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ORIGINAL PAPER

DELVING INTO THE NEXUS OF COLLABORATION AND SUPPLY CHAIN PERFORMANCE. EMPIRICAL EVIDENCE FROM AUTOMOTIVE INDUSTRY.

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ABSTRACT. Background: Supply chain management (SCM) practices play a significant role in modern business success through coordinating the continuous flow of goods, services and information within complex networks. At this level, the collaboration between supply chain (SC) members constitutes an important determinant of supply chain performance. Therefore, this study aims to explore the effect of supply chain collaboration dimensions, i.e., such as decision synchronization, collaborative communication, incentive alignment, goal congruence, information sharing joint knowledge creation, and resource sharing, on the level of supply chain performance.
Methods: The dataset was gathered using a convenience sampling procedure from middle and senior automotive SC executives. Partial least squares structural equation modeling (PLS-SEM) using SmartPLS software was carried out in order to analyze the data.
Results: The results show that collaborative communication, information sharing, incentive alignment, joint knowledge creation, and goal congruence contribute considerably to enhancing the automotive SC performance.
Conclusions: These findings have valuable implications for practitioners in order to adopt the appropriate practices to improve automotive SC performance. These insights can help to guide practitioners in implementing the appropriate collaborative practices to meet the specific challenges of the automotive supply chain. By considering these guidelines, practitioners will be able to streamline processes, optimize resource allocation and ultimately deliver more efficient outcomes, leading to improved overall automotive supply chain performance.

Keywords: Automotive industry, supply chain, collaboration, performance, structural equation modeling

INTRODUCTION

The Kingdom of Morocco has consolidated itself as the first automotive exporter on the African continent. The automotive industry is considered the largest exporting sector in Morocco. From 2014 to 2019, the industry generated over 147 000 direct jobs. This sector has recorded significant progress during the last decade. Today, the Kingdom of Morocco counts four main manufacturing hubs in Tangier, Kenitra, Rabat, and Casablanca, and numerous specialized automotive training centers, which offer significant business opportunities for multinational companies. Therefore, the kingdom expects to rank among the world's leading automobile manufacturers and to remain a competitive hub at the gateway to Europe.

Nowadays, worldwide competitiveness does not occur through individual enterprises but instead through supply chains [Farahani, et al. 2014]. Numerous players are involved in the automotive supply chain, which includes OEM automotive components, first-tier suppliers, 2nd-tier suppliers for component suppliers, and 3rd-tier suppliers for initial raw material suppliers, carriers, and distributors [Reddy et al. 2021].

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Supply chain collaboration has been a focus for researchers and practitioners considering the role of collaborative practices in the automotive supply chain. In this regard, collaborative approaches between the members of the supply chain have become a necessary condition for improving the performance level of the automotive supply chain. Hence, the purpose of this research is to investigate the role of collaborative practices between supply chain members in enhancing supply chain performance in the Moroccan automotive industry. More specifically, the goal of this study is to examine how various dimensions of SC collaboration, such as decision synchronization, collaborative communication, incentive alignment, goal congruence, information sharing joint knowledge creation, and resource sharing may influence SC performance.

As far as we know, this is the first empirical investigation of this topic in the Moroccan automotive industry. Hence, the research questions can be formulated as follows.

- How do collaborative practices in the automotive industry affect SC performance?
- Does sharing information and resource influence SC performance?
- Does goal congruence and decision synchronization promote the level of SC performance?
- Does collaborative communication, joint knowledge creation, and incentive alignment affect the automotive SC performance?

In order to answer these research questions, the current article is designed in the following order. Section 1 presents a review of the literature related to the relationship between collaborative practices between SC members and SC performance. The second section outlines the study methods. The presentation and the discussion of the results are outlined in the third section. Lastly, section 4 highlights the conclusions and suggests both theoretical and managerial implications.

THEORETICAL BACKGROUND

Supply chain collaboration is a major focus of management research [Al-Doori 2019; Cao Vonderembse, Zhang & Ragu-Nathan 2010; Ibn El Farouk, Moufad, Frichi, Arif & Jawab 2020; Ma, Wang & Chan 2020]. This concept reflects a "long-term partnership process where supply chain partners with common goals work closely together to achieve mutual advantages that are greater than the firms would achieve individually" [Cao et al., 2010].

It is recognized that supply chain collaboration positively and directly influences supply chain performance [Mofokeng & Chinomona 2019], which represents an essential condition for creating added value. The concept of supply chain performance is defined as "the ability of a supply chain to cost-effectively carry out its activities while minimizing costs, for the main purpose of meeting the ultimate customer's needs" [Mofokeng & Chinomona 2019].

Identifying key drivers of supply chain performance provides a basis for a successful supply chain [Boubker 2022; Chandak, Chandak & Dalpati 2021; Naoui, Boubker & Abdellaoui 2023]. Previous literature supports the essential contribution made by SC collaboration dimensions in enhancing the level of supply chain performance [García-Alcaraz et al. 2021]. According to Wiengarten et al. [2013], buyer-supplier collaboration is identified as a determinant of operational performance, more specifically, information sharing, incentive alignment, and joint knowledge creation are associated with improved performance under cost, quality, flexibility and innovativeness.

