



Network cooperation and economic performance of SMEs: Direct and mediating impacts of innovation and internationalisation

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ABSTRACT

Small firms' performance has been recognised as an important topic for researchers dealing with the topics of internationalisation and innovation. Literature has examined the individual influence of network cooperation, innovation and internationalisation on firm performance. However, there is an absence of research to explore the coherent relationship between network linkages, innovation performance, internationalisation performance and its cumulative influence on economic performance. That is, this research examines the mediating roles of innovation and internationalisation between network cooperation and firm performance. Based on the sample of 117 exporting Indian SMEs and using structural equation modelling, the results note that indirect effects produced by customers and Research and Development (R&D) organisations via innovation performance explain a higher proportion of their total effect on the economic performance of SMEs. Conversely, the relationship between three network stakeholders, viz. customers, government agencies and R&D organisations, and economic performance are mediated by the internationalisation performance of SMEs.

1. Introduction

In today's dynamic and competitive market, small and medium enterprises (SMEs) are considered engines of economic growth and technological progress (Bala Subrahmanya & Loganathan, 2021; Xu, Sukumar, Jafari-Sadeghi, Li, & Tomlins, 2021). They play an inevitable role through their inherent ability to constantly innovate new products and processes (Su, Khan, Lew, Park, & Choksy, 2020). SMEs occupy a place of strategic significance in the global economy due to their significant contributions to employment, exports and national income, among others (Su et al., 2020). The role of internationalisation and innovation in an SME context has gained attention from researchers over the past few years (see, for example, Sadeghi & Biancone, 2018). For example, Williams and Shaw (2011) note that innovation and internationalisation are interlinked— with successful internationalisation

dependent on innovation and its exploitation (Dana, 2001). Exploring further, researchers state that innovation helps SMEs in cross-border activities, especially through exports, where the development of new products can help the firms to overcome barriers that can prevent internationalisation (Paul, Parthasarathy, & Gupta, 2017).

Examining barriers to internationalisation, the literature highlights some traditional constraints such as lack of finance, limited entrepreneurial and managerial skills, limited marketing and business development abilities, low productivity and technology usage of SMEs as main obstacles in pursuing international markets (Ramadani, Abazi-Alili, Dana, Rexhepi, & Ibraimi, 2017; Jafari-Sadeghi, Amoozad Mahdiraji, Busso, & Yahiaoui, 2022; Bala Subrahmanya & Loganathan, 2021; Biancone, Secinaro, Iannaci, & Calandra, 2021). In order to overcome these constraints, SMEs use external support in the form of network cooperation¹ (inter-linkages) to pursue their internationalisation activities

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¹ In the context of this research, network cooperation refers to linkages which a firm formulates with other firms (inter-firm cooperation) and with research institutes and universities to sustain, grow and succeed by deriving a plethora of benefits (Chandrashekar & Bala Subrahmanya, 2018; Garcia-Perez-de-Lemaa et al., 2017)

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0148-2963/© 2022 The Author(s). Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

(Cenamor, Parida, & Wincen, 2019; Vrontis, Basile, Andreano, Mazzitelli, & Papisolomou, 2020; Mahdiraji, Beheshti, Jafari-Sadeghi, & Garcia-Perez, 2022). Evidence has shown that network cooperation helps in international market penetration and directly improves economic performance as well as innovation capabilities (Mazzola & Bruni, 2000; Martínez-Román, Gamero, de Loreto Delgado-González, & Tamayo, 2019; Jafari-Sadeghi, Dutta, Ferraris, & Del Giudice, 2020; Zucchella, 2021). While existing literature has examined different aspects of network cooperation in relationship with innovation (Sukumar, Jafari-Sadeghi, Garcia-Perez, & Dutta, 2020; Onjewu, Jafari-Sadeghi, & Husain, 2022), internationalisation (for example, Morrish & Earl, 2020; Hult, Gonzalez-Perez, & Lagerström, 2020), and firm performance (Jiang et al., 2020; Dolfsma & Van der Eijk, 2017), there is an absence of studies focussing on the effect of networks linkages on the trioka of internationalisation, innovation and firm performance. We, therefore, attempt to understand the impact of network cooperation on innovation, internationalisation and economic performance of SMEs. Additionally, this study attempts to probe whether network cooperation leads to better innovation performance and internationalisation performance, which in turn could influence economic performance either independently as separate effects or in conjunction.

To explore these aims, the paper undertakes a study of 117 manufacturing firms (export-oriented) from India and applies SEM-PLS to understand the direct and indirect relationship between innovation, internationalisation, and network co-operation on firm performance. India as the study setting provides a rich and unique context to the key constructs examined in the study. India has come a long way in terms of re-emerging as the fastest-growing emerging economy in the world today (International Monetary Fund. (2021), 2021), overcoming the cultural, social and institutional barriers that existed for the pursuit of entrepreneurship (Dana, 2007). India is today the world's third-largest start-up hub housing about 25,000 active tech-start-ups, with 84 unicorns and a fast-maturing entrepreneurial ecosystem (National Association of Software and Service Companies (NASSCOM). 2022, 2021). India's SMEs are significant contributors to its internationalisation and economy, accounting for about 50% of India's exports, employing 110 million people and contributing to about 28% of the country's GDP (Soni, 2019; RBI, 2019). For all these reasons, Indian SMEs provide the ideal context to study the interlinkages between internationalisation, innovation and network cooperation and their combined influence on firm performance.

The results note that the indirect effects produced by customers and R&D organisations via innovation performance can explain a higher proportion of their total effect on the economic performance of SMEs. Conversely, the relationship between three network stakeholders, viz. customers, government agencies and R&D organisations, and economic performance are mediated significantly by the internationalisation performance of SMEs. Further, while testing the two-path mediated model, which consists of both the mediators (innovation and internationalisation performance) between the exogenous construct - network cooperation and the endogenous construct-economic performance, it is ascertained that the direct influence of internationalisation performance on the economic performance of SMEs became insignificant.

The paper is structured as follows, section two explores the literature and develops the hypotheses around the key themes of network cooperation, innovation, internationalisation and firm performance. Section three details the data collection methods and the development of the measuring instrument while section four discusses the results of the data collection exercise. The final section is a conclusion discussing the implications of the research and highlights the future scope of work.

2. Conceptual background and hypothesis development

Resource-Based View (RBV) has extensively been used across multiple domains to explain how firms can obtain competitive advantage

(Barney, 1991; Westhead, Wright, & Ucbasaran, 2001; Nagano, 2020). From a strategic management perspective, the resources that are superior and distinctive relative to those of other competitor firms provide the basis for obtaining competitive advantage, when these are aligned to work coherently with external environment conditions (Freeman, Dmytriiev, & Phillips, 2021). Among the earlier works, Peteraf (1993) outlined four theoretical conditions of a resource-based model, all of which had to be met in order to obtain a competitive advantage. Resource heterogeneity was the first of these conditions, which was used as a measure of the uneven presence of superior resources (Lockett, Thompson, & Morgenstern, 2009). The second was limited to competition, which was explained as a requirement in order to enable a firm to retain its dominance in the market due to the accumulated superior resources (Miller, 2019). The third condition was imperfect mobility of resources, implying that any attempt to change the resource position of a firm would incur substantial transaction costs for the competition, or result in sunk cost (loss due to investment in resources) for the incumbent firm (Lavie & Miller, 2008). The fourth and last condition purported as a pre-requisite for sustainable competitive advantage was ex ante limits to competition. This condition meant that there must have been very limited or less competition in the market before the incumbent firm became equipped with superior resources (Snihur, Zott, & Amit, 2021).

While there is general consensus on resources influencing the sustenance of competitive advantage of a firm, there is however an ongoing deliberation on the modes and mechanisms on how this is achieved. Prior research has examined this phenomenon from an industry-specific, firm-specific and external environment-specific lens (Zakrzewska-Bielawska, 2019). However, the aspects of network cooperation have started to assume more importance in explaining how firms can obtain a competitive advantage by leveraging their resources (Dana, Gurău, Hoy, Ramadani, & Alexander, 2019). The industrial-organisational theories and resource-based theories have been criticised as being overly firm-centric (Hoskisson et al., 2018). Dana (2001) argued that firms were embedded in their networks and relationships with all other key stakeholders of the ecosystem in which they operate and that all actions, activities and outcomes of the firms depended on the strength of these networks and the emanating cooperation from them. Recent developments have brought to fore the importance of inter-firm cooperation, intra- and inter-organisational linkages in enabling competitive advantage to firms (Camanzi & Giua, 2020; Haffer, 2021).

