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CREATION OF INTERNATIONALIZATION CAPABILITIES IN FINNISH ENVIRONMENTAL TECHNOLOGY SME'S

Combining firm, local and network specific advantages

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LIST OF ABBREVIATIONS

SME	Small and Medium-Sized Enterprise
FSA	Firm Specific Advantages
LSA	Location Specific Advantages
NSA	Network Specific Advantages
MNE	Multi-National Enterprise
R&D	Research and Development
VRIN	Value Rare Imitatable New
RBV	Resource Based View

1 INTRODUCTION

For many small and medium size enterprises (SME's) in Europe, being able to maintain stable continuous growth in foreign markets is essential to success and survival (Fryges 2009, 182). As the domestic market in many of these countries tends to small, companies need to look to foreign markets to gain new sources of revenue. In this case, Finland is no exception. Finland has a population of only 5.35 million people and over 37% of Finland's GDP comes from exporting goods and services (US Department of State 2011).

1.1 Internationalization of small and medium size companies

In Europe, during 1998-1999, 65% of small and medium sized companies were operating internationally and from those 19% of their turnover came from sales abroad (Fryges 2009, 165). The Fryges study (2009) focused on 10 countries in the EU and highlighted the need that European high tech SME's have to internationalize early in order to grow and flourish. A key reason for this is that the increased cross border activity, expanded networks and easier access to information helps increase awareness of new or innovative products to foreign markets. As a result, innovative products can very quickly spread to foreign markets all over the world. Particularly where the needs and wants of buyers is more homogeneous. (Madsen & Servais 1997, 565)

For a small country, such as Finland, gaining access to these expanded markets becomes very important for their growth and development. This seems particularly true for companies who cannot sustain themselves domestically or are looking for access to new markets. Therefore, it is important that they understand how SME internationalization practices can be best implemented for them with the least amount of impact on their resources.

Internationalization is the process of increasing involvement, both inward and outward, in a company's international operation. From an outward perspective, SME's see internationalizing as selling their products to foreign markets. However, internationalization can also include buying material and bringing expertise from abroad into the company. Finding experience and advantages abroad and incorporating them into the organization is one example of a SME creating a unique internationalization capability. (Welch & Luotsarinen 1988, 36) Although Welch and Luotsarinen (1988) were discussing creating internal capabilities, the same concept can be applied to creating internationalization capabilities to help a SME focus on the outward international operations. However, there are several challenges that an internationalizing SME would need to overcome. Which challenges the company needs

to face does depend on whether it is a new or established company, what industry it is in and what mode of operation are they using.

One of the biggest obstacles for an internationalizing organization is the lack of knowledge of foreign markets and how best to operate in them. As a result, many SME's overcome this by developing knowledge through experience gained from operations in those markets. (Johanson & Vahlne 2003, 89) However, this can be a complicated process of hit and miss and not the most effective, resource friendly way, to internationalization. Another obstacle to internationalization is how the SME's structure and plan their growth (Madsen & Servais 1997, 563). In many cases, where knowledge is developed gradually through doing, international expansion takes place incrementally (Johanson & Vahlne 2003, 89). However, this incremental process can be slower and will not help a company who needs to be born global to survive as the result of a small a domestic market. In fact, a study of 24 innovative new ventures by McDougall *et al.* (1994) found that none of the SME's in the study followed the incremental stages of internationalization (Madsen & Servais 1997, 563).

Traditional internationalization theory usually looks at how multi-national enterprises (MNE's) create specific internationalization capabilities. However, when looking at SME's, there are three key sources for internationalization capabilities. These sources are the advantages gained from the firm, its location and the networks the company participates in. From these three areas, the firm then needs to select which advantages are valuable for the SME so they can incorporate it into their business and develop it into an internationalization capability. Doing so effectively is particularly important for hi-tech SME's as they may have more limited financial resources after the R&D, productization and commercialization expenses. Therefore, it is important to identify which of those internationalization capabilities are most successful for hi-tech SME's so time and resources are not lost following other less effective avenues of competitive advantage or simply not successful for the firm.

