www.irmbrjournal.com June 2021
International Review of Management and Business Research Vol. 10 Issue.2

Impact of Supply Chain Collaboration on Operational Performance of Port: A Gwadar Perspective

CHAUDHRY RIZWAN RIAZ
Department of Management Sciences Bahria University, Islamabad.
Email: rizriaz@gmail.com

Dr. KHALILULLAH MOHAMMAD
Department of Management Sciences Bahria University, Islamabad.
Email: khalilullah.buic@bahria.edu.pk

Abstract

The main concern of this study was to determine the impact of supply chain collaboration on Gwadar port operational performance. The objective of the study has been achieved through conducting a survey and primary data has been analyzed to assess the linkages between explanatory variable and dependent variable. The survey was conducted to collect the primary data from respondents to determine the impact of supply chain collaboration on port performance. The managers of the companies located in Gwardar port remain the unit of analysis and their responses have been collected. A total of 300 questioners had been distributed and a valid number of questionnaires 225 has been obtained which makes the response rate of 75%. Data properties and respondent characteristics have been outlined. The covariance based structural equation modeling has been employed to statistically signify the relationship between the supply chain collaboration on Gwadar port operational performance. Based on statistical analysis the findings of the study suggest that supply chain collaboration positively triggers the operational performance of Gwadar port.

Keywords: *Port Performance, Supply Chain Collaboration, Gwadar Port, Supply Chain.*

Introduction

The shipping industry has a huge impact on range of related economic activities, social setup and environnemental systems. There are several good reasons for this. International corporations frequently prefer to use ocean transportation networks in their supply chains and thus include merchant marine in their supply networks. Although supply chain management has been described under various perspectives, but it has grown considerably in scale as well as scope in the process. It modifies the roles of supply chain members from expanding to reconditioning and restructuring them, along with their approaches (Brun, Karaosman, & Barresi, 2020).

The high levels of operational demand created by the necessity for both terminal customers and port users to collaborate more in the same way as traditional coastal transportation partners in order to protect and expand their shipping and harbour logistics supply chains (Wu & Chiu, 2018). A vast and complex organizational apparatus of sea-container-hauling logistics, and various container shipping service providers are considered slower to embrace SCM techniques for shipping, but since SCM techniques are widely held to be complicated to implement and asses their potential impact (Duong & Chong, 2020).

Specifically, in the maritime industries, "supply chain collaboration" or SCC is described as "the extent to which port users and port entities work together to guarantee dependability, cost-effectiveness, and efficiency in the overall supply chain." Although "vertical" and "horizontal" integration is what generally

predominates, it appears somewhat an unfavourable equation due to "supply chain collaboration." Furthermore, it will be quite daunting for all the stakeholders to avail the benefits of supply chain collaboration (Florescu, Ceptureanu, Cruceru, & Ceptureanu, 2019).

Furthermore, it is also imperative that supply chain activities enable people, that, they may gain significant advantages from the above points, as well as being less likely to encounter disadvantages. Although there are weaknesses, it's safe to say one of the smartest decisions in the shipping industry is the expansion of the partnership programmers, since they seem to have the best track record of results. Diametrically opposed nautical entities, like suppliers, compete intensely in highly politicized supply chains, resulting in minimal coordination and operating profitability (Hofman, Blome, Schleper, Subramanian, & Environment, 2020).

Competitiveness and efficiency benefit from cooperation at every stage of a product lifecycle, including the supply chain. According to the existing literature, it must be accounted for in any assessment of co-supplied service and product design had to comply with "every-step" effectively. Past studies have also confirmed that chaotic events happen in ports which have adversely affected the supply chain collaboration (Hofman et al., 2020). With regards to the multifaceted measures in logistics, It was empirically discovered that holistic factors (i.e., several different viewpoints), effect cooperation, particularly those pertaining to "supply chain cooperation. The collaboration enables seaport companies to enhance their synergy and improve the quality of their services through enhanced competitive edge in the market (Larcombe, Baik, Finch, & Development, 2021).

It is also suggested by several organizations that supply chain benefit must now be seen as mostly inclusive, and both terms ought to be applied to different ship and cargo themes: expanded use of inter-activity, in which both senses, has been applied to theories on all vessels (e.g., the development of value in sea logistics, nautical logistics value, the value-driven chain-system, and the total-value proposition). For example, some see the economic importance of supporting effects in seaports supply chains' production, which are wide, or port usage, as a side effect, but others see it as a supportive measure to existing seaports' greater seaports' aim of reducing the competitive supply chain. Other activities associated with Maritime logistics and thus warrant emphasis on maritime teamwork, flexibility, efficiency, and creativity in response to customer needs, which is important in that it is defined as the distinction between Logistic system flexibility, Logistic response to demands, and value-added facilities or services produce that require differentiation from each other (Larcombe et al., 2021; Ma, Pal, & Gustafsson, 2019).

