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Prioritizing Critical Success Factors for Reverse Logistics as a Source of Competitive Advantage

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Abstract

Reverse logistics has received a lot of attention due to the negative impact it has on the environment and the growing demand for green products. This especially occurred in the fast-moving consumer goods retail sector due to recalls and waste management. This sector significantly contributes to the gross domestic product growth of all countries. This has therefore led to the growing significance of reverse logistics since the fast-moving consumer goods retail sector cannot avoid reverse logistics. The primary objective of this study was for fast-moving consumer goods retailers to prioritize critical success factors for reverse logistics as a source of competitive advantage in the fast-moving consumer goods retailers' sector. This is because it is essential for the fast-moving consumer goods retail sector to implement critical success factors in reverse logistics that can lead to firm competitiveness. The study employed a positivist research philosophy, where data were collected from 418 fast-moving consumer goods retailers and consumers via SurveyMonkey using two close-ended questionnaires. The Statistical Package for the Social Sciences and the Analysis of Moment Structures software version 27 were employed to analyze the data. The results offer insight into the critical success factors in reverse logistics that should be carried out to achieve firm competitiveness. Through the implementation of critical success factors, this sector will achieve several goals, such as meeting environmental protocols, decreasing operational costs, cultivating the cumulative value of the brand, and improving customer satisfaction.

Keywords:

Reverse Logistics (RL);
Critical Success Factors (CSFs);
Fast-Moving Consumer Goods (FMCG);
Retail Sector;
South Africa (SA);
Firm Competitiveness.

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1- Introduction

Consumers are becoming increasingly demanding, with changing needs due to increased product variety and globalization, as well as cheaper substitutes for products from foreign markets, which became more apparent during the COVID-19 pandemic. On average, 8% of total sales stem from retailers' reverse logistics (RL), and at the same time, tighter regulation and Omni-channel retail make RL more multifaceted [1]. According to Bowersox et al. [2], the RL of fast-moving consumer goods (FMCG) stems from the growing numerous laws encouraging the recycling of packaging materials and containers. Moreover, Linford and Mkansi [3] posit that another RL activity, namely waste management (collection, recycling, upcycling, remanufacturing, repackaging, transportation, and disposal), has grown to be essential in RL due to the growing demand for green products and the impact that RL has created on the environment.

According to Berg et al. [4], the recycling rates for plastic packaging of food services globally are low. For example, waste is generally managed with low leakage, but recovery rates for packaging and food-service plastics are about 28%. Several FMCGs can be repacked and remanufactured at the end of their life cycle, and aspects such as the product design or business model make the remanufacturing of a certain product more profitable than others. Though, in some cases, predominantly in the FMCG retail sector, remanufacturing products is not always suitable [5]. This is because some FMCG products, such as food and medication, cannot be remanufactured and resold but can only be disposed of. Moreover, those FMCG that cannot be remanufactured can be disposed of, which leads to solid waste challenges.

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The World Bank forecasts that waste generation in sub-Saharan Africa will reach 516 million tons per year in 2050 [6]. In India, the FMCG retail sector is the leading contributor to the packaging plastic waste generated [7]. Statistics reveal that, in 2014, more than 95% of the dried processed food items, a total number of biscuits, and hair care products, together with more than 85% of baked goods, dairy, skincare, and laundry products sold, were packaged in plastic [7]. Comparable to other countries globally, both general and food waste remain problematic in SA too. This is apparent in SA, with 826 landfill sites that are reported to take in 98 million tons of waste each year. Just less than 39% of general waste is recycled, and more than 61% is treated or landfilled, while just 6% of hazardous waste is reused or recycled, and 94% is treated or landfilled [6]. According to the Waste: Market Intelligence Report [8], 55% of general waste, followed by 44% of unclassified waste, and 1% of hazardous waste were created in SA in 2020. These statistics are of concern since only 6% is reused or recycled. Bega [9] clarifies that South African FMCG retailers such as "Shoprite, Woolworths, and Pick n Pay are aligned to the United Nations sustainable development goals, specifically with goal 12.3, which aims to halve global food waste at the retail and consumer levels as well as reduce food losses along the food chain by 2030". More initiatives should be taken by the FMCG retail sector to implement critical success factors (CSFs) to achieve firm competitiveness. The factors that are critical for the RL implementation towards achieving firm competitiveness include but are not limited to top management awareness, contract terms, economic factors, and resource management, which are the top four prioritized factors, while skilled workers and process capabilities are the least prioritized factors [10]. Enhanced firm competitiveness can improve supply chain (SC) competitiveness, which in turn contributes to the industry's and a country's performance [11].

In today's RL, customers even return empty bottles for discounts to companies such as Coca-Cola, Oasis, and several other beer suppliers [3]. RL of FMCG in the retail sector can be defined as the backward flow of goods by returning unused goods, defective goods, or damaged goods from customers (consumers, retailers, and distributors) to manufacturers for substitution, reuse, recycling, repackaging, remanufacturing, repair, resell, incineration, and disposal.

Makaleng [12] and Kussing & Pienaar [13] opine that there are three general stages in which RL can occur in the SC:

- ***From the customer*:** These include the RL of services, warranty returns, and goods that have reached the end of use;
- ***From the distributor*:** These include RL due to inventory adjustments, product recalls, commercial returns, and redistribution of products;
- ***Manufacturing*:** RL due to production scrap, failed quality controls, and surplus raw materials.

According to Agrawal et al. [10], a methodical application and thorough study of CSFs are important for successful RL implementation. A considerable amount of literature has been published on the CSFs of RL. This includes Luthra et al. [14], who identified and prioritized the critical factors in implementing the RL practices. The CSFs from their studies were grouped into seven categories, which are: environmental, economic, regulatory, social, knowledge, business environmental, and organizational factors. Moreover, Raut et al. [15] identified the CSFs of sustainable SCM practices in the context of the oil and gas industries. They identified 32 CSFs from literature and opinions from industry practitioners and academics. Wiggins [16] examined the CSFs of an RL SC. The author acknowledged online tracking of returned goods, better customer service, improved customer satisfaction, computerized return tracking, product service, product recovery, competition in the market, planning, coordination in SC, and awareness of RL as some of the important CSFs for RL. The CSFs employed in the current study are the availability and commitment of proper and adequate RL resources, the availability of formal policies and regulations, retailers' awareness of available RL support structures, top management, customers' willingness to pay extra for RL initiatives, and the availability of proper and adequate recovery facilities. A further search on ResearchGate, Sabinet, Google Scholar, and Scopus was used to identify literature available on CSFs of RL, and no studies were recorded from the years 2021 to 2023.

Therefore, this study responded to closing the gap by conducting a thorough study of CSFs for successful RL implementation that can lead to firm competitiveness, especially in the FMCG sector. The lack of thorough studies, understanding, and knowledge of RL CSFs in the FMCG sector within the South African context led to this study. However, this does not mean that since there is a lack of thorough studies on RL CSFs, it does not essentially mean that RL and its CSFs are not significant. The problem statement thus emanated from the dearth of literature on RL CSFs and their influence on the firm's competitiveness of FMCG retailers in SA.

