

The Impact of Reverse Logistics Process Coordination on Logistics Service Provider Relationship Quality

**A moderated mediation model for multichannel retailers in the fashion
industry**



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THESIS ACCEPTANCE CERTIFICATE

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No portion of the work referred to in the dissertation has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

Abstract

Multichannel retailing is a widely adopted strategy in fashion retailing environment of the current era. To gain a competitive edge, fashion retailers must invest resources in the efficient management of reverse logistics, particularly for product returns, stock adjustments, core returns etc. It is therefore vital for retailers to improve their returns management processes by understanding the role of service quality in reverse logistics. This study investigates the impact of reverse logistics process coordination on LSP relationship quality, through the mediating role of reverse logistics service quality and moderating role of conflict frequency. Although several researchers have discussed the role of logistics service quality in forward logistics, the notion in the context of reverse logistics remain underexplored. Moreover, process coordination, relationship quality with LSP and conflict frequency in reverse logistics are also underexamined. This study develops a hypothesized moderated mediation framework to address this gap in literature. A sample of 241 retail store managers was selected through purposive sampling, based on two criteria: multichannel characteristics and outsourced logistics. A self-administered questionnaire was developed for the measurement of constructs, gauging responses on a five-point Likert scale. The questionnaire was pilot tested to achieve a clearer understanding of the returns processes in fashion retail, and the conflicts between the retailer and LSP. Afterwards, online surveys were conducted to collect the data. Conditional process analysis was used to assess the moderated mediation model in SPSS using Process V4.1. The analysis demonstrated a significantly positive impact of reverse logistics process coordination on relationship quality with LSP, a significantly positive mediation effect of reverse logistics service quality in the relationship between process coordination and relationship quality, and a significantly negative moderation effect of conflict frequency on the relationship among process coordination and reverse logistics service quality. To sum, the findings revealed the presence of a significant direct and indirect effect, moderated by conflict frequency. However, conflict frequency, contrary to the hypothesis in the study, strengthened the indirect relationship. This study adds to the prevailing literature by developing and testing an underexplored framework in the context of reverse logistics in multichannel retail. The study will help managers obtain better insights on the best practices leading to effective management of reverse logistics processes, particularly the product returns.

Key words: Multichannel Retailing, reverse logistics, process coordination, relationship quality, logistics outsourcing, service quality.

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Table of Abbreviations

| Acronyms | Abbreviations |
|-----------------|---|
| LSP | Logistics service provider |
| LSPRQ | Logistics service provider relationship quality |
| RLPC | Reverse logistics process coordination |
| RLSQ | Reverse logistics service quality |
| CF | Conflict frequency |

1. Introduction

Diving nearly 150 years into the past, the retail sector underwent massive revolution in the form of rapid urbanization, driven by industrialization, setting off the bloom of departmental stores. Following the development of automobiles, moving quickly around cities became convenient and thus nurtured the concept of shopping malls (Riaz et al., 2022). The retail environment faced yet another transformation in the form of discount and category stores. These developments have consistently evolved the value-creating narrative under each era (Hossain et al., 2020; Melacini et al., 2018). Furthermore, the age of digitization has immensely reshaped the industry by compelling the retailers to make use of internet of things to increase customer outreach, loyalty, experience, and relationships.

Numerous channels has altered the retailing environment's infrastructure of today (Neslin et al., 2006). The internet-based channels i.e., online ad mobile, coupled with advanced technologies have brought about innovative opportunities for retailers to improve their decision flexibility with regard to marketing activities (Verhoef et al., 2015). Various mediums such as mobile devices, email, social media and websites permit retailers to potential customers without being constrained by location and time. Retailers of the day do not rely on traditional channels only, making good use of multiple channels to improve customer experience and overall sales.

The age of globalization has led the retail organizations to invest in strong network within and among their partners throughout the supply chain, so as to sustain prolonged relationships with them. Nowadays, in order to meet the dynamic requirements of the customer and to ensure success of the business, retail organizations are emphasizing on strong networking, uninterrupted communication and environmental sustainability. Furthermore, logistics services have made flexible processes, serving high varieties to end consumers and mass communication relatively simpler. Organization, especially retailers, usually outsource their logistics undertakings to third-party providers, so they can emphasize solely on their core capabilities, cost reduction, improved deliverability, increased scalability of the business to an expanded network, thereby improving the overall supply chain (Sanchís-Pedregosa et al., 2017). The 3PL providers have marked their prominence by delivering several direct and indirect gains to the clients and end users by operating the uninterrupted flow of resources upstream and downstream of supply chain.

Reverse logistics has become increasingly crucial since past two decades. Reverse logistics involves the movement of goods from their site of utilization to the point of source, for value-capturing purposes. Retail organizations of the current era are devising new strategies to increase the quality of their reverse logistics processes, mainly by outsourcing the function to third parties. The LSPs along with retailers are striving to handle the merchandise returns in an effectual and cost-effective manner. The implementation of stringent environmental laws has brought about the development of various models and their solutions for reverse logistics activities. The firm's overall performance is greatly impacted by the reverse logistics or returns management activities. Subsequently, it is necessary for retail organizations to design the right strategies to manage the reverse logistics network and manage the process in an optimal manner. Reverse Logistics of fashion Industry comprises of the following processes, merchandise recalls, inventory returns, core returns, reusable containers, impaired goods, stock adjustments (Krumwiede & Sheu, 2002). The forward and reverse logistics processes for the fashion retail, clothing (Appelbaum & Gereffi, 1994) and footwear (Theagarajan & Manohar, 2019) in particular, are illustrated in *Figure 1.1*.

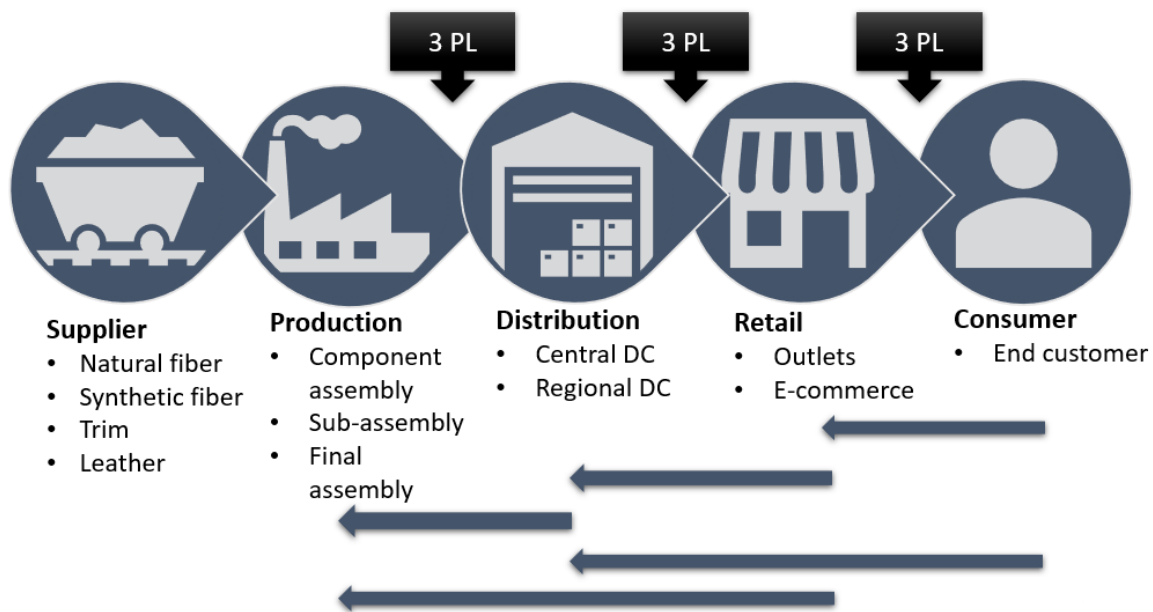


Figure 1.1: Reverse logistics in fashion retail

Source: Author's own description

The contemporary organizations are attempting to discern the parameters on which the quality of services provided by the LSPs can be assessed, drivers which guarantee successful and timely

delivery of services and the impediments that could potentially hinder their growth. Globalization has led to increased competition, however, it's safe to say that the future will bring about immense competitiveness among supply chain networks rather than the organizations. This notion emphasizes the significance of analyzing the relationships between supply chain partners, to attain a leading edge over others. Furthermore, the emerging trend of multichannel retailing has brought about the coordination among processes of supply chain partners. Coordination improves cooperation and collaboration among partners, leading to improved relationship between the LSPs and retailers. The role of service quality also comes into play since process coordination tends to enhance the quality of services. The frequency of conflict between the LSPs and the retailer, and the LSPs and the customer, plays a potential role in the association between reverse logistics process coordination and reverse logistics service quality.

Many authors have examined the influence of logistics service quality on LSP relationship quality in forward logistics, however, the impact particularly in the setting of reverse logistics remains underexplored. Furthermore, the relationship between process coordination in reverse logistics and LSP relation quality remains untested. The mediating role of reverse logistics service quality is also unexplored, along with the moderating impacts of conflict frequency. This study has strived to bridge this gap in literature. The goal of this study was to develop a moderated mediation framework to examine the effect of process coordination on LSP relationship quality through reverse logistics service quality, with the moderating role of conflict frequency, altogether in the setting of reverse logistics. The framework is one of the major empirical contributions to literature. The emerging trend of multichannel retailing strategy enabled the retailers to make optimal use of their e-commerce platforms, especially during the COVID-19 pandemic. Subsequently, e-commerce boomed, particularly in fashion retail. A significant feature of online purchasing is that the customers do not physically see the product before placing orders, due to which the probability of customers returning those products upon receipt increases as they might observe variation in product characteristics. The management and processing of those returns is very costly to retailers. Therefore, it is vital to boost the efficacy of the reverse logistics process catering to returns. Furthermore, multichannel retail strategy revolves around coordinated processes, which potentially improve the service quality of reverse logistics. However, if the service quality provided by the third-party LSPs is not satisfactory, retailers will be compelled to switch to other LSPs, which again is quite costly. Lastly, conflicts between retailers, LSPs and customers are

common when it comes to the management of returns. Therefore, it is crucial to systematically understand the roles that service quality, process coordination and conflicts play in determining the relationship quality between retailers and their LSPs. To address this research problem, this study aims to counter the following research questions:

RQ1: What is the role of reverse logistics service quality in multichannel fashion retail?

RQ2: How does the coordination of reverse logistics processes affect relationship quality between retailer and LSP?

RQ3: Does the conflict frequency play a significant role in determining the association between process coordination and service quality in reverse logistics?

In line with the goal, there are four major objectives of the research.

RO1: To study the role of reverse logistics in multichannel retail of fashion products.

RO2: To estimate the impact of reverse logistics process coordination on relationship quality between retailer and third party.

RO3: To test the mediating and moderating roles of reverse logistics service quality and conflict frequency, respectively.

RO4: To suggest to the managers, academicians, and practitioners the best practices leading to the effectual management of reverse logistics processes.

The format of the subsequent sections of this thesis are as follows. This chapter presents the topic, discusses the research problem and the gaps in literature and develops research questions and objectives to address the gap. Chapter 2 discusses the background of the global and local fashion industry. Chapter 3 presents an extensive review of literature, hypotheses of the study and the proposed theoretical framework of the research. Chapter 4 illustrates the methodology of the study, which consists of research philosophy and strategy/design, sampling design, data collection, the statistical framework and tool for analysis and the preliminary data analysis techniques. Chapter 5 will constitute the results section, whereas Chapter 6 will constitute the discussion sections, limitations of the researchs and recommendations for future studies.

2. Background of the Fashion Industry

Globally, the fashion business has a significant impact on the economy, politics, and culture (Craik, 2009). Western Europe is where the idea of fashion first emerged around the middle of the fourteenth century (Reilly & Hawley, 2019). The fashion industry's social, spatial and economic establishment underwent cycles (Miller & Merrilees, 2004) before slowly extending across the world. For instance, one of the most significant western trends has been fashion, which has become extremely concentrated in Paris, Milan, London, and New York, commonly referred to as the “fashion capitals” (Wenting, 2008). The dispersion of fashion toward the East did, however, occur at a faster rate as a result of the change in production and consumption patterns (Craik, 2009). The year 2018 marked a turning point for the apparel and footwear industries, according to the McKinsey Global Fashion Index, when more than half of sales occurred outside of Europe and North America (Ahmed et al., 2018). According to Ahmed et al. (2019), growing Asia Pacific nations appear to be the main forces behind this rise, and Singapore, China, and India are all developing as new fashion hubs (Craik, 2009; Lee, Moon, & Tu, 2019). Along with growing market segments and changes in fashion consumer trends, fashion retailing models have also changed (Craik, 2009; Lee et al., 2019).

The economics of the fashion business have changed from unbranded retail to renowned designer fashion enterprises and new kinds of advertising and promotions for fashion labels. China currently leads the world in terms of revenue generation (Statista, 2019). The growth in revenue is being seen in both the establishment of homegrown fashion retail businesses and their expanding manifestation around the world, in addition to the consumption of international fashion. Due to the growing number of mobile consumers that are educated, tech-savvy and middle class, economic expansion is also visible throughout Asia in countries like India (Ahmed et al., 2019), Malaysia (Teo, Nik, & Azman, 2019), Turkey (Belba, Üner, Cavusgil, & Cavusgil, 2019), Iran, Pakistan (Kalish & Planer, 2013), and others. Pakistan is quickly establishing itself as a developing fashion retail industry among the South Asian nations, in addition to India. This study focuses on Pakistan because, in terms of embracing fashion and retail presence, it has followed a highly intriguing cyclical trajectory to become a major player in the global fashion sector. Pakistan was on a progressive modernity road after achieving independence from the British colonial and was regarded as one of the early fashion embracers in the 1960s and 1970s; nevertheless, the fashion industry hit a standstill in the late 1970s. The country's expanding fashion sector was negatively

impacted by the emergence of political Islamization and conservatism. But when the millennium began, popular culture began to support society, and the fashion sector experienced a rising trend (Kalish & Planer, 2013).

In the previous two or three decades, the fashion business has experienced substantial growth, and during this period, consumers have learned more about international trends and designs (Wen et al., 2019). The demand for fashion products has been sparked by customers' greater awareness of the goods and services available and their growing fashion understanding. Along with other age groupings, young people between the ages of 15 and 30 tend to have a greater interest in fashion (Sudha & Sheena, 2017). Since people often use fashion to express their culture, personalities, interests, and other characteristics, the importance of fashion has clearly expanded over the past few years. Along with the interests and preferences of consumers, the fashion industry has changed over time. The fashion industry's businesses have been actively conducting market research to identify consumer preferences and meet those needs through their products (Strahle & Muller, 2017). The fashion industry in Pakistan has also grown over time. Numerous new investors and companies have penetrated the commercial sector, including Sapphire, Junaid Jamshed, Limelight, HSY Studio, and others. According to market research on potential customers, the majority of these brands have increased their market share in the past ten years. One of the main factors driving an expanding number of businesses into the fashion industry has been consumer demand for items, which has shown to be sufficient (J Haider, 2021). Additionally, most firms have begun offering their products and services online in order to better serve their customers and reach a wider audience (Idrees et al, 2020). Current fashion category revenue is estimated to be US\$ 763/million with a compound annual growth rate (CAGR) of 34.5%, leading to a market volume of US\$ 2,494/million by 2023 (Statista, 2019).

Figure 2.1 represents the retail sales value growth forecast as of the year 2020 for the apparel and footwear industry. Based on a rolling quarterly assessment, the baseline represents the most recent annual prediction data. Based on a hypothetical pandemic and concomitant economic hardship, Scenario 1 presents a more dismal picture than the baseline. In contrast to Scenario 1, Scenario 2 shows a gloomier outlook based on a potential pandemic and accompanying economic adversity, while Scenario 3 shows a more pessimistic outlook based on a prospective pandemic and related economic hardship than Scenarios 1 and 2 (Bio et al., 2021).

Apparel and Footwear / Total

Retail Value Sales (2020) Constant % growth, %Growth

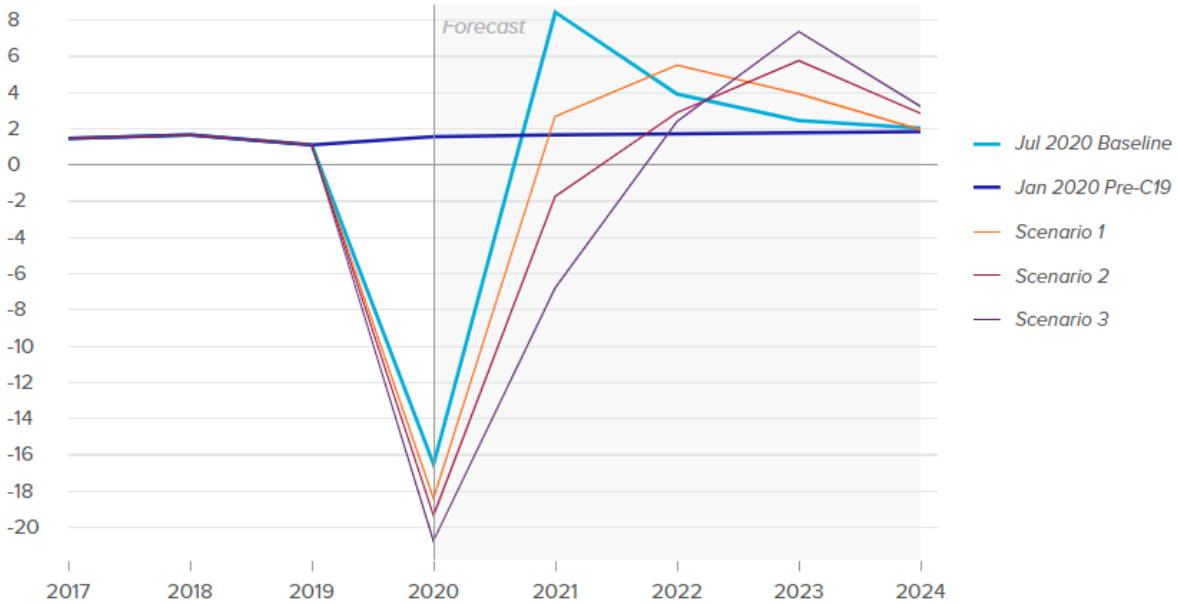


Figure 2.1: Retail value sales 2020

Source: (Bio et al., 2021)

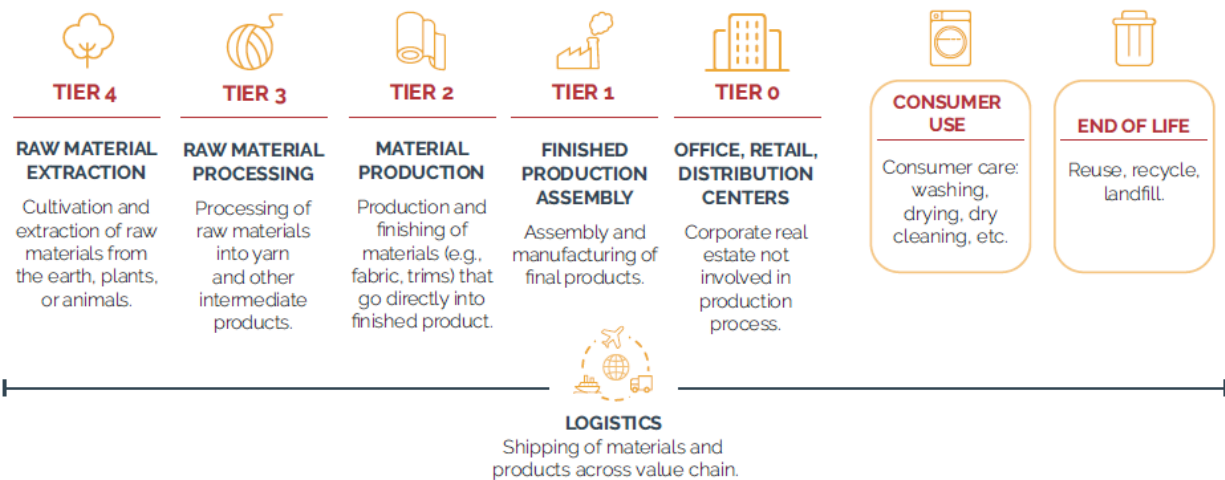


Figure 2.2: Apparel and footwear global value chain

Source: (Sadowski et al., 2019)

Figure 2.2. illustrates the value chain of clothing and footwear. The first element of the chain is the extraction of raw material (Tier 4), followed by its processing (Tier 3), followed by its

production (Tier 2), followed by finished production assembly (Tier 1) and finally office retail, distribution centers (Tier 0). The chain ends with consumer use and end of product life (Sadowski et al., 2019).

3. Literature Review

This chapter provides a wide-ranging assessment of literature on the trend of multichannel retailing followed by reverse logistics in retail industry and how the phenomenon is significant to the fashion retail industry in Pakistan. The chapter further debates on the prevailing literature on the relationship quality of the retailer and the LSP. Moreover, it reviews the literature on process coordination between retailer and LSP in the context of reverse logistics and how this variable impacts LSP relationship quality with evidence from literature. Further, it discusses the role of reverse logistics service quality and how the variable relates to relationship quality, and reverse logistics process coordination, based on the review of literature. Moreover, reverse logistics service quality in a mediating role is also discussed in light of literature. Next, the literature for conflict frequency is reviewed, also in its moderating role in the association between reverse logistics process coordination and reverse logistics service quality. Next, this chapter sheds light on the gap in literature that this research intends to address, followed by the analytical framework this study proposes. Hypotheses for the study are also developed in this chapter with guidance from literature.

