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A study on the effect of supply chain management practices on organizational performance with the mediating role of innovation in SMEs

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A B S T R A C T

This paper investigates the relationship between supply chain management practices and organizational performance with the mediating role of innovation. Data were collected from 207 small and medium enterprises (SMEs) in Punjab, Pakistan. PLS-SEM was used to analyze the proposed hypotheses. Findings reveal that strategic partnership with supplier and level of information sharing had no influence on organizational performance. In addition, quality of information sharing, internal supply chain process, and lean practices had significant influence on organizational performance. Moreover, all five practices of supply chain management had significant and positive influence on innovation. Meanwhile, innovation significantly and positively mediated the relationship between supply chain management five practices and organizational performance. The findings of this study will help managers of SMEs enhance their performance.

1. Introduction

Supply chain management practices (SCMP) was gaining popularity in early 1990s when whole the world was facing with massive competition in the world market in delivering goods and services at less cost (Li et al., 2006). Some of the prior researchers reveal that business managers, academicians, and consultants focus the concept of supply chain management (SCM) (Choon Tan et al., 2002; Croom et al., 2000; Van Hoek, 1998). Various organizations think to recognize SCM in enhancing performance of organizations (Jones, 1998). According to Li et al. (2006), SCM refers to unambiguously identifies the tactical nature of harmonization among organization trading partners and also enlighten the twofold objective of SCM: enhance individual organization performance and enhance whole organizational performance (OP). The main challenge for organizations is learn what supply chain practices they follow to enhance both organizational and operational performance. Many prior researchers have used SCMP to improve OP (Azmi et al., 2018; Chavez et al., 2013; Gimenez et al., 2012; Liu et al., 2013; Ramanathan, 2012; Sukati et al., 2012; Janaki et al., 2018). Other studies have inconclusive results and need to study further SCMP and OP (Ketokivi & Schroeder, 2004; Pilkington & Fitzgerald, 2006) and

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some other have examined the influence of practices on monetary performance only (Venkatraman & Ramanujam, 1986). In the current study, we focus on both financial as well as non-financial performance. SMEs plays an significant role in the developing of an economy (Wijetunge, 2017). Nowadays, SMEs play a vital role in economic growth, poverty reduction, innovation, and employment generation (Stokes et al., 2010). In developing countries especially, SMEs play a key role to contribute rural economy, poverty reduction, employment creation, entrepreneurship development, exports growth, and manufacturing industry (Stokes et al., 2010; Arora et al., 2017). Hence, SMEs are considered critical and backbone for developing countries (Prasad, 2004). Prior studies have ignored the mediating effect of innovation between SCMP and OP of SMEs. Hence, the current research is trying to fill this gap.

2. Literature Review

2.1 Organizational performance (OP)

Organizational performance (OP) is referred to phenomena of how well enterprises obtain their desired goals. There are various studies available in the past on OP but still, there is no universal definition that can be used to measure OP. Some of the researchers use financial performance to measure OP. Some others use non-financial performance to measure the performance of an organization. In the current study, we are using financial and market factors to measure OP (Yamin et al., 1999).

2.2 Supply Chain Management Practices (SCMP)

According to Li et al. (2006), SCMP is referred to a combination of activities undertaken within the organizations to encourage the efficient management of their supply chain. There are some researchers that use various SCMP. For instance, continuous process flow, supplier partnership, cycle time density, share information regarding technology, and outsourcing (Donlon, 1996). Choon Tan et al. (2002), introduced 6 elements of SCMP; namely supply chain integration, customer service management, information sharing, geographical propinquity, supply chain characteristics, and just-in-time capability. Chen and Paulraj (2004), identified communication, supplier based reduction, cross-functional teams, long-range association, and supplier involvement in measuring supplier and buyer relationship. Tan et al. (1998) identified customer relationship, quality, and purchasing to represent SCMP. Hence, literature depicts SCMP in terms of different perspectives but at the end one universal objective that is to enhance OP.

