Networking and the outward/inward innovativeness and internationalisation of firms in Poland*

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Abstract

This research explores the relationships between the networking of firms and their innovativeness and internationalisation, with the distinction between their outward and inward types. It adopts a holistic approach to firms' innovativeness and internationalisation and examines whether networking is more strongly related to firms' innovativeness or their internationalisation. Empirical data to test hypotheses were collected from 274 Polish firms using direct questionnaire interviews. The results show that networking is conducive both to the outward and inward innovativeness of firms, having the stronger relationship with inward innovativeness, and to outward internationalisation only. The results also indicate a variation concerning the strength of relationships corresponding to the sector in which the firms operate, their size, the capital group affiliation and the origin of capital.

Keywords: networking, innovativeness, internationalization, holistic approach, transition economy
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Introduction

A firm's relationships within its business networks are a source of competitive advantage due to a better use of the firm's distinctive resources, access to the resources of network partners, and the enhanced process of learning and knowledge sharing within networks (e.g. Hamel/Doz/Prahald 1989; Gulati 1991; Jarillo 1993; Dyer/Singh 1998; Gulati/Nohria/Zaheer 2000). Participation in these networks, i.e. networking, is considered as a way leading to higher innovativeness (e.g. Rothwell 1992; Calatone et al. 2002; Chesbrough 2003; Dhanaraj/Parkhe 2006) and faster internationalisation of firms (Johanson/Mattsson 1988; Sharma/Blomstermo 2003; Blomstermo et al. 2004; Coviello 2006; Johanson/Vahlne 2009). Although both economic and management literature indicates the significance of networks (or networking) for innovativeness and internationalisation of firms, empirical studies that would combine all three concepts are very rare (Chetty/Stangl 2010; Leonidou/Katsikeas/Coudounaris 2010). This research fills this gap by exploring the relationships of networking with firms' innovativeness and internationalisation in one study.

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Previous studies on firms' competitive advantage, innovativeness or internationalisation, draw on two different theoretical approaches of networking present in the economic and management literature. In order to incorporate the ideas of both research streams into the conceptual foundation of our research, an eclectic approach to the conceptualisation of networking is adopted. The concept of networking combines the manifestations of firms' networking, which seem the best or most relevant to this research, lending from both theoretical perspectives rather than following a single perspective only. In consequence, a composite measure of networking based on formative variables related to two different theoretical approaches is employed.

The majority of studies on relationships between networking, innovativeness, and internationalisation focuses exclusively on selected types of firms' innovativeness (e.g. product or process) (Gemunden/Ritter/Hydebreck; 1996; Ritter/Gemunden 2003) and outward forms of internationalisation (e.g. exporting, outward foreign direct investment) (Ietto-Gillies 1998; Ietto-Gillies/London 2009). Other types of innovations (e.g. marketing or organizational) and inward internationalisation (e.g. importing, inward foreign direct investment) have been rarely examined in the context of networking. This research adopts a holistic approach to the concepts of innovativeness and internationalisation of firms, which is based on the assumption that they should be treated in their entirety irreducible to their constituting parts. The research embraces the multidimensional nature of these concepts by including both the outward and inward types of innovativeness and internationalisation of firms and their various manifestations. The concept of outward innovativeness refers to product and marketing innovations which are market-oriented (external focus), while inward innovativeness involves process and organizational innovations being firm-orientated (internal focus). In both cases the concepts embrace the enablers (expenditures) and the outcomes (number and newness of innovations) of innovation processes. Outward internationalisation relates mainly to exporting and other outward internationalisation forms, while inward internationalisation focuses on importing and inward internationalisation forms, for each regarding their intensity (share in sales), the number of and the distance to foreign markets, and the firms' international experience. The holistic approach is reflected in the use of complex measures of outward and inward innovativeness and internationalisation.

The main purpose of this research is to determine whether networking is conducive both to firms' innovativeness and internationalisation and with which type of innovativeness and internationalisation (outward or inward) the relationship is stronger. The secondary aim is to establish whether the strength of relationships varies based on what sector firms operate in, what their size is, whether they are affiliated to capital group and have foreign capital share.

Empirical data to test the hypotheses were collected from 274 firms in Poland. Direct interviews using a structured questionnaire were employed to collect detailed data on a variety of aspects of networking, innovativeness, and internationalisation of the surveyed firms. All key concepts – networking, outward/inward innovativeness, outward/inward internationalisation – are measured with indices embracing the multiple dimensions of the studied phenomena. Correlation analysis is applied to examine relationships between the established constructs.

The key findings of the study are that networking is conducive both to innovativeness and internationalisation of firms. It is more strongly related to process and organizational (inward) innovativeness than to product and marketing (outward) innovativeness, and it supports only outward (e.g. exporting, outward FDI) internationalization of firms. Further, it was found that the strength of networking relationships with outward/inward innovativeness and internationalisation varies significantly depending on the firms' sector, size, the capital group affiliation, and the origin of capital.

The next section of the paper discusses the conceptual foundations and presents the research model. After that the methodology of the study is described. The third part discusses the empirical research results. The contribution of research, the limitations, and future research avenues constitute the last section of this paper.

The Conceptual foundation and the research model

Figure 1 presents the research model with the hypotheses on the relationships of networking with outward/inward innovativeness and outward/inward internationalisation.

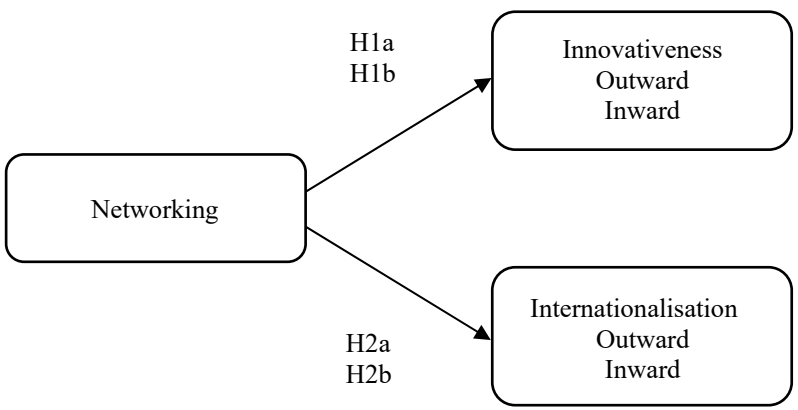

Figure 1 Research model and hypotheses

Main approaches to networking

The terms "network", "network ties", "network relations" and "networking" are widely used in economic and management literature. Often, the authors do not define them precisely, assuming that the concepts are commonly understood, and sometimes use them interchangeably without regard to their different theoretical foundations (Ebers/Grandori 2001). In fact, the concepts of "networks" and "networking" usually pertain to one of the main theoretical approaches developed within economic and management theories, i.e. the industrial networks approach or the transaction costs approach, where in general networking is regarded as an activity leading to network formation. To present the concept of networking used in the study, the two approaches will be outlined.

