer service levels (Cullinane et al. 2017:4).

Omni-channel retail strategy

An omni-channel retail strategy stems from a multichannel retail strategy. A multichannel retail strategy offers goods, information and support through multiple channels that do not interact (Silva, Duarte & Sundetova 2020:418). A channel is a customer contact point where the firm and the customer interact with each other (Beck & Rygl 2015:170). There are multiple channels, including brick-and-mortar, e-commerce and home shopping networks (Sit, Hoang & Inversini 2018:163). Beck and Rygl (2015:174) indicated a precipitate strategy between the two retail strategies called a cross-channel strategy where each channel has its individual structure, but consumers can interact easily between the channels. An omni-channel retail strategy integrates various channels, which have created a seamless shopping experience

(Silva et al. 2020:419). The firms use this strategy to benefit from existing multichannels through data sharing, product consistency and an integrated logistics process. The integrated process from this strategy ensures that consumers have an integrated view of the product in all channels from purchase, return or exchange (Adivar, Hüseyinoğlu & Christopher 2019:258).

A disadvantage of an omni-channel retail strategy is that consumers are hard to please because of having access to social media networks allowing for price comparisons and choosing the best alternative offer (Berman & Thelen 2018:600). However, this strategy allows for increased customer satisfaction and a better data collection process to help depict trends (Silva et al. 2020:428). The return process in literature is described as a singular linear process and does not consider the implications for managing returns with an omni-channel retail strategy (Bernon, Rossi & Cullen 2011:484–510). Therefore, there are numerous ways a customer can implement returns, meaning that the determinants and consequences of the return channel increase complexity. The increase in complexity stems from integrating returns, processes and inventory normally operated separately in reverse logistics management (Bernon, Cullen & Gorst 2016:595). Operations have become more difficult from a retailer's perspective, as customers may return products to any channel available (Hübner, Holzapfel & Kuhn 2016:257). The most common factor for increasing returns is that customers use online platforms to purchase goods and cannot touch or test before purchase (Daroch, Nagrath & Gupta 2021:41).

Supply chain disruption management

Supply chain disruptions are unplanned events that can disrupt the standard flow of resources and can generate an array of risks in the supply chain (He et al. 2019:134). These SCDs can propagate throughout the entire supply chain and can have deleterious effects on each network member (Sheffi 2015:170). To minimise the effects, firms need to identify, respond and retaliate to SCDs in a timely manner (Ivanov et al. 2017:22). This shows the importance of implementing correct supply chain disruption management (SCDM) processes (Revilla & Saenz 2017:7). Supply chain disruption management is implemented when traditional risk management practices do not prevent the SCD from occurring (Behdani 2013:346). Supply chain disruption management is a sequential and continuous process of analysing and managing SCDs throughout the entire disruption's lifecycle (Behdani et al. 2012:8).

Supply chain disruption management consists of four phases namely disruption detection, disruption reaction, disruption recovery and disruption learning (Behdani, Lukszo & Srinivasan 2019:308). Disruption detection is the first phase and is about detecting disruptions promptly (DuHadway et al. 2019:190). The phase outlines the anticipated repercussions and characteristics of SCDs (Holzhauer 2016:34). The disruption reaction phase aims for a firm to

return operations back to a normal state of functioning (Ivanov & Dolgui 2020:2907). A predetermined plan can be implemented that can help save time and may limit the impact of a SCD on a firm's performance (Scholten, Scott & Fynes 2014:222). In the disruption recovery phase, an SCD is continuously monitored by a firm, and information about the SCD is collected (Holzhauer 2016:34). Collaboration is important, as it is too late for a firm to implement preventive measures, and parties can recover better by collaborating (Scholten et al. 2014:219). Supply chain disruption recovery is an integral step in the SCDM process and an important part of supply chain resilience (SCRES) (Hohenstein, Feisel & Hartmann 2015:99). The basic principle of SCRES is for a firm to restore operations to normal after a SCD has occurred (Ambulkar, Blackhurst & Grawe 2015:112). Supply chain resilience allows a firm to create the capability to recover from SCDs and adapt to ever-changing risk environments (Bukowski & Feliks 2012:3). There are four main elements of SCRES, but the third element, recovery, is observed as a crucial element in SCRES (Blackhurst, Dunn & Craighead 2011:383). The recovery element focuses on unplanned responses to SCDs, as predetermined plans fail to suffice (Holzhauer 2016:34). Disruption learning is the final phase of the SCDM cycle and is when a firm evaluates the implemented measures during the SCD lifetime (Behdani et al. 2019:320). The lessons that have been learnt are documented and will help prepare a firm for future SCDs.

Reverse logistics

Traditionally, reverse logistics has been identified as a cost-draining activity in the supply chain. However, recent literature indicates that reverse logistics practices can help a firm's financial performance by recovering the value of products (Vlachos 2016:1). Reverse logistics consists of multiple processes to move goods from the customer back up the supply chain, including product return, product recovery management, direct reuse and waste management (Meyer et al. 2017:3). The reverse logistics process is usually initiated by requests for returns communicated up the supply chain. The goods are delivered to a certain supply chain member, such as a seller (Tan & Chanchaichujit 2016:11). Information sharing regarding returns is important, as any miscommunication can cause problems in the supply chain; for example, a fluctuation in supply may occur because of miscommunication resulting in stock returns throughout the supply chain, causing a loss in profit (Tan & Chanchaichujit 2016:11). Product returns can stem from various entities in the supply chain, namely customers, manufacturers or distributors (Lamber, Riopel & Abdul-kader 2011:562). Product returns are the prime makeup of the reverse logistics process and can form an additional number of consecutive processes. These processes include repairs, repackaging for restock or resale, recycling and disposal (Bernon et al. 2011:491; Silva et al. 2013:379).