2.2.1 Strategic partnership with suppliers (SPS)

SSP is referred to the long-range association with organizations and their suppliers (Li et al., 2006). Some of the prior researchers elucidate that SPS is designed to leverage the operational as well as strategic capabilities of employee participating corporations to facilitate them in attaining significant onward advantages (Monczka et al., 1998; Noble, 1997; Stuart, 1997). Moreover, deliberate partnership highlights direct, long-range relationship and promotes shared planning as well as efforts regarding problem-solving (Gunasekaran et al., 2001). SPS allows organizations to function more efficiently with more significant suppliers that are ready to divide responsibility for product success (Li et al., 2006). Some of the prior studies revealed that SPS had a significant and positive influence on OP (Li et al., 2006; Wijetunge, 2017). Moreover, SPS plays an important role in innovation and there is a study that elucidated that SPS has a positive influence on innovation (Maalouf, 2018). The following hypotheses are proposed for the current study:

H_1: SPS has a positive influence on OP.
H_2: SPS has a positive influence on innovation.
H_{12}: Innovation significantly mediates the relationship between SPS and OP.

2.2.2 Level of information sharing

Sharing of information consists of two elements such as quality and quantity; and both elements are significant for supply chain management practices and they are used as exogenous constructs in prior studies on supply chain management (Moberg et al., 2002; Monczka et al., 1998). Moreover, level of information (quantity element) means to the extent to which vital and proprietary information are transferred to organization supply chain partner (Monczka et al., 1998). Within an organization shared information can differ from the strategic level to the tactical level as well as from logistics movements to market and information related customers (Mentzer et al., 2000). Various researchers recommended that information sharing with other parties in the supply chain could become a source for organizational performance (Jones, 1998; Novack et al., 1995). Some of the prior studies elucidated that the LIS had a positive influence on organizational performance (Li et al., 2006; Wijetunge, 2017). Meanwhile, the level of information sharing has a positive influence on innovation (Didonet & Díaz, 2012). The following hypotheses are proposed for the current study:

H_3: LIS has a positive influence on OP.
H_4: LIS has a positive influence on innovation.
H_{13}: Innovation mediates significantly the relationship between a LIS and OP.

2.2.3 Quality of information sharing (QIS)

QIS consists timeliness, accuracy, credibility, adequacy, as final credibility of the information communicated (Moberg et al., 2002; Monczka et al., 1998). Moreover, information sharing is momentous, and the importance of its influence on supply chain management that what, when, and with whom information is shared (Chizzo, 1998; Holmberg, 2000). Therefore, organizations need to outlook their important information as organization asset and make sure that information communicated with the least delay and distortion (Li et al., 2006). There is a positive influence of the QIS on OP (Li et al., 2006). Moreover, the QIS is also important for innovation and authors elucidated that it had a positive influence on innovation (Didonet & Díaz, 2012). The following hypotheses are proposed for the current study:

H_5: QIS has a positive influence on OP.
H_6: QIS has a positive influence on innovation.
H_{14}: Innovation mediates the relationship between the QIS and OP.

2.2.4 Internal supply chain process (ISCP)

ISCP also known as postponement is referred to the practice of going ahead one or more than one operations such as making, sourcing, and delivering to a much afterward point in supply chain management (Johnson & Davis, 1998; Naylor et al., 1999; Van Hoek et al., 1999). One of the authors reveals that there is a need to develop postponement strategy such as examining how many steps organizations want to postpone and which steps they want to postpone (Beamon, 1998). The benefit of the postponement for organizations is that organizations have spare time changing the needs of customer and modification of the demand function (Waller et al., 2000). ISCP has a positive influence on organizational performance (Wijetunge, 2017). Moreover, the ISCP has a positive influence on innovation (Didonet & Díaz, 2012). The following hypotheses are proposed for the current study:

H_7: ISCP has a positive influence on OP**.**
H_8: ISCP has a positive influence on innovation.
H_{15}: Innovation significantly mediates the relationship between ISCP and OP.