Against this background, the primary objective of this study was for FMCG retailers to prioritize CSFs for RL as a source of competitive advantage in FMCG retailers' industries. To achieve this objective, the study had the following secondary objectives: SO_1: identify the RL CSFs that can enhance firm competitiveness for FMCG retailers; SO_2: assess the influence of RL CSFs on the firm's competitiveness of FMCG retail firms. The study further aimed to address the following methodological objectives: MO_1: to review the literature on CSFs driving RL, which can be used to enhance the firm's competitiveness in the FMCG retail sector; MO_2: to propose the most appropriate research design and methodology for this study; MO_3: to gather and analyze primary data on RL CSFs driving RL, which can be used to enhance the firm's competitiveness in the FMCG retail sector; MO_4: to propose a model for RL CSFs towards achieving firm competitiveness.

To address these objectives, a positivist research philosophy, which includes both descriptive and explanatory research, was employed to guarantee that these objectives were addressed. Moreover, a quantitative research approach was also employed because of the COVID-19 outbreak, since the researcher wanted to safeguard the safety of both the respondents and the researcher. Using a quantitative approach allowed the researcher to address the research problem through the quantitative results from the implementation of RL CSFs that can be employed in the FMCG retail sector, which can better support consumers, workers, supervisors, and managers in SA to gain firm competitiveness through enhancing customer satisfaction. Data was collected through two closed-ended questionnaires via SurveyMonkey from 418 FMCG retailers and consumers. The data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 27 and the Analysis of Moment Structures (AMOS) software version 27.

The findings of this study have indubitably responded to Agrawal et al. [10] and further contributed meaningfully to the theory development of future studies. This study will, therefore, play an essential role in the field by providing new insights and contributing to the body of knowledge. Moreover, RL CSFs will also lead to an effective RL management system, which can lead to the achievement of several goals, such as meeting environmental protocols, decreasing operational costs, cultivating the cumulative value of the brand, and improving customer satisfaction. Accordingly, this study will un-questionably assist the FMCG retail sector, managers, and practitioners in the successful application of RL—by enabling the FMCG retail managers to identify the RL CSFs that they need to achieve firm competitiveness. The remainder of this paper will include a literature review, research design and methodology, results, and discussion, respectively. This is followed by the conclusion of the study.

2- Literature Review

The failure to employ CSFs could affect the productivity and performance of a RL SC [16]. Therefore, the identification and prioritization of the RL CSFs can enable researchers and managers to make strategic decisions for RL implementation [10]. An important objective in RL is for an operational manager to identify the correct classification of CSFs that are industry-specific. The RL CSFs may vary from sector to sector or country to country, but many of them are common. The current study prioritized the following CSFs for firm competitiveness: availability and commitment of proper and adequate RL resources; availability of formal policies and regulations; retailers' awareness of available RL support structures; top management commitment; customers' willingness to pay extra for RL initiatives; as well as the availability of proper and adequate recovery facilities. These are discussed below and demonstrated in Figure 1.

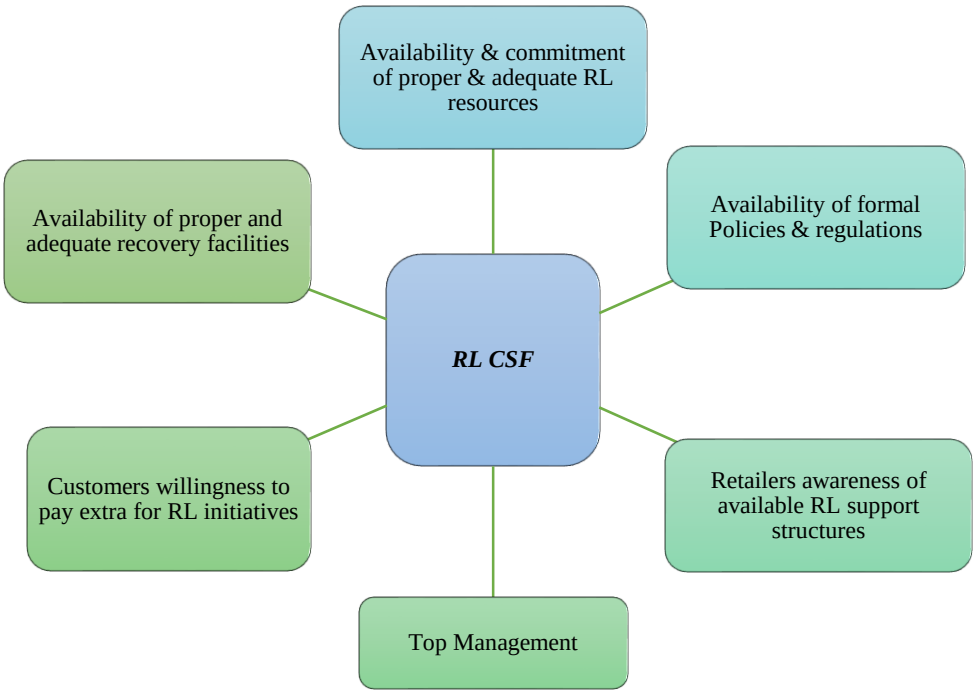


Figure 1. Reverse logistics critical success factors

2-1-Availability and Commitment of Proper and Adequate RL Resources

The resource-based view (RBV) theory can be employed to identify firms' competitive sources, and the availability of capacity to position the available RL resources in an appropriate and satisfactory manner is a critical factor that can allow firms, even in the FMCG retail sector, to create sustainable competitive advantages. Some of the RL resources essential for FMCG retailers include capital, efficient procedures, machinery, the employment of skilled personnel, trade

contacts, and knowledge. RL activities require the competence to produce new knowledge to solve problems and reduce the high uncertainty resulting from these activities [17]. The availability and development of human resources is another vital factor in providing a firm with the needed capacity to commit and position its RL resources in a proper and satisfactory manner [10], and eventually gain a competitive edge over its rivals.

2-2- Availability of Formal Policies and Regulations

All firms should follow policies and regulations, including FMCG retailers, to attain a competitive advantage. Regulations refer to guidelines passed by government authorities to decrease the effect of the end of life products on the environment [10]. In this study, policies and regulations refer to any formal guidelines guiding FMCG retailers on processes to follow when returning products and showing protocols and practices to follow to recover value from such products and minimize the returned products' end-of-life environmental effects. Current policies are a key enabler that can lead to firm competitiveness [18]. Additionally, Jikanovic & Vujosevic [19] posit that regulations regulate activities relating to RL. Therefore, government pressures comprise laws, regulations, and standards "that enforce the production, collection, and disposal of products in an environmentally friendly way" [20]. According to the literature, policies and regulations are some of the important reasons why firms participate in RL. Luthra et al. [14] study results noted that government standards and support, environmental management certifications, waste management practices, and extended producer responsibility form an important part of RL policies and regulations.

2-3- Retailers' Awareness of Available RL Support Structures

It is also critical that firms are aware of the available RL support structures that they can employ for their own benefit. Retailers should be aware of available government support, RL resources, human resources support, and support from business partners. The need for such support and the value of RL activities should be revealed by a firm's top management [21]. As such, retail top management's awareness of a firm's RL operations and support structures available for use by firms is significant in securing a sustainable competitive edge. Agrawal et al. [10] specify that top management awareness is vital for the success of RL implementation.

2-4- Top Management Support and Commitment

The employment of RL is a top management decision with a permanent effect on the firm [22]. Dubey et al. [18] further posit that top management commitment plays a critical role in converting external pressures such as coercive, normative, and mimetic pressures into desired managerial actions. Top management support and commitment are vital for internal and external organizational collaborations, which in turn improve firm competitiveness. Badenhorst [23] proposes that the success of forward SC depends on the visibility, trust, and collaboration of the many entities in the chain. Hence, collaboration and information sharing with various firms are as important in RL as in forward logistics (FL).