Several measurement scales have been adopted for operationalizing this multidimensional concept [Cao et al. 2010]. Researchers identify the following seven sub-components of supply chain collaboration, namely, goal congruence, information sharing, collaborative communication, joint knowledge creation, decision synchronization, incentive alignment, and resource sharing.

Information sharing (IS) reflects the degree to which a company exchanges a wide variety of pertinent, accurate, and timely information, plans, and procedures with its partners (Cao et al. 2010). Several empirical studies confirmed the significant influence of information sharing on SC performance [Adnani et al. 2023; Baah et al. 2021; Kankam et al. 2023; Whipple & Russell 2007]. For instance, the empirical study conducted by Al-Doori [2019] among SC members supports the direct and significant influence of information sharing and joint decision-making on operational performance. Furthermore, sharing information among partners in the supply chain can foster enhanced collaboration within the supply chain, leading to better operational performance [Fawcett, Wallin, Allred, Fawcett & Magnan 2011]. Tang et al. [2023] confirmed that sharing information and integrating customers significantly impacts on SC performance. In addition, García-Alcaraz et al. [2021] observed that the lack of sharing information between supply chain members is never translated into high SC performance. Hence, we suppose that:

Hypothesis 1. There is a significant impact of information sharing on SCP.

According to Zhang and Cao [2018], goal congruence (GC) represents "The process by which a firm perceives its own objectives are fulfilled by achieving the supply chain objectives." (p. 152). By investigating the influence of goal congruence, information sharing, and decision synchronization on SC performance among a population of 143 managers in different industrial sectors, García-Alcaraz et al. [2021] confirmed that the level of joint participation by SC members in conducting joint activities within a collaborative spirit helps to enhance SC performance. Hence, we suppose that:

Hypothesis 2. There is a significant impact of goal congruence on SCP.

Decision synchronization (DS) refers to the process of coordinating SC planning and operations decisions (i.e., strategy planning, production planning, order delivery, demand, and distribution management) that achieve optimal SC benefits [Simatupang & Sridharan, 2005]. Previous empirical investigations have shown a significant, direct and positive relationship between decision synchronization and SC performance [García-Alcaraz et al. 2021]. Hence, we suppose that:

Hypothesis 3. There is a significant impact of decision synchronization on SCP.

The incentive alignment (IA) represents the process for sharing risks, costs and benefits among SC partners [Cao et al. 2010]. A considerable body of literature has demonstrated the positive impact of incentive alignment on SC performance [Eriksson & Pesämaa 2007; Simatupang & Sridharan 2004]. By exploring the link between collaboration and supply chain performance of SMEs in Uganda, Eyaa et al. [2010] showed that incentive alignment as well as information sharing were key drivers of supply chain performance. Hence, we suppose that:

Hypothesis 4. There is a significant impact of incentive alignment on SCP.

The resource sharing (RS) refers to co-development of tools to assess performance of all SC members, as well as to share costs and risks that may occur in the supply chain [Paulraj, Lado & Chen 2008]. As a dimension of collaboration, resource sharing has been identified as a factor that favors collaborative advantage, in terms of process efficiency, flexibility, business synergy and quality innovation [Cao & Zhang 2011]. Hence, we suppose that:

Hypothesis 5. There is a significant impact of resource sharing on SCP.

The collaborative communication (CC) represents mechanisms for messaging between SC members regarding its frequency, direction, mode and strategy of influence [Paulraj et al. 2008]. Prior studies have shown that collaborative communication constitutes a relevant determinant of relational performance metrics [Chen et al. 2013]. As such, communicating efficiently between SC members leads to lower error associated with both product and performance, feeding into higher quality,

better lead times and greater customer responsiveness [Chen et al. 2004]. Hence, we suppose that:

Hypothesis 6. There is a significant impact of collaborative communication on SCP.

Joint knowledge creation (JKC) relates to the process of jointly seeking and acquiring new and relevant knowledge, as well as assimilating and applying this knowledge. It also reflects efforts made by SC members to recognize clients' needs, discover emerging markets, and recognize competitors' capabilities [Jimenez-Jimenez, Martínez-Costa & Sanchez Rodriguez 2018]. The existing literature pointed out that joint knowledge creation significantly influences collaborative advantage by enhancing innovation, quality and efficiency [Uca et al. 2018]. Hence, we suppose that:

Hypothesis 7. There is a significant impact of joint knowledge creation on SCP.

Our proposed research model includes seven independent variables that served to measure supply chain collaboration, namely information sharing, decision synchronization, goal congruence, incentive alignment, resource sharing, collaborative communication, and knowledge creation (Fig. 1).