Given the need many SME' have to internationalize early it is important to develop a process that they can use to develop good internationalization capabilities that will enhance the effectiveness of their efforts. This is certainly the case for environmental technology companies who start up and are based in Finland.

1.2 Environmental technology in Finland

Environmental technology is an important developing market area for Finland. In 2003, Environmental technology accounted for approximately 2.7% of the GDP of which almost 70% was exported. The global market for Environmental technology is expected to reach €750 billion by the end of 2010. (High Technology Finland 2010) In an ever-

increasing competitive marketplace, it is important for Finnish companies to be effective and efficient in their efforts to reach foreign markets and establish their place in them.

However, resources for SME's can be limited particularly in the environmental technology sector where large amount of investment are already spent on research and development and the development of a commercialized product. Therefore, it is important to understand how high tech SME's can develop successful internationalization capabilities by acquiring and combining the relevant firm specific advantages (FSA), location specific advantages (LSA) and network specific advantages (NSA). Given the limited resources that most hi-tech Finnish SME's have access to, it is important that they not only find the relevant advantages needed to create valuable internationalization capabilities but that they use those resources efficiently and effectively. This is so the firm can gain maximum benefit from those capabilities to increase their chances for success in the global marketplace. Therefore, this research will identify those firm, location and network specific advantages in a variety of environment technology companies and show how they are used as beneficial internationalization capabilities.

1.3 Research question

The purpose of this research is to determine how environmental technology SME's in Finland can use firm, location and network specific advantages to create internationalization capabilities.

The research will focus on observing established firms who have already engaged in internalization to determine:

1. How can environmental technology SME's in Finland attain the necessary firm, location and network specific advantages?
2. How can they combine these advantages to develop internationalization capabilities?

These questions will help these hi-tech environmental technology SME's gain an understanding of what advantages have been successful for other companies but also how they can apply it to themselves. It will also help SME's in this industry to identify areas where they can combine advantages to create a more dynamic internationalization capability.

This thesis will help bridge the gap between internationalization theory, such as the Uppsala model and the Innovation related model and more traditional views applied to multi-national enterprises. For example, more traditional views of competitive

advantage for MNE's have focussed on the resource-based view of the firm that concentrates on the internal strengths and weaknesses of the firm. (Peng 2006. 15) When looking at the internal resources it can be broken down even further into the specific advantages generated from the firm, location and networks the company participates in.

This thesis will apply the same idea and views of the resource based view to environmental technology SME's in Finland to help isolate and identify which firm, location and network specific advantages are beneficial for them. It will then look at how to combine these advantages to create successful internationalization capabilities that other firms in the same field can use as a guide to help them be more successful in their internationalization process.

2 INTERNATIONALIZATION OF SME'S

Internationalization is traditionally seen as a process of increasing commitments to foreign operations (Johanson & Vahlne 2003, 90). Traditional internationalization theory focused more on step by step development which depended on which stage the company development is in and would then start with countries of closer psychic distance and expand further as knowledge develops (Andersen 1993, 209). However, in today's evolving marketplace, more and more companies cannot wait to develop the right knowledge sets or only focus on countries with a short psychic distance. Before looking at the internationalization models it is first good to look at the internationalization process as a whole.

2.1 Internationalization process

The internationalization process is the process that companies use when they begin their internationalization operations. When looking at the internationalization process, the companies internationalizing can be fit into three major categories (Madsen & Servais 1997, 579):

1. Traditional exporters: Whose internationalization patterns can be explained through traditional stages models.
2. Leapfrog firms: Such as late started that have only domestic sales for many years then suddenly venture or invest into a foreign market.
3. Born Globals: Companies who start with significant internationalization operations.

Which category a company will fit into is based on what type of company it is, what are the standards of the industry and what country the company is located in. These factors will also determine what type of internationalization model they will use.

