

Reverse Supply Chain and Its Effect on Customer Satisfaction: A Comparative and SERVQUAL Analysis of Retail Practices

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Abstract— Reverse supply chain (RSC) operations have become increasingly critical for retail firms seeking to enhance sustainability, reduce costs, and retain customer loyalty. While traditional supply chain research emphasizes forward logistics, customer satisfaction in reverse logistics remains underexplored. This study investigates the relationship between RSC processes and customer satisfaction using qualitative semi-structured interviews with six U.S.-based supply chain professionals. It applies Qualitative Comparative Analysis (QCA) and the SERVQUAL model to analyze the configurations of RSC conditions that influence customer experience. Four key drivers emerged: return process efficiency, communication and transparency, employee competence, and alignment with customer expectations. A truth table developed using fuzzy set QCA 3.0 reveals five RSC condition combinations that consistently lead to high satisfaction. Customer communication and a hassle-free return process were necessary in all successful configurations. This study highlights best practices, including flexible return options, use of return metrics, staff training, and clear return policies. It contributes to the existing literature by reconceptualizing the reverse supply chain as not merely a cost recovery or operational function, but as a strategic service platform for generating competitive advantage in retail logistics. Further, this research offers a novel analytical framework capable of identifying multiple high-performance pathways rather than prescribing a one-size-fits-all solution. The emphasis on equifinality, or the possibility of different configurations leading to the same positive outcome, reflects the complexity and diversity of modern supply chain environments and aligns with the contemporary demands of supply chain managers.

Keywords— Reverse Supply Chain, Customer Satisfaction, Retail Logistics, SERVQUAL, Qualitative Comparative Analysis, fsQCA, Return Policy.

1. Introduction

In an increasingly competitive and customer-driven market, effective reverse supply chain (RSC) operations have become a critical determinant of organizational success, particularly in the retail industry. Traditionally, supply chain management has focused on the forward flow of goods from suppliers to end customers. However, the reverse flow of goods, encompassing returns, refurbishments, recycling, and disposals, has gained volume and strategic importance owing to evolving customer expectations, environmental regulations, and cost-saving imperatives [1]. As customer satisfaction drives brand differentiation, efficient reverse logistics management has become a logistical and strategic imperative for firms[2],[3].

The prevalence of online and omnichannel retailing has significantly intensified the complexity of RSC processes. Consumers expect easy returns, fast refunds, and user-friendly return systems. Surveys indicate that over 80% of online shoppers consider the ease of return when making purchase decisions, with many preferring brands with generous and clear return policies [2]. As a result, reverse logistics is no longer viewed as a cost center or exception process but as an integral component of the customer journey, influencing brand loyalty, repeat business, and perceived service quality [3].

Despite its strategic relevance, reverse supply chain management remains under-researched, particularly concerning customer satisfaction. Most existing literature emphasizes RSC's operational and cost-efficiency aspects, like warehousing, transportation,

and inventory recovery. Few studies have examined how a customer's return experience influences satisfaction or what combinations of RSC activities most effectively generate positive customer perceptions [4]. Current research often overlooks the nuanced, multidimensional nature of customer satisfaction, including service speed and accuracy, empathy, reliability, and perceived fairness.

This study addresses these gaps by examining how retail firms structure their RSC activities to enhance customer satisfaction. Using semi-structured interviews and fuzzy set Qualitative Comparative Analysis (fsQCA), this research explores both individual RSC conditions and their most effective configurations. Additionally, the SERVQUAL framework, covering reliability, responsiveness, assurance, empathy, and tangibles, is used to interpret qualitative data regarding established service quality dimensions [5], [6].

The study aims to uncover how diverse retail organizations leverage RSC as a logistics solution and as a customer-facing strategy that enhances service quality and brand trust. This study addresses four primary questions: (1) What is the nature of the relationship between RSC and customer satisfaction? (2) Which RSC condition configurations most effectively generate customer satisfaction? (3) What strategies and practices do retail firms use to improve customer satisfaction in reverse logistics? (4) How do customer expectations and perceptions shape RCS satisfaction?

This study makes several contributions to the literature. First, it advances the academic understanding of the customer-facing dimensions of reverse logistics, an area currently lacking empirical depth. Second, it offers a comparative configuration-based perspective using fsQCA to identify effective practice bundles across varying retail contexts. Finally, it provides actionable insights for retail managers and supply chain leaders seeking to improve service quality, loyalty, and customer retention through reverse logistics operations.

This paper is organized as follows. Section 2 reviews the relevant literature on the RSC and customer satisfaction. Section 3 outlines the research methodology, including the qualitative interview design and Qualitative Comparative Analysis (QCA) approach. Section 4 presents the key findings based on thematic and configurational

analyses. Section 5 discusses the managerial implications, and Section 6 concludes the paper with recommendations for future research.

2. Literature Review

RSC management has evolved from a tactical necessity to a strategic function that significantly shapes customer relationships and operational resilience. Over the last two decades, scholars have acknowledged RSC as key to modern logistics, particularly regarding sustainability, customer retention, and service differentiation [1], [7]. Unlike forward supply chains, where the flow of goods is toward the customer, reverse logistics concerns the movement of products from the customer back to the seller or manufacturer for return, recycling, disposal, or refurbishment[2],[8],[9]. Thus, RSC is intricately tied to the post-purchase experience and is crucial in determining customer satisfaction and retention.

