Impact of Supply Chain Management integration, Capabilities and Resilience to improve Supply Chain Performance of construction industry: Mediating Effect of Supply Chain Flexibility

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ABSTRACT

Supply chain performance shows the level to which a construction organization's supply chain can effectively achieve its strategic objectives. It is vital for the construction firms to identify factors that can improve supply chain performance. Therefore, this study examined the effect of supply chain management integration, supply chain resilience, and supply chain capability on supply chain performance. This research also explored mediating effects of supply chain flexibility. This research used quantitative research methodology and adopted cross sectional research design. Data was collected using the questionnaire developed from past studies. Developed questionnaire was distributed among employees of construction companies. Simple random sampling was used for questionnaire distribution. 267 usable responses were received from respondents. Smart PLS 4 was used for the analysis of gathered data. Results of study demonstrate that supply chain flexibility has positive effect on supply chain performance. Moreover, supply chain management integration, supply chain capability and supply chain resilience have positive influence on supply chain flexibility. Statistical results also show mediating role of supply chain flexibility. his research highlighted central role of supply chain flexibility to improve supply chain performance.

Keywords: Supply chain performance, Supply chain management integration, Supply chain flexibility, Supply chain capability, Supply chain resilience.

INTRODUCTION

Construction companies play a important role in the development of economy which is dependent on supply chains. Input materials are needed by the construction companies for their operations, therefore they need good connections through supply chain systems to increase business efficiency and reduce production cost. Strong supply chain systems minimize capital cost of business impacting their financial performance. Moreover, in presence of effective supply chain, consumption of products at business becomes easy. Different products can easily reach the market because of the supply chain (Tetteh et al., 2024). Therefore, supply chain performance is important for construction organizations to improve overall productivity, operational efficiency, competitiveness, and productivity of organization (Van Nguyen et al., 2022). Supply chain performance is also important for success of organizations as it has direct influence on customer satisfaction, service quality, and cost efficiency. Supply chain

performance allows organizations to handle market changes and develop competitive advantage. Supply chain performance plays very important role to ensure long-term sustainability and operational continuity in present volatile business environment.

Rapidly changing marketplace is shaped by technology, demographics, and consumer preferences. Therefore, construction organizations must alter their strategies so they can remain relevant and competitive. In this situation, supply chain flexibility plays a key role by helping firms develop flexible strategies (Emma & Keller, 2024). Supply chain flexibility is recognized as key capability that enables construction organizations to adjust operations in response to market volatility and environmental uncertainty. Studies show that supply chain flexibility permits organizations to re-align distribution process, production and sourcing to handle related supply disruption and demand variability. High level of supply chain flexibility is important to improve efficiency and supply chain performance. Studies also argue that supply chain flexibility plays important role to strengthen long term resilience and develop competitive advantage for the construction organizations (Holloway, 2025).

Integration is one of important factors of supply chain management as it helps in implementing supply chain in construction organizations (Zighan et al., 2023). Studies mention that construction organizations are able to design their products faster, with low cost and of high quality through supply chain management integration. Therefore, organizations can allocate their resources in efficient manner because of supply chain management integration (Rahman et al., 2025). The main focus of supply chain management integration is to enhance value for consumers by coordinating operations at all levels within supply chain. Supply chain management integration also offers cost-effective solutions. Therefore, supply chain management integration is important as integration outside and within supply chain takes place at the same time (Santhanam & kamatchi, 2024).

The factor of supply chain capabilities are also very important for construction companies to enhance supply chain performance. Supply chain capabilities require construction organizations to share integrated resources with partners operate efficiently and effectively in dynamic environment (Wetsandornphong et al., 2025). Studies mention that supply chain capability plays key role in helping construction organizations to remain competitive and reduce functional costs in intense competition. Supply chain capability is important to strengthen resilience across distribution systems, transportation and logistics. Furthermore, supply chain capability helps the construction organization to enhance work flow, improve process visibility and manage crisis through the improvement initiatives. As a nutshell, supply chain capability plays main role in sustained value creation and decision making throughout the value chain (Lu et al., 2025).

