Optimizing Organizational Strategy in Reverse Supply Chains: The Mediating Effects of Relationship and Agility

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ABSTRACT

The purpose of this research was to explore how various approaches impact the reverse supply chain while taking into account the operational complexity involved in collecting and disassembling end-of-life products. The main issues were the need for effective truck routing and the costly, time-consuming manual disassembly procedures that arise when suitable optimization models are not available. Partial least squares structural equation modeling (PLS-SEM) was the research technique used to investigate the interactions among supply chain relationships, supply chain agility, and reverse supply chain strategy. The sample for this study consisted of 351 respondents. The results demonstrated a robust and positive relationship between sustainability and operational performance, as well as between agility and sustainability. The results showed that organizational strategy, reverse supply relationship, reverse supply agility, and reverse supply chain were strongly correlated. Within the Iraq's manufacturing sector, this study can provide useful suggestions for supply chain management tactics as it is among the first studies that examined the effects of connections, organizational strategy, supply chain agility, and reverse supply chain and its agility, as well as the mediating effects of supply chain linkages on the relationships.

Keywords: Supply Chain Agility, Supply Chain Relationships, Reverse Supply Chain Strategy, PLS-SEM.

ARTICLE INFO

Article History:
Received: *02 June 2024*
Accepted: *05 July 2024*
Available online: *01 December 2024*

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INTRODUCTION

Among the strategies of sustainability is the implementation of reverse supply chaining, or RSC. An RSC includes all of the following: redistribution, collecting, inspection, and disposal (Zhang et al., 2024). RSCs encourage product take-back by lowering return policies and providing financial support to clients. In order to achieve strong sustainability and also to lessen the adverse effects on the environment and society, it is necessary to reuse waste as inputs in RSC operations (Wang et al., 2024). Reverse logistics (RSC) is regarded as an important technique for improving the environment by incorporating environmental considerations into supply chain activities. The use of reverse logistics (RSC) can highlight the importance of sustainability in organizational initiatives (Tseng et al., 2024). Furthermore, industries' increasing acknowledgment of reverse supply chain management as an income potential emphasizes the strategic necessity for successful operations in this sector (Zarbakhshnia & Karimi, 2024).

Additionally, rapidly changing corporate settings have highlighted the RSC as being a key source of long-term organizational benefits. This has increasingly been popular due to the numerous benefits it provides to all parties associated with the supply chain. This includes cheaper transportation costs, less energy required throughout manufacturing, and the removal of waste, which might sometimes end up in landfills. Considering this, this research paper recognized the achievements of current research. RSC research has increasingly focused on the impact of organizational strategy competencies (i.e., in the private and public sectors), supply chain linkages, and agility on the reverse supply chain in a variety of investigation settings. As researchers like Maheswari et al. (2020) argued that a more effective strategy is required to put the reverse supply chain concept into practice, it can be said that the purpose of the current study was to look into the way the use of the recently proposed constructs affects the interactions between RSC.

Organizational strategy from the perspective of RSC encompasses a comprehensive approach to maximizing value through processes such as reusing, repairing, refurbishing, remanufacturing, retrieving parts, recycling, and redesigning returned products (Trenerry et al., 2024). This strategic orientation is crucial for organizations operating in industries where reverse supply chains play a significant role. However, numerous organizational strategies require the effective adoption of RSC in all sectors of the industry. The aim of this study was to examine the effective management of RSC. As waste production rises, management is incorporating more recycling tactics into daily operations. The ecological, social, and economic repercussions of this practice must be considered before making an informed choice about its viability (Blaique et al., 2024). Businesses have been urged to form strong alliances with both suppliers and clients. Instead of focusing on how relationship processes affect performance, empirical studies on supplier chain relationships (SCR) have mostly attempted to explain the nature of relationship processes. Because of this, a sizable body of research has been done on how the different aspects of SC relationships interact with one another (such as trust, adaptation, communication, and cooperation). Both (Jiang & Yang, 2024; Li

et al., 2024). The capacity of the business to swiftly modify its supply chain strategies and operations is known as supply chain agility (SCA) (Aslam et al., 2024). SCA is essential to addressing supply chain consequences and reservations and constructing sustainability since a company's sustainability is centered on its profits, social duty, and environmental responsibility (Wang & Wang, 2024). SCA enables organizations to operate effectively in a dynamic and uncertain environment (Aljawazneh, 2024). SCA includes a range of business components, such as mindsets, logistical procedures, and organizational structures (Al-Maaitah, 2024).