Reverse logistics is a more complex operation to manage than forward logistics because of the multiple different activities occurring (Amini 2009:368). Forward logistics is associated with material flow starting at raw materials and ending at the

customer, while reverse logistics is associated with used materials and products coming back up from the final customer to the manufacturer or supplier (Govindan & Soleimani 2017:373). The complexity of the reverse logistics process stems from the quality of returned goods and more manual processes than forward logistics. Forward logistics activities have a more standardised process with better quality goods and opportunities for scale economies (Panjehfouladgaran & Lim 2020:1451). Multiple studies have shown that the reverse logistics process can potentially improve forward logistics performance and reduce the possibility of risks occurring (Govindan & Soleimani 2017:376; Kocabasoglu, Prahinski & Klassen 2007:1141).

Omni-channel reverse logistics risk

Omni-channel reverse logistics risks can stem from internal events created from certain internal managerial decisions, while external events are uncontrollable events in the industry in which the firm operates (Hoejmoose, Roehrich & Grosvold 2014:80). A firm needs to control these external and internal risks to maintain profitability and efficiency in business (Aqlan & Lam 2015:5640). Table 1 shows examples of sources of risk that stem from omni-channel reverse logistics.

The omni-channel reverse logistics risks identified stem from multiple different practices in the supply chain and no firm is immune to these risks. To combat these risks, a reverse logistics risk management process should be implemented (Panjehfouladgaran & Lim 2020:1450). Risk may affect the successful implementation of reverse logistics, making risk management an essential aspect for firms (Scheibe & Blackhurst 2018:43). Reverse logistics risk management stems from supply chain management, reverse logistics and SCRM, which is the basis for reverse logistics risk management

TABLE 1: Sources of risk from omni-channel reverse logistics.

Risk source	Definition	Examples of reverse logistics risk
Financial	Financial risk sources are associated with the external element of volatility in financial markets and internal elements such as liquidity and financing risk (Pellegrino, Costantino & Tauro 2019:181).	Additional need for working capital to carry additional inventory in the system.
Inventory	Inventory risk source is the probability of a firm not being able to sell goods and the possibility of inventory stock to decrease in value (Lai, Debo & Sycara 2009:811).	Storage space issues because of an increase of returned goods.
Operational	Operational risk relates to a firm's daily functions and trying to match supply with demand (Vahidi, Torabi & Ramezankhani 2018:1352).	Dependency on incompetent service suppliers in the reverse logistics process.
Outsourcing	Outsourcing risk relates to engaging with a third party to provide a firm with a specific service which may influence a firm in a positive or negative manner (Wu et al. 2013:242).	Errors stemming from third party reverse logistic providers.
Managerial	Managerial risk is when a manager does not have the experience or expertise to implement a strategy or make decisions in a timely manner (Senthil, Muruganathan & Ramesh 2018).	Lack of experience to implement an omni-channel retailing strategy.

Source: Senthil, S., Muruganathan, K. & Ramesh, A., 2018, 'Analysis and prioritisation of risks in a reverse logistics network using hybrid multi-criteria decision making methods', *Journal of Cleaner Production* 179(2), 716–730. <https://doi.org/10.1016/j.jclepro.2017.12.095>

(Panjehfouladgaran & Lim 2020:1455). The supply chain risk management process (SCRMP) involves four sequential steps, namely, risk identification, risk assessment, risk mitigation and risk monitoring and is indicated as the primary construction for reverse logistics risk management (Panjehfouladgaran & Lim 2020:1455).

To take advantage or combat various risks, different risk mitigation strategies are needed. Therefore, firms need to understand where resources need to be deployed, as firms cannot control every risk because of limited resources (Fan & Stevenson 2018:217). Adopting certain mitigation strategies can present a firm with cost-saving advantages, as the firm can recover faster than competitors and prevent a firm from losing market share (Mvubu & Naude 2020:7). The intangible benefits of mitigating risk are that firms can save brand reputation and increase customer loyalty (Pradhan & Routroy 2014:353). However, one main drawback is the cost versus benefits received, as some firms implement ostentatious strategies that are expensive but do not receive the expected benefits (Tang 2006:42).

Risk mitigation strategies used in reverse logistics

There are multiple mitigation strategies used in reverse logistics including efficient communication channels, design for disassembly, the use of technology, internal inspections and cost allocation. The most prominent strategy is having efficient communication channels throughout the supply chain by conducting regular meetings and having collaborative partnerships (Reeves 2019:64). Firms are using a proactive approach to mitigate risk by creating collaborative relationships with suppliers that are experts in the return process, allowing the firm to learn how to implement the reverse logistics process correctly (Prajapati, Kant & Shankar 2019:3). Firms can reduce risk by designing a product that is easily disassembled and selecting the right location for an effective transportation route, resulting in a more flexible nature (Prajapati et al. 2019:3).