In the theory of industrial networks (industrial networks approach – INA), developed by the IMP Group, a business network is most generally described as comprising actors, activities and resources (Håkansson/Johanson 1992), and defined as a set of actors and relationships that link them, or sets of ties linking several actors. Another perspective in researching networks offered in economic literature is the transaction cost theory (Williamson 1975, 1996). In the transaction costs approach (TCA) networks are perceived as an intermediate or hybrid organizational form – a governance structure or a coordination mechanism having both the features of the market and the hierarchy (Williamson 1979; Thorelli 1986; Thomson et al. 1991). Strategic management literature adopts this way of conceptualising networks, but applies a slightly narrower approach in understanding networks or inter-firm relationships, treating them as a separate, third organizational form whose characteristic features make it fundamentally different both from markets and the hierarchy (Håkansson/Snehota 1995).

Ebers and Grandori (2001) explain that "in general terms networking is about establishing and exploiting ties that link organizations, leading to the formation of inter-organisational networks" (p. 34). According to the industrial network approach, networking is an activity aimed at initiating, maintaining, utilizing, and terminating relationships with various external partners. It may also be understood as conscious, deliberate attempts of managers to affect interactions between organizations, i.e., business partners of a firm (Håkansson et al. 2009:196–199).

Networking results in business relationships developed between multiple partners cooperating within an industrial network. These may be both direct and indirect ties of different types, e.g. economic, informational, and emotional. According to the transaction costs approach, networking may be defined as creating and making use of intermediate or hybrid organisational forms standing for governance structures different from markets and hierarchies, such as collaborative agreements, joint ventures or alliances. Networking is responsible for the coordination of interdependent activities carried out by many actors (organizations)

having control over heterogeneous and distinctive resources (Håkansson et al. 2009:205). Such understanding of network in is prevalent in strategic management literature (e.g. Jarillo 1993), where the ability to establish and exploit network ties is perceived as conducive to the achievement of a firm's strategic goals, knowledge sharing with network partners and access to their distinctive resources and the resources created jointly within the network.

The two main approaches to understanding networking are not mutually exclusive. The former, INA, focuses on the inter-organisational relationships enabling cooperation in conducting firms' activities, while the latter, the strategic management approach, focuses on a mechanism of coordinating the activities in the most effective way. In this research, the two approaches are merged, which allows for the broader and deeper exploration of networking, and it is especially fruitful when applied to describe the relationships of networking with the innovativeness and internationalisation of firms.

Outward/Inward innovativeness concept

Previous research on innovation is not consistent in conceptualising the term "innovativeness" related to a firm (Damanpour 1991; Subramanian/Nilakanta 1996; Garcia/Calantone 2002; Armbruster/Bikfalvi/Kinkel/Lay 2008; Crossan/Apaydin 2010). In general, the innovativeness of a firm may be defined from a behavioural perspective (e.g. Wang/Ahmed 2004), and then operationalized by the reflective variables of firm's attitude or behaviour leading to the implementation of different types of innovation (product, process, marketing and organisational). On the other hand, the innovativeness of a firm may be described as its ability to conduct, or the consequence of performing innovation activities, and operationalized by formative variables related to their antecedents (e.g. R&D expenditures) or outcomes (e.g. innovations implemented) (Hollenstein 1996; Hagedoorn/Cloodt 2003). The extant empirical research on organizational innovativeness focuses mainly on formative variables related to R&D spending, types, number or newness of innovations introduced, sometimes moderated by firms' characteristics (e.g. sector, size, type of organization) (Damanpour 1991; Wolfe 1994). Most researchers focus on selected variables only, adhering to a given aspect of firms' innovativeness (e.g. R&D expenditure as a measure of innovation propensity, the number of innovations representing innovation intensity, or a share of innovative products in sales as a measure of innovation performance) (Kleinknecht/Van Montfort/Brouwer 2002). However, some authors recommend a more holistic approach to the multifaceted concept of a firm's innovativeness by embracing variables related to the measures (Damanpour 1991; Hollenstein 1996; Adams/Bessant/Phelps 2006). This approach allows studying a firm's innovativeness as its long-term attribute relating to a firm's future, present and past engagement in innovation processes. Previous research under-

lines that a firm's innovativeness is not a cumulative phenomenon (such as internationalisation), because once developed, it may disappear in the next period (lack of R&D spending, no innovation introduced etc.) or be boosted unexpectedly. In this research, we adopt the holistic approach to a firm's innovativeness and use formative variables related to the innovation process in which the firm is engaged over time.

Firms implement different types of innovations, most often described as product, process, marketing and organizational innovations (Oslo Manual 2018). They may focus on a single type of innovations, but many combine product with process innovations, termed technological innovations (Utterback/Abernathy 1975; Kraft 1990; Teece 1996; Percival/Cozzarin 2008; Martinez-Ros/Labeaga 2009). The majority of firms also introduce marketing and organizational innovations, known as non-technological innovations (Mothe/Uyen, 2010; Wang/Lestari 2013). The 'co-existence' of different types of innovations in firms results from the fact that in many situations product, process, marketing, and organizational innovations are related with each other because of their complementarity, not exclusiveness (Evangelista/Vezzani 2010; Lewandowska/Gołębiowski 2012 a, 2012 b; Geldes/Felzensztein/Palacios-Fenech 2017). Nevertheless, a vast number of studies on the innovativeness of firms focus on product or process innovations only (Utterback/Abernathy 1975; Kraft 1990; Percival/Cozzarin 2008; Martinez-Ros/Labeaga 2009), leaving aside marketing and organizational ones. The studies dealing with marketing or organizational innovations are rare (Hurley/Hult 1998; Mothe/Nguyen Thi 2010; Wang/Lestari 2013), though those which raise the issue confirm the positive influence of marketing and organizational innovations on the performance of firms (Som et al. 2012) or their internationalisation (Lewandowska et al. 2016).

The division of innovations into technological and non-technological is based on the assumption that the development of technological (product and process) innovations requires R&D, contrary to the implementation of non-technological (marketing and organizational) innovations (Schmidt/Rammer 2007; Mothe/Nguyen Thi 2010, 2012). The distinction is also related to the type of knowledge necessary to develop specific types of innovations. In the case of technological innovations, it is technological knowledge which matters most, while in the case non-technological innovations – market and marketing knowledge, as well as managerial or business knowledge are indispensable (Rothwell 1992; Sammara/Biggiero 2008).

Faced with this dichotomy, most empirical studies focus on technological innovations, because they are perceived as the main driver of firms' competitive advantage. They are also easier to trace thanks to a wider access to firms' data on R&D expenditure as a manifestation of firms' technological innovativeness. The evidence of this type of innovativeness comes mainly from large and medium-

sized firms from the industry sector. Much less recognition is given to non-technological innovations, though international statistics show that in general firms introduce more non-technological than technological innovations (Science, Technology, and Innovation in Europe 2012). A reason may be the difficulty to associate firms' non-R&D innovation expenditure with non-technological innovations only and the fact that this type of innovativeness is more viable in the service sector and smaller firms, which attracted less research interest (Garcia/Calantone 2002).

