


Inter-Firm Collaboration and Export Performance: A Mediation Analysis

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ABSTRACT

This study aims to encourage small and medium-sized enterprises (SMEs) to collaborate to enhance export rate. It investigates the influence of inter-firm collaboration on industry export performance and how this relationship is mediated by firm export performance in SMEs of Pakistan. Data were collected using self-administered questionnaires distributed among 491 respondents (professionals of the SMEs involved in exports). This study analysed the data employing structural equation modeling to determine the relationship among variables; firm export performance, inter-firm collaboration and industry export performance. Mediation analysis was tested using Baron and Kenny's procedure. Results revealed that inter-firm collaboration is an important factor in enhancing industry export performance and this relationship is significantly mediated by firm export performance. Industry export performance is an essential element for SMEs survival and growth. The study contributes theoretically and empirically by analysing the role of inter-firm collaboration in economic development and provides important implications for owners, managers, policymakers of SMEs, and export-related government agencies on improving cooperation.

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INTRODUCTION

The contemporary business environment is extremely dynamic and competitive. This dynamism and competitive pressure have forced organizations, especially those operating at micro, small and medium levels to collaborate (Cao et al., 2010; Herr & Nettekoven, 2018). To remain competitive, firms need a synergistic combination of knowledge, skills, and abilities which is effectively provided by inter-firm collaboration (Jucevičius & Jucevičienė, 2022). In addition, collaboration among different firms in the same industry is beneficial for all the collaborating partners in relation to knowledge sharing, resource sharing, enhancing international market share, and better export performance. Collaboration also enables firms to deliver innovation with speed and helps in bringing more flexibility in their operations required to go international (Nambisan et al., 2019), which results in the enhancement of individual firms as well as the whole industry export performance.

Pakistan is a developing economy and SMEs are considered the key components of its economic development, employment generation, as well as revenue generation (Khurram et al., 2008; Shah et al., 2019). However, SMEs in Pakistan, as in other developing countries, are labour-oriented there is less government support, low output, lack of funds, and barriers to exporting which create several problems for this sector (Ahmad et al., 2021; Burhan et al., 2021; Khan et al., 2021; Leonidou, 2004; Reza et al., 2021; Zafar et al., 2019; Zulkifli-Muhammad et al., 2009) These problems result in reducing the performance of SMEs in Pakistan and they remain unable to fully exploit the market opportunities (Anwar & Shah, 2021). Although inter-agency collaboration is considered an ideal strategy utilized by different enterprises to cope with the challenges of export performance (Ntale & Ssempebwa, 2022), there is very limited work done on the inter-firm collaboration of the SME sector with respect to developing economies like Pakistan. So, there is an evidence gap as well as a population gap that is addressed by the current study. Furthermore, no study evaluated the influence of inter-firm collaboration on the export performance of individual firms and industries. So, this area has not been fully studied and explored in the context of Pakistani SMEs. Thus, the evidence gap also existed and that is filled by the current study.

Resource Based theory (RBT) can be used to evaluate the impact of different resources and capabilities on the export performance of any firm and industry (Javed et al., 2018). This study used RBT as an overarching theory to explain the relationships among different variables. Firms can create and sustain a long-term competitive advantage based on their capabilities and resources (Barney, 2001). However, those resources must be rare, inimitable, and valuable. Those resources can be tangible or intangible, movable or

immovable, physical or virtual. Inter-firm collaboration is an intangible resource that enhances the SMEs' ability to improve export performance as well as industry export performance.

