

The Effect of Network Competence and Environmental Hostility on Internationalization of SMEs

*Lasse Torkkeli**

Lappeenranta University of Technology, School Of Business

Skinnarilankatu 34, P.O.BOX 20, FI-53851 Lappeenranta

Tel.: +358 5 6217277

Email: lasse.torkkeli@lut.fi

Kaisu Puumalainen

Lappeenranta University of Technology, School Of Business

Skinnarilankatu 34, P.O.BOX 20, FI-53851 Lappeenranta

Tel.: +358 40 541 9831

Email: kaisu.puumalainen@lut.fi

Sami Saarenketo

Lappeenranta University of Technology, School Of Business

Skinnarilankatu 34, P.O.BOX 20, FI-53851 Lappeenranta

Tel.: +358 50 308 6181

Email: sami.saarenketo@lut.fi

Olli Kuivalainen

Lappeenranta University of Technology, School Of Business

Skinnarilankatu 34, P.O.BOX 20, FI-53851 Lappeenranta

Tel.: +358 40 358 7020

Email: olli.kuivalainen@lut.fi

**corresponding author*

Abstract

Internationalization theories have suggested that networks offer firms, small and medium-sized entrepreneurs especially, tools to internationalize successfully. Network competence, the ability of firms to develop and maintain their networks of business relationships and to deal effectively with interactions in these relationships, is a core competence which has been linked to firm performance before. Taking into account also the environmental hostility facing internationalizing firms, this study seeks to link the level of network competence of SMEs to their successful first foreign market entry and subsequent success in those markets. The empirical part of the study is conducted on a web survey data gathered during the summer of 2008, with a sample of 298 Finnish SMEs representing five industries. We find higher levels of network competence and the lack of environmental hostility to both explain in part the difference between international and domestic SMEs, and the subsequent international performance of the internationalized SMEs. In the process, a shortened scale of network competence is developed.

Keywords: network competence, network embeddedness, business networks, environmental hostility, internationalization of SMEs, performance

1 INTRODUCTION

The purpose of this work is to study internationalization and international performance of small- and medium-sized (SME) firms, arising both from their competence of acting in business networks and from different environmental hostilities they perceive when doing business in foreign markets. Linking networking competencies of firms with low environmental hostility as explanatory factors for their successful internationalization has not been extensively considered in literature before, especially when it comes to the SME context.

Network competence (Gemünden et al., 1996; Ritter, 1999; Ritter et al., 2002), i.e. the ability of firms to develop and manage relations with key partners, such as suppliers, customers and other organizations, and to deal effectively with the interactions among these relations, offers a tested quantitative scale to measure the level of business relationship competencies of firms. It is because it offers a way to account for network-specific, partner-specific (i.e. dyadic) and employee-specific (i.e. individual) competencies of the firm. However, further development of this promising construct has been recognized to need both additional shortening of the scale and its application to settings where networks have been found to matter (Ritter et al., 2002).

One such area of study is the internationalization of firms, and of SMEs in particular. The network approach (Johanson and Mattsson, 1988) specifically sees internationalization as a process in which firms are trying to establish positions in networks to which they are new, by developing new exchange relationships with their partners in those new markets. Hence, all firms are recognized to be embedded in networks comprising of professional and social exchange relationships with other network actors (Granovetter, 1985; Håkansson and Snehota, 1998; Gulati et al., 2000), which include customers, suppliers and strategic allies (Anderson et al., 1994; Achrol 1997; Walter, Auer and Ritter, 2006). Leveraging networks to internationalize also can speed up the entry to new foreign markets (Saarenketo et al., 2004), and internationalization of SMEs has in particular been seen to arise through networks (e.g. Coviello and Munro, 1995 and 1997; Chetty and Campbell-Hunt, 2004). The competence of the firm to develop and maintain these

networks then, should have its positive effect on SME internationalization, in general, and on newly emerging knowledge-intensive industries in particular (Bell, 1995).

The arising opportunities for domestic and foreign market entry and subsequent performance through networks of business relationships are, on the other hand, tempered by market environment forces such as government intervention, dynamic technological environment and competitive market environment (Covin and Slevin, 1989; Zahra and Garvis, 2000). The effect of this environmental turbulence, or hostility, has been found to vary across SMEs and their industries (Kuivalainen et al., 2004), and thus may present additional challenges to those SME type firms trying to internationalize. Local competitors often are adept than those SMEs at meeting the demands of their regional markets, because they possess know-how on consumer preferences, government regulations, and market trends (Rugman and Collison, 2004). A firm-specific “fit”, which arises within firms from their entrepreneurial style, organizational structure and strategy, and influences the market performance of the firm (Naman and Slevin, 1993), is also needed to overcome the challenges posed by foreign markets to internationalizing SMEs. We therefore posit that it is not only the network competence of small firms that increase their internationalization efforts and enhances the following performance in foreign markets, but also their perceived lack of hostility of the cultural, economic and political environment of the foreign markets they target.