Thus, though widely applicable, the concept of collaborative advantage is not fully addressed in the Maritime theory. Moreover, there can be successful cooperation (such as having a cooperative advantage) or improved organizational outcomes. What supports the formulation and making of policies? Despite this fact, there being no scientific evidence to suggest its impact on cooperative yields, there is empirical evidence to prove the fact that cooperation results in less efficiency (Mofokeng & Chinomona, 2019). Academics, researchers, can ask whether the use of the Gwadar port has led to any strategic benefits, and she may, or otherwise provide value to the Maritime operations due to its prominence in the capacity of SCC. Specifically, the aim of this research is to find answers to the following questions: “What are the advantages of using SCC in the Maritme context?” is there a positive impact on collaborative benefit to be derived from a reduction in ports built in the SCC region? What impact does the introduction of SCC have on the ability to collaborate and the benefits that Gwadar provides for ships and Logistics?

As stated above, the rest of the paper is laid out, in ensuing paragraphs in the following order: It is Section 2 where theory and hypotheses are laid out in some detail. Everything is further developed in Section 3, including various methods, data collection techniques, and the overall approach is outlined clearly. The findings of the qualitative and quantitative study, analysis, the formula, and the general formula for the structure equation are listed in Section 4. The aforementioned theories and processes will be examined to aid in the analysis of possible conclusions before making a final recommendation(Singh, Garg, & Sachdeva, 2018) .

Theoretical Framework and Hypotheses Development

Based on substantive literature review the following framework has been deduced to determine the impact of supply chain collaboration on port performance. The contextual setting of the study is provided by Gwadar Port located in Pakistan.

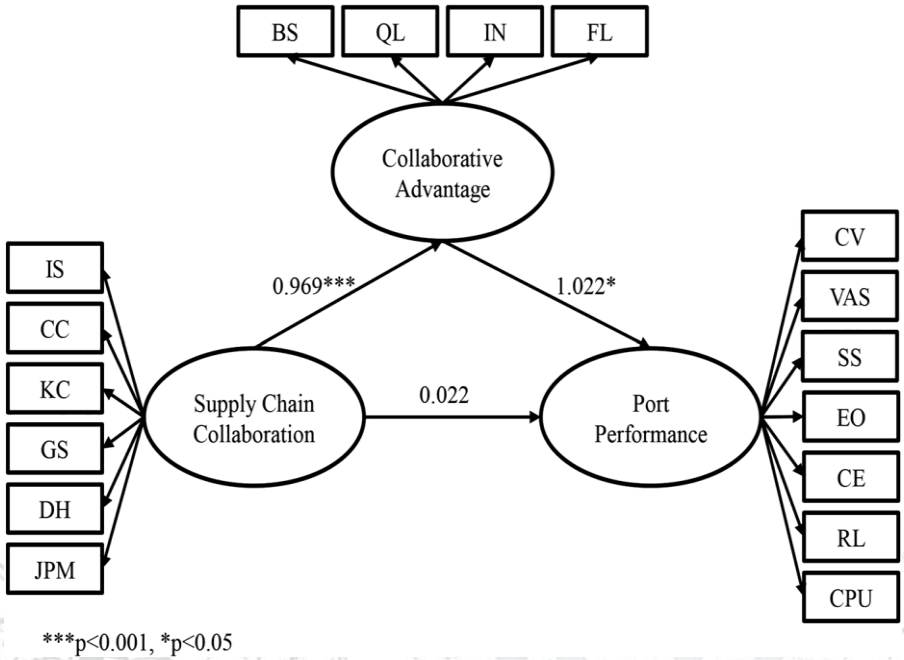

Figure No 1 : Model

Methodology

Measures

The Likert scale was used to measure disagreement and agreement on a five-point scale, where 1 was strongly disinclined and 5 was very enthusiastic agreement. The survey was conducted to collect the primary data from respondents to determine the impact of supply chain collaboration on port performance. The managers of the companies located in Gwardar port remain the unit of analysis and their responses have been collected. A total of 300 questionnaires have been distributed and a valid number of questionnaires 225, has been obtained which makes the response rate of 75%. All the measures of relevant constructs have been adopted from previous studies (Wu & Chiu, 2018; Yang, Lin, & Consumption, 2020; Yunus, 2018; Zhang & Cao, 2018).