Effective information sharing and profitable collaboration in SCs' RL activities depend on the chain member firms' top management support as well as commitment. Badenhorst [24] postulates that top management should start with development and training programs for staff as a strategic plan for RL. To provide a clear vision and value to RL programs, top management awareness is essential because of its ability to motivate employees and guarantee full support and commitment from seniors. Top management support and commitment were the most significant CSF in the study by Agrawal et al. [10] due to top management guides, recruits, and the ability to motivate firms to adopt and implement RL. According to Meyer et al. [25] findings, the devotion of both capital and human resources to RL operations was reported as a critical factor allowing managers to save costs and generate additional revenues. Therefore, firm managers should focus on the development of their awareness, ability to render support, and commitment to effective and efficient RL [26].

2-5- Customer's Willingness to Pay Extra for RL Initiatives

One of the reasons for being in the FMCG retail business is to offer a product or service that satisfies the customers' requirements. Literature specifies that customers are gradually demanding green products, and therefore, it is imperative for firms to partake in environmental RL practices. RL processes start with the customer; thus, customers are an important part of RL programs [22]. Mvubu [27] advises firms to create environmental awareness amongst customers by creating promotion activities for environmentally friendly products. This will unquestionably lead to customers' willingness to pay extra for the initiative. Moreover, customer awareness will minimize firm costs and improve their revenues from customer purchases of refurbished or remanufactured goods [10]. This can lead to increased firm profits through the resale of such goods.

Ravi & Shankar [22] further postulate that firms should offer incentives to customers returning products at the end-of-life/end-of-use to accomplish feasible RL operations. A good example of this in SA is the return of 1.25-liter empty cool drink bottles to the supermarkets for incentives, and these bottles can therefore be recycled and re-used, which

inspires firms to be environmentally conscious. Such an initiative can lead to a long-term economic revival and high-quality green product development [28]. Richnák & Gubová [29] indicate that consumers want goods that embrace green initiatives; nevertheless, only a few do buy these products. Consequently, researchers have to find more ways to close this intention gap that would lead to more customers being willing to pay extra for these RL initiatives.

2-6- Availability of Proper and Adequate Recovery Facilities

Environmental factors have placed firms under pressure to implement and integrate environmental initiatives into their businesses [25]. According to Temur et al. [30], forces such as environmental regulations, social responsibilities, customer consciousness, and profitability of recovery operations make firms integrate sustainable systems into their firms. For firms, even in the FMCG retail sector, to enjoy cost-competitive advantages, the availability of proper and adequate recovery RL facilities is key. Some firms may not have adequate recovery facilities and have the opportunity to outsource their RL functions to third-party RL firms for effective recovery. The availability of proper and adequate recovery facilities can also assist firms, including FMCG retailers, in mitigating RL risks. Additionally, this can be achieved through the merging of RL facilities.

The identification of the correct CSFs for each FMCG retailer is vital. Wiggins [16] specifies that failing to recognize CSFs could cause disruptions in customer retention and customer satisfaction that can affect the competitiveness of a firm and its SC.

3- Research Design and Methodology

A positivist research philosophy worldview was utilized in this study since it "assumes an objective world"; "searches for facts"; "generalizes results"; "uses scientific methods" and is "not interested in meaning but only proven facts" [31]. The positivist research philosophy also allows generalizing results and is objective in nature. Additionally, this study employed a combination of descriptive and explanatory research. The descriptive research design aided the researcher in describing the FMCG retailers' profiles and CSFs of RL in the FMCG retail sector. The explanatory research design was utilized to explain the relationship between RL CSFs and firm competitiveness using quantitative data. This research design has the potential to generalize responses to large populations if there is an application of the appropriate sampling design [32].

This study also aimed to develop a model that uses RL CSFs to improve firm competitiveness, following a quantitative research design. A quantitative approach assisted in addressing the research aims, objectives, and problem. The aim was that this would lead to the creation of a suitable competitive model for RL in the FMCG retail sector.

3-1- Sampling Design

The population for this study involved FMCG retailers and consumers in Pretoria. This included retail stores, such as Woolworths stores, Checkers stores, Pick n Pay stores, Spar stores, and Boxer stores, since these retail stores are some of the biggest retailers that involve the reversal of FMCG. This population included retail store managers, logistics managers/customer care managers, supervisors, third-party RL service providers, and shoppers or consumers of the FMCG. Any shoppers/ customers above the age of 18 in Pretoria, SA, formed part of the targeted population in this study. The researcher is from Pretoria, and since these retail stores are some of the biggest retailers that involve the reversal of FMCG, they showed the strength of not being very costly, not being time-consuming, easy to administer, and being able to assist the researcher in acquiring the information required to address the research questions formulated.

A non-probability purposive sampling method was utilized in this study to enroll the respondents because the researcher had a specific purpose in mind, which was for the FMCG retailers to prioritize RL CSFs and develop a firm's competitiveness framework that can assist the retailers in achieving a competitive advantage. A purposive sampling method was employed since the sampling population was to be selected on purpose. The researcher recruited the FMCG retailers through the retailer's database and sent out personal emails with the link to the required personnel that deal with RL. A link was further provided to consumers through social media platforms, such as emails and LinkedIn. The retailers and consumers provided information-rich cases and addressed issues relating to the research objectives and questions.

It was problematic to track the number of retail store managers, logistics managers/customer care managers, supervisors, third-party RL service providers, and shoppers in Pretoria; however, since the researcher employed purposive sampling, a large number of completed questionnaires were obtained, and all the targeted respondents in Pretoria, SA, had some degree of chance to be included in the sample of data collection.

The total population for this study was not known, and therefore the researcher determined the sample size of 520 respondents, which comprised 500 FMCG consumers and 20 FMCG retail employees, was adequate. Gay et al. [33] posit that where a population size (N) = 5000 or more, the population size is irrelevant, and therefore a sample size of 400 will suffice. Therefore, as per Gay et al. [33], the sample size of 520 was adequate.

3-2- Data Collection and Analysis

Data collection was completed through two closed-ended questionnaires. The questionnaires were converted into SurveyMonkey web-based research platform questionnaires, where one questionnaire was utilized to collect data from FMCG consumers while the other was used by retailers because it was less expensive. This allowed the researcher to gather data from a large group of FMCG customers and retailers, which ensured the safety of both the researcher and the respondents. The questionnaire items were adapted from previous questions from other researchers and the literature in this field.

SPSS version 27 was utilized to perform descriptive analysis on demographic information and RL CSFs. The reliability, convergent validity, and discriminant validity tests were also performed in SPSS version 27. Furthermore, this study performed a confirmatory factor analysis (CFA) in the Analysis of Moment Structures (AMOS) software version 27. The CFA confirmed already existing and tested questionnaire items, adopted and adapted from previous studies. Additionally, frequency tables and diagrams were employed to discuss the results [34, 35].