The relational theory of obtaining competitive advantage put forth by Dyer, Singh and Histerly (2017) identify relation-specific assets, knowledge-sharing routines, complementary resources and capabilities and effective governance as the four sources of inter-organisational competitive advantage. They posited that competitive advantage can be gained and sustained by effective and efficient management of networks and cooperation. They argued that inter-firm networks would ensure the creation of barriers to imitation (Vrontis, Basile, Sciarelli, & Tani, 2020; Garousi Mokhtarzadeh, Amoozad Mahdiraji, Jafarpanah, Jafari-Sadeghi, & Bresciani, 2021), enable asset interconnectedness (Berends & Sydow, 2019), provide resource surplus (Kale et al., 2019) and a manageable institutional environment. To start with, firms are seen (visualised) as bundles of resources as per RBV. According to RBV, some of these resources which are rare, valuable, hard to imitate and substitute provide firms with a sustained competitive advantage (Barney, 1991). Bala Subrahmanya (2015), while analysing the engineering industry SMEs, opines that the internal strength of SMEs lies in their own resource capabilities and strategies which enable them to innovate successfully. However, SMEs are constrained by various resources, be it financial, technological or human resources, which inhibit them to innovate on the one hand and internationalise on the other (Biancone et al., 2021; Sadraei, Sadeghi, & Sadraei, 2018; Boudlaie, Amoozad Mahdiraji, Saneie Jirandeh, & Jafari-Sadeghi, 2022). In the case of manufacturing SMEs, which possess brick-and-mortar set up and have to incur more expenditure on acquiring technological expertise, it becomes

rather more difficult for them to display innovation performance and exert their presence in the international markets (Ramadani et al., 2017; Bala Subrahmanya & Loganathan, 2021).

2.1. Network cooperation and economic performance (direct model)

The aspects of the influence of network cooperation on firms' economic performance have been receiving increased attention over the past two decades. Gulati, Nohria, and Zaheer (2000) observed that firm performance can be fully understood only after a thorough examination of the network of the relationships a firm is embedded with. Accordingly, there has been an exploration of the impact of network alliances on firm performance (Cenamor et al., 2019; Dyer, Singh, & Hesterly, 2017; Koka & Prescott, 2002). The key consensus achieved from these studies was that networks of the firm contained valuable information which would provide a strategic advantage to the firm. Networks were seen to be providing platforms for inter-firm and intra-firm discussion, providing initial insights on new techniques, routines and processes and enabling information mobility (Jiang, Liu, Fey, & Jiang, 2018; Mokhtarzadeh, Amoozad Mahdiraji, Jafarpanah, Jafari-Sadeghi, & Cardinali, 2020). The conjecture was that a firm's network could be thought of as an 'inimitable and non-substitutable resource' as well as 'a means to access unique capabilities' (Javalgi & Todd, 2011; Lin & Lin, 2016; Fang, Zhou, Wu, & Qi, 2019). These strategic resources when utilised appropriately by the firm would lead to superior economic performance (Rubino & Vitolla, 2018; Johansson, Raddats, & Witell, 2019; Cassia & Magno, 2019). The examination of the influence of network cooperation on firm performance has also been studied in the context of embeddedness (Dezi, Ferraris, Papa, & Vrontis, 2019). Uzzi (1996) proposed a theory that integrated organisation theory with social network theory which argued that organisational structure and quality of network ties influenced the economic performance of firms. The basic premise was that type of network that a firm is embedded in would determine the economic opportunities for it, whereas the firm's position in the group and its inter-firm linkages would determine the degree of opportunity exploitation (Jafari-Sadeghi, 2020; Tumelero, Sbragia, & Evans, 2019).

SMEs view external partners as complementary assets and derive the required benefits. SMEs make networks to access significantly and to substitute existing raw materials in the form of new machinery or accessories if needed (Whitley, 2002). Further, interaction with customers and clients particularly helps SMEs to know better about their product acceptability, which further helps them in product improvement. Horizontal cooperation includes SMEs of the same sector and knowledge co-operators called government institutions, industry associations and research organisations, among others. It helps the networked SMEs to perform joint R&D, which in turn helps in reducing the cost and improving the product quality (Kumar & Bala Subrahmanya, 2010). Moreover, knowledge co-operators assist SMEs by providing grants/loans, academic expertise and/or purchasing equipment for their R&D operations, among others. Network actors and cooperation play an important role in the performance of the SMEs; hence we hypothesise:

H1. Network cooperation has a positive relationship with the economic performance of SMEs

2.2. Network cooperation, innovation and economic performance

External network actors are the innovation intermediaries, which facilitate and coordinate innovation (Gronum, Verreynne, & Kastle, 2012; Nakwa, Zawdie, & Intarakummerd, 2012). Further, domestic and foreign networks have a differential impact on various dimensions of innovations. While the domestic network is found to affect innovation volume, the foreign network is found to impact innovation radicalness (Balachandran & Hernandez, 2018). In addition, while, empirical findings indicate that direct and indirect ties have a significant influence on innovation; structural holes have a negative effect on innovation (Ahuja,

2000). SMEs, in particular, form an external network and cooperate with each other to complement their capabilities and improve their skills (Coviello, 2006). These skills help them to come up with novel ideas on how to bring new products in the market according to the tastes and preferences of the customers (Zahra, 2005).

Rehman (2017) found that network cooperation is found to have a positive influence on the innovation performance of SMEs. Further, among internationalised SMEs, Ali et al. (2020) empirically found that network co-operation in the form of inter-firm interactions enhances the absorptive capacity of SMEs and thereby improve their innovation performance. Thrassou, Vrontis, Crescimanno, Giacomarra, and Galati (2020) found that network ties and internal knowledge management practices helped SMEs to internationalise successfully. In addition, Brink (2018) empirically showed that network co-operations, which involve dynamic complementary proximities positively affect the innovation performance of SMEs. Whereas Hilmersson and Hilmersson (2020) empirically observed that network co-operations accelerate SME innovations. In addition, the network of SMEs which consists of informal arrangements and formal long-term strategic alliances may lead to both types of innovation, viz. incremental and radical (Sammarrà & Biggiero, 2008).

Dana (2001) notes that the influence of networks has led to the realisation that performance or innovation outcomes of the firms no longer can be viewed in isolation to the firm, but should be viewed, assessed and monitored between groups or networks. Therefore, the effectiveness and efficiency of the networks, alliances and partnerships have become a primary focus of innovation and strategy literature (Ahuja, 2000). At a macro level, there has been initial literature suggesting that the structure and properties of networks positively influence the innovation and performance outcomes of firms (Sampson, 2007; Schilling & Phelps, 2007). Ramadani et al. (2019) have noted that in transition economies, product-based innovation was found to have a positive influence on the performance of firms, with the size of the firm, cost of labour capital and initial capital infusion influencing this relationship.