Present world is characterized by growing uncertainty and continuous change, therefore, supply chain resilience is considered a key factor for the success of construction organizations. Increasing exposure to market volatility has increased vulnerability of supply chain networks. Therefore, supply chain resilience has become priority for the organizations (Guo et al., 2025). The factor of supply chain resilience has gained attraction of managers and academicians because it is the capability that enables organizations to recover from, adapt to and withstand disruptive situations. The significant impact of different uncertainties shows the way supply chain resilience provides support to organizations in recovering, responding and anticipating risk from unexpected shocks. The ability of organizations to continue their operations reflects

that supply chain resilience creates difference between high performing organizations and others. Organizations that integrate supply chain resilience in their operations are in better position to handle unexpected situations by minimizing its impact. Approaches of traditional risks are inadequate, showing the need of supply chain resilience to manage situation of uncertainty (Mishra et al., 2024). In situation of crisis, supply chain resilience strengthen customer trust, protect market share and ensures continuity. Therefore, supply chain resilience is important to sustain long term competitiveness of construction organization (Hosseini Shekarabi et al., 2025). Thus, basic aim of the present study is to examine the effect of supply chain management integration, supply chain capability, and supply chain resilience on supply chain operation through mediation of supply chain flexibility in context of construction organizations.

LITERATURE REVIEW

Supply chain Flexibility (SCF) and Supply chain performance (SCP)

Performance in literature is discussed as flow of transformation towards downstream to upstream. In context of SCP is transformation from suppliers to customers along with information flow (Petropoulos et al., 2026). The SCP success is linked to good quality of strong relationship between all stakeholders of supplier networks. On these grounds SCP is defined as system of performance measurement along a tool to measure that is used to observe SCP joining between the organizations (Maestrini et al., 2017). Explanation of SCP is referred as outcome of supply chain ability to fulfill desire of customers and provide information about desire of consumers efficiently (Mukhsin et al., 2022).

SCF is discussed as ability of organization to adjust rapidly and understand strategies, resources and processes in response to internal and external alterations. It is based on ability to adjust to alterations in shifts in market conditions, new product introductions. Supplier disruptions and customer demands that has the ability to effect flow of services and goods (Edwin Cheng et al., 2021). SCF is the ability of a firm to adjust its logistics, distribution, production and sourcing processes in response to alteration in environmental uncertainty, supply uncertainty and demand uncertainty. This capability of the organization plays a very important role to enhance SCP that is measured in terms of customer satisfaction, quality, responsiveness, delivery reliability, and cost effectiveness (Delic & Eyers, 2020).

Organizations are able to respond quickly to the volatility of market in the shape of technological changes, supply disruptions and demand fluctuations because of flexible supply chain. By allowing organizations to enhance customize products, modify transport modes, switch suppliers and production volumes, flexibility minimize stockouts, lead times and prevent unwanted inventory (Macclever et al., 2017). As a result of this responsiveness customer relationships are improved that are main components of performance. Additionally, flexibility improves operational efficiency by minimizing obsolescence costs, rework and waste and better utilization of resources (Ike et al., 2022).

In competitive and uncertain environment, flexibility plays a key role to mitigate the risks (Chandak et al., 2021). Organizations with high level of SCF has the ability to recover faster and absorb shocks faster from disruption, thus maintaining financial stability and continuity of operations. As a result, SCF contributes indirectly and directly to improving SCP by

enhancing customer value creation, efficiency, resilience and responsiveness. So, SCF is recognized globally as the strategic capability that can support and strengthen SCP (Rahman et al., 2024). Furthermore, studies by Khanuja and Jain (2021) and Mukhsin et al. (2022) revealed positive effects of SCF on SCP. Therefore, we assumed that

H1: SCF has positive effect on SCP.

Supply chain management integration (SCMI) and Supply chain Flexibility

Literature has described supply chain integration as attempt of organization to enhance linkage within every component of supply chain with purpose to facilitate better decision making and to interact with all pieces of supply chain in more effective and efficient way (Jama et al., 2024). Studies mentioned that SCMI is often considered as strategic collaboration and coordination between different entities of the supply chain ranging from end users to the suppliers of raw material with purpose to develop a unified, flow of goods seamlessly, finance and information, enhancing overall performance and value to customers and minimizing costs (Imam, 2023). When organizations are integrated with customers and suppliers, they are able to gain timely access to accurate information about production capacities, inventory levels and demand changes that reduces environmental uncertainty allowing organizations to adjust their operations in effective manner (Masa'deh et al., 2022).