3.1. Multichannel retailing

The customer-centric approach towards strategy development has compelled companies to offer multiple buying alternatives to customers (Salmani & Partovi, 2021). Shopping experience for consumers has evolved with the increasing competition of companies towards adopting multichannel retailing strategies. The importance of multichannel retailing has been extensively discussed in literature with regard to attracting more customers (Venkatesan & Arunachalam, 2020), improving the competitive position of firms based on their supply chains (Verhoef et al., 2015), offering integrated buying service quality (Hu & Tracogna, 2020), and enhancing purchasing convenience for customers (Gawor & Hoberg, 2019). Many Pakistani fashion brands in the retail industry have leaped onto the multichannel bandwagon. Although several fashion brands are already utilizing this approach, the trend took a major spike during the COVID-19 pandemic (Ahmed & Shabib-ul-Hassan, 2021). Moreover, the research in the field of multichannel retailing in Pakistan is limited, providing sound basis for a deeper dive into the notion.

3.2. Reverse logistics in fashion retail industry

Reverse logistics, a concept that has become of paramount importance over the past 20 years (Janeiro et al., 2020), refers to the entire process of moving goods from their point of utilization to

their point of source, in order to recapture their value (Daugherty et al., 2001). Presently, retail organizations are striving to improve their logistics processes by providing value-added services in the form of product returns, leading to better sales and customer retention. The added-value could also be provided through reductions in cycle time or returns handling (Porter & Linde, 1995). The development of stringent environmental laws, coupled with the growing competitive pressure and consumer awareness has brought about the development of numeral models and their solutions for reverse logistics activities (Zuluaga et al., 2017). Devising the right strategies to manage the reverse logistics network is a growing protest for the retail industry, as it can impact the firm's performance to a great extent (Panigrahi et al., 2018). Reverse logistics in the fashion industry caters to merchandise recalls, inventory returns, core returns, reusable crates or pallets, impaired goods and stock adjustments (Krumwiede & Sheu, 2002).

In developing countries like Pakistan, where a major proportion of GDP is generated from the fashion and apparel industry (Janeiro et al., 2020), many companies are experiencing large number of product returns (Panigrahi et al., 2018). US studies report that the increase in online sales has led to an increasing number of returns with rates up to 60% in clothing (Cullinane & Cullinane, 2021). In the fashion industry, 10%-20% product returns are for casual apparel and 35%-40% returns are for high fashion (Li et al., 2013; Li et al., 2016). A survey conducted in Sweden revealed that 13% of the e-retail customers had placed orders with the intent of sending some of the products back (JDA, 2017); this phenomenon is referred to as retail borrowing or wardrobing (Cullinane & Cullinane, 2021). Another survey revealed that on a global level, 27% of e-retail customers purchase with the intention of returns (JDA & Centiro, 2018). It is thus said, that retailers need to work towards the efficient handling of returns, otherwise bad experience with regard to return services will color the opinion the consumer holds regarding the retailer, ultimately affecting the firm's revenues negatively (Colburn, 2013).

3.3. Relationship quality between retailer and LSP

The trend of outsourcing logistics operations has highlighted the concept of third-party logistics providers (Panayides & So, 2005a). They have become highly influential for the effective and resultant performance of the supply chain. Close collaboration and understanding with their clients to work out their businesses and facilitate them towards improvement are major prerequisites for effective supply chain performance (Panayides & So, 2005a). Literature argues that the increasing competition levels in the coming years will prevail between supply chain relationships rather than

between organizations. Research reveals that better relationships, commitment and trust tend to improve performance of firms (Vieira et al., 2015). Moreover, it is imperative to analyze relationship quality in modern retail (Tripathi & Dave, 2013). Trust is a crucial factor in the relationship quality of two parties (Nadeem & Al-Imamy, 2020). Therefore, retailers and their LSPs need to work towards building trust among each other to maintain harmony and good relationships. An increase in the level of relationship quality between the service provider and its client is likely to have a significant effect on the client's behavior which is demonstrated through enhanced relationship continuity and word-of-mouth (Al-alak, 2014). Regarding the measurement of LSPRQ, researchers have used different indicators. Nadeem and Al-Imamy (2020) treated the evaluation of relationship quality as a multidimensional concept comprising trust, satisfaction, and commitment. Many researchers have stated the importance of supply chain relationships by illustrating their role in supply chain effectiveness and integration (Lambert & Cooper, 2000; Patterson et al., 2003). To gain competitive edge over competitors, it is necessary to emphasize focus on inter-organizational harmonization (Ballou et al., 2000). Researchers have used different indicators to measure LSP relationship quality. This paper adopts the measurement instrument presented by Panayides and So (2005), and uses five attributes from literature, namely communication, empathy, trust, shared value and bonding.

3.4. Reverse logistics process coordination with the LSP

According to the studies conducted by Rabinovich (1999) and Samaddar (2006), processes of two companies are said to be coordinated when their business flows are synchronized or integrated (Rabinovich et al., 1999; Samaddar et al., 2006). Both the parties perform an active role in each other's processes and are welcoming towards solving any conflicts that arise (Kanda et al., 2008). The cooperation between teams and partners call for human engagement and managerial investment (Huo, 2012). Human involvement provides for important intangible sources such as skills, expertise, and experience, which give companies the edge required to stay ahead of their competitors. Resultantly, process coordination tends to improve the problem-solving capabilities of the integrated parties, reducing the level of conflicts arising which ultimately lead to competitive advantage for 3PL logistics partners (Liu et al., 2015).

The literature provides evidence for various outcomes of process coordination, such as suppliers being engaged in the processes of the focal organizations, leading to reduced transactional costs and improved financial performance (Huo, 2012). Joint planning is a highly effective coordination

mechanism on the operational and strategic level, which leads to enhanced performance (Aviv, 2001). Joint planning refers to the collaboration among partners to jointly plan production and scheduling, inventory replenishment, new product development, promotions, and advertisements (Cai et al., 2010). Collaborative learning agendas that act as a supportive mechanism in process coordination, generally steer joint training, which helps both the parties in developing innovative capabilities via knowledge-sharing (Samaddar et al., 2006; Simatupang et al., 2002).

Process coordination in the form of intra-system and inter-system coordination networks often lead to high level of cooperation among trading partners (Evtodieva et al., 2017), thus improving their relationship. Process coordination leads to enhanced level of cooperation i.e., improved relationships, with the facilitation of supportive mechanisms (Huiskonen & Pirttilä, 2002). Simatupang (2002) states an example in the form of collaborative learning programs that often lead to joint training, enabling both the parties to make use of knowledge sharing to acquire new-found capabilities (Samaddar et al., 2006; Simatupang et al., 2002). Such inter-organizational teams that cooperate with one another could potentially design mutually beneficial objectives and work on conflict resolution (Huiskonen & Pirttilä, 2002), which ultimately improves relationship quality. Thus, if reverse logistics processes are coordinated, the cooperation level between the LSP and the retailer will improve. The two cooperating parties work together to resolve conflicts which result in better relationship. Building on this evidence from literature, we can derive the following hypothesis.

H_1 : Reverse logistics process coordination has a positive effect on LSP relationship quality with LSP.

3.5. Reverse logistics service quality

Logistics operations pay a strategically significant contribution to the success of the retail stores (Bienstock et al., 1997). They are no longer considered a simple operation, but a strategic variable which is crucial to client's loyalty and satisfaction (Gil-Saura & Ruiz-Molina, 2011). Since the mid-80s, the quality of service provided has been a very important theme in logistics research (Richey et al., 2007). LSQ is referred to as an instrument which measures the level of value a customer perceives from the service provided (Huma et al., 2020). LSQ can be used to enhance client/consumer relationships by affecting satisfaction levels, enhancing client loyalty or retention, granting access to larger market share and better performance (Daugherty et al., 1998). In physical

distribution practices of suppliers, quality of services plays a huge role in enhancing customer satisfaction (Vázquez-Casielles et al., 2013). Literature presents two perspectives on LSQ: objective quality and subjective quality. The first notion explains how the adaptation of services to LSP defined specifications relate to quality (Chin et al., 2013). The second notion suggests that the valuation of quality depends on the customer, stating that quality is in fact a global judgement and its perception depends on attitudes (Parasuraman et al., 1988). Several authors have addressed LSQ in the business-to-business domain, using the framework proposed by Mentzer and Kahn (Mentzer et al., 1999). Literature defines LSQ as being comprised of three major components; timeliness, quality and availability (Mentzer et al., 1989). Earlier researchers have used the SERVQUAL scale to measure LSQ (Parasuraman et al., 1988). It is reliable and valid multiple-item scale that is used by retailers to obtain an in-depth sense of the consumer expectations and perceptions regarding the services provided, so as to enhance service. Another model used frequently cited in literature to assess service quality is the SERVPERF model, proposed by Cronin Jr and Taylor (1992), and is an extension of the SERVQUAL model (Cronin Jr & Taylor, 1992). This model is said to be more factual, and its data processing is relatively simpler and more intuitive (Li & Lu, 2019).

Li and Lu (2019) in their paper have explained the characteristics of the service quality of reverse logistics from downstream consumers: (1) Difficulty in foretelling the quantity, time, and location of the returned goods (2) Unsatisfactory quality/quantity received by customers (3) Constrained timeliness of reverse process. (4) The sporadic and disordered nature of reverse logistics (5) Complexity of the process (Li & Lu, 2019). Summing up, consumer expectation and their demand throughout the course of reverse logistics from initiation to provision of service is profoundly distinct from forward logistics. Therefore, the expectation and insights of consumers with regard to service quality is also fundamentally and essentially distinct from that of forward logistics. Products are typically returned by consumers for a number of reasons which include incorrect size, fit or color, damaged products, or merely an uncalled-for change of mind. As simple as these reasons may be, they can incur huge costs to the retailer. It is, therefore, necessary for retailers to maintain the capabilities to recoup some of these costs. One such capability is embedding a positive consumer returns experience by maintaining high levels of service quality (Colburn, 2013).

With regard to LSQ measurement approaches and its impact on customer satisfaction, various studies have assessed B2B relationships and logistics outsourcing (Gaudenzi et al., 2020). The aggregate cost of relationships particularly in the context of logistics outsourcing is investigated by Maltz and Ellram (Maltz & Ellram, 1997). Several authors investigated the association between logistics outsourcing, LSQ and performance (Gotzamani et al., 2010; Kuei et al., 2011; Rahman, 2006). Some authors employed the Kano model to analyze LSQ (Gustavsson et al., 2016; Mikulić & Prebežac, 2011; Sohn et al., 2017). However, nearly all these studies have used buyer-supplier relationship as their unit of analysis. Bask in his paper, highlights the importance of addressing LSQ from a logistics triad perspective which brings the 3PL providers into the loop (Bask, 2001).

This study adopts the preliminary indicator system for the measurement of reverse logistics service quality, developed by Li and Lu (Li & Lu, 2019). The five dimensions and their respective indicators are given in *Table 3.1*.

**Table 3.1: Indicators of reverse logistics service quality
(Li and Lu, 2019)**

| Dimension | Indicator |
|------------------------|--|
| Communication quality | Timely communication Communication stance Communication channel Managing objections Initiating communication |
| Information quality | Entirety of logistics information Reliability of logistics information Timeliness of logistics information Timeliness of refund information Protection of refund information |
| Return process quality | Fair return policy and provisions Response speed for return management Variety of return method Reliability of return assurance Acceptable cost of return Well-timed and transparent return enquiries |
| Convenience | Ease of return policies Whether pickup time/delivery setting is acceptable Numerous means of delivery and collection |
| Empathizing | Personalized service Give priority to client's interests Continuous updates are given regarding returns Manner of delivery personnel Suitable return visit mechanism |

3.5.1 Product Returns from Retail Stores/Outlets.

Although the forward/downstream flow of goods is what gives the retail company its revenues, the upstream flow of returns is what cuts down your profits due to their increased costs. Therefore, it is paramount to have a comprehensive plan and system in place to manage returns efficiently and effectively. An opinion contrary to the usual, a study claims that returns should be taken positively as they can make money (Yu & Wang, 2008). For example, if retailers develop strict return policies, retailers will have fewer unused items that are deemed as stock loss. Returns management is an integral element in reverse logistics of fashion products, and it has the potential to really set a company apart (Mollenkopf et al., 2007). Returns may end up benefiting the entire supply chain for the savvy businesses. Returns may one day be used as a strategy for cost reduction in the global marketplace given the rising trend of e-commerce and online retail. Yu and Wang

(2008) suggest that returned products when resold in the e-marketplace can extend and preserve product values and lifecycles (Yu & Wang, 2008). This will lead to less stockouts as returned products will be kept in-stock for resale, leading to customer satisfaction and better relationships. Therefore, an appropriate returns strategy must be put in place by the retail companies. They must reconcile with the LSPs to engage them in the decision-making and planning process regarding returns management, to enhance overall logistics service quality, which is mutually beneficial.

3.5.2. Process Coordination and Service Quality in Reverse Logistics

Authors suggest that coordinated processes produce improved organizational scores (Okhuysen & Bechky, 2009). Most findings suggest a positive correlation between coordination mechanisms and service quality (Atherly & Thorpe, 2011; Robinson, 2010). The reason for this is that the efficacy of the process of service delivery is dependent on the capability of the service provider to effectively coordinate their clients in the decision-making, knowledge-sharing and planning processes (Musenze & Mayende, 2021). Coordinated processes tend to realize quality service delivery by bringing improvements in other coordination mechanisms like task harmonization and prior planning (de Pablos-Heredero et al., 2013). If process coordination persists among the LSP and retailer, better logistics service quality can be achieved. Thus, this paper, in accordance with evidence from literature, proposes the following hypothesis.

H_2 : Reverse logistics process coordination has a positive effect on reverse logistics service quality.

3.5.3. RLSQ and Relationship Quality with LSP

It is essential to recognize that the nature of the returned product and the parties concerned, play a significant role in dictating return policies (Breen, 2006). The return management process has to be highly efficient and timely, otherwise the reusable products would have to be sold at a lower price or disposed off altogether (de Brito & Dekker, 2003). The information obtained for returns translate into sales, inventory, procurement, storage, distribution, and costs (pricing strategies, refund, distribution and safety stock). Therefore, the significance of maintaining a structured approach towards the management of returns must not be underestimated (Davis et al., 1998; Inderfurth & van der Laan, 2001; Mostard & Teunter, 2006; Yalabik et al., 2005). The quality of services that the logistics service providers exhibit greatly contribute to the efficacy and timeliness of the return management process. It is argued that the quality of services has a positive influence on relationship quality, further elaborating that better relationship quality is heavily conditioned

upon service quality (Cronin Jr & Taylor, 1992). Some scholars have assessed the antecedents of relationship orientation and have subsequently found that the level of trust the client maintains and satisfaction the client receives on part of the service provider significantly depends on the quality of services provided (Liu et al., 2011). The better the quality of reverse logistics services provided by the LSP to the retailer, higher the level of reliability and retailer's satisfaction, suggesting that relationship quality and service quality are highly correlated. Therefore, this study proposes the following hypothesis.

H₃: Reverse logistics service quality has a positive effect on LSP relationship quality.

3.5.4. Reverse Logistics Service Quality in a Mediating Role

LSQ has increasingly been used as a mediator in literature. Fernandes analyzes the mediating effect of LSQ is determining the association between logistics capabilities and consumer satisfaction (Fernandes et al., 2018). The mediating role of LSQ in analyzing the association between relationship flexibility and relationship satisfaction has been investigated (Ercan & Çelik, 2021). LSQ has also been explored as a controllable mediator between relationship satisfaction, logistics flexibility and relationship flexibility (Yu et al. 2017). Although LSQ in forward logistics has been analyzed in multiple studies, service quality, in the context of reverse logistics, and as a mediator remains underexplored. Reverse logistics process coordination tends to enhance reverse logistics service quality, which ultimately improves the relationship between the LSP and retailer. This claim is highly underexplored in literature. This study aims to analyze the indirect effect of reverse logistics process coordination on LSP relationship quality through the mediation of reverse logistics service quality. Thus, this paper suggests the following hypothesis.

H₄: Reverse logistics service quality mediates the relationship between reverse logistics process coordination and LSP relationship quality.

3.6. Conflict Frequency

Conflict is an important aspect of supply chain relationships. Literature defines conflict as a circumstance where one party feels that the interests of the other party are at odds with or adversely affecting (Wall Jr & Callister, 1995). Conflict can also be described as a state of affairs in which one party perceives that the other party is impeding him from accomplishing his objectives (Balabanis, 1998). Gaski (1984) suggested that some level of conflict is bound to be present as it is natural to all exchange relationships, which implies that necessarily not all conflict is

counterproductive (Gaski, 1984). Conflict is prevalent in several business relationships. It has also been demonstrated in logistics outsourcing relationships, in which there is usually a trade-off between performance objectives and cost objectives (Cahill et al., 2010). Effective conflict management is vital to inter-organizational relationships, which are in turn vital to firm's success (Cahill et al., 2010; Stank et al., 2003). There is a dire need for an effective and an appropriate strategy for conflict management, especially when retailers rely on extensive logistics service delivery from third parties, and in turn, develop high dependence on the services of the logistics provider. Dependence increases the relationship risks as well as conflict potential. If an effective strategy for conflict management is not adopted, the degree of service quality provided by the LSPs will be threatened (Murphy & Poist, 2000). A study by Saxby and Indiana (2011) demonstrated that conflict has a negative relationship with service quality (Saxby et al., 2011). Another study by Leon-Perez (2016) addresses the relationship amongst intragroup conflict and perceived quality of service. The group of conflicts demonstrated in the study included three types of conflicts: task conflict, relationship conflict and process conflict. Process conflicts are disputes involving planning issues and delegation problems in task accomplishment. Results revealed that process and relationship conflict are detrimental to the service quality provided by the teams (Leon-Perez et al., 2016).

Conflict frequency could be taken as an episodic occurrence or as an incremental experience. Conflict is an inherent part of relationships, so it can be fully expected in outsourcing relationships in reverse logistics, in which there is a constant rift between the cost objectives and the performance aspect of service delivery (Cahill et al., 2010). Organizational level conflicts can potentially occur between the retailer and the LSP, i.e., with reference to the terms of contract. Furthermore, product returns are a sensitive matter involving a constant blame-game prevalent among the retailer and the LSP. The retailer tends to blame the LSP for any damages or schedule issues, whereas the LSP tends to hold the retailer accountable. It is important for the retailer and LSP to jointly plan the timeliness of deliveries, to keep the processes coordinated. Moreover, issues of personnel behavior are not uncommon in such relationships. Increased conflicts may reduce service quality if the conflict persists and remains unresolved. Therefore, the presence of high frequency of conflicts will decrease the association between service quality and process coordination. Based on this discussion, this paper proposes the following hypothesis.

H_5 : The presence of conflict frequency weakens the relationship between reverse logistics process coordination and reverse logistics service quality.

3.7. Research Gap

Extensive research has been carried out on logistics service quality and LSP-retailer relationships. However, nearly all have been strictly in the context of forward logistics. Reverse logistics is a significant aspect of the retail environment. Companies are emphasizing on the importance of minimizing reverse logistics costs by improving its efficiency through service quality. Therefore, it is necessary to explore the role of reverse logistics service quality in retail. Moreover, this study focuses on multichannel retail which is yet another underexplored area with regard to reverse logistics. Additionally, the relationship between process coordination and LSP relationship quality remains underexplored, and reverse logistics service quality is also a significantly underexplored variable, particularly in a mediating role. The moderating role of frequency also remains undiscovered, particularly in the context of reverse logistics. Therefore, this study aims to address these mentioned gaps in literature.

Table 3.2 represents some of the studies conducted on process coordination, logistics service quality, relationship quality and conflict frequency along with a description of the context. Hussein Ali (2022) studied the association between LSP relationship quality and logistics service quality in the context of sustainable logistics. Kim (2022), Jang (2013) and Panayides & So (2005) studied a similar relationship in the context of forward logistics. Saikouk (2021), Wang (2020), Soares (2018), Huiskonen & Pirttila (2002) and Schramm-Klein & Morschett (2006) studied logistics process coordination and LSP relationship quality in a single framework, in the context of forward logistics. Gupta et al. (2022) examined logistics process coordination and logistics service quality in a single framework in forward logistics whereas Yang & Xiao (2017) studied a similar relationship in the context of overall supply chain. Zakaria et al. (2014) studied the variables logistics process coordination, LSP relationship quality and logistics service quality altogether in a single framework in the context of forward logistics. Ali (2021) studied the relationship between LSP relationship quality and conflict frequency in sustainable logistics whereas Cahill (2010) studied a similar relationship in forward logistics. Breitling (2019) examined logistics process coordination and conflict frequency in a single framework in forward logistics. This study examines logistics process coordination, LSP relationship quality, logistics service quality and conflict frequency altogether in a single new framework, adding to literature.