However, there are still many different aspects related to the interplay of firm networks and their innovation and economic performance that need further exploration. For example, firms are heterogeneous in nature and usually operate at different levels of maturity, implying a variance in the degree of resources and capabilities they possess (Shan, Luo, Zhou, & Wei, 2019). Silvia et al. (2016) deduced that exporting would benefit SMEs only after a certain level of international trade commitment is established, and any stage either earlier to it or later to it would negatively impact firm performance. Chebbi et al. (2016) from their study showed that the cultural attributes of Indian entrepreneurs played a significant positive role in enabling the successful internationalisation of Indian companies. There is not much apriori knowledge on how the variance in resource capabilities of the firms' impact or influence the innovation and economic performance outcomes as they participate in the network cooperation activities. Since the strategic and most valuable resources reside in the networks and alliances of the firms, the identification, exploration and exploitation of these resources by the firms need a different configuration (Felzensztein, Deans, & Dana, 2019). Drawing from the importance of network cooperation on innovation and firm performance, we hypothesise:

H2. Network cooperation has a positive relationship with the innovation performance of SMEs

H3. Innovation performance has a positive relationship with the economic performance of SMEs

2.3. Network cooperation, internationalisation and economic performance

Prior literature has indicated that network relationships fostered by the SMEs have helped them to expand their customer base by

collaborating with new companies in domestic as well as international markets and start exporting their products (Dana et al., 2019). Zhou, Wu, and Luo (2007) noted that international expansion typically implies greater risks for small, resource-poor firms. This is because the small firms are constrained in many ways, in terms of capabilities, limited access to market research, and the inability to onboard experts and mentors who can support them in their internationalisation efforts. Sapienza, Autio, George, and Zahra (2006) observed that early internationalisation of SMEs in some instances can reduce their survival chances. On the contrary, Zahra and Hayton (2008) deduced that firms get exposed to new learning and growth opportunities when they take the risk of venturing abroad. Rexhepi, Ramadani, Rahdari, and Anggadwita (2017) noted that firm strategy and business model alignment as the two most important factors contributing to the internationalisation of family businesses. Musteen, Francis, and Datta (2010) found that geographically diverse networks contributed to superior economic performance. Further, their study indicated that excessive reliance on the personal contacts of the entrepreneurs hindered the economic performance in some contexts.

The influence of networks on internationalisation has been shown to be more pronounced in transitional economies. It is posited that the weak institutional support, presence of an informal economy, the unpredictable legal system contributes to the traditional challenges of exporting (Batjargal, 2003). A few studies have explored how small firms have overcome these macro-level challenges by accessing external resources (Chen, 2003). Ratten, Dana, and Ramadani (2017) deduced that in the context of family businesses, social ties, their networks and kinship enabled them in better opportunity identification, exploitation and internationalisation. While there is adequate knowledge available on how network cooperation enables internationalisation, the further aspects of how and if internationalisation under the studied contexts enables the superior or better economic performance of the incumbent firms has not been explored in prior literature. It is this gap that we wish to address as part of the present study. There is not adequate evidence available on what kind of network-related attributes or structure enable or hinder the subsequent economic performance of a firm that leverages its networks to internationalise. Thus, linking network cooperation, internationalisation, economic performance, we hypothesise:

H4. Network cooperation has a positive relationship with the internationalisation performance of SMEs.

H5. Internationalisation performance has a positive relationship with the economic performance of SMEs

2.4. Mediating roles of innovation and internationalisation on network cooperation and economic performance of SMEs

2.4.1. Mediating role of innovation

It is found that networked firms exhibit a higher economic performance (Abramovsky, Kremp, López, Schmidt, & Simpson, 2009) and a higher innovation performance (measured by R&D intensity) (Becker & Dietz, 2004; Sampson, 2007). Thus, the networks formed among firms to enhance innovative skills are sometimes called innovation networks. Innovation networks are formed among SMEs to lower their transaction costs while performing joint R&D. Innovated SMEs with a considerable share of innovated products in total sales, achieve higher growth of sales turnover (Li & Mitchell, 2009; Rosenbusch, Brinckmann, & Bausch, 2011; Amoozad Mahdiraji, Sedigh, Razavi Hajiagha, Garza-Reyes, Jafari-Sadeghi, & Dana, 2021). The process of innovation induces learning to produce absorptive capacity which determines the ability to identify, integrate, and implement knowledge (Cohen & Levinthal, 2000), which eventually leads to better economic performance (Kostopoulos, Papalexandris, Papachroni, & Ioannou, 2011; Najafi Tavani, Sharifi, & Ismail, 2013). Moreover, innovation makes SMEs more efficient in utilising the factor inputs of production viz. capital and labour, which lead to their better economic performance (Kumar & Bala

Subrahmanya, 2010).

In the networked world, innovation no longer can be viewed as a firm's unique non-imitable resource. On account of network ties, alliances and partnerships the innovations derived from one firm diffuse through these networks to other firms (Etemad, Wright, & Dana, 2001). Higher resource complementarities of firms with stronger ties between themselves are posited to achieve higher degrees of innovation (Chandrashekar & Bala Subrahmanya, 2018). For the other firms in the network, any innovation is an opportunity to innovate, since the required resources and knowledge to derive the innovation will be accessible to firms due to the network linkages (Ahuja, 2000). For these reasons, innovation in a networked firm's structure can be viewed as a complementary resource endowment available from an alliance partner (Garcia-Perez-de-Lema, Madrid-Guijarro, & Martin, 2017). Therefore, moving away from the traditional firm-based outcome evaluation lens, innovation, having emanated from the inter-firm network linkages as a source can now be viewed as a moderating force of firms' economic performance. In line with this argument, we propose the next hypothesis as follows,

H6. Innovation performance positively mediates the relationship between network cooperation and the firm's economic performance.

2.4.2. The mediating role of internationalisation

More often, SMEs are unaware of the foreign markets where there could be a significant demand for their products. This information asymmetry is resolved with network agents or intermediaries (or sometimes called international networks) which help them to expand their geographical presence. In the network building process, SMEs discover new opportunities in the global market and generate a significant proportion of sales internationally. The internationalisation of SMEs has to overcome two liabilities, viz. newness and smallness (Westhead et al., 2001). The liability of newness, in the context of young firms, can be mitigated by cooperating with a firm having experience and a strong foothold in the market. The liability of smallness can be resolved through forging network linkages, which enable SMEs to gather enough resources required to internationalise (Welge & Borghoff, 2005). The network-related factors are found to influence the timing of internationalisation and the economic performance-related goals associated with the internationalisation of SMEs (Ellis, 2011; Vahlne & Johanson, 2017). Further, the personal ties of entrepreneurs and the founding team and/or senior management team have been shown to influence the internationalisation and economic performance of SMEs (Eriksson, Johanson, Majkgard, & Sharma, 1997; McDougall, Oviatt, & Shrader, 2003; Zucchella, Palamara, & Denicclai, 2007). Common language across the SME management and their international counterparts is another factor that enables internationalisation (Sui, Morgan, & Baum, 2015).

At a macro level, there is consensus that network building process helps SMEs discover new opportunities in the global market and through internationalisation, SMEs generate a significant proportion of sales (Ellis, 2011; Vahlne & Johanson, 2017; Mensah, Asamoah, & Jafari-Sadeghi, 2021). Prior literature has noted that if SMEs can overcome the liabilities of foreignness and outsiders (Johanson & Vahlne, 2009), then these aspects would help in the rapid expansion of international sales. On similar lines, Westhead et al. (2001) deduced that the internationalisation of SMEs has to overcome two liabilities, viz. newness and smallness. The liability of newness, in the context of young firms, according to them can be mitigated by cooperating with a firm having experience and a strong foothold in the market. The liability of smallness can be resolved through forging network linkages, which enable SMEs to gather enough resources required to internationalise (Welge & Borghoff, 2005). There is also prior evidence that network-related factors influence aspects of internationalisation (such as the timing of entry, mode and degree of internationalisation) and each of these aspects influences the economic performance of the SMEs (Vahlne & Johanson, 2017).

Building on this support, we hypothesise that internationalisation mediates the economic performance of firms that leverage network cooperation.

H7. Internationalisation performance positively mediates the relationship between network cooperation and the firm's economic performance.

2.4.3. Mediating roles of innovation and internationalisation on network co-operation and firm performance

The discussions in the prior sections bring forth the fact that network cooperation and network-related resources influence the innovation, internationalisation and economic performance of firms (Saridaikar et al., 2019; Morrish & Earl, 2020; Etemad, Gurau, & Dana, 2021). There has been an extensive exploration of these firm-related outcomes in prior literature, with each of these constructs being treated as the result or the outcome due to the influence of network cooperation (the source/cause) (Singh & Bala Subrahmanya, 2018; Martínez-Román et al., 2019). In other cases, network cooperation or network resources have been explored for their role in mediating these outcomes (Ellis, 2011; Vahne & Johanson, 2017; Garcia-Perez-de-Lema et al., 2017). Another body of prior research has explored whether internationalisation influences innovation or vice-versa with mixed outcomes (Rezaei, Jafari-Sadeghi, & Bresciani, 2020; Zucchella, 2021). The above strands of literature review reveal that despite the rich individual exploration of the effects of these constructs, the exact mechanisms of 'how' the network resources influence either of internationalisation or innovation prospects of the firms and further, whether the firms stand to benefit economically on account of increased internationalisation or innovation is still an area that needs further research (Jafari-Sadeghi, 2021; Zucchella, 2021).