Customer centricity is now embedded in the core objectives of many supply chain strategies, and RSC processes are no exception[10]. For instance, in the apparel, electronics, and home goods industries, where product returns can exceed 20–30%, customer-friendly return mechanisms can dramatically affect brand perception [14]. Studies have shown that over 60% of online shoppers review return policies before purchasing, and 95% are more likely to shop again if the return process is convenient [2], [10],[12]. These statistics underscore how RSC performance directly impacts customer loyalty and net promoter scores (NPS).

Several studies have identified the RSC components most linked to customer satisfaction, including process clarity, responsiveness, refund reliability, speed, transparency, and ease of return initiation[13], [5], [6]. These factors align with the SERVQUAL framework dimensions, particularly responsiveness, assurance, and empathy [5], [11],[14]. For example, customer satisfaction with a return depends on whether a refund is issued and how quickly and empathetically the issue is resolved [12], [15],[16]. Therefore, the quality of interpersonal interactions and digital communication throughout the reverse logistics process contributes to structural efficiency [9],[13],[17].

While several studies have focused on inventory management, transport costs, or return rate

minimization, few empirical investigations have explored the RSC from a customer experience perspective[20]. Some have found that optimal return policies balance flexibility and operational feasibility. Some retailers use “return scorecards” to assess customer behavior over time, segmenting those with frequent legitimate returns from those suspected of abuse. Although such models improve efficiency, overly strict enforcement may reduce customer satisfaction [6], [21].

Technology is transformative in shaping the customer-facing aspect of RSC [22],[25]. Using customer portals for returns, automated return labels, QR codes, and real-time refund status updates has become increasingly common [6], [9]. These tools reduce transaction costs and customer effort, positively affecting customer satisfaction. AI and machine learning have also been deployed to forecast return likelihoods, provide personalized post-sale support, and preempt dissatisfaction [7], [23],[24], [26]. Some firms use blockchain technology to create transparent, tamper-proof records of returns, enhancing accountability and trust.

There is a growing emphasis on the environmental impact of the RSC and how it shapes brand perception. Sustainability initiatives such as re-commerce (reselling returned goods), donation partnerships, and using biodegradable return packaging are gaining traction [18], [19], [27]. These practices address waste and resonate with environmentally conscious consumers. Brands like Patagonia and IKEA have integrated return sustainability into their marketing campaigns, aligning their logistics with their values[17], [22]. Circular supply chains and zero-waste strategies are becoming central themes in retail RSC planning, particularly in regions with stringent environmental regulations[5], [18].

Retailers operating in international or culturally diverse markets must navigate contextual return norms. In North America, liberal return policies are expected, whereas stricter policies are tolerated in some Asian and African markets. Therefore, the implementation of standardized global return policies must consider regional expectations, payment platforms, and logistical infrastructure [9], [19]. Global firms are increasingly localizing customer support, using region-specific metrics, and

training staff to manage culture-sensitive issues[9] [10].

The integration of RSC into corporate social responsibility (CSR) narratives is also under-researched. Return programs that include options for donation, resale, or community reuse reduce landfill waste and build goodwill [20], [21]. Retailers like H&M and North Face have incorporated clothing return bins and incentivized sustainable returns, creating environmental and reputational value. These strategies strengthen customer relationships with brands that are perceived as ethical and responsive to global concerns [9], [21],[25].

Despite the growing interest, few studies have holistically analyzed RSC, capturing the interplay of service, operational, and behavioral components affecting customer satisfaction. Configurational approaches like QCA address this gap [10], [23]. QCA allows researchers to assess combinations of RSC elements that consistently produce desirable outcomes, recognizing equifinality, for example, multiple paths to satisfaction [6], [15], [16]. This is particularly relevant in retail environments, where firm size, product type, and customer segment diversity shape return dynamics.

Cross-sector comparisons also remain limited. While fashion and electronics dominate existing RSC studies due to their high return rates, industries like home furnishings, pharmaceuticals, and grocery retail are underrepresented [6], [15]. Each sector presents unique return logistics, perishability issues, and customer expectations that may yield different satisfaction outcomes. Comparative studies offer practitioners industry-specific guidance[13], [14], [18], [22].

RSC is increasingly linked to omnichannel integration. Customers expect consistent return processes, whether online, offline, or through mobile apps. This has led to the development of unified RSC platforms that handle returns from multiple channels through a centralized system. These platforms enhance visibility, improve decision-making, and reduce the inconsistencies that lead to customer dissatisfaction. Without RCS integration, firms risk fragmented, confusing experiences that erode trust and repeat business [11], [17].

In summary, the literature suggests that the RSC has evolved beyond its operational roots to become a

cornerstone of competitive strategy, customer experience, and sustainability branding. However, the field lacks integrative frameworks combining service quality theory with configurational analysis to identify high-performance RSC models. This study addresses this gap by applying SERVQUAL and fsQCA to real-world retail cases and offers empirical insights into how reverse logistics practices affect customer satisfaction[5],[28].