The Iraqi manufacturing sector must act decisively to use the most cutting-edge production tools based on strategy, efficient supplier relationships, and agility if it is to remain competitive. Organizations will gain from this study by increasing their OS, which would also aid the Iraqi economy. The two most important strategies for reducing lead times and boosting output are SCR and SCA, which, when used together, will improve an organization's operating system. By cutting expenses in a highly competitive and personalized industry and obtaining an advantage over rivals, SCR and SCA enhance the company's operating system. By cutting waste and enhancing production procedures, the manufacturing and service industries would see tremendous financial growth if supply chain tools and SCA were adopted. Additionally, working or manufacturing processes should improve quickly with the application of SCA. More goods ought to be produced in the timeframe provided by the client, at a very low cost, and for the industry's profit. The outcomes of this research contribute to the occurrence of a framework that managers in the Iraqi manufacturing sector may use to successfully plan for the shift to a lean system and a clear supply chain. The outcome of this research will enable managers in the Iraqi manufacturing sector to focus on those areas of the operating system where lean and SCA can work best. They will also be able to defend the adoption of matching SCA and SCR to support efficient reverse supply chains. The Iraqi manufacturing sector must act decisively to use the most cutting-edge production tools based on strategy, efficient supplier relationships, and agility if it is to remain competitive. Organizations will gain from this study by increasing their OS, which would also aid the Iraqi economy. The two most important strategies for reducing lead times and boosting output are SCR and SCA, which, when used together, will improve an organization's operating system. By cutting expenses in a highly competitive and personalized industry and obtaining an advantage over rivals, SCR and SCA enhance the company's operating system. By cutting waste and enhancing production procedures, the manufacturing and service industries would see tremendous financial growth if supply chain tools and SCA were adopted. Additionally, working or manufacturing processes should improve quickly with the application of SCA. More goods ought to be produced in the timeframe provided by the client, at a very low cost, and for the industry's profit. The findings of this study contribute to the development of a framework that managers in the Iraqi manufacturing sector may use to successfully plan for the shift to a lean system and a clear supply chain. The results of this study will enable managers in the Iraqi manufacturing sector to focus on those areas of the operating system where lean and SCA can work best. They will also be able to defend the adoption of

matching SCA and SCR to support efficient reverse supply chains. The current study is driven by actual business practices and seeks to address the highlighted difficulties by adopting a reverse supply chain to address environmental challenges. Finding and analyzing academic literature that addresses the following three research issues is the aim of this project.

1. Do organizational strategies have an impact on reverse supply chain?
2. Does supply chain relationship have any impact on reverse supply chain?
3. Does supply chain agility have an impact on reverse supply chain?

An organization's resource-based view (RBV) was utilized as the underpinning theoretical postulation for the current study (Khan et al., 2023; Kristinae et al., 2023). Therefore, the 4th research question was to examine the role of SCA and links as mediators between organizational strategy and reverse supply chain.

The link between SCA and relationships in reverse supply networks has been the subject of a great deal of writing, although the specific processes by which supply chain agility influences relationships in reverse supply chains remain largely unknown. Although research has demonstrated that supply chain agility can enhance company performance and sustainability (Wang & Wang, 2024) and that stronger ties within reverse supply chains can result in more effective value appropriation and production (Sandberg et al., 2018). Studies that explored the complex link between supply chain agility and relationship dynamics in the setting of reverse supply chains are scarce. Furthermore, although several studies have looked into the financial and environmental implications of reverse supply chain scenarios for remanufacturing and the assessment of supply chain agility performance, Studies explicitly looking into how supply chain agility tactics might be used to strengthen connections amongst stakeholders in reverse supply chains are hard to come by. For the reverse supply chain companies that seek to improve their operations, they must understand the way supply chain agility initiatives. Moreover, the way to designee them to create healthy and cooperative relationships.

LITERATURE REVIEW

Reverse Supply Chain

RSC is most frequently defined by Rogers and Tibben-Lembke (1999) as the procedure that arranges, executes, and tracks inputs (raw materials, inventory kept throughout production, completed goods, and associated data) with the goal of returning (from consumption to origin) as closely as possible to their original state or in the most efficient way. RSC encompasses the activities in reverse that regulate a closed-loop supply chain in conjunction with linear logistics, as opposed to traditional logistics, which starts with supplier raw materials being given to the producer and delivers them to the final usage stage by the end consumer (U-Dominic et al., 2021).

Organizational Strategy

One of the most important aspects of business management that has a big impact on different organizational results is organizational strategy. The existing body of literature gives substantial intuition into the significance of organizational strategy in improving performance and accomplishing strategic goals. Research has examined various aspects of organizational strategy, including people commitment, organizational learning, and strategic planning, in order to understand how they affect the performance of businesses (Kohtamäki et al., 2012; Muthamia & Kilika, 2022). These studies emphasized how important it was to match organizational strategies with operational procedures to improve service delivery and foster success.