So far, an examination into the effect which relationship-based competencies together with environmental factors might play in domestic and foreign market performance in firms, and SMEs across industries especially, has been lacking. We therefore aim to link the observed effects of network competence and environmental hostility into internationalization of SMEs together, by examining if they can be found to act behind internationalized SMEs in the first place, and differences in their performance on the other hand. The empirical part of this study is based on a cross-industrial survey of small and medium-sized Finnish enterprises in five industries, two of which are seen more turbulent due more technology and knowledge intensity (Kuivalainen et al., 2004). This article is constructed as follows: in chapter 2, the theoretical background is presented, and the firm-specific competence measuring a firm's ability to act in them, network competence, is introduced further. The chapter also includes examination into environmental hostility, the

possible relationship between network competence, that hostility and SME internationalization and, as a result of the examination, hypotheses for this study are introduced. In chapter 3, the data are introduced and measures used are developed. The analyses to confirm or reject hypotheses are conducted and results presented in chapter 4, followed discussion on their merits in chapter 5.

2 THEORETICAL BACKGROUND AND HYPOTHESES

2.1 Competencies, capabilities and network competence

Networks of exchange relationships contribute to competence development (Awuah, 2007), and as the ability to network is recognized as a potential source of many positive outcomes relating to firm-specific strategies and performances as mentioned before, the question then arises whether this ability is a firm-specific competence, which would help in part explain the inter-firm differences in these areas. There exists a host of concepts aimed at capturing these, some seeing them as dyadic ones between partners, others taking into account also the existence of multiple partners in a set of networked relationships. These concepts are defined as either capabilities, based on the dynamic capabilities framework, or as competencies. Dynamic capabilities are the abilities of firms in integrating, building and reconfiguring internal and external competencies, in order to address rapidly changing environments (Teece et al., 1997). Eisenhardt and Martin (2000) define them as those processes of the firm that use resources to match and create market change, which makes them organizational and strategic routines aimed to shape their available resource base, competencies and processes while also creating new ones. The dynamic nature can be seen through thinking of these resources as unstable and vulnerable to erosion (Dierickx and Cool 1989), allowing for varying levels of different, firm-specific capabilities.

Competencies, on the other hand, are complex bundles of skills and knowledge accumulated, bundles which are then exercised by firms in their organizational processes and subsequently enable coordination of activities and making use of one's assets (Day 1994). To be competent in something is to *"fill the gap between intention and outcome"*,

and in a way that the outcome resembles the intention (Dosi et al., 2000). Some competencies are considered “core” (Prahalad and Hamel, 1990), which means that the competitiveness of a firm is decisively derived from its main competencies and products, i.e. the tangible results its core competencies. Mascharenas et al. (1998) define core competences as something in which a firm is good at and is not imitable while benefiting consumers. In this, a core competence can be not only technological knowledge, but (for example) the ability to keep close relationships with partners and customers.

Network competence is a core competence, the ability of firms to *“develop and manage relations with key suppliers, customers and other organizations and to deal effectively with the interactions among these relations”* (Ritter et al., 2002, 119). As a concept, it encompasses the business relationship competencies of a firm, and divides them into two distinct categories: task execution activities and their qualifications, with the former being further divided in relationship-specific and cross-relational tasks (Ritter 1999; Ritter et al. 2002). The qualifications part of network competence concentrates on people dealing with relationships, and also relies on specialist and social qualifications (Ritter 1999). Overall then, network competence as a construct encompasses the competency of the firm to manage both dyadic, i.e. individual one-to-one, partnerships (relationship-specific tasks) and networks of partnerships (cross-relational tasks), while also including the competence of individual employees. This makes it exceedingly useful for measuring business relationship abilities of firms as a core competence. Its uniqueness is further enhanced by the fact that, while firms have been recognized to have a multitude of core competencies and capabilities related to acting in business relationships and networks (for reviews, see e.g. Pagano, 2009 or Äyväri and Möller, 2006), the question as to how to describe and measure these kinds of organizational capabilities has remained an issue (Jarratt, 2008). Network competence answers this need directly, by offering a quantitative scale to capture this concept.

While there has been research illustrating the positive role network competence in innovation performance (e.g. Ritter and Gemünden, 2003 and 2004; Teng and Chiu, 2009), the role it plays in firm strategy across different contexts has not been extensively researched. This has been despite of calls for clarifying the role network competence plays in processes related to survival and growth of firms, e.g. in international performance

(Ritter et al., 2002; Ritter and Gemünden, 2003), as well as its role in corporate success in general (Ritter and Gemünden, 2004). Secondly, for the established network competence scale, there have been calls for overall validation and generalization of the measure across industries and cultures (Ritter et al., 2002; Ritter and Gemünden, 2004). As Churchill (1979) pointed out, validating and developing of scales call for retest and replication studies. There is a recognized need for a shortened scale, one which could be used as a part of larger surveys, as the developed scale with its multitude of items has led to the danger of leading to respondent fatigue when used in empirical studies (Ritter et al., 2002). Therefore, a sub-goal of this study is to form a reliable and valid shortened network competence scale for the SME context.

2.2 Network competence and environment in internationalization of SMEs

Internationalization has been defined the process where a firm increases its foreign operations (Johanson and Vahlne, 1977) and moves its international operations outward (Welch and Luostarinen, 1988). The internationalization process was originally seen as an incremental one, gradually developing one through the “stages” theories (Johanson and Wiedersheim-Paul, 1975; Johanson and Vahlne, 1977). Linking the networks of a firm to its successful internationalization also has a theoretical basis, both generally and for small firms especially. The network approach to internationalization (Johanson and Mattsson, 1988) also considers the process incremental, but sees the driving factor being the attempts of the internationalizing firm to enter new networks, some of which have their actors located in foreign markets. These are defined by interconnected exchange relationships between business units and the position of the firm in them (Halinen and Törnroos, 1998). Being embedded in gives firms positive impact in, among others, strategic (Andersson et al., 2002) and market performance (Ritala et al., 2009) terms. The ability to develop networks has been found to be deeply embedded in the overall internationalization strategy of firms (Loane and Bell, 2006) and to lead to sustainable competitive advantage (Dyer and Singh, 1998; Ziggers and Henseler, 2009). Pittaway et al. (2004) explicitly state that one of the main benefits of networking is indeed obtaining access to new markets. From this, it seems that the firms being able to embed themselves

in networks are able to extract benefits in terms of performance from both domestic and foreign markets and thus, have the opportunities for more successful internationalization.