2.2.5 Lean practice

Lean practice is referred to a process of eliminating waste time as well as resources in the production process (Wijetunge, 2017). Moreover, a lean practice can be considered a value, an ethos, a philosophy, a management concept, a work culture, and a methodology (Wilson & Roy, 2009). Nowadays, lean practice means a management approaches that develop all the processes within the organization at every level. According to Lewis (2000), the lean practice facilitates in removing all waste, stop shortages, minimize lead time, enhance stock turnover, and make sure customer satisfaction. The lean practice has a positive influence on organizational performance (Wijetunge, 2017). Moreover, the lean practice has a positive influence on innovation (Maalouf, 2018). The following hypotheses are proposed for the current study:

H_9: The lean practice has a positive influence on OP.
H_{10}: The lean practice has a positive influence on innovation.
H_{16}: Innovation significantly mediates the relationship between lean practice and OP.

2.2.6 Innovation

The term innovation plays a significant character in enhancing the quality and performance of an organization (Mone et al., 1998). It refers to the organizational efforts that give the advantage to the organization in long-range (Maalouf, 2018). One of the prior studies reveals that organizations maintain their strong positions in the existing market due to permanent investment in innovation and innovation must be executed in business process as well as in technology (Pisano, 2015). Despite this, innovation is an important element for enhancing organizational performance but various organizations fail to perform well even due to innovation because they do not know exact guidelines that how to use that technology and due to lack of formal rules and procedures (Maalouf, 2018). The following hypotheses are proposed for the current study:

H_{11}: Innovation has a positive influence on OP

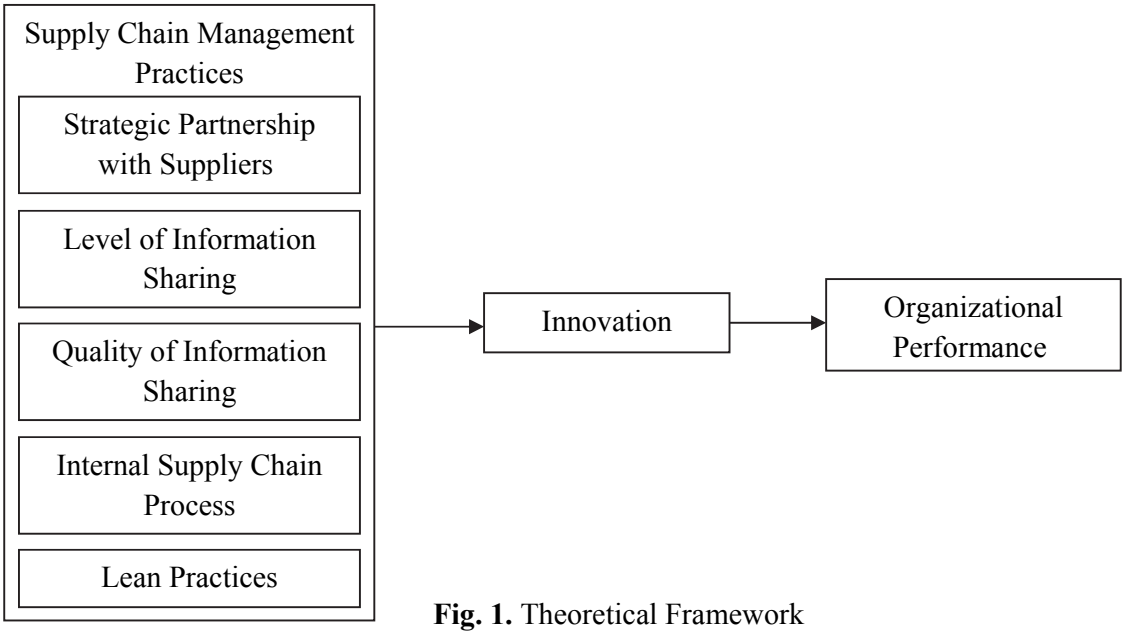

Fig. 1. Theoretical Framework

3. Methodology

The theoretical model of this study consists of seven variables and all these variables are measured by adapting the questionnaire from some of the prior studies since their reliability as well as validity had