Supply Chain Relationship

In general, the word "supply chain" refers to the passage of goods via many firms, classically originating at the site where raw materials are used and culminating at the place where customers point. Aamer et al. (2023) observed that even though logistics operations play a critical role in the supply chain, academics frequently used the same vocabulary when discussing SCR. A SCR is the manner and link precisely engaged in generating supplies and services and delivering them to consumers in agreement with their requirements, preferences, and appeals (Leukel & Kirn, 2008).

Supply Chain Agility

The more expansive and intricate concept of organizational agility serves as the foundation for the idea of SC agility (Swafford et al., 2006). Agility is the total integration of a business's competitive advantages, including quality, profitability, adaptability, efficiency, and innovation (Yusuf et al., 2020). Banerjee (2016) created the notion of agile supply chain management. He claimed that an agile SC should be able to adjust to various changes through virtual enterprise collaboration, production outsourcing, and component supplier networks, even if he does not offer a precise description. According to his definition, agility is concerned with change proficiency or the capacity through which an adaptive transformation takes place (Banerjee, 2016).

Development of Hypotheses

The link between organizational strategy and RSC

The effectiveness of the RSC is largely determined by an organization's strategy. The literature indicates that there is a considerable correlation between supply chain routine, organizational performance, and organizational strategy (Jafarzadeh Ghoushchi et al., 2021). Organizational performance benefits from the success of the supply chain; this relationship is typically mediated via customer satisfaction. Additionally, the connection between organizational success and supply chain process combination has highlighted the intervening role that supply chain skills play (Rajaguru & Matanda, 2019). Considering this, we hypothesized that:

H1: OS is positively related to RSC.

The link between organizational strategy and reverse supply agility

Reverse SCA and organizational strategy have a crucial interaction that affects both supply chain performance and organizational outcomes. Research has emphasized the significance of SCA in augmenting overall routine, with an emphasis on comprehending the function of logistical skills in accomplishing supply chain agility (M. Gligor & Holcomb, 2013). This emphasized how crucial it is to use technology to boost supply chain agility and, eventually, promote organizational excellence. Therefore, the study postulates that:

H2: OS is positively related to SCA.

The link between organizational strategy and supply chain relationship

Numerous seminal studies illuminated the complex dynamics at work in supply chain management through their data-driven research of the link between organizational strategy and supply network interactions. (Wong et al., 2011) examined how supply chain integration and operational effectiveness are related to environmental uncertainty and its contingency consequences. Their study offered insightful information about the interactions between external and internal integration initiatives in various environmental settings, giving managers useful justifications for successfully navigating a range of scenarios. Qiao and Wang (2021) emphasized the intervening functions of sharing as you concentrate on the relationship capital's impact on organizational performance inside the supply chain. Thus, we submitted the following hypothesis.

H3: OS is positively related to SCR.

The link between SCA and RSC

A careful reading of the literature demonstrates how these two crucial supply chain management ideas interact in a complex way: RSC and SCA contribute significantly to our understanding of supply chain agility by investigating the factors that lead to business agility. Their results demonstrated the strong correlation between supply chain agility and a business's capacity to swiftly and efficiently

develop and deliver innovative products, underscoring the significance of agility in adapting to shifting customer demands. Gligor et al. (2016) examined the SCA performance outcomes and demonstrated that agility, cost-effectiveness, and customer satisfaction had connections in a number of environmental circumstances. Hence, this study posited the following:

H4: SCA is positively linked to RSC.

The link between SCR and RSC

Among the significant elements of supply chain management is the empirical relationship between reverse supply chain and supply chain interactions. Moreover, a number of significant data studies brought up the nature of this relationship and how it impacts organizational effectiveness, yet the data-driven studies on the implementation of supply models were concentrated in developing countries (Hanna et al., 2023). The findings provide a detailed insight into the elements impacting supply chain concepts' acceptance of sustainability ideas. It also highlights the importance of supply chain partnerships in reaching stated goals; therefore, we propose:

H5: SCR is positively related to RSC.

The mediating role of SCA

Panigrahi et al. (2023) saw that the major goals of the operational method known as supply agility are supply chain speed and adaptability. Supply agility refers to a supply chain's capacity to respond to market changes while remaining competitive. To continue developing and providing new products and services, businesses must be competitive and have shorter life cycles. Moreover, Cantele et al. (2023) stated that supply agility is necessary to anticipate variations in supply and demand. They also saw that SCA presented an impact on a cost efficiency metric known as the ability to perform plant operations utilizing relatively few total input resources. Therefore, SCA incurs costs to provide customization, flexibility, and the ability to adapt to changing business situations.