Assuming that both firms' R&D and non-R&D expenditures, as well technological and non-technological knowledge should be recognised as enablers of firms' innovativeness, a novel typology of innovations is proposed in this research. The typology includes all types of innovations (product, process, marketing and organizational), all types of innovation expenditure (R&D and non-R&D), and refers to all types of knowledge necessary in innovation processes.

The concept of *outward innovativeness* and *inward innovativeness* applied in this research refers to the sources of a firm's competitive advantage. Product and marketing innovations (i.e. outward innovations) are responsible for the differentiation advantage of a firm, while the *inward innovativeness* related to process and organizational innovations (i.e. inward innovations) is accountable for the cost-based advantage. Both outward and inward innovativeness are based on R&D and non-R&D expenditure as their enablers. Hence, the additional strength of this typology is its better adjustment to studying innovativeness of firms varying by sector and size, which differentiate their R&D spending and technological development.

The main difference between these two types of innovativeness is that outward innovativeness is market-oriented and, in addition to technological knowledge, it also needs market and marketing knowledge, while inward innovativeness is firm-orientated and requires technological knowledge be combined with managerial and business knowledge. All types of knowledge may be developed independently by a firm or acquired and shared with partners in the network. The concept of outward/inward innovativeness of firms is based on the holistic approach as it embraces all types of innovations introduced by firms and the multifaceted nature of innovativeness developed by a firm in the longer term.

Networking and outward/inward innovativeness

From the 1970 s till the 1990 s innovation processes were considered to be conducted by individual firms based on their knowledge resources and R&D spending (Utterback/Abernathy 1975; Abernathy/Clark 1985; Dewar/Dutton 1986; Henderson/Clark 1990). Since the early 1990 s, the dominant model of innovation has become the network model of innovation (Rothwell 1992; Teece 1992; Powell et al. 1996). The network model of innovation describes the innovation

process as a process of inter-organizational learning (Calatone et al. 2002) or network learning in innovation networks (Dhanaraj/Parkhe 2006; Ojasalo 2008). Innovation processes span the firms' borders to integrate and share the knowledge and resources of multiple partners needed for successful innovation (Pittaway et al. 2004). The network forms of coordinating innovation processes are also present in the concept of open innovation (Chesbrough 2003; Van de Vrande et al. 2009; Lee et al. 2010), which allows for coupling internal and external sources of knowledge and ideas to create innovations in a process open to all participating entities. In addition, innovation is described as created within networks which emerge as a result of longitudinal cooperation between business partners or in networks engineered intentionally to create and support innovation (Van Aken/Weggeman 2000; Rycroft/Kash 2004; Dhanaraj/Parkhe 2006; Cowan et al. 2007). Emerging, engineered or designed networks increase trust between participants and reduce risk involved in innovation processes. In these types of innovation networks, network partners are more inclined to share knowledge, technologies and other resources, which leads to successful innovation. On the other hand, long and formalized relationships may result in inertia and resistance to change impeding innovation processes (Cowan et al. 2007).

Powell et al. (1996) found that if a knowledge base in an industry is sophisticated and sources of expertise are dispersed, innovation cannot be created in a single firm and inter-organizational innovation cooperation is necessary. Lack of access to a developing and evolving learning community (*liability of unconnectedness*) becomes a critical factor for competitive advantage in the industry for firms outside the network (Powell et al. 1996). Participation in a learning community depends on the firm's *absorptive capacity* of knowledge, which describes the firm's ability to learn from knowledge already developed as a result of its former engagement in R&D and innovation processes (Cohen/Levinthal 1999). Hence, firms intending to enter a new industry face the *liability of newness*, which refers to the lack of relationships in the innovation network as a barrier which is not possible to overcome without absorptive capacity developed somewhere else (Powell et al. 1996).

There is a rich body of literature concerning the influence of different dimensions of networking on the innovativeness of firms in terms of the type of innovation (mainly product and process), the number of innovations, the degree of innovation newness and the outcomes of innovation. For example, Gemunden, Ritter, and Hydebreck (1996) show that the type of innovation (product or process innovation) and the degree of its newness depend on the choice of innovation partners. Additionally, innovation success is related to the firm's ability to manage network relationships, i.e. the ability of networking. Ritter and Gemunden (2003) state that network competence (i.e. the ability to create innovation network) is responsible for the successful implementation of product and process innovations. Tether (2002) indicates that the form of cooperation is es-

sential – formal cooperation is more conducive to technological innovation based on R&D, while non-formal cooperation is sufficient for non-technological innovation. Nieto and Santamaria (2007) show that cooperation with a broader set of partners positively influences the newness of innovation; however, cooperation with competitors influences it negatively. Fitjar and Rodriguez-Pose's (2013) study supports this finding by stating that cooperation with suppliers and customers influences innovation positively, while cooperation with competitors limits propensity to innovate. They also indicate that cooperation with regional and international partners is significantly more conducive to innovation than cooperation with local partners. Love and Roper (2001) confirm that broader and stronger external relationships are essential for innovation intensity (the number of innovations introduced), but not for the commercialization of innovations.

Based on the understanding of the role of networking in integrating and sharing resources and development of knowledge by inter-organizational learning, and drawing on the concepts of outward and inward innovativeness of firms, the following hypotheses are proposed:

H1 a: Networking is positively related to outward innovativeness.

H1 b: Networking is positively related to inward innovativeness.

Outward/Inward internationalisation concept

One of the most widely cited definitions of the internationalisation of firms is the one by Welch and Luostarinen (1998), who define it as 'the process of increasing involvement in international operations' (Welch/Luostarinen 1988, p. 36). The definition is broad, thus encompassing different types and forms of firms' internationalisation, and represents a dynamic approach to internationalisation. In particular, it includes both *outward internationalization* and *inward internationalisation* (Welch/Luostarinen 1988, 1993). Outward internationalization manifests itself through different forms of foreign expansion of a firm (e.g. exporting, licensing-out, franchising-out, outward FDI), while the inward internationalisation is expressed by forms of international operations related to activities conducted by a firm on home market (e.g. importing, licensing-in, franchising-in, inward FDI).

Typically, researchers in the field of international business tend to focus on the outward internationalisation of firms. The studies concern the factors of (outward) internationalisation (Cavusgil/Naor 1987; Zou/Stan 1998) and its dimensions and forms (Bilkey/Tesar 1977; Reid 1981), the mechanism of firms' (outward) internationalisation process (Johanson/Wiedersheim-Paul 1975; Johanson/Vahlne 1977) and the degree of firms' (outward) internationalisation (Sullivan 1994; Dörrenbächer 2000). Far less attention is given to the inward internationalisation of firms (Welch/Luostarinen 1988, 1993; Fletcher 2001), despite the in-

creasing role of international operations in firms' domestic activities related with the development of international supply chains. Further, the theory of firm internationalisation neglects inward internationalisation, though already in the early 1990 s researchers indicated the importance of mutual and multifaceted relationships between inward and outward internationalisation (Luostarinen/Welch 1990; Welch/Luostarinen 1993; Luostarinen/Helman 1993). The previous studies show that inward internationalisation usually precedes outward internationalisation (Welch/Luostarinen 1988, 1993; Korhonen 1999; Jones 1999, 2001; Karlsen et al. 2003), as the majority of firms involved in international operations conduct both import and export activities (Welch/Luostarinen 1993; Korhonen et al. 1996; Jones 1999, 2001; Fletcher 2001, 2008), and outward internationalisation forms tend to mirror the preceding inward internationalisation forms (e.g. exporting followed importing, licensing-out resulted from prior experience with licensing-in) (Carstairs/Welch 1982; Welch/Luostarinen 1993; Korhonen 1999; Fletcher 2001).