For SME firms, the role of networks in their internationalization is further emphasized. Since the 1980s, the emergence of new kinds of small, often knowledge-intensive and high-technology (Madsen and Servais, 1997) firms seeking to internationalize rapidly straight after firm foundation, often called “born globals”, has been evident (McKinsey and Co., 1993; Rennie, 1993). The number and importance of these small firms are increasing at a rapid pace, which calls for building of new networks and utilizing created ones to leverage the internationalization process (Loane and Bell, 2006). Their market selection and entry initiatives are seen as originating from opportunities created through network contacts, rather than solely from the strategic decisions of managers in the firm (Coviello and Munro, 1995). More successful internationalization and firm growth in these kinds of firms are directly linked to their networks (Coviello and Munro, 1995 and 1997; Bell, 1995; Loane and Bell, 2006).

These small firms often lack specialized resources needed for internationalization (Knight and Cavusgil, 2004), resources which can be obtained externally through co-operative networked relationships (Johansson and Mattson, 1988). Parties embedded in different networks have bonds bridging separate networks (Fletcher 2008). Therefore, the internationalizing SME can use its domestic networks to find possible bonds to foreign networks, allowing for entering these networks as well and subsequently, being able to form network relationships with foreign actors. Often resources can be made use of by multiple network actors and become relational rents through joint use (Ziggers and Henseler, 2009), resulting in overcoming the constraints that these small firms inherently have (Karagozoglu and Lindell, 1998; Madsen and Servais, 1997).

Network competence helps in developing and maintaining these network relationships, which is critical considering internationalization decisions in small firms specifically rely on them (Coviello and Munro, 1995) and this network-related insight from firms and managers (Mouzas et al., 2008) is not to be managed by gut feelings, but analytically (Freytag and Ritter, 2005). Thus it could be argued that for the SME context especially, the firm-level network competence directly affects decisions on foreign market entry and, when

successful choices are assumed to lead to successful internationalization, performance therein.

As emerging high-technology industries especially are characterized by high market and technological uncertainty (Moriarty and Kosnik, 1989), inter-firm relationships offer better adaptability for small firms functioning in these kinds of uncertain environments (Heide and John, 1990), which arise due to institutional, industry and organizational factors (Zahra et al., 2000). Therefore, the effect of both business relationships competencies and the hostility of environment for small firms seem to have a bearing on their internationalization as a whole. According to the literature, then, possessing the competency to leverage networks should enable SME-type firms to internationalize. This suggests that firms already internationalized should exhibit significantly higher network competence than domestic ones. Furthermore, overcoming constraints through business relationships means network competence can also be seen as a tool for decreasing the environmental hostility experienced by firms when they start to internationalize. Therefore:

- H1: Higher levels of network competence and lower levels of environmental hostility explain whether the SME operates internationally or not.
 - H1a: The higher the level of network competence of a firm, the more likely it is to operate internationally.
 - H1b: The lower the amount of the environmental hostility, the more likely the firm is to operate internationally.

If this is the case, their impact on internationalization might interact in explaining the difference between the firms, for various reasons. This is because, in more turbulent markets, firms need each other in order to follow the market and thus overcome the challenges this environmental hostility would present them on their own (Bucklin and Sengupta, 1993). Forming strong business relationships and facilitating transfer of knowledge leads to more positive effects in especially hostile environments (Lee and Cavusgil, 2006), and a volatile environment can lead to further cooperation between firms, leading to better performance in foreign markets (Matanda and Freeman, 2008). If competencies in business relationships are indeed the source of successful internationalization for SMEs, and their importance is heightened in uncertain

environments, then firms operating in environmentally hostile markets should have even more to gain from possessing network competence than firms in less turbulent areas. This means that the effects of hostility and network competence may be intertwined and together enhance the likelihood of successful internationalization:

- H2: Higher level of network competence and lower perceived environmental hostility interact in positively explaining the difference between international and domestic SMEs.

Networks and alliances are seen as a fruitful way to increase the firm's international competitiveness (Majocchi et al., 2005). Internationally active small firms also tend to grow faster than the domestic ones (Andersson et al., 2004), with foreign market connections having been found to be a main factor enhancing their export performance in general (Doole et al., 2006). This is especially important for small firms, to whom exporting may be the preferred growth strategy (Bonaccorsi, 1992). Firm competencies determine this export performance to a large part (Zou and Stan, 1998) and therefore, when considering the already internationalized SMEs, firms have to possess internal organizational competencies that support both early internationalization and subsequent success in foreign markets (Knight and Cavusgil, 2004). Reconfiguring capabilities of firms have been found to be behind their international performance (Jantunen et al., 2005), and network competence can be understood as an internal organizational capability to continuously reconfigure business relationship activities depending on which needs arise in specific situations. This indicates possessing high levels of such a competence should result in better international performance. Hostility of the environment, as experienced by the firm, can be seen as diminishing market performance, for the same reasons it was seen hindering foreign market entry in the first place. Therefore:

- H3: Higher levels of network competence and lack of perceived environmental hostility explain the international performance of SMEs.
 - H3a: The higher the level of network competence of a firm, the better its international performance.
 - H3b: The lower the perceived environmental hostility of a firm, the better its international performance.