The mediating role of SCR

Recent studies have focused on the impact that supply chain relationships play in various aspects of supply chain management. Martinez-Sanchez & Lahoz-Leo (2018) explored the way SCA served as a mediator in the relationship between absorptive capacity (AC) and company performance. Their research emphasized the significance of agile supply chain practices in fostering organizational success by highlighting the critical role that SCA plays in converting absorptive capacity into enhanced firm performance. Qrunfleh and Tarafdar (2015) investigated how supply chain practices influenced the link between supply chain performance and agile supply chain (ASC) strategy. The study emphasized the interdependent functions of supply chain practices in augmenting the efficacy of agile supply chain tactics, stressing the intermediary function of supply chain associations in propelling

performance results. In an alternative setting, the research by Hu et al. (2022) centered on how SCA works as a mediator to improve competitive advantage through knowledge management capabilities.

Considering the arguments stated earlier, the following was put forth:

H6: SCR mediates the links between OS and SCP.

H7: SCA mediates the links between OS and SCP.

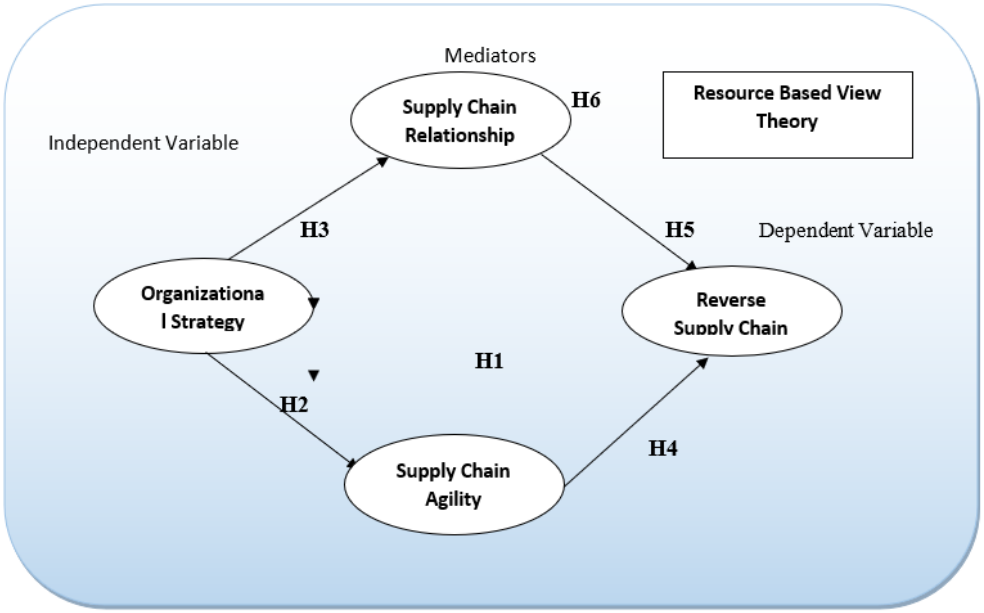

Figure 1: Research Model

Theoretical Framework

The Resource-Based View (RBV) theory offers an illuminating perspective on the current investigation, as this hypothesis states that a company's success and competitive advantage are determined by its unique assets and competencies (Wu, 2010). It also shows that maximizing organizational strategy in these supply chains requires an organization's strategic resources and competencies to improve its performance in managing reverse supply networks. Moreover, this theory helps to understand the mediating roles that connections and agility play in optimizing organizational strategy in reverse supply chains because agile supply chains and strong supplier connections are seen as critical resources for enhancing a company's competitive edge. Therefore, in accordance with the RBV if employed correctly, these resources can deliver improved performance outcomes in reverse supply chain management.

METHODOLOGY

Sample size and selection criteria

The sample for this study consisted of 351 respondents. Purposive sampling was employed to ensure the selected participants were capable of providing relevant information and insights. This method was chosen to align the sample with the study's objectives.

Manufacturing organizations were required to adhere to environmental guidelines. Participants had to be in managerial positions within these organizations, as per guidelines on best practices in the unit of analysis (Forza, 2002).

Data Collection and Questionnaire

Purposive sampling was used in the study to guarantee that participants were eligible to complete the survey; manufacturing organizations that provided consent had to follow environmental guidelines. A combination of online and in-person methods was used to boost survey response rates. Individual managers serve as the study's unit of analysis in accordance with Forza (2002) best practices. An effective response rate of 54% was achieved after the research contacted 650 companies in the Iraqi manufacturing sector, yielding a total of 351 usable samples. This rate was considered sufficient to explore the research hypotheses. From January 2024 to March 2024, we gathered data. Iraq was chosen as an appropriate research environment because many manufacturing companies had expressed interest in using reverse supply chain methods to boost their enterprises' credibility and implement innovative business models.