Networking and outward/inward internationalisation

From the late 1970 s to the late 1980 s, the dominant research approach to the internationalisation process focused on individual firms only. The Uppsala model of a firm's internationalisation describes (outward) internationalisation as an incremental, evolutionary and sequential process during which the firm increases its resource commitment in the international market (Johanson/Wiedersheim-Paul 1975; Johanson/Vahlne 1977). The mechanism behind the process is the development of the firm's experiential knowledge from activities conducted abroad (foreign market knowledge, general knowledge). The exploitation of experiential knowledge enables the firm to increase its involvement in foreign markets, beginning from those which are close to the firm's domestic market (geographic and psychic distance) (Johanson/Vahlne 1977).

The work by Johanson and Mattsson (1988) gave rise to the development of a new model of network-based (outward) internationalisation of a firm. They show how network ties help firms to internationalise by learning from both internal and external knowledge sources. Later studies proved that a firm's increased resource commitment in the international market follows the development of knowledge acquired by experiential learning and learning through networks (Sharma/Blomstermo 2003; Blomstermo et al. 2004; Coviello 2006). As a result, the network model of internationalisation became the dominant model of the internationalisation of firms (Johanson/Vahlne 2009). The model encompasses both the internal and external sources of knowledge and describes a firm's process of internationalisation as a process of learning – both experiential and network-based. In this model, the *liability of outsidership*, understood as lack of access to the relevant network, is perceived as a larger burden for an internation-

alising firm than the *liability of foreignness*, related with the distance to the foreign markets and lack of international experience. It is assumed that knowledge exploitation enables firms to expand on familiar paths of development only and reduces the risk of increased resource commitment in foreign markets. The exploration of knowledge from external sources, i.e. partners in the network, allows for experimentation with new possibilities carrying higher risk, yet potentially leading to higher profits in the longer term (March 1991; Forsgren 2002; Sharma/Blomstermo 2003).

Eriksson, Majkgård, and Sharma (2000) state that a firm's experiential knowledge may be a barrier to its further (outward) internationalisation as it limits the ability to recognize new opportunities for international development. Network ties, indirect and weak with multiple partners, rather than direct and robust with a few partners, give access to knowledge and resources of the network partners significant for international expansion. Combined with the knowledge and resources of a firm, network ties speed up and support the process of internationalisation (Granovetter 1973; Bell 1995; Coviello/Munro 1995; Majkgård/Sharma 1998; Sharma/Blomstermo 2003; Coviello 2006). Forsgren (2002) and Johanson and Vahlne (2009) state that the network model of internationalisation is universal as it describes how both small and medium-sized firms (e.g. born global, new international ventures), as well as large corporations, internationalise their activity by learning in networks.

Later studies by Hadley and Wilson (2003) link the Johanson and Mattsson (1988) network model of internationalisation with experiential knowledge of a firm in the (outward) internationalisation process (Eriksson/Majkgård/Sharma 2000). They show the differentiated influence of the degree of a firm's internationalisation and the degree of network internationalisation on capacity for developing different types of knowledge. They prove that internationalisation knowledge (i.e. knowledge concerning management of international operations) depends on the degree of a firm's internationalisation, in particular when described by the number of foreign markets served. The degree of network internationalisation, together with the degree of a firm's internationalisation, has an influence on foreign institutional knowledge (such as foreign languages, rules, norms, and values), but surprisingly it does not relate to foreign business knowledge (knowledge about foreign customers, competitors, distributors) (Hadley/Wilson 2003).

Inward internationalisation of firms and its relationship with networking has not received the same attention as outward internationalization. According to our best knowledge, neither conceptual nor empirical studies exist where inward internationalization has been explored. However, there are some studies in which the relationship between networking and inward internationalisation is discussed in the context of a firm's further outward internationalisation (Korhonen et al.

1996; Karlsen et al. 2003; Ciravegna et al. 2014). It is argued that the knowledge and experience gained through inward internationalisation from foreign suppliers of machines, technologies and final goods or other foreign business partners in licensing, franchising or joint ventures at home, support the development of a firm's future outward internationalisation. The network ties created by inward internationalisation become an external source of technological and managerial knowledge, as well as internationalisation knowledge, necessary for further outward and inward internationalisation (Korhonen et al. 1996; Karlsen et al. 2003). The exploration of knowledge from foreign partners in inward internationalisation is especially crucial for small and medium-sized firms from open, small or less advanced economies, such as Finland or Australia in the early 1990 s (Korhonen et al. 1996) and from emerging markets, such as China (Ciravegna et al. 2014) or Poland today. Hence, the knowledge gained from network partners in inward internationalisation (*knowledge exploration*) enables further development of a firm's outward internationalisation through the exploitation of the above-mentioned knowledge (Child/Rodrigues 2005). We suggest that networking supports – in a direct or indirect way – both the outward and inward internationalisation of a firm, increasing its involvement in international operations in foreign and home markets. This leads us to propose as follows:

H2 a: Networking is positively related to outward internationalisation.

H2 b: Networking is positively related to inward internationalisation.

Research concept and methodology

The methodology of this research is determined by the holistic approach to innovativeness and internationalisation, which is a distinctive feature of the study. It corresponds with calls for creating more multifaceted measures of innovativeness and internationalisation of firms, which would be better adjusted to different firms' characteristics and settings (firm size, industry, economy or such). The majority of previous studies on relationships between firms' networking with their innovativeness and internationalisation use individual structural variables, such as R&D spending, the type and number of innovations, export share, a share of employment or capital abroad, or the number of foreign markets. The selection of variables is usually justified by a specific narrow focus of a given study or data available in secondary sources.

This research attempts to cover a vast spectrum of variables constituting the research concepts. The formative measures are developed on the relevant conceptual assumptions founded in the network theories, the theory of innovation, and the theory of internationalisation. In addition, in the case of innovativeness and internationalisation indices, some already existing measurement practices are employed. The variables and weights used for the construction of the indicators

and indices are presented in Appendix 1. Finally, the conceptualization, operationalization, and measurement concepts of networking, outward/inward innovativeness, and outward/inward internationalisation are discussed.

Networking degree

The *networking degree* of the firm refers to the extensity of the use of cooperative relations with different network partners and the application of intermediate forms of coordinating activities in a firm's value chain. It is eclectic in nature as it is based on assumptions grounded in the industrial network approach and the transaction costs approach, while at the same time it also refers to the understanding of network and networking present in strategic management literature.