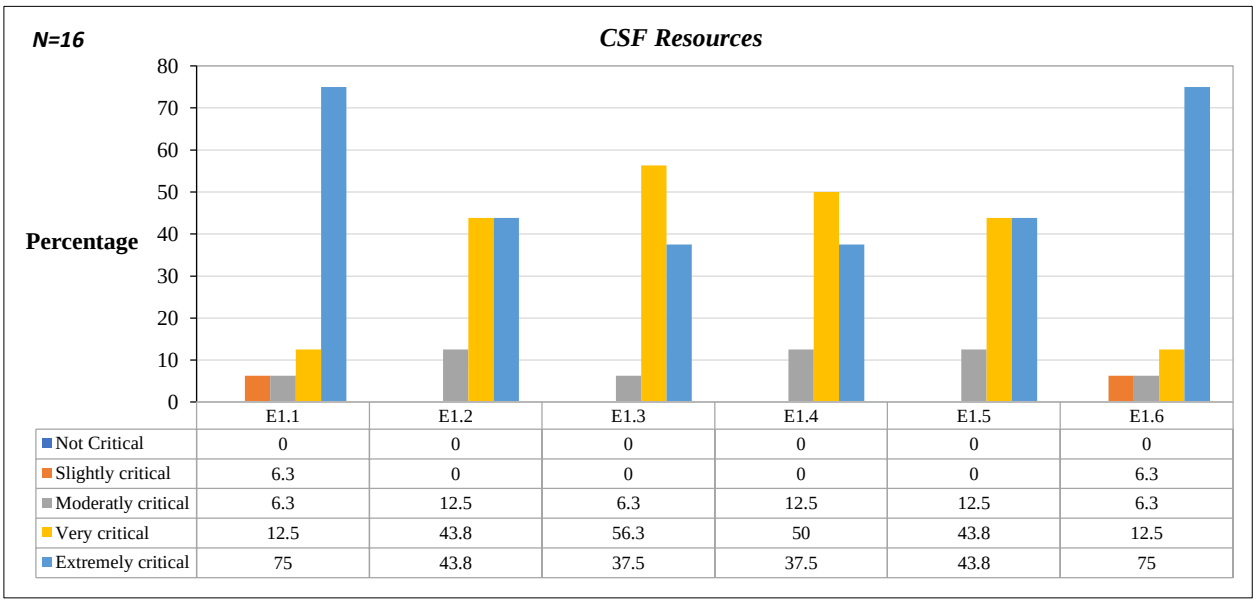
3-3- Data Quality Control

A Cronbach's alpha coefficient test performed in SPSS version 27 was utilized to test reliability. The researcher also conducted a pilot test to ensure the validity of the research questionnaire. Through the pilot test, the data collection instrument was measured for face and content validity. To test construct validity, this study performed both the convergent and discriminant validity tests in SPSS version 27.

4- Results and Discussions

Ravi & Shankar [22] postulate that an important objective in RL is for an operational manager to identify the correct classification of CSFs that are industry-specific. The study first sought to investigate the first subconstruct of how critical resources are as CSFs in the successful implementation of RL in FMCG retail firms. To measure resources, a five-point Likert scale was used. The mean point of the five-point Likert scale is 2.5 (5/2); any mean score below 2.5 implies that most respondents tend to either rate the statements on resources as slightly critical or not critical, while mean scores between 2.5 and 3.4 suggest that most respondents find the statements on the factors to be moderately critical. All the mean scores equal to or above 3.5 suggest that the majority of respondents tend to either believe that the statements are very critical or extremely critical, respectively. Both retail managers and customers were asked to indicate the factors they perceived to be critical for the successful implementation of RL among retailers. These results from retail managers' responses are discussed in the next paragraphs.

The results depict that all the factors explored in this study's survey are critical for the successful implementation of RL and the enhancement of firm competitiveness. Figure 2 displays that financial resources (75%), technology (75%), employment of skilled personnel (43.8%), and knowledge of RL (43.8%) are extremely critical factors in the successful implementation of RL among FMCG retailers. Figure 2 further displays that efficient procedures to handle RL (56.3%), and facilities (50%) are considered to be very critical success factors in RL among FMCG retailers. The availability of proper and adequate recovery facilities can further assist FMCG retailers in mitigating RL risks and which can be done through the consolidation of RL facilities.



	E1.1	E1.2	E1.3	E1.4	E1.5	E1.6
Not Critical	0	0	0	0	0	0
Slightly critical	6.3	0	0	0	0	6.3
Moderatly critical	6.3	12.5	6.3	12.5	12.5	6.3
Very critical	12.5	43.8	56.3	50	43.8	12.5
Extremely critical	75	43.8	37.5	37.5	43.8	75

Figure 2. Reverse logistics critical success factors (resources) based on retailers

Customer insights were also sought on the extent to which resources were considered critical factors in the successful implementation of RL practices to enhance firm competitiveness. Figure 3 presents the results on how critical resources are as RL CSFs in the successful implementation of RL in FMCG retail firms.

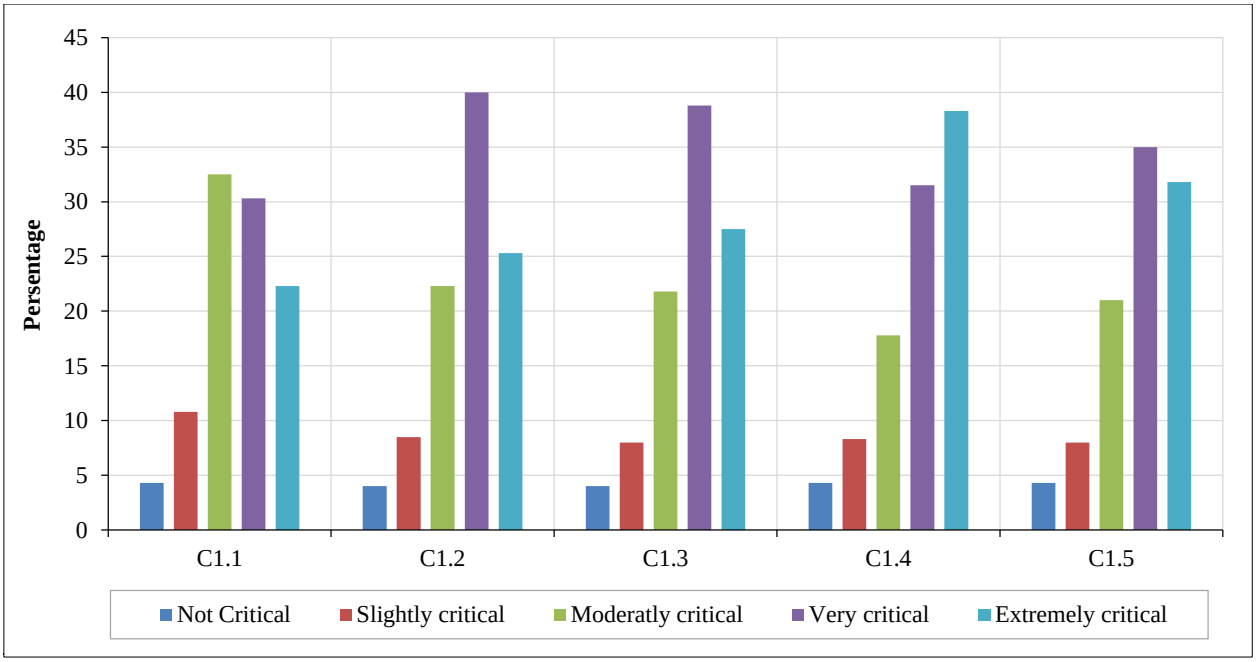


Figure 3. Reverse logistics critical success factors (resources) based on customers' insights: C.1.1= Financial resources (e.g. capital and assets); C.1.2= Employment of skilled personnel to handle reverse logistics (RL)- C.1.3= Efficient procedures to handle reverse logistics; C1.4= Knowledge of reverse logistics; C1.5= Technology.