Table 3.2: Summary of Past Studies and Contribution of this study

| Paper | LPC | LSPRQ | LSQ | CF | Logistics Context |
|-----------------------------------|------------|--------------|------------|-----------|--------------------------|
| (Hussein Ali et al., 2022) | | ✓ | ✓ | | Sustainable |
| (Kim et al., 2022) | | ✓ | ✓ | | Forward |
| (Saikouk et al., 2021) | ✓ | ✓ | | | Forward |
| (Wang et al., 2020) | ✓ | ✓ | | | Forward |
| (Yang & Xiao, 2017) | ✓ | | ✓ | | Supply chain |
| (Jang et al., 2013) | | ✓ | ✓ | | Forward |
| (Gupta et al., 2022) | ✓ | | ✓ | | Forward |
| (Zakaria et al., 2014) | ✓ | ✓ | ✓ | | Forward |
| (Soares Aharonovitz et al., 2018) | ✓ | ✓ | | | Forward |
| (Ali et al., 2021) | | ✓ | | ✓ | Sustainable |
| (Breitling, 2019) | ✓ | | | ✓ | Forward |
| (Huiskonen & Pirttilä, 2002) | ✓ | ✓ | | | Forward |
| (Schramm-Klein & Morschett, 2006) | ✓ | ✓ | | | Forward |
| (Panayides & So, 2005) | | ✓ | ✓ | | Forward |
| (Cahill et al., 2010) | | ✓ | | ✓ | Forward |
| <i>Proposed Framework</i> | ✓ | ✓ | ✓ | ✓ | <i>Reverse</i> |

3.8. Proposed framework

Many researchers have emphasized the need to develop effective returns management strategies, to improve overall service quality leading to improved performance. Moreover, the effect of logistics service quality on the association between the retailer and its LSP has also been addressed several times. However, the role of process coordination in determining relationship quality with LSP in reverse logistics is a notion yet to be addressed. Furthermore, studies have also addressed the impact of conflict frequency on these relationships, however, it has been underexplored in a moderating role in reverse logistics. A new framework needs to be developed to address these constructs in new roles in the context of reverse logistics, to improve the returns management process. Therefore, to address this gap, this study proposes the framework presented in *Figure 3.1*.

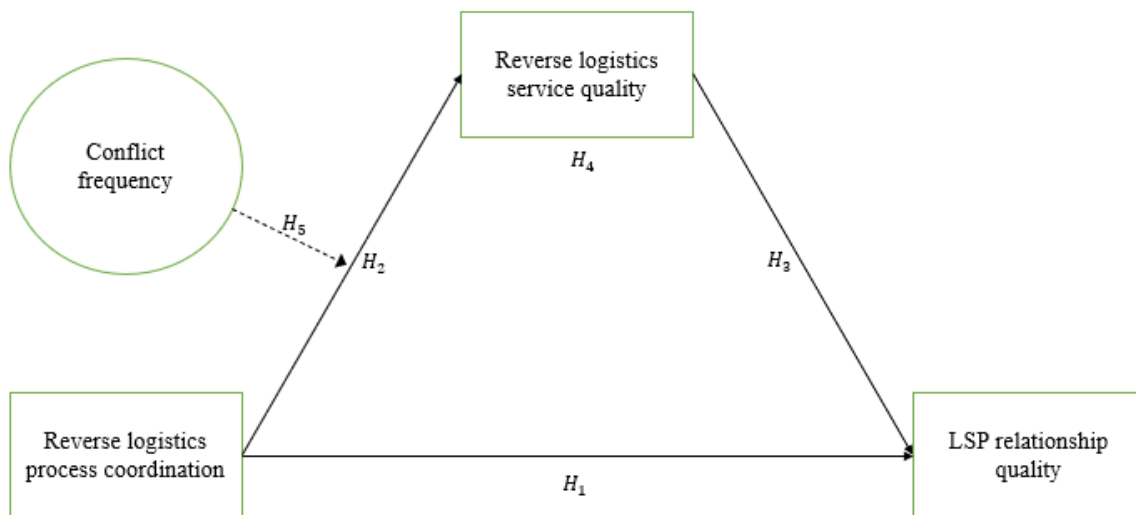


Figure 3.1: Theoretical Framework

The independent variable of the study is reverse logistics process coordination whereas the dependent variable is LSP relationship quality. The first hypothesis addresses the direct influence of the independent variable on the dependent variable. Reverse logistics service quality is the mediator used in the framework. The second hypothesis addresses the direct effect of reverse logistics process coordination on reverse logistics service quality whereas the third hypothesis addresses the direct impact on reverse logistics service quality on LSP relationship quality. The fourth hypothesis tests the mediating influence of reverse logistics service quality on the

association between the independent and the dependent variable. The fifth hypothesis illustrates the moderating effect of conflict frequency on the association between the independent variable and the mediator.

Many authors have emphasized the value of maintaining service quality in the returns management process, especially considering how frequent the returns, e-commerce in particular, have become post pandemic. Moreover, studies have analyzed the role of process coordination in logistics, however, limited authors have examined its impact on relationship quality between the retailer and LSP in the context of reverse logistics. Nonetheless, the existing literature, provides an in-depth understanding of the constructs measured in this study. Furthermore, it also helps build an understanding on how to fulfil the objectives of the research, in the form existing scales of the construct variables, and the statistical tools used to analyze the models. Researchers have used various statistical frameworks and models to examine the role process coordination, service quality and relationship quality play in forward logistics.

4. Methodology

This chapter describes the methods this study adopts to address the research questions and fulfill its objectives. The chapter first discusses the research philosophy and design adopted in this research, followed by the sampling design, and the data collection method and procedure. Next, it demonstrates the statistical model applied i.e., first-stage moderated mediation followed by a detailed explanation of the preliminary tests required for Ordinary Least Squares Regression analysis. Lastly, a conclusive diagram that summarizes the methodology is presented at the end of the chapter.

4.1. Research Philosophy and Design

Opting for a suitable methodology for research is determined by considering different aspects: the structure of research questions, the different aspects under study, the degree of control needed over behavioral control and the philosophical viewpoint of the researcher. This study adopts the positivist research philosophy which is also referred to as realism. This philosophy believes in objectivism, which suggests the existence of a singular reality or singular truth. In line with the philosophy, this study adopts the quantitative design strategy. This approach serves benefits to the researchers in terms of objectivity and accuracy of the results, ease in conducting the research, and cost effectiveness. Inferential procedures are used to analyze the hypotheses.

4.2. Sampling Design

The population of the study is multichannel fashion products retail stores in Pakistan. The target respondents are retail managers and assistant managers. Due to the nonavailability of the sampling frame, the non-probability sampling method has been adopted in this study. Non-probability samples refer to those in which the probability of a subject becoming part of the sample is unknown, leading to selection bias (Acharya et al., 2013), however, there are several ways to control the bias to some extent. Among the types of non-probability sampling methods, this study adopts purposive sampling. Purposive sampling is a technique in which the choosing of the sample is based on the assessment of the researcher. Certain criteria are set by researcher on the basis of which it is determined which units are to be selected for the sample (Oliver & Jupp, 2006). Among the various types of purposive sampling, this study adopts the homogenous sampling method (HSM) in particular. HSM enables the researcher to select units on the basis of similar characteristics that are of particular interest in the study (Rai & Thapa, 2015). The criteria in this study, for the selection of sample is that the retail store must contain the characteristics of a

multichannel store, and the retail store must be working with third-party logistics service providers. One of the key benefits of purposive sampling is that it offers the researcher appropriate justification to make logical, analytical or are theoretical generalizations from the selected sample (Rai & Thapa, 2015). Several authors have applied inferential analysis techniques like Process macro and Structural Equation Modeling, on purposive samples (Mashele & Chuchu, 2018; Mubarak et al., 2021; Sari & Seniati, 2020; Srimarut & Mekhum, 2020). Furthermore, this study uses individual retail stores as its sampling unit. The reasons for this are attributed to the varying managerial behavior, culture, leadership styles, employee job satisfaction across retail stores (Buisman, 2009; Markos & Sridevi, 2010; Stanford, 2010). Since these traits are individual-specific traits, the relationship of retail managers with their third-party logistics providers can vary from store to store. The sample size for this study is 241, is drawn based on sampling recommendation by researchers who have conducted studies of the same context (Hult et al., 2018; Khan et al., 2021).

4.3. Data Collection

Cross-sectional data from retail store managers in the fashion industry was collected through an empirical respondent-filled questionnaire survey, which contains items to measure the study variables. The questionnaire survey method is an inexpensive data collective method, which offer fast results. Moreover, it offers scalability as information can be gathered from a large audience. As this is a quantitative study, questionnaire is an appropriate and viable data collection instrument since the data can be easily quantified and analyzed. A pilot study was led by using a semi-structured questionnaire to achieve a better understanding of the notion of the study. The results of the pilot study were analyzed and changes in the questionnaire items were made subsequently, so the respondent could clearly understand the items while filling the questionnaire. The items are constructed on 5-point Likert scales, where 1 = Strongly disagree and 5 = Strongly agree. The final questionnaire includes items to test the four variables. To assess LSPRQ, the managers were asked 13 items that reflected the strength of relationship quality between the retailer and the third party LSP. To measure RLPC, the managers were asked 7 items regarding the level of joint planning with the LSP, that improves process coordination. To measure RLSQ, there were 19 items in the questionnaire that reflected the level of service quality offered by the LSP in the context of returns. Lastly, to measure CF, 10 items were included in the questionnaire to reflect on the frequency of conflicts between the retailer and LSP, and the LSP and consumer. A total of 460 online

questionnaires were sent to retail managers and assistant manager, out of 250 responses were attained, bearing a response rate of 54.3%. Out of those 250 responses, 241 responses were usable for further analysis.

The use of several respondents per organization as opposed to a single respondent has been recommended by an abundant number of authors in the management and marketing literature (Dawes, 2000; Gray, Matear, Boshoff & Matheson, 1998; Tsai, 2002). Insights into the variation in responses of managers on certain themes are more crucial than an average measurement of their responses, which can be achieved with multiple respondents per firm (Balloun et al., 2011). The multiple respondent survey methodology was adopted by Balloun et al. (2011) to prove that a better understanding of the managers' varying perspectives and opinions can be obtained, as compared to a methodology which incorporated a single respondent per organization. This study adopts a subjective measure of retail and LSP performance in the form of process coordination, service quality, conflict frequency and relationship quality between the two parties. A subjective gauge of organization performance is more pragmatic and valuable than the objective financial performance measurement approach, which the latter kind is accessible (Naman & Slevin, 1993; Sanberg & Hofer, 1987). The subjective approach calls for opinionated responses from multiple managers in a retail organization. Furthermore, when numerous respondents are incorporated in organizational research, the difference of opinion among them can be identified and assessed for their magnitude (Balloun et al., 2011). This approach also tends to minimize the respondent bias and maximize the central tendency, by taking the mean of response values for each item. These mean values are then used in further analysis.

When aiming to quantify managers' opinions, concerns, or perceived effectiveness of an intervention, Likert and ordinal-scale responses are very common psychometric item scoring schemes and are often employed in research (Bishop & Herron, 2015). These opinionated Likert-scale ordinal data require parametric tests for analysis, and parametric tests assume a normal distribution of values (Chin & Lee, 2008). The parametric analysis of ordinary means of Likert scale data can be justified by the Central Limit Theorem (Johnson, 2004), which states that regardless of the population distribution, if the sample size is high enough i.e., close to 250 (Memon et al., 2020), the means of samples acquired replacement are distributed normally with a specific mean and variance (Kwak & Kim, 2017).

4.4. First-stage Moderated Mediation

Mediation refers to the inclusion of a third variable M in the association between two variables X and Y (MacKinnon et al., 2007). This represents an indirect association between X and Y, through the mediation of M, i.e., X causes M and M causes Y. This implies that variable X has an indirect influence of variable Y (Van Kollenburg & Croon, 2022). So, the association between X and Y exists if the effect of M is significant. Moderation model, on the other hand, addresses “when” an outcome variable is greatly explained by a variable (Frazier et al., 2004). A moderating variable intensifies or undermines the association between an independent and a dependent variable. While the evaluation of mediation and moderation is well established (Mallinckrodt et al., 2006; Preacher & Hayes, 2008), there has been a debate over the techniques for testing integration models of mediation and moderation (Edwards & Lambert, 2007; Ye & Wen, 2013).

Conditional process analysis refers to the analytical integration of moderation and mediation analysis. The term was first coined by Hayes (Hayes & Preacher, 2014). This phenomenon comes to use when the researcher hypothesizes that the system through which one variable affects another variable through the inclusion of mediators, is dependent on the value of moderating variables. Mediation analysis emphasizes on ‘how’ an effect functions, whereas moderation analysis demonstrates ‘when’ that particular impact exists, along with the size of the effect. Conditional process analysis, on the other hand, answers ‘when of the how’ questions. A significant feature of this model is that it allows a direct effect, an indirect effect (most common), or both to depend on one or more moderators (Hayes, 1987). This phenomenon is also referred to as first-stage moderated mediation (Hayes & Hayes, 2018). This study hypothesizes that the moderator W, which is conflict frequency, moderates the association between the independent variable RLPC and the mediating variable RLSQ. The analysis is conducted on SPSS using Hayes PROCESS Macro. It is a well-established tool and is widely used in literature to analyze moderated mediation models (Han et al., 2020; Hayes & Montoya, 2017; Hayes & Rockwood, 2017; Kalyar et al., 2021; Mensah, 2021; Ong et al., 2018; Priesemuth & Taylor, 2016). The analysis is conducted by applying Hayes PROCESS model number 7.

The statistical model of conditional process macro is presented in *Figure 4.1*.

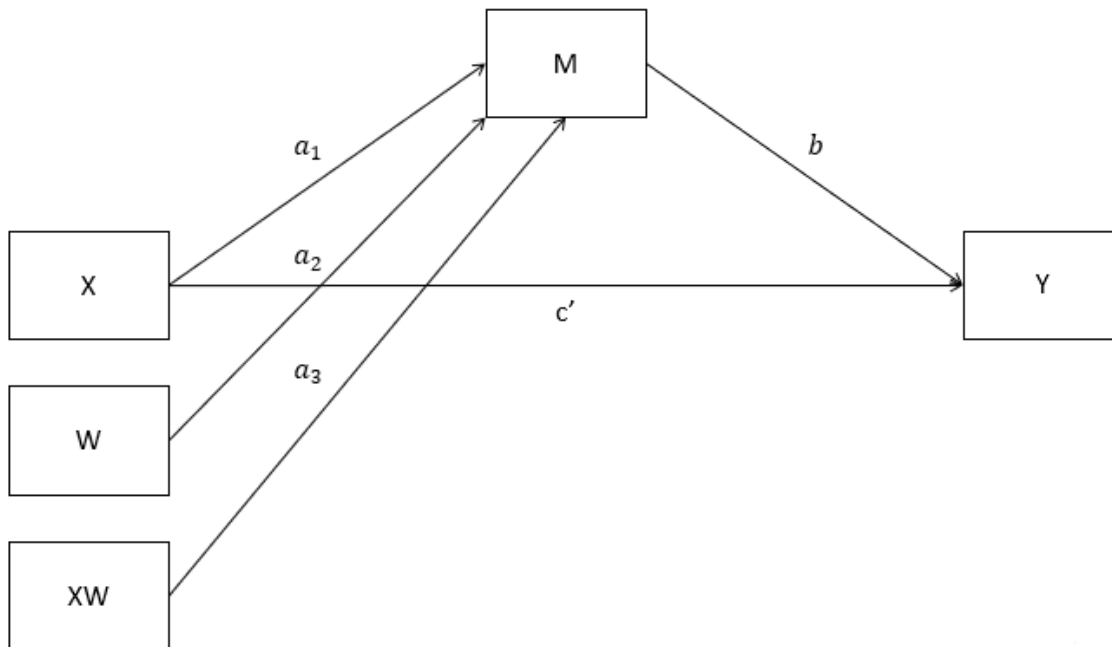


Figure 4.1: Statistical Framework

Conditional indirect effect of X on Y through M = $(a_1 + a_3W)b$

Direct effect of X on Y = c'

The parameters of the direct effect of X (RLPC) on Y (LSPRQ) can be typically estimated with *Equation 1*.

$$Y = \alpha_y + cX \quad \text{Equation 1}$$

Where α_y is the intercept and c is the slope of the direct effect

The effect of X on M is represented by *Equation 2*.

$$Y = \alpha_M + a_1X \quad \text{Equation 2}$$

The mediation effect is represented in *Equation 3*.

$$\hat{Y} = \alpha_y + c'X + bM \quad \text{Equation 3}$$

The effect of X (RLPC) on M (RLSQ) in a mediation model can be projected as linearly moderated by W (CF). Using regression analysis, the model at present is estimated with \hat{M} .

$$\hat{M} = \alpha_M + a_1X + a_2W + a_3XW \quad \text{Equation 4}$$

Where,

α_M is the intercept in *Equation 4* respectively, and a_1 , a_2 and a_3 are the slopes of X, W and XW respectively.

When we include the moderator and the product term into *Equation 4*, the effect of Y on the mediator varies as a function of the moderator. Like a general mediation model, the product of the effects of X on M and M on Y produces the indirect impact of X on Y. However, in a moderated mediation model, the product term has to permit the indirect effect to be conditional on W. Hence, *Equation 5* is derived by substituting *Equation 3* into *Equation 4*, projecting an estimation of the first stage moderated mediation model.

$$Y = \alpha_y + c'X + b_{iM} + a_1bX + a_2bW + a_3bXW \quad \text{Equation 5}$$

The effect of X on M is illustrated as $(a_1 + a_3W)$ whereas the effect of M on Y is b_{iM} . The conditional indirect effect is illustrated as $\omega = (a_1 + a_3W)b$.

4.5. Preliminary Data Analysis

4.5.1. Reliability

Reliability describes the level of consistency in the measurement instrument (Tavakol et al., 2008). It can be measured objectively using Cronbach's alpha, the most widely accepted empirical measure of reliability (Tavakol & Dennick, 2011). Cronbach alpha is commonly used in instruments where several items are employed to measure a construct. It measures the internal consistency of all the items in assessing the same construct. Reliability estimates also reflect the extent of measurement errors in a test (Tavakol et al., 2008). The acceptable range of alpha values have been reported to be 0.70 to 0.95 (DeVellis & Thorpe, 2021).

4.5.2. Assumptions of Regression Analysis

Hayes and Montoya (2017) illustrate the following assumptions of ordinary least squares regression analysis.

1. The first assumption is normality. Normality is a phenomenon which reflects a statistical distribution called normal distribution. It is a symmetrical distribution, which is continuous in nature, and has a certain mean and a standard deviation of the data. Contrary to the

widespread understanding of normality, the phenomenon actually relates to the shape of the estimation of errors of the independent variable Y, not Y itself nor the predictor variables' distribution. Although normality is an assumption of regression, it is the least important one, since regression is fairly robust to errors that are non-normal in estimation (Hayes et al., 2017). Nonetheless, we evaluate the normality of residuals using Jarque-Bera (JB) test in SPSS (Dong & Giles, 2004). The JB is a widely used tool to analyze the normality in panel data (Alejo et al., 2015). Bootstrapping is widely used computer technique to overcome the problem of non-normality.

2. An important assumption in regression is the linearity of variables. This assumes a straight-line association between any two variables (Nimon, 2012). If non-linear data is put into a linear model, the analysis will yield incorrect predictions (Flatt & Jacobs, 2019). A common tool to test for linearity in the data set is Pearson's Correlation (Pak & Oh, 2010). To deal with nonlinearity in the data set, researchers recommend the transformation of variables (Marrocu, 2006).
3. Homoskedasticity is another important assumption of regression, which refers to the phenomenon in which the standard deviations of a predicted variable that are monitored over different values of the predictor variable are constant. When the variance of the residuals is non-constant over a range of determined values, the data set is said to be heteroskedastic in nature. Heteroskedasticity is a violation of the homoscedasticity assumption. This violation will lead to incorrect results. Scatters plots and White's test are commonly used to test for heteroskedasticity (White, 1980). Researchers have recommended the inclusion of heteroskedasticity-consistent standard errors to lessen the effects of heteroskedasticity on inference. (Hayes & Cai, 2007; Hinkley, 1977; Long & Ervin, 2000; MacKinnon & White, 1985); White, 1980).