According to the industrial network theory, both direct and indirect ties are taken into account. Because a firm's indirect ties are not easy to survey, only the direct inter-organizational relationships created by the firm with its business partners (i.e. suppliers, buyers, customers, and competitors) are included in the study. According to the transaction costs theory, linkages between firms are described as intermediate or hybrid organisational forms or coordination mechanisms for activities conducted by different actors, i.e. a firm and other organisational actors participating in value adding activates coordinated by a firm. Table 1 shows the indicators and weights employed for the construction of the index measuring the networking degree.

Table 1 Formative indicators constituting the networking index

Networking index	
Formative indicators	**Weight**
Nature of Relations in Supply Chain	0.15
Forms of Cooperation in Business Network	0.15
Type of Linkages with Business Partners	0.15
Dominant Nature of Business Relationships	0.15
Forms of Coordination of Primary Activities	0.25
Forms of Coordination of Support Activities	0.15

Hence, the construction of the networking index is based on two complementary logics – *cooperation logic*, referring to the industrial network theory, and *coordination logic*, based on the transaction costs theory and the strategic management approach. The *cooperation logic* assumes that the degree of networking increases with a more extensive use of inter-organizational relations ranging from single transactions to capital cooperation. Cooperation should not be loose and occasional but it should tend towards permanent and contractual or capital one. The linkages between partners in a network should be not only economic but also informational or structural ones. The dominant nature of business relation-

ships should not be exclusively competition-oriented, but they should also involve cooperation with multiple partners, including competitors. The *coordination logic* assumes that the degree of networking increases when coordination forms of primary and supporting activities in a firm's value chains are somewhat intermediate, network-based, rather than market- or hierarchy-based. The above assumptions are reflected by different weights given to various types and forms of relations and linkages between the firm and its network partners and to the frequency of the use of particular forms.

The degree of outward and inward innovativeness

In general, the *degree of innovativeness* is defined here as a firm's overall product, process, marketing and organizational innovativeness, including propensity to innovate (innovation spending) and the intensity of innovation (the number and newness of innovations). In the study, two types of innovativeness are considered: *outward innovativeness*, including variables related to product and marketing innovations, and *inward innovativeness*, including process and organizational innovations variables.

The idea of using complex measures of innovativeness is aligned with the findings of many studies, calling for a more holistic approach to the innovativeness of firms, and proving the need to use more comprehensive sets of innovation variables. It is especially important in more comprehensive studies on relationships between innovativeness and performance of firms varying in size and industry (e.g. Hollenstein 1996; Kleinknecht et al. 2002; Hagedoorn/Cloodt 2003; Adams et al. 2006).

The concept of measuring innovativeness by complex indices also refers to the innovativeness measures developed and used by OECD and the European Commission. For example, the Summary Innovation Index (SII) comprises seven factors in three areas: enablers, firm activities, and outputs, considered to constitute the overall innovativeness of the European economies (IUS 2013). The formative indicators with their weights used for the construction of the indices measuring the degree of outward and inward innovativeness are presented in Table 2.

Table 2 Formative indicators constituting the outward and inward innovativeness indices

Outward Innovativeness index	
Formative indicators	**Weight**
The degree of Newness of Product and Marketing Innovations	0.35
Number of Product and Marketing Innovations against Competitors	0.20
The share of Product Innovation Expenditure in Total Expenditure	0.25
R&D Product Innovation Expenditure against Competitors	0.20

Inward Innovativeness index	
Formative indicators	**Weight**
The degree of Newness of Process and Organizational Innovations	0.35
Number of Process and Organizational Innovations against Competitors	0.20
The share of Process Innovation Expenditure in Total Expenditure	0.25
R&D Process Innovation Expenditure against Competitors	0.20

The indices measuring the degree of outward and inward innovativeness include innovation newness (new to a firm, new to a domestic market or new to an international market) and the number of implemented outward (product and marketing) and inward (process and organizational) innovations. These indicators represent innovation intensity. Propensity to innovate is represented by the share of innovation-related expenditure in total expenditure (by product, process, marketing, and organizational innovations) and R&D spending on innovation (by innovation type: product – outward, process – inward). Due to the potential impact of the industry specificity on the number of innovations implemented and R&D spending, individual variables are referred to competitors.

The degree of outward and inward internationalisation

The *degree* of *internationalisation* refers to a firm's overall involvement in the international market through both outward and inward forms concerning the number and distance of markets. In the research, both outward and inward internationalisation is included. The *degree of outward internationalisation* embraces variables connected to outward forms of internationalisation, while the *degree of inward internationalisation* includes the indicators related to inward forms of internationalisation.

The idea of measuring both outward and inward internationalisation responds to the call for a more holistic approach to the internationalisation of firms (Welch/Luostarinen 1993; Korhonen et al. 1996; Jones 1999, 2001; Fletcher 2001, 2008). The underlying assumption is that the outward and inward forms of internationalisation usually coexist and support each other in a way challenging their separate examination.

The measurement of the degree of internationalisation builds on the experience of UNCTAD in the use of composite indices of the degree of (outward) internationalisation in transnational corporations (e.g. the transnationality index – TNI, and the geographical spread index – GSI) (Ietto-Gillies 1998; Ietto-Gillies/London 2009). It also refers to the degree of (outward) internationalisation (DOI) scale constructed by Sullivan (1994), combining variables of different nature (i.e. structural, performance-related and attitudinal/behavioural) to measure the degree of a firm's internationalisation (Sullivan 1994; Dörrenbächer 2000).

Table 3 shows the formative indicators and weights used for the construction of the measure of the degree of a firm's outward and inward internationalisation.

Table 3 Formative indicators constituting the outward and inward internationalisation indices

Outward internationalisation index	
Formative indicators	**Weight**
Outward Internationalisation Forms and Markets	0.40
Export Share in Sales and Markets	0.40
Firm's International Experience and Markets	0.20
Inward Internationalisation index	
Formative indicators	**Weight**
Inward Internationalisation Forms and Markets	0.40
Import Share in Sales and Markets	0.40
Firm's International Experience and Markets	0.20

The outward/inward internationalisation indices developed for the study cover multiple forms of firms' internationalisation. Unlike the measures adopted for transnational corporations, they do not employ only the variables representing exporting/importing and outward/inward foreign direct investments (FDI), but also contractual forms (licensing-out/in, franchising-out/in, etc.). This is based on the assumption that the contractual forms of internationalisation (*NEMs – non-equity modes*) are nowadays the fastest developing network forms of conducting international operations, especially useful for less internationally experienced firms (WIR 2011).

Similarly to the DOI index, the internationalisation indices comprise a firm's international experience, as well as the scope and spread of internationalisation reflected by the number of foreign markets and their physical and psychic distance from the Polish market. Hence, the measurement concept should be considered to be adjusted to the context of the Polish economy, which is a transition economy, characterised in general by low degree of internationalisation, i.e. low intensity of international activity, a rare use of capital forms of internationalisation, and a relatively narrow scope and spread of foreign activity of firms.