And again, it is possible that network competence and the environment act in unison in explaining international performance outcome, as evidenced by Lee and Cavusgil (2006) or Matanda and Freeman (2008), therefore:

- H4: The level of network competence and lack of environmental hostility positively interact in explaining the international performance of SMEs.

As to the effect industry plays in linking network competence with internationalization, industry-specific differences in internationalizing through networks do exist, and are especially evident when comparing high-technology industries to low-technology ones (Bell 1995). Rapid internationalization of SMEs has been found to be particularly evident in information and communication technology (ICT), due to high upfront research and development costs and narrow global niches (Saarenketo, 2002), which heightens the importance of both achieving the resources for the former through networks, and capturing the gains from the latter through internationalization. The international trade is becoming increasingly knowledge-intensive in general (Contractor and Lorange, 2002), and turbulent environments are thought to be especially prevalent in industries with high knowledge intensity (Kuivalainen et al., 2004). Therefore:

- H5: In knowledge-intensive industries, the effect of network competence and lack of perceived environmental hostility on international performance is stronger than in other industries.

3 RESEARCH METHOD

3.1 Data collection

The empirical data to be used in the research is already available, as it was collected during the summer of 2008 from Finnish SMEs presenting five industries (metal, food, furniture, software and knowledge-intensive business services - KIBS). The selection of industries was based on the idea that, as mentioned before, firms in knowledge-intensive

industries are often different from those in more traditional manufacturing industries (e.g. in terms of their internationalization), and therefore both types of SMEs were deemed to be needed in the data. KIBS and software industry firms, therefore, were selected to present knowledge-intensive industries in this data, while the other three were selected from the more traditional manufacturing industries.

The term SMEs is used to characterize companies termed “small” or “medium” through different size measures, e.g. through the amount of employees in a firm and/or the amount of yearly turnover generated. The thresholds for these categories vary between countries, as do the sizes of economic sectors between them. The Organisation for Economic Co-operation and Development (OECD) terms them as *“non-subsidiary, independent firms which employ fewer than a given number of employees”* (OECD, 2008). The European Commission has, on the other hand, created a unified definition by stating that a medium-sized firm is one that lists less than 250 employees and whose yearly turnover or yearly balance sheet total is less than 50 million euro’s and less than 43 million euro’s, respectively (European Commission, 2003). On the other hand, in Canada and USA, for example, the threshold between a “large” and a “medium-sized” firm is considered to be 500 employees (OECD, 2008). Following these guidelines, here a firm is considered an SME if it has less than 500 employees *and* if its reported turnover is less than 50 million euros.

Consequently, the selection of SME firms that were contacted and asked to fill out the survey was conducted through the Amadeus database, and restricted to Finnish firms of 10-500 employees in the aforementioned five industries. The data were then collected by a web survey, between February 2008 and July 2008. The survey included additional items on internationalization indicators to the internationalized firms, otherwise it was the same to all respondents. These were some general questions on the age, scope and scale of the international activities of the firm, as well as a set of items inquiring on managerial assessment of how successful the internationalization process had been in terms of set strategic goals. Statements related to network competence were adapted from the original scale, as were those for strategic orientations and environmental factors. Some items in the survey were negatively worded, in order to avoid agreement bias.

From 1147 inquiries, 298 responses were received, for a response rate of 26%. The response rates varied across industries, from 16% (metal industry) to 31% (furniture industry). More respondent firms were domestic (179) than international (119). The respondents' firms were 18 years old, and SMEs in software industry were the youngest with an average age of 13 years. Most of the respondents were managing directors (191) or owners (59), and 40 identified themselves as "other key person". The average turnover of respondent firms was 5.7 million euros, ranging between 3.3 million in KIBS to 6.2 million in food industry firms. The average number of employees per firm was 40, ranging from 33 (furniture industry) to 43 (food industry).

3.2 Scale development

Network competence was measured by using an adapted scale, with statements related to network competence task execution taken from the original scale by Ritter et al. (2002). These items can be seen in appendix A. The following changes to the original scale were made for the survey:

- For items stating "technical partners", the word "technical" was removed, in order to generalize over different business relationships such as suppliers and customers, and in order to reduce ambiguity.
- In the initiation sub-scale, several items regarding ways of searching partners were combined to form a single item, "We search actively for new partners.", in order to shorten the scale while retaining its contents maximally.
- Similarly, several items regarding ways to discuss shared requirements and objectives with partners were combined into single item: "We share the same goals with our partners."