3. Methodology

This study employed a qualitative design using semi-structured interviews, supported by fsQCA, and interpreted the results through the SERVQUAL framework. The methodology was structured to understand the complex interplay between RSC practices and customer satisfaction in retail environments.

3.1 Research Design

A qualitative exploratory design was selected to examine how retail organizations manage reverse logistics processes to enhance customer satisfaction. This approach enables an in-depth examination of organizational practices, internal processes, and customer service dimensions, which may not be adequately captured through quantitative survey instruments. This design is appropriate, given the limited availability of comprehensive models exploring the configurations of RSC practices using qualitative comparative logic. Qualitative inquiry reveals the meanings and motivations underlying RSC strategies and customer interactions that are difficult to detect through standardized questionnaires.

Qualitative research is beneficial for uncovering the latent conditions that influence how firms balance customer-centric return policies with cost and operational constraints. As the RSC function spans logistics, marketing, operations, and customer service departments, capturing its complexity requires direct engagement with key organizational actors. The interview format was chosen to allow participant reflection, storytelling, and elaboration, adding rich context to the identified practices and outcomes.

3.2 Data Collection

Data were collected through semi-structured interviews with six senior professionals from diverse

retail sectors in North America, each responsible for overseeing reverse logistics operations within their organizations. Participants were selected using purposive sampling, targeting individuals with expertise in customer-facing return policies, process execution, and performance monitoring. This approach ensured that those most familiar with the nuances of RSC systems contributed to the analysis. Each interview lasted approximately 60–90 minutes and was conducted via video conferencing. The participants represented firms of varying sizes, customer bases, and return volumes, providing a broader understanding of RSC configurations across different retail contexts.

The interview questions were designed to be flexible, allowing the researcher to explore unexpected insights. A thematic guide based on the SERVQUAL framework was used to prompt questions about reliability (e.g., refund speed), assurance (e.g., policy clarity), empathy (e.g., staff interaction), responsiveness (e.g., support access), and tangibles (e.g., packaging, returned product condition) [5]. The interviewees also discussed the influence of technology, policy design, return incentives, sustainability initiatives, third-party logistics partnerships, and performance metrics in monitoring customer satisfaction. Questions were pretested for clarity and iteratively refined to reflect insights from early interviews.

All interviews were audio recorded with consent and transcribed verbatim to preserve data integrity. Transcripts were cross-checked for accuracy and anonymized to protect participants' identities. Field notes were taken to capture nonverbal cues, emphasis, and emotional tone, further enriching the contextual understanding. More than 500 minutes of recorded dialogue were analyzed, yielding over 100 pages of raw transcripts.

3.3 Data Analysis

Interview transcripts were transcribed and analyzed using a hybrid approach combining thematic coding and fsQCA. Thematic analysis generated initial codes, identified emergent themes, and captured descriptive insights, while fsQCA identified causal patterns and configurations across cases[28]. This dual method provided depth and comparative power, aligning with the study's objective of exploring multiple interacting factors influencing customer satisfaction in RSC settings.

Thematic coding involved open, axial, and selective phases. Open coding generated various codes related to return policies, service interactions, and technological use. Axial coding clustered related codes into broader themes, such as process transparency and technology integration. Finally, selective coding synthesized these insights into central categories tied to customer satisfaction. NVivo software was used to organize patterns and reduce human bias in the coding.

FsQCA software (version 3.0) was used to calibrate and analyze the conditions. Each RSC element, such as “policy clarity,” “return speed,” “customer communication,” “technology use,” “flexibility,” and “sustainability integration,” was coded using a binary scale (1 = presence, 0 = absence). Calibration thresholds were obtained from the literature and refined based on empirical evidence from interviews. The outcome variable—customer satisfaction was operationalized by combining the participants’ stated outcomes, repeat purchase behaviors, NPS data (when available), and qualitative customer experience quality judgments.

A truth table was constructed to capture the presence and absence of each causal condition across cases. The data were then minimized using Boolean algebra to generate causal condition combinations consistently linked to high satisfaction. This approach highlights the importance and interdependence of each RSC element. For example, policy clarity and technology use might lead to high satisfaction in one configuration, whereas responsiveness and empathy may be sufficient in another [8], [11]. The fsQCA method suits the study’s context well because it enables equifinality, recognizing that multiple pathways can have the same outcome.

3.4 Validity and Reliability

Multiple validation techniques were used to ensure methodological rigor. Triangulation was achieved by comparing participant responses and examining supporting documentation (e.g., return policies and internal process manuals). Peer debriefing was conducted with academic colleagues specializing in supply chain and qualitative methods to ensure that the codes and interpretations were reasonable and theoretically grounded.

Member checking was employed to enhance credibility; each participant received a summary of their interview findings for confirmation or clarification. Data saturation was observed when no new themes emerged, reinforcing the adequacy of the sample size. An audit trail documenting the coding decisions, fsQCA calibration choices, and analytical steps was maintained to enhance transparency and replicability.