This perception-based study evaluates the influence of inter-firm collaboration of SMEs upon industry export performance and how this relationship is mediated by the export performance of firms. The study is based on the resource-based view (RBT) of the firm which focuses on the further imperative and strategic components for accumulating, combining, and exploiting the novel knowledge and information for ensuring the industry export performance of SMEs. The studied group of current research includes owners, managers as well as employees of SMEs in Pakistan that are involved in product exporting. The study will have multiple implications for managers/owners as well as it will enrich existing literature by filling the proposed gaps. This research contributes by highlighting several important implications for managers as well as owners of SMEs as it empirically tests how inter-firm collaboration can result in enhancing the export performance of firms and industries. Furthermore, the study also has methodological implications that can enrich existing literature.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Inter-firm collaboration

Inter-firm collaboration is described as a practice in which different firms collaborate formally or informally and make joint policies that affect all parties (Cambra-Fierro et al., 2011; Jambou et al., 2022). The phenomenon of inter-firm collaboration is not new (Vatne & Taylor, 2018). However, with the emergence of new technologies and globalization, it has become relatively easy to develop collaboration and gain higher returns with more effective collaboration. With inter-firm collaboration, firms create and maintain direct and indirect relationships (Zulu-Chisanga et al., 2020), and as a result, they become a part of a network which results in easy access to information, knowledge, and know-how of other networks (Loebbecke et al., 2016) with all the partnering firms acting as source and also as a destination for the information (Owen-Smith & Powell, 2004).

According to RBT, sustainable competitive advantage is based on tangible and intangible resources (Soliman & Noorliza, 2020) including inter-firm collaboration. This valuable, rare, and inimitable intangible resource has the potential to create a competitive advantage. Thus, the concept of inter-firm collaboration is aligned with the RBT of the firm. All the above-mentioned intangible resources can be utilized by firms for overcoming the problem of scientific knowledge, resources, and competencies (Cui et al., 2020). It improves

the firm's performance by decreasing production costs which makes it easier for firms to enter the international markets (Porter, 1980). Inter-firm collaboration glorifies the image of the organization which is helpful in the international market (Zhang & Pezeshkan, 2016). Firms can also choose different types of partners for exporting, depending upon their goals (Hernández-Espallardo et al., 2011; Rialp-Criado & Rialp-Criado, 2018) that could enhance their performance in the international market. The success of SMEs significantly depends on the exploitation of knowledge that is created outside the firm (Forés & Camisón, 2016; Klein & Todesco, 2021). Like large-scale firms, SMEs can also build collaboration with other firms in the same industry and across the industries to improve their export performance (Lee et al., 2010). The main reason for SMEs to develop inter-firm collaboration is to overcome the constraint of resources (Oliver, 1990; Sarti, 2017). Inter-firm collaboration for SMEs results in greater external economies and effective new opportunity exploitation (Narula, 2004). It improves the firm knowledge of exporting to enhance the export performance (Lin & Chaney, 2007).

Firm export performance

Export performance is the firm accomplishment of its planned goals through export (Oura et al., 2016; Č Kostevc, 2022). Firm export performance is continuous engagement in exporting with effectiveness and efficiency (He & Huang, 2020; Shoham, 1991). Different authors (Atkin et al., 2017; Calantone et al., 2006; Leung & Sharma, 2021) viewed firm export performance as an indicator of firm higher performance. Firm export performance is acknowledged as a multi-dimensional notion and is considered as the outcome of inter-firm collaboration (Blomqvist & Levy, 2006). Different tools have been proposed for measuring export performance including export intensity (Azar & Ciabuschi, 2017; Tookey, 1964), continuous engagement in export activity (Brooks & Rosson, 1982; Imran et al., 2017), and profitability (Bilkey, 1982; Emőke-Szidónia, 2015).

From the RBT perspective, a firm can develop and create a sustainable competitive advantage based on its resources and capabilities (Barney, 2001). For better export performance, the firm should use its unique resources and capabilities. It is affected by both internal and external organizational factors that are rare, inimitable, and valuable. Internal factors are internal characteristics of a firm like production and marketing whereas external factors include phenomena like market and industry characteristics (Leonidou et al., 2002). Therefore, for better export performance, the resources and capabilities an organization uses should be rare, inimitable, and valuable (Gueler & Schneider, 2021). The other factors that affect firm export performance include

owners decision-making, management commitment, knowledge, skills, and business attitude along with a positive environment for exporting, uniqueness of products, and support from other organizations (Cavusgil & Zou, 1994; Wang & Olsen, 2002). These factors vary from firm to firm (unique), rare, and no other firm can copy them. Furthermore, the inter-firm collaboration also enhances the firm export performance as it provides knowledge and resources, the scarcity of which impedes export performance of a firm (Johanson & Vahlne, 1990; Paul et al., 2017). Thus, aligning the firm export performance with RBT. On the other hand, firm export performance affects the overall performance of firms and their reputation which eventually influences the overall industry export performance. Based on these arguments, the following hypotheses are developed:

H1: There is a positive relationship between inter-firm collaboration and industry export performance.