It is this gap that the present study tries to address by positing the following two hypotheses. We argue that the internationalisation or innovation abilities of firms mediate the influence of network cooperation on economic performance. Rather than treating innovation or internationalisation as an outcome, we consider these constructs as a necessary intermediate step in the process where the network-related cooperation enables economic performance by means of increased internationalisation and/or innovation. Reflecting this, we state that,

H8. Innovation and internationalisation sequentially mediate the relationship between network cooperation and the economic performance of SMEs.

H9. Internationalisation and innovation sequentially mediate the relationship between network cooperation and the economic performance of SMEs

Fig. 1 shows the direct effect of network cooperation on firm performance without taking into account the mediating influence of internationalisation or innovation.

But as it is known, firm performance is an outcome of a process that is influenced by a firm's different resource capabilities. Internationalisation and innovation can mediate the economic performance of SMEs and Figs. 2 and 3, express this path mediated effects of network cooperation on firm performance, via innovation and internationalisation

3. Research context

This study is based on Indian manufacturing SMEs, the choice of Indian SMEs was based on two key factors. The first one is rooted in the

nature and contribution of Indian SMEs to the country's exports while the second one relates to the unique contextual nature of Indian manufacturing SMEs that pose additional barriers to export. These two factors are discussed below.

Firstly, similar to the rest of the world, SMEs can be viewed as being one of the principal contributors to the internationalisation from India. In terms of absolute numbers, it is estimated that India has about 633.9 million SMEs operating actively as of 2018–19. While about 47,000 exporting SMEs were accounted for in 2005–06, as of 2018–19, this number had increased to about 127,000 exporting SMEs in India (MSME Ministry, Govt. of India, 2019; Line, 2019). As of 2018–19, almost about 50% of India's exports were contributed by the Indian SMEs (Soni, 2019). They also provide employment to 110 million people and contribute over 28 per cent to the country's GDP (MSME Ministry, Govt. of India, 2019; RBI, 2019). The manufacturing SMEs operating in India contributes over 7% of the GDP, 45% of the industrial output and 40 % of the exports (MSME Ministry, Govt. of India, 2019; RBI, 2019). They are also characterised by a very diverse range of products and services that they manufacture, or by way of their size and scale of operations, or through the ownership patterns, location of operations and degree of technological adaptation (MSME Ministry, Govt. of India, 2019).

Secondly, the heterogeneity and scale of operations of the Indian SMEs form the major barrier to growth and internationalisation (MSME Ministry, Govt. of India, 2019). About 99.47% of the Indian SMEs are microenterprises, and these SMEs employed about 1.75 people per entity on average (MSME Ministry, Govt. of India, 2019) indicating the suboptimal scale of operation of Indian SMEs. Due to this inappropriate scale of Indian SMEs, the traditional constraints to SMEs such as lack of finance, limited entrepreneurial and managerial skills, limited marketing and business development abilities, low productivity and technology usage become even more pronounced and exponentially complicate the operating conditions for the Indian SMEs (OECD, 2000; Bala Subrahmanya & Loganathan, 2021). In response to these challenges, Indian SMEs most often resort to utilising local skills and resources and focus on meeting local customer needs (Bala Subrahmanya, 2018). Given these operating conditions, even if external support and knowledge were to be available and ready to be shared, the internal capabilities of the Indian SMEs are not sufficiently aligned to develop synergistic external linkages and resolve their internal challenges (Bala Subrahmanya, 2018). It also provides an interesting angle to explore how these firms use their resources (networks) to enter overseas markets as well as the role of innovation and internationalisation in their firm performance.

4. Data

The organisations selected for this research were manufacturing SMEs who were exporting from India. The sampling frame was obtained from Visvesvaraya Trade Promotion Centre (VTPC), Bengaluru, the designated Nodal Agency of the Government of Karnataka for the promotion of International Trade from Karnataka. The decision-makers targeted by the survey were CEOs and Managing directors who were knowledgeable about the export activities within their firms. Further inclusion criteria to select only active exporting SMEs, a decision was made to include only firms that at least generated 25% of its sales from exporting (Falahat, Ramayah, Soto-Acosta, & Lee, 2020). A random sampling approach was used to draw the desired sample to represent the SME population for our research, in line with similar past studies (Sadeghi, Nkongolo-Bakenda, Anderson, & Dana, 2019; Sukumar, Jafari-Sadeghi, & Xu, 2021). A total of 392 engineering goods exporting SMEs (25 % criteria) were identified and a two-stage data collection strategy was employed to collect empirical data.

Firstly, a pilot study was done with ten randomly selected SMEs to pre-test the questionnaire, based on the responses and further interviews with the participants, minor modifications were made to the questionnaire for the second part of the study. In the second part, questionnaires were sent to 298 export-oriented manufacturing SMEs in late 2019, with



Fig. 1. Model with direct effect.

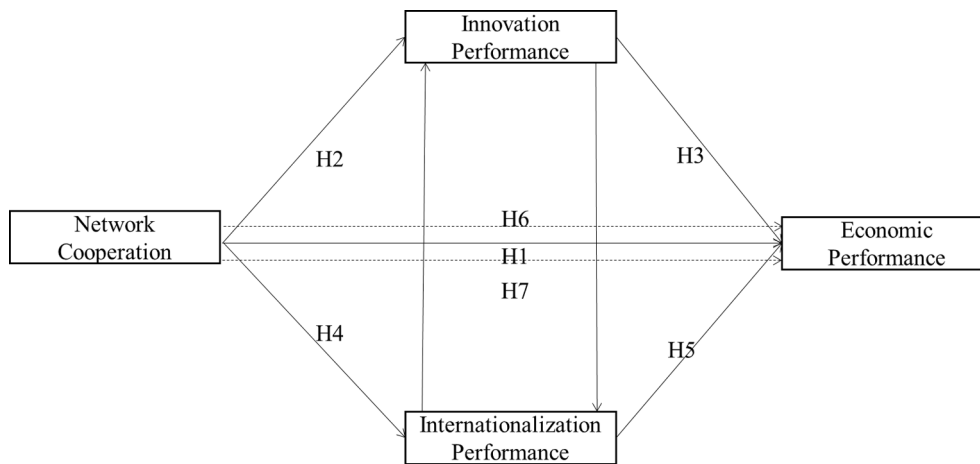


Fig. 2. Model with path-mediated effects.

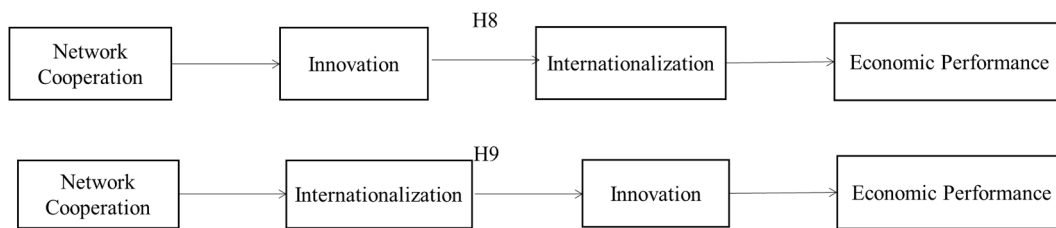


Fig. 3. Path mediated by Innovation and Internationalisation.

data collected from 117 SMEs with a response rate of about 40%. The final questionnaire contained questions that covered all the key constructs being examined in the study. For example, to collect information related to the network linkages of SMEs, questions related to the quantum of assistance they received from external stakeholders on matters such as marketing, taxation and operations among others were asked, with the responses of SMEs being captured on a Likert scale. In a similar fashion, to measure innovation-related characteristics of SMEs,

questions related to improvements in their production process, the proportion of sales due to new products etc. were asked. For internationalisation related data collection, information such as the number of countries penetrated, market entry modes, time to initiate exports among others were collected.