Credibility was reinforced through prolonged engagement with the data, and confirmability was supported using a detailed methodological journal. Transferability is strengthened by providing detailed firm descriptions, RSC setups, and customer contexts. Despite the small sample size, qualitative inquiry analysis was pursued rather than statistical generalization. Thus, the configurations derived from fsQCA reflect potentially transferable models for practitioners in similar industries.

By integrating thematic insights with fsQCA configurational logic, this study advances a richer understanding of how reverse logistics strategies affect customer satisfaction. It moves beyond linear cause-and-effect models and identifies robust RSC practice combinations tailored to firm-specific contexts. This framework explores complexity and variation while aligning with established service quality constructs like SERVQUAL.

4. Results

This section presents the findings derived from thematic and configurational analyses using fsQCA. Four research questions guided the investigation into how RSC practices influence customer satisfaction in the retail industry. The results are structured according to the research questions.

4.1 Results for RSQ1: The Relationship Between RSC and Customer Satisfaction

The first research question explores the relationship between reverse supply chain practices and customer satisfaction. The participants revealed four core themes in response to the first research question: indispensability and fundamentality, cause and effect, effective return management, and strong relationship and profitability. These themes highlight RSC practices as a critical driver of the modern customer experience and loyalty.

Participants unanimously recognized the RSC as indispensable to retail operations and customer retention. It was described not as an auxiliary function, but as foundational to the post-sales customer experience. One participant stated, “Reverse logistics is the only part of the transaction that can reverse satisfaction,” highlighting RSC’s impact on loyalty. A strong cause-and-effect relationship was observed between effective returns management and customer satisfaction [4], [5], [9]. Smooth and efficient return experiences increase trust, driving repurchasing and recommendations. Conversely, delays, a lack of transparency, and cumbersome procedures increase frustration and defection [2]. Participants stressed that fast, convenient, and respectful returns signal a caring, professional brand, while rigid or punitive returns policies were equated with mistrust. From a strategic perspective, the RSC was seen as a service function and a differentiator in competitive markets. The findings confirm that customer satisfaction is closely linked to how well the reverse logistics process is designed and executed.

4.2 Results for RSQ2: Configurations of Conditions That Lead to Customer Satisfaction

This study explores the combinations of RSC elements that foster customer satisfaction. Using fsQCA 3.0, six participants (P1–P6) were evaluated across ten key conditions to determine which configurations consistently led to customer satisfaction (Table 1).

Table 1. Truth Table: Configurations Leading to Customer Satisfaction

Case	CW	HF	UM	T	F	QRT	SRP	CoR	CF	SP	CS
P1	1	1	1	1	0	1	1	1	1	1	1
P2	1	1	1	1	0	1	1	0	0	0	1
P3	1	1	1	1	0	1	1	1	0	1	1
P4	1	1	0	1	1	1	1	1	1	0	1
P5	1	1	0	1	1	1	1	1	0	1	1
P6	1	1	1	1	1	1	1	0	0	1	1

Note: CW, Communication with the customer; HF, Hassle-free return process; UM, Use of return metrics; T, Transparency; F, Flexibility; QRT, Quick response time; SRP, Streamlined return process; CoR, Commitment of resources; CF, Customer feedback; SP, Sustainable practices; CS, Customer satisfaction.

The analysis for RSQ2 used fsQCA 3.0 to evaluate how ten RSC condition combinations influence customer satisfaction. These conditions include customer communication, hassle-free processes, metrics, transparency, flexibility, quick response times, streamlined return processes, resource commitment, customer feedback, and sustainable practices. A value of 1 in the truth table indicates the presence of a condition, while 0 indicates its absence. Among the six participants (P1–P6), five unique configurations led to high customer satisfaction, with only customer communication and hassle-free returns appearing in all configurations, highlighting their importance [5],[25]. The flexibility, sustainability, and customer feedback conditions varied across participants, suggesting that organizations can adapt based on strategy. The findings support the conclusion that there are multiple pathways to achieving customer satisfaction in RSC, depending on how firms configure their operational priorities [1], [4].

4.3 Results for RSQ3: Best Practices and Strategies for Improvement

Participants outlined strategies to improve customer satisfaction in the RSC, identifying seven key themes: accuracy of returns, communication with the customer, customer feedback, customer support, educating customers, training employees, and quick response time.

The participants emphasized that accurate return tracking and prompt issue resolution were fundamental. Errors in return documentation, confirmation delays, and discrepancies between policies and actions have led to dissatisfaction. Proactive and responsive customer communication has been repeatedly cited as essential [6]. Collecting and acting on customer feedback helped the participants refine their policies. One participant stated, “We update our returns portal quarterly based on customer complaints and praise.” This addressed evolving expectations. Customer education via email or packaging inserts to clarify return steps reduced confusion [7], [9]. Employee training complemented this by ensuring consistent, informed responses. Speed was also a recurring theme. Participants noted that delays between return initiation and resolution eroded trust. Collectively, these practices reflect an integrated customer-focused strategy for enhancing RSC outcomes.

4.4 Results for RSQ4: Customer Expectations and Perceptions

In response to the final research question, participants identified six key factors that shape customer satisfaction in the RSC process: condition of the replacement or refund item, consistency, flexibility, return options, a streamlined return process, and a user-friendly process.