Measures, Scales, and items

The 5-point Likert-type items on the scales used in this study (ranging from 1-strongly disagree to 5-strongly agree) were based on formerly justified scales that were taken from marketing and logistics literature. The operational definitions that were created for the constructs in this investigation followed the instructions given by Forza (2002). SCA was measured with eight items developed and adapted from (Gligor et al., 2020; Sukati et al., 2012) 8 items were acquired and adapted from the study to measure the organization strategy. 12 items were developed and adapted from Gupta (2013); Prahinski and Kocabasoglu (2006); Tyagi et al. (2012) to measure the RSC. Six items were formed and validated for the supply chain relationship.

Data Analysis Technique

Data for the current research utilizing the PLS-SEM technique. Following the suggestion of Wong (2013) using the SmartPLS4 application to conduct the analysis in two phases.

RESULTS

Demographic Respondents

The analysis was performed using SPSS version 29. Further, various methods were used to analyze the descriptive profile of data in this phase. First, the responders' profiles are assessed. Males accounted for 269 (76%) of respondents, while females accounted for 82 (23.4) %. Regarding age, those who were between 20-30 were 116 (33%) of the respondents, while those in the age bracket 31-40 were 202 (57.5%) of the respondents, and those in the age group of 41-50 were 33 (9.4%). Respondents' marital status profile showed that 120(34.2%) were single, 205(58.4%) were married, and 26 (7.4%) were either divorced, separated, or widowed. The educational profile of the respondents revealed that 164 (56.4%) had bachelor's degrees, 61(17.4%) had master's, and 92(26.2%) had doctorate degrees. Regarding respondent's experience, those with less than one year's work experience were 4 (1.1%), those between 1-3 years of experience were 51(14.5%), those in the 4-7 years were 261(74.4%) while those who had experience above 7 years were 35(10.1%).

Respondents Demographic

Item	Frequency	Percentage (%)
Gender		
Male	269	76.6
Female	82	23.4
Age		
20-30	116	33.0
31-40	202	57.5
41-50	33	9.4
Marital Status		
Single	120	34.2
Married	205	58.4
Divorced/Separated/Widow	26	7.4
Education		
Bachelors	164	56.4
M.Sc.	61	17.4
Doctorate	92	26.2
Years in Service		

Less than 1 year	4	1.1
1-3 Years	51	14.5%
4-7 years	261	74.4
Above 7 years	35	10.1

Common Method Bias

Because CMV uses regular procedures for gathering data, there is a chance that participants will become biased. The findings showed that just 28 percent of the variance in total could be explained by a single component. This result was far lower than the 50% criterion mentioned in the body of existing research.

Measurement Model

Figure 2 shows a representation of the measuring model with reflected measurement.

Indicator reliability

The stability and consistency of the measurement are referred to as reliability (Forza, 2002). Each indicator's squared outside standardized loading served as a proxy for the indications' dependability. As shown in Table 1 the majority of outside loadings were above the 0.7 criterion (Wong, 2013).

Internal Consistency Reliability

Reliability was evaluated in relation to each construct's composite reliability (CR). As shown in Table 2 every CR satisfied the 0.7 criteria, as recommended by (Wong, 2013). Thus, it can be said that the reliability of all the measurement model constructs were verified.

Convergent Validity

The precision and applicability of the measurement to the idea under study are referred to as validity (Forza, 2002). "The extent to which a measure correlates positively with an alternative measure of the same construct" is the definition of convergent validity.

Multicollinearity

Prior to the structural model analysis, the variance inflation factor (VIF) needs to be evaluated. VIF values of more than 10.0 are considered to indicate multicollinearity (Méndez, 2017). Furthermore, a VIF score of 3.3 or below is considered satisfactory (Diamantopoulos & Siguaw, 2006).

Discriminant validity

In assessing DV, we utilized the exam formed by Fornell and Larcker (1981). The square root of AVE for each construct must correlate more strongly than any other construct to pass this test. More relationships existed between all square roots of AVE that appeared on the diagonal (below the diagonal) than between any other constructs, as Table 2 demonstrates. As a result, discriminant validity was maintained. The discriminant validity of Table 2 was evaluated by means of the Fornell and Larcker (1981) technique.