been established. 5-Likert scales is used that has a range within 1 (strongly disagree) to 5 (strongly agree). SCMP e.g. SPS consists of 5 items, LIS consists of 5 items, QIS consists of 5 items, ISCP consists of 3 items, and lean practices consists of 3 items adapted from Li et al. (2006), innovation consists of 5 items and adapted from Panayides and Lun (2009), and OP is adapted from Li et al. (2006).

4.1 Data collection

For current research, data were collected from SMEs that works in Punjab, Pakistan. 275 questionnaires were distributed among owners of SMEs and only 217 questionnaires received back and 10 questionnaires exclude due to missing values. Hence, 207 were questionnaires used for the analysis.

4.2 Statistical analysis results

In this paper, we have employed a Partial Least Square (PLS-SEM) approach to examine the theoretical model. Some of the prior researchers proved that PLS-SEM approach is suitable for both research models such as simple and complex; also there is no need to perform normality test with subtleness (Bamgbade et al., 2015; Hair Jr et al., 2014). In addition, this approach gives better results of estimation to establish construct validities as compared to another approach such as CBC-SEM (Afthanorhan, 2013; Hair Jr et al., 2014). There is a need of two models in PLS-SME like measurement as well as structural model. In the current study, we use both of these models.

4.3 Measurement model

According to Hair Jr et al. (2013), in the running measurement model in PLS tool we ascertain three things. First, content validity, second, convergent validity, and the final one is discriminant validity.

4.3.1 Content Validity

Table 1
Factor loading and cross loadings

Variable	Items	SPS	LIS	QIS	ISCP	LP	INV	OP
Strategic partnership with suppliers	SPS1	**0.901**	0.010	0.455	0.399	0.089	0.477	0.244
	SPS2	**0.909**	0.188	0.315	0.407	0.040	0.479	0.196
	SPS3	**0.820**	0.049	0.415	0.447	0.135	0.420	0.214
	SPS4	**0.867**	0.117	0.426	0.459	0.059	0.444	0.201
	SPS5	**0.867**	0.059	0.417	0.426	0.055	0.425	0.242
Level of information sharing	LIS2	0.104	**0.904**	0.071	0.135	0.039	0.236	0.112
	LIS3	0.090	**0.872**	0.101	0.114	0.009	0.223	0.053
	LIS4	0.082	**0.820**	0.091	0.044	0.026	0.168	0.025
	LIS5	0.057	**0.881**	0.112	0.141	0.048	0.253	0.102
Quality of information sharing	QIS2	0.428	0.044	**0.729**	0.184	0.281	0.227	0.214
	QIS3	0.312	0.069	**0.752**	0.196	0.333	0.361	0.180
	QIS4	0.145	0.116	**0.690**	0.192	0.022	0.452	0.561
	QIS5	0.238	0.037	**0.720**	0.189	0.212	0.314	0.157
Internal supply chain process	ISCP1	0.110	0.062	0.457	**0.826**	0.007	0.336	0.475
	ISCP2	0.202	0.030	0.446	**0.876**	0.018	0.376	0.486
	ISCP3	0.450	0.200	0.453	**0.807**	0.367	0.796	0.306
Lean practices	LP1	0.459	0.012	0.160	0.035	**0.805**	0.270	0.062
	LP2	0.488	0.074	0.172	0.142	**0.890**	0.363	0.092
	LP3	0.660	0.001	0.280	0.231	**0.884**	0.444	0.068
Innovation	INV1	0.433	0.226	0.407	0.670	0.344	**0.902**	0.356
	INV2	0.365	0.257	0.538	0.538	0.308	**0.832**	0.390
	INV3	0.518	0.182	0.391	0.457	0.443	**0.828**	0.564
Organizational performance	OP2	0.244	0.010	0.455	0.399	0.089	0.477	**0.901**
	OP3	0.196	0.188	0.315	0.407	0.040	0.479	**0.909**
	OP4	0.214	0.049	0.415	0.447	0.135	0.420	**0.820**
	OP5	0.201	0.117	0.426	0.459	0.059	0.444	**0.867**
	OP6	0.242	0.059	0.417	0.426	0.055	0.425	**0.867**