Flexibility is improved because of supplier integration that allows manufacturers to alter quantities of inputs, adjust delivery schedules and switch suppliers in response to fluctuations of market (Liu & Chiu, 2021). Organizations are enabled because of customer integration to capture signals of real time demands and customize distribution and production as per need. Internal integration shows cross functional coordination among different departments such as marketing, logistics, productions and procurement. It also support flexibility by making sure that internal processes are responsive and aligned to external changes. Functional silos are reduced because of internal alignment that enhance organizational agility (Sarfraz et al., 2023).

A number of different sectors illustrate that supply chains can better handle demands in quick manner and supply disruptions in presence of SCF (Muntaka et al., 2017). By collaborative planning and information sharing, integrated organizations are able to adjust inventory policies, reroute logistics and reconfigure production plans faster than non-integrated organizations. Therefore, SCMI plays direct role to integrate and strengthen SCF by improving coordination, adaptability and responsiveness throughout the entire supply chain network (Siagian et al., 2021).Thus, SCMI plays the role of foundational capability to develop flexibility in uncertain and dynamic environment. The study by Siagian et al. (2021) discussed that SCMI plays vital role to improve SCF. So, this research hypothesises that:

H2: SCMI has positive effect on SCF.

Supply chain Capability (SCC) and Supply chain Flexibility

Studies have defined SCC as the ability because of which supply chains are enabled to execute systematically a response in effective manner to the sustainable ambitions, customer demands and market changes (Singh, 2024). These capabilities include technology integration, process, responsive sustainability product design and collaboration. These factors together provide operational agility that helps in managing waste. It also plays important roles to provide

sustainability in the operations of supply chain. Operations of the suppliers results in partnership that underlies mutual benefits especially regarding ethical considerations and environmental consideration (Rajaguru & Matanda, 2019).

Different type of supply chain capabilities including integrated operations, green sourcing, sustainable productions, and supplier collaboration provide required architecture for SCF. Organizations are enabled because of these capabilities to develop strong operational foundations, informational foundations and relational foundations with purpose of supporting fast adjustment to external and internal changes. A supply chain is equipped with organizational capabilities with purpose to demonstrate strong maturity and improved ability to respond to, sense to and re-calibrate effectively along with diverse triggers of environment including technological shifts, regulatory changes, supply disruptions and demand volatility.

In present consumer markets, customers demand the fulfillment of demands instantly, personalized services and products and flexibility to change orders in short spam of time. In order to meet these requirements, organizations are required to develop capability to enhance responsiveness, coordination and visibility across supply networks (Fatima et al., 2021). Collaboration at the level of suppliers improves joint problem solving and information sharing whereas integrated operations minimize lead times and process errors. Likewise, faster customization and production modification is enabled as a result of agile product design without delay or excessive cost (Üstündağ & Ungan, 2020).

Industrial enterprises demonstrate such kind of relationship by adjusting production plans on real time with purpose to reflect fluctuation in demands (Raj et al., 2025). It is possible to make such adjustments when organizations have strong supply chain capabilities to translate relationships, technology and knowledge into operational responsiveness. Therefore, supply chain capabilities correspond to foundational skills and knowledge on which supply chain is able to operate, whereas flexibility shows effectiveness of these capabilities through adaptability and responsiveness across partners and processes. As a result, SCC plays the role of important antecedent to enable SCF (Gunawan & Dewi, 2022). The study by Singh (2024) revealed empirically that SCC plays key role to enhance SCF. So, this research assumes that:

H3: SCC has positive effect on SCF.

Supply chain Resilience (SCR) and Supply chain Flexibility

In literature SCR is defined as supply chain's adaptive capability to recover from them, respond to disruptions and prepare for unexpected events by maintaining on the continuous basis of operations at the required level of control and connectedness over function and structure (Dey, 2023). SCR is discussed as capability of supply chain to handle disruption and recover organizational capability after occurrence of disruptions. Studies mentioned two important components of resilience including capability to recover, and capability for resistance (Boonlua et al., 2023). The connection between resilience and SCF is increasingly becoming important for organizations to manage the challenges of current settings of organizations.