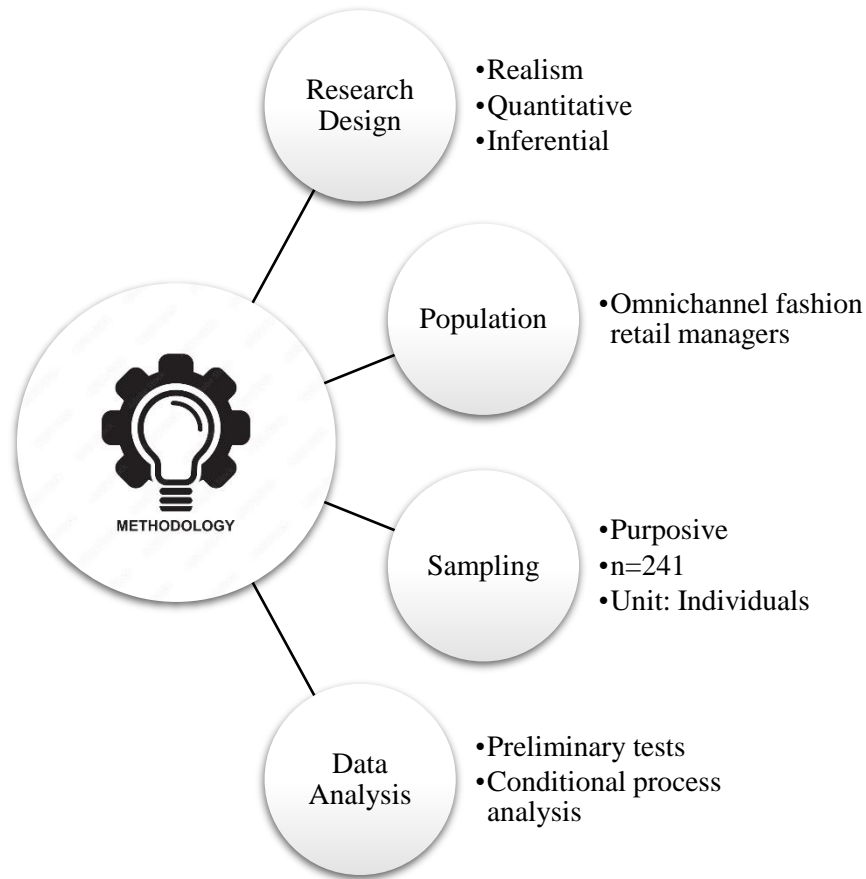


Figure 4.2: Methodology Conclusive Diagram

4. The coefficients produced in regression may sometimes be over or underestimated. This depends on the structure and extent of non-independent cases. This leads to the problem of autocorrelation, which generates incorrect results. In this phenomenon, the variables or errors terms correlate with the scores of associated cases on the same variables or error terms. Technically, the coefficient estimates produced in the presence of autocorrelation vary from the true coefficient to a great extent. The presence of autocorrelation may lead to the following: (1) A regression coefficient might be generated which is substantially different from zero, while in reality there might be little or no correlation between the variables. This may lead the researcher to report false findings. (2) The researcher might report a significant difference between the estimates of two different autocorrelated samples and the relationship between the two estimates does not replicate, when in reality, they relationship is replicable and substantial (Malcolm, 1964). The Durbin-Watson test is generally assumed to be the most powerful simple tool to test first-order autocorrelation

(Habibagahi & Pratschke, 1972; Harrison, 1975; Schmidt & Guilkey, 1975). A D-W statistics value that lies in the range 1.5 to 2.5 are considered normal (Field, 2013). Autocorrelation in panel data can be reduced using Random-Effects Modeling (Bell & Jones, 2015).

5. Results and Discussion

This chapter discusses the findings of the statistical analysis conducted on SPSS. The section is divided into four sub-sections. The first subsection, data, reviews the results of the preliminary analysis which include the demographics analysis, Missing Value Analysis and tests of normality, linearity, heteroskedasticity and autocorrelation. The next subsection delivers an in-depth understanding of the results of the conditional process analysis and discusses its implications. The last subsection of the chapter discusses the findings of the analysis in detail, with support from literature.

5.1. Data

A total of 250 responses were received through an online survey, out of which 9 were rejected since they did not meet the criteria for sample selection i.e., their logistics activities were not outsourced to third party providers, so 241 responses were used for further analysis. Missing data is a common aspect in survey-based data collection approaches. At first, Missing Value Analysis was conducted on SPSS to find the percentage of missing data in the data set (See *Appendix B*). Although the percentage of missing data in each item was very low, nonetheless, we replaced the missing values using the *mean* function to generate a complete dataset for further analysis.

5.1.1. Demographics

Responses amounting to 241 were collected from 76 retail outlets, with one response from each outlet. The maximum number of responses from one brand was 8 and minimum was 2. The demographics analysis of the respondents revealed that 48% of the 241 retail managers had an experience of 1 to 5 years in that particular store, 40% had an experience of 6 to 10 years whereas 12% had an experience of 10 years and above (See *Figure 5.1*). The duration of their contract with their 3PL provider was 6 years and above for 77% of the sample retail stores, 2 to 5 years for 16% of the stores and 0 to 1 year for 7% of the stores (See *Figure 5.2*).

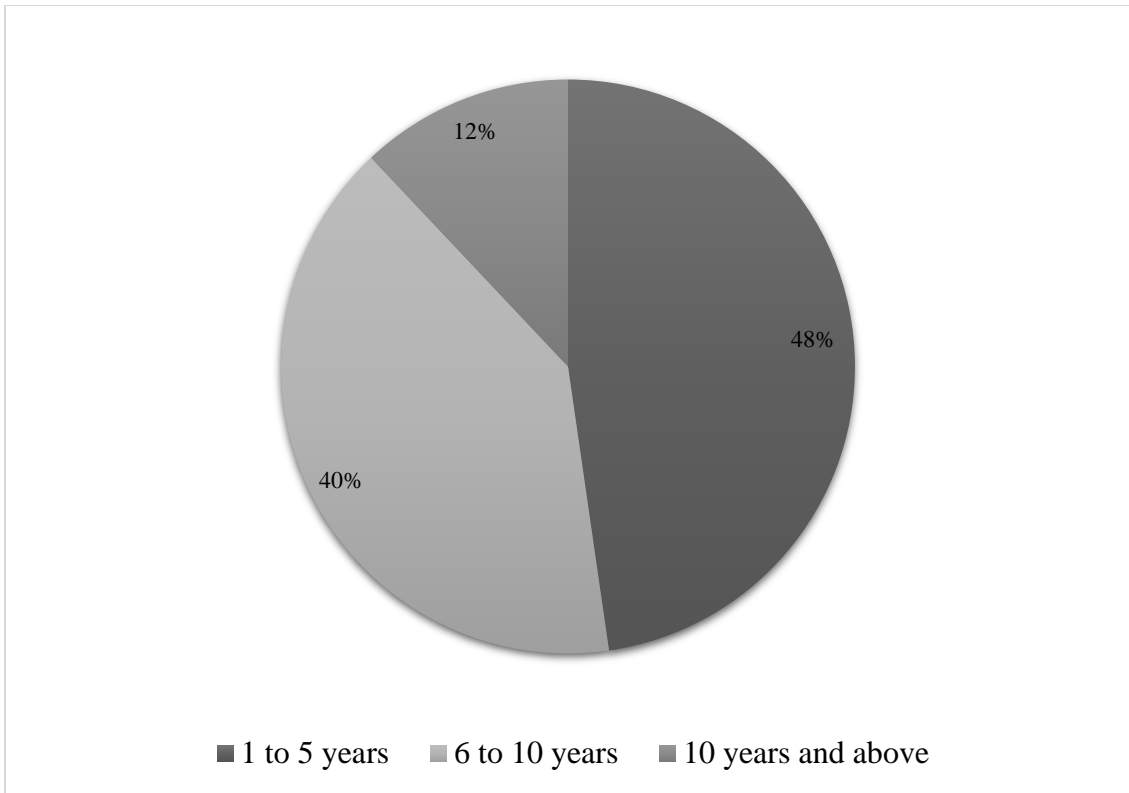


Figure 5.1: Experience working in the store

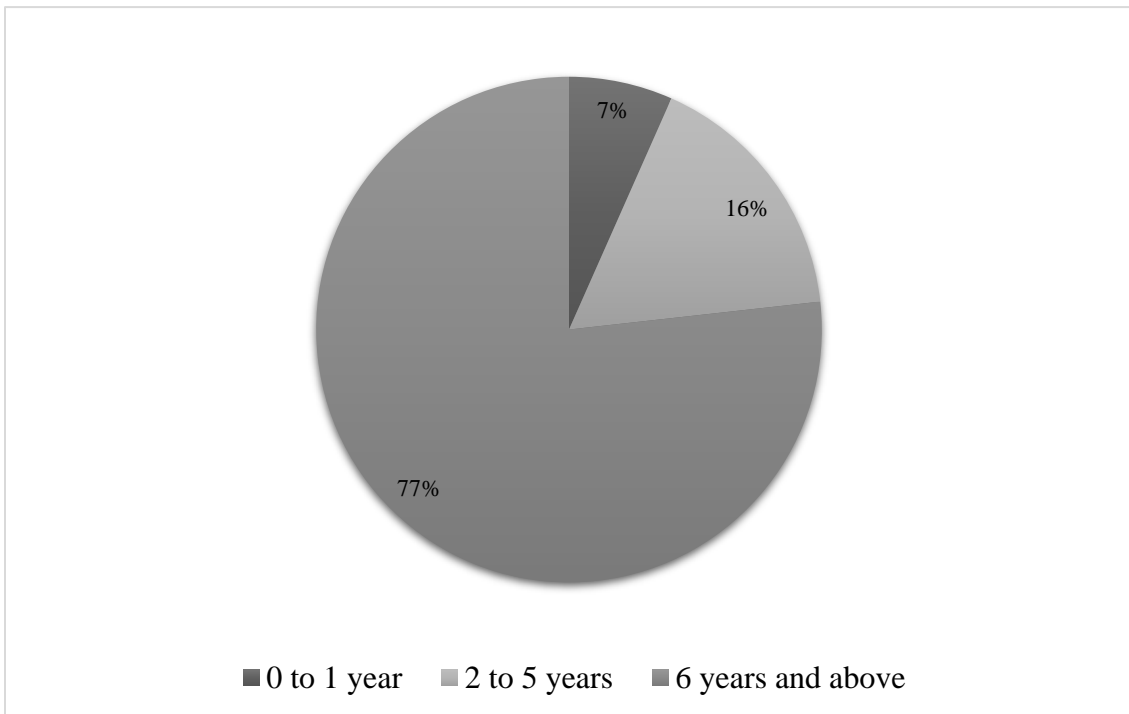


Figure 5.2: Duration of contract with 3PL provider

5.1.2. Reliability

The reliability of the scales was checked using Cronbach's alpha reliability analysis. The analysis generated good Cronbach alpha values for each scale, ensuring reliability of the questionnaire. The values for Cronbach's alpha for each variable scale are given in *Table 5.1*.

Table 5.1: Reliability Analysis

| Construct | Cronbach's alpha |
|-----------|------------------|
| LSPRQ | 0.90 |
| RLPC | 0.86 |
| RLSQ | 0.91 |
| CF | 0.95 |

A preliminary data analysis was performed to confirm whether the data set met the assumptions of the regression analysis. The results of the preliminary analysis are explained below.

5.1.3. Normality

Although there are many tests to confirm whether the data follows a normal distribution, the Process macro accounts for the normality assumptions. Nonetheless, we test the normality of residuals using Jarque-Bera (JB) test in SPS. The JB-tests for the skewness and kurtosis of the residuals. The standard range of skewness values fall between -3 and +3 whereas the normal. range for kurtosis is -10 to +10 (Brown, 2015). The results of the J-B test are presented in *Table 5.2*. The kurtosis values for all variable residuals are within the normal reference range. Moreover, the skewness values for all variables also lie within the normal reference range. Hence, the normality assumption is not violated. Researchers have recommended the use of bootstrapping to overcome the problem of non-normality (Hayes & Preacher, 2014; Preacher & Hayes, 2004). Bootstrapping methods are computer techniques that permit the resampling of large samples into smaller samples. The resampling incorporates the replacement from original sample to generate an approximation of the standard error and the confidence interval (Efron, 1979; Hayes, 2009). The additional benefits of bootstrapping are:

- (1) It requires less assumptions
- (2) It yields the highest power

(3) It minimizes the risk of type 1 error (Hayes, 2009; Hayes & Preacher, 2014).

Hayes PROCESS macro contains the feature for bootstrapping samples.

Table 5.2: J-B Test

| | Skewness | Kurtosis |
|-------------|----------|----------|
| Res1 (RLPC) | -0.776 | 2.131 |
| Res2 (RLPC) | -0.388 | 5.856 |
| Res3 (RLSQ) | -0.509 | 2.454 |
| Res4 (CF) | -0.861 | 2.709 |

5.1.4. Linearity

Many authors have used Pearson’s correlation to test the linearity of the data set (Blom et al., 2017; Kim & Seock, 2019). The results of the analysis presented in *Table 5.3*

Table 5.3, show that the Pearson Correlation for all variables is statistically significant, with $p < 0.05$, at 95% confidence interval. Therefore, the assumption of linearity is not violated.

Table 5.3: Pearson’s Correlation

| | | LSPRQ | RLPC | RLSQ | CF |
|--|---------------------|---------|---------|---------|---------|
| LSPRQ | Pearson Correlation | 1 | .575** | .621** | -.344** |
| | Sig. (2-tailed) | | .000 | .000 | .000 |
| RLPC | Pearson Correlation | .575** | 1 | .717** | -.222** |
| | Sig. (2-tailed) | .000 | | .000 | .001 |
| RLSQ | Pearson Correlation | .621** | .717** | 1 | -.309** |
| | Sig. (2-tailed) | .000 | .000 | | .000 |
| CF | Pearson Correlation | -.344** | -.222** | -.309** | 1 |
| | Sig. (2-tailed) | .000 | .001 | .000 | |
| **. Correlation is significant at the 0.01 level (2-tailed). | | | | | |

5.1.5. Homoskedasticity

Although there are multiple approaches to the measurement of homoskedasticity or heteroskedasticity in literature, Hayes suggests the use of a Heteroskedasticity-Consistent Standard Error Estimator (Hayes & Cai, 2007), to lower the influence of heteroskedasticity on the inference. This, however, does not eliminate the need for a proper heteroskedasticity measurement test. Therefore, we first tested heteroskedasticity using scatter plots of the residual squares and the unstandardized predicted values. The results of the least squares residuals and unstandardized predicted values scatter plot (See *Appendi B*), measuring heteroskedasticity in RLPC and LSPRQ relationship (See *Table 5.4*) reveal the presence of heteroskedasticity. Furthermore, to confirm this, White’s test was used. Since the p-value < 0.05 at 95% confidence level, we accept the null hypothesis that heteroskedasticity is in fact present.

Table 5.4: Heteroskedasticity analysis 1

| ANOVA ^a | | | | | | |
|---|------------|----------------|-----|-------------|--------|-------------------|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 5.018 | 2 | 2.509 | 18.916 | .000 ^b |
| | Residual | 31.565 | 238 | .133 | | |
| | Total | 36.582 | 240 | | | |
| a. Dependent Variable: RES_12 | | | | | | |
| b. Predictors: (Constant), Unstandardized Predicted Value, PRE_12 | | | | | | |

The results of the scatter plot (See *Appendi B*), measuring heteroskedasticity in RLPC and RLSQ relationship (See *Table 5.5*) reveal the presence of heteroskedasticity. Results of the White’s test reveal that the p-value < 0.05 at 95% confidence level, therefore, we accept the null hypothesis, confirming the presence of heteroskedasticity.

Table 5.5: Heteroskedasticity Analysis 2

| ANOVA ^a | | | | | | |
|---|------------|----------------|-----|-------------|--------|-------------------|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 2.554 | 2 | 1.277 | 23.250 | .000 ^b |
| | Residual | 13.074 | 238 | .055 | | |
| | Total | 15.628 | 240 | | | |
| a. Dependent Variable: RES_22 | | | | | | |
| b. Predictors: (Constant), Unstandardized Predicted Value, PRE_22 | | | | | | |

The results of the scatter plot (See *Appendi B*), measuring heteroskedasticity in RLSQ and LSPRQ relationship (See *Table 5.6*) reveal the presence of heteroskedasticity. Results of the White's test reveal that the p-value < 0.05 at 95% confidence level, therefore, we accept the null hypothesis, confirming the presence of heteroskedasticity.

Table 5.6: Heteroskedasticity Analysis 3

| ANOVA ^a | | | | | | |
|---|------------|----------------|-----|-------------|--------|-------------------|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 1.453 | 2 | .726 | 13.577 | .000 ^b |
| | Residual | 12.734 | 238 | .054 | | |
| | Total | 14.187 | 240 | | | |
| a. Dependent Variable: RES_32 | | | | | | |
| b. Predictors: (Constant), Unstandardized Predicted Value, PRE_32 | | | | | | |

The results of the scatter plot (See *Appendi B*), measuring heteroskedasticity in CF and RLSQ relationship (See *Table 5.7*) reveal the presence of heteroskedasticity. Results of the White's test reveal that the p-value < 0.05 at 95% confidence level, therefore, we accept the null hypothesis, confirming the presence of heteroskedasticity.

Table 5.7: Heteroskedasticity Analysis 4

| ANOVA ^a | | | | | | |
|---|------------|----------------|-----|-------------|--------|-------------------|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 9.990 | 2 | 4.995 | 49.125 | .000 ^b |
| | Residual | 24.200 | 238 | .102 | | |
| | Total | 34.191 | 240 | | | |
| a. Dependent Variable: RES_42 | | | | | | |
| b. Predictors: (Constant), Unstandardized Predicted Value, PRE_42 | | | | | | |

To overcome the problem of heteroskedasticity, an alternative approach towards the estimation of standard error is used in which homoskedasticity is not an assumption (Hayes & Cai, 2007). The application of a heteroskedasticity-consistent standard error (HCSE) is a highly appealing approach toward the reduction of the impact of heteroskedasticity on inference. (White, 1980). This approach requires no information of the functional form in which heteroskedasticity persists in the model. It requires no transformation techniques and no complex computer simulations (Hayes & Cai, 2007). Researchers have developed four types of HSCEs. This model uses the HC4, which is the preferred estimator (Hayes & Cai, 2007). The HC4 was developed by Cribari-Neto (Cribari-Neto, 2004).

5.1.6. Autocorrelation

The results of the Durbin-Watson test for the RLPC and LSPRQ relationship reveal that the D-W statistic value lies between 1.5 and 2.5, indicating the absence of autocorrelation (See *Table 5.8*).

Table 5.8: D-W Analysis 1

| Model Summary^b | | | | | |
|----------------------------------|-------------------|----------|-------------------|----------------------------|---------------|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
| 1 | .575 ^a | .331 | .328 | .44149 | 1.553 |
| a. Predictors: (Constant), RLPC | | | | | |
| b. Dependent Variable: LSPRQ | | | | | |

For the RLPC and RLSQ relationship, the D-W statistic value lies between 1.5 and 2.5, indicating the absence of autocorrelation (See *Table 5.9*).

Table 5.9: D-W Analysis 2

| Model Summary^b | | | | | |
|----------------------------------|-------------------|----------|-------------------|----------------------------|---------------|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
| 1 | .717 ^a | .514 | .512 | .30410 | 1.994 |
| a. Predictors: (Constant), RLPC | | | | | |
| b. Dependent Variable: RLSQ | | | | | |

For the RLSQ and LSPRQ relationship, the D-W statistic value lies between 1.5 and 2.5, indicating the absence of autocorrelation (See *Table 5.10*).

Table 5.10: D-W Analysis 3

| Model Summary^b | | | | | |
|----------------------------------|-------------------|----------|-------------------|----------------------------|---------------|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
| 1 | .621 ^a | .386 | .383 | .42291 | 1.745 |
| a. Predictors: (Constant), RLSQ | | | | | |
| b. Dependent Variable: LSPRQ | | | | | |

For the CF and RLSQ relationship, the D-W statistic value lies between 1.5 and 2.5, indicating the absence of autocorrelation (See *Table 5.11*).

Table 5.11: D-W Analysis 4

| Model Summary^b | | | | | |
|----------------------------------|-------------------|----------|-------------------|----------------------------|---------------|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
| 1 | .309 ^a | .096 | .092 | .41498 | 1.724 |
| a. Predictors: (Constant), CF | | | | | |
| b. Dependent Variable: RLSQ | | | | | |

The results of the preliminary analysis reveal that the assumptions of linearity and autocorrelation are not violated. To deal with non-normality and heteroskedasticity, PROCESS employs bootstrapping methods and heteroskedasticity-consistent standard errors. Therefore, we proceed with the descriptive analysis and the OLS regression analysis.

5.1.7. Descriptive Statistics

The results of the descriptive analysis reveal that the respondents have rated LSPRQ, RLPC and RLSQ on the higher level with means equal to 4.17, 4.12 and 4.30 respectively. CF has been rated on the lower level with a mean of 2.04 (See *Table 5.12*

Table 5.12).

Table 5.12: Descriptive Statistics

| Descriptive Statistics | | | | | |
|------------------------|-----|---------|---------|--------|----------------|
| | N | Minimum | Maximum | Mean | Std. Deviation |
| LSPRQ | 241 | 1.92 | 5.00 | 4.1712 | .53861 |
| RLPC | 241 | 1.86 | 5.00 | 4.1250 | .65540 |
| RLSQ | 241 | 2.21 | 5.00 | 4.3029 | .43547 |
| CF | 241 | 1.00 | 5.00 | 2.0490 | .94277 |
| Valid N (listwise) | 241 | | | | |

5.2. Conditional PROCESS Analysis

To calculate the effects of moderated mediation, we used the PROCESS macro syntax for model number 7 in SPSS. To prevent bias in the obtained confidence intervals, the statistical significance of the direct and indirect effects was examined using 20,000 bootstrap samples (CI = 95%), while also employing heteroskedasticity-consistent SEs in the form of HC4. Furthermore, mean composite scores were used on the items for each construct. LSPRQ was set as the dependent variable, RLPC as the independent variable whereas RLSQ was entered as a mediator. Moreover, CF was set as the moderator W.