In Figure 3, the results indicate that, just like the retail managers, the surveyed customers also consider financial resources, employment of skilled personnel, efficient procedures to handle RL, and knowledge of RL along with technology as critical factors in the successful implementation of RL. Nevertheless, opposing the retail managers' insights results discussed above, most of the customers (38.3%) cited knowledge of RL as an extremely critical factor in the successful implementation of RL in FMCG retail firms. More so, as illustrated in Figure 3, 40% of the respondents viewed the employment of skilled personnel to handle RL and efficient procedures to handle RL (38.8%) as very critical factors in the successful implementation of RL among FMCG retailers. Some respondents (32.5%) suggest that financial resources are moderately critical for FMCG retailers. Based on these results in Figure 3, all these resources are critical to the successful implementation of RL in the FMCG retail sector.

The overall mean value (M=3.76) is above 3.5, which further suggests that a majority of surveyed customers specified they consider resources as very critical success factors in the implementation of RL. These results coincide with those from retail managers' insights, with an overall mean value (M= 4.39) that indicated that the respondents found the statements measuring resources to be very critical.

According to the literature reviewed, it was obvious that the availability of environmental regulations, government rules and regulations on RL, standards of recycling management, legal regimes affecting reverse goods, company policies on RL implementation, and regulations from legislative bodies were the critical success factors in the implementation of RL.

Table 1 further delivers retail managers' insights results on the subconstruct of how critical the availability of formal policies and regulations is as a factor that drives the successful implementation of RL in FMCG retail firms in enhancing firm competitiveness. The results in Table 1 depict that a majority of the surveyed retail managers consider formal policies and regulations as factors that are very critical in the successful implementation of RL in FMCG retail firms because of the overall mean (Mean= 4.54). From the results in Table 1, it is apparent that 81.3% of the surveyed retail managers also exposed that company policies (e.g., recycling policy, product returns policy, re-use policy, remanufacturing policy, and repackaging policy) on RL implementation are extremely critical success factors. In addition, 75% of these managers further indicated that regulations from legislative bodies are extremely critical success factors in the implementation of RL practices. Furthermore, 68.8% of the retail managers said they regard government rules and regulations on RL standards.

Table 1. RL CSFs (availability of formal policies and regulations) based on retailers

Environmental Regulations				
	Frequency	**Percentage**	**Mean**	**Std.Dev**
Slightly critical	1	6.3	4.50	0.816
Very critical	5	31.3		
Extremely critical	10	62.5		
Total	16	100		
Government Rules and Regulations on Reverse Logistics (RL)				
Slightly critical	1	6.3	4.50	0.894
Moderately critical	1	6.3		
Very critical	3	18.8		
Extremely critical	11	68.8		
Total	16	100		
Standards for Recycling Management				
Slightly critical	1	6.3	4.50	0.894
Moderately critical	1	6.3		
Very critical	3	18.8		
Extremely critical	11	68.8		
Total	16	100		
Legal Regime Affecting the Reversed Goods				
Moderately critical	5	31.3	4.38	0.957
Extremely critical	11	68.8		
Total	16	100		
Company Policies on Reverse Logistics (RL) Implementation (e.g. Recycling Policy, Product Returns Policy, Re-Use Policy, Remanufacturing Policy, and Repackaging Policy)				
Moderately critical	1	6.3	4.75	0.577
Very critical	2	12.5		
Extremely critical	13	81.3		
Total	16	100		
Regulations from Legislative Bodies				
Slightly critical	1	6.3	4.63	0.806
Very critical	3	18.8		
Extremely critical	12	75		
Total	16	100		

Mean: 4.54; Std.Dev: 0.752

Lastly, Table 1 indicated that 62.5% of the retail managers revealed that environmental regulations are also an extremely critical factor in the successful implementation of RL practices. Mangla et al. [36] suggested that government norms and support, environmental management certifications, extended producer responsibility, and waste management practices form an important part of RL policies and regulations. So, having these policies and regulations in the FMCG retail sector can lead to achieving firm competitiveness. Dubey et al. [18] also postulated that current policies are a vital enabler that can lead to firm competitiveness.

In this study, it was also imperative to gather customer insights on the subcontract of how critical the availability of formal policies and regulations are as an RL CSF in the implementation of RL in FMCG retail firms. The policies and regulations encompassed environmental regulations, government rules and regulations on RL, standards for recycling management, company policies on RL implementation (e.g., recycling policy, product returns policy, re-use policy, remanufacturing policy, and repackaging policy), and regulations from legislative bodies. The surveyed customers had the choice to specify how critical the availability of environmental regulations, government rules and regulations on RL, standards for recycling management, company policies on RL implementation, and regulations from legislative bodies are to the successful implementation of RL in FMCG retail firms. Table 2 presents the results.

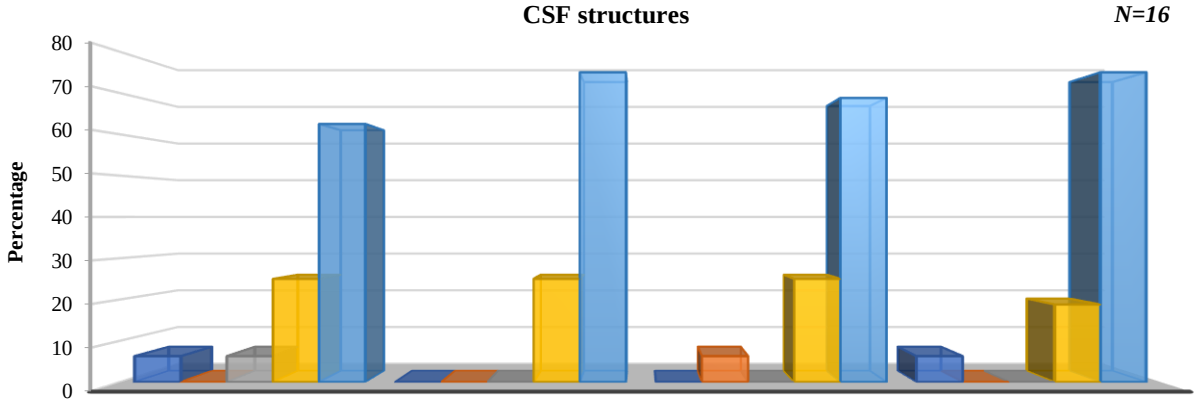
The surveyed customers agreed with the retail managers that policies and regulations are critical success factors in the implementation of RL among FMCG retail firms. It is also evident from Table 2 that company policies on RL

implementation (36%) are very critical to the successful implementation of RL among FMCG retail firms. This is followed by 34.5% of the surveyed customers who indicated they consider regulations from legislative bodies and standards for recycling management to be a very critical success factor in the implementation of RL in FMCG retailers. Additionally, 33% of the customers indicated that government rules and regulations are a very critical RL success factor, and 32.5% indicated that environmental regulations are a very critical success factor in the implementation of RL in FMCG retail firms. Also, the majority of respondents considered formal policies and regulations to be a very critical RL success factor in FMCG retail firms because of the overall mean score (M=3.77) which is above 3.5. These results coincide with those in Table 1 from the retail managers' data that show that a majority of these respondents find formal policies and regulations to be a very critical RL success factor in FMCG retail firms because of the overall mean (Mean= 4.54).