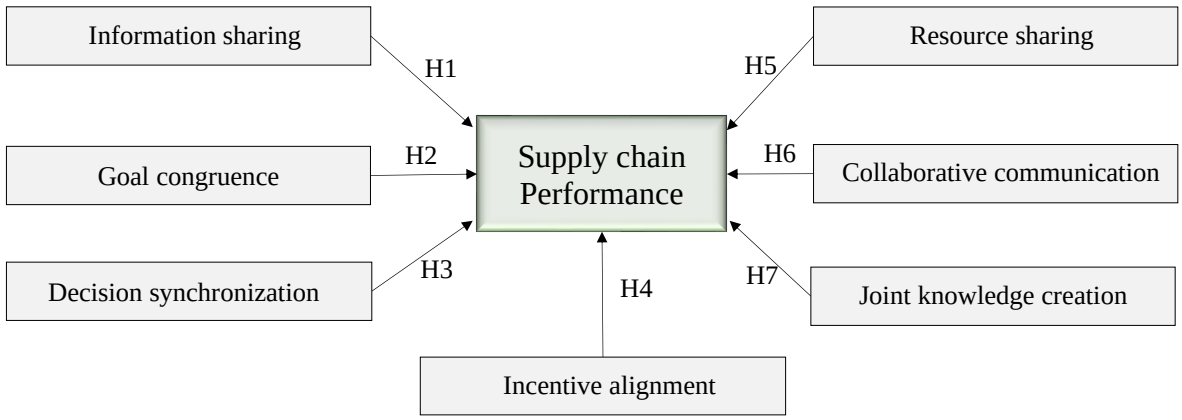

Fig. 1. Conceptual model.

MATERIALS AND METHODS

To generate items for measuring latent variables of the proposed model, we referred to earlier supply chain management studies. At this level, the supply chain collaboration was measured using seven sub-components, namely information sharing (IS - four items), goal congruence (GC: four items), decision synchronization (DS: four items), incentive alignment (IA: four items), resource sharing (RS: four items), collaborative communication (CC: four items), and joint knowledge creation (JKC: five items). All these measures were selected from the study by Cao and Zhang [2011].

The SC performance was assessed by four items selected from Qrunfleh and Tarafdar [2014]. This measurement scale includes the supply chain's ability to meet special customer specification requirements, the ability to adjust rapidly capacity to meet changes in customer demand, customer response time, short order-to-delivery cycle time. A five-point Likert-type scale was used for questions associated with each latent variable.

Since we have no database on all the automotive supply chain members in Morocco, a convenience sampling procedure was followed to gather data through a web-based questionnaire, by using a survey link to the target population via the LinkedIn platform. Convenience sampling was chosen due to practical considerations and limited resources [Sarstedt et al. 2018]. This method allowed for easy access to potential participants, as they were readily available and willing to participate in the study. However, it is important to acknowledge that the findings may not be representative of all supply chain members due to the non-random

selection process. Data were gathered over a three-month period from February 2 to May 7, 2021.

As indicated in Fig. 2, the dataset was compiled from 95 middle and senior automotive supply chain executives, including more males (87.37%) than females (12.63%). Over half of those interviewed were aged between 26 and 36 years old (56.84%), with a large percentage holding a BAC+5 diploma (69.47%).

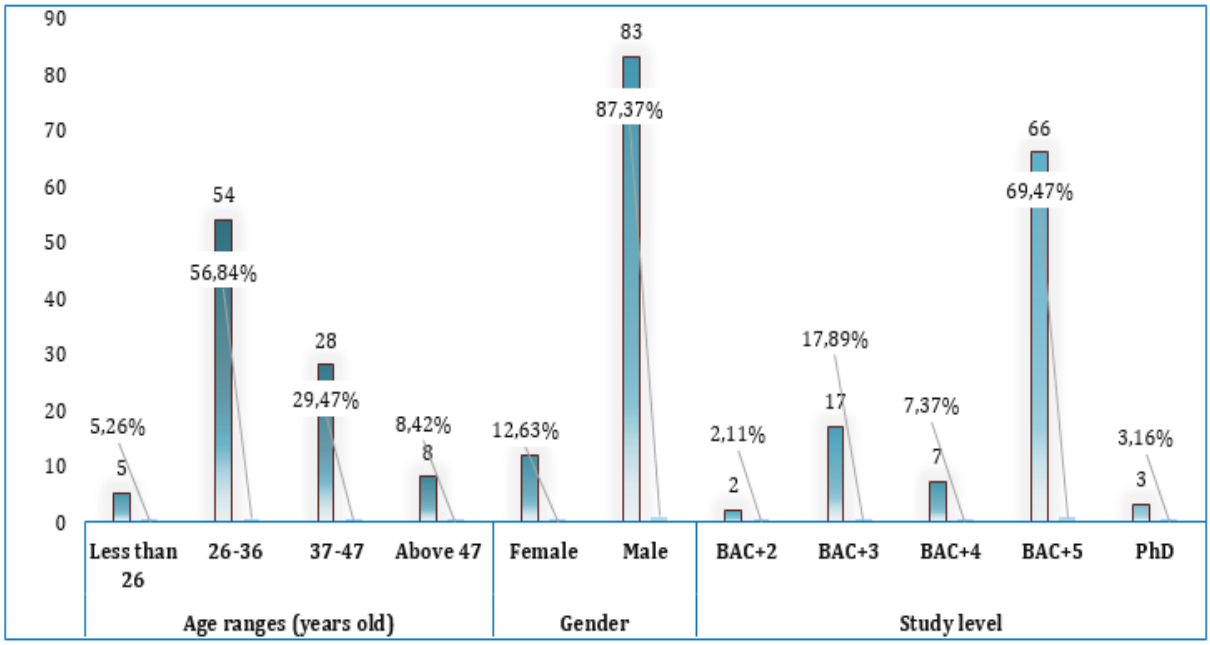

Fig. 2. Age, gender, and participants' study levels.