H2: Inter-firm collaboration is positively associated with the firm's export performance.

Export performance of the industry

Industry export performance is the general achievement of export goals by an industry (Durmuşoğlu et al., 2012; Mata et al., 2021). According to different researchers, industry export performance is dependent on inter-firm collaboration by making the partner firms more effective and efficient in terms of resource sharing, knowledge sharing, and collective working to enhance the industry exports (Bhavani & Tendulkar, 2001; Dodgson, 2018; Mokhtarzadeh et al., 2020; Singh, 2009). Inter-firm collaboration enables the partnering organizations to build a relationship of trust and develops an environment where partner firms share resources to achieve effective firm as well as industry performance (Kohtamäki et al., 2013; Mcevily et al., 2003). It also helps in improving the financial position of enterprises and positively affects the balance of payment (Balassa, 1978; Cooper et al., 2018). Additionally, SMEs around the world mostly are resource constrained and do not have enough resources to export their products (Fletcher & Harris, 2012; Liem et al., 2019); however, with effective collaboration, they can share resources, knowledge, and methods and create synergistic combinations to augment the overall export performance of the sector. All the above-given discussions support the RBT viewpoint for enhancing the export performance of the industry. Thus, the hypotheses developed are:

H3: The firm export performance is positively associated with industry export performance.

H4: The mediating effect of firm export performance on inter-firm collaboration and industry export performance.

RESEARCH MODEL

Figure 1 presents the conceptual framework for this study. Inter-firm collaboration is the independent variable and industry export performance is the dependent variable. Firm export performance is the mediator.

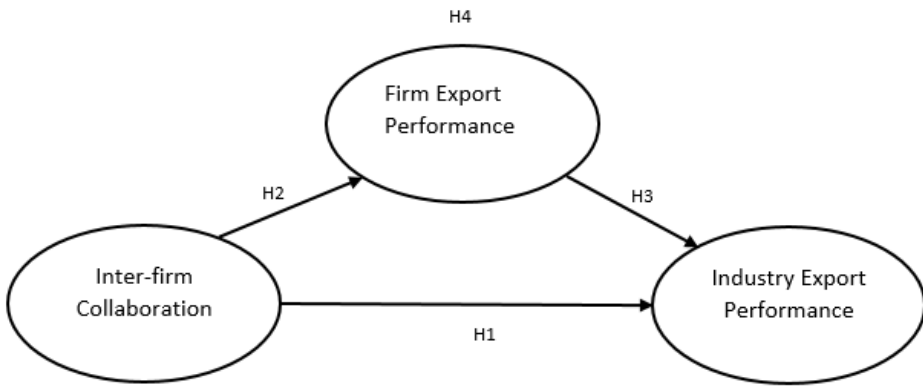


Figure 1: *Conceptual Framework*

METHODOLOGY

The research approach is quantitatively cross-sectional and the philosophical stance is positivism. Data were collected from the experienced professionals of SMEs in Pakistan who were involved in the exports. Enterprises were selected from the lists of SMEs having valid registration with the Small and Medium Enterprise Development Authority, Pakistan (SMEDA). Selected SMEs were from the textile, agriculture, gems, and fisheries sectors. A total of 650 self-administered questionnaires were emailed to the respondents, and 491 were returned back, completed in all respects. The response rate was 75.5%. This was sufficient for testing a mediating model (Wolf et al., 2013).

Measurement of variables

The questionnaire for inter-firm collaboration consisted of an 18-items, 5-point likert scale adapted from the study of Hocevar et al. (2012). It contained items like 'effective inter-firm collaboration is on high priority for our firm' and 'our

organization's procedures are flexible and responsive to the requirements of other firms'. Inter-firm collaboration was measured using a single additive index that computed Cronbach's α coefficient value of 0.83.