Resilient supply chain plays key role in proactive management of risk practices including real-time visibility systems, backup logistics options, safety buffers, and multiple sourcing strategies. As a result of these mechanisms, different types of feasible availability of responses to the managers is increased during disruption (Hosseini Shekarabi et al., 2025). Therefore,

distribution flexibility, production and sourcing are enhanced. Organizations having diversified supplier bases can shift orders rapidly in case of failure of suppliers. Whereas, these flexible alternative and contracts in transportation modes can reconfigure flow without delays (Guo et al., 2025). Additionally, preparedness and organizational learning is fostered because of resilience. Organizations are able to adapt cross-functional coordination mechanisms, scenario planning capabilities, adaptive routines through SCR (Johnson, 2025). Organization is able to redesign processes, reschedule production and reallocate resources because of dynamic organizational capabilities in response to altering conditions that directly affect flexibility.

Resilience also improves information sharing, trust and collaboration by strengthening relational flexibility among partners of supply chain. Therefore, SCR plays the role of enabler and antecedent of SCF. As SCF reflects the ability to alter, resilience provides governance structures, resources and preparedness that make different changes under pressure. As a result, higher levels of resilience will lead to greater level of flexibility that allows supply chains to respond to disruption in effective manner (Khan et al., 2024). So, it is hypothesized that

H4: SCR has positive effect on SCF.

Mediating effect of Supply chain Flexibility

Supply chain management integrates establishes contribution at organizational boundaries that impacts SCP through indirect manner. SCP is improved when operational capability is developed from integration. SCF shows this critical mechanism of conversion by enabling organizations to reconfigure logistics, volumes, and processes in response to uncertainty of environment (Masa'deh et al., 2022). Integrated system improves collaborative decision making, cross functional alignment and information accuracy. Whereas flexibility shows the way these resources can be used in dynamic conditions effectively. By providing rapid adjustment in distribution, production scheduling and sourcing, SCF converts integration driven conditions into effective and timely operational response.

As a result, performance is improved in terms of service reliability, responsiveness and efficiency by enhanced flexibility as compared to only integration. Therefore, SCF has the capability to serve as mediator between SCMI and SCP. Literature has revealed that SCF is discussed as mediator in study of Tsai and Lasminar (2021) and Ahmed (2023). Therefore, this research illustrates that

H5: SCF is a significant mediator between SCMI and SCP.

Studies revealed that variation in SCP cannot be explained by only SCC. It is because SCC cannot ensure conversion of SCP in changing conditions. The performance value of technological, relational, and operational capability relies in the way these resources are mobilized in case of uncertain situations. Mobilization process is captured by SCF by enabling organizations to recalibrate logistics, redesign workflows and reallocate resources in real time (Alkhatib & Momani, 2023). When knowledge-based foundation and structural foundation is provided by capabilities, flexibility determines the level to which these strengths are operationalized to give response (Tamirat & Amentie, 2023).

By adjusting flexibility in delivery configurations, production volumes and sourcing, organizations are in better position to align outputs and absorb disruptions with requirements

of market. Therefore, effect of supply chain capabilities on service outputs, reliability and efficiency has materialized by enhancing SCF. In past, several studies have determined SCF as mediator (Siagian et al., 2021). So, this research hypothesizes that

H6: SCF is a significant mediator between SCC and SCP.

Resilience is able to facilitate sully chains to handle disruption and to continue their operations. But organizational resilience cannot have positive effect on organizational performance in direct manner. Additional operational mechanism is required to move to improved performance from disruption (Li et al., 2025). This role is performed by SCF by allowing organizations to move to actions that can have effective impact on performance. SCF can change flexibility can adjust sourcing networks, change disruption routes and modify production schedules as per needs of post disruptions.

Therefore, flexibility is able to materialize resilience by converting recovery capability into efficient operations. In absence of flexibility, resilient supply chain may not be able to get full benefit of efficiency improvement (Holloway, 2024). Therefore, responsiveness, service reliability and cost efficiency is achieved in support of resilience through adaptive SCF. As a result, SCF has the potential to act as mediator between reliance and performance. In past, several studies have determined SCF as mediator (Siagian et al., 2021; Tsai & Lasminar, 2021). So, we determine that

H7: SCF is a significant mediator between SCR and SCP.

On the basis of literature review, this research has developed theoretical framework showing effect of SCR, SCC, and SCMI on SCP and SCF (see figure 1).