Table 2. RL CSFs (availability of formal policies and regulations) based on customers

C.2 How critical is the availability of the following formal policies and regulations as *reverse logistics (RL)* critical success factors in the successful implementation of RL practices in the *fast-moving consumer goods (FMCG)* retail firms in Pretoria (*N=402*)		**Not critical**	**Slightly critical**	**Moderately critical**	**Very critical**	**Extremely critical**	**TOTAL %**
C2.1	Environmental regulations	4.5%	9%	23%	32.5%	31.5%	**100%**
C2.2	Government rules and regulations on ***reverse logistics (RL)***	4.8%	6.5%	26%	33%	29.8%	**100%**
C2.3	Standards for recycling management	5.35%	9%	23.3%	34.5%	28%	**100%**
C2.4	Company policies on ***reverse logistics (RL)*** implementation (e.g. recycling policy, product returns policy, re-use policy, remanufacturing policy, and repackaging policy)	4.5%	7.8%	20.3%	36%	31.5%	**100%**
C2.5	Regulations from legislative bodies	4.8%	7.98%	22.5%	34.5%	30.5%	**100%**

Again, the study further sought insights from both retail managers and customers on how critical support structures are as an RL success factor in FMCG retail firms. The results are presented in Figure 4. The results from the retail managers' responses are discussed in the next paragraphs.



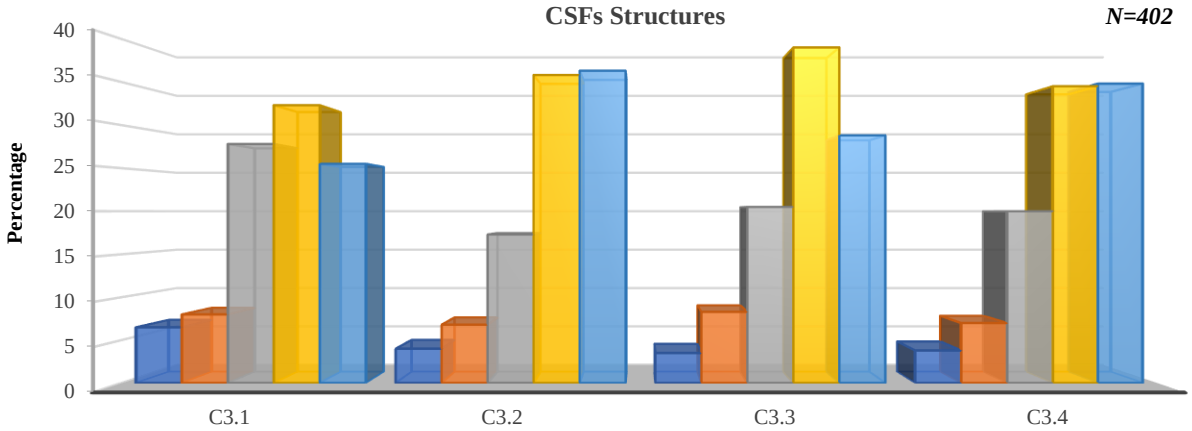
	E3.1	E3.2	E3.3	E3.4
Not critical	6.3	0	0	6.3
Slightly critical	0	0	6.3	0
Moderately critical	6.3	0	0	0
Very critical	25	25	25	18.8
Extremely critical	62.5	75	68.8	75

Figure 4. RL CSFs (support structures) based on retailers: E.3.1= Government support E.3.2= Top level management commitment and support; E.3.3= Support from business partners; E3.4= Human resources support

Based on the overall mean (M= 4.56), the retail managers indicated that they find support structures as an extremely critical RL success factor for FMCG retailers. The results in both indicate that 75% of the retail managers found top-level management commitment and support and human resources support (e.g., development and training programs for staff) as an extremely critical RL success factor in FMCG retail firms that enhance firm competitiveness. According to Agrawal et al. [10], human resources are critical for RL implementation. This is because the devotion of both capital and human resources to the RL operation enables managers to save costs and generate additional revenue for the firm [25].

Moreover, the results in Figure 4 depict that 68.8% of the retail managers also believe that support from business partners and government support (62.5%) are extremely critical RL success factors in FMCG retail firms. This makes sense since the successful implementation of RL requires costly infrastructure (e.g., recovery facilities) and technology.

Furthermore, the customers were also asked to specify how critical support structures are for the successful implementation of RL in FMCG retail firms. These support structures comprised government support, top-level commitment and support, support from business partners, and human resources support, e.g., development and training programs for staff in retail firms. The results are illustrated in Figure 5.



	C3.1	C3.2	C3.3	C3.4
Not critical	6.5	4	3.5	3.8
Slightly critical	8	6.8	8.3	7
Moderately critical	27.8	17.3	20.5	20
Very critical	32.3	35.8	39	34.5
Extremely critical	25.5	36.3	28.8	34.8

Figure 5. RL CSF (support structures) based on customers: C.3.1= Government support; C.3.2= Top level management commitment and support- C.3.3= Support from business partners; C3.4= Human resources support

Comparable to the retail managers, the surveyed customers also consider having top-level management commitment and support (36.3%) and having human resource support (34.8%) as extremely critical RL factors for FMCG retail firms (see Figure 5).

According to Figure 5, 39% of the customers indicated that they regard having support from business partners and having government support (32.3%) as a very critical RL success factor in FMCG retail firms. The mean score (Mean=3.82) is above 3.5, which shows that a majority of the customers believe that support structures are a very critical RL success factor for FMCG retail firms. Also, this coincides with the results from the retailer's data regarding support structures as an RL CSF that had an overall mean (M= 4.56).

4-1- Reliability and Convergent Validity

According to Field [37], composite reliability and Cronbach's alpha are normally employed to measure the scale's reliability. The essential cut-off value of both Cronbach's alpha and composite reliability is 0.8 and above [34]. Though Malhotra et al. [38] mention that 0.7 is acceptable and 0.6 is sometimes also acceptable. The results in Table 3 propose that Cronbach's alpha ranges from 0.820 to 0.931, suggesting an overall good level of internal consistency of the constructs. Moreover, these Cronbach's alpha results are supported by composite reliability coefficients, which extended from 0.821 to 0.929. Based on both Cronbach's alpha and composite reliability, all constructs involved in this study are considered reliable. For example, the overall alpha for the RL CSF (resources) was 0.857, and for the RL CSF (formal policies), it was 0.931. Correspondingly, the composite reliability for the RL CSF (formal policies) was 0.929, and for the RL CSF (support structures), it was 0.888, thus confirming that all the constructs are internally consistent.

The statistical evidence in Table 3 also supports the convergent validity of the measurements through average variance extracted estimates above 0.5. These results propose that convergent validity is supported [38, 39]. The results in Table 3 statistically support the reliability and convergent validity of the items. This is because all factor loadings were above 0.5. Overall, the items retained are good measures of their respective constructs. The statistical evidence of discriminant validity is presented and discussed through the matrix of correlations and average variance extracted from square root coefficients, which are tabulated in Table 3.

Table 3. Statistical evidence of reliability and convergent validity

Construct	Items	Factor loadings	P-value	Cronbach's alpha	Composite reliability	The average variance extracted (AVE)	The final number (Initial number of items)
Critical success factors – Resources	CSFR2	0.699	***	0.867	0.857	0.601	4(5)
	CSFR3	0.815	***				
	CSFR4	0.827	***				
	CSFR5	0.754	***				
Critical success factors – Formal policies	CSFFP1	0.825	***	0.931	0.929	0.725	5
	CSFFP2	0.868	***				
	CSFFP3	0.872	***				
	CSFFP4	0.52	***				
	CSFFP5	0.838	***				
Critical Success Factors – Support structures	CSFS1	0.761	***	0.890	0.888	0.665	4
	CSFS2	0.888	***				
	CSFS3	0.816	***				
	CSFS4	0.792	***				
Firm competitiveness	FC1	0.686	***	0.846	0.824	0.484	5(7)
	FC2	0.694	***				
	FC3	0.727	***				
	FC6	0.717	***				
	FC7	0.652	***				

* Indicates the significance of the factor at a 99% confidence interval.