The participants indicated that customers expect more than convenience; they want their time and trust respected. Dissatisfaction spikes occur when returned items are replaced with damaged goods or refunds are delayed [7]. Consistency in return experiences across channels (e.g., in-store vs. online) was also critical. Customers appreciated flexible policies and multiple return options (e.g., mail, drop-off, in-store). Rigid systems often penalized loyal customers seeking exceptions. Offering empathetic, fair alternatives was key. A user-friendly return interface, via app or website also mattered [16]. Participants noted that even a well-intentioned policy can fail if execution is clunky or unclear. A seamless digital experience fosters satisfaction by reducing cognitive and emotional efforts[9]. These findings confirm that RSC satisfaction depends on meeting emotional, psychological, and functional expectations [2], [3], [5]. Customers want to be supported, understood, and valued during their return journey[2] ,[7].

4.5 Participant Perspectives

The interviews revealed rich narratives that underscored the complexity and sensitivity of RSCs. The participants shared how organizational culture, frontline staff behavior, and system design contributed to or undermined customer satisfaction. One respondent explained that returns represent an emotionally charged moment in the customer lifecycle: “It’s when the purchase didn’t go as planned. We can either recover or lose the relationship.”

Another participant emphasized the importance of tone and empathy during return conversations. They observed that customers are often defensive or upset, and how representatives handle these moments significantly affects the overall perception of the brand. Participants invested in emotional intelligence training for call center staff to better de-

escalate and guide customers through frustrating processes.

Internal misalignments between departments were highlighted as barriers to a smooth RSC. In cases where marketing promoted a “no questions asked” return policy but operations enforced strict guidelines, customer trust was eroded. A cohesive cross-functional approach was cited as a success factor [9]. Firms that held regular interdepartmental meetings to align their return policies, customer service scripts, and logistical capabilities reported fewer service gaps[19], [23].

Participants noted that while digital transformation in returns (e.g., self-service portals and AI chatbots) improved efficiency, it needed to be balanced with human discretion. One executive warned, “If a system automatically denies a return because it misses a rule nuance, that’s a customer we just lost.”

In summary, the participants’ perspectives confirm that customer satisfaction depends more on policies and processes. Organizational responsiveness, empathy, and cross-functional coordination were repeatedly cited as critical for delivering a positive return experience [26].

4.6 Summary of Key Insights

These thematic and configurational findings offer a multidimensional view of how RSC practices influence customer satisfaction:

First, multiple satisfaction pathways exist. fsQCA identified five distinct configurations leading to high satisfaction, showing firms can tailor RSC strategies to their capabilities and market position. Second, communication and hassle-free processes are essential. Present in all successful configurations and repeatedly stressed by participants, they form the foundation of customer experience. Third, omnichannel consistency matters. Aligning in-store and online return processes is key to maintaining trust and meeting service expectations. Fourth, emotional experience is critical. Returns often involve regret or frustration; empathy and efficiency can turn these into positive brand moments. Finally, technology must be balanced with human touch. While automation and AI improve speed and scale, participants emphasized the need for human support to ensure a responsive, customer-centric journey[6], [25].

These insights contribute to academic understanding and managerial practices. From a scholarly perspective, they demonstrated the usefulness of a configurational approach to supply chain service analysis. Practically, they offer a roadmap for building flexible, customer-oriented return systems that support long-term loyalty.

4.7 Additional Analysis: Weak Configurations and Common Failures

While the primary focus was on identifying successful configurations, the analysis of weaker outcomes revealed key barriers to satisfaction. For example, Participant 6 lacked clear communication and had minimal technological integration in the return process. Their customers received little guidance on initiating returns, experiencing long delays before receiving updates or refunds. Despite a standard return policy, inconsistent enforcement across channels resulted in confusion and dissatisfaction [7],[10]. This demonstrates how missing responsiveness and assurance undermine even well-intentioned policies.

Participant 5 illustrated another weak configuration in which empathy and flexibility were present but were unsupported by reliable refund mechanisms. Inconsistent timelines and lost packages frustrated customers, despite courteous and helpful staff [2],[11]. This suggests that soft skills and customer care are insufficient when the operational systems are weak or fragmented [9]. In fsQCA terminology, this reflects a lack of sufficiency; having one or two supportive conditions is insufficient if other critical components are missing[28].

4.8 Sectoral and Strategic Differences

Product type and the retail sector also helped in shaping configurations. Due to high return volumes, fast fashion and electronics firms prioritize speed and automation. In contrast, furniture and home goods retailers prioritize personalized services and flexible return pickups given the complexity of bulky returns [5],[6]. These differences suggest that the optimal RSC design is contingent on customer expectations and product characteristics, return cost structures, and fulfillment networks.

For example, a fashion retailer used automated chatbots and QR code-enabled labels to streamline

returns, whereas a furniture firm used live agents and scheduled pickups. Both configurations achieved high satisfaction through different investments and design choices. This reinforces the need for strategic alignment rather than universal best practices [2],[5],[15],[23].

