The effect of commitment to Sustainable Supply Chain Management and Reverse Logistics on Performance in Context of UAE Food Industry

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The aim of the study is to test the commitment to sustainable supply chain management and commitment to sustainable reverse logistics on sustainable reverse logistics capability, competitive advantage, and operational performance by collecting and analyzing data from the UAE food industry. A research model is suggested that shows the hypothesized relationship between sustainable commitment to sustainable supply chain management, commitment to sustainable reverse logistics, sustainable reverse logistics capability, and operational performance. The proposed research model and hypotheses were tested using correlation analysis and structural equation modeling based on data collected from 315 companies working in the UAE food industry. The statistical analysis of the collected data supports the existence of a positive relationship between commitment to sustainable supply chain management and commitment to sustainable reverse logistics on one side and sustainable reverse logistics capability on the other. Also, the statistical analysis supports the positive relationship between sustainable reverse logistics capability on one side and operational performance on the other. To test the research hypotheses, data was collected by an online survey from 315 supply chain managers in the UAE food industry. The generalization of the study results may be limited by the size of the sample. This study recommends a useful working model in the UAE food industry. The results suggest that successful implementation of commitment to sustainable supply chain management and commitment to sustainable reverse logistics will help improve sustainable reverse logistics capability, and operational performance.

Keywords: Sustainable Supply Chain Management; Reverse Logistics; performance.

1. Introduction

In today's ever-changing market environment, businesses from small to large firms are modernizing their business systems to guarantee continued productivity and viability in the global market and adopting sustainable supply chain management (SSCM) systems (Prasad et al., 2020; Centobelli et al., 2021). These companies are enhancing their operational performance through effective supply chain management (Baliga, Raut and Kamble, 2020; Das and Hassan, 2022; Shekarian et al., 2022). Since the supply chain comprises the core organization to activities performed in all stages, from the generation of goods or services to their usage, it is a crucial component in determining the effectiveness of a company (Das and Hassan, 2022). Several studies have demonstrated that reverse logistics (RL) is a component of SSCM and reusing, recycling, and remanufacturing are seen as RL tasks that facilitate the achievement of SSCM.

RL deployment as a business approach has developed a great deal of interest amongst organizations due to its implications for sustainable growth (Al Zaabi, Al Dhaheri, and Diabat, 2013; Choi and Cheng, 2015; Chen et al., 2019). The fundamental tenet of logistics activities is that many items that are deemed useless or unwanted by the customers are valuable and can be put back into circulation with minimal change and repair (Abu Seman, 2012; Singh, Rastogi, and Aggarwal, 2016; Su et al., 2022). Almost 80% of supply chain expenses are determined by logistical issues (Gao and Cao, 2020). In addition to the expenses, carbon emissions-related environmental issues, customer awareness, regulatory pressure, and potential economic advantages have sparked tremendous attention in the development of the RL supply chain network

(Bernon, Rossi, and Cullen, 2011; Su et al., 2022). To cope with the present competitive environment, efficient RL must be utilized as a competitive advantage, a promising revenue source, a cost-cutting means, and a client satisfaction component (Ravi, Shankar, and Tiwari, 2005; Wang et al., 2021). Several studies have demonstrated that the usefulness of returned products can strengthen the desire to utilize the resources to increase the financial performance of an organization (Jack, Powers, and Skinner, 2010; Aitken and Harrison, 2013; Morgan, Richey, and Autry, 2016). However, proper utilization of RL requires commitment to use RL, proper planning, and the development of RL capabilities to achieve organizational efficiency (Choi and Cheng, 2015; Wibowo et al., 2022), and these capabilities include the discovery and analysis of elements that promote greater RL operations, such as dealing with customers and sustainability considerations (Morgan, Richey, and Autry, 2016; Wang et al., 2021). Therefore, the establishment of an effective supply chain network taking RL into account is crucial for organizational performance. Although SSCM and RL are expected to contribute significantly to enhancing the performance of businesses, little study has been conducted on the association of RL and SSCM sustainability with performance. In this study, we hypothesized that the commitment of a company to invest resources in recovery activities such as recycling and reprocessing of return items and SSCM might have a positive effect on financial benefits and organizational performance and analyzed their relationship. Therefore, this article provides a comprehensive assessment of the impacts of commitment to SSCM and RL on sustainability performance, as well as presenting future research prospects.