The data come from the SC manager (3.16%) logistics manager (24.21%), logistics coordinator (22.11%), logistics supervisor (17.89%), production planner (15.79%), procurement manager (8.42%), store manager (4.21%), and supply planner (4.21%). The majority of these participants in the survey have experience ranging from three to seven years (66.32%), more precisely 24.21 percent of them have experience ranging from three to five years and 42.11% of them have experienced five to seven years (Fig. 3). A large proportion of the survey participants are employees of automotive companies based in Tangier city (85.26%).

Regarding the data analysis methodology, we adopted a PLS-SEM procedure [Hair, Risher, Sarstedt & Ringle 2019]. As is the case in our study, the PLS-SEM is well suited to smaller sample sizes.

RESULTS

Measurement model validity

According to the data analysis performed using SmartPLS software, the items presenting a loading value lower than 0.7 were excluded from the model, these items are Res-Shar1, Dec-Syn3, and Go-Cong4, which have factorial contribution values of 0.47, 0.67, and 0.68, respectively (Fig. 4).

After removing items with a poor loading value, the results of the external model evaluation can be found in Table 1. The average variance extracted (AVE), Cronbach's alpha (α), and composite reliability (ρc) values are all above 0.5, 0.7, and 0.7, respectively, which ensures a good level of outer models' convergent validity.

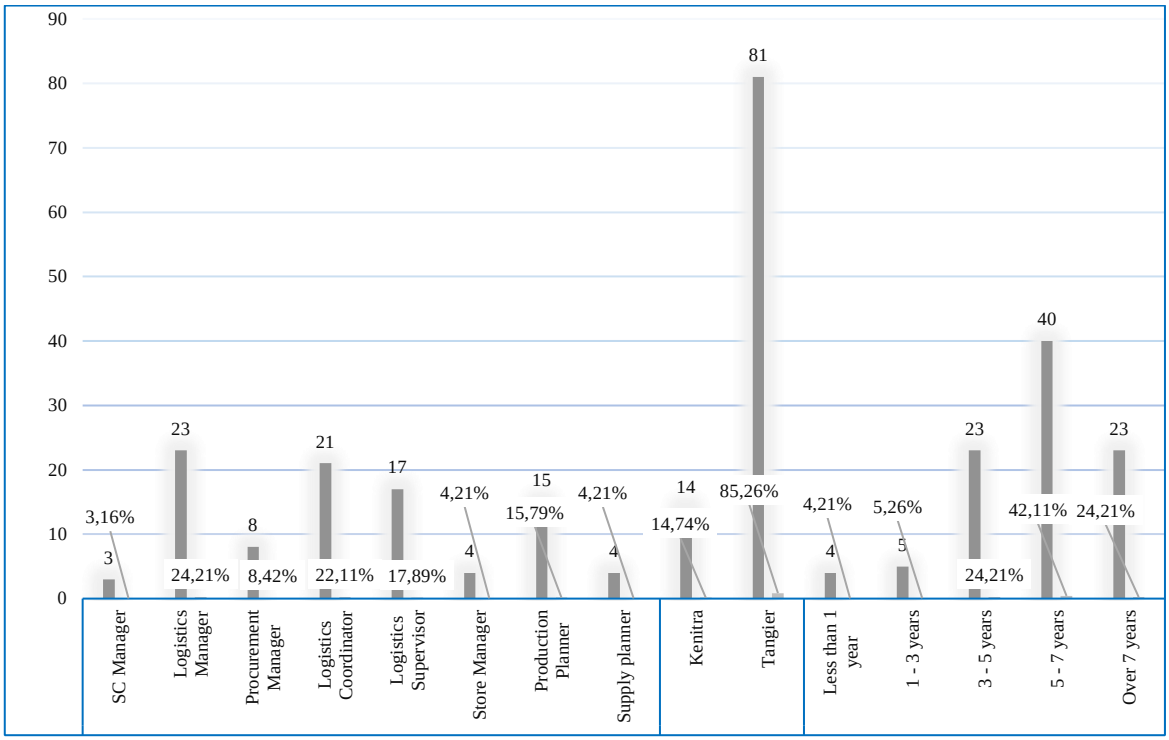

Fig. 3. Job title, city, and experience of study participants'.