4.9 Emerging Patterns and Managerial Implications

Several recurring themes emerged that offer valuable guidance for retail practitioners. Speed and visibility are foundational; quick refunds and transparent updates are universally appreciated, while delays and uncertainty are the most common frustrations. Communication should be multimodal, as customers prefer return updates through SMS, email, and in-app alerts; firms relying on a single method often see lower satisfaction. Empowerment through self-service, such as return portals and instant label downloads, improves customer experience by reducing reliance on call centers. Sustainability is a differentiator, not a necessity; firms embedding eco-conscious return practices appeal to a growing segment of value-driven consumers [2],[19],[25]. Integration trumps innovation; cutting-edge technology alone does not ensure satisfaction, but aligning tech with support teams, training, and policies leads to better outcomes. These findings suggest a maturity model for RSC development could help organizations benchmark capabilities and target improvements. Early-stage firms may focus on policy clarity and responsiveness, while mature firms may invest in sustainability and omnichannel coordination [18].

5. Discussion

The results contribute to the literature that situates RSC as a strategic pillar of customer satisfaction in the retail sector. Here, we discuss the findings in relation to the study's objectives, previous research, and managerial theory. It highlights the significance of configurational thinking, the applicability of the SERVQUAL framework in logistics, and its implications for service design, digitalization, and sustainability[5].

5.1 Configurational Thinking and Service Design

The identification of multiple configurations that lead to customer satisfaction reinforces the concept

of equifinality, that is, there is no single best path to successful RSC outcomes. The fsQCA method confirms that combinations of conditions, not isolated practices, drive satisfaction[28]. Some firms relied heavily on digital infrastructure and return automation, whereas others achieved similar results through personalized services and transparent communication. These findings challenge the linear service improvement models and support a systematic thinking perspective. Managers should align elements such as speed, clarity, empathy, and flexibility, rather than pursuing one-size-fits-all solutions. These results echo findings in the service operations literature that emphasize the importance of alignment between service delivery systems and customer expectations. The success of the various configurations in this study suggests that firms can and should tailor their reverse logistics strategies to customer demographics, product characteristics, and brand identity. This flexibility is critical in fast-changing, competitive markets [18].

5.2 SERVQUAL Relevance in Logistics Context

Using SERVQUAL to guide thematic analysis provides a structured understanding of how quality is perceived in reverse logistics. Traditionally applied in face-to-face service settings, SERVQUAL's dimensions—reliability, assurance, responsiveness, empathy, and tangibles—proved highly applicable to returns. Participants cited reliable return processing, clear instructions, prompt communication, and empathetic staff interactions as the hallmarks of a satisfactory experience. Responsiveness and assurance were consistently aligned with positive satisfaction outcomes, echoing prior studies that ranked speed and clarity as the top satisfaction drivers in e-commerce. Furthermore, including empathy as a core satisfaction factor validated the emotional dimension of service recovery. Returns often involve disappointment or uncertainty, making how a firm handles them critical to trust and loyalty.

5.3 Integration of Digital Tools and Human Interaction

The role of technology in shaping satisfaction is particularly notable in this study. Participants valued automation, AI-driven return portals, and real-time updates but also stressed the limits of technology in resolving complex or emotionally charged

cases[25]. This suggests that successful RSC systems require a hybrid approach, pairing digital efficiency with human empathy. Self-service portals and automated return labels reduce friction; however, customer service must be ready when exceptions arise. This has implications for system design: organizations should implement escalation protocols, AI training data reflecting nuances, and staff training programs focusing on resolving exceptions rather than managing routine cases. The findings align with service design principles in human-computer interaction, which suggest that “fallback to human” is a key element of a robust system.

5.4 Strategic Role of Sustainability

Although not present in every configuration, sustainability emerged as a differentiating factor for several participants. Retailers incorporating eco-friendly packaging, donation programs, and re-commerce options reported stronger engagement among value-driven customers. These findings align with broader trends in consumer behavior research, favoring brands that exhibit environmental responsibility. The implication for managers is that integrating sustainability into an RSC is not merely a cost or regulatory compliance issue; it can drive competitive differentiation. Programs that repurpose returned goods or reduce packaging waste can also be leveraged in marketing communications to signal brand value. From a design perspective, firms should consider integrating sustainability without compromising convenience.

5.5 Cross-Functional Coordination and Organizational Culture

Several participants in the interviews described gaps between marketing, customer service, and logistics that led to inconsistent messaging and execution. This suggests that RSC success is as much an organizational issue as a technical one. Firms that aligned their departments around common metrics and held regular interdepartmental meetings to discuss returns reported smoother experiences and fewer escalations. This finding supports previous studies on service blueprinting and internal service quality that showed that customer-facing quality often reflects backstage integration. Therefore, managers should invest in cross-functional teams, shared KPIs, and internal training to promote a unified understanding of the RSC goals [23].