Technology advancements can help mitigate risks in the reverse logistics process. Radio frequency identification (RFID) allows a firm to count the quantities of returned goods at collection points, and the data captured is sent to the central return centre, allowing the firm to cater for expected returned goods (Lee & Chan 2009:9299). This technology has created visibility throughout the supply chain, allowing firms to optimise vehicle scheduling. Transportation and internal inspectors are inspection strategies that can help mitigate the chances of risks occurring in the reverse logistics process. Internal inspectors inspect the goods for damages before the reverse logistics process is implemented, while transportation inspectors guarantee that the mode of transport is up to specific standards (Reeves 2019:71). A cost allocation strategy allows a firm to place specific charges such as claims for damages, extra mileage and stop-offs to the correct parties in the reverse logistics process (Reeves 2019:71). Certain policies will be implemented to ensure that

the specific party is liable for the cost. These are generic risk mitigation strategies that can help create a competitive advantage for a firm.

Reverse logistics risk mitigation and competitive advantage

By mitigating reverse logistics risk efficiently and implementing an effective reverse logistics process, a firm can gain a competitive advantage and increase profits, as the return of reuse materials allows a firm to reduce operation costs. Therefore, allowing additional capital to be used in other functional areas of a firm (Panjehfouladgaran & Lim 2020:1450). Creating reverse logistics capabilities, including a closed-loop supply chain and integration, can assist in mitigating risks and transforming returns from a cost centre to a profit centre by improving the productivity of resources, labour and materials (Morgan, Richey & Autry 2016:294). A firm can create these capabilities by acquiring, developing and deploying a firm's resources in the correct manner, which can translate these resources into specific capabilities that can create a competitive advantage (Dubey et al. 2018:130).

An efficient reverse logistics process that mitigates risks can bring benefits for the firm and for the customer. These benefits include improved customer knowledge and service, reduced waste disposal costs and an increased good corporate image (Hsiao 2014:72). Jayaraman and Luo (2007:57) indicate that by mitigating risks and implementing the correct reverse logistics capabilities, firms can achieve tangible competitive advantages including green product credibility, sales growth and value recovery stemming from used goods, whereas intangible competitive advantages include customer satisfaction, good corporate image and feedback information on product returns.

Research methods and design

A generic qualitative research design was adopted for this study (Percy, Kostere & Kostere 2015:78). This research design was chosen as the study attempted to explore the opinions and experiences of participants relating to omni-channel reverse logistics risk during SCDR in the South African fashion retail industry. The unit of analysis in this study was large fashion retail firms that use an omni-channel retail strategy, while the units of observation were the senior supply chain professionals interviewed. Fourteen semi-structured interviews were conducted – one per participating firm.

This study used a homogenous sampling method, a form of purposeful sampling, to recruit firms with similar predetermined characteristics (Plano-Clark & Creswell 2015:174). The firms were selected based on being a part of the South African fashion retail industry that uses an omni-channel retail strategy and is large in size. The firm should have had headquarters or regional offices within South Africa and have experienced an SCD in the reverse logistics process that needed to be recovered in the last 2 years. Criterion

sampling was used to sample the individual participants. Criterion sampling is a type of purposeful sampling and is where participants are only considered to be part of a study if they meet a specific predetermined criterion (Palinkas et al. 2015:519). Firstly, the employee needed to be a mid to senior manager in logistics, supply chain or operations that was directly involved in the decision-making process when disruptions in the supply chain occurred. Secondly, the participant needed to have worked at the firm for at least 12 months in a senior supply chain management role and understood the omni-channel retail strategy and reverse logistics. Thirdly, the participant needed to have the authority to make decisions when SCDs occurred in the reverse logistics process. This enabled the participant to explain the reasoning behind the decisions made in the face of the SCD and the recovery process. Table 2 outlines the details of the participants interviewed.

The data for this study were collected through semi-structured interviews to gain an in-depth understanding of a specific topic (Rowley 2012:262). A discussion guide was used to guide the interviews. A pre-test interview was conducted with a supply chain professional who matched the inclusion criteria before data collection. This allowed the researchers to verify the time needed to cover all the questions and determine whether the questions in the discussion guide were viable (Ey, Zuo & Han 2014:150). Only minor amendments were made to the questions. All interviews were conducted using online platforms such as, Zoom. The recordings were transcribed within 48 h after the interview.

Thematic data analysis was conducted by using ATLAS.ti version 9 to analyse the data collected in this study. Thematic analysis refers to analysing data by recognising, categorising and comprehending themes found within a data set (Chapman, Hadfield & Chapman 2015:202). The researchers employed coding reliability thematic analysis, which is a specific type of

thematic analysis. Deductive in nature, coding reliability thematic analysis typically involves the early development of themes, either during or even before the analysis process (Braun & Clark 2021:333). The researchers conducted a preliminary exploratory analysis by extensively analysing each transcription. This was done by listening to the audio-recordings and reading the transcribed interviews simultaneously; this allowed the researchers to become familiarised with the data. The researchers then allocated codes to relevant segments of text to understand and summarise the meaning of each text segment. A master code list was constructed, and overlapping or repetitive codes were merged to prevent redundancy (Braun & Clarke 2012:63). Patterns were identified and used to create themes and sub-themes that correlate to the study's research questions.