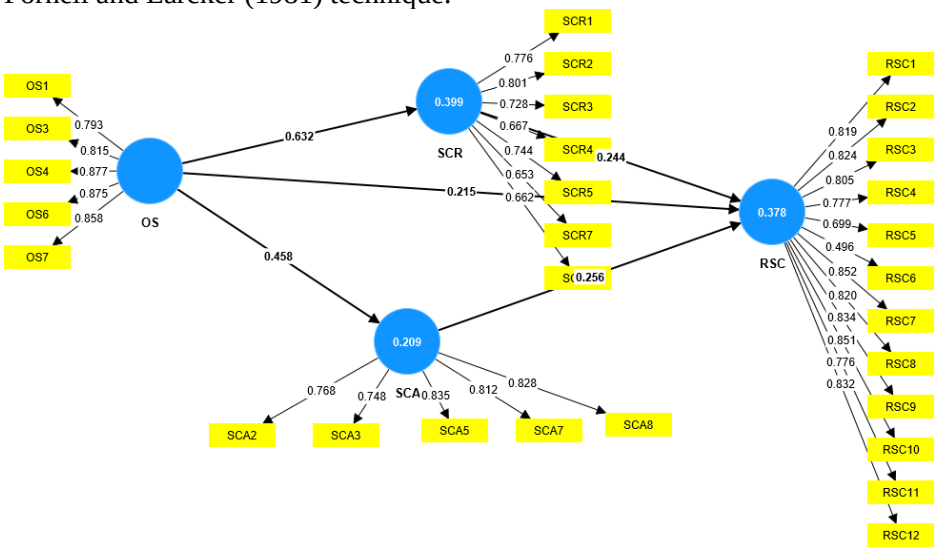

Figure 2: Measurement Model

Table 1: Internal Consistency Reliability

Constructs	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	AVE
OS	0.899	0.901	0.925	0.713
RSC	0.943	0.949	0.951	0.621
SCA	0.858	0.859	0.898	0.638
SCR	0.846	0.854	0.883	0.52

Table 2: Discriminant Validity (Htmt)

Constructs	OS	RSC	SCA	SCR
OS				
RSC	0.568			
SCA	0.611	0.388		
SCR	0.738	0.597	0.73	

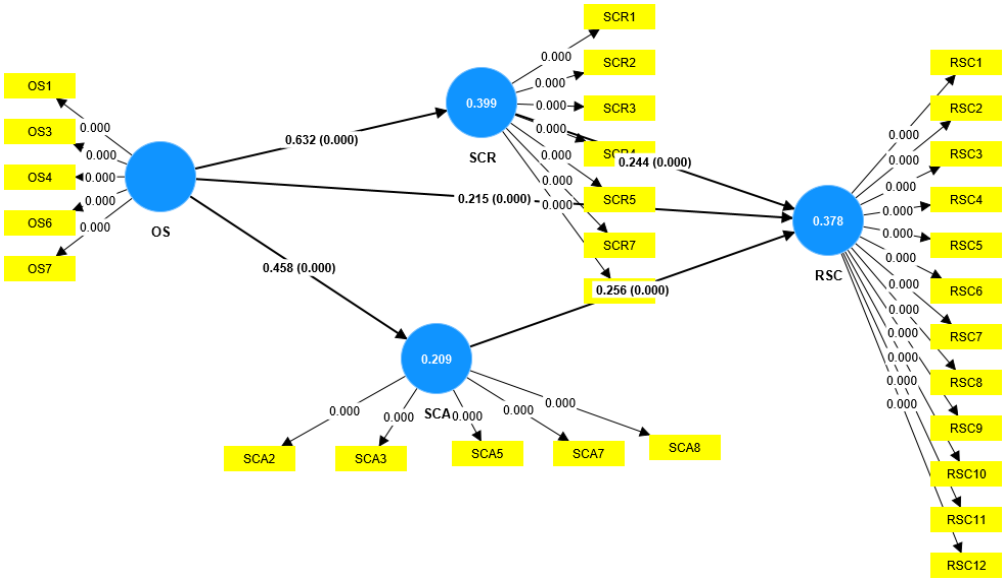

Figure 3: Measurement Outer Model

Path Coefficient & p Value

The results of SEM were applied for hypothesis testing, and the results of the direct hypothesis are shown in Table 3 and Figure 3. Each of the five hypotheses met the threshold accordingly, where the values of t>1.96 and p<0.05 were guaranteed. So, all five direct hypotheses were accepted.

Structural model

This model looks at the causal link between the constructs. A bootstrapping approach with 5,000 resamples was used to determine the suggested model's statistical significance (Hair et al., 2012). The results of the structural model analysis are displayed in Figure 3. The results validated the hypothesis (H1: β 0.215, ρ < 0.005, t: 3.686) that there was a noteworthy positive link between organizational strategy and reverse supply chain. Furthermore, SCA and organizational strategy (H2: β 0.458, ρ < 0.005, t:7575) had a significantly favorable association, as expected. The organizational approach (H3: β 0.632, ρ<0.005, t:483) also significantly positively associated with the supply chain relationship, as expected. Furthermore, SCA (H4: β 0.256, ρ < 0.005, t: 3.913) showed a positive correlation with the reverse supply chain, as expected. The supply chain association (H5: β 0.244, ρ < 0.005, t: 3.799) was likewise thought to be positively correlated with the reverse supply chain.