5.6 Limitations and Future Research

Although this study offers several important insights, it has some limitations. While sufficient for a qualitative comparative analysis, the sample size of six participants limits the generalizability. Future research should expand the sample size or conduct longitudinal studies to assess how configurations evolve over time. Additionally, while fsQCA is well-suited for exploring causal complexity, it does not measure effect size or magnitude. Supplementing fsQCA with quantitative metrics (e.g., return cycle time, NPS, and retention rates) could yield richer conclusions[28]. Finally, further research could explore cross-cultural differences in RSC perceptions as return expectations and policies vary significantly by region. Overall, the discussion affirms that a well-executed RSC is not just about operational efficiency but also a strategic lever for customer satisfaction, brand differentiation, and long-term loyalty.

6. Managerial Implications

This section presents actionable recommendations derived from the study findings to help managers design and implement effective RSC strategies to enhance customer satisfaction. Based on the fsQCA results, thematic insights, and the SERVQUAL analysis, the following strategic priorities are recommended for retail firms.

6.1 Prioritize Hassle-Free Returns and Clear Communication

Managers should view communication and hassle-free processes as non-negotiable features of modern RSC. The results showed that these two conditions were present in every configuration, leading to high satisfaction. To ensure customer confidence, firms must clearly communicate their return policies at every touchpoint, from websites and apps to receipts and customer service scripts. Ambiguity undermines trust; clarity reinforces transparency and fairness. Operationally, managers should streamline return workflows to minimize customer effort. Prepaid labels, digital return requests, and status notifications enhance the user experience. Investing in a return-tracking infrastructure and proactive communication protocols can significantly boost satisfaction. Automation tools that notify customers when returns are received and refunded reduce anxiety and strengthen brand credibility.

6.2 Adopt a Configurational Approach to Return Strategy

Firms should embrace configurational thinking, rather than copying competitors or following rigid frameworks. This study reveals multiple pathways to satisfaction, each with unique conditions. Managers should audit their strengths—whether in digital agility, frontline services, sustainability practices, or customer loyalty programs—and build RSC models around them. One firm might focus on AI-based return automation and fast refund systems, while another might differentiate itself by training staff to offer empathetic, flexible in-store return experiences. The key is internal coherence; the chosen configuration should align with brand positioning, customer expectations, and operational capabilities.

6.3 Integrate Human and Digital Capabilities

Digital tools like AI chatbots and return portals drive efficiency; however, they should not replace human support. This study found that digital-only systems struggle to handle exceptions, emotionally sensitive issues, or non-standard cases. Therefore, managers should adopt a hybrid model that automates routine returns but allows seamless escalation to trained representatives. This implies an investment in training beyond transactional tasks. Employees should be empowered to make decisions, reduce tension, and ensure service recovery. The return systems should include decision trees or AI to flag complex cases for human review. Firms should monitor satisfaction not only by speed and accuracy, but also by empathy and service recovery success.

6.4 Align RSC with Sustainability Goals

Sustainability emerged as a secondary but strategic differentiator. Retailers who promoted eco-friendly return options including product donation, recycling, or minimal packaging gained loyalty from environmentally conscious consumers. Managers can amplify their efforts by integrating return sustainability into broader CSR campaigns. Moreover, sustainability efforts in RSC are inexpensive. Firms can incentivize reusable returns packaging, partner with nonprofits to channel returned goods to communities in need, or create secondary marketplaces for refurbished returns.

Marketing teams should highlight these programs as part of a brand's ethical commitment.

6.5 Improve Internal Alignment and Cross-Functional Communication

A silent cause of customer dissatisfaction is the misalignment between marketing, logistics, and customer service. Managers must ensure that promises, for example, “free, no-hassle returns,” are feasible and consistently delivered across all channels. Firms should create cross-functional RSC task forces that regularly monitor return policies, customer feedback, and performance metrics. Shared KPIs across departments, such as “customer satisfaction with returns” or “first-contact resolution,” reinforce collective accountability. Training should include return scenario simulations to ensure that every department understands the customer journey.

6.6 Design for Omnichannel Consistency

Customers increasingly expect seamless returns across in-store, online, or mobile channels. Inconsistent policies and fragmented return systems can lead to confusion and dissatisfaction. Managers should develop unified return platforms that support all channels and provide consistent visibility of the return status. This may include centralizing returns data, integrating POS and CRM systems, and developing staff protocols accommodating multichannel customer interactions. A “buy online, return in store” capability is now a baseline expectation. Retailers should also provide centralized support lines and documentation to ensure uniform guidance regardless of the return origin.

6.7 Establish Feedback Loops for Continuous Improvement

Customer feedback on the return experience should be analyzed by firms for insights. Managers should deploy return-specific satisfaction surveys and monitor NPS related to post-sale interactions. Text analytics tools can also detect trends in complaints, praise, and unmet expectations. These insights should facilitate continuous process improvements. For example, if a recurring complaint relates to unclear refund timing, managers may update the policy language, improve training scripts, or adjust

processing workflows. Feedback loops should be embedded in RSC systems and reviewed regularly for operational planning.

6.8 Balance Policy Flexibility with Risk Management

Rigid return policies can alienate customers, whereas overly lenient policies may invite abuse. Managers must balance customer lifetime value, product margins, and return fraud risk. Return segmentation offers a solution by applying different rules for different customer tiers based on their purchase history and behavior. Data analytics can support this strategy by flagging risky patterns or validating loyal customer behaviors. Training staff to recognize and escalate questionable returns is essential. Flexible but fair policies, like store credit or extended return windows for loyal customers, can improve loyalty without undermining the bottom line.