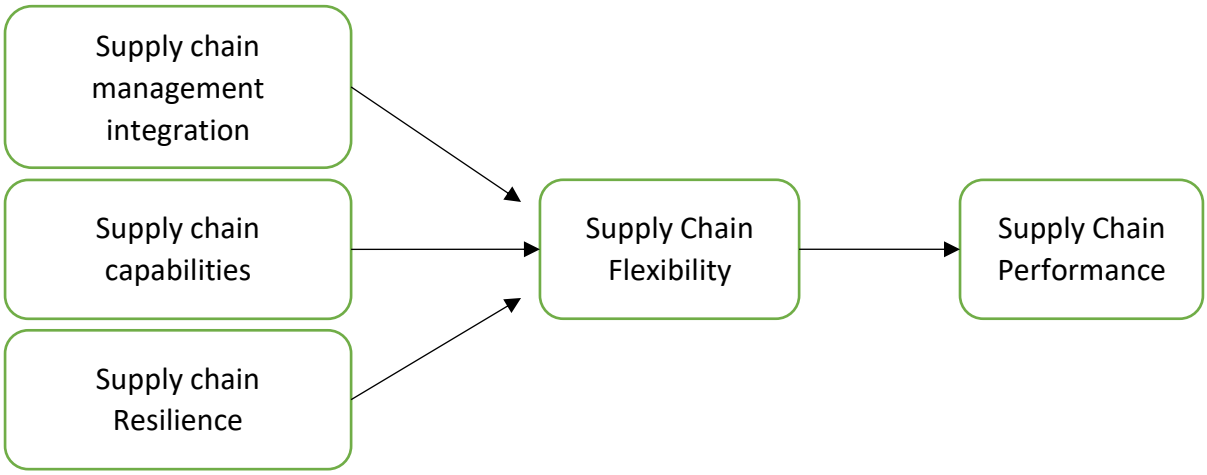

Figure 1: Framework

METHODOLOGY

This research used cross sectional research design and quantitative research methodology. Respondents of the study were employees working in firms. Data was collected from respondents through questionnaires using survey technique. Items of questionnaire were adapted from in-depth literature review. Items of SCF were adapted from Khanuja and Jain (2021); questionnaire of SCP were adapted from Kaliani Sundram et al. (2016); scale of SCR

was used from items of Singh and Modgil (2024); items of supply chain integration were adapted from Liao et al. (2021) and items of SCC were adapted from Malhotra (2023).

This developed questionnaire was distributed among employees using simple random sampling technique. Questionnaire was distributed among 325 employees of construction firms. We received 287 questionnaires from respondents. 26 questionnaires were omitted from further usage as they were not fully filled by respondents. In other words, 261 questionnaires were used for further analysis. This research used Smart PLS 4 as tool for analysis and SEM as technique.

RESULTS

The analysis through smart PLS 4 is divided in two sections namely measurement and structural model. Measurement model (Figure 2) evaluation is based on validity, reliability and outer loading assessments to make sure that proposed constructs are meaningful and accurate for analysis. All these assessments are important for measurement models.