Some studies reveal that content validity is calculated by using cross-loading and it refers to that the value of the measured variable should be higher than other study variables in the same rows as well as columns (Chin, 1998b; Hair Jr, 2010) as shown in Table 1.

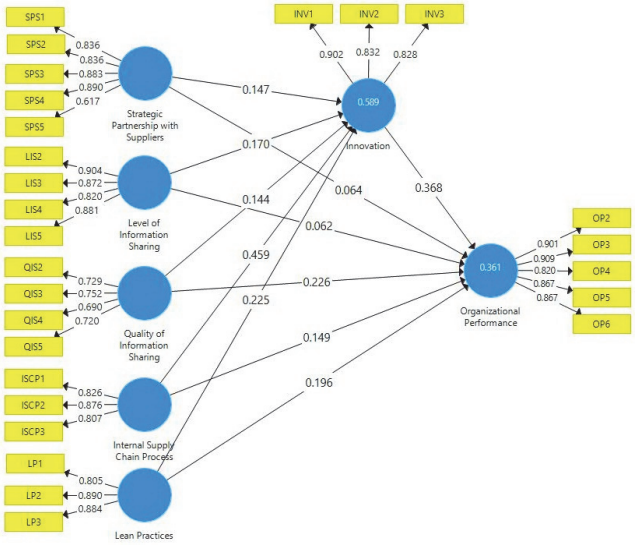

Fig. 2. Measurement Model

Table 2
Convergent Validity

Variables	Items	Factor Loadings	AVE	CR	Cronbach Alpha	R^2	Rho_A
Strategic partnership with suppliers	SPS1	0.901	0.670	0.909	0.874		0.900
	SPS2	0.909					
	SPS3	0.820					
	SPS4	0.867					
	SPS5	0.867					
Level of information sharing	LIS2	0.904	0.756	0.925	0.893		0.915
	LIS3	0.872					
	LIS4	0.820					
	LIS5	0.881					
Quality of information sharing	QIS2	0.729	0.523	0.814	0.731		0.740
	QIS3	0.752					
	QIS4	0.690					
	QIS5	0.720					
Internal supply chain process	ISCP1	0.826	0.700	0.875	0.792		0.811
	ISCP2	0.876					
	ISCP3	0.807					
Lean practices	LP1	0.805	0.741	0.895	0.829		0.867
	LP2	0.890					
	LP3	0.884					
Innovation	INV1	0.902	0.730	0.890	0.815	0.589	0.816
	INV2	0.832					
	INV3	0.828					
OP	SCP2	0.901	0.763	0.941	0.922	0.361	0.923
	SCP3	0.909					
	SCP4	0.820					
	SCP5	0.867					
	SCP6	0.867					

Table 2 shows that factor loadings, CR, and AVE fulfill the standardized criterion (Hair Jr et al., 2013). Factor loadings should be greater than 0.50, AVE values also must be greater than 0.50, and CR value should be higher than 0.60. The value of Cronbach's alpha must be higher than 0.60 as suggested by Fornell and Larcker (1981). Finally, the values of Rho_A demonstrate that all items were reliable for further analysis. Hence, the current study fulfills the requirements of convergent validity. Table 3 demonstrates that the current study data fulfills the discriminant validity criterion as suggested by Fornell and Larcker (1981) that above the value of diagonal must be greater than off-diagonal elements in same rows as well as columns. Moreover, the current study fulfills the required criteria of Heterotrait-Monotrait Ratio (HTMT) that recommends Hair Jr et al. (2013) (See Table 4).