In order to form a reliable and valid network competence scale for the SME context, item reduction was first sought through an exploratory factor analysis using principal-component factor analysis (PCA). Varimax rotation method using SPSS 17 for Windows software was used, which however did not result in a satisfactory construct. Therefore, further shortening of the scale through confirmatory factor analysis was deemed

necessary. The resulting network competence construct was formed with LISREL 8.50 software using confirmatory factor analysis (CFA) technique (Jöreskog and Sörbom, 1996). PRELIS 2.50 was used to calculate the covariance matrix and maximum likelihood subsequently applied as the estimation method. As the model was not deemed to fit the data sufficiently when all the items were included in it as per the theoretical network competence construct, it was improved by removing individual network competence items one by one, basing the removal decisions on residual patterns (Anderson and Gerbing, 1982; 1984; 1988) and modification indices (Bagozzi and Yi, 1988). According to the theoretical model of network competence, the cross-relational scale of network competence should consist of planning, organizing, staffing and controlling sub-scales. Accordingly, the relationship-specific scale should consist of initiation, exchange and coordination sub-scales. Three alternative models following these criteria were developed:

- Model 1 was formed through removing least-fitting items from the model until it became a sufficient fit, as indicated by parsimonious, incremental and absolute fit measures (Hair et al., 1998).
- Model 2 was the entire set of items used in the survey, i.e. the first exploratory factor analysis scale mentioned above.
- Model 3 was a one-factor model, where network competence was deemed as a uni-dimensional construct in a single factor.

Model 1 was found to outperform models 2 and 3 (table 1). the root mean square error of approximation (RMSEA) was below 0.7, and most of the fit indices were above 0.90 (the goodness-of-fit index GFI 0.91, the comparative fit index CFI 0.95, and the normed fit index NFI 0.91, with the adjusted goodness-of-fit AGFI reasonably close at 0.87) and the t-values for factor loadings each were statistically significant.

(table 1 here)

Taking also into account Akaike's information criterion (AIC, 247) and the normed chi-square value (2.12) as parsimonious fit measures, the model achieved an acceptable fit, and therefore was used in this study as the measure of network competence, at least in

the SME context. The final result of the CFA can be seen in figure 1 (see appendix B for the list of individual items).

(figure 1 here)

The measure for internationalization performance was defined as a sum of subjective and objective performance measures. This was done in order to take into account not only the scope and scale of the internationalization (as measured by common economical measures such as and the amount of foreign markets successfully entered and share of turnover derived from them, i.e. their degree of internationalization), but also to that of achieving the set strategic goals. The former as a measure of internationalization performance lacks a common definition (Susman, 2007), but it is recommended to be formed as a multi-item measure (Sullivan, 1994; Jantunen et al., 2005). It is notable that the proportion of the export turnover in relation to current turnover of a firm might not always be indicative of its past actions as it was starting to internationalize. An incumbent firm, having started its internationalization process decades ago can have larger amount of their turnover coming from foreign markets than only recently internationalized small firms, e.g. born globals (Rennie 1993; McKinsey and Co. 1993). Still, the latter might have better yearly performance in their process when compared to that of the former, as long as it manages to achieve better results in the years immediately following the start. Therefore, to take that into account, the objective international performance, i.e. degree of internationalization, is here defined as the sum of the scale of internationalization (foreign share of turnover three years after internationalizing) and the scope of internationalization (amount of foreign countries entered).

However, the majority of international performance measures in literature seem to be subjective (Leonidou et al. 2002). Therefore, international performance was not only measured through the degree of internationalization measure, but by subjective managerial assessment of achieving the strategic outcome of internationalization, through a set of seven Likert-scale statements included in the international part of the survey questionnaire. The statements were as follows:

- *“Generally speaking, we are satisfied with our success in the international markets.”*

- *“We have achieved the turnover objectives we set for internationalization.”*
- *“We have achieved the market share objectives we set for internationalization.”*
- *“Internationalization has had a positive effect on our company's profitability.”*
- *“Internationalization has had a positive effect on our company's image.”*
- *“Internationalization has had a positive effect on the development of our company's expertise.”*
- *“The investments we have made in internationalization have paid themselves back well.”*

The objective and subjective measures were standardized and then calculated into a sum variable forming the measure for internationalization performance of SMEs. Environmental hostility measures were as follows:

- *“Access to capital is difficult.”*
- *“Products become obsolete quickly.”*
- *“Bankruptcy among companies in the industry is high.”*
- *“Demand for industry products is declining.”*
- *“Our company must often change its marketing practices to keep up with the competitors.”*

The first four can be thought of as encompassing regulatory, technological, competitor and customer hostility, respectively, as per Zahra et al. (2000), and the last one was adapted from Naman and Slevin (1993). The environmental hostility items were similarly calculated into a sum variable. Finally, several control variables were added to the analyses. In addition to controlling for firm size (number of employees) and age, an industry variable was included. Since internationalization in knowledge-intensive industries has been found to often differ from that in more traditional industries, software and knowledge-intensive services firms were separated in the data as a dichotomy from the furniture, food and metal industry firms as high knowledge-intensive versus other industries. Descriptives and intercorrelations for formed measures are in table 2

(table 2 here)

Network competence and environmental hostility correlated somewhat positively with each other, which seems to indicate that the level of network competence is higher in more turbulent industries (e.g. software and other high-technology industries).

Internationalization performance correlated rather strongly and significantly with both network competence and environmental hostility, indicating that the hypotheses could be expected to possibly receive support through regression analysis. The controlling variables seemed to not matter as much to the performance outcome, as their correlation to internationalization performance was not significant. The number of employees and the knowledge-intensiveness correlated significantly, although rather weakly, with the level of environmental hostility experienced by the firms.