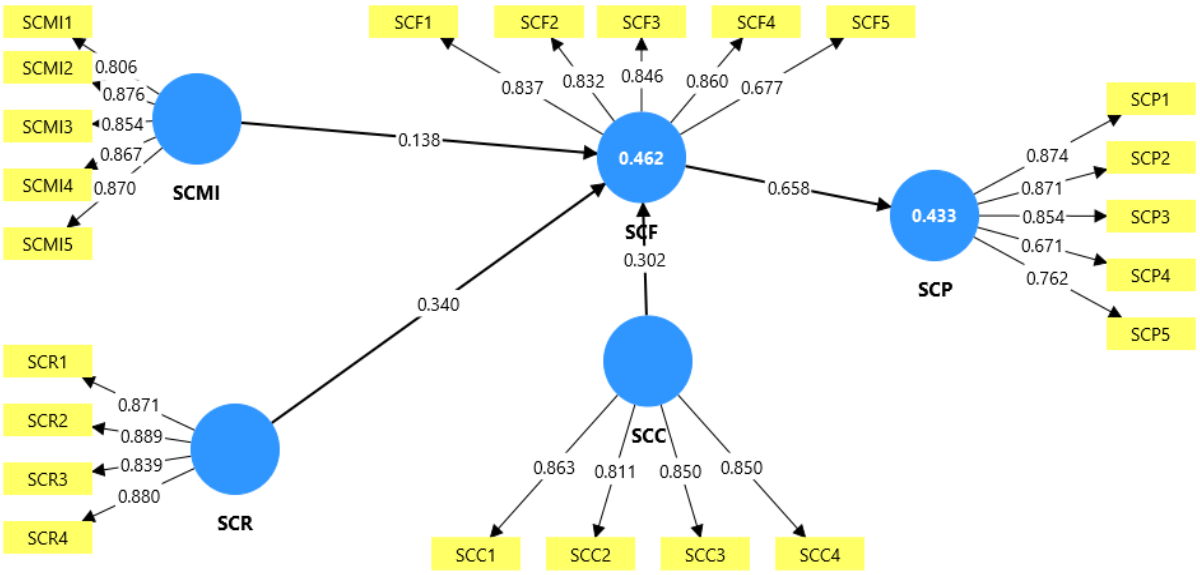

Figure 2: Measurement Model

Reliability is assessed through metrics of internal consistency that confirms consistency and stability of every variable (Aripin et al., 2023). Proposed values of rho c should be more than 0.70 to confirm validity. Table 1 of the study shows that all values of rho-c exceed this limit. Assessment of validity in the form of convergent validity examined through AVE ensuring required distinction among each variable. Table 1 also shows that AVE values range from 0.661 to 0.757, exceeding limit of 0.50.

Table 1: Internal consistency

	Alpha	rho_c	AVE
SCC	0.865	0.908	0.712
SCF	0.870	0.907	0.661
SCMI	0.908	0.931	0.731
SCP	0.866	0.905	0.657
SCR	0.893	0.926	0.757

Later, this research examined the outer loading of the data that reflects the relationship strength among every indicator. Researchers recommended the value of outer loading must be higher than 0.60. Table 2 and Figure 2 show that this benchmark is achieved as all figures of is higher than 0.60.

Table 2: Loading

	SCC	SCF	SCMI	SCP	SCR
SCC1	0.863				
SCC2	0.811				
SCC3	0.850				
SCC4	0.850				
SCF1		0.837			
SCF2		0.832			
SCF3		0.846			
SCF4		0.860			
SCF5		0.677			
SCMI1			0.806		
SCMI2			0.876		
SCMI3			0.854		
SCMI4			0.867		
SCMI5			0.870		
SCP1				0.874	
SCP2				0.871	
SCP3				0.854	
SCP4				0.671	
SCP5				0.762	
SCR1					0.871
SCR2					0.889
SCR3					0.839
SCR4					0.880

Later, this research examined discriminant validity using HTMT approach as recommended by Henseler et al. (2014). The benchmark figure for HTMT values should be less than 0.90. Table 3 shows that all values in the metrics are less than 0.90, meeting requirements.

Table 3: Discriminant Validity

	SCC	SCF	SCMI	SCP	SCR
SCC					
SCF	0.670				
SCMI	0.671	0.606			
SCP	0.548	0.754	0.718		
SCR	0.679	0.690	0.758	0.614	

In the later stage of measurement model, we examined value of R square for which values should be more than 0.10 as recommended by Falk and Miller (1992). A Primer for Soft Modeling. University of Akron Press). Figure 2 and Table 4 show these criteria are achieved. At this stage, all requirements of measurement model are achieved.

Table 4: R square

	R-square
SCF	0.462
SCP	0.433

Structural model analysis is used to assess the hypothesis of the research. The significance of hypothesis is determined by t and p values. Table 5 shows the direct results of the study. These findings show that SCC has positive effect on SCF with t=4.966, accepting hypothesis. Similarly, SCF has positive effect on SCP with t= 15.077, accepting hypothesis. Likewise, SCMI has positive influence on SCF with t=1.911, supporting hypothesis, and SCR has positive effect on SCF with t=5.1655, accepting hypothesis

Table 5: Direct findings

	B	SD	T	P
SCC -> SCF	0.302	0.061	4.966	0.000
SCF -> SCP	0.658	0.044	15.077	0.000
SCMI -> SCF	0.138	0.072	1.911	0.028
SCR -> SCF	0.340	0.066	5.165	0.000

Results in Table 6 showing mediating findings. These stats show that SCF mediates between SCC and SCP with t=5.141, accepting hypothesis. Likewise, SCF mediates between SCMI and SCP having t=1.791, supporting mediating hypothesis, and SCF mediates between the SCR and SCP with t= 4.945, accepting hypothesis.

