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## The impact of opportunity connectedness on innovation in SMEs' foreign-market relationships

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## ABSTRACT

Small and medium-sized enterprises (SMEs) use of business networks has grown significantly during the last decades, partly due to increasingly complex innovation processes. This article investigates how different kinds of networks, depending on location, contextualize innovation in specific foreign market business relationships. Building on internationalization, network, and innovation research we develop a model that views opportunity connectedness in specific host-markets, home-markets, and other international markets as prerequisites to innovative collaboration and innovation outcomes in foreign business relationships. The results of our linear structural relations (LISREL) analysis of Swedish SMEs provide empirical evidence that the effect of opportunity connectedness on innovation outcomes in foreign business relationships is mediated by the level of innovative collaboration. These results indicate that SMEs need a relatively higher level of innovative collaboration in their partnerships with foreign market customers to convert opportunities conceived in home- and international- market networks into innovative outcomes in comparison to opportunities conceived in host-market networks. This finding implies that as opportunities become increasingly contextually remote, the importance of collaborative business relationships increases. By showing these results, the study contributes to research in the international small-business domain that seeks to identify important prerequisites of SME innovation.

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## 1. Introduction

Over the past decade, the focus on firms' abilities to innovate has again become a key focal point owing to the rapid rate of technological change, shortened product life cycles, and the globalization of markets. Even though the bulk of private research and development (R&D) spending still comes from a small number of very large firms, disruptive breakthroughs often emanate from small and medium-sized enterprises (SMEs) (Baumol, 2004). In light of these developments, the current discourse regarding the requisites for SME innovation is vigorous, and *Technovation* is a particularly important forum for this debate (e. g., Radas and Božić, 2009; Radas et al., 2015; Tolstoy and Agndal, 2010; Uyarra et al., 2014; van de Vrande et al., 2009; Zeng et al., 2010). In this article, we investigate how access to opportunities in networks can enable SMEs to innovate in foreign markets. A wide array of previous studies have highlighted that networks facilitate international expansion and new business new business creation of SMEs

(Coviello, 2006; Crick and Spence, 2005; Freeman et al., 2006; Lindstrand et al., 2011; Rovira Nordman and Melén, 2008; Sullivan Mort and Weerawardena, 2006; Zhou et al., 2007). There also are numerous studies dedicated to identifying different prerequisites of innovation in SMEs from both a developed country context (e. g. Löfgren, 2014; van de Vrande et al., 2009) and an emerging country context (e. g. Ren et al., 2015; Zeng et al., 2010). By performing this study, we build on this line of research and contribute with novel insights about how opportunities drawn from distinct networks (i. e. host-market networks, home-market networks, and international networks) influence innovation in specific foreign market settings. The specific purpose of this study is to investigate how networks, depending on their location, contextualize innovation in particular foreign market business relationships.

By following this approach, distinguishing and comparing effects between different distinct networks, we can contribute to research in the international small-business domain that seeks to identify important prerequisites of SME innovation. The study is, furthermore, practically relevant as it sheds light on the strategic impact of different regional support systems which could be useful when taking localization issues into account in the development of SMEs' innovation programs.

Networks are becoming increasingly important for firms, especially those that undertake innovative activities (Hagedoorn

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et al., 2000; Zeng et al., 2010). Networks are also particularly central for SMEs, which often lack tangible which often lack tangible resources (e. g., financial and human-capital resources) and, therefore, rely heavily on intangible resources that are accessed and employed outside the boundaries of the firm (Knight and Kim, 2009; Rovira Nordman and Melén, 2008; van de Vrande et al., 2009; Zeng et al., 2010; Zhou et al., 2007).

In this study we establish a link between the network level and relational level when analyzing foreign market innovation of SMEs. In line with ideas indicated in social network theory that individuals in firms can glean valuable information from weak network ties (i.e. ties to other firms that are signified by lower time-investments, lower reciprocity and lower emotional intensity/intimacy than strong ties (Sharma and Blomstermo, 2003)), we argue that weak-ties may be instrumental to extract value from resources and leverage innovative opportunities drawn from networks. Previous research has, moreover, suggested that firms which restrict their networks to include counterparts that they already know well (i. e. firms which they already have strong relationships with), risk acquiring more redundant information which, in its turn, may stifle innovation activities (Granovetter, 1973). Weak ties may thus supply more novel knowledge that can be used for innovative purposes than stronger ties (Rogers, 1980; Sharma and Blomstermo, 2003). Because of this, a wide and diversified network range has been suggested to be important for new business creation (Burt, 1982).

Building on the idea that a broad and diversified range of network relationships (including both strong and weak ties) provide greater access to important information and opportunities than would be possible if contacts were drawn from a narrower group, we investigate three groups of network locations in this study. The first is the specific foreign market network where a firm realizes business-transactions with at least one important actor that is located in that market, called “the host-market network” (see: Johanson and Vahlne, 2009). The second is the national market where a firm first initiates its business, here denoted “the home-market network” (see Manolova et al., 2010). The third group consists of additional foreign market networks, other than the home and host market networks, in which the investigated firms have foreign business relationships. This is referred to as “the international market network” (see: Laanti et al., 2007). In this study we specifically intend to capture network effects on innovation by using the term opportunity connectedness, which comprises firms’ connections to opportunities in either the home-market network, the host-market network, or the international market network. Hence, the study proceeds from the notion that opportunity connectedness is vital for SMEs that want to succeed with their businesses in foreign market settings. Opportunity connectedness is defined as a business relationship’s dependence on knowledge based opportunities generated by input from a particular business network (i. e., consisting of customers, customers’ customers, and suppliers). The importance of opportunity connectedness in local settings has been implied in recent articles discussing that international business opportunities emerge more frequently in inter-firm constellations than within the boundaries of individual firms (e.g., Freeman et al., 2006; Johanson and Vahlne, 2009; Melén Hånell et al., 2014; Tolstoy and Agndal, 2010).