Table 1
Results of the measurement model.

LV	Items	CUS	EI	EP	GA	IA	PROD	RD
CUS α = 0.71 CR = 0.82	Advanced Order Information	0.710						
	Market Awareness	0.701						
	Product Feedback	0.718						
	Product Specification	0.833						
EI	Export Intensity		1.000					
EP	csnew (income in crores)			1.000				
GA α = 0.76 CR = 0.86	Policy Framework				0.863			
	Subsidies & Tax Incentives				0.806			
	Training Courses for Entrepreneurs				0.805			
IA α = 0.78 CR = 0.87	Quality Control Systems					0.872		
	Lobbying & Mediating					0.800		
	Tax and Legal Matters					0.822		
PROD α = 0.83 CR = 0.92	Modified Product Sales Proportion (MODPROP)						0.928	
	New Product Sales Proportion (NPPROP)						0.924	
RD α = 0.72 CR = 0.84	New idea/product or technology							0.764
	R&D Infrastructure							0.791
	Researcher Expertise							0.845

4.1. Measures of variables

It is appropriate to empirically investigate the characteristics of network cooperation, innovation performance and internationalisation performance of the sampled SMEs, before examining any association between the three. The measurement items for this research were developed based on literature review, particularly, from the previous work done by Singh and Bala Subrahmanya (2018) validated constructs that captured network cooperation, internationalisation, innovation was measured on a five-point Likert scale ranging from (1) strongly disagree to (5) strongly agree. The survey questionnaire was divided into two parts, with the first part capturing company information while the second part focussed on questions related to constructs. Network cooperation is measured in terms of the quantum of assistance received by the SMEs from different network participants/stakeholders, such as industry associations (IA), R&D organisations (RD), government agencies (GA) and customers/clients (CUS). Innovation performance is measured by product innovation (PROD), while internationalisation performance is measured by export intensity (EI), while EP denotes the economic performance of the SMEs. The full description of the constructs along with factor loadings is given in Table 1.

4.2. Measurement model

We used Structural Equation Modelling (SEM) for testing and validating the model. A quantitative methodology with PLS-SEM as the statistical technique is the ideal fit to examine the objectives laid out in this study. This is because, PLS-SEM as a quantitative technique is best suited to evaluate the direct and latent relationship between the variables under examination (Chin, 1998; Hair, Ringle, & Sarstedt, 2013). Further, due to the availability of quantifiable data related to the key constructs being examined, the adoption of quantitative methodology is the most optimal choice, since the outcomes of such analysis are logical, unbiased and verifiable (Nunnally & Bernstein, 1994; Calza, Aliane, & Cannavale, 2013). This method is particularly useful when researchers need to examine latent variables (Hair et al., 2013; Dash & Paul, 2021). Specifically, we adopted Partial Least Squares (PLS)-SEM, to test our measurement model based on its applicability in similar contexts as of the present study (Dash & Paul, 2021; Sarstedt, Hair, Nitzl, Ringle, & Howard, 2020).

SmartPLS 3.3 (Ringle, Wende, & Becker, 2015), a software tool for conducting variance-based SEM analysis has been used for analysis in the study. The SmartPLS software provides a visual user interface that helps researchers to specify the models with mediation and/or moderation, as well as provides capabilities to indicate reflective and formative measures on the tool's user interface (Hair et al., 2013). Further, due to the availability of user guides to perform the SEM analysis, SmartPLS has emerged as the go-to tool to conduct variance-based SEM analysis (Ringle et al., 2015). For these reasons, we have used the SmartPLS software tool for the analysis in this study.

The dimensionality and the reliability of the data were addressed through established procedures (Hair et al., 2013; Sarstedt et al., 2020). The dimensionality of the data and its appropriateness for analysis is ascertained by confirmatory factor analysis of the constructs (Dash & Paul, 2021). The absence of multicollinearity and the average variance of extracted constructs being above specified threshold values establishes the construct validity (Chin, 1998). Construct validity refers to the degree to which an instrument measures a variable what it is intended to measure. It is established through convergent validity and discriminant validity measures. Convergent validity refers to the degree to which a variable is associated positively with another item or variable used to measure the same construct (Hair et al., 2013, p. 115). The average variance extracted (AVE) corresponding to each latent construct is evaluated to establish the convergent validity. The threshold value of AVE prescribed is 0.5 (Chin, 1998) to establish the convergent validity of a latent construct. The AVE values for all the constructs in our study are

found to be above 0.5 as shown in Table 2. Hence, the criteria of convergent validity are satisfied for the model.

Discriminant or divergent validity refers to the extent to which a construct is precisely distinguishable from other constructs, and the degree of variance between a construct and its indicators (Hair et al., 2013, p. 115). The Fornell and Larcker (1981) is used to establish discriminant validity. The diagonal values represent the square root of AVE, which measures the variance between a construct and its items, while the off-diagonal elements measure the squared correlation between latent constructs. Table 2 notes that the score of diagonal items is greater than that of off-diagonal elements in respective columns, which confirms the discriminant validity of the constructs.

Reliability is known by the degree to which the distinct observed variables measure the same latent variable. It is established by two measures, viz. Composite reliability and indicator reliability. Composite reliability is employed to assess the internal consistency between observed variables of the same construct (Hair et al., 2013). It ascertains if the observed variables estimating a factor/construct are closely related. Composite reliability does not assume an equal weightage of observed variables like Cronbach's alpha does. Both values are recommended to be greater than 0.70 (Nunnally & Bernstein, 1994) to establish the internal consistency of a scale, which is confirmed for all the constructs in the model as shown in Table 1. Indicator reliability or individual item reliability refers to the proportion of variance in an item explained by a latent variable (factor) (Hair et al., 2013). This form of reliability is examined by the factor loadings of all the indicators used to measure different constructs in the measurement model. The values of factor loadings (outer loadings) range from 0 to 1. Indicators having a factor loading greater than 0.7 are accepted (Hair et al., 2013). Table 1 confirms the indicator reliability of all the constructs.

5. Empirical results

5.1. Network cooperation and economic performance of SMEs: Innovation performance and internationalisation performance as the mediators

For validating the inner (structural) model shown in Fig. 4, the following steps are used. Initially, the direct relationships between network cooperation and other three constructs, namely, innovation performance, internationalisation performance and economic performance were examined, then the direct relationship between innovation and economic performance, and between internationalisation and economic performance are ascertained. Secondly, the mediating effects of innovation and internationalisation, one by one, is accounted whereas analysing the impact of network cooperation on the economic performance of SMEs. Thirdly, the predictive accuracy and predictive relevance of the two-path mediated model was assessed by R^2 and Q^2 values of endogenous constructs, respectively (Chin, 1998). Subsequently, the effect size f^2 was measured to evaluate the importance of an exogenous variable on the endogenous variable (Hair et al., 2013).

Bootstrapping was employed on 117 data points and 5000 samples to approximately normalise the data and examine the statistical significance of path coefficients (Vinzi, Trinchera, & Amato, 2010). The results of hypothesis testing drawn after the completion of the bootstrapping method are given in Table 3.

It is found that the network cooperation with customers (CUS), government agencies (GA), industry associations (IA), and R&D organisations (RD) has a positive influence on internationalisation performance (EI), innovation performance (PROD) and economic performance (EP) of SMEs. Further, it is observed in Table 3 from the magnitude of path coefficients (as shown in bold in Table 4) that the assistance received from customers/clients and government agencies (or functionaries) has more influence on internationalisation performance, innovation performance and economic performance of SMEs, compared to that of industry associations, and R&D organisations. While probing

Table 2
Fornier-Larcker criterion analysis for discriminant validity.