Table 6: Mediation results

	B	SD	T	P values
SCC -> SCF -> SCP	0.198	0.039	5.141	0.000
SCMI -> SCF -> SCP	0.091	0.051	1.791	0.037
SCR -> SCF -> SCP	0.223	0.045	4.945	0.000

DISCUSSION

The purpose of the study to explore the effect of SCF, SCMI, supply chain capabilities and SCR on SCP in context of construction firms. Results highlight that SCF has positive effect on SCP. These results highlight the strategic importance of supply chain structures. In case of enhanced SCF, construction organizations are able to respond effectively to environmental disruptions, supply uncertainty and demand variability. With the help of flexible sourcing, responsive logistics, and adjustable production schedules improves SCP.

Also, SCF enhances SCP through rapid configuration of processes of supply chain in case unexpected situations. Construction organizations having greater SCF has the ability to switch inventory, shipment and supplier that minimizes cost inefficiencies and operational risk. As a result, SCP is strengthened in terms of customer satisfaction, speed and delivery reliability. Additionally, SCF provide support to collaboration and coordination among all networks of supply chain. Through synchronized decision-making and information sharing enabled through SCF contributing to improved SCP. These results suggests that organizations focusing SCF are

in better position to absorb shock leading to superior SCP. These results are constant with findings of Khanuja and Jain (2021).

The findings of the study also illustrate that SCMI has positive effect on SCF. The possible reason for these results is that SCMI plays important role in developing coordination among external partners and internal functions when it is effectively implemented. Moreover, SCMI develops unified flow of decisions, materials and information. The SCF is supported by integrated structure enabling quick adjustment in production process. Furthermore, SCF is enhanced by SCMI through reduction in gaps of decision making between members of supply chain. Collaborative forecasting, shared databases, and integrated planning system allows construction organizations to respond quickly and anticipate changes when needed. Therefore, improvement resulted in SCF through timely reconfiguration and synchronized actions of supply chain processes.

Moreover, SCMI also strengthens collaboration and trust that supports SCF in conditions of uncertainty. Integrated relationships among partners allows that to adjust capacity and workflow in case of any alarming situation. These results also suggests that SCMI is key to develop SCF by transforming supply chain operations. These results are in line with the results of Siagian et al. (2021) in literature. The statistical findings of study also support hypothesis that SCC has positive effect on SCF (Singh, 2024). The findings underscore the strategic importance of SCC in supply chain networks. SCC of construction organizations shows organizational ability to effectively deploy knowledge, integrate processes and coordinate resources across distributors, manufacturers, and suppliers. The results shows that construction organizations having stronger supply chain capabilities are positioned better reallocate resources, adjust sourcing decisions and redesign workflows in response to changes in industrial environment. Well developed capabilities in the form of relational coordination, collaborative planning and information sharing enhance control and visibility across supply chain. As a result, flexible and timely operational adjustments are facilitated. Furthermore, supply chain capabilities helps the construction organizations to balance adaptability with efficiency by integrating regular processes through mechanisms of responsive decision making. Consequently, construction firms are allowed to swiftly respond to market uncertainty, supply disruptions and demand variability without impacting overall performance. The results suggests that flexibility is not just an operational outcome but driven through capability. It is also consequence of deliberate investment in competencies of supply chain. So, managers of organizations should give priority to SCC to sustain SCP.

The findings shows that SCR has positive influence on SCF as discussed in study of Khan et al. (2024). Results of this study highlights critical role of SCR to adapt supply chain behavior. SCR shows the capacity of construction organization to recover from unexpected events, absorb shocks and anticipate disruptions. Results also suggests that supply chains of organizations are flexible because they are built to function under stress and uncertainty. SCR helps the construction organizations to keep alternative options in terms of sourcing, production and logistics under consideration. Furthermore, practices linked to resilience in the form of contingency coordination, redundancy planning and risk monitoring provide strength to the supply chains ability to reconfigure resources and processes in case of changes in conditions.