Data collection and sampling

The empirical data were collected through direct interviews conducted in 274 Polish firms. A structured questionnaire was used to collect data. The purposive sampling was applied to select firms demonstrating innovative activity and, irrespectively of or simultaneously with their innovativeness, involved in international markets through outward internationalisation forms (e.g. exporting) or in-

ward internationalisation forms (e.g. importing). The research sample is heterogeneous, with the exception of ownership – almost all firms (96%) are privately owned. The sample embraces firms operating both in industry (54%) and services (46%) sectors. Small and medium-sized firms each constitute approx. 40% of the sample, while large firms account for 20%. The majority of firms (67%) do not belong to any capital group. Firms with solely Polish capital constitute 68% of the sample, whereas the remaining firms have foreign equity – exclusively or partially. The heterogeneity of the sample is intentional as it gives an opportunity to create and test more universal measures to study the related phenomena in different types of firms. A firm's sector, size, affiliation to capital group and origin of capital are considered control variables in our study.

Results

Table 4 summarizes descriptive statistics of the key constructs of the studz. The final values of the indices are normalised to take the value from 0 to 1. The normalisation of the value of the indices allows for their comparisons within the intended value range. The normalised values of the indices are regarded as low if within the range 0.0 – 0.19, moderate: 0.2 – 0.39, high: 0.4 – 0.59, and very high: above 0.6.

Table 4 Descriptive statistics for innovativeness, internationalization and networking indices (N=274)

Index	Mean	Tests	Range	Standard deviation
Networking	**0.443**		**0.812**	**0.185**
industry	**0.469**	Statistically significant differences – test U MW		
services	**0.419**			
small	0.445	Statistically insignificant differences		
medium	0.448			
large	0.435			
affiliated	0.456	Statistically insignificant differences		
non-affiliated	0.418			
Outward Innovativeness	**0.319**		**0.910**	**0.154**
industry	0.329	Statistically insignificant differences		
services	0.310			
small	0.296	Statistically insignificant differences		
medium	0.335			
large	0.309			
affiliated	0.315	Statistically insignificant differences		
non-affiliated	0.328			

Index	Mean	Tests	Range	Standard deviation
Inward Innovativeness	**0.281**		**0.800**	**0.148**
industry	**0.305**	Statistically significant differences – test U MW		
services	**0.258**			
small	**0.252**	Statistically significant differences for small and large firms – Kruskal-Wallis test		
medium	0.290			
large	**0.309**			
affiliated	**0.269**	Statistically significant differences – test U MW		
non-affiliated	**0.306**			
Outward Internationalization	**0.125**		**0.713**	**0.125**
industry	**0.162**	Statistically significant differences – test U MW		
services	**0.089**			
small	0.111	Statistically insignificant differences		
medium	0.136			
large	0.127			
affiliated	0.125	Statistically insignificant differences		
non-affiliated	0.124			
Inward Internationalization	**0.123**		**0.663**	**0.118**
industry	**0.139**	Statistically significant differences – test U MW		
services	**0.109**			
small	0.119	Statistically insignificant differences		
medium	0.127			
large	0.121			
affiliated	0.121	Statistically insignificant differences		
non-affiliated	0.128			

The results for the entire research sample show that the mean degree of networking is relatively high within a large range and the distribution of its value is close to normal. The means of the indices of outward and inward innovativeness indicate moderate innovativeness of the surveyed firms within a very large range (higher for outward innovativeness) and almost normal distribution. The mean degree of both outward and inward internationalisation is low (slightly higher for outward internationalisation). A vast majority of firms present the low degree of both types of internationalisation and strong right asymmetry in their value distribution is observed.

The mean values of the degree of networking, outward and inward innovativeness and internationalisation vary by sector, firms' size and capital group affiliation. Nevertheless, most of the differences between mean values of the indices

are statistically insignificant, and none of them show significant differences for firms varying by capital origin. The statistically significant differences concern the networking degree by sector affiliation – the networking degree is slightly higher for industrial firms than for the service firms. The degree of innovativeness shows statistically significant differences only in the case of inward innovativeness. It varies between sectors, firm's size, and capital group affiliation, being higher for industrial firms, large firms *versus* small ones, and non-affiliated to capital group, but the differences are rather small, approximately at 0.05. Also, the degrees of outward and inward internationalisation vary by sector – both are higher in industry than in services, and the degree of outward internationalisation in industry is twice as high as in services. Inward internationalisation does not show any statistically significant differences between groups of firms.

To test the research hypotheses, Pearson correlation coefficient *r* was used, showing statistically significant, weak to moderate positive linear correlations between the majority of the networking, innovativeness and internationalisation indices, as presented in Table 5.

Table 5 Correlations of networking, innovativeness and internationalization indices (N=274)

	Outward Innovativeness	Inward Innovativeness	Outward Inter-nationalization	Inward Inter-nationalization
Networking	**.178****	**.311****	**.282****	**.113**
industry	.158	.250**	.252**	.158
services	.182**	.333**	.265**	.042
small	.387**	.456**	.298**	.100
medium	.081	.259**	.180	.075
large	.018	.182	.469**	.204
affiliated	.164	.238**	.316**	.092
non-affiliated	.193**	.370**	.268**	.131
domestic capital only	.199**	.312**	.287**	.115
with foreign capital	.171	.347**	.305**	.122

** $p<0.05$

First, correlation analysis for the entire sample confirms by large the assumption underlying the study that networking is positively related to the innovativeness and internationalisation of firms. In most cases the hypotheses are verified positively and the statistical significance of the results is high enough, though the strength of correlations is not large (weak to moderate).

Second, the hypotheses H1 a and H1 b, predicting that networking is positively related to both outward and inward innovativeness, are supported. However, the strength of the correlation between networking and outward innovativeness is weak, while its relationship with inward innovativeness may be regarded as moderate. This means that networking has a noticeably stronger relationship with inward innovativeness than with outward innovativeness.

Third, as for the effect of networking on internationalisation, mixed results are achieved. The hypothesis H2 a, stating that networking is positively related to outward internationalisation gained support, with close to moderate strength of the relationship. The hypothesis H2 b, predicting the positive relationship between networking and inward internationalisation is not supported, because of the statistically insignificant result of the analysis. The result shows that networking is conducive only to outward internationalisation.

Forth, the examination of relative strength of the relationships of networking with outward/inward innovativeness and internationalisation in the entire sample indicates that networking most strongly underpins inward innovativeness and outward internationalisation. It hardly contributes to outward innovativeness and has no influence on inward internationalisation.

Some interesting results arise from the analysis of the correlations between the degree of networking, innovativeness and internationalisation for firms grouped by sector, size, capital group affiliation, and capital origin. First, in the case of service firms, the degree of networking shows statistically significant correlations for three of the four variables – the degree of outward and inward innovativeness and the degree of outward internationalisation. In the industrial firms only inward innovativeness and outward internationalisation are supported by networking. In general, the correlations are stronger among the service firms than among the industrial firms, which implies that networking supports outward and inward innovativeness and outward internationalisation in service firm more effectively.

Second, also in small firms the degree of networking shows statistically significant correlations with the degree of outward and inward innovativeness and outward internationalisation. The correlations are stronger in small firms than in medium and large firms, with the exception of correlation between networking and outward internationalisation in large firms. In large firms networking is conducive to inward innovativeness and outward internationalisation, while in medium firms – only to inward innovativeness.