The study applied Guba and Lincoln's (1985:289–331) criteria of trustworthiness. These criteria include credibility, transferability, dependability and confirmability and are referred to as the 'golden standard' by many for determining the quality and trustworthiness of a study (Polit & Beck 2012:583). To ensure credibility, the participants were reminded that confidentiality and anonymity would occur to ensure that the participants gave a full and honest account of events throughout the interview and allowed the participants to withdraw from the study at any time (Polit & Beck 2012:585). The researchers provided a detailed description of the context in which the study took place, the methodology used and the inclusion criteria employed to enhance the transferability of the study. This will allow future researchers to create their own assumptions regarding whether the study can be applied to a new context or not (Yilmaz 2013:320). To ensure dependability, an audit trail was conducted, which enabled the researchers to describe all research decisions and showed why these decisions were made (Bloomberg & Volpe 2018:163). The audit trail included the research design, the sampling methods and the data collection methods that were used (Anney 2014:278). Finally, the researchers used open-ended questions during the interviews to ensure confirmability. This allowed the participant to answer all the questions with their own opinions and perspectives (DeJonckheere & Vaughn 2019:2).

TABLE 2: Participants profiles.

Pseudonym	Position	Firm	Gender	Number of employees	Length of interview (minutes)
P1	Head of distribution	F1	Male	500	26
P2	Head of logistics	F2	Male	29 121	34
P3	Head of supply chain	F3	Male	40 000	34
P4	Supply chain executive	F4	Male	1233	37
P5	Vice president for e-commerce	F5	Male	2244	30
P6	Head of supply chain	F6	Male	787	29
P7	Head of operations South Africa	F7	Male	55	32
P8	Head of procurement	F8	Male	31 000	39
P9	Managing director	F9	Male	4338	20
P10	Country manager	F10	Male	567	25
P11	Head of operations South Africa	F11	Female	1840	35
P12	Head of logistics	F12	Male	19 707	36
P13	Head of e-commerce and supply chain	F13	Male	65	35
P14	Head of supply chain	F14	Male	160	29
Average duration of interviews					32

Note: The average duration of interviews is 32 minutes.

Ethical considerations

The study was approved by the University of Pretoria Faculty of Economic and Management Sciences Research Ethics Committee (No u16048467/2021). Before the interviews commenced, participants had to read and sign the informed consent form. The form explained to the participant that all information provided would be treated confidentially and anonymously and included the purpose of the study. The pseudonyms listed in Table 2 were used to protect the participants and their firm's identities.

Results

In this section, the findings of the study are reported for the three research questions. As illustrated in Table 3, three main themes relating to the study's research questions emerged

TABLE 3: Themes and sub-themes.

Themes	Types of omni-channel reverse logistics risks during SCDR	Types of risk management strategies used to manage omni-channel reverse logistics risk during SCDR	The role of mitigating omni-channel reverse logistics risk to create a competitive advantage
Sub-themes	Internal risks: <ul style="list-style-type: none"> • Financial • Inventory • Information • Staffing skills • Product related • Customer service External risks: <ul style="list-style-type: none"> • Outsourcing • Compliance 	Proactive strategies: <ul style="list-style-type: none"> • Technology implementation • Collaborative relationships • Quality insurance inspections • Specific transportation standards • Standard operating procedures • Skilled staff • Packaging design • Problem-solving culture Reactive strategies: <ul style="list-style-type: none"> • Customised policy changes • Disruption-specific reverse logistics teams 	<ul style="list-style-type: none"> • Sales growth • Increase customer loyalty • Value recovery of goods

SCDR, supply chain disruption recovery.

from the data and include several sub-themes. Descriptive quotations were added in the discussion of the findings.

Theme 1: Types of omni-channel reverse logistics risk

The first theme relates to research question one, as it considers the types of omni-channel reverse logistics risks experienced in the fashion retail industry of South Africa during SCDR. The study identified eight omni-channel reverse logistics risk types categorised into internal and external risks.

Internal risks

Participants indicated that reversing goods from one place to another through their omni-channel during SCDR may result in a financial risk. This is because the reverse logistics process is expensive and may have hidden costs that the firm did not accommodate for. Therefore, the firm may have to allocate additional capital not in the budget, which results in decreasing profit margins. This is evident in the following quotation:

‘So, workout the finance of it, if you sell something to somebody for a thousand bucks, when it’s a store environment, you have all of that store costs. When it’s an online environment you’ve got either some store costs or some e-com costs getting it to the clients. Then they say they not happy with it or it’s not working. Then you’ve got to go out and pick it up and it’s going to cost you another a hundred bucks then bring it back and you have reformatted it. That’ll cost you another hundred bucks by the time you’ve reversed it’s actually going to cost you a lot.’ (P2, male, head of logistics)

Inventory-related risks have been identified as a risk during SCDR in the omni-channel reverse logistics processes by most participants. Pilferage contributes to inventory risk during SCDR as goods go missing because of multiple parties

coming in contact with the goods during the omni-channel reverse logistics process. Once these goods go missing, stock decreases and specific halts occur, resulting in an untimely recovery for firms. This can be seen by the following quotation:

‘There’s no doubt that the more people that touch the product, the more risk there is to the integrity of the product in terms of getting stop-start or getting pocketed ...’ (P6, male, head of supply chain)

The timely sharing of information during SCDR in the omni-channel reverse logistics process can be difficult, as each supply chain member may have separate systems that cannot communicate with one another, resulting in miscommunications mentioned by participants. These miscommunications are exacerbated by losing visibility downstream because of signal loss when goods need to be collected. Therefore, information is not in real time, which causes problems when decisions need to be made abruptly. This is evident in these quotes:

‘We also work across two different systems so omni-channel is a different system to what the distribution centre (DC) operates in and marrying up those two is very difficult.’ (P9, male, managing director)

‘... cell phone signal, a lot of these guys have to sign on tablets, but then when they go to the customer’s house, there’s no signal ... so in terms of real time visibility you don’t have that, it’s sort of semi real time.’ (P10, male, country manager)

Having an insufficiently skilled work force can affect the omni-channel reverse logistics process during SCDR, as the firms do not have the skilled staff to manage the process. This is further exacerbated by staff in the downstream sector who tend to care less about the reverse logistics process that may result in damaged goods coming back upstream because of negligence. This is evident in the following quote:

‘I hate returns as a warehouse supply chain person, because the stores always stuff it up, they stuff up the packaging or it need steaming ... their crumpled up a little box with a whole other stuff, and I have to go and put it nicely back in a slot that’s a mess.’ (P3, male, head of supply chain)

When SCDR occurs in the omni-channel reverse logistics process, participants indicated that product-related risk is evident. Product-related risk emerges as a result of goods that are not quality checked before dispersion, or goods are returned in worse quality than what the goods were sold in. Subsequently, goods are unable to be resold after SCDR has occurred:

‘So, the product was not quality controlled enough and it went out to market and we had to recall it.’ (P2, male, head of logistics)

‘So, if it does come back for quality issue, it’s really the customer that has done something to it by the time it comes back to us.’ (P8, male, head of procurement)

The last internal omni-channel reverse logistics risk is customer service risk mentioned by participants. This is when the customer is not satisfied with the service received during SCDR and refuses to support the firm anymore,

resulting in losing profit and reputational damage. This is explained in the quotation below:

'The one omni-channel reverse logistic risk that I haven't mentioned is where you actually just freak the customer out, where the experience is so bad. So your risk is now coming back to actually losing a customer because that service of the return is so poor. You're either not rocking up to pick it up or the driver of the crew is just rude ... if you do thousands of orders a day, you just need one or two on Facebook a day, to get the whole ball rolling.' (P12, male, head of logistics)

External risks

Participants indicated that outsourcing the reverse logistics process becomes a significant problem during SCDR, as the firm does not control certain variables. This makes it difficult to make a correct and timely decision, as not all member care or some supply chain members are more dependent on one another than others. Therefore, conflict can occur during the recovery process. Participants also stated that transportation issues could occur from outsourcing because of dependence on external parties when goods need to be transported from one place to another during SCDR in the omni-channel reverse logistics process. This can be seen in the following statement:

'It's a complicated business sense in that if you are using a 3PL outsourced warehouse you have large dependencies, their last mile couriers and to physically receive the kind of return requests that is one element. So, there's a lot of system dependencies there.' (P13, male, head of e-commerce and supply chain)

Adhering to laws and regulations in the omni-channel reverse logistics process during SCDR can be a risk as indicated by participants. Firms need to ensure that they abide by new laws, such as Protection of Personal Information Act (POPIA). Firms adhere to this law by ensuring that there is no evidence of the customer's personal details on the parcels being returned. The problem with this is that a learning curve has been created for employees as training has to occur and additional steps have been created in the omni-channel reverse logistics process. Therefore, there is more room for error during SCDR as illustrated:

'A new risk popped into the arena for us and we have to be compliant with POPIA. All of a sudden you're moving things around back or forwards and there's customer's details on it and people need to be retrained or historically you could have a package with somebody's name on it and now you can't. We might get 50 to a 100 parcels every couple of days at our returns, DC. Historically it was a case of just unpack it, process the inventory. Now there's another step, now we have to deface the boxes ... you can't just throw the box away as scrap anymore.' (P12, male, head of logistics)

The findings confirm those of Senthil et al. (2018:718) and Hoejmose et al. (2014:80) indicating that the types of omni-channel reverse logistics risks are financial, staffing skills and inventory, which can be categorised as either internal or external to a firm. The findings identified additional types of omni-channel reverse logistics risks during SCDR. These types of risks can be categorised as internal and external and

are information, product-related, customer service and compliance. The literature does not emphasise pilferage as the main contribution to inventory risk in the omni-channel reverse logistics process during SCDR. This could be because of geographical differences, as South Africa has a high theft rate because of a low standard of living.

Theme 2: Types of risk management strategies used to manage omni-channel reverse logistics risk during supply chain disruption recovery

The second research question aims to understand the types of risk management strategies used to manage omni-channel reverse logistics risk during SCDR. The study identified 11 strategies separated into proactive and reactive strategies.