The findings also demonstrate that SCR encourages construction organizations to continuous improvement, collaboration and learning that further support flexible responses. By integrating

resilience in all relationships, organizations can adjust distribution channels, product volumes and delivery schedules without severe operational disruption. In other words, results confirm SCR can be used as strategic enabler regarding SCF allowing construction organizations to sustain stability and responsiveness in increasingly volatile and complex business environments.

Findings also show the significant role of SCF as mediator between relationship of SCMI and SCP. The results of the study signifies the key mediating role of SCF between the relationship of SCMI and SCP. These results offer a separate explanatory mechanism. SCMI enhances information and coordination alignment among all stakeholders. Whereas the performance of supply chain is benefitted when such integration is translated into flexible capabilities. The findings of study also suggest that supply chain develop synchronized decision-making and visibility that empowers organizations to alter delivery, volumes and processes structures in real time. Thus, SCF plays the role to transform integrative efforts into real time performance outcomes. Without enough flexibility in supply chain, advantages of SCMI. It also limits the improvement of service quality, responsiveness, and cost effectiveness. As a result, SCF enables SCMI to respond to environmental changes, providing strengths to SCP.

Results also support mediating effect of SCF between supply chain capabilities and SCP. As supply chain capabilities such as integration of process, information sharing and coordination provide strength to operations of the organization, their performance is not improved automatically. Whereas supply chain capabilities improve ability of the organization to adjust decisions related to distribution, production and sourcing in response to changes in environment. SCF later translates these supply chain capabilities into actions by allowing organizations to effectively respond to operational disruptions and demand variations. As a result, improvement in SCP is emerged when supply chain capabilities are utilized through flexibility. This mediating relationship shows SCF is the pathway to improve SCP by using supply chain capabilities.

Mediating findings also support mediating effect of SCF between SCR and SCP. The impact of SCR on SCP is limited despite the fact that resilience allows forms to handle shocks, maintain continuity and recover from disruptions. SCF allows organizations to modify, adjust capacity and reconfigure logistics after and during disruptions. Through the structures of SCF, organizations are able to transform SCR into adaptive execution and timely decision making, which enhances performance of supply chain. Therefore, SCF plays the role of operational bridge to convert SCR to measurable gains SCP. These mediating findings are consistent with the results mentioned by Siagian et al. (2021).

LIMITATIONS AND FUTURE DIRECTIONS

Some of the limitations of the study will be mentioned in this section. Firstly, this research deals with antecedents of SCP. It would be better to enhance this study towards sustainable SCP as in present age of digitalization, sustainable performance is one of the core issue of the organizations. Therefore, extending this model towards sustainability is recommended. Secondly, this study has discussed SCF as the mediating variable in the proposed research framework. It is recommended that future studies may use this variable as independent variable to assess its exogenous role in the framework.

Thirdly, this research is based on three independent, one mediating and one dependent variable.

There must be moderating variable in the framework in the form of supply chain information sharing, supply chain collaboration, and supply chain agility. Fourthly, R square values of the present study suggest that there should be addition of other variables in the framework to enhance effect of independent variables on the outcome variables. Therefore, it will be interesting to add variables like supply chain digitalization and blockchain capabilities as independent variables in the proposed framework. Moreover, this study used simple random sampling as the sampling technique to reach the respondents. It is recommended that future studies may use stratified sampling for this purpose. In the end, this study used quantitative research methodology. In order to get in depth opinion of the respondents, qualitative research is recommended in future.

Theoretical and Managerial Implications

Present study has both managerial and theoretical implications that will be highlighted in this section. This research is among the few studies that have discussed mediating effect of SCF between SCMI, SCC, SCR and SCP. In other words, this research extends knowledge of supply chain literature by discussing all proposed variables in a single framework. This research advances the perspective of organizational capability by showing that SCR, SCC and supply chain integration is translated into SCP indirectly through SCF.

From the perspective of managerial contribution, the results highlight the importance of resilience, capabilities and integration at the level of supply chains to improve SCP of organizations. Additionally, managers of organizations should also prioritize flexible sourcing, real tome information sharing, responsive production planning and adaptive logistics to enhance SCP. These results can be used by academicians for their research and policy makers can use these results for strategy development.

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