Data Collection and Data Analysis Methods

The survey was conducted to collect the primary data from respondents to determine the impact of supply chain collaboration on port performance. The managers of the companies located in Gwardar port remain the unit of analysis and their responses have been collected. A total of 300 questionnaires have been distributed and a valid number of questionnaire 225 has been obtained which makes the response rate of 75%. Data properties and respondent characteristics have been outlines as under (Yang et al., 2020).

Table No 1: Respondent profile

Demographic characteristics Number	Number
Business type	
Terminal operator	48
Shipping line	50
Inland transport company	20
Freight forwarder	21
Ship management company	19
Third-party logistics provider	20
Position	
Assistant	17
Manager	26
Deputy general manager	31
Department manager	52
Managing director	38
CEO	14
Number of employees	
Below 100	40
101–200	48
201–300	41
Over 300	49

At the same time, several searches were initiated to accrue the ability to identify many different types of nautical terms.

Results

Measure Validation and Reliability

The study employed to illustrate the SCC concept for the best fit to be recorded to 2 versus [Goodness of fit index = 1.772, item common factor index (CFI) = 0.0.172, reduced fit index of problematic (TLI) = 0.274, SRMSEA = 0.05], meaning that all of the assessment's dimensions can be treated as theoretically based. The collective reliability (CR) and validity (Cranach's alpha) was greater than 0.7, so that the theory had passed the test (Um & Kim, 2019).

The R values were typically between 0.4 and 0.002 and almost all factor loadings were significant, and all variables loaded almost equally. Therefore, in addition to that, the standardized regression weights for each object were twice as high as their usual errors. An average variance extraction (AVE) was found for all the definitions, as evidenced by this. Convergent validity, in turn, means that the test does, therefore, mean that is used in the following statement is valid in predicting future behavior. Every linear pairwise-coupled relationship between variables outperformed AVEs in terms of root mean squared deviation the inter-correlation between definitions was low (estimated to be approximately 0.85) Discriminant validity can be proven pervious to the theorem itself.

A similar approach was taken, for the benefit of the whole organization. In order to quantify the level of cooperative gain, we used fifteen products, as well as several parameters. It met all quality index criteria including coefficient of function interpretation index (CFI) of fit (CFI: 0.859), restricted magnitude of

shared Error (TLI: 0.59), and Root Mean Squared Error of items (RMSEA: 0.15). The CR and deviation value are more than 0.5 of each other, thus being well regarded as reliable sources.

Table No 2: CFA result for SCC.

Construct	Standardized regression weight	t-value	R^2	CR	AVE
α					
IS1	0.904	-	0.820	0.987	0.817	0.953
IS2	0.886	19.360***	0.790		
IS3	0.862	17.106***	0.750		
IS4	0.929	20.918***	0.859		
IS5	0.896	21.343***	0.866		
KC1	0.923	20.003***	0.801	0.972	0.830	0.965
KC2	0.919	-	0.861		
KC3	0.923	21.457***	0.835		
KC4	0.908	21.900***	0.842		
KC5	0.892	20.600***	0.835		
CC1	0.917	20.720***	0.735	0.972	0.830	0.943
CC2	0.867	22.722***	0.845		
CC3	0.941	19.114***	0.763		
CC4	0.908	-	0.899		
CC5	0.872	22.071***	0.822		
GS1	0.867	-	0.764	0.968	0.799	0.946
GS2	0.887	15.924***	0.778		
GS3	0.855	16.760***	0.734		
GS4	0.919	15.381***	0.786		
GS5	0.930	21.522***	0.796	0.932	0.799	0.946
DH1	0.883	-	0.833		
DH2	0.888	19.113***	0.876		
DH4	0.877	19.533***	0.763		
DH5	0.905	18.754***	0.757	0.958	0.888	0.954
JPM1	0.909	17.674***	0.879		
JPM2	0.865	19.176***	0.767		
JPM3	0.897	19.654***	0.830		
JPM5	0.956	-			

Note: IS, information sharing; KC, knowledge creation; CC, collaborative communication; GS, goal similarity; DH, decision harmonization; JPM, joint supply chain performance measurement.
***p < 0.001.

Table No 3: Mean, standard deviation and correlation matrix for SCC.