Industry export performance was measured using an instrument adapted from the same Hocevar's study and contained 7-items, measured through 5-point likert scale. Sample items are 'inter-firm collaboration increased export performance of the industry' and 'employees of our firm have the freedom to collaborate with other firms for enhancing the industry export performance'. These items produced Cronbach's α coefficient value of 0.79.

Firm export performance was also measured using an instrument adapted from the same study and contained a 9-items, 5-point likert scale. Sample items included items like 'due to inter-firm collaboration, our firm export has increased' and 'after the inter-firm collaboration, our knowledge about foreign markets has been improved' were used. For, firm export performance, the value of the coefficient of Cronbach α was calculated to be 0.81.

In addition to these variables, some variables were controlled for better estimation of relationships. Variables that were controlled are firms' age, firms' number of employees, as well as annual sales turnover. The age of the firm was coded as 1= under 4 years, 2=4 to 8 years, 3=8 to 12 years, 4=12 to 16 years, and 5=16 or more years. The number of employees was coded as 1= less than 50 employees, 2=51-100 employees, 3=101-150 employees, 4=151-200 employees, and 5= 201-250 employees. Annual sales turnover was coded as 1= less than 50 million rupees, 2= 50 million to less than 200 million rupees, 3=Rs. 200 million to less than 400 million rupees, 4= 400 million to less than 600 million rupees, and 5= 600 million to less than 800 million rupees.

DATA ANALYSIS AND RESULTS

Assessment of the measurement model

Confirmatory factor analysis was computed by utilizing AMOS for examining the scale validity. Convergent validity was tested using CR and AVE values. The results show that $CR > 0.07$ which is the threshold value. Similarly, the AVE value was higher than the threshold value of 0.50 as well as CR is greater than the AVE which confirmed the discriminant validity of the construct. Results are presented in Table 1.

For testing overall model fitness, three different models were tested with different indicators. In the first model, the three variables related to current research were loaded on a single factor ($\chi^2 = 119.79$; $df = 109$; $p < .001$; $CFI = .79$; $GFI = .81$ and $SRMR = .19$). Second model merged the inter-firm collaboration

Table 1.

Factor loadings, composite reliability, and convergent validity

	Items	Cronbach	Factor Loading	CR	AVE
Inter-firm collaboration	18	0.83	0.717-0.915	0.978	0.720
Industry export performance	7	0.79	0.729-0.899	0.946	0.716
Firm export performance	9	0.81	0.747-0.796	0.931	0.600

and industry export performance as a single factor and firm export performance was considered as the second variable ($\chi^2 = 129.21$; $df = 112$; $p < .001$; $CFI = .86$; $GFI = .87$ and $SRMR = .10$). The Last model was a three-factor model with each variable of study considered as a separate factor ($\chi^2 = 141.12$; $df = 118$; $p < .001$; $CFI = .90$; $GFI = .91$ and $SRMR = .071$). All the statistical results of χ^2 , df , CFI , GFI , along with $RMSEA$ for model-3 convincingly met the threshold values as the threshold value of GFI and $CFI \geq 0.90$ (Hu & Bentler, 1999) and in the current study, the GFI and CFI resulted values were 0.91 and 0.90, respectively and the value of $RMSEA$ was found to be 0.071 while recommended value is 0.08 or lesser (Hu & Bentler, 1999).

Descriptive analysis

Table 2 shows descriptive and correlation results. The descriptive statistics show that the average age of the firm was 3.14 with a standard deviation of 1.73 which means that on average, the age of the firm was greater than 12 years. The mean value of employees was 2.97 with an SD of 0.98 which implies that on average, each firm was heaving almost 100 employees. The mean of annual sales turnover was 2.12 with a mean of 1.03 which means that the annual sales turnover of sample firms was more than 50 million but less than 200 million. The correlation results in Table 2 confirmed the existence of a significantly positive association among all three constructs of interest of current research. The value of the coefficient of correlation (r) between inter-firm collaboration and firm export performance is 0.45, between industry export performance and inter-firm collaboration (0.32), and between industry export performance and firm's export performance (0.43).