We thus stipulate that innovative collaboration in specific host-markets is conducive for extracting value from opportunities that exist in various network settings. Innovative collaboration is defined as the extent to which SMEs perceive their foreign business relationships to be characterized by joint problem solving and innovative knowledge development that may lead to innovation. Innovative collaboration thus reflects “innovativeness” which denotes a behavior that determines the capacity for generating innovative business solutions (see Subramanian and Nilakanta,

1996). The independent variable used in this study, innovation outcome, is treated as a performance measure and involves the generation of actual innovation output in terms of new products and technologies. These outcomes include both radically new products and technologies, and products and technologies that are perceived as new by their developers (van de Ven, 1986). Such products and technologies may for example be incremental improvements in already existing products and technologies. Based on these concepts, we develop a model focused on the causal paths among relationship opportunity connectedness, innovative collaboration, and innovation outcomes in foreign business relationships of SMEs.

## 2. Theoretical development and hypotheses

Firms’ business relationships do not exist in isolation. Rather, they are often affected by developments in other connected relationships (Håkansson and Snehota, 1995). In a conceptual article from 2009, Johanson and Vahlne argue that the success of any internationalizing firm is dependent on its access to relevant network relationships in a market setting. Firms that are well established in a foreign-market network become “insiders”, while firms without established network connections are “outsiders”. Insidership in foreign networks is particularly important for learning about new foreign-market opportunities. For example, the knowledge acquired from one relationship might enable firms to discover and create new opportunities in other, connected, relationships (Eriksson and Chetty, 2003; Rovira Nordman and Melén, 2008; Sharma and Blomstermo, 2003). In addition, Lindstrand et al. (2011) find that knowledge about business opportunities acquired from customer and supplier networks in previous market assignments can be useful for developing business in the current market assignment which means that opportunities are connected and can cross borders. The relationship between knowledge driven and innovation oriented foreign business networks and increased innovation is also highlighted in a more recent study of internationalizing Swedish SMEs (Löfgren, 2014). In sum, these results collectively suggest that connectedness in network settings can be viewed as a requisite for innovation because it provides access to knowledge and resources that would otherwise be unavailable to individual firms (Powell et al., 1996).

Along these lines, the relationship between networks and innovation has been empirically substantiated in marketing and innovation research also outside the international business context, i. e. on firms operating in their indigenous markets (e.g., Cassiman and Veugelers, 2002; Belderbos et al., 2004; Zeng et al., 2010). For example, Zeng et al. (2010) found a significant positive relationship between networks and innovation performance in a study of 137 Chinese manufacturing SMEs. Studies in the field of international small business, in particular, have found that SMEs can effectively overcome size-related challenges by accessing resources in networks. SMEs do so by creating, transferring, and combining resources – activities that can enable them to discover business opportunities and align their business models with foreign-market requirements without costly research and planning (Coviello, 2006; Crick and Spence, 2005; Freeman et al., 2006; Rovira Nordman and Melén, 2008; Sullivan Mort and Weerawardena, 2006; Tolstoy and Agndal, 2010; Zhou et al., 2007). In numerous studies, opportunity discovery in the internationalization process has been found to be a consequence of leveraging the external competences of SMEs’ foreign business relationships (Crick and Jones, 2000; Komulainen et al., 2006; Sharma and Blomstermo, 2003; Tolstoy, 2014). For example, in a study of eight Australian SMEs, Chandra et al., (2009) demonstrate that a high degree of connectedness in the SME’s network can link and

synthesize dispersed bits of knowledge on a worldwide scale and enhance the firm's ability to detect foreign business opportunities. Similarly, in a study of eight Swedish biotech firms, [Rovira Nordman and Melén \(2008\)](#) find that firms' connectedness to foreign business relationships in both the home-market and in various globally dispersed markets influence the opportunities that the firms encounter during internationalization, thereby affecting their international expansion and innovativeness. While a few studies have held the geographical domain of the network constant in their examinations (e. g. [Löfgren \(2014\)](#) and [Tolstoy \(2014\)](#)) which focus on the effects of the host-market network of SMEs), most studies have not distinguished between different effects of distinct networks, let alone compared such effects.

Nonetheless, knowledge and opportunities drawn from different networks, in an international context, are to varying degrees tied to specific settings and can therefore lose meaning and value if applied in other settings (cf. [Barkema et al., 1996](#)). From this perspective, knowledge used in the same context in which it was conceived is generally considered easier to interpret, transfer, and apply. Researchers have, however, found that firms indeed can use knowledge developed in specific market settings to develop procedural knowledge that is applicable to business situations in seemingly disconnected foreign markets ([Eriksson et al., 1997](#); [Fang et al., 2007](#)). This reasoning is analogous to the idea of double-loop learning outlined by [Argyris and Schön \(1978\)](#). Furthermore, the more diverse the network-range ([Burt, 1982](#)), the more novel and non-redundant information can be acquired leading to the discovery of new opportunities. When firms use their networks to get new information and discover new opportunities, new knowledge is developed and programmed into the routines, structures and decision making systems of the firms ([Blomstermo et al., 2004](#)). Building on these ideas, we argue that knowledge and opportunities drawn from disparate network settings, in the home, the host and other international markets, can be applied to stimulate innovation outcome in specific foreign business relationships.

**Hypothesis 1a.** Opportunity connectedness in SMEs' host market networks will have a positive impact on innovative outcomes in host market business relationships of SMEs.

**Hypothesis 1b.** Opportunity connectedness in SMEs' home market networks will have a positive impact on innovative outcomes in host market business relationships of SMEs.

**Hypothesis 1c.** Opportunity connectedness in SMEs' international networks will have a positive impact on innovative outcomes in host market business relationships of SMEs.