	Mean	SD	SD	IS	KC	CC	KS	DH	JPM
IS	3.49	1.02	0.902***						
KC	3.79	1.06	0.6000***	0.916					
CC	3.48	0.99	0.7898***	0.197***	0.999				
GS	3.47	0.99	0.6578***	0.867***	0.800***	0.909			
DH	3.50	1.99	0.698***	0.786***	0.733***	0.801***	0.910		
JPM	3.28	0.00	0.768***	0.588***	0.757***	0.899***	0.596***	0.897	

Note: Square root of AVE is on the diagonal.
***p < 0.001.

The t-value for all the instruments was significant, all instrument correlation was positive, and all variables were supported by standardized approximations (stem) estimates of two standard errors of approximation.

In addition, there were AVEs [Above Avoids and Voids] above the value of 0.4 In order to further solidify convergent validity, this proves that an inter-relationship between concepts was less than 0.75 whereas latent associations were higher than possible between any set of latent variables. [The results] provide evidence that there is a significant level of discriminant validity to these findings (Table 5).

This study determined the efficiency of the Gwadar port by conducting an analysis on different objects and seven dimensions. The model's measurement was highly accurate: its measurement was better than usual. This coefficient expands to CFI = 2, with a degree of freedom of 2/df

A similar approach was taken, for the benefit of the whole organization. In order to quantify the level of cooperative gain, we used fifteen products, as well as several parameters. As it passed all indices of goodness of fit : The Fit indices were also acceptable: CFI = 0.34, TLI = 0.593, RMSEA = 0.160, and TLMR. Reliability is certified with a score of 1.0 or better, and value exceeds 0.5.

Hypotheses Tests

The structure-equation model was applied to investigate the impact of the increase in Gwadar SCC performance as well as the intermediary influence of Gwadar SCC on the correlation between Gwadar port and port performance. Because of the numerous complications with measurement, as well as the complexity and difficulty in defining the concept, the total score is used to reduce the overall complexity and difficulties of interpretation of the model. These tests began with a well-fitting index, 2/DL = 1.536, CI = 0.284, with supporting RMSEA = 0.275, and SRMR = 0.750, and expansion in mental rotation supported Figure 2 showed a significant overlap with H1 (overlapping) (support: 0.969, p = 7.143, significant) and no significant overlap (non-overlapping) between it and H3 (0.224, 0.651). We did a second mediation analysis to see if mediation hold rather than the other data.

Table No 4: CFA result for collaborative advantage.

construct	Standardized regression weight	t-value	R^2	Composite reliability	AVE	α
BS1	0.906	17.750***	0.811	0.944	0.788	0.922
BS2	0.897	16.659***	0.789			
BS3	0.865	-	0.756			
BS4	0.854	15.550***	0.723			
QL1	0.834	15.055***	0.754	0.934	0.743	0.945
QL2	0.824	-	0.745			
QL3	0.854	16.414***	0.789			
QL4	0.865	15.286***	0.745			
IN1	0.968	-	0.793	0.957	0.854	0.971
IN2	0.956	21.670***	0.864			
IN3	0.457	22.839***	0.809			
FL1	0.897	15.056***	0.766	0.966	0.738	0.945
FL2	0.789	-	0.711			
FL3	0.844	14.151***	0.761			
FL4	0.823	14.932***	0.764			

Goodness-of-fit indices: $\chi 2/df = 1.064$, CFI = 0.874, TLI = 0.883, RMSEA = 0.020, SRMR = 0.030

There are four conditions that need to be fulfilled for mediation to be effective: It must be determined that the independent variable is impacting a mediating factor. Also, the second requirement is that the independent variable influences the dependent variable. If compromise can be found, the effect of the independent variable on the dependent variable will be reduced or reduced to insignificance. This indicates that the first condition was met, as our findings showed that the supply chain operative gain relation was

significant at the 0.0027 level (which is between 70 and 90 decibels), thus, for each additional 0.002 change in the value of SCC, the effect on Gwadar port output is apparent in figure 1.

Table No 5: Mean, standard deviation and correlation matrix for collaborative advantage.

Z	Mean	SD	BS	QL	IN	KS
BS	3.39	0.02	0.882***			
QL	3.59	0.06	0.555***	0.816		
IN	3.38	1.99	0.635***	0.997***	0.841	
FL	3.67	0.99	0.490***	0.467***	0.783***	0.869

Note: Square root of AVE is on the diagonal.
***p < 0.001.