Mediation analyses

For testing the mediating effects, the Baron and Kenney 4 steps approach was used. Table 3 and Table 4 represent the results of mediation. Multiple regression analysis was utilized to test the Baron and Kenny (1986) 4 steps. As shown in Table 3, the association between inter-firm collaboration as well as industry

Table 2.

Descriptive statistics, and correlation analysis results (n = 491)

Constructs	Mean	(SD)	1	2	3	4	5	6
Firms' Age	3.14	1.73	1					
Number of employees	2.97	0.98	.21*	1				
Sales turnover (Annual)	2.12	1.03	.21	.11*	1			
Inter-firm collaboration	3.34.	.67	.08	.13*	.07	1		
Firm export performance	3.12	.56	-.06	.10	-.03	.45**	1	
Industry export performance	2.98	.98	.14	-.13	-.02	.32**	.43**	1

SD= Standard deviation

export performance is significant and both are associated positively with each other ($\beta = 0.17$, $t=5.73$, $p< 0.001$) which confirms the first condition of Baron and Kenny and also confirmed the H1. The association between inter-firm collaboration and firm export performance is also confirmed ($\beta =0.25$, $t= 9.76$, $p<0.001$), so H2 is confirmed also. The third requirement of Baron and Kenny's approach was confirmed with a significant association between the firm's export performance as well as industry export performance ($\beta =0.32$, $t= 10.14$, $p< 0.001$) and founding on these outputs, H3 is statistically accepted.

Table 3.

Regression Analyses

Factors	Industry Export Performance					Firm Export Performance				
	R ²	S.E	β	t-value	p-value	R ²	S.E	β	t-value	p-value
<i>Inter-firm collaboration</i>	0.10	0.05	0.17	5.73	<0.001	0.20	0.043	0.25	9.76	<0.001
<i>Firm export performance</i>	0.19	0.036	0.32	10.14	<0.001	-	-	-	-	-

For fourth condition, multiple regression analysis was done. Three models were tested. Model-I illustrated the impact of inter-firm collaboration on industry export performance. Controlled variables were added in model-II whereas in model-III mediating variable i.e. firm export performance was added.

In model-I, as shown in Table 4, inter-firm collaboration has a significant effect on industry export performance ($\beta=.10$, $SE=0.05$) and when the controlled variables were entered in the same relationship in model-II, the relationship remained significant ($\beta=.12$, $SE=0.051$). In model-III, firm export performance was introduced as a mediating variable which resulted in turning the association of inter-firm collaboration and industry export performance to insignificant

Table 4.
Mediating effects of FEP among IFC as well as IEP

	Model - I β (SE)	Model - II β (SE)	Model - III β (SE)
Independent construct:			
IFC	0.10** (0.05)	0.12** (0.051)	0.05 (0.47)
Control Variables:			
Firms's Age		0.07 (0.087)	0.030 (0.050)
Number of employees		0.09 (0.032)	0.09 (0.028)
Sales turnover (Annual)		0.14* (0.21)	0.05* (0.087)
Mediating Variable:			
FEP			0.26** (0.024)

(Note:** p < .001; * p < .01 (two-tailed test))

IFC (Inter-firm collaboration), FEP (Firm export performance), and IEP (Industry export performance).

($\beta=0.05$, $SE=0.47$) whereas the association among firm export performance as well as industry export performance was established as significant ($\beta=0.26$, $SE=0.024$). This confirmed that firm export performance fully mediates the association between inter-firm collaboration and industry export performance. Thus, H4 is accepted.

As Baron and Kenny 4 step method only depicts the occurrence of mediation and does not predict its strength, so normal test method advocated by Preacher and Hayes (2008) was utilized to calculate the size along with the strength of the indirect effect. The results of the Preacher and Hayes approach ($Z = 3.09$, and $p < 0.001$) confirmed the indirect effect that is $(0.22 - 0.06 = 0.16)$.