There are many different models for internationalization but two that have been the most relevant for SME's are the Uppsala and Innovation related models. For many years, these traditional views have been prevalent in internationalization theory.

2.1.1 The Uppsala Internationalization Model

The Uppsala internationalization model was put forth in 1977 and since then it has been a defining piece of internationalization theory. The Uppsala internationalization model believes that internationalization decisions are initiated by knowledge of opportunities

or challenges (Johanson & Vahlne 1977, 27). As mentioned earlier, internationalizing firms would then follow a step-by-step development depending on which stage the company is in and would start with countries of closer psychic distance and expand further as knowledge develops. In developing the Uppsala model, Johanson and Vahlne categorized internationalizing companies into 4 stages (Johanson & Vahlne 1977, 24-25):

1. No regular export activities
2. Export via independent representative
3. Establishment of overseas subsidiary
4. Overseas manufacturing facilities

Which mode a company would use depends on the availability of resources, commitment and market knowledge gained through experience (Johanson & Vahlne 1977, 27). The Uppsala internationalization model does correctly identify the need for commitment of both personnel and resources as well as the development of knowledge from previous internationalization experience. However, this model does not take into account the newer modes of doing business in foreign markets or the increased access to information via the Internet. With a wider range of internationalization operations available to today's SME's, the innovation-related model is more reflective of the modern internationalization environment.

2.1.2 The Innovation-Related Internationalization Model

The innovation-related internationalization model takes a more modern approach to how a firm may internationalize. The model looks at the decision to begin internationalization as an innovation for the firm. From there goals are set and the company then begins a learning process. From there the firm develops internationalization skills and expertise needed to achieve the internationalization goal (Andersen 1993, 211).

This model accounts for a company in the early phases of development, like a SME, to make a conscious decision to undertake internationalization in a market even though they may not be in the proper stage for it. This could be the result of a perceived opportunity or other external factor.

There are several variations of the innovation related model that vary mostly in how they see the stages in which a company is ready to begin internationalization. The innovation related models put more emphasis on pre-entry decisions and proactive internationalization that seem to better fit internationalizing technology firms (Schwens & Kabst 2010, 62). As mentioned earlier, technology companies in Finland usually

undertake the decision to start internationalization early in the company's development so they can reach larger markets and revenue streams sooner. As a result, this model is more applicable to them than the more traditional Uppsala internationalization model. Therefore, this study will focus on the internationalization capabilities needed to support this model of internationalization when looking at Finnish SME's in the environmental technology industry.

2.2 Internationalization capabilities for technology firms

Internationalization capabilities are those capabilities that a company can employ and effectively use to successfully gain business from new international markets. These capabilities can come from physical resources, knowledge, expertise, network skills or location resources. How a firm gains valuable resources, and even how they release those that are no longer useful, are also important capabilities for the company. However, finding and securing these valuable resources can be challenging particularly when the structure of the organization is evolving and the markets are unclear and constantly changing. (Eisenhardt 2000, 1108)

In the changing and evolving environments an SME faces, it can be hard for the company to identify and determine which resources are valuable during the current phase of growth. There can be several different factors that impact which internationalization capabilities are needed. For example, the SME's current place in the domestic and foreign market alone can make identifying useful resources challenging. Also, different modes of internationalization require different resources for the SME to be successful. Looking at all these factors combined will help determine how an SME will increase foreign commitments, which process they use and which model to employ. It will also affect what internationalization capabilities an SME will need to be successful. Another factor, which can change the needs of the SME, is that when firms do business abroad they learn from that business and perhaps even get something that may be of value in the future. (Johanson & Vahlne 2003, 90)

Internationalizing a technology firm has a unique set of challenges. There are a few key differences between young technology companies and those in more traditional industries. First, technology SME's tend to be more knowledge intensive than other SME's. Secondly, proactive international venturing is quite common in these technology businesses (Schwens & Kabst 2010, 72). As a result, these venture capitalists, or other outside investors, can bring outside experience and knowledge to the firm to help the internationalization process. However, there is also a risk of misdirection if the experience brought by the outside investors is not applicable to the SME's business field or if it is just plain wrong.