The model summary for RLSQ as the outcome variable revealed a P-value < 0.05 and an $R^2 = 0.613$. The service quality of reverse logistics improved when the reverse logistics processes of the retailer were coordinated with those of the LSP (Effect = 0.39, $p < 0.05$), providing support for H_2 . The analysis of conflict frequency between the retailer and LSP, and the LPS and consumer, revealed a negative effect of conflict frequency on the outcome variable reverse logistics service quality (Effect = -0.102, $p < 0.05$). The RLPC and CF interaction term (X*W) revealed a significant moderating influence on the association between reverse logistics process coordination

and reverse logistics service quality (Effect = 0.170, $p < 0.05$). This means that the interaction of RLPC and CF is bringing 7.4% change in the criterion variable (R^2 -chng = 0.074, $p < 0.05$). (See 5.13).

Table 5.13: Outcome variable – RLSQ

| | Coeff | p-value |
|----------|----------------|----------------|
| Constant | 4.326 | 0.000 |
| RLPC | 0.396 | 0.000 |
| CF | -0.102 | 0.001 |
| Int_1 | 0.170 | 0.001 |
| | R2-chng | p-value |
| X*W | 0.074 | 0.001 |

The Johnson-Neyman interval tells us the range of values for the moderator in which the slope of the independent variable is significant and non-significant at a specific α -value (5% in this case). The results of the Johnson-Neyman output reveal that at an average level of conflict frequency, the impact of the focal predictor (RLPC) on the outcome variable (RLSQ) is significant (Effect = 0.39, $p < 0.05$), at a lower level, which is the mean minus 1 SD, the effect is also significant (Effect = 0.235, $p < 0.05$) and at a higher value of CF i.e., mean plus 1 SD, the effect is again significant (Effect = 0.55, $p < 0.05$). Although, the effect increases as the values of conflict frequency increase. (See Table 5.14)

Table 5.14: Johnson-Neyman Output

| Conditional effects of the focal predictor at the values of the moderator (s): | | |
|---|---------------|----------------|
| CF | Effect | p-value |
| -0.943 | 0.235 | 0.001 |
| 0.000 | 0.396 | 0.000 |
| 0.943 | 0.556 | 0.000 |

The graph (See Figure 5.3) shows a steeper gradient for average and high conflict frequency. The impact of RLPC on RLSQ is much stronger at average and high values of conflict frequency.

However, lower conflict frequency, the line tends to straighten. This shows that at lower conflict frequency, the increase in RLPC does not lead to similar change in RLSQ. Concluding, higher conflict frequency strengthens the impact of RLPC on RLSQ. Although the effect is significant, the analysis nonetheless provides evidence to reject H_5 .

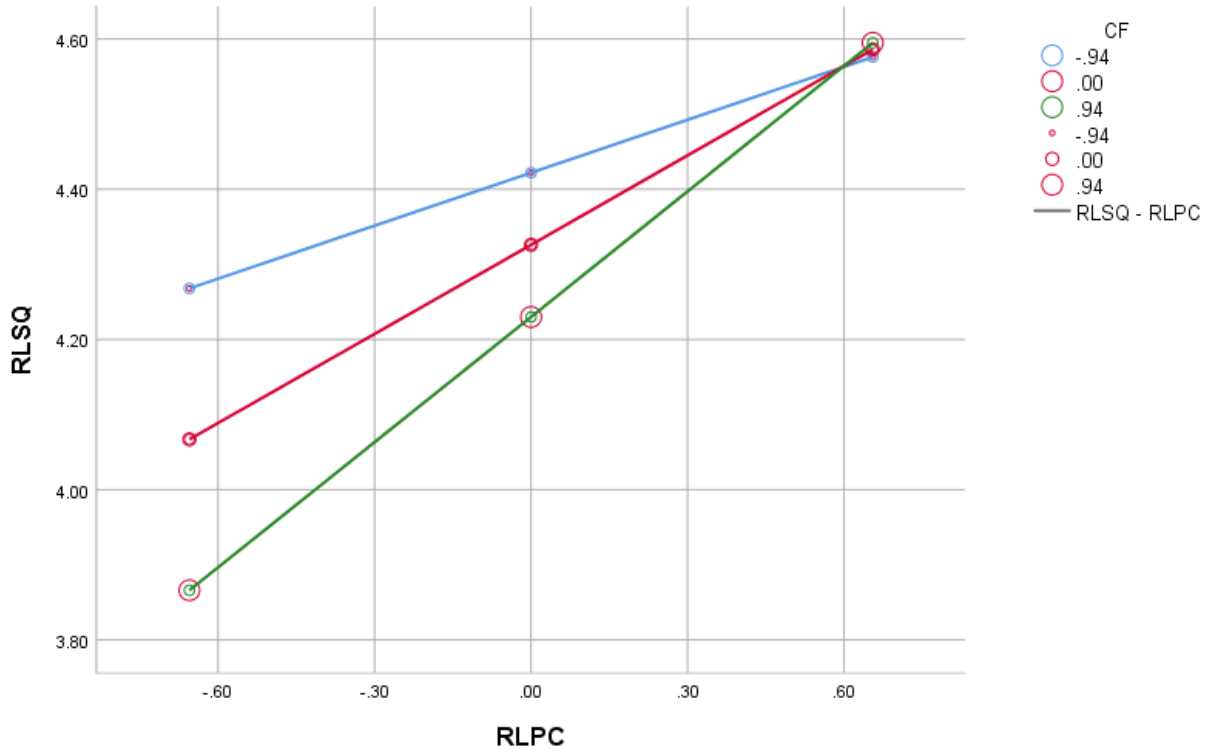


Figure 5.3: Johnson-Neyman Output

Table 5.15: Outcome Variable – LSPRQ

| | Coeff | p-value |
|----------|--------------|----------------|
| Constant | 1.883 | 0.000 |
| RLPC | 0.219 | 0.001 |
| RLSQ | 0.532 | 0.000 |

The model summary for LSPRQ as the outcome variable revealed a P-value < 0.05 and $R^2 = 0.42$. The relationship quality between the retailer and the LSP improves when the level of reverse logistics service quality increases (Effect = 0.532, $p < 0.05$), thereby providing evidence for H_3 . (See Table 5.15).

The results provide evidence for a significant direct effect of RLPC on LSPRQ (Effect = 0.21, $p < 0.05$). This reveals that if the reverse logistics processes are coordinated among the retailer and the LSP, the relationship quality of the retailer and LSP will improve, thereby accepting H_1 .

The conditional indirect effect shows that the indirect effect is weak at low levels of conflict frequency, higher at an average level and further higher at a higher conflict frequency level. Although, the conditional indirect effects are significant at all three levels. The indirect effect in the presence of the moderator at a mean level is 0.21, and per the bootstrap, that is within the confidence interval at a $p < 0.05$. This suggests that even in the absence of the moderating variable CF, the RLSQ significantly mediates the relationship between RLPC and LSPRQ. Therefore, H_3 is accepted. (See *Table 5.16*).

Table 5.16: Conditional Indirect Effects

| Conditional indirect effects of X on Y: | | | |
|--|---------------|-----------------|-----------------|
| Indirect effect: RLPC → RLSQ → LSPRQ | | | |
| CF | Effect | BootLLCI | BootULCI |
| -0.943 | 0.125 | 0.056 | 0.211 |
| 0.000 | 0.210 | 0.129 | 0.299 |
| 0.943 | 0.296 | 0.175 | 0.413 |

Table 5.17: Index of Moderated Mediation

| Index of moderated mediation: | | | |
|--------------------------------------|--------------|-----------------|-----------------|
| | Index | BootLLCI | BootULCI |
| CF | 0.091 | 0.035 | 0.146 |

The evaluation of the model revealed a significant moderated mediation index (Effect = 0.091, 95% CI [0.035, 0.146]). This suggests that the indirect effect of RLPC on LSPRQ through the mediation of RLSQ is moderated by CF. This evidence, thus, holds the presence of moderated mediation in the model, and the vigor of the conceptual model (Hayes, 2017) (*See Table 5.17*).

5.2.1. Summary

The results of the relationships tested in the study are summarized in *Table 5.18* and *Table 5.19*.

Table 5.18: Summary of Direct Relationships

| Direct Relationships | Unstandardized Coefficients | P-values |
|----------------------|-----------------------------|----------|
| RLPC → RLSQ | 0.396 | < 0.05 |
| RLSQ → LSPRQ | 0.532 | < 0.05 |
| RLPC → LSPRQ | 0.219 | < 0.05 |
| RLPC * CF → RLSQ | 0.170 | < 0.05 |

Table 5.19: Summary of Indirect Relationships

| Indirect Relationships | Direct Effect | Indirect Effect | C-I | P-value |
|------------------------------|-------------------------|------------------------|-------------|----------------|
| RLPC → RLSQ → LSPRQ | 0.219 | 0.210 | 0.12 – 0.29 | < 0.05 |
| <i>Probing Relationships</i> | <i>Moderated Effect</i> | <i>Indirect Effect</i> | <i>C-I</i> | <i>P-value</i> |
| Low level of CF | 0.125 | 0.039 | 0.05 – 0.21 | < 0.05 |
| High level of CF | 0.296 | 0.061 | 0.17 – 0.41 | < 0.05 |
| Index of Moderated Mediation | 0.091 | 0.29 | 0.03 – 0.14 | < 0.05 |

5.3. Discussion

The concept of multichannel retailing is directed towards serving the customers as per their want, in terms of when and how. The consumer of today is now routinely engaging with multiple channels, thereby increasing the complexity of a single shopping experience. Multichannel provides a specific directive to investigate how the abundance of retail channels fit into a decision-making journey in fashion retail. Product returns are very common element in fashion retail. Retail companies spend a good sum of expense on the management of product returns from the consumer to the retailer and from the retailer to the central/regional warehouse. Therefore, the efficient and effective management of product returns is an intriguing concern among the fashion retail industry. This management phenomenon requires the provision of quality services by the third-party LSP, since majority of retail companies have outsourced their logistics to third-party providers. Process coordination among the two parties is an important prerequisite for quality services provided by the LSP. Additionally, if service quality is improved, the relationship quality will increase.

Maintaining good relationships with LSPs is of priority to the retailer, since a very important function of their business operations is outsourced to them, without which the entire supply chain will be hindered. Additionally, LSPs are often prone to conflicts with the retailer and its consumers, particularly regarding damages claim, schedule issues, quality issues and personnel behavior. Henceforth, an increased frequency of conflicts can potentially reduce the quality of reverse logistics services provided.

Several researchers have probed the effect of logistics service quality on relationships. Moreover, conflict frequency has been found to moderate the association between coordination and service quality. However, the mediating function of logistics service quality in the relationship between process coordination and LSP relationship quality, particularly in the context of reverse logistics is highly underexplored. Moreover, the direct relationship between process coordination and LSP relationship quality in reverse logistics is also understudied. This study has addressed these mentioned gaps in literature. Lastly, the moderated mediation model, which studies the impact of process coordination on LSP relationship quality through reverse logistics service quality, moderated by conflict frequency, in the context of reverse logistics in particular, is the contribution of this research to the prevailing literature.

The results of this study reveal that if the processes among the retailer and the LSP are coordinated, the relationship quality of the retailer and LSP will improve. Coordinated processes tend to improve cooperation among parties. Moreover, collaboration among parties is also a byproduct of process coordination. Both cooperation and collaboration improve relationship quality. The outcomes are coherent with those of Theodorakioglou et al. (2006). He narrates that coordination of activities in process management provides a sound infrastructure to the firm which aids the firm in achieving better relationship quality, better relationship handling and better information sharing with its third-party suppliers. The mediating effect of reverse logistics service quality in the relationship between reverse logistics process coordination and relationship quality with the LSP is underexplored and is thus a novel contribution to literature.

Results show that reverse logistics process coordination improves reverse logistics service quality. The reason for this, as evidenced in literature, is that the effectiveness of the process of service delivery is highly dependent on the ability of the LSP to effectively coordinate their clients i.e., retailer in this case, in the decision-making, knowledge-sharing and planning processes. These

findings are consistent with those of Lavikka (2009); however, the study was in reference to the service quality of businesses in general. The study suggested that good service quality requires coordination among business units (Lavikka et al., 2009). These findings are also supported by Gronroos (1990). He argues in his book that the improvement of service quality requires coordination between parties (Grönroos, 1990). Furthermore, Hermayanty and Irma (2021) in their paper suggest that if coordination persists in an organization's processes, the quality of services provided will continue to increase, ultimately affecting the overall quality of the organization (Hermayanty, 2021).

The results also revealed the presence of significant and positive relationship between reverse logistics service quality and LSP relationships. Better the reverse service quality provided by the LSPs, better the quality of relationships. These findings are supported by Jang (2013). His findings reveal a positive association between logistics service quality and relationship quality, particularly with the indicators of trust and satisfaction (Jang et al., 2013). The findings of Jaafar (2006) also illustrate a positive impact of logistics service quality on relationship quality (Jaafar, 2006). If LSPs consistently provide good quality services to their retailers, the retailers would trust their word, would stay committed and would want to maintain long-term relationships, since the cost of switching also tends to be high.

Further, we account for the moderating impact of conflict frequency, thereby demonstrating that the presence of conflict frequency does in fact significantly moderate the relationship between reverse logistics process coordination and reverse logistics service quality, however, the effect is positive. Contrary to the general assumption in which the moderation effect is negative, these findings imply that an increased level of conflict frequency strengthens the relationship. The reasons for this theory could be attributed to the possibility of the conflict being constructive instead of destructive in nature. Constructive conflicts tend to compel both the parties to improve their services by implementing the best and mutually beneficial solutions to conflicts, thereby improving service quality. Managers and employees in cultures like China are known to use constructive conflict to augment the quality of their products and services, efficiently responding to consumer complaints, and strengthen relationships with employees and customers by improving their motivation (Tjosvold et al., 2001). Furthermore, there is sufficient evidence regarding the significant and positive correlation of constructive conflict and trust (Bijlsma & Koopman, 2003;

Hempel et al., 2009). Since trust is an important element in relationship quality, it is safe to say that constructive conflicts enhance relationship quality. Lastly, the moderated mediation model as a whole is significant, which illustrates the significance of the impact of reverse logistics process coordination on LSP relationship quality through the mediating effects of reverse logistics service quality, by the moderation of conflict frequency. The acceptance and rejection of the hypotheses, based on the findings of the study is mentioned in *Table 5.20*.

Table 5.20: Hypotheses Findings

| Hypotheses | Conclusion |
|-------------------|-------------------|
| H_1 | Accepted |
| H_2 | Accepted |
| H_3 | Accepted |
| H_4 | Accepted |
| H_5 | Rejected |

The analysis of the study provides evidence to accept H_1 , which demonstrates the positive impact of reverse logistics process coordination on LSP relationship quality. We also accept H_2 , which illustrates the positive effect of reverse logistics process coordination on reverse logistics service quality. Further, we accept H_3 , which illustrates the positive relationship between reverse logistics service quality and LSP relationship quality. The results also lead to the acceptance of H_4 , which demonstrates the mediation effect of reverse logistics service quality on the association between reverse logistics process coordination and LSP relationship quality. However, the results of the analysis reject H_5 , which illustrates the moderation role of conflict frequency in the relationship between reverse logistics process coordination and reverse logistics service quality.

6. Conclusion

The consumer of today is now routinely engaging with multiple channels, thereby increasing the complexity of a single shopping experience. The plethora of multiple channels carries along the problem of excessive consumer returns. Moreover, ease of logistics outsourcing has enabled firms to easily transport goods in both B2B and B2C setting. The management of these returns incurs costs to the retail company. Therefore, the efficient and effective management of product returns is an intriguing concern among the fashion retail industry. This study aims to address the management of product returns by improving service quality and relationships in reverse logistics. The study proposed an analytical framework that addressed the direct association between RLPC and LSPRQ, and their indirect relationship through the mediation of RLSQ and moderation of CF. Data were collected from fashion retail managers via survey and analysis was conducting using conditional process analysis technique. The results revealed significantly positive direct relationships between RLPC and LSPRQ, RLPC and RLSQ and RLSQ and LSPRQ. RLSQ was also found to positively mediate the association between RLPC and LSPRQ, whereas CF was found to negative moderate the relationship between RLPC and RLSQ. Lastly, the moderated mediation model was found to be significant, which illustrates the significance of the impact of RLPC on LSPRQ through the mediating effects of RLSQ and by moderation of CF.

6.1. Contribution of the study

The role of reverse logistics service quality in fashion retail is highly underexplored. Moreover, reverse logistics service quality has been understudied in a mediating role. Moreover, reverse logistics service quality in direct relation to process coordination and LSP relationship quality with the retailer in reverse logistics is also underexamined. Conflict frequency as a moderator is also under discovered in this context. This research contributes to the prevailing body of knowledge by developing a new framework that studies the variables reverse logistics process coordination, reverse logistics service quality, LSP relationship quality and conflict frequency altogether in the context of reverse logistics. The study also adds to the literature on reverse logistics in multichannel fashion retail. Additionally, the proposed framework has not been studied with respect to multichannel fashion retailers in Pakistan, which also makes the contribution of this study contextual in nature. Lastly, this study suggests to the fashion industry retailers and their LSPs the best practices for the effective and efficient management of returns.

6.2. Managerial Implications

Returns management is a vital concern for the retailers, especially after the COVID-19 pandemic, during which e-commerce returns in particular, took a huge spike. So, retail companies are trying to come up with optimal solutions to their returns-related problems. This study suggests implications for practitioners by asserting that it is imperative for managers to know that their coordinated processes can improve the service quality for returns logistics. All retailers aim to provide their customers great service quality via sales force and logistics. Therefore, emphasizing on the importance of coordinated processes in achieving service quality will compel the retailers to collaborate with their 3PL providers to implement transportation management systems and warehouse management systems, leading to improved process coordination and ultimately, better services. Moreover, this will also lead to better relationship with their 3PL providers. On the contrary, if the retailers are not convinced with the service quality provided by the LSPs in the management of product returns, they will be compelled to switch to other third-party providers, which is very costly and causes hinderance in processes. Therefore, LSPs must devise strategies to improve service quality which will lead to healthier relationship with the retailer. Furthermore, conflicts among the parties involved are unavoidable. However, their resolution must be constructive in nature. Retail managers need to be aware that they need to work on resolving their conflicts with their LSPs and customers in a constructive manner, benefitting both the parties by creating a win-win situation, which will lead to improved service quality, ultimately enhancing the quality of relationship.

6.3. Limitations and Future Recommendations

Like every research, this study also has its limitations. The first limitation is the use of non-probability sampling due to inaccessibility of a sampling frame. Although the non-probability sampling technique i.e., purposive sampling, used in this research accounts for better generalizability compared to other non-probability sampling methods, nonetheless, probability samples would increase the generalizability to a great extent. Another limitation of the study is the respondent's bias against the LSP. A manager might have personal issues with the personnel of the LSP due to which his response might be biased. This might lead to lower quality of the findings, if the percentage of such biased responses is high.

It is proposed that future researchers should study in depth the moderating effects of constructive and destructive conflicts separately while also demonstrating the effects of other types of conflicts,

so managers can focus on those conflicts in particular, thereby saving time and effort. Researchers should replicate the study to other retail industries, like electronics, in which the rate of product returns is high. They should also dive deeper into the notion of reverse logistics service quality and combine it with elements of sustainability, since that is an emerging global phenomenon raising concern among organizations around the world.

References

- Acharya, A.S., Prakash, A., Saxena, P., & Nigam, A. (2013). Sampling: why and how of it? *Indian Journal of Medical Specialities*, 4, 330-333.
- Ahmed, H., & Shabib-ul-Hassan, S. (2021). Omnichannel customer experience in the context of experiential shopping value: The moderating role of omnichannel intensity. *KASBIT Business Journal*, 14(1), 84–106.
- Ahmed, I., Achim, B., Balchandani, A., Robb, Y., Johanna, A., & Saskia, H. (2019). The state of Fashion 2019. Business of Fashion and McKinsey.
- Al-alak, B. A. (2014). Impact of marketing activities on relationship quality in the Malaysian banking sector. *Journal of Retailing and Consumer Services*, 21(3), 347–356.
- Alejo, J., Montes-rojas, G., & Galvao, A. (2015). Tests for normality in linear panel-data models. 3, 822–832. <https://doi.org/10.1177/1536867X1501500314>
- Ali, A. H., Melkonyan, A., Noche, B., & Gruchmann, T. (2021). Developing a sustainable logistics service quality scale for logistics service providers in Egypt. *Logistics*, 5(2), 21.
- Appelbaum, R. P., & Gereffi, G. (1994). Apparel Commodity Chain. *Global Production: The Apparel Industry in the Pacific Rim*, 42.
- Atherly, A., & Thorpe, K. E. (2011). Analysis of the treatment effect of Healthways' Medicare Health Support Phase 1 Pilot on Medicare costs. *Population health management*, 14 Suppl 1, S23–S28. <https://doi.org/10.1089/pop.2010.0059>
- Aviv, Y. (2001). The effect of collaborative forecasting on supply chain performance. *Management Science*, 47(10), 1326–1343.
- Balabanis, G. (1998). Antecedents of Cooperation, Conflict and Relationship Longevity in an International Trade Intermediary's Supply Chain. *Journal of Global Marketing*, 12(2), 25–46. https://doi.org/10.1300/J042v12n02_03
- Ballou, R. H., Gilbert, S. M., & Mukherjee, A. (2000). New managerial challenges from supply chain opportunities. *Industrial Marketing Management*, 29(1), 7–18.