Proactive strategies

Firms invest in certain technologies before a disruption to ensure that during SCDR, the omni-channel reverse logistics process can run smoothly. A prime example of technology implementation is RFID, which has been able to mitigate omni-channel reverse logistics risk because of increasing visibility of where inventory is throughout the supply chain. These data are shared in real time therefore improving communication during SCDR. This finding is supported by the following quote:

'So, we've got all piece of work to use RFID for all our products which will certainly it'll improve our availability ... it will improve waste and shrinkage. That's related to product that just goes missing and it will also help us in the reverse logistics process.' (P7, male, supply chain executive)

Participants explained that collaborative relationships set up before a disruption help to manage omni-channel reverse logistics risk during SCDR. The benefit of this is that both parties create a better solution to overcome the disruption by amalgamating resources, expertise and knowledge, resulting in a more effective SCDR process. This is seen in the following quotation:

'So, we do definitely collaborate with our partners if they've got technology or a solution that is implementable and is cost effective. Then obviously there's a collaborative, there's enough collaboration between us to, to pull that into the process.' (P10, male, country manager)

Participants indicated that before dispatching goods, quality inspections were conducted. This reduces the chances of returns, which conversely reduces the chance of omni-channel reverse logistic risk occurring during SCDR. This means that by doing it right the first-time goods were less likely to be returned. The following quote supports this claim:

'So, it's packed properly to make sure that it's the right size and the right colour is a lot that goes through different checks in-house because we don't want returns.' (P8, male, head of procurement)

This study found that firms implement specific transportation standards that a courier must meet to transport goods. Firms

implemented these transportation standards to help prevent disruption from occurring because of damaged returns, therefore reducing the likelihood of omni-channel reverse logistics risk occurring during SCDR. This is demonstrated in the following quote:

'Transportation standards? Absolutely. So, we manage our suppliers in terms of a contractual SLA ... that's a key metric to ensure customer satisfaction and that our returns don't increase as a result of a poor SLA on the original delivery inspections.' (P13, male, head of Ecommerce and supply chain)

Participants explained that a firm's manager sets up a specific step-by-step process before a disruption to help guide a firm through omni-channel reverse logistics risk management during SCDR. These standard operating procedures are agreed upon by managers in a specific function and help guide the members during SCDR. This helps manage omni-channel reverse logistics risk, as all firm members understand their role in the SCDR process. This is supported by the following quote:

'So, it's in the last couple of weeks, actually that we're now taking a deeper look at it, putting more processes and procedures in place really defining what is allowed to go into reverse logistics and who has the authority to instruct it to happen. So, specifically for us its stock moving and putting those processes in place.' (P11, female, head of operations)

It is imperative to have knowledgeable and trained staff in certain positions before an SCD occurs. The staff can help with the SCDR process because of prior experience with disruptions. Participants indicated that skilled staff mitigate omni-channel reverse logistics risk during SCDR, as these employees are highly skilled in combating risks. This is clear in the following quote:

'We rely on people, throughout the processes, which is putting some single point of failure risk into the business, but we like to think that we retain the right people who have that intellectual property. So those people would then be more responsible in how they're making decisions.' (P6, male, head of supply chain)

Participants also mentioned that firms develop packaging, so that the process makes it easier for customers to return goods during SCDR, therefore limiting the chances of omni-channel reverse logistics risk. The packaging is developed inconspicuously to protect and reduce the chances of pilferage when goods are returned upstream because of SCDs. Therefore, the chances of receiving all stock back are increased. This is supported by the following quote:

'So, our boxes are completely brown on the outside, and if you open it up its just firm 11 branded. So, you get the experience inside the box, not outside so that people would want to steal it. So, for our reverse logistics and to mitigate our risk, our boxes, as your e-com order comes in. So, it's a brown box that closes one side and then the other side like this. So, before you close it, there's a double-sided tape pull off and it closes. Then there's a little perforated pull tab thing that you pull open. So then it's open. If you want to return it, you just close it the other way around. There's another double-sided tape, sticky thingy, and you close it. So, same box still unbranded and, you know, your stuff's is protected.' (P11, female, head of operations)

Instilling a problem-solving culture before an SCD occurs allows a firm to recover more effectively, as each employee has the same characteristics as the business culture. Some participants indicated that having a problem-solving culture before mitigating omni-channel reverse logistics risk during SCDR allows for a quicker response, as there was no conflict between parties. Therefore, allowing the firms to continue with normal business operations at a faster rate than competitors. The following quote supports this:

'So, we did a lot of things we tend to learn very quickly from that because we are an entrepreneurial company. Yeah, no finger pointing. It's the culture of this went wrong. There's no witch hunt, there's no politics. How do we fix it as quickly as possible?' (P4, male, supply chain executive)

Reactive strategies

Participants explained that during SCDR, a firm customises policies based on which customers are returning goods. The reason for this is that some customers abuse the policy changes, for example, customers who will return goods right before the warranty ends. Thus, some firms have taken a reactive approach to mitigating omni-channel reverse logistics risk during SCDR by analysing all customers and refusing the customers that always return goods. This simplifies the SCDR process, as fewer returns need to be accommodated. The following quote supports this:

'It's kind of a flexible application of the policy. So, it's a policy framework as opposed to a one size fits all approach. So, you apply a liberal policy for the customers that are non-abusive and a much more stringent application of the policy for customers that are. So, it's about kind of building that framework and defining the approaches in each scenario.' (P5, male, vice president for e-commerce)

A specific reverse logistics team is set up once an SCD occurs. This team takes the lead in managing omni-channel reverse logistics risk during an SCD, as they are well versed in the reverse logistics process and utilise their skills to make the right decisions during SCDR. The following quote illustrate this:

'... we fix it as quickly as possible and put a task team together and get it done.' (P4, male, supply chain executive)

The findings align with various strategies used to manage reverse logistics risk found in literature and are extended into the omni-channel context. Firstly, the use of technology implementation is confirmed (Lee & Chan 2009:9299). Secondly, the study confirms that having collaborative relationships can help a firm during SCDR (Prajapati et al. 2019:3). Thirdly, the findings correlate with the use of specific checks and standards to manage omni-channel reverse logistics risk prior to SCDR, as the study found proactive strategies, such as quality inspections and transportation standards, to be evident (Reeves 2019:71). Fourthly, it is worth noting that in the fashion retail industry of South Africa, firms do not make use of modular design strategies, which eases the returns process, as stated in the literature (Prajapati et al. 2019:3). Modular design strategies allow for

breaking products down into separate or independent parts. Firms in South Africa rather package the goods in such a way that it makes it easier for returns or reduces the chance of pilferage (Prajapati et al. 2019:3). The study identified additional strategies to manage omni-channel reverse logistics risk during SCDR. These strategies can be categorised as proactive and reactive and are standard operating procedures, skilled staff, problem-solving culture, customised policy changes and disruption-specific reverse logistics teams.

Theme 3: The role of mitigating omni-channel reverse logistics risk to create a competitive advantage

Research question three relates to the role that mitigating omni-channel reverse logistics risk during SCDR plays in creating a competitive advantage. The following subsections describe how mitigating the risk during SCDR can be beneficial in contributing to a competitive advantage.

Participants stated that mitigating omni-channel reverse logistics risk during SCDR led to an increase in sales growth. When a firm mitigates the risk, the omni-channel reverse logistics process is more streamlined, resulting in less capital spent reversing a good. This is supported by the following quote:

'Reverse logistics is the key to unlock profitability in an online strategy. So it's paramount that we minimise and eliminate reverse logistics, or we bring it to a level so that the overall equation still makes online profitable.' (P4, male, head of operations)

Mitigating omni-channel reverse logistics risk during SCDR increases customer loyalty, as mentioned by participants. This is attributed to an easier return process for the customer, which results in customers wanting to purchase the specific firm's goods instead of a competitor as it is a less complex and seamless process, increasing the chance of customers continually purchasing from the firm. This is evident in the following quotation:

'If I can make my return logistics secure and kind of the least arduous, my consumers, most likely to dive into my brand.' (P13, male, head of e-commerce and supply chain)

Furthermore, participants explained that mitigating omni-channel reverse logistics risk during SCDR increases the likelihood of value recovery, contributing to a competitive advantage. This is because of goods returning to the warehouse and being used as material for future goods, resulting in lower manufacturing costs. This is clear in the following quotation:

'So, the reverse logistics can be used to your advantage in the right circumstances, but sometimes we there to assist the business, which was also an advantage because if the stores can't sell healthy stock, we won't do well. So, we've been able to take that problem away from store and deal with it in the DC, which has helped our business. So, I guess it is to our advantage, how you process reverse logistics.' (P6, male, head of supply chain)

The findings extend the literature of Pradhan and Routroy (2014:353) as mitigating omni-channel reverse logistics risk during SCDR can increase customer loyalty as the process is less complex, which was only stated in a reverse logistics context before. The study confirmed and expanded the work of Jayaraman and Lao (2007:57) who stated that by mitigating reverse logistics risk, value recovery could occur resulting in lower manufacturing costs that can contribute to a competitive advantage this can now be seen in an omni-channel environment as well. Lastly, the study found by mitigating omni-channel reverse logistics risk during SCDR sales growth can occur as there is a more streamlined process.

Conclusion

Summary of findings and theoretical implications

The aim of this study was to identify the types of omni-channel reverse logistics risks during SCDR and understand the strategies used to mitigate omni-channel reverse logistics risk and whether mitigating the risk can contribute to a competitive advantage.

The first research question identifies the types of omni-channel reverse logistics risks during SCDR in the chosen context. The findings confirm the work of Senthil et al. (2018:718) and Hoejmose et al. (2014:80), explaining that the types of omni-channel reverse logistics risks are financial, staffing skills and inventory that can be categorised as either internal or external to a firm. Furthermore, this study expands on the current literature by identifying additional types of omni-channel reverse logistics risks during SCDR, including information, product-related, customer service and compliance. Pilferage was a significant contributor to inventory risk and was unique to the South African context.