Latent Constructs	Average Variance Extracted (AVE)	CUS	EI	EP	GA	IA	PROD	RD
CUS	0.537	0.733						
EI	1.000	0.391	1.000					
EP	1.000	0.468	0.600	1.000				
GA	0.680	-0.048	0.386	0.443	0.825			
IA	0.692	0.190	0.293	0.447	0.157	0.832		
PROD	0.857	0.511	0.599	0.766	0.292	0.328	0.926	
RD	0.642	0.109	0.286	0.327	0.179	0.110	0.302	0.801

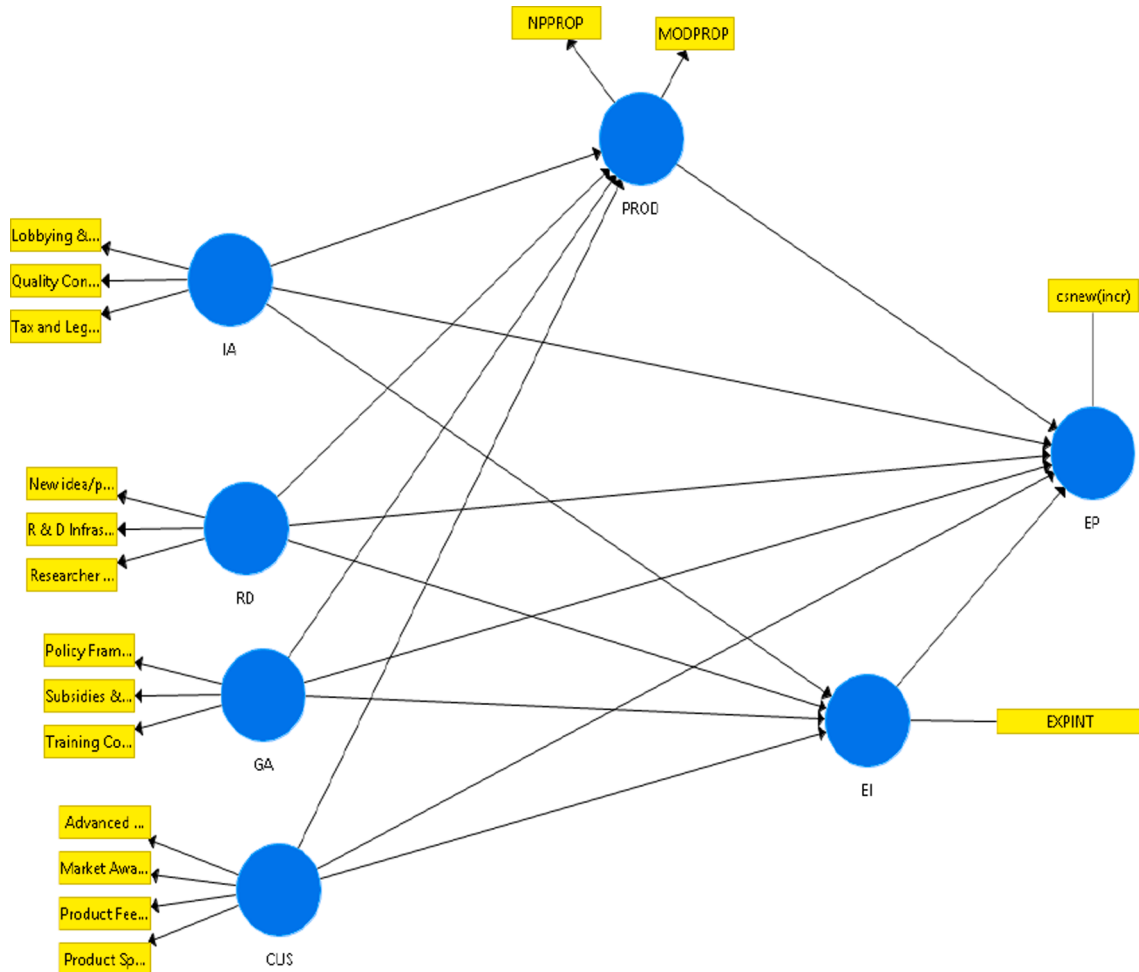


Fig. 4. PLS-SEM Model.

the direct bivariate relationship between innovation performance and economic performance, and between internationalisation performance and economic performance of SMEs, it is found that both direct relationships are found to be statistically significant. Table 4 shows that innovation performance has a much more significant impact on the economic performance of SMEs ($\beta = 0.634$) as compared to that of internationalisation on the economic performance ($\beta = 0.220$).

5.2. Mediation analysis

Mediation analysis is conducted to ascertain the causal relationship between an independent variable and the dependent variable by including other explanatory (independent) predictors between them (Hair et al., 2013). The other independent variable is called mediating variable. In PLS-SEM, mediation analysis is performed by the following steps:

In the first step, the direct effect of each exogenous (independent) construct on the endogenous construct (dependent) is evaluated without any mediating variable. This direct effect (P13) needs to be significant to run the mediation analysis (Zhao, Lynch, & Chen, 2010). In the next step, the mediator variable is included in the path model and the overall indirect path effect is assessed (P12*P23) using a bootstrapping procedure. If the indirect effect is also statistically significant, then it proceeds to measure the total effect and hence the VAF (Variance Accounted For) measure is calculated. VAF measures the proportion of direct path absorbed by the mediators. It is calculated as:

$$VAF = \text{Indirect Effects} / \text{Total Effect}, \text{ where Total effect} = \text{Direct effect} + \text{Indirect Effects}$$

$$\text{Therefore, } VAF = (P12 * P23) / (P13 + P12 * P23).$$

If the VAF measure lies between 0 and 0.2, then no mediation effect is assumed to be present; if the VAF value lies between 0.2 and 0.8, then

Table 3
Structural relationship.

Paths	Path Coefficient	Standard Deviation	t-statistic	p-value	Decision
CUS -> EI	0.361	0.083	4.351	0.000	Supported
GA -> EI	0.350	0.079	4.450	0.000	Supported
IA -> EI	0.151	0.074	2.044	0.041	Supported
RD -> EI	0.168	0.068	2.460	0.014	Supported
CUS -> PROD	0.469	0.069	6.828	0.000	Supported
GA -> PROD	0.255	0.067	3.788	0.000	Supported
IA -> PROD	0.180	0.070	2.576	0.010	Supported
RD -> PROD	0.184	0.065	2.818	0.005	Supported
CUS -> EP	0.412	0.056	7.400	0.000	Supported
GA -> EP	0.385	0.061	6.284	0.000	Supported
IA -> EP	0.288	0.059	4.872	0.000	Supported
RD -> EP	0.182	0.057	3.182	0.002	Supported

Table 4
Structural relationship.

Paths	Path Coefficient	Standard Deviation	t Statistic	P Values	Decision
PROD-> EP	0.634	0.068	9.306	0.000	Supported
EI->EP	0.220	0.081	2.726	0.007	Supported

partial mediation effect is present and if VAF is more than 0.8, then full mediation effect on the endogenous construct is observed. Table 5 illustrates that innovation performance (PROD) partially mediates the relationship between all the four constructs of network cooperation and the economic performance of SMEs, based on the VAF scores. Moreover, it is observed that VAF values of the customer (CUS) and R&D organisations (RD) are greater than that of government agencies (GA) and industry associations (IA). This indicates that the indirect effects produced by customers and R&D organisations via innovation performance explain a higher proportion of their total effect on the economic performance of SMEs.

Table 6 illustrates that internationalisation performance (EI) partially mediates the relationship between three constructs of network cooperation (except IA) and the economic performance of SMEs, based on VAF scores. This indicates that the indirect effects produced by customers, government agencies and R&D organisations, via internationalisation performance explain more than 20 % of their total effect on the economic performance of SMEs.

5.3. Quality criteria: Assessing R² and Q²

R² value measures the predictive accuracy (power) of the structural model (Chin, 1998). The endogenous constructs, viz., innovation performance (PROD), internationalisation performance (EI), and economic performance (EP) have R² values of 0.428, 0.368 and 0.707 respectively (Table 7). Thus, based on moderate R² values, it is confirmed that the

Table 5
Mediation Analysis: Innovation performance as a mediator.