The second requirement also has been verified (expanded to two decimals) Then counting the decimal placeholder, it is discovered that there is only a minor advantage (2.022 –. or -2.022 in Figures 1 and 2), Thus, since they fully account for SCC's relationship to the Gwadar, cooperatively controlled gains are completely transmissible. By expanding upon the concept of cooperative gain in the Maritime industry, the ship port efficiency could be raised to the next level of innovation.

Further Structural Model Test

The second requirement also has been verified (expanded to two decimals) Then counting the decimal place holds, it is discovered that there is only a minor advantage (2.022 –. or -2.022 in Figures 1 and 2), Thus, since they fully account for SCC's relationship to the Gwadar, cooperatively controlled gains are completely transmissible. By expanding upon the concept of cooperative gain in the Maritime industry, the ship port efficiency could be raised to the next level of innovation.

Discussion

Theoretical Implications

The research on SCC's effect on trade has enhanced our understanding of how the port's effectiveness influences cooperative gains and losses. The main focus of the most recent research on the SCC has been on.

Table No 6: CFA result for port performance.

construct	Standardized regression weight	t-value	R^2	Composite reliability	AVE	α
CV1	0.896	-	0.611	0.876	0.988	0.922
CV2	0.797	28.659***	0.345			
VAS1	0.675	-	0.987	0.896	0.730	0.855
VAS2	0.564	26.550***	0.564			
VAS3	0.454	23.055***	0.643			
SS1	0.654	-	0.765	0.678	0.772	0.445
SS2	0.874	21.414***	0.987			
EO1	0.985	18.286***	0.765	0.978	0.786	0.335
EO2	0.898	14.967***	0.789			
EO3	0.786	-	0.864			
CE1	0.547	25.839***	0.987	0.967	0.678	0.998
CE2	0.657	-	0.678			
CE3	0.379	24.056***	0.643			
CE4	0.484	26.151***	0.567			

RL1	0.733	18.932***	0.765	0.897	0.997	0.958
RL2	0.867	-	0.456			
RL3	0.765	18.445***	0.567			
RL4	0.768	20.645***	0.786			
CPU1	0.865	19.956***	0.876	0.998	0.966	0.953
CPU2	0.958	-	0.765			
CPU3	0.345	19.654***	0.789			

Goodness-of-fit indices: $\chi 2/df = 1.174$, CFI = 0.992, TLI = 0.880, RMSEA = 0.033, SRMR = 0.024

The research on SCC's effect on trade has enhanced our understanding of how the port's effectiveness influences cooperative gains and losses. Recent research on the SCC has primarily concentrated on Table.

Table No 7: Mean, standard deviation and correlation matrix for SCC.

Mean	SD	CV	VAS	SS	EO	CE	RL	U
CV	3.69	1.02	0.902					
VAS	3.60	1.06	0.387***	0.816				
SS	3.38	1.06	0.998***	0.468***	0.397***			
EO	3.47	0.99	0.666***	0.667***	0.800***	0.999		
CE	3.60	1.99	0.514***	0.386***	0.733***	0.701***	0.897	
RL	3.48	0.00	0.697***	0.288***	0.654***	0.379***	0.667***	0.809
CPU	3.59	0.39	0.555***	0.768***	0.467***	0.763***	0.517***	0.739***