[Rogers \(2004\)](#) claim that a firm's innovative processes are characterized by social or, at least, collective processes by which the input – heterogenous knowledge in networks – can be transformed into innovation outcome. Whether firms are able to make practical use of such novel resource input found in networks is, however, determined by their abilities to interpret it and understand its potential, which arguably may be more difficult in an international environment ([Eriksson et al., 1997](#)). Another reason why international business creation often is a complex process, is that technology- and products frequently need to be altered to suit local systems and thus often are bound to local conditions. Innovative collaborations in local markets are facilitated by a cooperative climate where partners are willing to interact, share knowledge, and solve problems which may lead to the development of higher-order knowledge and, eventually, innovation outcome ([Tolstoy, 2010](#)). Previous studies of innovative SMEs have shown that a positive link exists between innovation activities and interactions in specific business relationships, especially on the customer side of the supply chain ([Crick and Jones, 2000](#); [De Jong](#)

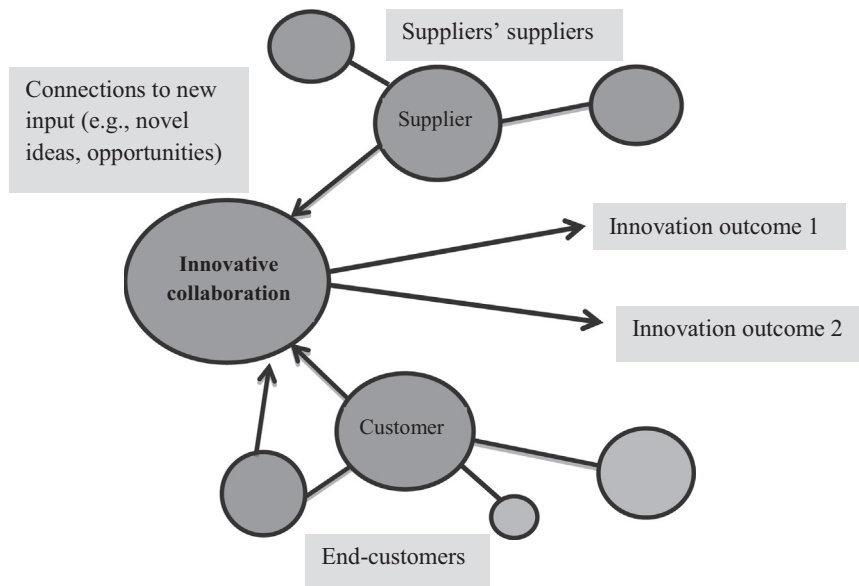
and [Vermeulen, 2006](#); [Yli-Renko et al., 2001](#)). For example, [De Jong and Vermeulen \(2006\)](#) argue that small firms can build competitive advantages by cultivating specific business relationships as a means of developing new knowledge, which can then lead to new innovation outcomes. Moreover, SMEs have been found to use certain key business relationships as catalysts to exploit resources acquired in networks to create new technological solutions ([Komulainen et al., 2006](#); [Ritter and Gemünden, 2003](#); [Rovira Nordman and Tolstoy, 2011](#)). Innovative processes of problem solving, experimentation with alternatives, and knowledge transfer in foreign business relationships can eventually align innovation activities with local market conditions. This may lead to synergetic outcomes ([Quintana-García and Benavides-Velasco, 2006](#)), such as new technologies or new products. Consequently, we propose the following hypothesis:

**Hypothesis 2a.** Innovative collaboration mediates the impact that opportunity connectedness in home-market networks, host-market networks, and international networks has on innovative outcomes in host market business relationships of SMEs.

Even though some scholars indicate a positive relationship between weaker ties and opportunities leading to innovation ([Granovetter, 1973](#)), and highlights the benefits of a broad network range ([Burt, 1982](#)), previous SME-studies have shown that these firms can (because of limited resource capacities) rarely leverage the full capacities of too wide network structures ([Tödting and Kaufmann, 2001](#)). Because opportunities to varying degrees are context-specific, opportunities that emerge may not always be easily transferred from one setting to another ([Wiklund and Shepherd, 2003](#)). Research has also shown that geographical distance and cultural barriers inhibit learning and the transfer for knowledge and capabilities from one market to another ([Barkema et al., 1996](#); [Bhagat et al., 2002](#)). From this perspective, the transfer of knowledge is most effective when the collaborating/transacting organizations are located in the same or, at least, in a similar market context. Because of the tacit and social nature of knowledge-based opportunities, firms are more likely to effectively pursue opportunities if they are drawn from a related market setting ([Gertler, 2003](#)). Market proximity is thus likely to enhance the mediation effect of innovative collaboration and increase the probability of innovative outcomes because knowledge from other locations will need to be re-contextualized. In short, this means that opportunities extracted from the host-market will be more applicable in host-market business relationships than opportunities generated elsewhere.

**Hypothesis 2b.** The mediation effect of innovative collaboration on innovative outcomes will be stronger in regards to opportunity connectedness in host-market networks than it will be in regards to opportunity connectedness in home market- and international networks.

In this paper we argue that the innovative processes of SMEs in cross-border business relationships are highly contextualized by various network dimensions as well as the relational dimension. As illustrated in [Fig. 1](#), opportunities for innovation can be generated from knowledge inflows from connected business relationships in different network settings. These opportunities may, for example, contain new ideas for products and technologies. Knowledge drawn from networks may be of various types, for example be related to markets and/or products to various degrees, and therefore have various implications. From customers firms may, typically, learn about market related issues such as particular requirements and alternative application areas. From suppliers they may be informed about product related issues such as technological advancements and more efficient production methods. While this description pertains to the archetypical situation of



**Fig. 1.** An illustration of foreign-market innovation outcomes in an inter-firm context.

downstream and upstream relationships it is probably equally plausible that certain expert customers can play a big part in the product development and in the creation of technological specifications. Conversely, suppliers may be able to provide market insight about new customer groups and interesting product categories.