2. Literature Review

2.1. Sustainable Reverse Logistics

All logistical procedures for goods that are approaching the end of their respective service lives or that need a number of additional operations are referred to as RL (Li and Olorunniwo, 2008). Sustainable RL, also known as "aftermarket supply chain," is the process of gathering and aggregating items, components, and materials after the end of their useful lives for repurposing, recycling, and repatriation. The American Reverse Logistics Executive Council (ARLEC) defines RL as an effective process for planning, implementing, and controlling the transportation of raw materials, ongoing holdings, finished goods, and relevant documents from an intended destination to an origin point with the objective of recovering to capture value or proper disposal (Hashemi, 2021).

RL is typically driven by the requirement for product returns in retail businesses; producers may send back raw materials to the providers if they are not of high grade, excessive or otherwise superfluous, unwanted, or out-of-spec (Wibowo et al., 2022). In addition to production problems, due to business returns, unwanted out-of-season items, and incorrect deliveries, companies may recall their goods, such as automobile brake systems (Epoh and Mafini, 2018; Shaharudin et al., 2022). In developed countries, consumers are entitled to return things that are undesirable or, under guarantee, have reached the end of their useful life or usefulness (Waqas et al., 2018). Financially, the chance to recuperate resources inexpensively and add value by changing them into other assets with greater substantial assets motivates businesses to engage in RL operations (Piyachat, 2017; Su et al., 2022).

Reverse logistic operations may significantly facilitate the adoption of effective waste management procedures and the decrease of environmental degradation in established supply chains (Safdar et al., 2020). Choi, Min, and Joo (2018) illustrated that customers get the opportunity to return defective or end-of-life items with ongoing warranty periods, which increases the application of RL. The overall objective of RL is to optimize or make aftermarket activities more effective, with the end result being cost savings for the company involved (Richey, Genchev, and Daugherty, 2005; Bernon, Rossi, and Cullen, 2011; Nguyen et al., 2021). This is accomplished by including all the actions that are related to a product or service after the point of sale.

2.2. Reverse Logistics Capabilities

RL is not a new approach, but it is a coordinated system that needs to be developed to support a circular economy dependent on RL activities (Fernando, Shaharudin and Abideen, 2022). Organizations need to develop RL capabilities for proper collection and transportation of commodities in order to organize them for reprocessing, repairing, refurbishing, or recycling (Hsu, Tan and Mohamad Zailani, 2016; Wang et al., 2021). The firms must be able to handle the need for returnable goods while preventing the production of trash and pollution. The RL capabilities of an organization involve the precision and accessibility of the data utilized, as well as the method and reliability of RL data (Kocabasoglu, Prahinski and Klassen, 2007; Mokhtar et al., 2019). RL capabilities are associated with the business' customer approach, client opportunism, resource logistics commitments, and contractual obligations and these qualities are in turn, associated with RL cost reductions (Jack, Powers, and Skinner, 2010). In addition to these features, RL capabilities also encompass internal and external communication and the usability of the information (Jaharuddin, Mohamed and Sambasivan, 2014). These competencies reflect a collection of information-based approaches that help a business to manage and maintain its RL operations, which may result in cost reductions (Kocabasoglu, Prahinski and Klassen, 2007; Visamitanan and Assarut, 2021). RL capabilities help businesses to strengthen return policies and overall cost position (Abu Seman, 2012; Dey and Cheffi, 2013).

2.3. Sustainable supply chain management (SSCM)

The supply chain achieves optimum success by enhancing the relationships between its enterprises to optimize profitability in all stages of business activities. SSCM practices are the approaches, policies, and processes followed by businesses in order to minimize or remove waste, pollution, and harmful substances (Choi and Cheng, 2015; Das and Hassan, 2022; Shekarian et al., 2022). These environmental practices encompass supply chain operations such as eco-design, RL, transportation, green procurement, internal environmental conservation, environmental data management in the organization, and supply chain management (Pinto, 2020). SSCM establishes goals for itself in the areas of the economy, the environment, and society. It also controls the resources, information, revenue, and connections between businesses across the supply chain. The struggle among financial, social, and environmental goals is the most ambiguous aspect of the sustainability idea when it is considered in its three aspects (Luo et al., 2020). To cope with the current competitive landscape, organizations must be conscious of and implement SSCM. Long-term SCM is concerned with environmental protection, social obligations, financial growth, and prosperity. Implementing RL is considered a "corrective" strategy that reduces the negative environmental effects of infrastructure projects and makes the construction industry more efficient, resulting in economic advantages and sustained competitiveness (Pushpamali, Agdas, and Rose, 2019).