Third, the firms which are not affiliated with capital groups show stronger correlation of networking with both inward and outward innovativeness than firms belonging to capital groups. Only in the case of outward internationalisation networking is more effective for affiliated firms.

Fourth, the firms with solely domestic capital present a positive relationship of networking with both types of innovativeness and outward internationalisation, while in the firms with exclusively or partially foreign capital networking is not conducive to outward innovativeness, but it has the strongest relationship with outward internationalisation.

To summarize, networking is the most conducive to the inward innovativeness of firms in all groups but large ones. The relationships of networking with inward innovativeness are generally stronger than with outward innovativeness. Outward innovativeness is supported only in small and service firms, firms non-affiliated to capital groups and with domestic capital. The relationship of networking with outward internationalisation is in general weaker than with innovativeness, with the exception of large and capital group affiliated firms. The strongest correlation (close to 0.5) is observed in the case of the relationship between networking and outward internationalisation for large firms and the relationship between networking and inward innovativeness for small firms. No statistically significant correlation was found between networking and inward internationalisation among any groups, which shows that in general networking is irrelevant to the inward internationalisation of firms.

Discussion and conclusions

The results of this research provide a broad overview of the relationships between the networking of firms and their innovativeness and internationalisation, indicating the relative significance of networking for the two ways of increasing firms' international competitiveness. The findings also confirm the rationale for employing the holistic approach to examine the effects of a firm's networking on both the outward and inward types of innovativeness (Hollenstein 1996; Kleinknecht et.al. 2002; Hagedoorn/Cloodt 2003) and internationalisation of firms (Jones 1999, 2001; Fletcher 2001, 2008). This approach offers a unique insight into the differentiated relationships of networking with the outward and inward forms of the studied phenomena. Another interesting finding of the study is related to the heterogeneity of the sample by sector, size, capital group affiliation and origin of capital, proving the necessity of controlling the empirical research results in this respect. Last, the context of the study, Poland as an emerging market and a transition economy, makes the contribution to the networking literature raising the issue of learning by networking in innovation and internationalisation processes conducted in less advanced economies.

The results show that networking supports both types of innovativeness of firms, but, astonishingly, the strength of the relationship is higher for inward innovativeness than for outward innovativeness. This suggests that firms create network ties and look for network forms of coordinating value chain activities to introduce process and organizational innovations rather than product and mar-

keting ones. Inward innovativeness (i.e. process and organizational innovations) may be considered related to the cost-based advantage, while outward innovativeness (i.e. product and marketing innovations) may be linked with the differentiation-based advantage. Does it mean that the firms that engage more intensely in networking to reduce costs, while they tend to strive for differentiation alone? We suggest that this finding is specific for Polish firms because Poland is an emerging economy and a modest innovator among other EU economies (IUS 2013). In Poland, price competition is still often a dominant force, while differentiation seems to remain an imitation of product innovations created somewhere else. Having a relatively large internal market, firms do not need to involve network partners to get access to a new market or technological knowledge from external sources. They may implement product and marketing innovations based on their internally developed technological and market knowledge only and engage in networking to gain access to technological and managerial knowledge necessary to pursue cost-reducing measures and organisational innovations. Competitive strategies founded on the cost-based advantage dominate also in other transition economies from Central and Eastern Europe. However, the ability to create differentiation-based advantage by outward (product and marketing) innovations is constantly growing (Stojcic/Hashi/Telhaj 2011).

The low level of innovativeness of Polish firms may be a source of their *liability of newness* and *liability of unconnectedness* (Powell et al. 1996). Their low level of engagement in R&D and innovation processes results in lack of absorptive capacity of knowledge (technological, market and managerial) necessary for innovation (Cohen/Levinthal 1999). Deficiency of network ties with partners highly involved in innovation processes may aggravate and perpetuate the situation. These research results extend the network theory of innovation (Rothwell 1992; Teece 1992; Powell et al. 1996) by adding a comment to the issue of the relationship between networking and different types of innovation and knowledge indispensable to introduce them. They demonstrate that emerging economies are the settings in which different patterns of knowledge flows and sources of competitive advantage may be explored.

The findings from this research offer an insight into the role of networking in outward and inward internationalisation processes. They indicate that network ties and network forms of coordinating value chain activities created by the studied firms are conducive to outward internationalisation only (e.g. exporting, franchising-out, outward foreign direct investments), while for inward internationalisation (e.g., importing, franchising-in, inward foreign direct investments) they are ineffective. These results may suggest that networks and networking give access to external resources and knowledge, such as foreign market knowledge, internationalisation knowledge, and foreign business knowledge, useful in outward internationalisation processes, but not necessary for inward internationalisation.

The findings from this research correspond with the network model of internationalisation by Johanson and Mattsson (1988), where *early starters* and *lonely internationals* (i.e. firms with both low and high degree of internationalisation operating in business networks characterised by low degree of internationalisation) expand their international activity less effectively than those which have access to an international network offering access to the partners' knowledge and resources necessary for internationalisation. The findings are also consistent with the Johanson and Vahlne's Uppsala model revised in 2009. The *liability of outsidership* of Polish firms operating in the economy characterised by the low level of internationalisation means that most of them have no access to relevant networks offering resources and knowledge necessary for further internationalisation. Although *liability of foreignness* no longer creates an important barrier for Polish firms operating mainly within the Single European Market, their involvement in international operations abroad and at home is still low. Network ties with mainly local partners are not used for knowledge exploration which could enable firms' expansion to foreign markets. The exploitation of firms' own knowledge enables only continuing along the familiar path of development and enjoying the lower risk of resource commitment in the domestic market, i.e. they stay at home, in the large and still developing market (Forsgren 2002; Sharma/Blomstermo 2003; Hadley/Wilson 2003).

Again, these findings may be specific to the Polish transition economy and emerging market only. Having in mind that, in general, the degree of internationalisation of firms in Poland is rather low (Szymura-Tyc 2015), one may expect that the majority of the studied firms rather choose to form network ties with local partners, lacking knowledge resources useful for outward internationalisation (e.g. foreign market knowledge, internationalisation knowledge, foreign business knowledge). This is in line with the results of another study on Polish firms' internationalisation (Lewandowska et al.), which proves that cooperation with foreign partners is conducive to outward internationalisation, while cooperation with local partners reduces firms' propensity to internationalise. The same situation is observed in other emerging economies. Milanov and Fernhaber (2014) and Prashantham and Birkinshaw (2015) reveal that strong relationships of small and medium-sized or young firms with domestic partners may hinder their international expansion, if local partners focus on the internal market and do not have international experience.