Table 3
Discriminant validity (Fornell-Larcker)

Variable	SPS	LIS	QIS	ISCP	LP	INV	SCP
SPS	**0.818**						
LIS	0.123	**0.870**					
QIS	0.355	0.107	**0.723**				
ISCP	0.336	0.132	0.543	**0.837**			
LP	0.636	0.026	0.246	0.175	**0.861**		
INV	0.516	0.258	0.519	0.648	0.430	**0.855**	
SCP	0.252	0.090	0.466	0.490	0.086	0.515	**0.873**

Table 4
Heterotrait-Monotrait Ratio (HTMT)

Variable	SPS	LIS	QIS	ISCP	LP	INV	SCP
SPS							
LIS	0.148						
QIS	0.484	0.118					
ISCP	0.364	0.141	0.544				
LP	0.713	0.056	0.373	0.208			
INV	0.593	0.298	0.615	0.747	0.503		
SCP	0.276	0.105	0.454	0.589	0.099	0.590	

4.4 The Structural Model and Hypotheses Testing

Now ascertain the direct associations of exogenous variables such as the SPS, LIS, ISCP, and QIS, lean practices, and innovation on the endogenous variable that is OP. Fig. 3 demonstrates whether or not the beta values and t-value in confirming hypotheses are accepted or not.

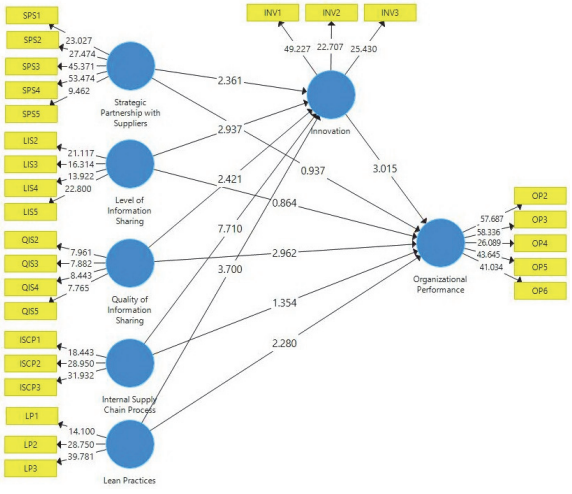

Fig. 3. Structural Model

In this study, there are eleven hypotheses, that have direct relationships and out of eleven hypotheses only two hypotheses were not accepted. For example, SPS has insignificant influence on OP (β=0.064, t-value=0.937, p>0.05) and the hypothesis H_1 is supported. Moreover, a SPS has a positive impact on innovation (β=0.147, t-value=2.361, p<0.05) and supported the second hypothesis H_2. Meanwhile, the LIS has no influence on OP (β=0.062, t-value=0.864, p>0.05) and the third hypotheses H_3 is not supported. LIS has a positive impact on innovation (β=0.170, t-value=2.937, p<0.05) and supported the fourth hypothesis H_4. QIS has a positive impact on OP (β=0.226, t-value=2.962, p<0.05) and accepted the fifth hypothesis H_5. Moreover, the QIS has a positive impact on innovation (β=0.144, t-value=2.421, p<0.05) and supported the six hypothesis H_6. ISCP has a positive influence on OP (β=0.149, t-value=1.354, p<0.10) and supported the seventh hypothesis H_7. Furthermore, the ISCP has a positive impact on innovation (β=0.459, t-value=7.710, p<0.05) and accepted the eighth hypothesis

H_8. In addition, lean practices have a positive influence on OP (β=0.196, t-value=2.280, p<0.05) and the ninth hypothesis H_9 is supported. Lean practices have a positive influence on innovation (β=0.225, t-value=3.700, p<0.05) and supported the hypothesis H_{10}. Meanwhile, innovation has a positive influence on OP (β=0.368, t-value=3.015, p<0.05) and supported the hypothesis H_{11}.