DISCUSSION

Exporting is an important element of any economy, and it is considered an essential element for the country's economic development. Export growth brings stability to the economy, enhances the rate of growth of the economy, and positively affects income distribution in the country (Chen & Feng, 2000; Erdoğan et al., 2020). Besides the economy, export is also essential for industry and firms, and for this reason, export growth is kept as a top priority by all the countries. The SME sector is an important contributor to exporting as most of the goods manufactured in developing countries like Pakistan are by SMEs (Kureshi et al., 2009). However, it is difficult for the majority of resource-constrained SMEs to enter the export market on their own; therefore, it was important to study the influence of inter-firm collaboration of SMEs upon individual firms and

industries.

All the proposed relationships between inter-firm collaboration, firm export performance, and industry export performance were found to be significant. Thus, this study offers important research findings. Firstly, this study empirically proved that inter-firm collaboration has a positively significant relationship with IEP, consistent with the findings of previous studies. (Adomako et al., 2021; Manolova et al., 2010; Tomiura, 2007). Secondly, it confirms that inter-firm collaboration positively impacts firm export performance. In current literature, similar results were also found by other researchers in the past (Siddharthan & Nollen, 2004; Sung et al., 2022). So, it can be concluded that inter-firm collaboration improves the firm as well as industry export performance. The third important finding of this research is that the firm export performance improves the overall industry export performance and the association between inter-firm collaboration and industry export performance is positively mediated through firms' export performance. No such results were reported by any previous studies. The research aimed to find out the benefits of inter-firm collaboration in enhancing export performance of SMEs. The study found that inter-firm collaboration enables the firm to enhance its exports as well as industry exports. SMEs are a significant part of the economy for employment generation, accelerated learning, and enhanced economic growth; and their collaboration to increase exports positively adds to their role in economic growth.

THEORETICAL AND PRACTICAL IMPLICATIONS

This research has some important theoretical addition. This research adds to Resource Base View (RBT) theory. In earlier studies, internal resources, as well as the capabilities of firms, were mostly considered as a foundation for the accomplishment of competitive advantage; however, in some studies, external resources owned by collaborating firms are also considered as a source of competitive advantage (Lavie, 2006; Paladino et al., 2015). This study focused on the use of external resources for enhancing firm and industry exports. The development of this model adds to the prevailing theory through advocating suggestions to enhance the firm and industry export. The methodology used in this research is distinct as this research is based on quantitative evidences while most of the existing studies used qualitative methods to develop the model or to test the model(s).

The results of current research confirmed that inter-firm collaboration improves firm as well as industry exports for SMEs. This knowledge can be utilized by managers/owners of SMEs to enhance their export performance. The finding

of this study can also be utilized by policymakers at the government level to reduce the balance of payment problem for developing countries like Pakistan. Government agencies can also use the findings of this research for developing programs to train owners/managers to create inter-firm collaboration so that the resources and knowledge are shared to increase exports.

LIMITATIONS

There are few limitations of the study. This research developed and tested a model having a single independent, dependent, and mediating variable. Adding more independent, dependent, mediating, or/and moderating variable(s) like 'government support', 'export market orientation', and 'firm age' etc. can make this model more comprehensive. It has used a self-reported questionnaire. Designing a study based on collecting data from different sources will also make this study more comprehensive. The data of the research was collected from SMEs only and hence cannot be generalized to all sectors.

CONCLUSION

The study examined the impact of inter-firm collaboration on industry export performance in Pakistani SMEs while evaluating the mediating role of forms export performance. The results revealed that when firms collaborate with each other, industry export performance is enhanced. The study also proved that export performance acts as a mediator between inter-firm collaboration and industry export performance. The success of inter-firm cooperation in boosting industry export performance depends on the individual export performance of the participating enterprises as well. The study is useful in understanding the variables of the study as well as their relationships. It guides the management of SMEs to utilize the opportunities of collaboration for enhancing export performance.

CONFLICT OF INTEREST

The authors have no conflict of interest.

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