2.4. Operational performance (OP)

OP refers to an organization's capacity to produce and distribute goods to potential consumers, thus enhancing its market dominance and boosting its possibilities of promoting its goods in worldwide markets (Younis, Sundarakani, and Vel, 2016) more reliably. Hadli (2017) demonstrated that OP is significant to businesses as it aids in increasing the efficacy of manufacturing operations and the quality of goods, resulting in greater profitability and revenue. Different activities designed to reduce scrap rates as well as turnaround times, boost product quality, reduce stock levels, and increase capacity utilization (Jabbour et al., 2016; Laari et al., 2018) help to strengthen collaboration with suppliers and clients. This relationship may assist businesses in enhancing their organizational competencies, which may subsequently result in enhanced OP. The OP of an organization can be increased in different ways, including waste reduction, and one of the best approaches for this is RL and green practices. Acquaye et al. (2017) demonstrated that businesses may enhance their OP by using successful RL strategies and developing RL capabilities.

2.5. Relationship between sustainable SCM and sustainable RL capability

RL has emerged as a growing competitive need for supply chain strategies in general and has drawn a lot of attention for its capacity to retrieve value from discarded and even used goods (Nguyen et al., 2021). RL facilitates waste recuperation and decreases waste production. Organizations are switching their priority to RL to cope with environmental protection laws, smaller goods lifecycles, and more waste production (Safaei, Roozbeh, and Paydar, 2017). Bag and Gupta (2020), in a survey of 250 automotive manufacturing firms in South Africa, observed that commitment to SSCM has a moderate impact on accessibility to sustainable human capital, the adoption of RL, and the effectiveness of remanufacturing OP.

Although most businesses are used to redistributing returns, few accept ownership of items that have reached the end of their useful lives, and those that do often only do so to adhere to regional or national environmental rules (Khor and Udin, 2013). Previous studies have shown that logistic activities contribute significantly to the greening of conventional supply chains by reducing environmental pollution and implementing innovative waste management techniques (Li, 2014; Dubey et al., 2017). Therefore, companies should think about how effectively they manage their existing resources, in addition to how successfully they reposition themselves and create different capabilities through long-term and short-term sustainability-generating practices (Huang and Yang, 2014).

Most companies are receiving instructions from their corporate headquarters on how to conduct the RL procedure, but the process is not yet in full flow (Li and Olorunniwo, 2008). There are a number of causes, including a lack of understanding of RL practices at the shop level, less support from manufacturers and suppliers, and a lack of government participation in the adoption of RL practices at the store level and other stakeholder levels (Daugherty et al., 2005; Olorunniwo and Li, 2010; Bernon, Tjahjono, and Ripanti, 2018). There are reputable worldwide brands in every industry that recycle and remanufacture their discarded items regularly. However, in the case of some organizations, their primary objective is to maximize product sales, which may explain why they do not take a very firm position regarding RL practices (Hazen, Cegielski, and Hanna, 2011; Choi and Cheng, 2015). Sharma et al., (2021) suggested that effective RL can only be implemented if the manufacturer agrees to dispose of used or damaged items, since they have a better understanding of where and how to destroy or reuse them.

Based on the studies above, the following hypothesis can be suggested:

H1. Commitment to sustainable SCM has a direct and positive effect on sustainable RL capability.

2.6. Relationship between sustainable **RL** *and sustainable RL capability*

Commitment to sustainable RL involves engaging and involving resource suppliers, service providers, vendors, transporters, and end consumers in a collaborative effort to mitigate or eradicate detrimental effects on the environment resulting from their activities (Rao and Holt, 2005). With growing concern about environmental degradation and material waste, most industrial companies have discovered that the recuperation of discarded items is an eco-friendly means of promoting sustainable development (Garbout and Zouari, 2015; Morgan, Richey, and Autry, 2016; Maheswari et al., 2020). Companies committed to sustainable RL are recovering and collecting returned and used goods in addition to producing environmentally sustainable items due to legal regulations, social obligations, environmental considerations, economic incentives, and increasing awareness among consumers (Lau and Wang, 2009; Vlachos, 2016; Bag and Gupta, 2020).