- Balloun, J., Barrett, H., & Weinstein, A. (2011). One is Not Enough: The Need for Multiple Respondents in Survey Research of Organizations. *Journal of Modern Applied Statistical Methods*, 10, 287–296. <https://doi.org/10.22237/jmasm/1304223900>
- Bask, A. (2001). Relationships among TPL providers and members of supply chains – a strategic perspective. *Journal of Business & Industrial Marketing*, 16, 470-486.
- Belbağ, A. G., Üner, M. M., Cavusgil, E., & Cavusgil, S. T. (2019). The new middle class in emerging markets: How values and demographics influence discretionary consumption. *Thunderbird International Business Review*, 61(2), 325-337.
- Bell, A., & Jones, K. (2015). Explaining fixed effects: Random effects modeling of time-series cross-sectional and panel data. *Political Science Research and Methods*, 3(1), 133–153. <https://doi.org/10.1017/psrm.2014.7>
- Bienstock, C. C., Mentzer, J. T., & Bird, M. M. (1997). Measuring physical distribution service quality. *Journal of the Academy of Marketing Science*, 25(1), 31. <https://doi.org/10.1007/BF02894507>
- Bijlsma, K. and Koopman, P. (2003), Introduction: trust within organisations, *Personnel Review*, Vol. 32 No. 5, 543-555. <https://doi.org/10.1108/00483480310488324>
- Bio, N. C., Euromonitor International, Feng, A., Göransson, A., Cazin, N., & Roberts, F. (2021, March 23). The New Look of Fashion Retail. *Euromonitor*. <https://www.euromonitor.com/article/the-new-look-of-fashion-retail>
- Bishop, P. A., & Herron, R. L. (2015). Use and misuse of the Likert item responses and other ordinal measures. *International Journal of Exercise Science*, 8(3), 297.
- Blom, A., Lange, F., & Hess Jr, R. L. (2017). Omnichannel-based promotions' effects on purchase behavior and brand image. *Journal of Retailing and Consumer Services*, 39, 286–295.
- Breen, L. (2006) Give me back my empties or else! A preliminary analysis of customer compliance in reverse logistics practices (UK). *Management Research News*, 29(9): 532-551.
- Breitling, T. (2019). Inter-functional coordination of purchasing and logistics: impact on supply chain performance. *Supply Chain Forum: An International Journal*, 20(2), 71–88.

- Brown, T. A. (2015). *Confirmatory factor analysis for applied research*. Guilford publications.
- Buisman, K. (2009). *The understanding of the moderating effect of leadership styles on the relationship between hierarchical conflicts and employee satisfaction*. University of Twente.
- Cahill, D. L., Goldsby, T. J., Knemeyer, A. M., & Wallenburg, C. M. (2010). Customer Loyalty in Logistics Outsourcing Relationships: an Examination of the Moderating Effects of Conflict Frequency. *Journal of Business Logistics*, 31(2), 253–277. <https://doi.org/10.1002/j.2158-1592.2010.tb00151.x>
- Cai, S., Jun, M., & Yang, Z. (2010). Implementing supply chain information integration in China: The role of institutional forces and trust. *Journal of Operations Management*, 28(3), 257–268.
- Carr, A. S., & Pearson, J. N. (1999). Strategically managed buyer--supplier relationships and performance outcomes. *Journal of Operations Management*, 17(5), 497–519.
- Chin, S. H., Soh, K. L., & Wong, W. P. (2013). Impact of Switching Costs on the Tripartite Model - Third Party Logistics. *Management Science*, 3, 79–88.
- Colburn, R. T. (2013). *Determining the Effect of the Returns Management Experience on Consumer Satisfaction*. http://trace.tennessee.edu/utk_chanhonoproj/1584
- Craik, J. (2009). *Fashion: the key concepts*: Bloomsbury Academic.
- Cribari-Neto, F. (2004). Asymptotic inference under heteroskedasticity of unknown form. *Computational Statistics & Data Analysis*, 45(2), 215–233.
- Cronin Jr, J. J., & Taylor, S. A. (1992). Measuring service quality: a reexamination and extension. *Journal of Marketing*, 56(3), 55–68.
- Cullinane, S., & Cullinane, K. (2021). The Logistics of Online Clothing Returns in Sweden and How to Reduce its Environmental Impact. *Journal of Service Science and Management*, 14(01), 72–95. <https://doi.org/10.4236/jssm.2021.141006>
- Daugherty, P. J., Autry, C. W., & Ellinger, A. E. (2001). Reverse logistics: the relationship between resource commitment and program performance. *Journal of Business Logistics*, 22(1), 107–123.

- Daugherty, P. J., Stank, T. P., & Ellinger, A. E. (1998). Leveraging logistics/distribution capabilities: the effect of logistics service on market share. *Journal of Business Logistics*, *19*(2), 35.
- Davis, S., Hagerty, M., & Gerstner, E. (1998). Return policies and the optimal level of “hassle.” *Journal of Economics and Business*, *50*(5), 445–460.
- Dawes, J. (2000). Market orientation and company profitability: Further evidence incorporating longitudinal data. *Australian Journal of Management*, *25*(2), 173-199
- de Brito, M. P., & Dekker, R. (2003). Modelling product returns in inventory control—exploring the validity of general assumptions. *International Journal of Production Economics*, *81–82*, 225–241. [https://doi.org/https://doi.org/10.1016/S0925-5273\(02\)00275-X](https://doi.org/https://doi.org/10.1016/S0925-5273(02)00275-X)
- de Pablos-Heredero, C., Garcia, A., Perea, J., & Angon, E. (2013). Quality and relational coordination amongst upper education Spanish systems: Case of Cordoba University and Rey Juan Carlos University. *INTED2013 Proceedings*, 4749.
- DeVellis, R. F., & Thorpe, C. T. (2021). *Scale development: Theory and applications*. Sage publications.
- Dong, L. Bin, & Giles, D. E. A. (2004). Testing for normality in the linear regression model: An empirical likelihood ratio test. *Econometrics Working Paper, EWP0402*, 1–18.
- Edwards, J. R., & Lambert, L. S. (2007). Métodos para integrar la moderación y la mediación: un marco analítico general utilizando un análisis de trayectoria moderada. *Métodos Psychol*, *12*, 1–22.
- Efron, B. (1979). Bootstrap Methods: Another Look at the Jackknife. *The Annals of Statistics*, *7*(1), 1–26. <https://doi.org/10.1214/aos/1176344552>
- Ercan, E., & Çelik, M. (2021). Investigating the mediator role of logistic service quality in relation between relationship flexibility and relationship satisfaction. *International Review*, *3–4*, 71–80. <https://doi.org/10.5937/intrev2103071e>
- Evtodieva, T. E., Chernova, D. V, Voitkevich, N. I., Khramtsova, E. R., & Gorgodze, T. E. (2017). Transformation of logistics organizational forms under the conditions of modern economy.

In *Russia and the European Union*, 177–182. Springer.

Fernandes, D. W., Moori, R. G., & Filho, V. A. V. (2018). Logistic service quality as a mediator between logistics capabilities and customer satisfaction. *Revista de Gestão*, 25(4), 358–372. <https://doi.org/10.1108/rege-01-2018-0015>

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. sage.

Flatt, C., & Jacobs, R. L. (2019). Principle Assumptions of Regression Analysis: Testing, Techniques, and Statistical Reporting of Imperfect Data Sets. *Advances in Developing Human Resources*, 21(4), 484–502. <https://doi.org/10.1177/1523422319869915>

Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology*, 51(1), 115.

Gaski, J. F. (1984). The theory of power and conflict in channels of distribution. *Journal of Marketing*, 48(3), 9–29.

Gaudenzi, B., Confente, I., & Russo, I. (2020). Logistics service quality and customer satisfaction in B2B relationships: a qualitative comparative analysis approach. *The TQM Journal, ahead-of-p*. <https://doi.org/10.1108/TQM-04-2020-0088>

Gawor, T., & Hoberg, K. (2019). Customers' valuation of time and convenience in e-fulfillment. *International Journal of Physical Distribution & Logistics Management*, 49(1), 75–98. <https://doi.org/10.1108/IJPDLM-09-2017-0275>

Gil-Saura, I., & Ruiz-Molina, M. E. (2011). Logistics service quality and buyer--customer relationships: the moderating role of technology in B2B and B2C contexts. *The Service Industries Journal*, 31(7), 1109–1123.

Gray, B., Matear, S., Boshoff, C., & Matheson, P. (1998). Developing a better measure of market orientation. *European Journal of Marketing*, 32(9/10), 884-903.

Grönroos, C. (1990). *Service management and marketing* (Vol. 27). Lexington books Lexington, MA.

Gupta, A., Singh, R. K., Mathiyazhagan, K., Suri, P. K., & Dwivedi, Y. K. (2022). Exploring relationships between service quality dimensions and customers satisfaction: empirical study

in context to Indian logistics service providers. *The International Journal of Logistics Management*, ahead-of-print.

Gustavsson, S., Gremyr, I., & Sarenmalm, E.K. (2016). Using an adapted approach to the Kano model to identify patient needs from various patient roles. *The TQM Journal*, 28, 151-162.

Habibagahi, H., & Pratschke, J. L. (1972). A comparison of the power of the von Neumann ratio, Durbin-Watson and Geary tests. *The Review of Economics and Statistics*, 179–185.

Han, S.-H., Oh, E. G., & others. (2020). The link between transformational leadership and work-related performance: moderated-mediating roles of meaningfulness and job characteristics. *Leadership & Organization Development Journal*, 41(4), 519–533.

Harrison, M. J. (1975). The power of the Durbin-Watson and Geary tests: Comment and further evidence. *The Review of Economics and Statistics*, 377–379.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, 76(4), 408–420.

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford publications.

Hayes, A. F., & Cai, L. (2007). Using heteroskedasticity-consistent standard error estimators in OLS regression: An introduction and software implementation. *Behavior Research Methods*, 39(4), 709–722. <https://doi.org/10.3758/BF03192961>

Hayes, A. F., & Hayes, A. F. (2018). Partial , conditional , and moderated moderated mediation : Quantification , inference , and interpretation Quantification , inference , and interpretation. *Communication Monographs*, 85(1), 4–40. <https://doi.org/10.1080/03637751.2017.1352100>

Hayes, A. F., & Montoya, A. K. (2017). A tutorial on testing, visualizing, and probing an interaction involving a multicategorical variable in linear regression analysis. *Communication Methods and Measures*, 11(1), 1–30.

Hayes, A. F., & Preacher, K. J. (2014). Statistical mediation analysis with a multicategorical independent variable. *The British Journal of Mathematical and Statistical Psychology*, 67(3), 451–470. <https://doi.org/10.1111/bmsp.12028>

- Hayes, A. F., & Rockwood, N. J. (2017). Regression-based statistical mediation and moderation analysis in clinical research: Observations, recommendations, and implementation. *Behaviour Research and Therapy*, 98, 39–57.
- Hempel, P. S., Zhang, Z.-X., & Tjosvold, D. (2009). Conflict management between and within teams for trusting relationships and performance in China. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 30(1), 41–65.
- Hermayanty, I. (2021). *The effects of coordination on public service quality at the office of archives*. 05(03), 261–264.
- Hossain, T. M. T., Akter, S., Kattiyapornpong, U., & Dwivedi, Y. (2020). Reconceptualizing Integration Quality Dynamics for Omnichannel Marketing. *Industrial Marketing Management*, 87, 225–241. <https://doi.org/https://doi.org/10.1016/j.indmarman.2019.12.006>
- Hu, T.-I., & Tracogna, A. (2020). Multichannel customer journeys and their determinants: Evidence from motor insurance. *Journal of Retailing and Consumer Services*, 54, 102022. <https://doi.org/https://doi.org/10.1016/j.jretconser.2019.102022>
- Huiskonen, J., & Pirttilä, T. (2002). Lateral coordination in a logistics outsourcing relationship. *International Journal of Production Economics*, 78(2), 177–185.
- Hult, G. T. M., Hair Jr, J. F., Proksch, D., Sarstedt, M., Pinkwart, A., & Ringle, C. M. (2018). Addressing endogeneity in international marketing applications of partial least squares structural equation modeling. *Journal of International Marketing*, 26(3), 1–21.
- Huma, S., Ahmed, W., Ikram, M., & Khawaja, M. I. (2020). The effect of logistics service quality on customer loyalty: case of logistics service industry. *South Asian Journal of Business Studies*, 9(1), 43–61. <https://doi.org/10.1108/SAJBS-10-2018-0114>
- Huo, B. (2012). The impact of supply chain integration on company performance: An organizational capability perspective. *Supply Chain Management*, 17(6), 596–610. <https://doi.org/10.1108/13598541211269210>
- Hussein Ali, A., Gruchmann, T., & Melkonyan, A. (2022). Assessing the impact of sustainable logistics service quality on relationship quality: Survey-based evidence in Egypt. *Cleaner*

Logistics and Supply Chain, 4, 100036.
<https://doi.org/https://doi.org/10.1016/j.clscn.2022.100036>

Idrees, S., Vignali, G. and Gill, S. (2020). Technological Advancement in Fashion Online Retailing: A Comparative Study of Pakistan and UK Fashion E-Commerce. *International Journal of Economics and Management Engineering*, 14(4), pp.318-333.

Inderfurth, K., & van der Laan, E. (2001). Leadtime effects and policy improvement for stochastic inventory control with remanufacturing. *International Journal of Production Economics*, 71(1–3), 381–390.

Jaafar, Harlina S. (2006): Logistics service quality and relationship quality in third party relationships. Loughborough University. Thesis. <https://hdl.handle.net/2134/7818>

Janeiro, R., Pereira, M. T., Ferreira, L. P., Sá, J. C., & Silva, F. J. G. (2020). New conceptual model of reverse logistics of a worldwide fashion company. *Procedia Manufacturing*, 51(2020), 1665–1672. <https://doi.org/10.1016/j.promfg.2020.10.232>

Jang, H. M., Marlow, P. B., & Mitroussi, K. (2013). The effect of logistics service quality on customer loyalty through relationship quality in the container shipping context. *Transportation Journal*, 52(4), 493–521.

JDA. (2017). *Customer Pulse 2017*. http://now.jda.com/rs/366-TWM-779/images/JDA_and_Centiro_Customer_Pulse_Report_2017_UK.pdf

JDA, & Centiro. (2018). *2018-Global-Consumer-Survey-European-Report*. <https://now.jda.com/rs/366-TWM-779/images/JDA-Centiro-2018-Global-Consumer-Survey-European-Report.pdf>

J Haider. (2021). Building Supply Chain Efficiency Through Online Retailers. *diva-portal.org*. <https://www.diva-portal.org/smash/get/diva2:1569689/FULLTEXT01.pdf>

Johnson, O. (2004). *Information theory and the central limit theorem*. World Scientific.

Kalish, I., & Planer, B. (2013). The path to 2020: Taking the long view of retail market entry. Retrieved from London

Kalyar, M. N., Ali, F., & Shafique, I. (2021). Green mindfulness and green creativity nexus in

- hospitality industry: examining the effects of green process engagement and CSR. *International Journal of Contemporary Hospitality Management*, 33(8), 2653–2675. <https://doi.org/10.1108/IJCHM-09-2020-1079>
- Kanda, A., Deshmukh, S. G., & others. (2008). Supply chain coordination: perspectives, empirical studies and research directions. *International Journal of Production Economics*, 115(2), 316–335.
- Khan, M. S., Wang, H., Wang, Q., Khan, W., & Javed, T. (2021). Examining the relationship between the level of logistics service quality, relationship quality and repurchase intention in e-retail sector of Pakistan. *International Journal of Research in Business and Social Science (2147-4478)*, 10(1), 189–204. <https://doi.org/10.20525/ijrbs.v10i1.1028>
- Kim, S. H., & Seock, Y.-K. (2019). The roles of values and social norm on personal norms and pro-environmentally friendly apparel product purchasing behavior: The mediating role of personal norms. *Journal of Retailing and Consumer Services*, 51, 83–90. <https://doi.org/https://doi.org/10.1016/j.jretconser.2019.05.023>
- Kim, S. T., Lee, H.-H., Hwang, T., & Park, B. (2022). The Impact of Relationship Quality on Supply Chain Performance in Logistics Outsourcing. *Journal of Managerial Issues*, 34(1), 23-40.
- Krumwiede, D. W., & Sheu, C. (2002). A model for reverse logistics entry by third-party providers. *Omega*, 30(5), 325–333.
- Kuei, C., Madu, C. N., & Lin, C. (2011). Developing global supply chain quality management systems. *International Journal of Production Research*, 49(15), 4457–4481.
- Kwak, S. G., & Kim, J. H. (2017). Central limit theorem: the cornerstone of modern statistics. *Korean Journal of Anesthesiology*, 70(2), 144–156.
- Lambert, D. M., & Cooper, M. C. (2000). Issues in supply chain management. *Industrial Marketing Management*, 29(1), 65–83.
- Larson, P. D., & Kulchitsky, J. D. (1998). Single sourcing and supplier certification: performance and relationship implications. *Industrial Marketing Management*, 27(1), 73–81.

- Lavikka, R., Smeds, R., & Jaatinen, M. (2009). Coordinating the service process of two business units towards a joint customer. *Production Planning and Control*, 20(2), 135-146.
- Lee, C. H., Ko, E., Tikkanen, H., Phan, M. C. T., Aiello, G., Donvito, R., & Raithel, S. (2014). Marketing mix and customer equity of SPA brands: Cross-cultural perspectives. *Journal of Business Research*, 67(10), 2155-2163.
- Lee, S. H., Moon, C. H., & Tu, T. L. N. (Eds.). (2019). *Fashion and Beauty in the Time of Asia*. New York: NYU Press.
- Leon-Perez, J. M., Antino, M., & León-Rubio, J. (2016). The Role of Psychological Capital and Intragroup Conflict on Employees' Burnout and Quality of Service: A Multilevel Approach. *Frontiers in Psychology*, 7. <https://doi.org/10.3389/fpsyg.2016.01755>
- Lyons, K. (2015). Does your sample size matter. *Lipman Hearne Inc*.
- MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology*, 58, 593–614. <https://doi.org/10.1146/annurev.psych.58.110405.085542>
- Malcolm, M. (1964). *Galton's Problem as network autocorrelation*. 754–770.
- Mallinckrodt, B., Brent, Abraham, Todd, W., Wei, M., Meifen, Russell, D., & W, D. (2006). Advances in Testing the Statistical Significance of Mediation Effects. *Journal of Counseling Psychology*, 53, 372-. <https://doi.org/10.1037/0022-0167.53.3.372>
- Maltz, A. B., & Ellram, L. M. (1997). Total cost of relationship: an analytical framework for the logistics outsourcing decision. *Journal of Business Logistics*, 18(1), 45.
- Markos, S., & Sridevi, M. S. (2010). Employee engagement: The key to improving performance. *International Journal of Business and Management*, 5(12), 89.
- Marrocu, E. (2006). An investigation of the effects of data transformation on nonlinearity. *Empirical Economics*, 31(4), 801–820.
- Mashele, F., & Chuchu, T. (2018). An Empirical Investigation into the Relationship between Sustainability and Supply Chain Compliance within the South African public and the private sector. *Journal of Business and Retail Management Research*, 12(2).
- Melacini, M., Perotti, S., Rasini, M., & Tappia, E. (2018). E-fulfilment and distribution in omni-

channel retailing: a systematic literature review. *International Journal of Physical Distribution & Logistics Management*, 48(4), 391–414. <https://doi.org/10.1108/IJPDLM-02-2017-0101>

Memon, M. A., Ting, H., Cheah, J.-H., Thurasamy, R., Chuah, F., & Cham, T. H. (2020). Sample size for survey research: review and recommendations. *Journal of Applied Structural Equation Modeling*, 4(2), 1–20.

Mensah, A. (2021). Job stress and mental well-being among working men and women in Europe: The mediating role of social support. *International Journal of Environmental Research and Public Health*, 18(5), 2494.

Mentzer, J. T., Flint, D. J., & Kent, J. L. (1999). Developing a logistics service quality scale. *Journal of Business Logistics*, 20(1.1999).

Mentzer, J. T., Gomes, R., & Krapfel, R. E. (1989). Physical distribution service: A fundamental marketing concept? *Journal of the Academy of Marketing Science*, 17(1), 53–62. <https://doi.org/10.1007/BF02726354>

Mikulić, J. and Prebežac, D. (2011), A critical review of techniques for classifying quality attributes in the Kano model, *Managing Service Quality: An International Journal*, Vol. 21 No. 1, 46-66. <https://doi.org/10.1108/09604521111100243>

Miller, D., & Merrilees, B. (2004). Fashion and commerce: a historical perspective on Australian fashion retailing 1880-1920. *International Journal of Retail & Distribution Management*, 32(8), 394-402.

Mollenkopf, D. A., Rabinovich, E., Laseter, T. M., & Boyer, K. K. (2007). Managing internet product returns: a focus on effective service operations. *Decision Sciences*, 38(2), 215–250.

Morgan-Lopez, A. A., & MacKinnon, D. P. (2006). Demonstration and evaluation of a method for assessing mediated moderation. *Behavior Research Methods*, 38(1), 77–87.