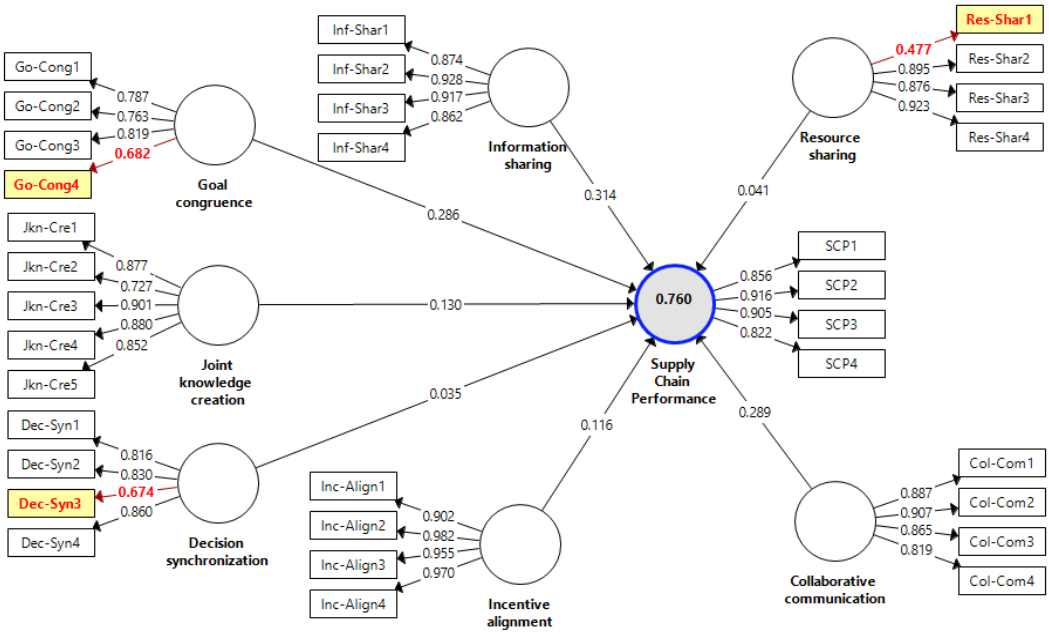

Fig. 4. Factor loadings results.

Table 1. Convergent validity results.

Convergent validity	**CC**	**DS**	**GC**	**IA**	**IS**	**JKC**	**RS**	**SCP**
Cronbach's alpha (α)	0.892	0.822	0.765	0.967	0.918	0.902	0.892	0.898
Composite Reliability (ρc)	0.926	0.893	0.862	0.975	0.942	0.928	0.928	0.929
Average variance extracted (AVE)	0.757	0.736	0.676	0.908	0.802	0.722	0.811	0.767

Furthermore, the discriminant validity is checked using the Fornell and Larcker criterion, and the Heterotrait-monotrait (HTMT) ratio, indicating that the greatest value of HTMT ratio is 0.895, which meets the specialists' recommendations [Henseler, Ringle & Sarstedt 2015]. Additionally, the discriminant validity of the outer model is assessed using cross-loading criterion, indicating that loadings of the indicators are greater than all its cross-loadings (Table 2).

Table 2. Discriminant validity results.

			CC	DS	GC	IA	IS	JKC	RS	SCP
Fornell-Larcker	Collaborative communication (CC)		0.870							
	Decision synchronization (DS)		0.597	0.858						
	Goal congruence (GC)		0.652	0.415	0.822					
	Incentive alignment (IA)		-0.307	-0.114	-0.268	0.953				
	Information sharing (IS)		0.808	0.561	0.522	-0.279	0.896			
	Joint knowledge creation (JKC)		0.582	0.488	0.413	-0.195	0.537	0.850		
	Resource sharing (RS)		0.238	0.120	0.108	-0.088	0.076	0.220	0.901	
	Supply chain performance (SCP)		0.802	0.603	0.667	-0.157	0.757	0.611	0.185	0.876
HTMT Criterion	Collaborative communication (CC)									
	Decision synchronization (DS)		0.699							
	Goal congruence (GC)		0.765	0.482						
	Incentive alignment (IA)		0.328	0.125	0.300					
	Information sharing (IS)		0.895	0.642	0.606	0.295				
	Joint knowledge creation (JKC)		0.647	0.567	0.489	0.202	0.593			
	Resource sharing (RS)		0.256	0.136	0.128	0.110	0.096	0.234		
	Supply chain performance (SCP)		0.888	0.694	0.789	0.160	0.827	0.681	0.185	
Cross-loadings	Collaborative communication (CC)	Col-Com1	0.89	0.43	0.59	-0.31	0.75	0.52	0.19	0.67
		Col-Com2	0.91	0.46	0.61	-0.35	0.76	0.58	0.24	0.72
		Col-Com3	0.86	0.58	0.59	-0.16	0.64	0.50	0.20	0.74
		Col-Com4	0.82	0.61	0.48	-0.25	0.65	0.42	0.19	0.65
	Decision synchronization (DS)	Dec-Syn1	0.45	0.84	0.42	-0.06	0.50	0.41	0.04	0.55
		Dec-Syn2	0.53	0.86	0.27	-0.16	0.40	0.45	0.14	0.46
		Dec-Syn4	0.56	0.88	0.36	-0.08	0.53	0.40	0.13	0.53
	Goal congruence (GC)	Go-Cong1	0.46	0.23	0.80	-0.17	0.38	0.36	0.10	0.47
		Go-Cong2	0.45	0.20	0.83	-0.24	0.31	0.25	0.01	0.49
		Go-Cong3	0.66	0.53	0.84	-0.24	0.56	0.39	0.14	0.65
	Incentive alignment (IA)	Inc-Align1	-0.27	-0.06	-0.21	0.90	-0.22	-0.11	-0.15	-0.09
		Inc-Align2	-0.28	-0.12	-0.26	0.98	-0.27	-0.20	-0.06	-0.16
		Inc-Align3	-0.34	-0.13	-0.29	0.96	-0.29	-0.21	-0.07	-0.18
		Inc-Align4	-0.26	-0.10	-0.24	0.97	-0.26	-0.20	-0.08	-0.13
	Information sharing (IS)	Inf-Shar1	0.74	0.51	0.52	-0.32	0.87	0.52	-0.02	0.59
		Inf-Shar2	0.73	0.45	0.47	-0.26	0.93	0.50	0.07	0.72
		Inf-Shar3	0.74	0.51	0.41	-0.20	0.92	0.46	0.13	0.70
		Inf-Shar4	0.68	0.55	0.47	-0.23	0.86	0.45	0.08	0.69
	Joint knowledge creation (JKC)	Jkn-Cre1	0.50	0.54	0.36	-0.14	0.46	0.88	0.20	0.53
		Jkn-Cre2	0.41	0.41	0.35	-0.07	0.38	0.73	0.17	0.52
		Jkn-Cre3	0.51	0.35	0.33	-0.25	0.46	0.90	0.19	0.51
		Jkn-Cre4	0.50	0.39	0.36	-0.20	0.46	0.88	0.19	0.51
		Jkn-Cre5	0.55	0.37	0.34	-0.16	0.52	0.85	0.19	0.52
	Resource sharing (RS)	Res-Shar2	0.20	0.08	0.12	-0.09	0.05	0.19	0.90	0.12
		Res-Shar3	0.18	0.00	0.09	-0.11	0.00	0.15	0.88	0.12
		Res-Shar4	0.24	0.18	0.09	-0.06	0.12	0.23	0.92	0.22
	Supply chain performance (SCP)	SCP1	0.75	0.62	0.58	-0.09	0.68	0.48	0.24	0.86
		SCP2	0.75	0.51	0.62	-0.20	0.67	0.54	0.20	0.92
		SCP3	0.75	0.54	0.55	-0.13	0.72	0.59	0.12	0.91
		SCP4	0.54	0.43	0.58	-0.12	0.57	0.54	0.07	0.82