Exogenous Variables	Direct Effect	Indirect Effect	Total Effect	VAF Range	Mediation
CUS	0.170	0.241	0.411	0.586	Partial
GA	0.256	0.130	0.386	0.337	Partial
IA	0.196	0.092	0.288	0.319	Partial
RD	0.086	0.095	0.181	0.525	Partial

Mediating Variable: PROD; Endogenous Variable: EP.

Table 6
Mediation analysis: Internationalisation as a mediator.

Exogenous Variables	Direct Effect	Indirect Effect	Total Effect	VAF Range	Mediation
CUS	0.327	0.088	0.415	0.212	Partial
GA	0.299	0.084	0.383	0.219	Partial
IA	0.251	0.036	0.287	0.125	No Mediation
RD	0.141	0.040	0.181	0.221	Partial

Mediating Variable: EI; Endogenous Variable: EP.

Table 7
Results of R² and Q².

Endogenous Variables	R Square	R Square Adjusted	Q Square	Predictive Relevance
PROD	0.428	0.408	0.343	Medium
EI	0.368	0.345	0.328	Medium
EP	0.707	0.691	0.652	Large

structural model has predictive accuracy.

Further, the structural model is evaluated in terms of its predictive relevance by cross-validated redundancy Q² values corresponding to all the endogenous constructs. Towards this aim, the blindfolding technique, taking an omission distance of 7 as suggested in the literature (Hair et al., 2013), is applied to the structural model with reflective indicators to calculate the parameter known as Stone-Geisser Q² (Geisser, 1974; Stone, 1974). PROD has a Q² value of 0.343; EI has 0.328, and EP has 0.652. Since all Q² values are positive, it can be inferred that the PLS structural model is structurally relevant. Moreover, if the value of Stone-Geisser Q² lies between 0 and 0.15, the predictive relevance is low; if Q² value falls between 0.15 and 0.35, the corresponding endogenous construct is said to possess a medium predictive relevance and if Q² for an endogenous variable is greater than 0.35, its predictive relevance is considered to be high. Table 7 illustrates that both PROD and EI have medium predictive relevance, while EP has high predictive relevance. Therefore, it is empirically verified that constructs of network assistance, viz. IA, RD, GA and CUS could successfully predict innovation performance (PROD), internationalisation performance (EI) and economic performance (EP) of SMEs.

5.4. Measuring f² effect size

Effect Size (f²) is used to calculate the change in the measure of R² after omitting a selected exogenous variable from the model. In other words, it captures the effect of a specific exogenous variable on a specific endogenous construct by measuring a substantial change (if exists) in R² value of the model. Effect size is considered negligible if f² value is more than 0.02. If its value is more than 0.02 but smaller than 0.15, the effect size is considered to be small. If f² lies from 0.15 to 0.35, the corresponding endogenous construct has a medium effect size and if f² for a particular endogenous variable is more than 0.35, its effect size is considered to be large. Table 8 illustrates that f² effect size for all exogenous variables ranges from small to large on different endogenous variables. CUST shows a small effect size while explaining EP, but a medium effect size on EI and a large effect size on PROD. It means that customer assistance is an important predictor of both innovation performance and internationalization performance. Further, GA shows a small effect size while explaining both PROD and EP but a medium effect size for EI. Whereas IA shows a small effect size while explaining all the endogenous constructs, such as EI, PROD and EP. On the other hand, RD shows a small effect size while explaining EI and PROD but a negligible (non-significant) effect size on EP.

Table 8 illustrates that the path coefficients from all the exogenous variables to the endogenous variables are significant, either at 95%

Table 8
f²-effect size.

Exogenous Latent Variables	EI		EP		PROD	
	Path Coefficients	f ² Effect Size	Path Coefficients	f ² Effect Size	Path Coefficients	f ² Effect Size
CUS	0.361**	0.195	0.156**	0.055	0.469**	0.364
EI	Not Applicable		0.082	0.013	Not Applicable	
GA	0.350**	0.182	0.234**	0.144	0.254**	0.106
IA	0.151*	0.033	0.189**	0.107	0.180*	0.053
PROD	Not Applicable		0.483**	0.399	Not Applicable	
RD	0.168*	0.042	0.079	0.019	0.185**	0.057

*p-value < 0.05; **p-value < 0.01.

significance level or at 99% significance level, except the two exogenous constructs, viz. EI and RD. It indicates that both internationalisation performance and R&D assistance do not show a direct impact on the economic performance of SMEs. It is observed that EI exhibits a significant direct impact on the economic performance of SMEs in a single-path mediating model. Moreover, EI produces partial mediation to influence the relationship between network cooperation and the economic performance of SMEs as shown in Table 8. But in the two-path mediated model comprising both innovation and internationalisation as mediators, the direct influence of EI on EP became insignificant (path coefficient = 0.082), as observed in Table 8. Thus, the hypothesised path directing from internationalisation performance to economic performance of SMEs is rejected.

6. Discussion

Recent literature posits a positive relationship between innovativeness and the firm's internationalisation (Saridakis, Idris, Hansen, & Dana, 2019; Chiarvesio, De Marchi, & Di Maria, 2015; Razavi Hajiagha, Ahmadzadeh Kandi, Mahdiraji, Jafari-Sadeghi, & Sadat Hashemi, 2022). The relationship between innovation and internationalisation of firms has been explored from both perspectives: evaluating how innovation helps firms to be on the path of internationalisation (Saradikis et al., 2019; Azar & Ciabuschi, 2017; Miocevic & Crnjak-Karanovic, 2012), and exploring how firms that expanded their markets are able to develop higher innovative capability (Boermans & Roelfsema, 2015; Kafouros, Buckley, Sharp, & Wang, 2008). There is a consensus that this bidirectional relationship of circular causality indicates the existence of a closed-loop based on complementary and positive effects on firm profitability and growth (Rodil, Vence, & Sánchez, 2016; Chiva, Ghauri, & Alegre, 2014; Golovko & Valentini, 2011).

From our study results, it is observed that in isolation, network cooperation, innovation and internationalisation lead to the economic performance of SMEs, respectively via Hypothesis 1, 4 and 5. The mediation impacts revealed that it is internationalisation that leads to enhanced innovation performance and not vice-a-versa, which subsequently generate higher economic performance, as proposed in Hypothesis 9. It is empirically observed that internationalisation of Indian manufacturing SMEs leads to enhanced innovation performance which is in sync with various empirical studies pertaining to different geographies across the world (Filippetti, Frenz, & Ietto-Gillies, 2011; Kafouros et al., 2008; Pla-Barber & Alegre, 2007; Keeble & Wilkinson, 2017; Trinh, 2016).

There could be several reasons justifying the observed causality from internationalisation to innovation, such as more exposure of an SME's resources and its products to alternative business culture and innovation contexts that result in enhanced knowledge acquisition via learning new capabilities from diverse environments. Thrassou et al. (2020) have noted that strong network ties and efficient internal knowledge management systems in firms help the internationalisation of SMEs. Upon accessing multiple geographic markets on account of its network ties, it can be posited that SMEs accumulate knowledge of operating successfully in new markets, which enables them to identify and exploit new

opportunities in these markets - leading to the creation of new innovative products and services. To justify the above proposition, Ali et al. (2020) have observed that inter-firm interactions significantly enhance a firm's absorptive capacity and thereby improve its innovation performance.

However, some studies proved the causal effect of innovation on the degree of internationalisation (Cassiman & Martinez-Ros, 2007; Caldera, 2010; Love & Roper, 2015; Paul et al., 2017). While examining the impact of innovation on internationalisation in a path mediation process (which emerge from network cooperation and culminate into economic performance), our test results indicate that we could not prove Hypothesis 8, which stated that innovation and internationalisation sequentially mediate the impact of network cooperation on the economic performance of SMEs. It might be due to many factors. One way of assessing the above results may be that technological innovation, in theory, refers either to improvement in the existing products and processes, or the generation of new products/processes. Although innovation has the potential to generate demand, which in turn may stimulate firm growth, it may not take into account the preferences of customers present in the other countries. On the other hand, if a firm starts exporting its products, it gets to know better about the choices of its customers in other markets, through feedback and other such mechanisms, which makes the firm more innovative on a continuous basis. This view is strengthened by the theory of learning by exporting (Vahlne & Johanson, 2017). In addition to the direct effects on internationalisation performance, there is continuous learning during the innovation process which has a plethora of indirect advantages.