### 3. Method

#### 3.1. Development of questionnaire

To develop the questionnaire used in this study, the researchers conducted a number of case studies (not reported in this paper) as well as an extensive literature review in the fields of international business and international marketing. Prior to the distribution of the questionnaire to the final sample, a pilot study was conducted in which the questionnaire was tested on six SMEs in Stockholm and Uppsala. In this pilot study, the investigators visited the respondents at their offices and remained in the room while the respondents answered the questionnaires. The respondents were instructed to inform the investigators if they experienced any problems with the questions. Thereafter, the research group met to assess the results of the pilot study. Those discussions resulted in a shortening of the questionnaire and the modification of certain expressions that the respondents found confusing. In an attempt to minimize the likelihood of missing values, the investigators also decided to include an introductory letter that assured respondents that all answers would remain confidential.

#### 3.2. Sampling and data collection

Two criteria were applied in the selection of firms to be included in this study. First, each firm had to be actively engaged in foreign markets (i. e., at least 10% of their turnover derived from international sales). Second, each firm had to fulfil the definition of "SME". In other words, they could not have more than 250 employees (OECD, 2002). The data were derived from Statistics Sweden and covered a stratified random sample of Swedish international SMEs.

The sample comprised two groups: small firms (6–49 employees) and medium-sized firms (50–250 employees). As

microenterprises have been categorized as enterprises that have, at most, five or ten employees (OECD, 2002), firms with less than six employees were eliminated from the sample. A stratified sample was used in order to increase the variance in size among the SMEs, as 97% of firms in Sweden have 50 or fewer employees. A random sample of 1000 firms was selected from each of these two groups of firms.

Data collection was conducted in two phases. In the first phase, the researchers collected data during personal visits to firms in the Mälardalen region in Sweden. Mälardalen is a densely inhabited region with approximately 2.7 million residents. The region comprises several major Swedish cities, including Stockholm, Uppsala, and Västerås. Other notable cities situated in Mälardalen are Enköping, Eskilstuna, Södertälje, and Strängnäs. The region is home to a multiplicity of business initiatives and industrial clusters, including spin-offs of the heavy manufacturing sector in Västerås and the science-based firms that have grown out of the academic community in Uppsala. In this stage, a subsample of 339 firms located in the region was drawn from the total sample of 2000 Swedish firms. After contacting individuals in these firms by telephone, the investigators excluded some firms from the study because they had grown too large (i. e., they were no longer SMEs), they had divested their international operations, or they were no longer in business. As a result, the total study sample for phase one consisted of 233 SMEs. In total, 188 completed questionnaires were collected. Non-responding firms often reported one of two reasons for not participating: a lack of time and a reluctance to release information. To further ensure reliability, the investigators personally administered the questionnaires to the Swedish SMEs. By visiting the firms (visit duration: 0.5–1 h), the research group sought to ensure that the correct individual answered each questionnaire and that a high response rate with a low number of missing values was obtained. We surveyed individuals who were considered to be key informants, including chief executive officers (CEOs) and marketing managers. Some basic general characteristics of the investigated firm are included in [Appendix A](#).

The data collection shows a high response rate and a low degree of missing values. Little's missing completely at random (MCAR) test revealed that data were not missing in a systematic pattern at the 0.05 level in either subset. This finding implies that the missing values were not related to other observed or unobserved values.

### 3.3. Measures

The questions included in the survey revolved around a specific foreign business relationship that was chosen by the respondent based on its importance for the firm. This focus is motivated by the purpose of the study, which is to investigate how networks, depending on their location, contextualize innovation in particular foreign market business relationships. Moreover, the business relationship had to fit the following criteria: (1) located in a foreign market, (2) ongoing, and (3) resulted in realized sales transactions.

#### 3.3.1. Opportunity connectedness

Locally acquired knowledge (e.g., knowledge about new business opportunities) is frequently obtained through connected business relationships (Powell et al., 1996; Sharma and Blomstermo, 2003). Connectedness determines the opportunities that are available and when they become available (Burt, 1997). In this study, opportunity connectedness is measured by estimating the extent to which a focal business relationship is dependent on the novelties, original ideas, and contributions to new business opportunities provided by connected business relationships (i.e., with other customers, customers' customers, and suppliers).

#### 3.3.2. Innovative collaboration

Knowledge that promotes innovation is often found outside a firm's boundaries (De Jong and Vermeulen, 2006). Previous studies show that innovation often takes place in cooperative business relationships in which the involved parties participate in joint problem solving (von Hippel, 1988). In this study, innovation within the relationship between the responding firms and their selected business partners is measured using three items designed to reflect the way in which the respondents regard their business relationships as tools for problem solving and innovation. The first two dimensions are cooperative measures concerning the extent to which the respondents believe their selected business relationships are characterized by innovative knowledge development and joint problem solving. The third dimension measures whether the respondents regard their selected business partners as sources of innovation. This indicator focuses on innovation in its broadest sense (to capture, for example, non-radical innovativeness). It is also designed to capture incremental improvements in existing products and services.

#### 3.3.3. Innovation outcome

This is a broad concept that encompasses all possible market and product outcomes of firm activities (e. g., target markets or product/technology portfolios). To measure this concept, we use two indicators aimed at capturing the most tangible outcomes of the investigated business relationships – those leading to innovation output in the shape of new products and new technologies. These indicators concern both radically new products and technologies, and products and technologies that are perceived as new by their developers (van de Ven, 1986), as well as incremental improvements in existing products and technologies.