The allocation of resources makes RL activities more efficient and productive. Retailers develop RL capabilities to execute their returns policies and transport returned goods upstream (Chen et al., 2019). Jack, Powers, and Skinner, (2010) conducted a survey on 295 retailers and found that resource commitments have a significant positive effect on capabilities related to RL, and that these capabilities lead to reductions in cost. Commitment to sustainable resource management may stimulate innovation, cost savings, and business longevity (Das, 2018; Shekarian et al., 2022). Therefore, the resources need to be utilized to build novel return-handling skills and strategies. For many retail firms that lack the resources to adopt a RL strategy, consumer returns may pose a potential financial burden, with the costs surpassing the advantages. Skinner, Bryant, and Glenn Richey, (2008) observed that under instances of active resource commitment to RL programs, operations and supply chain managers may expect superior performance by choosing destroying, recycling, refurbishing, and/or remanufacturing of product. Richey, Genchev and Daugherty, (2005) observed that smaller enterprises' resource commitment was not shown to be strongly associated to RL capabilities, presumably due to the number of accessible resources, whereas larger organizations can devote more resources, resulting in improved performance relative to smaller enterprises. However, many organizations have an issue: how to include the recovery of used items into their current forward logistics chains. Huang and Yang, (2014) demonstrated that many companies consider RL as a "necessary evil" as opposed to a successful breakthrough and ignore or misunderstand the impact of RL. In this instance, it is required to rebuild a fresh sustainable RL network of supply chain by restructuring the existing products and services into blended processing operations (O'Reilly and Kumar, 2016).

But most of the studies have shown that commitment to sustainable resources serves as a positive mediator in the interrelationship between RL and performance outcomes. Therefore, the following hypothesis can be developed:

H2. Commitment to sustainable RL has a direct and positive effect on sustainable RL capability.

2.7. Relationship between sustainable RL capability and operational performance.

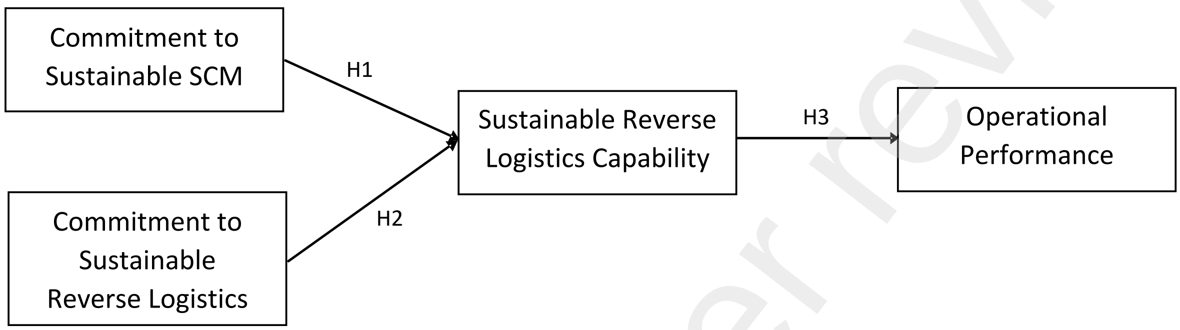
SCM strategies along the entire supply chain, which encompass upstream, internal business processes, and downstream operations, have a substantial influence on the operational success of the organization (Baliga, Raut, and Kamble, 2020; Prasad et al., 2020). The concept of RL has become more popular over the last few decades due to growing awareness about resource waste, releases of greenhouse gases, and ecological imbalance (Bernon, Rossi, and Cullen, 2011; Saruchera and Asante-Darko, 2021).

In a study conducted more than 10 years ago, Hazen, Cegielski, and Hanna (2011) observed that people consider remanufactured and repurposed items inferior to brand-new commodities. According to the findings of the study, participants rated the quality of items manufactured using recycled materials on par with that of brand-new products. But the level of awareness regarding sustainability has gradually increased, both among organizations and customers since the last decade. Therefore, customers are also inclined toward companies inclined toward SSCM and, more specifically, sustainable RL (Kocabasoglu, Prahinski, and Klassen, 2007; Su et al., 2022). Businesses have also started to recognize that the deployment of reverse logistic operations has the potential to generate a substantial amount of income or profit while lowering expenses, allowing them to stay market-competitive and sustainable (Li and Olorunniwo, 2008; Lau and Wang, 2009; Hsu, Tan, and Mohamad Zailani, 2016).