Table 3: Direct Relationship

Hypothesis	Relationship	β-value	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
H1	OS -> RSC	0.215	0.058	3.686	0.002	Accepted
H2	OS -> SCA	0.458	0.06	7.574	0.000	Accepted
H3	OS -> SCR	0.632	0.041	15.483	0.000	Accepted
H4	SCA -> RSC	0.256	0.065	3.913	0.001	Accepted
H5	SCR -> RSC	0.244	0.064	3.799	0.002	Accepted

Mediation Analysis

Next, we interrogated the intervening function of SCA in the link between organizational strategy and reverse supply chain (H6). The indirect effect technique described by Preacher and Hayes (2004, 2008) was evoked. The indirect effect results showed that supply chain agility (H6: β0.117, ρ < 0.005, 3.503) mediated the link between organizational agility and RSC. In addition, a second analysis was carried out to look at the supply chain connection's mediating function in the relationship between organizational strategy and the reverse supply chain (H6). The findings of the indirect effect signal that the supply chain relationship (H7: β0.154, ρ < 0.005, 3.518) mediated the association between organizational strategy and reverse supply chain. To sum up, the SM assessment results are shown in Table 4 and Figure 4, which show that all the hypotheses (H6, H7) were found to be justified. According to Hair et al. (2021), researchers must also ascertain and report the effect size (F^2) and coefficient of determination (R^2) in addition to assessing the significance of the correlations. Consequently, R^2 and F2 were studied. The R^2 measures the independent variable(s)'s explanatory power relative to the linked DV. The value of R^2 indicated that organizational strategy contributed between 20% (R^2 50) and 50.1% (R^2 50.1) of supply chain agility. Furthermore, of the reverse supply chain (R^2 50), the R^2 values of supply chain relationship and agility accounted for 53.2% and 62.9%, respectively. Therefore, F^2 denoted the effect magnitude or the percentage that an IVs adds to the DV's R^2. The cut-off values for microscopic, medium, and large impact sizes are F^2 5 0.02, 0.15, and 0.35, respectively, according to Cohen (1988).

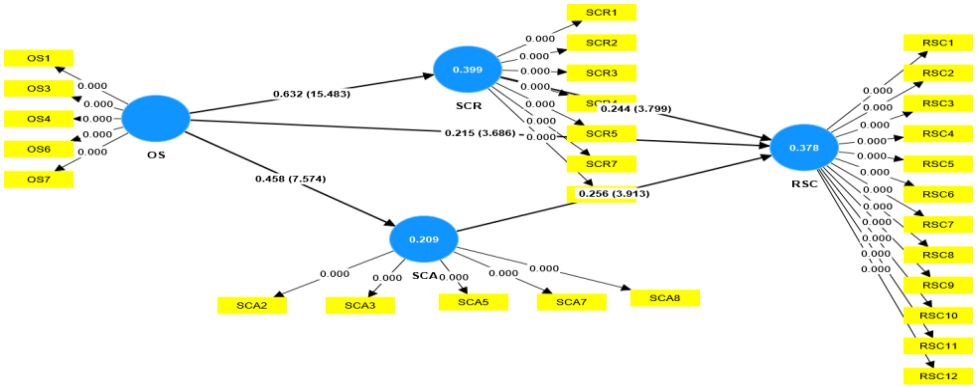

Figure 4: Structural Model (Path Coefficient & T Value)

Table 4: Indirect Relationship

Hypothesis	Relationship	β-value	T statistics (|O/STDEV|)	P values	Decision
H6	OS -> SCA -> RSC	0.117	3.503	0.003	Accepted
H7	OS -> SCR -> RSC	0.154	3.518	0.003	Accepted

DISCUSSION

Examining how organizational strategy affected three distinct supply chain management (SCM) approaches, RSC, SCR, and SCA, was the primary goal of the research. The study also investigated SCR and SCA's dual mediating functions in the link between OS and RSC. Our hypothesis was that SCR and SCA are predicted by organizational strategy. These were not unexpected results, and they align with previous research findings. Furthermore, this finding was congruent with similar results that demonstrated the link between organizational strategy and supply chain outcomes as well as the exchange of information and agility (Aigbavboa & Sukdeo, 2023; Aitken & Harrison, 2013; Loomba & Nakashima, 2012; Mafini & Loury-Okoumba, 2018). The findings bolstered this theory by showing that organizational strategy had a twofold benefit, emphasizing the importance of internal integration, external integration with important clients and suppliers, and external flexibility as organizational practices that enhance a company's SCA. From what is mentioned above, it can be said that organizational strategy has a significant impact on supply chain dynamics and that the strong positive relationship between organizational strategy and supply chain dynamics implies that in order to improve supply chain performance and agility, firms must properly manage their processes. As for the RBV theory, such features are critical organizational assets. They help organizations outperform their competitors and achieve their objectives. According to the results, marketing SCR and SCA has a beneficial impact on RSC (Aslam et al., 2018; Ni et