The second research question aimed to identify the types of risk management strategies used by managers to mitigate omni-channel reverse logistics risk during SCDR. The study identified multiple strategies that were categorised as proactive and reactive strategies. The study confirms various strategies existent in literature and expands on these strategies in the omni-channel environment during SCDR. These strategies include using technology, having a collaborative relationship before SCDR and implementing specific checks and standards before dispatch (Lee & Chan 2009:9299; Prajapati et al. 2019:3; Reeves 2019:71). Additionally, managers in the South African fashion retail industry try to mitigate omni-channel reverse logistics risk during SCDR by designing packaging in such a way that the customer can use the same packaging to return a good and the good is protected from being stolen because of certain safety measures (Prajapati et al. 2019:3). The study identified additional strategies including standard operating procedures, skilled staff, problem-solving culture, customised policy changes and disruption-specific reverse logistics teams.

The third research question explored the role of mitigating omni-channel reverse logistics risk during SCDR and contributing to a competitive advantage. The research conducted in this study demonstrates that by reducing the risks associated with omni-channel reverse logistics, customer loyalty can be enhanced. This is attributed to the simplified and user-friendly nature of the process, which aligns with and builds upon the findings of Pradhan and Routroy (2014:353). Moreover, the study validates and extends the findings of Jayaraman and Lao (2007:57) by highlighting that mitigating omni-channel reverse logistics risk can generate value recovery. This is accomplished through the reuse of goods as raw materials, resulting in cost savings that can be allocated to other areas. The study identified that sales could increase because of mitigating omni-channel reverse logistics risk, thus contributing to a competitive advantage. The study contributes to existing literature by identifying these aspects in an omni-channel context during SCDR.

Therefore, three theoretical implications are identified in this study. Firstly, the findings expand on the current literature by identifying additional types of omni-channel reverse logistics risks during SCDR and confirming existing types of risks in literature. Secondly, the study confirms and expands on strategies used to manage reverse logistics risk during SCDR and identifies that in a South African context, the safety of protecting a good from pilferage is extremely important during SCDR. The study further contributes to existing literature by identifying these strategies to mitigate the risk in both an omni-channel environment and an SCDR context. Thirdly, the findings confirm that mitigating reverse logistics risk can contribute to a competitive advantage by creating customer loyalty and increase value recovery. A new finding is that sales can increase by mitigating omni-channel reverse logistics risk. The study contributes to existing literature by identifying how mitigating reverse logistics risk can create a competitive advantage and can now be expanded into the omni-channel environment and the SCDR context.

Managerial recommendations

Firstly, the findings contribute to identifying types of omni-channel reverse logistics risks during SCDR in the South African fashion retail industry. Therefore, managers can identify these risks more easily during SCDR in the omni-channel reverse logistics process and understand how these risks can potentially affect a firm during SCDR. Thus, managers will have a more in-depth understanding of how these omni-channel reverse logistics risks can affect a firm and will be able to identify these risks quicker, which will result in a prompt response. Secondly, the findings aid in creating awareness of the importance of managing omni-channel reverse logistics risks between the channels from market during SCDR. Managing the risks can provide various benefits between channels from market if managed effectively and can potentially result in permanent damage between the channels from market if the risks are not

managed appropriately. Thirdly, managers in the South African fashion retail industry can use the various proactive and reactive strategies in the findings to manage omni-channel reverse logistics risk during SCDR. Thus, managers can determine which strategies are most appropriate to the firm and potentially implement these strategies to help mitigate omni-channel reverse logistics risk during SCDR. Lastly, managers can use the findings to understand how mitigating omni-channel reverse logistics risk can help create a competitive advantage for firms. This means that by managing the risks adequately, a manager may see that a firm can create a better competitive advantage, which may cause better market share than competitors. The way mitigating omni-channel reverse logistics risk can help create a competitive advantage is by helping retain customer loyalty, value recovery and an increase in sales. Therefore, managers can now understand how to contribute to creating a competitive advantage by mitigating omni-channel reverse logistics risk.

Limitations and directions for future research

Because of the qualitative nature of the study, only the participants' opinions on the types of omni-channel reverse logistics risks and risk management strategies used during SCDR were obtained. Thus, the study did not measure the extent to which these strategies and types of omni-channel reverse logistics risks during SCDR are practically feasible. This means that future research should use a quantitative research design to determine which types of omni-channel reverse logistics risks have the largest impact on a firm and which risk management strategies are the best to use during SCDR. Furthermore, limiting this study to a South African context limits the study's findings to perspectives of only one country. Therefore, future research should be conducted in other developing countries to ensure consistency and transferability in the findings. The study was only conducted with large firms; therefore, a future study can be carried out on small-medium firms to see whether the findings are similar across multiple sized firms. Furthermore, this study was conducted in a single industry. Future investigations may include other retail settings. In addition, future research needs to attempt to create a deeper understanding of which risk management strategies contribute most to effectively mitigating omni-channel reverse logistics risk during SCDR and creating a competitive advantage. Case studies can be conducted at certain firms to see how the firms have been affected by omni-channel reverse logistics risk and determine which strategies contributed most to mitigate the risk during SCDR and helped create a competitive advantage.

Acknowledgements

Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

This article is based on the MPhil dissertation of T.E who was the main researcher. W.N. acted as the supervisor with the conceptualisation, literature review, research instrument and development of this manuscript.

Funding information

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Data availability

Data are stored according to institutional policy.

Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

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