RL has significant financial impacts for both the organization and the supplier. RL plays a critical role in the enhancement of a firm's OP, which in turn enhances its competitiveness and decreases the expenses incurred throughout the whole network (Li and Olorunniwo, 2008; Skinner, Bryant, and Glenn Richey, 2008; Pushpamali, Agdas, and Rose, 2019). Younis, Sundarakani, and Vel (2016) revealed that businesses improve RL capabilities by boosting product quality, reducing lead times, and collaborating with people in the upstream and downstream supply chains from the design phase through disposal. They also found that adopting green purchasing practices led to an improvement in OP. In a survey-based study, Vlachos (2016) found that capabilities related to RL have an effect on business performance. The importance of institutional variables was significantly higher than that of supply chain elements, and closed-loop capabilities were the most important feature. Jack, Powers, and Skinner (2010) claimed that the capabilities of RL serve as a mediator in the interaction between resource commitments, contractual arrangements, and cost reductions in RL. In another study, Bag and Gupta (2020) found that the availability of green human resources RL positively impacted the achievement of OP. They also observed that the opportunism of customers has a negative correlation with the capability of RL. When RL activities are aimed at sustainability, RL innovation increases an organization's capacity to investigate innovative, unconventional, or new perspectives and thus boosts the OP of the organization (Wang et al., 2021). Fernando, Shaharudin, and Abideen (2022) claim that successful product return handling as a mediating factor can increase a company's dedication to careful resource utilization, resulting in financial advantage.

H3. Sustainable RL capability has a direct and positive effect on operational performance.

Figure 1: Research Model.



3. Methodology

A survey based on past studies was created to test the suggested research model. The research variables' measurements were modified from prior studies and changed as needed to match the context of the current investigation (Dillman and Fanning, 2000; Morgan et al., 2018). The poll was distributed to supply chain managers from all food firms in the UAE. There are 550 food companies in the UAE; the survey was produced in Google Docs and delivered to supply chain managers through email; follow-up emails and phone calls were conducted to encourage managers to complete the survey and clarify any queries you may have. A total of 315 completed questionnaires were returned, giving a 57% response rate.

The food industry was chosen since it is one of the most important industries in the UAE, contributing considerably to the country's economic growth. In 2022, the food industry employed over 80,000 people, with a production value of more than $9 billion and exports worth more than $4 billion. Furthermore, the UAE food market is expected to earn US$37.89 billion in revenue in 2023, with a 4.39% annual growth rate, according to Statista.

https://www.statista.com/topics/10373/food-and-beverages-market-in-the-united-arab-emirates/).

4. Data analysis and results

4.1 Validity and Reliability Measures:

The statistical analysis commenced by conducting assessments to assess the reliability and validity of the scales. The validity of the scales was evaluated using the normed-fit index (NFI). Table 1 presents the NFI values for all variables, illustrating that every variable exhibits convergent validity over 0.9. That conclusion aligns with the assessment of strong convergent validity for all scales, as proposed by Ahire et al. (1996). Table 2 summarizes the outcomes of the correlation investigation carried out on all variables. The highest correlation coefficient observed is 0.584, whereas the lowest coefficient is 0.469. As stated by Kenny (2012), it is observed that there is no significant correlation between any two variables that is equal to ±1 or near it. This outcome implies strong discriminant validity. Furthermore, the correlation analysis results presented in Table 2 indicate a robust connection among all the variables, suggesting a favorable level of predictive validity for the scales employed, as posited by Garver and Mentzer (1999).

The reliability of the measures was evaluated by Cronbach's alpha coefficient. According to Garver and Mentzer (1999), Table 3 presents the Cronbach's alpha coefficients for the scales used, every one of which surpasses 0.9. This shows that the scales reflect a high level of dependability. The adequacy of the fit between each of the variable scales has been verified by confirmatory analysis. The outcomes of the confirmatory analysis are displayed in Table 4, revealing an adequate conformity between the scales of the variables and the data gathered, as indicated by Koufteros (1999).