Structural model assessment

Testing the inner model includes verifying multiple criteria, such as the coefficient of determination (R^2), the predictive relevance (Q^2), the effect size (f^2), and the goodness-of-fit. The study findings indicate that an R^2 value of SC performance is 0.757, indicating an appropriate degree of determination of this dependent variable (Fig. 5).

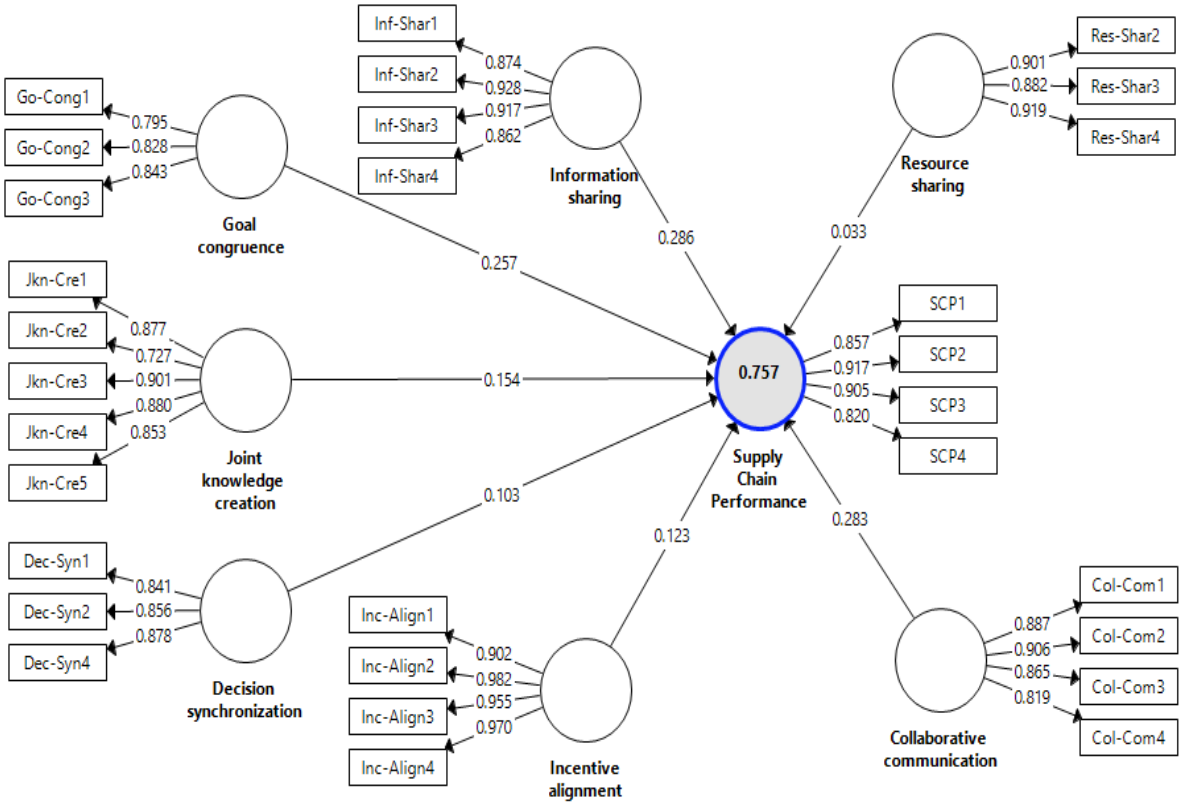

Fig. 5. Coefficient of determination of the Supply Chain performance.

As shown in Table 3, the Q^2 value for supply chain performance is greater than 0.39, which is 0.561, providing proof of the model's predictive relevance [Hair, Howard & Nitzl 2020]. Lastly, the GoF value is 0.76465, reflecting a large goodness-of-fit [Henseler, Ringle & Sinkovics 2009].