### 3.4. Control variables

Studies focusing on relationship implications of the international development SMEs usually control their studies in relation to size, duration, knowledge intensity (Jonsson and Lindbergh, 2010; Lindstrand, 2009; Tolstoy, 2010) and geographical proximity (Rovira Nordman and Tolstoy, 2008, 2011). In this study we used five control variables to check for effects (1) size which was measured by number of permanent full-time employees. A reason for this is that the behavior of e. g. small firms may deviate from the behavior of medium-sized firms. Because studies have

indicated that business experience in general and international experience in particular may affect firm behavior (Lu and Beamish, 2006) we also controlled for (2) age (number of years elapsed since the firm was registered), and (3) duration of the business relationship (measured by the number of years since the relationship was instigated). (4) Patents was included because it, to some extent, captures the proclivity to innovate among firms (Acs and Audretsch, 1989), which could re-distribute the magnitude of the effects in the model. Possession of intellectual property were measured using a dummy variable where 1 = ownership of 1 or more patent(s) and 0 = no patents. The variables size, age, and duration were skewed and were, therefore, logarithmically transformed using the natural logarithm. Finally, since detection of business opportunities in various network settings is based on interpretations, (5) cultural distance was operationalized in line with Hofstede's (1980) cultural dimensions which were transformed into a composite index comprising the cultural distance of every country that was represented in our sample in relation to Sweden. This index was developed by the formula developed by Kogut and Singh (1988) which corrects deviations for differences in variances and then averages them arithmetically:

$$CD_j = \sum_{i=1}^4 \left\{ (I_{ij} - I_{is})^2 / V_i \right\} / 4.$$

In the equation  $CD_j$  represents the cultural distance from Sweden to country  $j$ .  $I_{ij}$  is index for cultural dimension  $I$  of country  $j$ .  $V_i$  is the variance index of dimension  $i$ ;  $s$  indicates Sweden (see Appendix C).

## 4. Data analysis

We carried out our data analysis according to the standard two-step procedure (Anderson and Gerbing, 1988) using LISREL 8.7. In the first step, we undertook a confirmatory factor analysis using a measurement model. In the second step, we based our analysis on structural models to estimate the path coefficients. We decided to specify three separate models to compare for network effects. To reason for doing this, rather than incorporate and compare these effects in one single model, is that is an element of mutual exclusiveness between these scenarios. All respondents were not assumed to have experiences of both Swedish and international suppliers why they were instructed to respond to questions regarding only one of these categories, i. e. the category that was most relevant for their business.

### 4.1. Validity of measurement model

We estimated measurement models for all three models. When estimating the validity of measurement models, we took into account the validity of the entire model (nomological validity) as well as the validity of the individual constructs included in the model (convergent and discriminant validity). The fit of the measurement model was substantiated by a number of key statistics, which are functions of the chi square ( $\chi^2$ ) and the degrees of freedom ( $df$ ). We relied on three frequently used fit-measures – the goodness-of-fit index (GFI), which checks for sample-size effects and should be greater than 0.90; the root-mean-square error of approximation (RMSEA), which estimates population discrepancy per degree of freedom and should be less than 0.08; and the comparative fit index (CFI), which controls for non-normal distributions. CFI values that are greater than 0.9 indicate an acceptable fit (Jöreskog and Sörbom, 1993; Murtha et al., 1998). The models' fit measures indicate strong nomological validity. The RMSEA for the host market-model is 0 the GFI is 0.98, and the CFI

**Table 1**  
The constructs and their indicators.

Construct	Indicator	B	t	CR	AVE
OPPCONN_HOST	To what extent is the business relationship dependent on your experiences with your local customers' novelties, original ideas, and contributions to new business opportunities?	0.85	9.89		
	To what extent is the business relationship dependent on your experiences with your local customers' customers' novelties, original ideas, and contributions to new business opportunities?	0.72	8.73	0.71	0.46
	To what extent is the business relationship dependent on your experiences with your local suppliers' novelties, original ideas, and contributions to new business opportunities?	0.39	4.87		
OPPCONN_HOME	To what extent is the business relationship dependent on your experiences with your Swedish customers' novelties, original ideas, and contributions to new business opportunities?	0.91	6.94		
	To what extent is the business relationship dependent on your experiences with your Swedish customers' customers' novelties, original ideas, and contributions to new business opportunities?	0.58	4.60	0.66	0.42
	To what extent is the business relationship dependent on your experiences with your Swedish suppliers' novelties, original ideas, and contributions to new business opportunities?	0.33	2.58		
OPPCONN_INT	To what extent is the business relationship dependent on your experiences with your International customers' novelties, original ideas, and contributions to new business opportunities?	0.77	7.54		
	To what extent is the business relationship dependent on your experiences with your International customers' customers' novelties, original ideas, and contributions to new business opportunities?	0.62	6.19	0.7	0.45
	To what extent is the business relationship dependent on your experiences with your International suppliers' novelties, original ideas, and contributions to new business opportunities?	0.60	5.98		
INNCOLL	The relationship with the business partner is characterized by innovative knowledge development.	0.88	8.7		
	The relationship with the business partner is characterized by joint problem solving.	0.49	10.9	0.72	0.48
	The business partner is a source of knowledge.	0.64	6.4		
INNOUT	The business relationship has resulted in new products.	0.59	7.4	0.7	0.55
	The business relationship has resulted in new technology.	0.87	11.2		

Note AVE: average variance extracted; CR: construct reliability.

is 1 ( $\chi^2 = 11.35$   $df = 17$ ).

The convergent validity of the constructs was estimated by analyzing  $t$  values (significance),  $R^2$  values (linearity), and coefficients (correlation). As recommended by Hair et al., (2006), convergent validity was also assessed by analyzing the construct reliability (CR) and average variance extracted (AVE). In this regard, all constructs (displayed in Table 1) are statistically valid because CR and AVE values are above or reasonably close to the recommended levels of 0.7 and 0.5, respectively (Hair et al., 2006).

#### 4.2. Common method variance

Common method variance is always a substantial risk when basing a study on cross-sectional survey data. Such a bias can compromise the discriminant validity of constructs. As a measure to avoid common method variance the independent variables are related to past time experiences which induces a temporal lag into the model. In addition, principal component analysis and a Harman's one-factor test were applied to check for unwanted effects in the three models. First, the eight indicators in each model were entered into a factor analysis (using principal component analysis with varimax rotation) to determine the number of factors necessary to account for the variance in the variables. If considerable common method variance is present, one of the following occurs: (a) a single factor surfaces from the factor analysis or (b) one general factor represents the majority of the covariance among the variables. In the first model (host-market), the principal component analysis extracted three factors with eigenvalues greater than 0.93 that together accounted for 72% of the total variance. The largest factor did not account for the majority of variance (28%), which indicates a low threat of common method bias. In a final check, the variables were loaded onto one factor in a Harman's one-factor test. The test is designed to indicate common method bias if the one-factor confirmatory factor analysis model fits the

data well. However, the results of testing the first model (the two other models showed similar results in all aspects) revealed the opposite ( $\chi^2 = 810$ ,  $df = 20$ ). Hence, these tests suggest that common method bias is not a major threat in this study and that it should not affect the interpretation of the results.