This research explored the relationships between networking, innovativeness and internationalisation for firms varying by sector, size, capital group affiliation and capital origin. The empirical studies of relationships between the three phenomena within such a heterogeneous sample are very rare. Most studies focus on comparing the pairs of them (e.g. networking and innovativeness or networking and internationalisation) based on empirical data from the industry (e.g. manufacturing firms), leaving aside the service sector. Similarly, the extant stud-

ies focus either on large firms or SMEs. This stems not only from researchers' interests, but it is also an issue of measures used in these studies, which are specific to a given type of firms. The measures used in this research were more universal and allowed for the examination of a more heterogeneous sample of firms. The findings confirm the crucial role of networking for smaller firms in respect of outward and inward innovativeness (Rogers 2004) and outward internationalisation (e.g. Korhonen et al. 1996; Ciravegna et al. 2014). For large firms networking is important for outward internationalisation only, while for innovativeness they rely more on their own knowledge resources. This result might be surprising, but not difficult to justify by their better resource endowment. The findings concerning service firms are difficult to discuss against the background of previous studies, as we have not found any studies focusing on similar issues.

Limitations and future research

The current study has two main limitations. One is related to the research sample, which is non-representative, thus reducing the opportunity to generalise the results. The entire sample is relatively small and the subsamples are even smaller, which weakness the strength and statistical significance of the results. A future research could address this by collecting large samples in order to test the hypotheses with more advanced analytical methods.

The other limitation is of conceptual and methodological nature. The networking measure used in this research considers only direct ties, while we recognize that indirect ties may have an influence on both innovativeness and internationalisation. Also, the network characteristics and network positions of firms are not accounted for in this research, though some researches stress their importance for the relationships with innovativeness and internationalisation. The future research could examine the networking effect through the two logics mentioned earlier: the *cooperation logic* and the *coordination logic* considered separately. This might provide an insight into the role of the two different facets of networking in the relationships with innovativeness and internationalisation of firms. In addition, studying the effects of networking should be explored in other emerging or transition economies to further understand how the development of the economy affects firms' innovativeness and internationalisation in networks.

Further research could also include an examination of relationships between outward/inward internationalisation and outward/inward innovativeness. This is based on wieldy accepted assumption that firms' relations with foreign partners or within international networks are identified as having crucial importance for firms' innovativeness, constituting the foundation of firms' international competitiveness.

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Appendix: Interview Questionnaire

Networking

Place the relevant figure in respective fields: 7 – exclusively; 6 – most frequently; 5 – very frequently; 4 – frequently; 3 – rarely, 2 – very rarely; 1 – never

Nature of Relations in Supply Chain	Suppliers	Buyers	Customers
[1] single transactions			
[2] repetitive transactions			
[3] long-term relations			
[4] contractual cooperation			
[5] capital cooperation			

Forms of Cooperation in Business Network	Suppliers		Buyers		Competitors	
	Domestic	Foreign	Domestic	Foreign	Domestic	Foreign
[1] loose, occasional						
[2] permanent, non-contractual (e.g. within cluster or supply chain)						
[3] permanent, contractual (e.g. within purchasing/sales group, outsourcing, co-sourcing)						
[4] strategic, contractual (e.g. strategic alliance, contractual joint venture)						
[5] strategic, capital (e.g. within a capital group, capital joint venture)						

Type of Linkages with Business Partners	Suppliers	Buyers	Customers	Competitors
[1] economic (mutually beneficial transaction terms)				
[3] informational (informational links and knowledge exchange)				
[6] structural (jointly used and created resources and competencies)				

Dominant Nature of Business Relationships	Partners in Supply Chain		Competitors
	Suppliers	Buyers	
[1] pure competition			
[2] competition with elements of cooperation			
[3] cooperation with elements of competition			
[4] pure cooperation			

Forms of Coordination of Primary Activities	Carried out by independent firms [1]	Outsourced to partner firms		Carried out within capital group [2]	Carried out within the firm [1]
		domestic contractor [3]	foreign contractor [3]		
Procurement					
inbound logistics					
component manufacture					
component assembly					
full production cycle					
warehousing and sale					
outbound logistics					
wholesale distribution					
retail distribution					
customer pre- and after-sale services					

Forms of Coordination of Support Activities	Carried out by independent firms [1]	Outsourced to partner firms		Carried out within capital group [2]	Carried out within the firm [1]
		domestic contractor [3]	foreign contractor [3]		
R&D					
projects and designing					
human resource management					
HR and payroll services					
finance and accounting services					
legal services					
advisory services					
IT service					
fleet management					

Forms of Coordination of Support Activities	Carried out by independent firms [1]	Outsourced to partner firms		Carried out within capital group [2]	Carried out within the firm [1]
		domestic contractor [3]	foreign contractor [3]		
R&D					
real estate management					
business & market intelligence					
promotion (e.g. advertising, PR, fairs)					
customer service (e.g. call center, help desk, CRM)					

Innovativeness

Give the number of innovations

13. Degree of Newness of Innovation (by innovation type)	New for the firm [1]	New for domestic market [2]	New for international market [3]
Product innovations			
Process innovations			
Marketing innovations			
Organizational innovations			

Place X in the respective filed

Number of Innovations against Competitors (by innovation type)	Highest [4]	Very high [3]	Average [2]	Low [1]
Product innovations				
Process innovations				
Marketing innovations				
Organizational innovations				

Place X in the respective filed

R&D Innovation Expenditure against Competitors (by innovation type)	Highest [4]	Very high [3]	Average [2]	Low [1]	No expenditure [0]
Product innovations					
Process innovations					

Place X in the respective filed

Share of Innovation Expenditure in Total Expenditure (by innovation type)	No expenditure [0]	0–1 % [1]	1–3 % [2]	3–5 % [3]	5 %-10 % [4]	more than10 % [5]
Product innovations						
Process innovations						

Internationalisation

Give the number of markets

Outward Internationalisation Forms and Markets		[1] Number of EU markets	[3] Number of European markets beyond EU (incl.Russia)	[6] Number of non-European markets
International commercial relations [1]	Indirect exports			
	Direct exports			
	Cooperative exports			
International cooperation: contractual and capital [2]	Licensing abroad			
	Franchising abroad			
	Contractual production abroad / offshoring			
	Capital joint venture abroad			
Own activity abroad [3]	Production affiliate abroad			
	Service affiliate abroad			

Give the number of markets

Inward Internationalisation Forms and Markets		[1] Number of EU markets	[3] Number of European markets beyond EU (incl.Russia)	[6] Number of non-European markets
International commercial relations [1]	Indirect imports			
	Direct imports			
	Cooperative imports			
International cooperation: contractual and capital [2]	License from abroad			
	Franchise from abroad			
	Contractual production at home / offshoring			
	Capital joint venture at home			

Place X in the respective filed

Export Share in Sales and Markets in %	[1] EU markets	[3] European markets beyond the EU (incl. Russia)	[6] Non-European markets
[1] less than 5			
[2] 5–24			
[3] 25- 49			
[4] 50–74			
[5] 75–100			

Place X in the respective filed

Import Share in Sales and Markets in %	[1] EU markets	[3] European markets beyond the EU (incl. Russia)	[6] Non-European markets
[1] less than 5			
[2] 5–24			
[3] 25- 49			
[4] 50–74			
[5] 75–100			

Give the number of years

Firm's International Experience and Markets			
Years of existence of the firm	[1] Years of operations in EU markets	[3] Years of operations in European markets beyond the EU (incl. Russia)	[6] Years of operations in non-European markets

Legend: numbers in brackets [...] – weights