Table 5
Direct relationships

Hypotheses	Paths	Original Samples	Sample Mean	Std. Deviation	T-values	P-values	Results
H_1	SPS→ SCP	0.064	0.068	0.068	0.937	0.174	Not Sig.
H_2	SPS → INV	0.147	0.149	0.062	2.361	0.009	Sig.
H_3	LIS → SCP	0.062	0.061	0.071	0.864	0.194	Not Sig.
H_4	LIS → INV	0.170	0.170	0.058	2.937	0.002	Sig.
H_5	QIS → SCP	0.226	0.236	0.076	2.962	0.002	Sig.
H_6	QIS → INV	0.144	0.140	0.059	2.421	0.008	Sig.
H_7	ISCP → SCP	0.149	0.151	0.110	1.354	0.088	Sig.
H_8	ISCP → INV	0.459	0.460	0.060	7.710	0.000	Sig.
H_9	LP→ SCP	0.196	0.192	0.086	2.280	0.011	Sig.
H_{10}	LP→ INV	0.225	0.228	0.061	3.700	0.000	Sig.
H_{11}	INV→ SCP	0.368	0.356	0.122	3.015	0.001	Sig.

4.5 Mediation Testing

Innovation plays a significant mediating role between SPS, QIS, LIS, ISCP, lean practices, and OP. Innovation significantly and positively mediates the relationship between SPS and OP (β=0.054, t-value=1.802, p<0.05) and supported the hypothesis H_{12}. Moreover, innovation significantly and positively mediates the relationship between the LIS and OP (β=0.063, t-value=1.960, p<0.05) and H_{13} is accepted. Meanwhile, innovation positively and significantly mediates the relationship between the QIS and OP (β=0.053, t-value=1.662, p<0.05) and confirms H_{14}. Similarly, innovation significantly and positively mediates the relationship between ISCP and OP (β=0.169, t-value=3.192, p<0.05) and supported H_{15}. Furthermore, innovation significantly and positively mediates the relationship between lean practices and OP (β=0.083, t-value=2.516, p<0.05) and supported H_{16}.

Table 6
Indirect relationships

Hypotheses	Paths	Original Samples	Sample Mean	Std. Deviation	T-values	P-values	Results
H_{12}	SPS→INV→SCP	0.054	0.053	0.030	1.802	0.036	Accepted
H_{13}	LIS→INV→SCP	0.063	0.062	0.032	1.960	0.025	Accepted
H_{14}	QIS→INV→SCP	0.053	0.052	0.032	1.662	0.048	Accepted
H_{15}	ISCP→INV→SCP	0.169	0.161	0.053	3.192	0.001	Accepted
H_{16}	LP→INV→SCP	0.083	0.080	0.033	2.516	0.006	Accepted

4.6 The predictive relevant of study model

In the current study, two things are determined for the predictive relevance of model like R^2 and cross-validated redundancy. R^2 values mean that all exogenous variables jointly explained the endogenous variable. Table 7 shows that 58.9% innovation is explained by all exogenous variables. While 36.1% OP is explained by all exogenous variables. According to Cohen (1988), the R^2 value in the range of 0.02 to 0.13 shows weak, the R^2 value in the range of 0.13 to 0.26 represents moderate, and R^2 value more than 0.26 indicates high effect. In the current study, R^2 for innovation and OP show high effect. In PLS tool cross-validated redundancy is calculated by running blindfolding. Some of the prior researchers conclude that the value of Q^2 should be greater than zero value (Chin, 1998a,b; Henseler et al., 2009). In this study, Table 8 shows that the Q^2 value of innovation and OP meets the above-mentioned criteria.