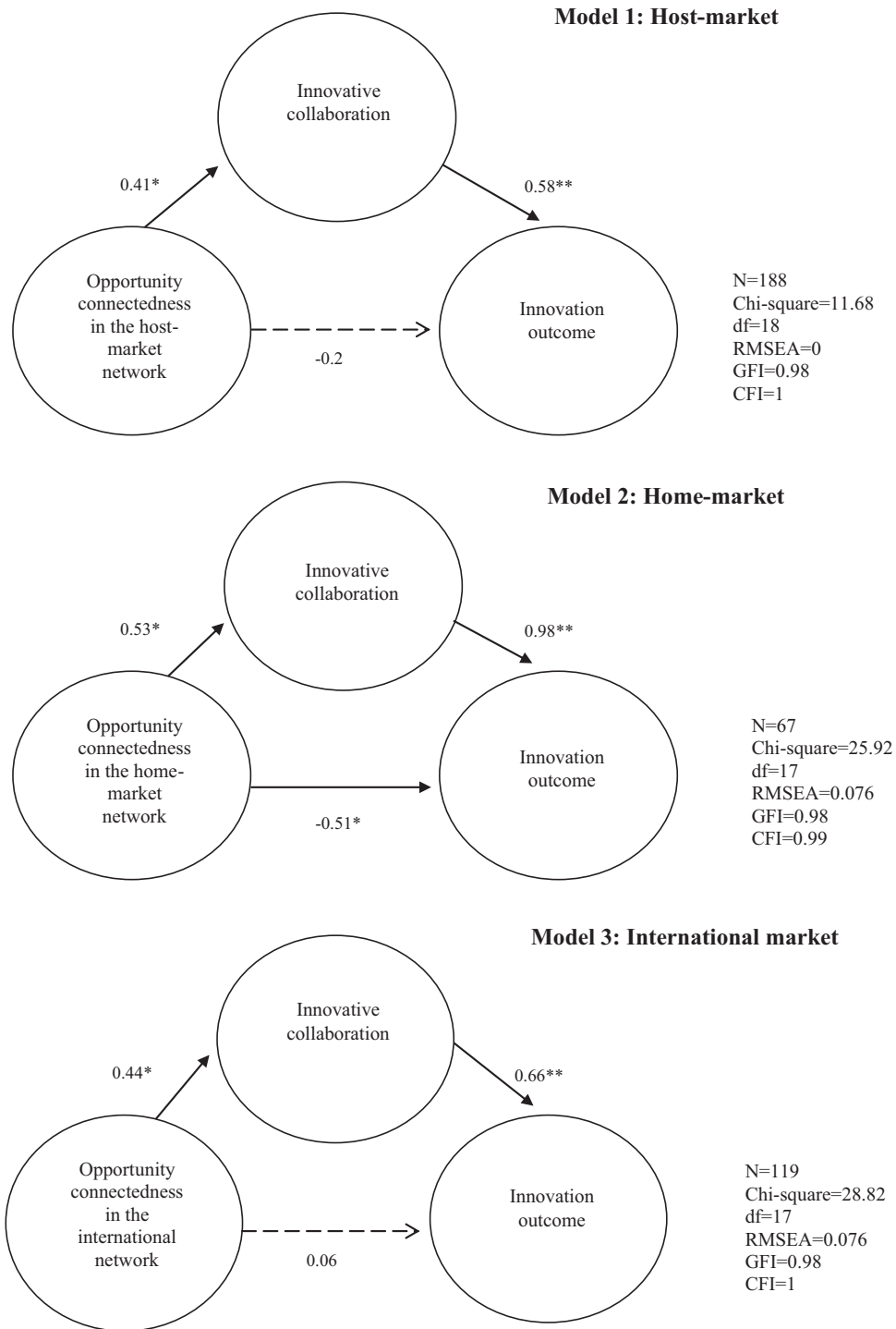
## 5. Results and discussion

The structural models shows nomological validity and discriminant validity between constructs (see Fig. 2). A basic requirement for confirming discriminant validity is that the correlations between latent variables should be significant but not equal to 1, as a value of 1 suggests unidimensionality (Jöreskog and Sörbom, 1993).

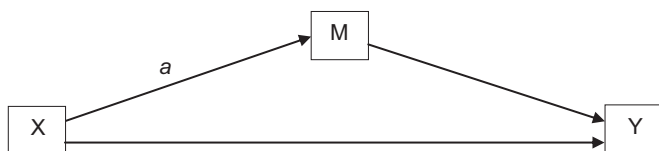
As displayed in Fig. 2, we started our analysis by testing for direct effects between the opportunity-connectedness constructs and innovation outcome to discern how the models held up when bypassing the intermediate function of innovation collaboration. However, the structural models showed no positive significant relationship between these constructs. This led us to utilize path analysis to unravel the interrelatedness between the structural dimension and the relational dimension in the process of innovation. We therefore proceeded to investigate the correlational.

paths among the constructs of opportunity connectedness in different market networks, innovation outcome, and innovative collaboration.

Hypotheses 1a and 1c cannot be statistically confirmed by Models 1 and 3. Hypothesis 1b is, however, clearly rejected and reveals a remarkably negative effect on the innovation outcome in a foreign market relationship in the realm of the structural model. Opportunity connectedness, however, has a positive effect on innovative collaboration in all three models ( $\beta_{\text{opportunity\_host}} = 0.41$ ;  $\beta_{\text{opportunity\_home}} = 0.53$ ;  $\beta_{\text{opportunity\_int}} = 0.44$ ). Furthermore, all three



**Fig. 2.** The structural models. Note: \* = indicates significant coefficients at the 0.01-level; \*\* = indicates significance of coefficients at the 0.001-level. Dotted lines represent insignificant coefficients.