Table 1: Dimensionality and Convergent Validity Assessment

Scale	Relative χ^2	SRMR	RMSEA	NNFI	CFI	NFI	GFI
Commitment to Sustainable SCM	2.657	0.623	0.082	0.91	0.91	0.923	0.878
Commitment to Sustainable Reverse Logistics	2.876	0.616	0.088	0.94	0.90	0.915	0.845
Sustainable Reverse Logistics Capability	2.976	0.678	0.089	0.92	0.87	0.956	0.899
Operational Performance	2.734	0.699	0.091	0.92	0.92	0.944	0.827

Table 2: Correlation Analysis

Scale	Commitment to Sustainable SCM	Commitment to Sustainable Reverse Logistics	Sustainable Reverse Logistics Capability	Operational performance
Commitment to Sustainable SCM	1			
Commitment to Sustainable Reverse Logistics	0.534**	1		
Sustainable Reverse Logistics Capability	0.599**	0.459**	1	
Operational Performance	0.489**	0.488**	0.578**	1

Correlation is significant at *0.05 and * *0.01 levels (two-tailed)

Table 3: Reliability Assessment

Scale	Cronbach's alpha	Construct reliability	Variance extracted
Commitment to Sustainable SCM	0.95	0.97	0.87
Commitment to Sustainable Reverse Logistics	0.92	0.93	0.89
Sustainable Reverse Logistics Capability	0.91	0.92	0.82
Operational Performance	0.93	0.91	0.84

Table 4: Confirmatory Analysis
chi-square=2.247; SRMR=0.67; RMSEA=0.087; NFI=0.94; NNFI=0.975; CFI=0.92; IFI=0. 945.

Construct/ measures	Standardized coefficients	*t*-value
Commitment to Sustainable SCM		
CSSCM1	0.90	12.97
CSSCM2	0.93	13.72
CSSCM3	0.96	12.87
CSSCM4	0.88	12.57
CSSCM5	0.90	13.48
CSSCM6	0.96	13.58
Commitment to Sustainable Reverse Logistics		
CSRL1	0.85	12.78
CSRL2	0.92	13.49
CSRL3	0.95	13.28
CSRL4	0.89	12.69
Sustainable Reverse Logistics Capability		
SRLC1	0.95	13.67
SRLC2	0.93	12.71
SRLC3	0.91	12.66
SRLC4	0.92	13.26
SRLC5	0.94	12.35
SRLC6	0.93	13.45
SRLC7	0.98	13.67
SRLC8	0.97	12.56
Operational performance		
OP1	0.86	12.86
OP2	0.89	13.56
OP3	0.90	12.49
OP4	0.95	12.79
OP5	0.97	12.57
OP6	0.88	13.78

4.2 Correlation Analysis:

Commitment to Sustainable Supply Chain Management (SCM) was found to have a statistically significant positive link with Commitment to Sustainable Reverse Logistics, Sustainable Reverse Logistics Capability, and Operational Performance, as shown in Table 2. Additionally, there was a positive correlation between commitment to sustainable reverse logistics and operational performance. This correlation has been established with a degree of confidence equal to or greater than 99%. In addition, there is a significant association between sustainable reverse logistics and both sustainable reverse logistics capability and operational performance, and the level of confidence in this correlation is 99%. Both concepts are related to sustainable reverse logistics. There is a statistically significant positive link between operational performance and sustainable reverse logistics capability, which is supported by a confidence level of 99%. The findings of the correlation study offer support for the hypothesis that there is a strong positive link between all the variables that were investigated.

4.3 Linear Regression Analysis:

In order to investigate the connections between the different aspects of the study, a linear regression model was developed. According to the findings of the linear regression analysis, which are detailed in Table (5), the corrected R2 values are as follows: 0.045, 0.091, and 0.167. These principles imply that a commitment to sustainable SCM and a commitment to sustainable reverse logistics have a positive and significant effect on a company's ability to do reverse logistics. In addition, the capabilities of both forward and reverse logistics have a direct and significant impact on the operational performance of the organization. The facts presented up until this point offer evidence in favor of accepting the hypotheses H1, H2, and H3.