Note: Square root of AVE is on the diagonal.
***p < 0.001.
***P<0.001

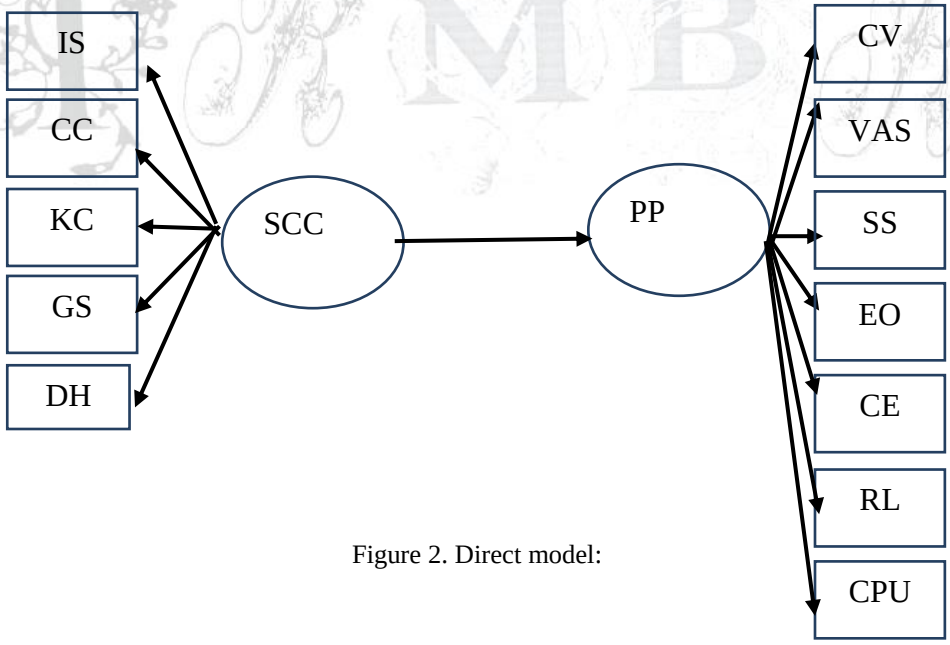

Figure 2. Direct model:

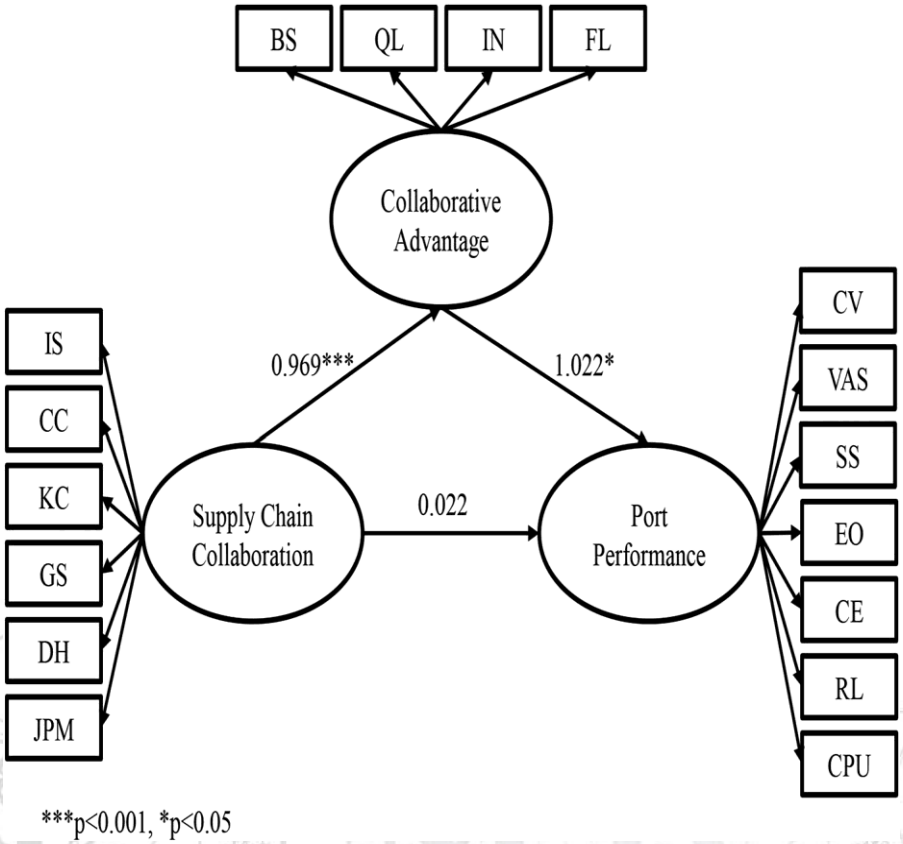

Figure 3. Direct model.

Manufacturers' perspectives and SCC's position in terms of organizational efficiency, operational performance, progress and long-term collaboration, and relationship satisfaction No. 8 table Result of model estimation.

Table No 8: Direct Model and Mediation

Model element	Direct Model	Mediation Model
Model fit		
χ2/df	1.414	1.375
CFI 0.891	0.930	
TLI	0.896	0.974
RMSEA	0.057	0.062
SRMR	0.056	0.060
Standardized regression weight		
SCC→port performance	1.032***	0.032
SCC→collaborative advantage	NE	0.969***
Collaborative advantage →port performance	NE	1.022*
Note:(NE, not estimated. ***p < 0.001.*p < 0.05.)		