It has long been established that young technology firms suffer from “liabilities of size” and “liabilities of newness” during their first internationalization efforts. (Singh, Tucker & House 1986, 171). Therefore, it is critical for young technology SME’s to quickly become familiar with the selected foreign market in order to avoid errors that could jeopardize their growth and performance (Sapienza, Autio, George & Zahra 2006, 928). This is why finding the right combination of internationalization capabilities and effectively implementing them is important for technology based SME’s as they do not usually have enough resources to gain experience through trial and error.

It is important to note that a study by Schwens and Kabst (2010) showed that in Germany technology companies internationalized in a proactive manner as suggested in the innovation-based model as well as systematically as presented in the Uppsala model (Schwens & Kabst 2010, 72). This shows willingness to innovate and to be flexible when approaching their internationalization efforts. Taking the best of both models, and combining them to give the technology company the best chance of success, is in the spirit of taking the best of a company’s location, network and firm specific advantages to create internationalization capabilities that will help them internationalize more effectively.

3 TYPES OF SPECIFIC ADVANTAGES

For Finnish SME's in the environmental technology sector this study will focus on 3 key areas where these SME's can find and develop internationalization capabilities. The 3 key areas that the research will focus on are firm specific advantages, location specific advantages and the network specific advantages. These specific advantages are based on Dunning's (2001) eclectic paradigm theory (OLI) which is usually applied to multi-national enterprises. The theory looks at MNE's in 3 parts (Dunning 2001, 176):

- Ownership advantages
- Location advantages
- Internalization advantages

To apply this to SME's, the ownership advantages are treated as firm specific advantages and the internalization advantages, which is important to MNE's, is converted to networking specific advantages which is more relevant for internationalizing SME's. In this way, the OLI theory is adapted to create the framework for the study to look for internationalization capabilities.

3.1 Firm specific advantages

The first source of internationalization capabilities is the firm specific advantages that a SME possesses. These firm specific advantages (FSA) are normally intangible assets that can be transferred to create value for the firm. These assets can include (Texas A&M University 2010):

- Knowledge
- Technology
- Innovation activities
- Economies of scale
- Economies of learning
- Access to finance
- Patents and ownership
- Use of natural resources and brands

Which assets are important to the SME can depend on their industry and their stage of development. However, if an SME is able to utilize, and take advantage of any or all of these firm advantages, they can generate higher revenues and/or lower costs that can offset the overall cost of internationalization operations (Texas A&M University 2010).

Once a SME has identified the right assets for them they can look at combining those resources and firm characteristics together to create firm specific advantages. However, to be truly valuable those characteristics need to have some attributes that are unique to the firm. Taking a look at the resources a firm can incorporate shows how an SME can develop unique resource based assets.

3.1.1 Resource characteristics

Traditionally, competitive advantage frameworks focussed on the resource based view (RBV) of a firm. The RBV view focuses on the internal structure and organization of the Firm and how those characteristics can be used to create competitive advantage. The RBV also sees firms as a bundle of resources that are distributed throughout the organization and remain consistent over time (Eisenhardt 2000, 1105). When these resources have specific qualities unique to the firm then they can be a source of firm specific competitive advantage. However, to be successful these resources need to be valuable, rare, inimitable and hard to substitute. The RBV focuses on competitive advantage but the same can be said for internationalization capabilities. If an SME can organize and bundle resources effectively then they may be able to more efficiently deploy those resources to assist in internationalization. As with firm specific advantages, it should be noted that the required resources could vary by industry and stage of the company's development. A company, even in the same industry, could require different resources in the early growth stage compared to the product launch phase.

However, firms cannot solely rely completely on resource-based assets and the internationalization capabilities derived from them. They also need to incorporate unique firm specific characteristics to complement their resource-based capabilities as well. By doing so, the SME can then combine these characteristics to create firm specific advantages.