Table 5: Linear Regression Analysis

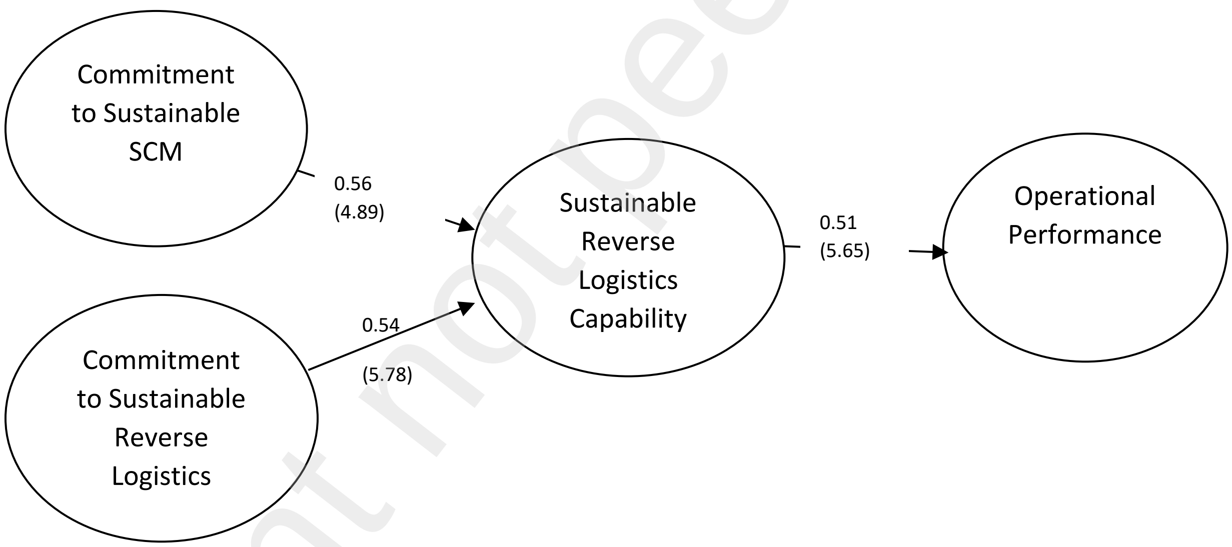
Variables	Sustainable Reverse Logistics Capability			Operational performance		
	B	R^2	ΔR^2	B	R^2	ΔR^2
Commitment to Sustainable SCM	0.415	0.457	0.045*			
Commitment to Sustainable Reverse Logistics	0.582	0.367	0.091**	-	-	-
Sustainable Reverse Logistics Capability	-	-	-	0.189	0.487	0.167*

4.4 Structural equation modeling results:

The statistical method known as structural equation modeling (SEM) was developed to make it easier to conduct in-depth analyses and assessments of research hypotheses. Figure 2 provides a graphical representation of the results that were obtained from the inquiry that utilized Structural Equation Modeling (SEM). According to Koufteros (1999), the value of the Chi-square statistic for the model is 2.254, which indicates that there is support for accepting the study model. In addition, the values of the NNFI and CFI are, respectively, 0.989 and 0.95. According to Garver and Mentzer (1999), the results of this investigation point to a high degree of validity for the model that was used in the research. Figure 2 depicts a noteworthy and statistically significant link between the commitment to sustainable supply chain management (SCM) and the capability of sustainable reverse logistics. This association is illustrated by a positive relationship between the two variables. The estimated coefficient for this relationship is 0.56, and the corresponding t-value is 4.89.

In addition, the data shown in Figure 2 illustrates a statistically significant relationship between a company's commitment to sustainable reverse logistics and its capability in this area. This relationship is estimated to have a coefficient of 0.54 and a t-value of 5.78, both of which point to a positive association between the two variables. In addition, there is a positive and significant relationship between sustainable reverse logistics capability and operational performance. The calculated coefficient for this correlation is 0.51, and its t-value comes in at 5.65. The findings presented above give evidence that supports the acceptance of all the hypotheses that were proposed in the study.

Figure 2: The structural equation modeling with standardized coefficients and (t-value).



Chi-square=2.247; SRMR=0.67; RMSEA=0.087; NFI=0.94; NNFI=0.975; CFI=0.92; IFI=0. 945.

5. Discussion and conclusions:

To evaluate the proposed research hypotheses, two primary statistical tests were administered. The initial methodology employed is linear regression analysis, while the subsequent method utilized is structural equation modeling. The outcomes of these two tests are presented in Table 5 and Figure 2, respectively. The findings from the two experiments support the acceptance of all three research hypotheses. Hypothesis 1 proposes that there is a positive relationship between dedication to sustainable supply chain management (SCM) and sustainable reverse logistics capability. The findings of this study provide support for accepting the presence of this relationship. The present findings are consistent with prior research conducted by Madhavaram and Hunt (2008), and Morgan et al. (2018).

The study conducted H2 to examine the impact of commitment to sustainable reverse logistics on sustainable reverse logistics capability. The findings of the study provide empirical evidence that supports the acceptance of the stated hypothesis. The present findings align with prior research conducted by Madhavaram and Hunt (2008), and Morgan et al. (2018). The current study's statistical results provide evidence for the acceptance of the hypothesis, indicating a significant effect of sustainable reverse logistics capability on operational performance. The findings of the present study align with those of prior research conducted by Closs et al. (2011) and Morgan et al. (2018).