Table 3. Predictive relevance

Latent variable	SSO	SSE	Q^2 (=1-SSE/SSO)
Collaborative communication	380.000	380.000	
Decision synchronization	285.000	285.000	
Goal congruence	285.000	285.000	
Incentive alignment	380.000	380.000	
Information sharing	380.000	380.000	
Joint knowledge creation	475.000	475.000	
Resource sharing	285.000	285.000	
Supply chain performance	380.000	166.965	0.561

The results of hypotheses testing using SmartPLS reveal that under SC collaboration dimensions, information sharing (H1. β = 0.286, t = 2.582; p = 0.010), goal congruence (H2. β = 0.257, t = 3.638; p = 0.000), incentive alignment (H4. β = 0.123, t = 2.004; p = 0.046), collaborative communication (H6. β= 0.283, t = 2.551; p = 0.011), and joint knowledge creation (H7. β= 0.154, t = 2.463; p = 0.014) were found to have a positive influence on SC performance (Table 4).

Table 4. Results of hypothesis tests.

Hypothesis				β-value	Sample Mean	Standard Deviation	T-value	P-value	Effect size	Decision
H1.	IS	→	SCP	0.286	0.279	0.111	2.582	0.010**	0.106	Supported
H2.	GC	→	SCP	0.257	0.258	0.071	3.638	0.000***	0.153	Supported
H3.	DS	→	SCP	0.103	0.104	0.077	1.332	0.184NS	0.026	Not supported
H4.	IA	→	SCP	0.123	0.111	0.062	2.004	0.046*	0.055	Supported
H5.	RS	→	SCP	0.033	0.040	0.061	0.537	0.591NS	0.004	Not supported
H6.	CC	→	SCP	0.283	0.275	0.111	2.551	0.011*	0.076	Supported
H7.	JKC	→	SCP	0.154	0.162	0.063	2.463	0.014*	0.060	Supported

*** p < 0.001; **p < 0.01; *p < 0.05. GoF = 0.764648857
Predictive relevance: Q^2 SCP = 0.561

The influence of decision synchronization (β= 0.103, t = 1.332; p = 0.184), and resource sharing (β= 0.033, t = 0.537; p = 0.591) on supply chain performance was found not significant, thereby H3 and H5 are not supported (Fig. 6).

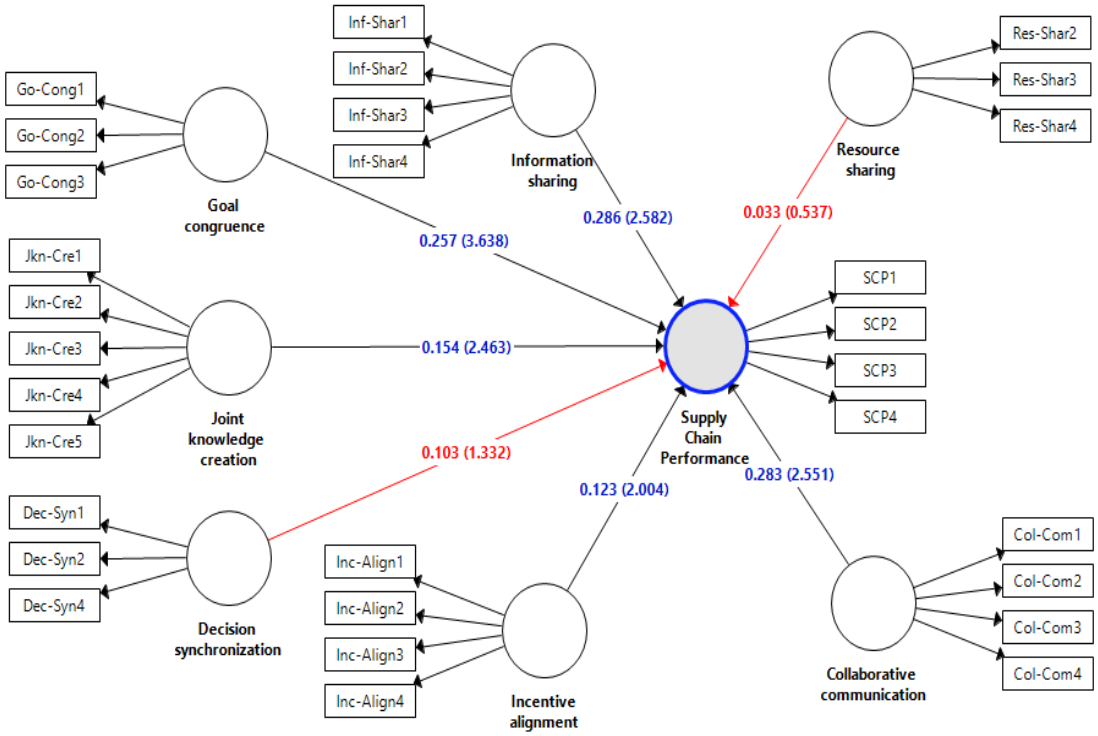

Fig. 6. Results of model testing.

DISCUSSIONS

The focus of this empirical investigation was to explore how collaborative practices between SC members affect automotive SC performance. More precisely, this study focuses on testing the impact of different dimensions of collaboration, including information sharing, goal congruence, incentive alignment, decision synchronization, collaborative communication, joint knowledge creation, and resource sharing on the level of SC performance. Hence, this study intended to bridge a knowledge gap in the SCM literature concerning the association between collaboration and performance.