3.1.2 Firm characteristics

The OLI theory has been used to explain how multinationals can source competitive advantage for internationalization through by combing ownership advantages, location advantages and internalizing value activities (Dunning 2001, 176). However, the situation and environment is different for SME's particularly when it comes to internationalization. As with the resource-based assets, markets can be ambiguous and constantly shifting so firms need to flexible (Eisenhardt 2000, 1105). As a result,

SME's need to have firm characteristics that allow them to be flexible and move quicker than their MNE counter parts.

To do so, SME's must focus only on those few key characteristics that are important to their internationalization process. These characteristics should not be treated as independent entities but should be combined to create something unique that the company can then use to bolster their competitive advantage in their foreign operations.

The key firm characteristics important to SME's are (Fryges 2009, 176):

- Size and age of the firm
- R&D activities
- Product characteristics
- Human capital
- Management capabilities

An example of how firm characteristics can be a source of competitive advantage is how a company approaches its' R&D activities. One way to gain firm specific advantages, that are also imperfectly inimitable, is through R&D activities to create novel or innovative technologies to strengthen the firms' products (Fryges 2009, 176). By continuously focusing on innovation, an SME can gain market share over potential competitors as well stay ahead of those trying to catch up through imitation. This creates an innovation capability where a firm can achieve superior technology and/or management processes (Rangone 1999, 235). This characteristic can assist in internationalization by giving the SME something unique to the marketplace that very few or no others have.

Product characteristics also influence a SME's internationalization behaviour and success. If the product requires high customization before being accepted by foreign markets then it would be more costly and challenging for the company to internationalize over a company who does not require such high customization. Not only are there increased costs for the customization but also the close contact needed with the end-users raises the transaction costs of the product prior to sale. (Fryges 2009, 176) As a result, these increased costs may make entering a foreign market that was once desirable now unprofitable. Therefore, this may impact the ownership dynamics that the firm uses in its foreign market operations.

Having the right people, with the right experience, is also an important characteristic for a SME. This applies to technical and process experience as well as managerial experience. If the management team has previous experience working abroad, or was educated abroad, or previous internationalization experience then the firm can also use this as an intangible asset to help form and shape the companies internationalization behaviour. (Fryges 2009, 177) The more international experience the management team has the greater the chances of success for the internationalizing SME. The management

knowledge is as firm specific advantage of that firm. Also, the length of time an SME has operated domestically can effect the accumulation of knowledge in the internationalizing firm (Blomstermo et al. 2004, 252). A SME who is born global may need to require more resources externally as they may not have the time or resources to develop internally.

Having the right combination of firm specific characteristics is important for formulating strategy and acquiring the proper resources needed for the SME involved in internationalization. However, as with the resource based characteristics, these firm characteristics are much more valuable when they are unique, hard to replicate and imbed in the organization.

3.1.3 VRIN characteristics

For any asset to be valuable to a firm in internationalization, or other processes, it is best if it has certain attributes. These unique attributes can be classed as valuable, rare, inimitable and non-substitutable (VRIN) and a firm can use one or all of them together to create a source of competitive advantage. Using VRIN resources effectively allows firms to design and implement effective strategies to create competitive advantage. (Eisenhardt 2000, 1105) As with competitive advantage, the more unique firm and resource characteristics that an SME has (or can acquire) the stronger its internationalization capabilities can be. Providing they utilize those resources effectively. However, these assets and capabilities are not static and can change over time so it is important that the company anticipates the future needs of the company to develop new resources, assets and capabilities to sustain growth and competitive advantage (Peng 2006, 92).

For example, specific knowledge in the areas of procurement and international negotiation can be sources of internationalization that all high-tech SME's may not possess. This knowledge could give the firm an advantage over its rivals in a new foreign market. Competitors may be able to copy tangible resources but it is much harder to imitate knowledge-based resources that give the firm better competence and more efficient processes (Knight & Kim 2008, 257).