**Fig. 3.** Mediation effect.

models show a positive relationship between the construct innovative collaboration and innovation outcome. These relationships do, in combination, complete a casual path which suggests a

mediation effect. We can thus conclude that innovation in foreign-market relationships is influenced by processes that take place in the interaction between network mechanisms and relational mechanisms at the host-market level.

To assess the mediation effects that were stipulated in Hypothesis 2a–b, we followed Baron and Kenny (1986) procedure which builds on the conception that a mediation effect only can be present if the total effect of a model including an independent variable (X) and a mediation variable (M) on the dependent variable (Y) is larger than the direct effect (c) of the independent variable. In the model displayed in Fig. 3 the total effect can be

expressed as:  $ab + c$ . The presence of a mediation effect should also build on the premise that X is a significant predictor of M and that M is a significant predictor of Y.

Our analysis substantiates **Hypothesis 2a**. The construct innovative collaboration carries positive indirect effects of opportunity connectedness in all three dimensions. The mediation effect is further proved by the fact that the explanatory power of the independent variable is reduced in the full models; it is even found insignificant in model 1 and model 3. Notably, the mediation effect is stronger in model 2 (home-market) and model 3 (international market), indicating that opportunities drawn from these networks are particularly dependent on strong innovative partnerships to produce innovative outcomes. The negative direct effect of opportunity connectedness in home-market networks can be interpreted that firms which have strong supportive networks in the home markets may produce relatively more innovations in domestic settings in cases when collaborative partnerships abroad do not exist. In the light of our findings, **Hypothesis 2b** is rejected. We can conclude that collaborative partnerships are even more instrumental for leveraging opportunities for innovation when there is a disconnection between the setting for the discovery of the opportunities and the setting of the specific foreign market assignment. Conversely, the reason why the mediation effect of innovative collaboration is slightly weaker in the model which analyzes the effect of opportunity connectedness in host-market networks may be that all dynamics takes place within the same setting, meaning that external capabilities may not be as critical to bridge and re-contextualize the opportunity from one market to another. It is important to make the distinction that while innovative collaboration is likely not to be less effective for translating opportunities conceived in the host-market than in other settings, the need for collaboration in these other situations may not be as pronounced.

For the control analysis we used an OLS-regression technique because LISREL is not optimal for dummies and one-item variables. In the baseline models the control variables generally showed weak or insignificant effects on innovative outcomes. In all three baseline models there was, however, a positive effect of duration of foreign market relationship and the level of innovation outcomes. This is natural because high-performing relationships usually take time to develop (Holm et al., 1996). The effect of duration of foreign market entry is, however, cancelled out when the variable innovative collaboration enters the model and does, thus, not affect the theoretical underpinning of this study. Fit-measures are notably better in Model 1 than in Model 2 and Model 3. A likely reason for this could be greater sample size which reduces heteroscedacity.

## 6. Conclusion

A firm's size does not determine its capacity for internationalization or innovation. For precisely this reason, international and innovation-driven SMEs comprise a key segment of many national economies. As both an international orientation (Knight and Kim, 2009) and innovation are important determinants of growth (Radas and Božić, 2009), there is a need to investigate the contextual dynamics that promote SME innovation at the foreign-market level. In this study, we investigated the effect that opportunity connectedness related to three network dimensions have on innovation outcomes in foreign market relationships international SMEs as well as the mediating effect of innovative collaboration. In so doing, we shed light on the regional and relational mechanisms that contextualize innovation at the foreign-market level. Even though previous reviews focused on SME internationalization have indicated that the network dimension and the relational dimension are both important for SME development

at the foreign-market level in their own right (Melén et al., 2011; 2013), the relationships among these dimensions have not been thoroughly empirically verified. Furthermore, researchers have not demonstrated how different network dynamics and relational dynamics are interrelated in the process of innovation. We argue that distinguishing and comparing effects between different distinct networks, is an important issue given that local learning and pursuit of opportunities is imperative for the development of SMEs (Tödting and Kaufmann, 2001). Particularly since SMEs have to be able to develop their businesses in accordance with the particular needs and requirements of local market settings to stay competitive in the long run (Sharma and Blomstermo, 2003).

The findings of this study show that opportunity connectedness in all three network dimensions do not have strong direct effects on innovation outcomes in business relationships. The effects are to large parts mediated by the level of innovative collaboration in foreign market business relationships. Innovative collaboration in the business partnership will stimulate the development and application of ideas and knowledge that originally were generated in the networks of the SMEs. There is thus an interplay between the network level and the relational level that is beneficial for production of innovation outcomes. Our models are consistent with the results of, for example, Rovira Nordman and Melén (2008), Tolstoy and Agndal (2010), and Löfgren (2014) who observe that networks can provide access to extended resources bases and can, therefore, serve as platforms for business development in foreign market relationships.

Building on the idea that a broad and diversified network range is beneficial for generating non-redundant information (Burt, 1982), we wanted to investigate how opportunities drawn from different and distinct networks influence innovation in specific foreign market settings. The more original finding of our study is that the conducive qualities of innovative collaboration seem to be more pronounced under certain conditions, depending on the origins of business opportunities. The results show that to convert opportunities conceived in international and home-market networks into innovative outcomes, SMEs need a relatively higher level of innovative collaboration in their partnerships with foreign market customers in comparison to when opportunities are conceived in the host-market network. Partnership can thus be viewed to be particularly instrumental when firms attempt to act upon opportunities from contextually remote locations. Key foreign partnerships can facilitate interpretation and transfer of such opportunities to particular market settings so that firms become better equipped to develop innovative business solutions that are geared towards the customers' preferences and requirements in a specific foreign market.