Table 7
The Predictive relevance of the model

Total	R^2
Innovation	0.589
Organizational Performance	0.361

Table 8
Cross-validated redundancy

Total	SSO	SSE	Q2 = (1-SSE/SSO)
Innovation	621.0	375.437	0.395
Organizational Performance	1035.0	775.397	0.251

4.7 The effect size of a model

R-square reveals the strength of model that how well all exogenous constructs explained endogenous construct. To calculate the effect size (f^2) there is a need to first remove one exogenous construct and run a model to find R-square by excluding the contribution of that construct, then R-square excluded subtract from R-square is included and follow the below formula (Hair Jr et al., 2014).

$$f^2 = \frac{R^2 \text{ included-}R^2 \text{ excluded}}{1 - R^2 \text{ included}}.$$

The effect size (f^2) is smaller when $f^2 = 0.02$, effect size is moderated when $f^2 = 0.15$, and effect size is high when $f^2 = 0.35$ (Cohen, 1988). Below Table 9 and 10 show all exogenous variables have smaller effects while the internal supply chain process maintains the highest effect.

Table 9
Effect Size of exogenous constructs on endogenous construct (Innovation)

Independent Variables	R^2 Included	R^2 excluded	R^2included – R^2excluded	1 – R^2 included	Total Effect
SPS	.589	.578	.011	.411	.026
LIS	.589	.561	.028	.411	.068
QIS	.589	.576	.013	.411	.031
ISCP	.589	.450	.139	.411	.338
LP	.589	.559	.030	.411	.072

Table 10
Effect Size of exogenous constructs on the endogenous construct (OP)

Independent Variables	R^2 Included	R^2 excluded	R^2included – R^2excluded	1 – R^2 included	Total Effect
SPS	.361	.358	.003	.639	.004
LIS	.361	.358	.003	.639	.004
QIS	.361	.328	.033	.639	.051
ISCP	.361	.357	.004	.639	.006
LP	.361	.341	.020	.639	.031
INV	.361	.341	.020	.639	.031

5. Discussion and Conclusion

The aim of the existing research was to determine the influence of SCMP on OP with the mediating effect of innovation. The findings have revealed that a SPS had insignificant influence on OP. The findings are consistent with the other results (e.g. Flynn et al., 2010). Moreover, SPS had a significant influence on OP and H_2 was accepted. The results are similar to the results Maalouf (2018). LIS had no influence on OP and H_3 was not accepted. The findings are consistent with the work accomplished

by Baihaqi and Sohal (2013). Meanwhile, the LIS had a significant influence on OP and supported H_4. The work is similar to the work of Didonet and Díaz (2012). QIS had a positive influence on OP and supported H_5. The findings are consistent with the findings of Li et al. (2006). Meanwhile, the QIS had a positive influence on innovation and H_6 was accepted (Didonet & Díaz, 2012). ISCP had a positive influence on OP and accepted H_7. The results are similar to the findings of Wijetunge (2017). Moreover, ISCP had a positive influence on innovation and supported H_8. The findings are the same as the findings of Didonet and Díaz (2012). Lean practices had a positive influence on OP and supported H_9. The findings are similar to the findings of Wijetunge (2017). Lean practices had a positive influence on innovation and accepted H_{10}. The work is consistent with the work of Maalouf (2018). Innovation had a positive influence on OP and accepted H_{11}. The work is similar to the work of Seo et al. (2014). Innovation significantly mediates the relationship between SPS, LIS, QIS, ISCP, lean practice, and OP. Hence, our hypotheses H_{12}, H_{13}, H_{14}, H_{15}, and H_{16} were accepted.

6. Limitations and future directions

The present research has lots of strong points but there are also some limitations. First, the current study has used a smaller sample size and there is a need to increase sample size in future. Second, the current study uses five practices of SCM and future researchers can increase more practices with the same mediator and dependent variable. The current study has used innovation as a mediating variable between SCMP and OP. There is a need to use moderating variables (demand uncertainty and strategic goals) also in future between SCMP and OP.

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