4-2- Contributions

Upon completion of this research, it is clear that the field of RL is dynamic and there is a dearth of research dealing with RL in the FMCG sector in SA. The study contributes significantly to the theory development of future studies since it provides insight into previous research on RL, the FMCG sector in SA, RL CSFs, and the firm's competitiveness, contributing to the body of knowledge. The study also identified RL CSFs based on the literature review for successful RL implementation that can lead a firm towards achieving the firm's competitiveness. The study proposes an RL conceptual model for evaluating and prioritizing the RL CSFs. This will further assist many individuals by making a living through RL by recycling and selling recycled products from waste delivery. Also, it will lead to an effective RL management system that will lead to the achievement of many goals, such as meeting environmental protocols, decreasing operational costs and the cumulative value of the brand, and increasing customer satisfaction. This study will also indubitably assist the FMCG retail sector, managers, and practitioners in the successful implementation of RL by allowing the FMCG retail managers to identify the RL CSFs that they need to achieve the firm's competitiveness.

4-3- Implications

This study proposes the conceptual model below (Figure 6) for acceptance in research. There is a need to develop an RL framework to help guide FMCG retailers to capitalize on the key RL CSFs to achieve the firm's competitiveness. This need was informed by the existing RL conceptual frameworks and models relevant to the current study. Particularly, [40–43] conceptual framework's and [44] conceptual model. The RL CSF conceptual framework in this study is also suggested and depicted in Figure 6 based on the results.

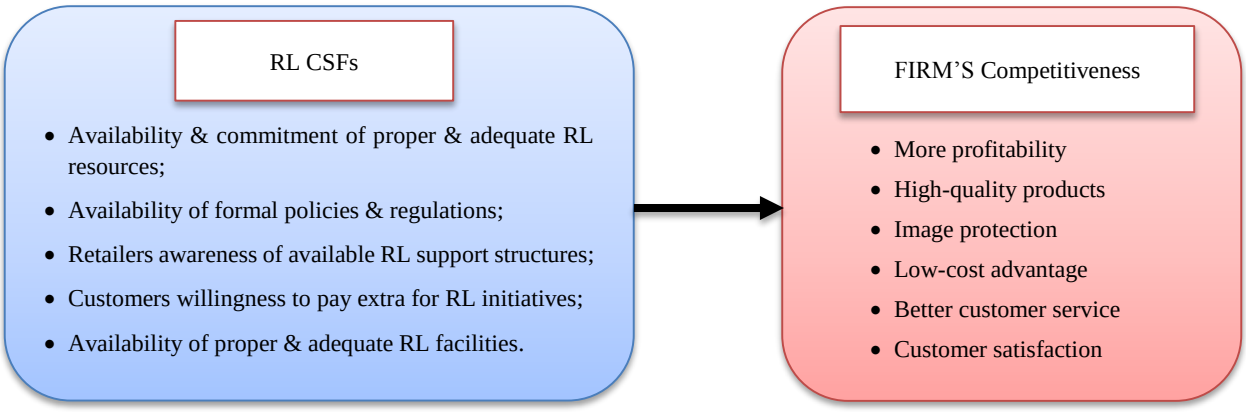


Figure 6. Proposed RL CSFs firm competitiveness conceptual model

Anne et al. [40] suggested a conceptual framework six years ago, and a lot has happened in RL since then, especially with the outbreak of COVID-19, competition, and technological advancements, amongst others. Time has forced firms to improve their RL efficiency and effectiveness toward achieving the firm's competitiveness. While [40–43] conceptual frameworks and [44] conceptual models can help firms gain an understanding of RL, the models do not include other factors. For instance, Anne et al. [40] focused on food manufacturing firms and RL practices only. Mbovu & Mburu's [41] conceptual framework focused on RL practices and the competitiveness of manufacturing firms. Omwenga [42] developed a conceptual framework based on RL practices that influence the competitiveness of plastic packaging manufacturing firms in Nairobi. Gu et al. [43] also developed a conceptual framework, however focusing on the best RL strategy. Lastly, Ebenezer & Zhuo [44] developed a conceptual model based on RL, competitive advantage, and firm performance. None of these conceptual frameworks/models were based on the FMCG retail sector; none of them included RL CSFs and firm competitiveness; and none of them were developed for SA.

Thus, in light of the above, the current study has developed and suggests an RL CSF conceptual model that can lead to firm competitiveness in the FMCG retail sector. This model can also be used in other industries and other countries. From the results, it is obvious that RL CSFs are vital for the FMCG retail sector and to the achievement of the firm's competitiveness. Therefore, this study proposes the RL CSFs firm competitiveness model for acceptance in research and practice.

4-4- Recommendations

In the previous section, this study suggested the RL CSFs firm competitiveness model for FMCG retailers based on the results of the study. Moreover, it is recommended that FMCG retail managers increase customers' awareness of RL. This can be done through social media drives on the FMCG retail firm's website. Retailers can do some podcasts on RL and initiatives currently utilized in their firms. This will permit customers to inquire and get more educated on the firm's RL and initiatives, as well as on their benefits. Ultimately, this will improve customers' willingness to pay extra for the RL initiatives and help firms achieve their competitiveness.

It is also recommended that FMCG retail managers train and educate their employees on RL since this was identified as a key RL CSF in this study. The managers can enroll employees in formal logistics courses that teach RL in detail.

The FMCG retail sector also needs to invest in the appropriate systems and technologies to promote effective and profitable RL knowledge management and for heightened eco-compatibility. Investing in the appropriate RL infrastructure and technologies will also assist these firms in improving their implementation of RL practices such as recycling, reusing, reselling, and incineration. Also, where the firm has little resources or no capacity to effectively implement and manage the RL, it is recommended that they consider forming strategic alliances with their SC partners. They can also outsource their RL function to third parties for RL implementation success, which will allow the firm to focus on its core business, minimize costs, and transfer RL technology. Lastly, the results of this study specified that having formal policies does not amount to or lead to firm competitiveness. This, then, means that the managers in FMCG retail firms need to harness RL's formal policies towards the achievement of the firm's competitiveness. Firms will also need to warrant the availability and effective coordination of resources and capitalize on the efficient use of available support structures, such as the RL recovery centers. This will allow them to effectively enforce RL formal policies and adherence to RL-related regulations, which will in turn lead to more profitability, low-cost advantages, improved corporate image, better customer service, the manufacturing of high-quality products, and ultimately improved customer satisfaction. It is thus recommended that FMCG retailers globally enforce formal policies through harnessing RL CSFs to achieve these benefits that lead to the firm's competitiveness. These recommendations are anticipated to advise and assist FMCG retail firms in ways to improve their RL performance to achieve firm competitiveness.