3.3 Construct reliability and validity

For individual items in the network competence construct, reliability was determined through their path coefficients and squared multiple correlations, while Cronbach alpha values, composite reliability values and average variance extracted were used when determining the reliability of latent indicators. The reliability statistics for the shortened network competence scale can be seen in table 3. As seen in the table, all of the individual items were related significantly to their constructs. Cronbach's alpha values ranged between 0.68-0.85 and composite reliabilities between 0.67-0.83, both exceeding the threshold of 0.60 (Hair et al., 1998). The AVE values were also above 0.50, as recommended by Diamantopoulos and Siguaw (2000). Therefore, the network competence construct was found to be sufficiently reliable.

(table 3 here)

Its construct validity was examined through convergent and discriminant validities. Significant factor loadings and correlating factors within a construct provide some confirmation of convergent validity (Bagozzi and Yi, 1991). As factor loadings were all statistically significant and above 0.60 and factors in both the cross-relational and relationship-specific constructs all illustrated statistically significant (at the 0.01 level) and

reasonably strong (correlations between 0.47-0.63, convergent validity of the construct was deemed sufficient. Discriminant validity requires that the components are not perfectly correlated, with correlation values of 1 (Bagozzi and Yi, 1991). AVE values for each factor relative to its shared variance with the other components also point to discriminant validity (Fornell and Larcker, 1981). As seen in table 4, for all factors the squared correlation was lower than the AVE value, and all of the correlations between components were different from 1 (all the correlations were significant at the 0.01 level). Therefore, while the components measure different aspects of the same construct, it can be concluded that they still measure unique dimensions of it. Therefore, the network competence construct was deemed both a reliable and valid construct for use in analyses.

(table 4 here)

4 ANALYSIS AND RESULTS

Binary logistic regression model was run for testing H1 and H2. We also controlled for the effects of firm size (number of employees), age and industry. The results of this linear regression using enter method are seen in table 5.

(table 5 here)

The model was significant, although Nagelkerke and -2 log likelihood values indicated the model fit was not very good. However, the Hosmer and Lemeshow test statistic (sig.=0.612) indicated that the estimates of the model fit the data adequately. Network competence had a significant positive and an adequately large coefficient (0.4), while environmental hostility had a negative coefficient (-0.3), although it was only significant at the 0.10 level. Both results were as expected, with both H1a and H1b (and consequently, H1) receiving support, although the significance of the 10% risk level is naturally debatable. Internationalized SMEs were found to have had significantly better network competence and having benefitted from lack of the environmental hostility they perceived. Younger firms of and those of highly knowledge-intensive industries (i.e. software and knowledge-intensive business services industries) in the sample were much more likely to

be international than older companies in the more traditional industries, indicating that the model applies to born global -type firms especially. Other variables in the model, including the interaction variable of network competence and environmental hostility, were not significant, even at the 0.10 level. Therefore, the effects of network competence and environmental hostility were not found to be intertwined and thus, H2 received no support.

The effect of network competence and environmental hostility on international performance of SMEs was tested by conducting linear regression analysis. The same controlling variables were included in the model as before. The results of this linear regression using enter method are seen in table 6.

(table 6 here)

Adjusted R^2 value for the model was .245, indicating that the model explained a quarter of the internationalization performance, as indicated by the data. The model was significant at the 0.05 level. The result shows firstly, that both network competence and environmental hostility have a significant effect on internationalization performance, i.e. that higher level of network competence and less hostile environment explain the internationalization performance of SMEs. The coefficients for both were as expected, but as their interaction variable was not significant, they seemed to have an independent explanatory power on their own. The effects of firm age, size or industry were not significant, indicating that network competence and the lack of environmental hostility explain the performance in SMEs independently of each other and of the firm characteristics. Therefore, both H3a and H3b and consequently, H3 as a whole, were supported, while H4 received no support. The results were somewhat similar to the analysis shown in table 5, while the environmental hostility coefficient was strongly significant in the international performance model, further indicating that network competence and the level of hostility the firm experiences have their effect on SME internationalization that is significant but separate. Finally, neither the interaction variable between knowledge-intensive industry and network competence, nor the one between it and environmental hostility were significant, indicating that the effect of network competence and environmental hostility on performance was not found to be significantly

stronger in industries with high-knowledge industry. Consequently, H5 received no support.

5 CONCLUSIONS AND DIRECTIONS FOR FUTURE RESEARCH

This study aimed to provide further proof for the important role which the competencies of SMEs to develop and handle business relationships in the business networks they are embedded in, together with the hostility of market, technological, regulatory and competitive environment, play in their internationalization efforts. In the process, a reliable and valid shortened network competence scale for the SME context was formed. The results found that both successful internationalization and subsequent performance in those international markets are explained in part by both the level of network competence and lack of environmental hostility. These findings are in line with earlier studies indicating that the ability of firms to manage business relationships offer them new avenues to internationalize and perform in foreign markets (e.g. Bell, 1995; Coviello and Munro, 1995; Walter et al., 2001; Loane and Bell, 2006; Mort and Weerawardena, 2006; Hanna and Walsh, 2008).