The model findings imply that sustainable SCM investments are related with higher operational performance both directly and indirectly (through their relationship with a sustainable reverse logistics capacity). Investments in reverse logistics that lead to a sustainable reverse logistics capacity (e.g., by lessening the negative environmental effect of reverse logistics procedures) may be profitable for the company. Investing in reverse logistics and making the supply chain more sustainable may help a company achieve a strong sustainable competence in this area. This suggests that sound strategic behavior is essential for converting resource investments into fruitful, long-term supply chain operations. While the availability of contradictory findings in the existing literature has been documented, it is widely accepted that resource commitments are a crucial motivator towards accomplishing supply chain goals (Ellinger et al., 1998). This research confirms the need of investing in sustainable reverse logistics initiatives as part of an organization's larger goal to create a green supply chain. The results of our partly mediated model show that investing in sustainable reverse logistics is not enough to boost performance on its own. A sustainable reverse logistics capacity is supported by these resources, which in turn enhances the efficiency with which the business operates. Our results add to the literature by expanding on the study of sustainable supply chains via the use of a SCP framework.

The observed good outcomes of the study may be attributed to the prior governmental initiatives aimed at enhancing and advancing the food business. The collaborative efforts of the Ministry of Climate Change and the Ministry of Industry are focused on enhancing the domestic food supply and positioning the United Arab Emirates as a globally recognized leader in food security. The present findings highlight the significance of the food industry managers' focus on the development and management of a sustainable supply chain. This is attributed to the positive impact it has on the establishment of a sustainable reverse logistics capability, ultimately resulting in enhanced operational performance for the company. It is imperative for managers to possess an understanding of the challenges and substantial financial commitment involved in establishing a sustainable supply chain, as well as the considerable duration required to cultivate a lasting partnership with the supplier. Additionally, the findings of this study assist in addressing the existing research vacuum in academia regarding the significance of establishing a sustainable supply chain to improve the performance of individual companies and the overall economic performance of a country.

Organizations may feel secure in their current market positions and certain that their expansion will continue in a linear fashion. Therefore, supply chain managers may feel secure in their position in the market and devote their attention to tactical matters such as reducing costs and running day-to-day operations. Knowing this fact about SCM, managers should take a step back and recognize that discussions and evaluations of sustainability are happening outside of the normal course of business. Managers in the supply chain must realize the connection between efficient reverse logistics management and overall supply chain performance is a sustainable reverse logistics capacity. Managers must pay close attention to the necessary shift in behavior when industries undergo quick and significant shifts. Companies like Scott Paper and Fleming Company Inc. have been severely harmed due to management's refusal to adapt to shifting market conditions.

The development of a long-term SCM capacity is influencing practices all throughout the supply chain. Managers, if they want to grow capabilities and get a leg up on the competition, need to investigate the advantages of sustainable SCM and arrange their reverse logistics operations accordingly. For continued success, businesses will need to invest in sustainable SCM and reverse logistics. They may fortify their position and boost their performance by creating a sustainable reverse logistics capacity. In a similar vein, our research suggests that a sustainable approach may be necessary for a reverse logistics program to thrive in the modern day. The creation and implementation of a sustainable SCM capacity are predicted to aid in the reduction of costs and the acceleration of response times. Strategically, there are open problems concerning how to build a reliable reverse-logistics capacity from a standpoint of constant enhancement. Defee and Fugate (2010) state that to prove their enterprise-wide value and applicability in the supply chain context, these skills need to span several companies. This degree of intricacy calls for intensive investigation. As a cost center, sustainability programs have a low chance of success. Cost savings and more responsiveness will be expected of supply chain managers throughout time. This research shows that enhancements to the environment and the economy are both feasible. Ideally, you'd like to achieve both, and that's OK. Long-term success of a sustainability program may depend on the efficiency with which reverse logistics and sustainable reverse logistics are implemented.

The findings of this study are constrained to the food business in the United Arab Emirates (UAE) due to the exclusive selection of the sample from this sector. Additionally, the study exclusively examined the impact of commitment to sustainable supply chain management (SCM) and commitment to sustainable reverse logistics on sustainable reverse logistics capability and operational performance. This limitation should be acknowledged. It is imperative to replicate the study within the same industry to corroborate the findings, as well as across various industries and nations.

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