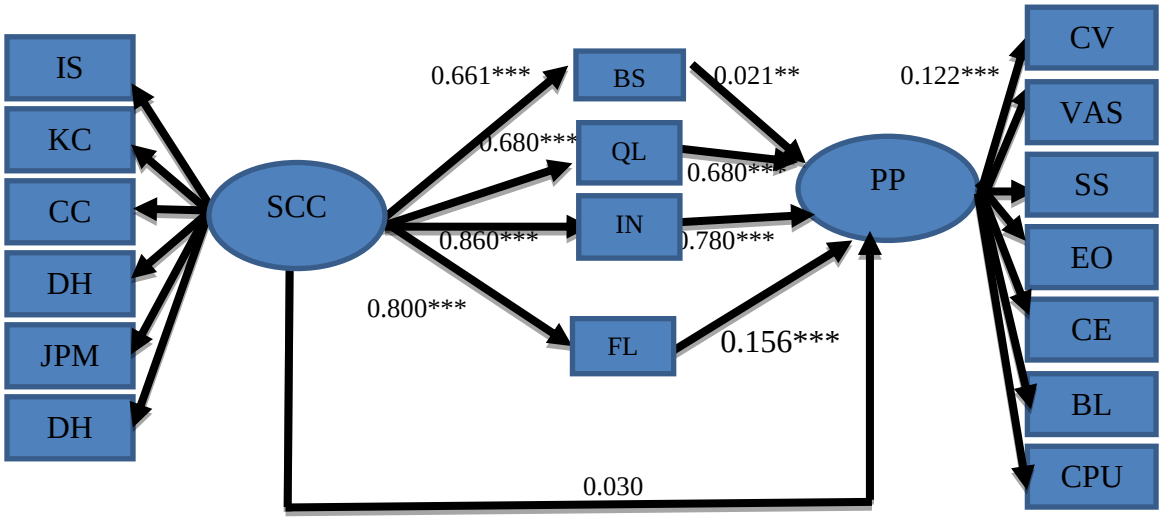

Figure 3. Model with sub-dimensions of collaborative advantage

It's the first attempt to comprehensively investigate the progress of SCC. While the SEZ will be dependent on the SCC's open, transparent, collaborative, and rational ideas, this depends on the success of the Gwadar industrial zone. The study's goal was to satisfy a call for nautical empirical research with empirical data collected in Pakistan. Agadir has shown beneficial roles in collective success, which contributes to overall effectiveness and efficiency of the port.

Our findings show that SCC is affected by cooperative benefit, empirically. Creative explanation: In accordance with prior research, which found that the value realized through supply chain partners is high. Since SCC is proportional to profit, increased seaport to SCC can lead to greater profits. The project team uncovered a strong possibility of collaboration among "shipping lines, terminal operators, and port benefit providers" in the planning stages. In this regard, our findings show that through SCC activities such as information sharing, knowledge creation, communication, harmonisation, target similarity, and cooperative performance, organisations can be more successful and fluid (Um & Kim, 2019).

These findings lend further support to the notion of a positive correlation between group achievement and cooperative gains. Overall, the benefit for all supply-chain partners was mutual. This investigation set out to discover the significance of cooperative benefits in the maritime field. Cooperation can yield more for the seaport and seaport users in terms of connectivity, productivity, operational effectiveness, service affordability, and environmental protection.

Managerial Implications

This research leads to the development of various perspectives for senior Maritime executives. It demonstrates the importance of inter-organizational and interdependence relationships in outperforming other seaport supply chains. Managers seeking good SCC-practices should remember that they are intentionally interconnected and must be able to allow their priorities, goals, and decisions to collide, exchange useful information, and raise awareness, resulting in the endorsement of combined supply-chain performance measures. By reviewing the large amount of money and time spent with efforts, seaports are looking for innovative solutions or redevelopment of existing facilities to improve the Gwadar port's efficiency and customer satisfaction. Seaports have significant sunk costs because it is difficult and expensive to dispose of the final or finished building.

SCC-practices, which the seaports have adopted, may be a less expensive and time-consuming solution than redeveloping the entire seaport system. As a result of a small-scale operational collaboration with other seaport users, it could be launched soon. As a result, the SCC steps outlined in this study would assist policymakers in determining the SCC's current status in Maritime logistics and assisting in the Maritime logistics center's state planning.