Interestingly, this bridging effect is most pronounced in circumstances when opportunities are discovered and leveraged in the disparate settings. Based on this finding we argue that business relationships could provide a wide range of options for the involved parties to interpret, experiment, and leverage the capacity of the input generated in connected markets to develop business in new market settings. By identifying a bridging effect of collaborative foreign business relationships, we imply that a broad network range, covering also weak-ties in diversified and remote market settings has the potential to spur international entrepreneurial behavior and innovation. By presenting these results we contribute with novel insights about how opportunities drawn from distinct networks influence innovation in specific foreign market settings. Thus we can contribute to research in the international small-business domain that seeks to identify important prerequisites of SME innovation.

## 7. Limitations and suggestions for future research

As with any study, this research has several limitations that



highlight possible avenues for future research. First, we have not distinguished between radical and incremental innovation. We therefore see potential in exploring how the structural characteristics of foreign-market networks (e. g., size, connectivity, relational embeddedness, and cultural context) influence the likelihood of radical innovation for SMEs. Second, this study has investigated the developmental phase of an innovation. An equally important topic is the commercialization phase of innovation in foreign markets, which researchers can investigate in empirical inquiries. Such studies could also use a network perspective, and look into the contacts and network configurations that enable firms to gain legitimacy and penetrate the market. Third, we have not specifically examined sectorial differences among SMEs. Future research could compare knowledge-intensive and traditional SMEs in terms of network strategies, interaction modes, and the nature of exchange to uncover the ramifications of differences in these factors on innovation at the foreign-market level.

## 8. Managerial implications

A clear practical implication of this study is that firms require strategic partnerships to be able to capitalize on opportunities that are conceived in networks elsewhere. Such strategic partnerships could, for example, spur firms to adapt their offerings so that they resonate with the local market. The results that firms will benefit from a diverse range of network relationships to access creative input. They also need to develop close business relationships in foreign markets in order to leverage this input to produce innovation outcomes. Even though such strong-ties imply a tight

interaction between firms and often are costly to maintain (Sharma and Blomstermo, 2003), these kind of relationships can bridge opportunities from one market to another. Innovation processes of international SMEs, thus, take place in border spanning networks and need to be managed accordingly.

Access to foreign-market networks is not usually open or free. Typically, firms wishing to understand and participate in complicated knowledge-sharing processes must make significant investments. The barriers to entering specific relationships and networks in foreign markets need to be recognized by the various actors, including venture-capital investors, governmental institutes, business incubators, and trade organizations. In order to support the innovation and international growth of SMEs, these actors must be able to map key actors in relevant sectors and to facilitate the matching of entering firms with compatible collaborators. Such activities could also reduce the likelihood of errors, such as fatal mergers, acquisitions, or other insourcing activities, which could level out the very resource heterogeneity of SMEs that constitutes their competitive advantage in the first place.

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## Appendix A General characteristics of the studied SMEs

Organizational Characteristics	Mean	Median
No. of Employees	48	23
Turnover (Thousands SEK)	122,193	50,379
Years abroad	8.9	5.5
Share of total sales abroad	56	50

Note: SEK = the Swedish currency Swedish Krona (10 SEK is equivalent to about 1,0 €)

## Appendix B: OLS-regression for analysis of effects of control variables

Effects of innovation outcome in a foreign business relationship	Model 1 (Host-market)		Model 2 (Home-market)		Model 3 (International markets)	
	<i>Baseline 1</i>	<i>Full model 1</i>	<i>Baseline 2</i>	<i>Full model 2</i>	<i>Baseline 3</i>	<i>Full model 3</i>
	Beta (S. E)	Beta (S. E)	Beta (S. E)	Beta (S. E)	Beta (S. E)	Beta (S. E)
Constant	-0.925 (0.394)	-0.377 (0.369)	-1.181 (0.565)	-0.816 (0.557)	-0.565 (0.548)	0.016 (0.506)
(ln) Age	0.114 (0.082)	0.089 (0.075)	0.109 (0.12)	0.102 (0.114)	0.097 (0.112)	0.067 (0.101)
(ln) Size	0.037 (0.073)	-0.075 (0.069)	0.157 (0.114)	0.019 (0.119)	-0.072 (0.097)	-0.14 (.088)
(ln) Duration of business relationship	0.21*(0.083)	0.143 (0.076)	0.113*(0.125)	0.133 (0.12)	0.25*(0.11)	0.121 (0.102)
Cultural distance	0.009 (0.035)	0.02 (0.032)	0.048 (0.058)	0.067 (0.056)	-0.022 (0.045)	-0.013 (0.04)
Patents	0.158 (0.163)	0.155 (0.148)	-0.207	-0.082	0.401 (0.221)	0.284 (0.2)

Innovative collaboration		0.444 (0.071)	(0.254)	(0.246)		0.486*(0.094)
N	188	188	67	67	119	119
R2	0.054	0.233	0.079	0.195	0.089	0.275
Adjusted R2	0.027	0.206	0	0.108	0.046	0.233
F	1.97	8.514	0.94	2.255	2.085	6.632

Note: P < 0.05-level \*; P < 0.01-level

### Appendix C: Cultural distance index

Country of foreign market entry	Cultural distance from Sweden
Denmark	0.20
Norway	0.23
Lithuania	0.25
Netherlands	0.42
Finland	0.83
Canada	1.91
Australia	2.79
Unites States	2.82
South Africa	2.91
United Kingdom	2.97
Ireland	2.98
Tanzania	3.09
Vietnam	3.12
Thailand	3.22
Spain	3.29
Germany	3.46
France	3.53
Chile	3.84
Brazil	3.97
Turkey	4.11
Quatar	4.36
South Korea	4.41
Italy	4.46
Belgium	4.64
Austria	5.31
China	5.48
Poland	5.55
Malaysia	5.60
Russia	5.68
Hungary	6.76
Saudi Arabia	7.02
Iraq	7.96
Japan	8.72

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