Further, the highly innovative SMEs are more efficient in utilisation of factor inputs of production, viz. capital and labour, which lead to a better economic performance of SMEs (Kumar & Bala Subrahmanya, 2010). In addition, innovation enables SMEs to enter newer markets or penetrate existing markets and thereby enhance their economic performance (Bala Subrahmanya, 2015). This qualitative viewpoint strengthens our proposed hypothesis 4, which is substantiated empirically in the study. Recent work on international entrepreneurship (Chetty & Stangl, 2010; Zucchella, Hagen, & Serapio, 2018) provides a plausible explanation of how network cooperation supports the mutually reinforcing relationship between innovation and the internationalisation of firms. The results from our study help in furthering this existing knowledge on the above constructs.

In summary, the first set of findings extends the existing knowledge on 'how' and 'which' modes of external assistance and network cooperation help the SMEs in internationalisation and innovation, extending the available knowledge in this domain (Biancone et al., 2021; Sadeghi & Biancone, 2018; Ciravegna, Lopez, & Kundu, 2014). The second set of findings reiterates the previous findings related to the influence of network cooperation on a firm's internationalisation, innovation and economic performance in the context of emerging economies (Dana, 2007; Lin & Lin, 2016; Jafari-Sadeghi, Amoozad Mahdiraji, Devalle, & Pellicelli, 2022). The final set of findings helps us understand the sequence of priorities among internationalisation and innovation to be embraced as the strategic direction by the SMEs operating in an emerging economy context in the quest of sustaining long-term firm

performance (Pandya, Sukumar, Jafari-Sadeghi, & Tomlins, 2021; Ramadani et al., 2019; Rexhepi et al., 2017; Ratten et al., 2017).

6.1. Theoretical contributions and practical implications

Empirically, the study has made three contributions to the existing literature. Firstly, it explores the nature of external assistance received by SMEs from external stakeholders in order to internationalise their operation and increase their innovation performance. By doing so, it brings out the importance of various external co-operators (stakeholders) involved in the model of network cooperation in the context of internationalising SMEs. The results from the analysis indicate that SMEs receive assistance, particularly from four external participants, viz. industry associations, R&D organisations, customers and government agencies. SMEs receive the maximum assistance on product specifications from customers, whereas they interact least for entrepreneurial training and issues relating to subsidy and tax incentives from government agencies. Moreover, the impact of the assistance received from industry associations and R&D organisations is found to be lower as compared to that of assistance received from customers and government agencies. But it is important for SMEs to develop network cooperation and facilitate it with these four external participants.

Secondly, the study attempted to throw light on the direct effects of network cooperation on each innovation performance, internationalisation performance and economic performance of SMEs, along with the direct influence of both innovation and internationalisation on the economic performance of SMEs. The results depict that network cooperation has a strong positive influence on innovation performance, internationalisation performance and economic performance of SMEs. Moreover, it is observed that both innovation and internationalisation performances lead to a better economic performance of SMEs.

Thirdly, the study has explored how both innovation and internationalisation performances mediate the influence of network cooperation on the economic performance of SMEs. The indirect effects produced by only customers and R&D organisations via innovation performance explain a higher proportion of their total effect on the economic performance of SMEs. Conversely, the relationship between three network stakeholders, viz. customers, government agencies and R&D organisations, and economic performance are mediated significantly by the internationalisation performance of SMEs. Further, while testing the two-path mediated model, which consists of both the mediators (innovation and internationalisation performance) between the exogenous construct - network cooperation and the endogenous construct-economic performance, it is ascertained that the direct influence of internationalisation performance on the economic performance of SMEs became insignificant. It further prompted us to test the three-path mediated model depicting the cumulative influence of network cooperation on the economic performance of SMEs, via both mediating variables, the path coefficient depicting the influence of internationalisation performance on innovation performance became statistically significant. Thus, based on the final PLS-SEM three path-mediated model, it is inferred that SMEs must develop network cooperation to enhance their degree of internationalisation, which would promote their product innovations and cumulatively enhance the economic performance of SMEs.

The results of this study have implications for policymakers. In general, SME policy has laid more emphasis on the promotion of inter-firm linkages (like subcontracting) between SMEs and large firms. But our study has brought out an equally significant role, if not more, that can be played by other network participants, such as SME promotional agencies, universities, industry associations, etc. Therefore, future policy revisions for SMEs need to lay an equal emphasis on the diverse kinds of external networks to facilitate the economic performance of SMEs. Further, Government policy across the globe has always laid emphasis on providing direct support to SME internationalisation, either by means of subsidies or employing administrative guidance and market

information (Sadeghi & Biancone, 2018). Our study has revealed that it is equally significant to acknowledge the role of network cooperation in the promotion of internationalisation and thereby lay policy emphasis accordingly. Next, in the global context, Government policy has always focused on technology up-gradation and modernisation of SMEs (Bala Subrahmanya, 2018; Biancone et al., 2021). In the process, the inherent abilities of SMEs to undertake innovations are either overlooked or not given adequate attention for promotion (Bala Subrahmanya, 2015; Thrassou et al., 2020). Particularly, the role of external networks in enabling SMEs to improve their economic performance has hardly been understood (Vrontis, Viassone, & Thrassou, 2015; Lin & Lin, 2016; Hosseinzadeh, Samadi Foroushani, & Sadraei, 2022;). As revealed by our study, it is appropriate to recognise the importance of network cooperation to enhance the innovation performance of SMEs and accordingly chalk out policies and programs.

Finally, the coherent relationship between inter-linkages (external networks), innovation performance, internationalisation performance and its cumulative influence on the economic performance of SMEs has been less understood and therefore did not receive any policy attention. A comprehensive policy to guide SMEs to develop inter-linkages (external networks) to enter the international markets, thereby enhancing their innovation capabilities and cumulatively improving their economic performance, will prove highly productive for the overall SME sector growth. Such an attempt will gradually and steadily result in healthy and competitive growth of the SME sector, contributing to the nation's economic development.

7. Conclusion

Overall, the results from this study establish that network cooperation helps SMEs to penetrate international markets and expand their customer base, which in turn facilitates them to recognise the customer preferences/requirements better, to acquire technical competence and to understand the product dynamics, including product shape, size and overall dimensions. In other words, the increased internationalisation performance would enhance the product innovation capabilities of SMEs, which would further reflect in their innovation performance due to the increased proportion of innovated sales. This process of graduating from external cooperation to increased internationalisation performance, and then enhanced innovation performance, eventually enhancing the economic performance of SMEs. The study is without its limitations, firstly, it took into account the common measures of innovation and internationalisation, and there could be other possible measures that may apply to manufacturing SMEs that are into exports. Secondly, due to time constraints, the only response from 117 firms was received, a small sample size with a medium effect of 0.15 at 90% on power analysis (G^* power). In future, further studies can expand the constructs of measures used that can explain the economic performance of manufacturing SMEs. Further comparative studies can be done between emerging and developed economies to better understand the contextual setting in innovation, internationalisation, network cooperation and firm performance. In-country comparison can also be made between low intensity and high-intensity exporters and examine the differences between the two groups in relation to innovation, internationalisation and firm performance.

CRediT authorship contribution statement

Rashmeet Singh: Writing – review & editing, Writing – original draft, Visualization, Software, Methodology, Formal analysis, Data curation, Conceptualization. **Deepak Chandrashekar:** Writing – review & editing, Writing – original draft, Software, Methodology, Formal analysis, Data curation, Conceptualization. **Bala Subrahmanya Mungila Hillemane:** Writing – review & editing, Writing – original draft, Visualization, Software, Methodology, Formal analysis, Data curation, Conceptualization. **Arun Sukumar:** Writing – original draft, Software,

Methodology, Formal analysis, Data curation, Conceptualization. **Vahid Jafari-Sadeghi:** Writing – review & editing, Writing – original draft, Visualization, Software, Methodology, Formal analysis, Data curation, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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