SCC-practices among seaports and seaport users, according to the findings, have a positive impact on cooperative advantage. To sustain and create a high level of cooperative value for their seaport-supply chain, terminal operators and seaport users should work to improve or promote information exchange, knowledge creation, cooperative communication, target resemblance, decision cooperation, and combined supply-chain output evaluation. Managers must reduce inefficient activities by exchanging information and creating awareness that can be implemented in their practices. As a result, improved, highly sensitive, and entirely flexible seaport services are possible. Furthermore, because the ICT sector and the Maritime industry have stronger links, managers must be encouraged to use ICT (information and communication technology) to promote information exchange and knowledge creation.

Improving the seaport supply chain is not an easy task because each participant seeks to improve their own operations at the expense of the whole. As a result, their goals are gradually shifting toward the SCM philosophy, which encourages seaports and seaport users to prioritize psychological cooperation over organizational and strategic cooperation because it is critical for cooperative gain.

Limitations and Future Research

Despite its numerous conclusions, this study contains a number of shortcomings. To begin, this study examines only the relationships between seaport (terminal operator) and particular seaport users; it makes no attempt to examine the relationships between auxiliary seaport users (for example, “shipping lines-inland transportation companies” or “shipping lines-freight forwarders”). As a result, it would be advantageous if future studies considered the various complexities associated with port user relationships. Second, determining the SCC's essence and its impact on cooperative gain and port efficiency in Gwadar may take considerable time. Cooperation facilitates even more cooperation over time. As a result, prospective research should incorporate longitudinal studies, which yield more precise results.

Third, due to power imbalances, collaboration occurs against the firms' will on a periodic basis. Almost certainly, any business will be involved. It would be fascinating if future research could investigate this power imbalance qualitatively and quantitatively in order to ascertain how seaports or seaport users initiate and cultivate cooperation in the face of unequal power. In the future, the partnership may be investigated by classifying seaports and seaport users into cooperation leaders, managers, and other cooperation associates. Although this study focused exclusively on the container industry, it may be beneficial to examine SCCs in other industries such as liquid and dry goods. Finally, because future-work takes vertical and horizontal collaboration into account will add synergy and remain vital for all stakeholders.

References

Brun, A., Karaosman, H., & Barresi, T. J. S. (2020). Supply chain collaboration for transparency. *12*(11), 4429.

Duong, L. N. K., & Chong, J. J. I. J. o. P. R. (2020). Supply chain collaboration in the presence of disruptions: a literature review. *58*(11), 3488-3507.

Florescu, M. S., Ceptureanu, E. G., Cruceru, A. F., & Ceptureanu, S. I. J. E. (2019). Sustainable supply chain management strategy influence on supply chain management functions in the oil and gas distribution industry. *12*(9), 1632.

Hofman, P. S., Blome, C., Schleper, M. C., Subramanian, N. J. B. S., & Environment, t. (2020). Supply chain collaboration and eco-innovations: An institutional perspective from China. *29*(6), 2734-2754.

Larcombe, W., Baik, C., Finch, S. J. H. E. R., & Development. (2021). Exploring course experiences that predict psychological distress and mental wellbeing in Australian undergraduate and graduate coursework students. 1-16.

Ma, K., Pal, R., & Gustafsson, E. J. I. J. o. P. R. (2019). What modelling research on supply chain collaboration informs us? Identifying key themes and future directions through a literature review. *57*(7), 2203-2225.

Mofokeng, T. M., & Chinomona, R. J. S. A. J. o. B. M. (2019). Supply chain partnership, supply chain collaboration and supply chain integration as the antecedents of supply chain performance. *50*(1), 1-10.

Singh, H., Garg, R., & Sachdeva, A. J. U. S. C. M. (2018). Supply chain collaboration: A state-of-the-art literature review. *6*(2), 149-180.

Um, K.-H., & Kim, S.-M. J. I. J. o. P. E. (2019). The effects of supply chain collaboration on performance and transaction cost advantage: The moderation and nonlinear effects of governance mechanisms. *217*, 97-111.

Wu, L., & Chiu, M.-L. J. I. J. o. I. M. (2018). Examining supply chain collaboration with determinants and performance impact: Social capital, justice, and technology use perspectives. *39*, 5-19.

Yang, Z., Lin, Y. J. S. P., & Consumption. (2020). The effects of supply chain collaboration on green innovation performance: An interpretive structural modeling analysis. *23*, 1-10.

Yunus, E. N. J. I. J. o. I. S. (2018). Leveraging supply chain collaboration in pursuing radical innovation.

Zhang, Q., & Cao, M. J. I. j. o. P. e. (2018). Exploring antecedents of supply chain collaboration: Effects of culture and interorganizational system appropriation. *195*, 146-157.