In their review of SME internationalization literature, Coviello and McAuley (1999) are of the opinion that in the end, internationalization of SMEs comes to depend on their networks instead of other explanatory firm specificities. This was partly supported in the sense that, although firm characteristics relating to age and size were found to matter for the likelihood of the SME being internationalized in the first place, they seemed to have no effect on the consequent performance outcome in the international markets. Less hostile environment was found to affect SME internationalization and international performance, as well, supporting studies linking environmental hostility, or turbulence, with firm performance (e.g. Zahra and Garvis, 2000; Li and Atuahene-Gima, 2001; Kuivalainen et al., 2004; Boyne and Meier, 2009).

The results of this study indicate that, as SMEs aim to succeed in starting their internationalization process and gaining better international market performance, they would do well to concentrate first on improving their network competence. Successful

internationalization, in both scale and scope, is in part based on one's ability to develop and maintain partnerships and networks of partnerships. Firms already operating in foreign markets seem to exhibit higher levels of network competence, and their internationalization performance, measured in both scale and scope, as well as strategically, is in part due to this competence. An additional implication is that when deemed necessary to find out the level with which the firm is able to conduct its business relations, network competence offers a reliable and a valid scale for measuring it.

The level of environmental hostility experienced by SMEs decreased their international performance but, contrary to some earlier results (e.g. Zahra and Garvis, 2000; Covin and Slevin, 1989), it did not act as a moderator, but instead on its own. Still, the result suggests that environmental hostility, while not significantly affecting the first foreign market entry of SMEs, can act as a major detriment in market performance once there.

Several limitations in the study should be noted. Firstly, the research data was constrained on small and medium entrepreneurial firms in the Finnish cultural context. The fact that no firms with more than 500 employees, or firms outside of Finland were included in the sample should be kept in mind when aiming to generalize the results further. Secondly, as the data were gathered in 2008 before the main effects of the international global market downturn in 2009, at least the environmental hostility faced by firms has likely somewhat changed since. Longitudinal examination of the selected firms might therefore be useful. Also, the whole network competence scale was not used in the survey. Some items from the task execution scale were dropped and the qualifications sub-scale was not included in the survey. One could argue that the importance of individual network competence is heightened in small entrepreneurial firms, as they have fewer employees, and therefore the qualifications part of the original scale should be included in all SME contexts. This claim has some merit, and therefore it would be interesting to see whether similar or stronger results would be obtained using the complete original network competence scale (as defined by Ritter et al., 2002), or one where both the task execution and qualifications parts of it were represented equally. The same could be said of the environmental hostility measure used, as it only contained five individual items.

Another issue for subsequent research is that the context could be altered to include a larger sample of firm sizes over more industries. This would help make the observations more general towards different sized and types of firms. Naturally, the cultural context of the results is also heightened by the fact that the data were constrained to Finnish SMEs, and subsequent research might do with including SMEs from other countries in addition. Finally, it should be studied whether business relationship competencies of SMEs, as evidenced by their network competence, are moderated (or act as moderators of) other previously examined determinants of international performance of SMEs, such as market orientation (e.g. Ruokonen et al., 2008), entrepreneurial orientation (Jantunen et al., 2005), or other strategic orientations of firms. The role of relationships and networks in international markets is recognized in literature, but their manifestation as firm-specific competencies, their interplay with other capabilities and core competencies of firms and the consequence to SME internationalization could do with more study.

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APPENDIX A. The network competence scale used in the survey.

Planning sub-scale:

- We evaluate the way our relationship with each partner depends on our relations with other technical partner. (PART_2)
- We evaluate the way our relationship with each partner interferes depends on our relations with other technical partner. (PART_3)
- We evaluate the way our relationship with each partner helps our relations with other technical partners. (PART_4)
- We evaluate the way each of our partners contributes to success of our firm. (PART_5)
- We evaluate the way the results of collaboration with each of our partners fit together. (PART_6)
- We evaluate the way our collaboration with our partners contributes to achieving out firm's strategic objectives. (PART_7)
- We compare our partners in terms of their technical knowledge. (PART_8)
- We compare our partners in terms of their productivity. (PART_9)

Organizing sub-scale:

- We share the same goals with our partners. (PART_1)
- We allocate available financial resources to each relationship with our partners (e.g. travel budgets) (PART_10)
- We establish objectives for relationships with each partner. (PART_11)
- We initiate meetings and discussions among those in our firm involved in relationships with our partners. (PART_12)

Staffing sub-scale:

- We assign people to each relationship with our partners. (PART_13)
- We coordinate the activities involved in different relationships with our partners. (PART_14)

Controlling sub-scale:

- We assess how much effort our people put into relationships with partners. (PART_15)
- We monitor the extent to which relationships with our partners work to our advantage. (PART_16)
- We monitor differences between expected and actual performance in relationships with our partners. (PART_17)

Initiation sub-scale:

- We search actively for new partners. (PART_18)
- We visit potential partners in order to get to know them. (PART_19)

Exchange sub-scale:

- We exchange general information with our partners. (PART_20)
- We exchange confidential information with our partners. (PART_21)
- Our people discuss social and personal matters with people from our partners. (PART_22)
- We inform others in our firm about the requirements of our partners. (PART_23)

Coordination sub-scale:

- We put people from our partners in contact with key people in our firm. (PART_24)
- We put people in our firms in contact with key people from our partners. (PART_25)
- We initiate personal contacts between people in our firm and our partners. (PART_26)

APPENDIX B. The shortened network competence scale.

Planning sub-scale:

We evaluate the way our relationship with each partner helps our relations with other technical partners.