Mostard, J., & Teunter, R. (2006). The newsboy problem with resalable returns: A single period model and case study. *European Journal of Operational Research*, 169(1), 81–96.

Mubarak, N., Khan, J., Yasmin, R., & Osmadi, A. (2021). The impact of a proactive personality

- on innovative work behavior: the role of work engagement and transformational leadership. *Leadership & Organization Development Journal*, 42(7), 989-1003.
- Muller, D., Judd, C. M., & Yzerbyt, V. Y. (n.d.). Correction to Kim and Kendall (2014). *Psychology*, 89, 852–863.
- Murphy, P. R., & Poist, R. F. (2000). Third-party logistics: some user versus provider perspectives. *Journal of Business Logistics*, 21(1), 121.
- Musenze, I. A., & Mayende, T. S. (2021). Coordination and Quality Service Delivery in Service Organizations: Qualitative Investigation. *Journal of African Business*, 22(2), 190–208. <https://doi.org/10.1080/15228916.2019.1699758>
- Nadeem, W., & Al-Imamy, S. (2020). Do ethics drive value co-creation on digital sharing economy platforms? *Journal of Retailing and Consumer Services*, 55, 102095.
- Naman, J. L., & Slevin, D. P. (1993). Entrepreneurship and the concept of fit: A model and empirical tests. *Strategic Management Journal*, 14, 137-153.
- Neslin, S. A., Grewal, D., Leghorn, R., Shankar, V., Teerling, M. L., Thomas, J. S., & Verhoef, P. C. (2006). Challenges and Opportunities in Multichannel Customer Management. *Journal of Service Research*, 9(2), 95–112. <https://doi.org/10.1177/1094670506293559>
- Nimon, K. F. (2012). Statistical assumptions of substantive analyses across the general linear model: a mini-review. *Frontiers in Psychology*, 3, 322.
- Okhuysen, G. A., & Bechky, B. A. (2009). 10 coordination in organizations: An integrative perspective. *Academy of Management Annals*, 3(1), 463–502.
- Oliver, P., & Jupp, V. (2006). *Purposive sampling*. Sage.
- Ong, H. L., Vaingankar, J. A., Abdin, E., Sambasivam, R., Fauziana, R., Tan, M.-E., Chong, S. A., Goveas, R. R., Chiam, P. C., & Subramaniam, M. (2018). Resilience and burden in caregivers of older adults: moderating and mediating effects of perceived social support. *BMC Psychiatry*, 18(1), 1–9.
- Pak, S. Il, & Oh, T. H. (2010). Correlation and simple linear regression. *Journal of Veterinary Clinics*, 27(4), 427–434. https://doi.org/10.1007/978-3-319-89993-0_6

- Panayides, P. M., & So, M. (2005a). Logistics service provider-client relationships. *Transportation Research Part E: Logistics and Transportation Review*, 41(3), 179–200. <https://doi.org/10.1016/j.tre.2004.05.001>
- Panayides, P. M., & So, M. (2005b). The Impact of Integrated Logistics Relationships on Third-Party Logistics Service Quality and Performance. *Maritime Economics & Logistics*, 7(1), 36–55. <https://doi.org/10.1057/palgrave.mel.9100123>
- Panigrahi, S. K., Kar, F. W., Fen, T. A., Hoe, L. K., & Wong, M. (2018). A Strategic Initiative for Successful Reverse Logistics Management in Retail Industry. *Global Business Review*, 19(3_suppl), S151–S175. <https://doi.org/10.1177/0972150918758096>
- Parasuraman, A. ;, Zeithaml, V. A. ;, & Berry, L. L. (1988). Servqual: A Multiple-Item Scale For Measuring Consumer Perc. *Journal of Retailing; Spring*, 64.
- Patterson, K. A., Grimm, C. M., & Corsi, T. M. (2003). Adopting new technologies for supply chain management. *Transportation Research Part E: Logistics and Transportation Review*, 39(2), 95–121.
- Porter, M., & Linde, V. (1995). Green and Competitive, Harward Business Review. *Sep/Oct*.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, 36(4), 717–731.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879–891.
- Priesemuth, M., & Taylor, R. M. (2016). The more I want, the less I have left to give: The moderating role of psychological entitlement on the relationship between psychological contract violation, depressive mood states, and citizenship behavior. *Journal of Organizational Behavior*, 37(7), 967–982.
- Rabinovich, E., Windle, R., Dresner, M., & Corsi, T. (1999). Outsourcing of integrated logistics functions: An examination of industry practices. *International Journal of Physical Distribution and Logistics Management*, 29(6), 353–374.

<https://doi.org/10.1108/09600039910283587>

- Rahman, S. (2006). Quality management in logistics: an examination of industry practices. *Supply Chain Management: An International Journal*, Vol. 11 No. 3, 233-240.
- Rai, N., & Thapa, B. (2015). A study on purposive sampling method in research. *Kathmandu: Kathmandu School of Law*, 5.
- Reilly, A., & Hawley, J. (2019). Attention deficit fashion. *Fashion, Style & Popular Culture*, 6(1), 85-98.
- Riaz, H., Baig, U., Meidute-Kavaliauskiene, I., & Ahmed, H. (2022). Factors Effecting Omnichannel Customer Experience: Evidence from Fashion Retail. *Information (Switzerland)*, 13(1), 1–18. <https://doi.org/10.3390/info13010012>
- Richard Chin, & Bruce Y. Lee. (2008). *Principles and Practice of Clinical Trial Medicine*.
- Richey, R. G., Daugherty, P. J., & Roath, A. S. (2007). Firm Technological Readiness and Complementarity: Capabilities Impacting Logistics Service Competency and Performance. *Journal of Business Logistics*, 28(1), 195–228. <https://doi.org/10.1002/j.2158-1592.2007.tb00237.x>
- Robinson, K. M. (2010). Care coordination: a priority for health reform. *Policy, Politics, & Nursing Practice*, 11(4), 266–274.
- Sadowski, M., Yan, C., Cummis, C., & Aden, N. (2019). Apparel and footwear sector. *Science-Based Targets Guidance*, 58. <http://www.jstor.org/stable/j.ctt16gznzj.10>
- Saikouk, T., Fattam, N., Angappa, G., & Hamdi, A. (2021). The interplay between inter-personal and inter-organizational relationships in coordinating supply chain activities. *The International Journal of Logistics Management*, 32(3), 898–917. <https://doi.org/10.1108/IJLM-11-2020-0443>
- Salmani, Y., & Partovi, F. Y. (2021). Channel-level resource allocation decision in multichannel retailing: A US multichannel company application. *Journal of Retailing and Consumer Services*, 63, 102679.
- Samaddar, S., Nargundkar, S., & Daley, M. (2006). Inter-organizational information sharing: The

- role of supply network configuration and partner goal congruence. *European Journal of Operational Research*, 174(2), 744–765.
- Sanberg, W. R., & Hofer, C. W. (1987). Improving new venture performance: The role of strategy, industry structure, and the entrepreneur. *Journal of Business Venturing*, 2, 5-28.
- Sanchís-Pedregosa, C., González-Zamora, M.-D.-M., & Palacín-Sánchez, M.-J. (2017). Outsource Services to Improve Financial Performance: Is There a Limit? *Global Business Review*, 19, 097215091771327. <https://doi.org/10.1177/0972150917713274>
- Sari, R. L., & Seniati, A. N. L. (2020). The role of job satisfaction as mediator between work-life balance and organizational commitment among lecturers. *Psychology and Education*, 57(2), 106–110.
- Saxby, C. L., Ehlen, C. R., & Koski, T. R. (2004). Service Quality In Accounting Firms: The Relationship Of Service Quality To Client Satisfaction And Firm/Client Conflict. *Journal of Business & Economics Research (JBER)*, 2(11). <https://doi.org/10.19030/jber.v2i11.2941>
- Schmidt, P., & Guilkey, D. K. (1975). Some further evidence on the power of the Durbin-Watson and Geary tests. *The Review of Economics and Statistics*, 379–382.
- Schramm-Klein, H., & Morschett, D. (2006). The relationship between marketing performance, logistics performance and company performance for retail companies. *International Review of Retail, Distribution and Consumer Research*, 16(02), 277–296.
- Shobana Theagarajan, S., & Lysander Manohar, H. (2019). Agility Enabling Practices to Augment the Supply Chain Performance of the Leather Footwear Industry: Developing a Fuzzy QFD based ASCM Model. *Applied Mathematics & Information Sciences*, 13(4), 629-642.
- Simatupang, T.M., Wright, A.C., & Sridharan, R. (2002). The knowledge of coordination for supply chain integration. *Business Proces. Management Journal.*, 8, 289-308.
- Soares Aharonovitz, M., Vidal Vieira, J., & Suyama, S. (2018). How logistics performance is affected by supply chain relationships. *The International Journal of Logistics Management*, 29, 0. <https://doi.org/10.1108/IJLM-09-2016-0204>
- Sohn, J.-I., Woo, S.-H. and Kim, T.-W. (2017), Assessment of logistics service quality using the

- Kano model in a logistics-triadic relationship. *The International Journal of Logistics Management*, Vol. 28 No. 2, 680-698. <https://doi.org/10.1108/IJLM-09-2015-0172>
- Srimarut, T., & Mekhum, W. (2020). From supply chain connectivity (SCC) to supply chain agility (SCA), adaptability and alignment: mediating role of big data analytics capability. *International Journal of Supply Chain Management*, 9(1), 183–189.
- Stanford, N. (2010). *Corporate culture: getting it right* (Vol. 79). John Wiley & Sons.
- Stank, T. P., Goldsby, T. J., Vickery, S. K., & Savitskie, K. (2003). Logistics service performance: estimating its influence on market share. *Journal of Business Logistics*, 24(1), 27–55.
- Statista. (2019). Fashion, Pakistan. Fashion, Pakistan. Retrieved from <https://www.statista.com/outlook/244/294/fashion/pakistan>
- Strähle, J. and Müller, V. (2017). Key aspects of sustainability in fashion retail. In *Green fashion retail* (pp. 7-26). Springer, Singapore.
- Sudha, M. and Sheena, K. (2017). Impact of influencers in consumer decision process: the fashion industry. *SCMS Journal of Indian Management*, 14(3), 14-30.
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53–55. <https://doi.org/10.5116/ijme.4dfb.8dfd>
- Tavakol, M., Mohagheghi, M. A., & Dennick, R. (2008). Assessing the skills of surgical residents using simulation. *Journal of Surgical Education*, 65(2), 77–83.
- Teo, B. C. C., Nik, N. S., & Azman, N. F. (2019). Making sense of fashion involvement among Malaysian Gen Y and its implications. *Journal of Emerging Economies and Islamic Research*, 5(4), 10-17.
- Tjosvold, D., Hui, C., & Law, K. S. (2001). Constructive conflict in China: Cooperative conflict as a bridge between East and West. *Journal of World Business*, 36(2), 166–183.
- Tripathi, G., & Dave, K. (2013). Store format choice and relationship quality in apparel retail: A study of young and early-middle aged shoppers in New Delhi region. *Journal of Retailing and Consumer Services*, 20(5), 479–487. <https://doi.org/https://doi.org/10.1016/j.jretconser.2013.04.003>

- Tsai, W. (2002). Social structure of ‘coopetition’ within a multiunit organization: Coordination, competition, and intra-organizational knowledge sharing. *Organization Science*, *13*(2), 179-190.
- Van Kollenburg, G. H., & Croon, M. A. (2022). How to Define and Test an Indirect Moderation Model: The Missing Link in Regression-Based Path Models. *Methodology*, *18*(3), 164–184.
- Vázquez-Casielles, R., Iglesias, V., & Varela-Neira, C. (2013). Collaborative manufacturer-distributor relationships: The role of governance, information sharing and creativity. *Journal of Business and Industrial Marketing*, *28*(8), 620–637. <https://doi.org/10.1108/JBIM-05-2011-0070>
- Venkatesan, R., & Arunachalam, S. (2020). Omnichannel strategy. In *The Routledge companion to strategic marketing* (pp. 293–308). Routledge.
- Verhoef, P. C., Kannan, P. K., & Inman, J. J. (2015). From multi-channel retailing to omni-channel retailing: introduction to the special issue on multi-channel retailing. *Journal of Retailing*, *91*(2), 174–181.
- Vieira, J. G. V., Yoshizak, H. T. Y., & Ho, L. L. (2015). The effects of collaboration on logistical performance and transaction costs. *International Journal of Business Science & Applied Management (IJBSAM)*, *10*(1), 1–14.
- Wall Jr, J. A., & Callister, R. R. (1995). Conflict and its management. *Journal of Management*, *21*(3), 515–558.
- Wang, Q., Huo, B., & Zhao, X. (2020). What makes logistics integration more effective? Governance from contractual and relational perspectives. *Journal of Business Logistics*, *41*(3), 259–281.
- Weitz, B. A., & Jap, S. D. (1995). Relationship marketing and distribution channels. *Journal of the Academy of Marketing Science*, *23*(4), 305–320.
- Wenting, R. (2008). Spinoff dynamics and the spatial formation of the fashion design industry, 1858–2005. *Journal of Economic Geography*, *8*(5), 593-614.

- Wen, X., Choi, T.M. and Chung, S.H. (2019). Fashion retail supply chain management: A review of operational models. *International Journal of Production Economics*, 207, pp.34-55.
- White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica: Journal of the Econometric Society*, 817–838.
- Yalabik, B., Petruzzi, N. C., & Chhajed, D. (2005). An integrated product returns model with logistics and marketing coordination. *European Journal of Operational Research*, 161(1), 162–182.
- Yang, D., & Xiao, T. (2017). Coordination of a supply chain with loss-averse consumers in service quality. *International Journal of Production Research*, 55(12), 3411-3430.
- Ye, B., & Wen, Z. (2013). A discussion on testing methods for mediated moderation models: Discrimination and integration. *Acta Psychologica Sinica*, 45(9), 1050–1060. <https://doi.org/10.3724/SP.J.1041.2013.01050>
- Zakaria, H., Zailani, S., & Fernando, Y. (2014). Moderating role of logistics information technology on the logistics relationships and logistics service quality. *Operations and Supply Chain Management: An International Journal*, 3(3), 134–147.
- Zuluaga, J. P. S., Thiell, M., & Perales, R. C. (2017). Reverse cross-docking. *Omega*, 66, 48–57.

Appendices

Appendix A

Questionnaire

Reverse logistics is a Key Performance Indicator in the retail sector. Companies must effectively manage their returns to retain customers. Most clothing brands in Pakistan have outsourced their logistics to Third-party providers to improve their service quality. I am a MS student at NUST, studying logistics and supply chain management. As a milestone of my degree, I am conducting research on ‘The role of Reverse Logistics Service Quality in retail.’ The information collected under this study is protected under NUST Code of Research Ethics. It is ensured that the responses will be kept strictly confidential and used for academic purpose only.

Please read the following questions carefully and tick mark the box best suited.

| Question | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|-------------------|----------|---------|-------|----------------|
| LSP RELATIONSHIP QUALITY (Cronbach Alpha = 0.907) | | | | | |
| We and our logistics service providers trust each other. | | | | | |
| Our past relationship experience proves that our logistics service provider can be trusted. | | | | | |
| My company trusts our logistics service provider. | | | | | |
| We both try very hard to establish a long-term relationship. | | | | | |
| We work in close cooperation. | | | | | |
| We communicate our opinions about business matters to each other frequently. | | | | | |
| We can show discontent towards each other through communication. | | | | | |
| We and our logistics service provider share the same values. | | | | | |
| We and our logistics service provider share the same opinion about most business matters. | | | | | |
| We and our logistics service provider share similar world view. | | | | | |

| | | | | | |
|--|--|--|--|--|--|
| We and our logistics service provider care about each other's feelings. | | | | | |
| We and our logistics service provider understand each other's values and goals. | | | | | |
| We and our logistics service provider always see matters from each other's view. | | | | | |
| REVERSE LOGISTICS PROCESS COORDINATION (Cronbach Alpha = 0.867) | | | | | |
| We hold meetings with our logistics service providers on a regular basis to solve product return-related problems. | | | | | |
| We work as a team with our logistics service providers. | | | | | |
| We jointly plan reverse logistics and resolve problems with our logistics service providers. | | | | | |
| We have maintained clear segregation of responsibilities with our logistics service providers. | | | | | |
| We jointly plan with our logistics service providers to cut costs and improve efficiency of reverse logistics process. | | | | | |
| We jointly achieve our goals regarding reverse logistics with our logistics service providers | | | | | |
| We jointly design return management processes with our logistics service providers. | | | | | |
| REVERSE LOGISTICS SERVICE QUALITY (Cronbach Alpha = 0.910) | | | | | |
| We and our logistics service provider communicate frequency regarding our reverse logistics process. | | | | | |
| We and our logistics service provider have an uninterrupted communication regarding returns. | | | | | |
| We and our logistics service provider effectively handle complaints of customers regarding returns. | | | | | |
| The returns information provided by our logistics service provider is complete. | | | | | |
| The returns information provided by our logistics service provider is reliable. | | | | | |
| The returns logistics information provided by our logistics service provider is on time. | | | | | |

| | | | | | |
|--|--|--|--|--|--|
| The refund information provided by our logistics service provider is on time. | | | | | |
| We and our logistics service provider ensure privacy of return information. | | | | | |
| We have a proper return policy in place. | | | | | |
| We are able to quickly process the returns. | | | | | |
| Returned products and related information flows uninterruptedly throughout the reverse logistics channel. | | | | | |
| We are able to fulfil our returns commitments towards our customers. | | | | | |
| Our return enquiries are transparent. | | | | | |
| Our return procedure is simple and well organized. | | | | | |
| Our customers are satisfied with the return pick-up times. | | | | | |
| We provide customers with flexible delivery and collection methods. | | | | | |
| The product is returned/replaced as per the requirement of the customer. | | | | | |
| Our customers are updated about the status of their returned products. | | | | | |
| The logistics service provider's delivery personnel are friendly towards customers. | | | | | |
| CONFLICT FREQUENCY WITH LOGISTICS SERVICE PROVIDER (Cronbach Alpha = 0.957) | | | | | |
| In our relationship with our logistics service providers, we frequently run into conflict on the organizational level i.e., terms of contract. | | | | | |
| In our relationship with this logistics service provider, we frequently run into conflict on timeliness of deliveries. | | | | | |
| In our relationship with this logistics service provider, we frequently run into conflict on delivery of damaged goods. | | | | | |
| In our relationship with this logistics service provider, we frequently run into conflict due to the behavior of delivery personnel. | | | | | |

| | | | | | |
|---|--|--|--|--|--|
| Our logistics service provider and we often have many differences on evaluating and prioritizing tasks. | | | | | |
| Our customers frequently run into conflict with us on the purchase of damaged goods. | | | | | |
| Our customers frequently run into conflict with us on timeliness of service delivery. | | | | | |
| Our customers frequently run into conflict with us on the behavior of our staff. | | | | | |
| Our customers frequently run into conflict with us on the quality of products. | | | | | |
| Our customers frequently run into conflict with us on the return of products. | | | | | |

In addition to the above information, the following demographic information is also important to the study.

Designation? _____

Experience working in this store?

- 0 to 3 years
- 4 to 7 years
- 8 years and above

Duration of contract with the Third-Party Logistics Provider?

- 0 to 1 year
- 2 to 5 years
- 6 years and above

Name of the company? _____

Would you like to receive a report of findings once concluded? If yes, please provide the following information.

Email: _____

Thank you for your time and effort.