4-5- Limitations and Future Research

This study was not without limitations. It was challenging for the researcher to find relevant literature on RL CSFs in the FMCG retail sector since there is limited research conducted in this area. Due to time constraints, this study was conducted in Pretoria, SA, and could not cover SA as a whole. So, further studies may be conducted in other countries, provinces, and sectors. Furthermore, future research can be conducted to improve the measurement of RL CSF constructs. The study employed a quantitative research method due to the 2020/2021 outbreak of the COVID-19 pandemic; thus, the study only collected data through an online survey to ensure the safety of both the respondents and the researcher. This also became more challenging in July 2021, when the Protection of Personal Information (POPI) Act was implemented. So, further studies can consider employing other research methods of collecting data, such as a qualitative research method and or a mixed method, to get more insights on RL CSFs, which can lead to the firm's competitiveness in comparing the results. Furthermore, since this study only focused on RL CSFs, further research can explore other variables that can lead to the firm's competitiveness.

5- Conclusion

This study identified the RL CSFs that can enhance firm competitiveness for FMCG retailers in SA as well as globally, and it also assessed the influence of RL CSFs on the firm competitiveness of FMCG retail firms. These RL CSFs included the availability and commitment of proper and adequate RL resources, the availability of formal policies and regulations, retailers' awareness of available RL support structures, top management commitment, the customer's willingness to pay extra for RL initiatives, as well as the availability of proper and adequate recovery facilities. The CSFs that were identified in this study were rather similar to those identified by various researchers globally, as indicated in the literature review, and can also be employed to measure and therefore manage RL performance in organizations. RL will permit the recovery of value from disposals, which is beneficial to FMCG retailers in SA and can be achieved through the effective implementation of CSFs. These CSFs mentioned in this study should, however, be industry-specific, and managers should therefore implement the CFSs for successful RL implementation in their industry.

This study was also accomplished through a review of literature on CSFs driving RL that can be used to enhance the firm's competitiveness in the FMCG retail sector and employing the most appropriate research design and methodology for this study. Furthermore, primary data on RL CSFs driving RL that can be employed to improve the firm's competitiveness in the FMCG retail sector was gathered and analyzed. This study also proposed a model for RL CSFs towards achieving firm competitiveness.

6- Declarations

6-1- Data Availability Statement

The data presented in this study are available on request from the corresponding author.

6-2- Funding

This research is partially funded by UNISA (University of South Africa), Tshwane University of Technology, and NRF (National Re-search Fund) grant number: 129441.

6-3- Acknowledgements

The author would like to thank South African retailers and consumers for supporting this study. The author also wishes to thank the editor and statisticians for their support.

6-4- Institutional Review Board Statement

The study was conducted in accordance with the Declaration from the Nelson Mandela University, and approved by the Faculty of Business and Economic Sciences Research Ethics committee (ethical clearance reference number: H21-BES-LOG-050/ 12 June 2020).

6-5- Informed Consent Statement

Not applicable.

6-6- Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the author.

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Appendix I: Data Collection Instrument

Fast-Moving Consumer Goods Retailers Research.

Table A-1. Reverse logistics critical success factors

	1	2	3	4	5
E.1 How critical are the following resources as critical success factors in the successful implementation of ***reverse logistics (RL)*** practices in the ***fast-moving consumer goods (FMCG)*** retail firms in Pretoria? *(Please place an X in the appropriate box, only one answer is possible)*	**not critical**	**Slightly critical**	**Moderately critical**	**Very critical**	**Extremely critical**
Financial resources (e.g. capital and assets)	1	2	3	4	5
Employment of skilled personnel to handle ***reverse logistics (RL)***	1	2	3	4	5
Efficient procedures to handle reverse logistics	1	2	3	4	5
Facilities (e.g. product recovery facilities and remanufacturing equipment)	1	2	3	4	5
Knowledge on reverse logistics	1	2	3	4	5
Technology (e.g. recycling technology, Returns software; product returns track-and-trace technology	1	2	3	4	5
E.2 How critical is the availability of the following formal policies and regulations as ***reverse logistics (RL)*** critical success factors in the successful implementation of RL practices in the ***fast-moving consumer goods (FMCG)*** retail firms in Pretoria? *(Please place an X in the appropriate box, only one answer is possible)*	**not critical**	**Slightly critical**	**Moderately critical**	**Very critical**	**Extremely critical**
Environmental regulations	1	2	3	4	5
Government rules and regulations on ***reverse logistics (RL)***	1	2	3	4	5
Standards for recycling management	1	2	3	4	5
Legal regime affecting the reversed goods	1	2	3	4	5
Company policies on ***reverse logistics (RL)*** implementation (e.g. recycling policy, product returns policy, re-use policy, remanufacturing policy and repackaging policy)	1	2	3	4	5
Regulations from legislative bodies	1	2	3	4	5
E.3 How critical are the following available support structures as ***reverse logistics (RL)*** critical success factors in the successful implementation of RL practices in the ***fast-moving consumer goods (FMCG)*** retail firms in Pretoria? *(Please place an X in the appropriate box, only one answer is possible)*	**not critical**	**Slightly critical**	**Moderately critical**	**Very critical**	**Extremely critical**
Government support	1	2	3	4	5
Top level management commitment and support	1	2	3	4	5
Support from business partners	1	2	3	4	5
Human resources support, e.g. development and training programmes for staff in the retail firms	1	2	3	4	5

Table A-2. Fast-moving consumer goods customers research

	1	2	3	4	5
C.1 How critical are the following resources as critical success factors in the successful implementation of ***reverse logistics (RL)*** practices in the ***fast-moving consumer goods (FMCG)*** retail firms in Pretoria? *(Please place an X in the appropriate box, only one answer is possible)*	**not critical**	**Slightly critical**	**Moderately critical**	**Very critical**	**Extremely critical**
Financial resources (e.g. capital and assets)	1	2	3	4	5
Employment of skilled personnel that deal with RL processes	1	2	3	4	5
Efficient procedures to handle reverse logistics	1	2	3	4	5
Knowledge of reverse logistics	1	2	3	4	5
Using technology (e.g. recycling technology, returns software; product returns track-and-trace technology)	1	2	3	4	5
C.2 How critical is the availability of the following formal policies and regulations as reverse logistics critical success factors in the successful implementation of ***reverse logistics (RL)*** practices in the ***fast-moving consumer goods (FMCG)*** retail firms in Pretoria? *(Please place an X in the appropriate box, only one answer is possible)*	**not critical**	**Slightly critical**	**Moderately critical**	**Very critical**	**Extremely critical**
Environmental regulations to guide the FMCG retailers	1	2	3	4	5
Government rules and regulations on reverse logistics implementation in ***fast-moving consumer goods (FMCG)*** retailers	1	2	3	4	5
Standards for recycling management to guide FMCG retailers	1	2	3	4	5
Company policies on reverse logistics implementation (e.g. recycling policy, product returns policy, re-use policy, remanufacturing policy and repackaging policy to guide the fast-moving consumer goods retailers	1	2	3	4	5
Regulations from legislative bodies to guide the FMCG retailers	1	2	3	4	5
C.3 How critical are the following available support structures as ***reverse logistics (RL)*** critical success factors in the successful implementation of RL practices in the ***fast-moving consumer goods (FMCG)*** retail firms in Pretoria? *(Please place an X in the appropriate box, only one answer is possible)*	**not critical**	**Slightly critical**	**Moderately critical**	**Very critical**	**Extremely critical**
Having government support	1	2	3	4	5
Having top level management commitment and support	1	2	3	4	5
Having support from business partners	1	2	3	4	5
Having human resources support (e.g. development and training programmes for staff in the retail firms	1	2	3	4	5