6.9 Treat Returns as a Moment of Brand Truth

Returns are critical in the customer journey, often marked by emotion, disappointment, and uncertainty. How a firm responds can repair or destroy trust. Managers should treat return experiences as branding opportunities, measuring them with the same care as pre-sale and delivery stages. Success metrics include the emotional tone during customer interactions, post-return satisfaction scores, and return-to-repurchase conversion rates. Marketing and operations should collaborate to embed brand values—speed, fairness, and friendliness—in every return interaction.

6.10 Measure and Benchmark Return Performance

Managers should define and track return-specific KPIs to ensure their accountability and visibility. Useful metrics include average return processing time, return-related customer satisfaction, first-contact resolution rates, refund issuance speed, return policy clarity scores, and NPS post-return. Benchmarking against industry standards or internal targets can highlight opportunities for improvement. Monthly dashboard reviews by cross-functional teams enable swift, data-driven responses to performance issues.

7. Conclusion

This study examines how RSC practices influence customer satisfaction in the retail sector using semi-structured interviews and fsQCA. The findings revealed that customer satisfaction is not tied to a single factor but emerges from distinct configurations of interdependent elements. Communication and hassle-free returns were universally critical, whereas factors like technology, flexibility, and sustainability varied across firms.

By adopting a configurational approach, the study moves beyond traditional linear models. Instead of viewing satisfaction as a product of isolated inputs, this study emphasizes that success stems from multiple aligned practices that work in tandem. Equifinality, the idea that different firms can follow different paths to reach the same positive outcome, is the core contribution of this study. Consequently, firms are encouraged to customize their RSC strategies according to their operational strengths, customer segments, and brand identity.

The SERVQUAL framework is instrumental in understanding how traditional service quality dimensions apply within reverse logistics environments. Reliability, responsiveness, assurance, empathy, and tangibles manifested differently across return operations but remained relevant in evaluating the customer experience. Notably, responsiveness and assurance emerged as leading predictors of satisfaction, particularly when customers faced uncertainty or frustration during the return process. Empathy is also a powerful differentiator, especially in cases where policy exceptions or emotional sensitivity are required.

Furthermore, this study highlights how reverse logistics functions evolve from operational necessities to competitive differentiators. Historically regarded as cost centers, returns are now recognized as critical moments of truth in the post-purchase customer journey. A well-managed return can preserve customer loyalty and also enhance brand perception. The participants consistently noted that the return experience often represents the only personal interactions with a brand after purchase, underscoring its strategic importance.

The methodological integration of thematic analysis with fsQCA provides a robust foundation for generating insights [28]. Thematic coding captured

nuanced views on service behavior, emotional expectations, and organizational design, whereas fsQCA revealed causal combinations that produced satisfaction [5],[28]. This methodological fusion also ensured that the results were rich in context and analytically rigorous, bridging the qualitative depth with a systematic comparison.

From a practical standpoint, the study yielded ten concrete managerial implications that span communication clarity, process simplicity, digital-human integration, internal alignment, and sustainability. These are actionable strategies, validated by practitioners. For example, the emphasis on omni-channel consistency reflects customer expectations of fluid experiences across digital and physical channels. Similarly, the call to embed sustainability in an RSC reflects rising consumer awareness and opportunities for ethical branding.

Importantly, the findings reaffirm that technology should be leveraged to complement rather than replace human services. Although automation improves efficiency, it cannot fully capture the empathy, discretion, or adaptability required in certain situations. Organizations must ensure that digital tools include “human fallback” mechanisms, especially for edge cases or high-value customer interactions.

This study contributes to the existing literature by reconceptualizing the reverse supply chain as not merely a cost recovery or operational function, but as a strategic service platform for generating competitive advantage in retail logistics. Further, this research offers a novel analytical framework capable of identifying multiple high-performance pathways rather than prescribing a one-size-fits-all solution. The emphasis on equifinality, or the possibility of different configurations leading to the same positive outcome, reflects the complexity and diversity of modern supply chain environments and aligns with the contemporary demands of supply chain managers.

Organizational culture and cross-functional coordination have emerged as overlooked but essential pillars of RSC success. Departmental misalignment often leads to policy inconsistencies, delayed responses, and customer confusion. This study advocates unified return governance and

shared performance metrics across departments such as marketing, operations, and customer service.

In conclusion, reverse supply chain practices are no longer peripheral logistical concerns—they are central to a retailer's ability to build, sustain, and grow customer relationships. When executed strategically with attention to responsiveness, empathy, digital integration, and sustainability, RSC becomes a source of brand loyalty and competitive differentiation. This study offers a replicable framework and guiding principles for organizations seeking to transform their return systems from transactional burdens to relational opportunities.

Future research should expand the sample size to include a broader range of industries and geographical contexts or explore longitudinal outcomes from specific RSC interventions. Nevertheless, the study findings provide a solid foundation for academic inquiries and practical improvements in reverse logistics strategies

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