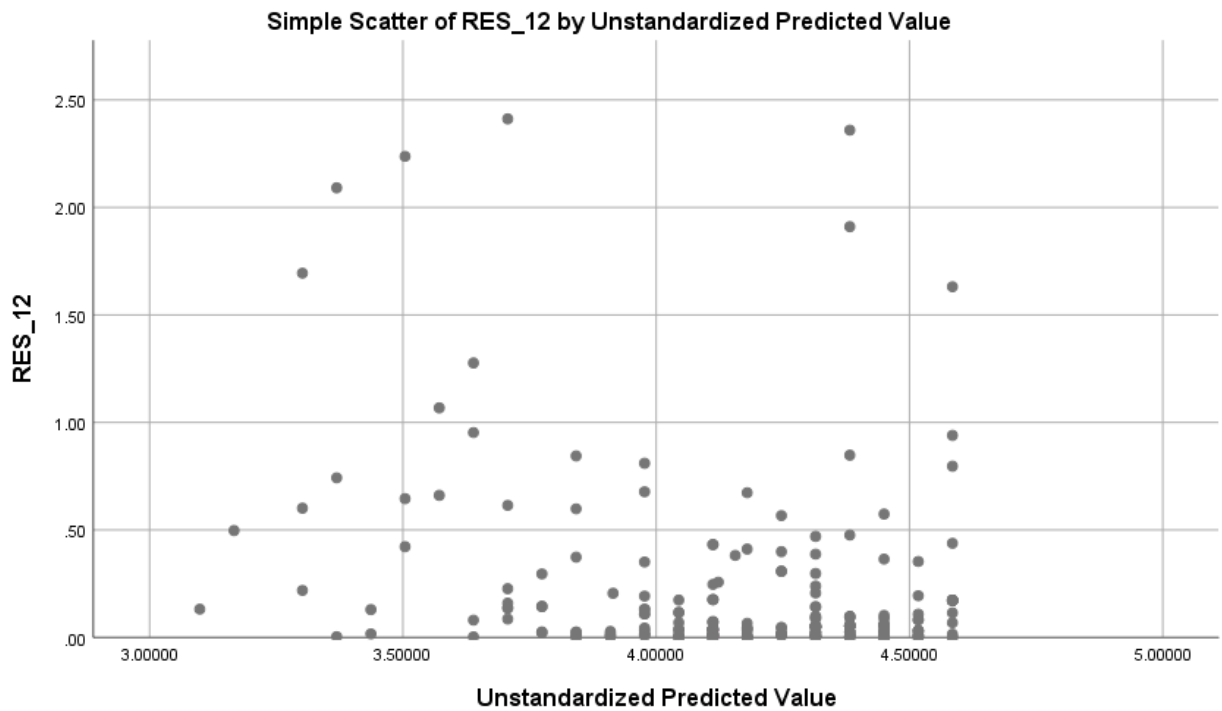
Appendix B

Univariate Statistics

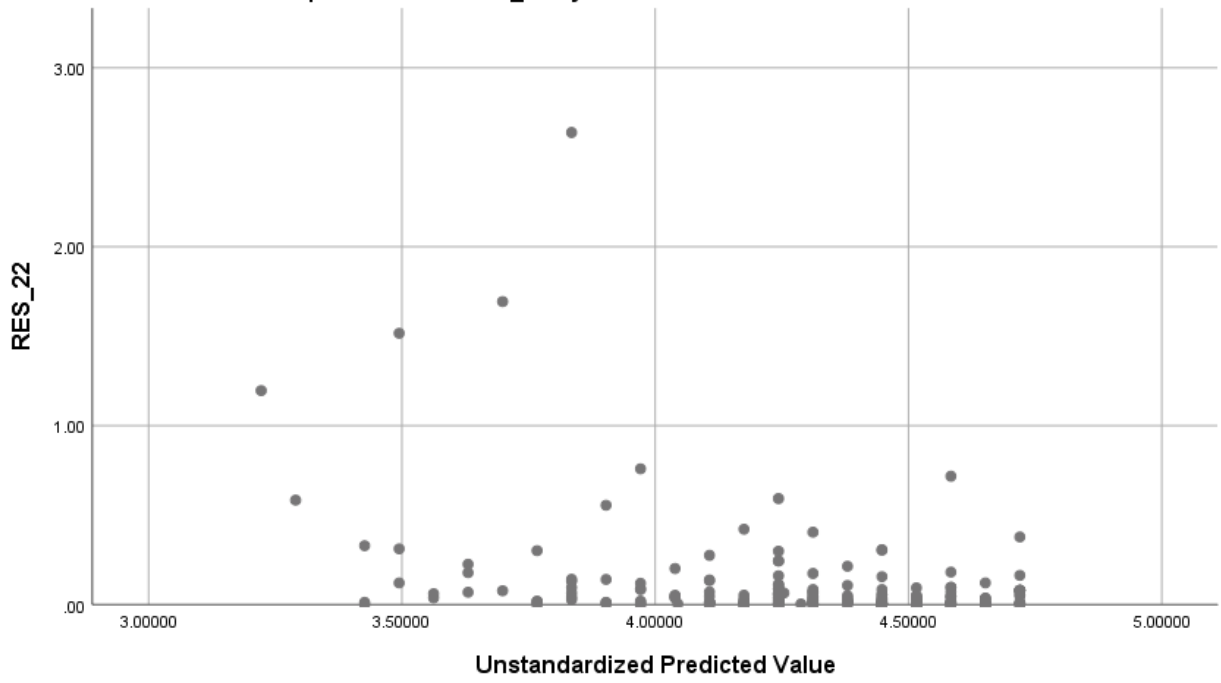
| | N | Mean | Std. Deviation | Missing | | No. of Extremes ^a | |
|---------|-----|------|----------------|---------|---------|------------------------------|------|
| | | | | Count | Percent | Low | High |
| LSPRM1 | 240 | 4.44 | .638 | 1 | .4 | 4 | 0 |
| LSPRM2 | 240 | 4.35 | .601 | 1 | .4 | 3 | 0 |
| LSPRM3 | 240 | 4.38 | .636 | 1 | .4 | 4 | 0 |
| LSPRM4 | 240 | 4.25 | .729 | 1 | .4 | 9 | 0 |
| LSPRM5 | 240 | 4.29 | .701 | 1 | .4 | 7 | 0 |
| LSPRM6 | 240 | 4.16 | .794 | 1 | .4 | 12 | 0 |
| LSPRM7 | 240 | 4.24 | .691 | 1 | .4 | 6 | 0 |
| LSPRM8 | 240 | 4.02 | .898 | 1 | .4 | 19 | 0 |
| LSPRM9 | 240 | 3.96 | .881 | 1 | .4 | 19 | 0 |
| LSPRM10 | 240 | 3.88 | .958 | 1 | .4 | 0 | 0 |
| LSPRM11 | 240 | 4.11 | .838 | 1 | .4 | 13 | 0 |
| LSPRM12 | 240 | 4.14 | .804 | 1 | .4 | 12 | 0 |
| LSPRM13 | 240 | 4.00 | .924 | 1 | .4 | 18 | 0 |
| RLPC1 | 240 | 3.90 | 1.227 | 1 | .4 | 0 | 0 |
| RLPC2 | 240 | 4.24 | .730 | 1 | .4 | 10 | 0 |
| RLPC3 | 240 | 4.15 | .796 | 1 | .4 | 15 | 0 |
| RLPC4 | 240 | 4.28 | .667 | 1 | .4 | 6 | 0 |
| RLPC5 | 239 | 4.08 | .892 | 2 | .8 | 21 | 0 |
| RLPC6 | 240 | 4.15 | .832 | 1 | .4 | 16 | 0 |
| RLPC7 | 241 | 4.07 | .908 | 0 | .0 | 25 | 0 |
| RLSQ1 | 241 | 4.23 | .754 | 0 | .0 | 10 | 0 |
| RLSQ2 | 240 | 4.22 | .668 | 1 | .4 | 6 | 0 |
| RLSQ3 | 240 | 4.25 | .728 | 1 | .4 | 8 | 0 |
| RLSQ4 | 241 | 4.31 | .687 | 0 | .0 | 6 | 0 |
| RLSQ5 | 239 | 4.27 | .720 | 2 | .8 | 7 | 0 |
| RLSQ6 | 240 | 4.26 | .777 | 1 | .4 | 10 | 0 |
| RLSQ7 | 240 | 4.18 | .801 | 1 | .4 | 12 | 0 |
| RLSQ8 | 241 | 4.33 | .657 | 0 | .0 | 3 | 0 |
| RLSQ9 | 240 | 4.43 | .616 | 1 | .4 | 2 | 0 |
| RLSQ10 | 240 | 4.35 | .728 | 1 | .4 | 10 | 0 |
| RLSQ11 | 240 | 4.18 | .707 | 1 | .4 | 7 | 0 |
| RLSQ12 | 240 | 4.34 | .640 | 1 | .4 | 4 | 0 |
| RLSQ13 | 241 | 4.44 | .589 | 0 | .0 | 2 | 0 |
| RLSQ14 | 240 | 4.42 | .609 | 1 | .4 | 3 | 0 |
| RLSQ15 | 241 | 4.31 | .611 | 0 | .0 | 4 | 0 |
| RLSQ16 | 240 | 4.08 | 1.058 | 1 | .4 | 28 | 0 |
| RLSQ17 | 240 | 4.37 | .639 | 1 | .4 | 6 | 0 |

| | | | | | | | |
|--------|-----|------|-------|---|----|---|----|
| RLSQ18 | 241 | 4.41 | .660 | 0 | .0 | 6 | 0 |
| RLSQ19 | 240 | 4.38 | .642 | 1 | .4 | 3 | 0 |
| CF1 | 241 | 1.99 | 1.120 | 0 | .0 | 0 | 32 |
| CF2 | 241 | 2.29 | 1.204 | 0 | .0 | 0 | 0 |
| CF3 | 241 | 2.10 | 1.159 | 0 | .0 | 0 | 41 |
| CF4 | 241 | 2.02 | 1.045 | 0 | .0 | 0 | 29 |
| CF5 | 241 | 2.17 | 1.187 | 0 | .0 | 0 | 0 |
| CF6 | 240 | 2.04 | 1.024 | 1 | .4 | 0 | 30 |
| CF7 | 240 | 2.07 | 1.148 | 1 | .4 | 0 | 39 |
| CF8 | 240 | 1.94 | 1.029 | 1 | .4 | 0 | 25 |
| CF9 | 241 | 1.85 | 1.025 | 0 | .0 | 0 | 24 |
| CF10 | 241 | 2.02 | 1.140 | 0 | .0 | 0 | 37 |

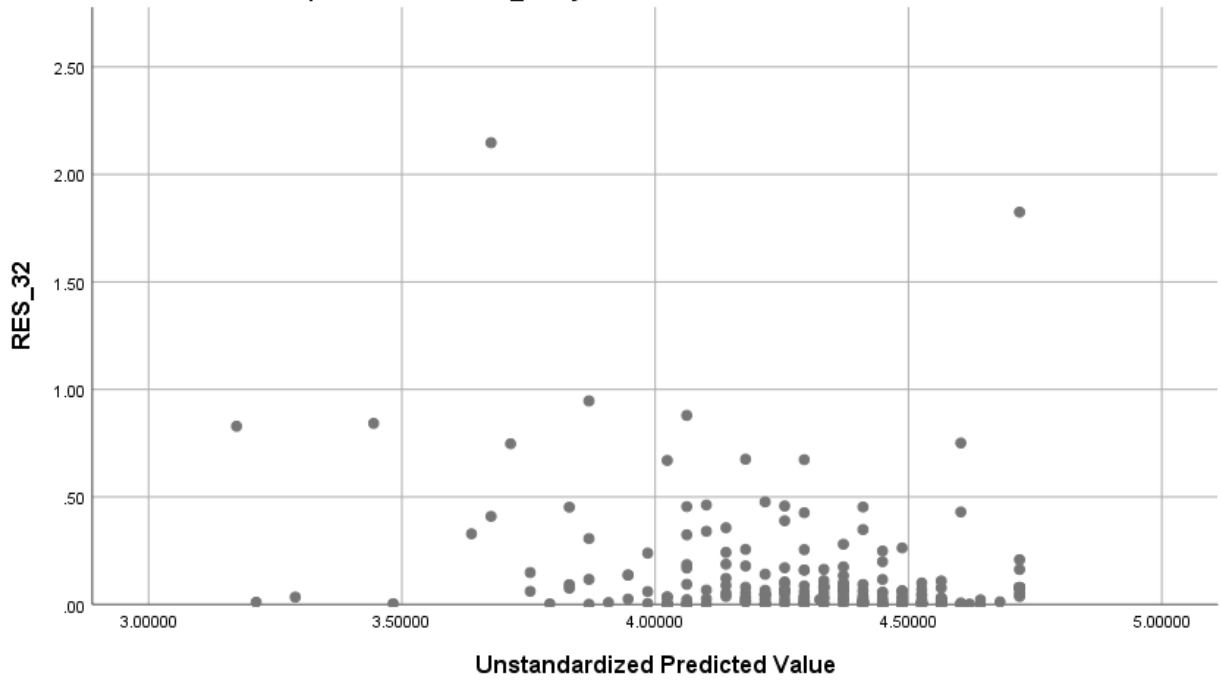
a. Number of cases outside the range ($Q1 - 1.5 \cdot IQR$, $Q3 + 1.5 \cdot IQR$).



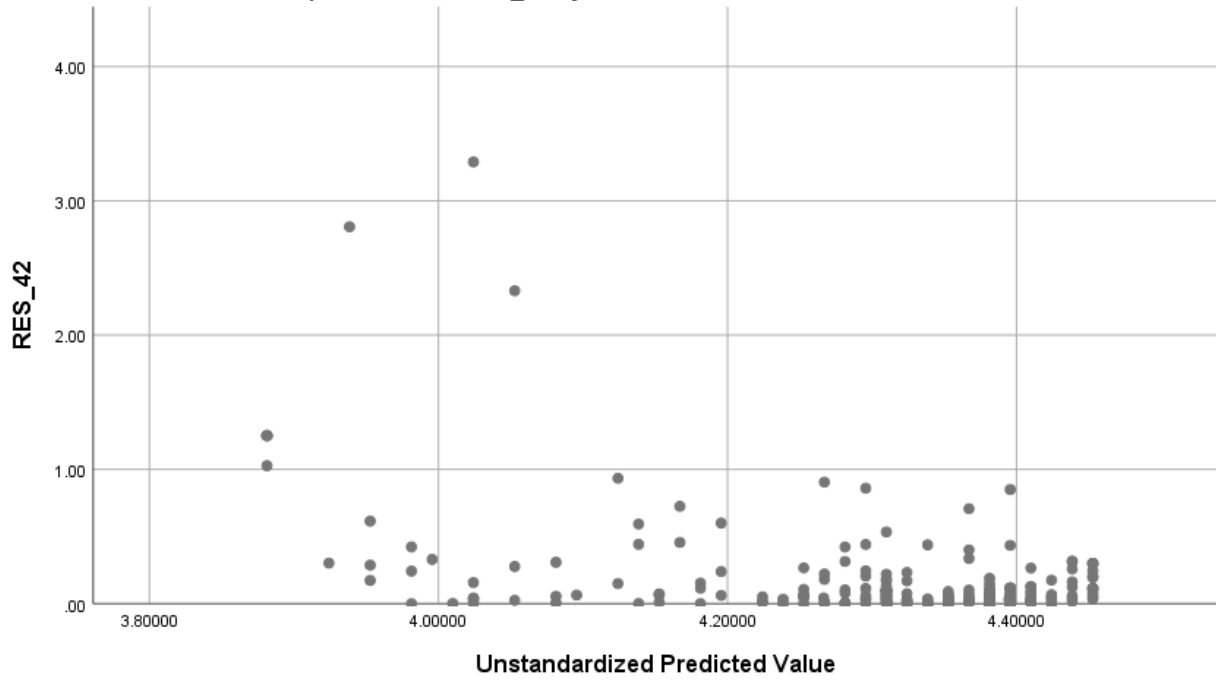
Simple Scatter of RES_22 by Unstandardized Predicted Value



Simple Scatter of RES_32 by Unstandardized Predicted Value



Simple Scatter of RES_42 by Unstandardized Predicted Value



Appendix C

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.1 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
 Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model : 7
 Y : LSPRQ
 X : RLPC
 M : RLSQ
 W : CF

Sample
 Size: 241

OUTCOME VARIABLE:
 RLSQ

| Model Summary | | | | | | |
|---------------|------|------|--------|-------|---------|------|
| R | R-sq | MSE | F(HC4) | df1 | df2 | p |
| .783 | .613 | .074 | 42.756 | 3.000 | 237.000 | .000 |

| Model | | | | | | |
|----------|-------|---------|---------|------|-------|-------|
| | coeff | se(HC4) | t | p | LLCI | ULCI |
| constant | 4.326 | .018 | 239.548 | .000 | 4.291 | 4.362 |
| RLPC | .396 | .042 | 9.426 | .000 | .313 | .478 |
| CF | -.102 | .031 | -3.265 | .001 | -.163 | -.040 |
| Int_1 | .170 | .051 | 3.362 | .001 | .071 | .270 |

Product terms key:
 Int_1 : RLPC x CF

| Test(s) of highest order unconditional interaction(s): | | | | | |
|--|---------|--------|-------|---------|------|
| | R2-chng | F(HC4) | df1 | df2 | p |
| X*W | .074 | 11.304 | 1.000 | 237.000 | .001 |

 Focal predict: RLPC (X)
 Mod var: CF (W)

Conditional effects of the focal predictor at values of the moderator(s):

| CF | Effect | se(HC4) | t | p | LLCI | ULCI |
|-------|--------|---------|--------|------|------|------|
| -.943 | .235 | .071 | 3.326 | .001 | .096 | .374 |
| .000 | .396 | .042 | 9.426 | .000 | .313 | .478 |
| .943 | .556 | .056 | 10.012 | .000 | .447 | .666 |

There are no statistical significance transition points within the observed range of the moderator found using the Johnson-Neyman method.

Conditional effect of focal predictor at values of the moderator:

| CF | Effect | se(HC4) | t | p | LLCI | ULCI |
|--------|--------|---------|-------|------|------|------|
| -1.049 | .217 | .075 | 2.888 | .004 | .069 | .365 |
| -.859 | .250 | .067 | 3.710 | .000 | .117 | .382 |
| -.668 | .282 | .060 | 4.709 | .000 | .164 | .400 |
| -.478 | .314 | .053 | 5.908 | .000 | .210 | .419 |
| -.287 | .347 | .048 | 7.288 | .000 | .253 | .441 |
| -.097 | .379 | .043 | 8.737 | .000 | .294 | .465 |

| | | | | | | |
|-------|------|------|--------|------|------|-------|
| .094 | .412 | .041 | 10.015 | .000 | .331 | .493 |
| .284 | .444 | .041 | 10.831 | .000 | .363 | .525 |
| .475 | .477 | .043 | 11.052 | .000 | .392 | .562 |
| .665 | .509 | .047 | 10.794 | .000 | .416 | .602 |
| .856 | .542 | .053 | 10.281 | .000 | .438 | .645 |
| 1.046 | .574 | .059 | 9.686 | .000 | .457 | .691 |
| 1.237 | .606 | .067 | 9.107 | .000 | .475 | .738 |
| 1.427 | .639 | .074 | 8.581 | .000 | .492 | .785 |
| 1.618 | .671 | .083 | 8.118 | .000 | .508 | .834 |
| 1.808 | .704 | .091 | 7.715 | .000 | .524 | .883 |
| 1.999 | .736 | .100 | 7.366 | .000 | .539 | .933 |
| 2.189 | .769 | .109 | 7.063 | .000 | .554 | .983 |
| 2.380 | .801 | .118 | 6.799 | .000 | .569 | 1.033 |
| 2.570 | .833 | .127 | 6.567 | .000 | .583 | 1.083 |
| 2.761 | .866 | .136 | 6.363 | .000 | .598 | 1.134 |
| 2.951 | .898 | .145 | 6.182 | .000 | .612 | 1.185 |

Data for visualizing the conditional effect of the focal predictor:
 Paste text below into a SPSS syntax window and execute to produce plot.

```

DATA LIST FREE/
      RLPC      CF      RLSQ      .
      BEGIN DATA.
      -.655      -.943      4.268
      .000      -.943      4.422
      .655      -.943      4.576
      -.655      .000      4.067
      .000      .000      4.326
      .655      .000      4.586
      -.655      .943      3.866
      .000      .943      4.230
      .655      .943      4.595
      END DATA.
GRAPH/SCATTERPLOT=
      RLPC      WITH      RLSQ      BY      CF      .
*****
OUTCOME VARIABLE:
      LSPRQ

Model Summary
      R      R-sq      MSE      F(HC4)      df1      df2      p
      .649      .421      .169      41.027      2.000      238.000      .000

Model
      coeff      se(HC4)      t      p      LLCI      ULCI
constant      1.883      .439      4.294      .000      1.019      2.747
RLPC      .219      .066      3.324      .001      .089      .349
RLSQ      .532      .101      5.260      .000      .333      .731
***** CORRELATIONS BETWEEN MODEL RESIDUALS *****
      RLSQ      LSPRQ
      RLSQ      1.000      -.056
      LSPRQ      -.056      1.000
***** DIRECT AND INDIRECT EFFECTS OF X ON Y *****

Direct effect of X on Y
      Effect      se(HC4)      t      p      LLCI      ULCI
      .219      .066      3.324      .001      .089      .349

```


Conditional indirect effects of X on Y:

| | | INDIRECT EFFECT: | | | |
|-------|--------|------------------|----------|----------|-------|
| RLPC | | -> | RLSQ | -> | LSPRQ |
| CF | Effect | BootSE | BootLLCI | BootULCI | |
| -.943 | .125 | .039 | .056 | .211 | |
| .000 | .210 | .043 | .129 | .299 | |
| .943 | .296 | .061 | .175 | .413 | |

Index of moderated mediation:

| Index | BootSE | BootLLCI | BootULCI |
|-------|--------|----------|----------|
| CF | .091 | .029 | .036 |

***** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS *****

OUTCOME VARIABLE:
RLSQ

| Coeff | BootMean | BootSE | BootLLCI | BootULCI |
|----------|----------|--------|----------|----------|
| constant | 4.326 | 4.325 | .018 | 4.290 |
| RLPC | .396 | .397 | .039 | .321 |
| CF | -.102 | -.103 | .028 | -.159 |
| Int_1 | .170 | .169 | .042 | .084 |

OUTCOME VARIABLE:
LSPRQ

| Coeff | BootMean | BootSE | BootLLCI | BootULCI |
|----------|----------|--------|----------|----------|
| constant | 1.883 | 1.905 | .419 | 1.086 |
| RLPC | .219 | .220 | .065 | .094 |
| RLSQ | .532 | .527 | .097 | .334 |

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
20000

W values in conditional tables are the mean and +/- SD from the mean.

NOTE: A heteroscedasticity consistent standard error and covariance matrix estimator was used.

NOTE: The following variables were mean centered prior to analysis:
CF RLPC

----- END MATRIX -----