(PART_4)

We evaluate the way the results of collaboration with each of our partners fit together. (PART_6)

We compare our partners in terms of their technical knowledge. (PART_8)

Organizing sub-scale:

We share the same goals with our partners. (PART_1)

We initiate meetings and discussions among those in our firm involved in relationships with our partners.

(PART_12)

Staffing sub-scale:

We assign people to each relationship with our partners. (PART_13)

We coordinate the activities involved in different relationships with our partners. (PART_14)

Controlling sub-scale:

We assess how much effort our people put into relationships with partners. (PART_15)

We monitor the extent to which relationships with our partners work to our advantage. (PART_16)

Initiation sub-scale:

We search actively for new partners. (PART_18)

We visit potential partners in order to get to know them. (PART_19)

Exchange sub-scale:

We exchange confidential information with our partners. (PART_21)

We inform others in our firm about the requirements of our partners. (PART_23)

Coordination sub-scale:

We put people from our partners in contact with key people in our firm. (PART_24)

We put people in our firms in contact with key people from our partners. (PART_25)

Table 1. Network competence model scales comparison.

	Model 1	Model 2	Model 3
Absolute fit measures			
GFI	.910	.790	.783
RMSEA	.068	.087	.137
Incremental fit measures			
CFI	.951	.872	.809
NFI	.911	.815	.773
Parsimonious fit measures			
AGFI	.869	.747	.710
Normed chi-square	2.12	2.74	.4,92
AIC	246.875	917.491	541.556

Table 2. Descriptives and correlations for variables included in regression models.

	Mean	Std.d.	1	2	3	4	5	6
1 Network competence	4.45	1.70	1					
2 Environmental hostility	3.30	0.89	.257*	1				
3 Internationalization performance	0.09	1.70	.443***	-.330**	1			
4 Number of employees	32.88	44.40	.117	-.164**	.137	1		
5 Firm age	23.88	21.19	-.019	.071	-.180	.222**	1	
6 Industry (1=Knowledge-intensive, 0=other)	.46	.499	.098	-.174**	-.048	-.088	-.346**	1

***p<0.01

**p<0.05

*p<0.10

Table 3. The reliability measures for the shortened network competence scale.

Items	R^2	Loading	T-value	CR	AVE	Alpha
CROSS-RELATIONAL						
Planning:				0.83	0.62	0.83
PART_04	0.63	0.79	a			
PART_06	0.70	0.83	12.63			
PART_08	0.53	0.73	11.04			
Organizing:				0.68	0.56	0.67
PART_01	0.40	0.63	a			
PART_12	0.64	0.80	9.36			
Staffing:				0.83	0.75	0.83
PART_13	0.69	0.83	a			
PART_14	0.72	0.85	13.35			
Controlling:				0.68	0.51	0.68
PART_15	0.47	0.69	a			
PART_16	0.56	0.75	9.945			
RELATIONSHIP-SPECIFIC:						
Initiation:				0.79	0.69	0.79
PART_18	0.62	0.78	a			
PART_19	0.70	0.83	10.69			
Exchange:				0.70	0.55	0.69
PART_21	0.41	0.64	a			
PART_23	0.68	0.83	9.31			
Coordination:				0.85	0.75	0.85
PART_24	0.74	0.86	a			
PART_25	0.75	0.87	14.25			

^a The t-value is not available because the coefficient is fixed at 1.

Table 4. Network competence scale factors and their intercorrelations.

Factors	1	2	3	4	5	6	7
1 Planning	1						
<i>sq.correlation</i>	1						
2 Organizing	.670***	1					
<i>sq.correlation</i>	.449	1					
3 Staffing	.470***	.599***	1				
<i>sq.correlation</i>	.221	.359	1				
4 Controlling	.611***	.567***	.706***	1			
<i>sq.correlation</i>	.373	.321	.498	1			
5 Initiation	.497***	.462***	.503***	.524***	1		
<i>sq.correlation</i>	.247	.213	.253	.275	1		
6 Exchange	.568***	.634***	.506***	.527***	.614***	1	
<i>sq.correlation</i>	.322	.402	.256	.278	.377	1	
7 Coordination	.500***	.590***	.560***	.517***	.535***	.628***	1
<i>sq.correlation</i>	.250	.348	.314	.267	.286	.394	1

***p<0.01

Table 5. The results of the logistic regression analysis, with firm type (domestic/international) as the dependent variable.

Independent variables	Estimated regression coefficient	Wald
Network competence	.399**	6.398**
Environmental hostility	-.293*	2.970*
Network competence x Environmental hostility	-.079	.199
Firm age	-.326*	2.965*
Number of employees	.471**	6.298**
Industry (1=K-I, 0=other)	.797**	5.978**
Model fit: Chi-square = 25.794***, Nagelkerke pseudo R-square = .161, -2LL = 240.728, 72% correctly classified (93% domestic, 30% international)		

*p<0.10

**p<0.05

Table 6. The results of the linear regression analysis, with internationalization performance as the dependent variable.

Independent variables	Estimated regression coefficient	t
Constant	.236	.564
Network competence	.332**	2.249**
Environmental hostility	-.311**	-2.140**
Network competence x environmental hostility	-.103	-.662
Network competence x industry (1=K-I, 0=other)	-.211	-1.430
Environmental hostility x industry (1=K-I, 0=other)	.018	.908
Firm age	-.089	-.599
Number of employees	.248	1.662
R ² =.381, adj.R ² =.245, F=2.808**		

**p<0.05