The findings showed a positive and significant influence of information sharing on SC performance. In other words, when automotive SC members incorporate information sharing as part of their collaborative practices by exchanging timely, accurate, complete, and confidential information, they will help to enhance their supply chain's performance. These results are in line with earlier empirical studies in the area of SCM, which suggest that information sharing plays a significant part in enhancing competitive gains and SC performance [Adnani et al. 2023; Baah et al. 2021; Kankam et al. 2023; Whipple & Russell 2007]. García-Alcaraz et al. [2021] demonstrated empirically that a lack of information sharing is never linked to high performance across the supply chain. Likewise, Tang et al. [2023] proved empirically that sharing information and integrating customers represent significant determinants of SC performance.

Furthermore, the study outcomes confirmed the significant influences of goal congruence on SC performance. Stated differently, when supply chain members align their objectives and recognize the importance of collaboration throughout the supply chain, this will lead to improved supply chain performance. A number of earlier studies confirmed that increased levels of joint participation by supply chain members in conducting joint activities within a collaborative spirit helps to achieve higher levels of supply chain performance [García-Alcaraz et al. 2021].

Consistent with previous empirical studies [Eriksson & Pesämaa 2007; Eyaa et al. 2010; Simatupang & Sridharan 2004], a positive and significant association was found between incentive alignment and SC performance. These results imply that enhancing performance requires that SC members perform incentive alignment practices through collaborative creation of mechanisms for mutual performance assessment and promotion, expense allocation and joint management of potential SC risks.

The study results confirmed the positive influence of collaborative communication on SC performance. To put it another way, improved SC performance relies on implementing collaborative communication between SC members through maintaining regular and frequent interactions, promoting informal communication, as well as employing a wide range of communication channels. These findings are consistent with past studies showing that collaborative communication constitutes a relevant determinant of relational performance metrics [Chen et al. 2013].

Moreover, the findings showed that joint knowledge creation has a significant impact upon supply chain performance. To be precise, joint knowledge creation among supply chain members refers to the shared exploration and acquisition of new and relevant knowledge, its integration and implementation, shared recognition of customer needs, the discovery of emerging markets, and the understanding of competitors' intentions and capabilities. This result is congruent with previous studies outlining that joint knowledge creation significantly influences collaborative advantage through enhancing innovation, quality and efficiency [Uca et al. 2018].

In contrast to earlier studies showing a positive influence of decision synchronisation [García-Alcaraz et al. 2021] on SC performance, the results of the current study demonstrated no significant association between these variables in the context of automotive SC. The above result supports the conclusions of Eyaa et al. [2010], confirming that decision synchronisation has no significant influence on SMEs' supply chain performance. Similarly, Wiengarten et al. [2010]

reported that decision synchronisation does not necessarily imply increased performance.

Finally, the findings revealed no significant association between resource sharing and SC performance. This is consistent with an earlier study that concluded that under high uncertainty, the link between resource sharing and performance becomes lower [Maghsoudi & Pazirandeh 2016].

CONCLUSIONS

The purpose of the current research was to explore empirically the effect of SC collaboration practices on automotive SC performance. More precisely, this study has attempted to check the link between different aspects of SC collaboration, including decision synchronization, collaborative communication, incentive alignment, goal congruence, information sharing joint knowledge creation, and resource sharing on SC performance. The findings highlight that information sharing, collaborative communication, goal congruence, joint knowledge creation, and incentive alignment provide a basis for enhancing the level of SC performance. These findings offer a certain number of implications for theory and practice.

The SC management literature has explored the link between SC collaboration and SC performance. It is generally confirmed that collaborative SC positively affects the level of SC performance, whereas the modalities of association between these constructs varied from one study to another. In other words, there is a considerable difference in the measurement scales used to operationalize these concepts depending upon who considers them as one-dimensional or those who mobilize them as multidimensional concepts. Therefore, the theoretical implication of this study is related to using a multifaceted measure of SC collaboration. In addition, this research brings additional empirical evidence of the positive impact of SC collaboration on SC performance.

This study suggests a novel approach that might help practitioners by identifying ways to reach and sustain a high-level of SC performance. The considerable influence of information sharing, incentive alignment, collaborative communication, goal congruence, and joint knowledge creation on SC performance should persuade SC managers to carefully consider these collaborative practices in order to meet clients' specific requirements quickly, as well as to react to changing client demands by rapidly adapting production capacity. In short, members of the Moroccan automotive supply chain are encouraged to:

- engage in a timely exchange of accurate, complete, and confidential information.
- agree on SC goals, the importance of collaboration, and opportunities for overall supply chain improvement.
- develop co-develop systems to know each other's performance (dashboard), to share costs and risks that may occur in the supply chain.
- have frequent contacts on a regular basis, making available many communication channels leading to discuss any SC decision-making.
- jointly seek and obtain relevant new knowledge, attempting to assimilate and apply it jointly.
- discover jointly clients' needs, emerging markets, and analyze competitors' intentions and capabilities.

Although these are valuable implications, this research contains certain limitations that may be addressed in future empirical investigations. This study was exploratory with a small sample size, which prevents the results from generalizability. The expansion of the existing dataset may be appropriate in order to generalize the study findings. This expansion could potentially facilitate more widely applicable and representative results. Finally, it will be relevant to extend the proposed model by including the firm's performance as the dependent variable.

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