al., 2021; M. Wang & Wang, 2024). Moreover, depending on the relationship, by exploiting supply chain agility to better responsiveness to market changes and disturbances, businesses can improve their overall resilience and sustainability. Also, firms can focus on developing cooperative and sustainable supply chain operations. Supply chain operations are important for management's long-term performance sustainability and volatility.

The identification of supply chain flexibility as an important component of sustainability in the aftermath of COVID-19 emphasizes the practical need to adjust to changing market conditions and disruptions. Among the study's key goals was to evaluate the role of SCR. SCR is employed as a mediators in the interactions between OS and RSC. In the end, the findings indicated that SCR worked as a mediator in the interaction between OS and RSC and that the corporate strategy and the reverse supply chain can interact. Yet, SCR might moderate the interaction since it has a high significance in improving the supply chain's performance as well as sustainability (Wang et al., 2023).

According to Wong (2021), supply chain partnerships are important in managing the interaction between organizational strategy and reverse supply chain because they improve both supply chain and organizational performance. They (2021) also argued that there is a substantial relationship between supply chain performance and management, in addition to between supply chain performance and perceived organizational performance. The increased attention to reverse supply chains owing to environmental issues, as well as the demand for sustainable practices, highlights the importance of supply chain connections. Because of the tight environmental regulations and the depletion of raw material resources, reverse supply chains are becoming more and more significant. Strong links are necessary to effectively manage the reverse flow of goods and commodities (Covaci, 2019; Quaddus & Woodside, 2015).

CONCLUSION

In conclusion, it can be said that this research provides basic data concerning the association between OS, SCR, SCA, and RSC. Moreover, in a number of ways, the current study contributes to the comprehension of the operation management literature. The study initially proposed a framework that integrates the SCA, SCR, and OS in order to maximize its impact on RSC. It was therefore suggested that SCA and SCR be combined with RSC. Secondly, the work advanced our understanding of RSCs by providing experimental proof of their contributions to OS. Lastly, it provided empirical evidence supporting the mediation role of SCR and SCA in explaining the relationship between OS and RSC. It was determined that by cutting expenses in a highly competitive and personalized market and gaining an advantage over rivals, SCR and SCA enhance the company's operating system. This study looked at how a company can use SCA and SCR to compete in a global market by offering distinctiveness and customer service in a highly customized setting. Businesses that embrace SCA and SCR as a working philosophy

within their businesses can achieve notable OS improvements, according to the data analysis. The companies in this study had proved the significant advantages of integrating SCA and SCR into the industrial culture.

Multifaceted and significant were the practical ramifications of supply chain interactions managing the link between RSC and OS. Thus, it can be said that the results highlighted the way to foster strong, mutually beneficial relationships throughout the supply chain and also highlight the importance of funding interorganizational communication and integration, that is, to enhance RSC (Paulraj & Chen, 2007; Rajaguru & Matanda, 2019). Therefore, using these insights may help organizations improve the overall efficacy of reverse supply chain operations. This can happen by giving priority to the development of relational capabilities and inter-organizational integration.

The RBV was theoretically affected by the study's conclusions. The research advanced our understanding of how supply chain agility and relationships function as dynamic capabilities that help businesses adapt to shifting market conditions and improve their operational performance by leveraging RBV capabilities. It does this by illuminating the mediating effects of relationships and agility in optimizing organizational strategy within reverse supply chains. This is consistent with the RBV perspective, which highlights the capacity of an organization to foster, incorporate, and redesign core and exterior proficiencies in response to quickly changing circumstances.

Future studies should consider the limitations of this study. First, this research was done in Iraq, and the conclusions are exclusive to Israel. Examining the research model in nations other than Iraq would be helpful in extrapolating the study's findings. Secondly, the process of gathering the data was done all at once. It's probable that a longer study would have produced different findings from the ones this one did. Thirdly, the study employed a quantitative methodology. When combined with a qualitative approach, such as manager interviews, the data findings could be explained in a more useful manner. Lastly, rather than concentrating on any one area, this study was carried out on businesses from a range of industries. Analyzing the research model in niche markets, like the high-tech sector, would be fascinating.

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