This becomes even more important in cases when market boundaries become blurred, business models unclear and the market players are ambiguous and shifting. In this environment firms must rely much less on existing knowledge and focus on creating new situation-specific knowledge (Eisenhardt 2000, 111). By having FSA, with VRIN attributes to draw from, a SME should have more success with planning and implementing their internationalization process.

3.1.4 *Creating firm specific advantages*

To create firm specific advantages a SME needs to find the relevant resource characteristic and firm characteristics for their internationalization process. Once identified, those resources should go through the VRIN Check to see if there are in fact valuable, rare, inimitable and non-substitutable. Resources that are have more value to the SME's are a greater source of firm specific advantage.

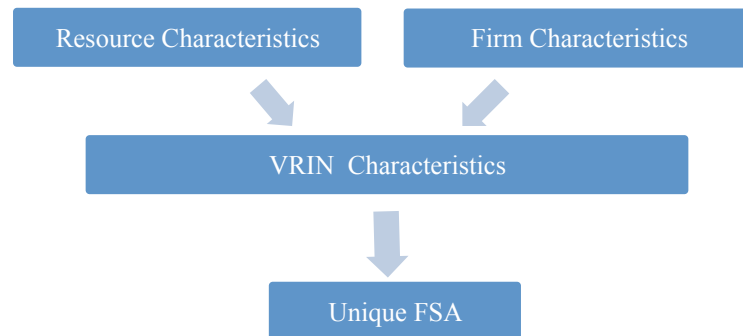


Figure 1 Combining characteristics to create firm specific advantages

After the characteristics pass through the evaluation, then the SME needs to be aware of what those characteristics are and how to utilize or combine them together to create beneficial firm specific advantages. These advantages can then be combined with other advantages to help create dynamic internationalization capabilities. Once the capability is deemed valuable, and applicable, it then it needs to be implemented and imbedded within the organization so the company can benefit from the advantage (Eisenhardt 2000, 111).

However, as mentioned earlier, firm specific advantages are not the only source of internationalization capabilities for an SME. Along with the firm advantages, hi-tech SME's can also create important capabilities by taken advantage of their location specific advantages.

3.2 **Location specific advantages**

To take full advantage of the firm specific advantages available to a company, they also need to take into account the location specific advantages they can leverage. Location specific advantages for SME's can be viewed from two different aspects. The first is the location of the international market that the SME is targeting and starting international operations in. The second is the company's location in their own domestic market. Both aspects can be sources of internationalization capabilities that a high-tech SME can incorporate to increase success in their internationalization efforts.

3.2.1 Domestic location

The location of the SME in its domestic country can impact its ability to successfully internationalize. Companies closer to international borders and exit points will primarily have more advantages than those in more remote location. Also, being close to the “information centers” or internationalization “clusters” can increase the chances of being exposed to external stimuli and network effects (Olson & Wiedersheim-Paul 1975, 290). An internationalizing SME can benefit from being close to the information and international centers as they can gain knowledge and network contacts by being in close proximity to similar organizations who are also internationalizing. There are many types of these organizations and industry specific clusters across Finland and in other countries.

In Finland, an example of this is the Turku Science Park. The Turku science park is a cluster that brings together both academic and business expert in biotechnology and ICT (Turku Science park 2010). For SME’s in these fields, being next to or a part of these clusters gives the firm access to resources that would otherwise be expensive to acquire. If the SME can then successfully acquire these resources then they can turn those resources into location specific advantages to help them internationalize.

Another domestic location specific advantage is the availability of government infrastructure programs. The programs are primarily designed to help companies successfully internationalize. They can do this by promoting trade through agreements with other countries or by providing instruments for internationalization Finance directly or indirectly. For example, the Finnish organization Tekes provides finances and funding to over 1500 businesses for research or business development (tekes.fi 2010). For an SME being able to be near their Tekes representative gives them better access to knowledge of programs, options and instruments that the organization offers.

Having access to these systems, knowledge and infrastructure can give a firm trying to internationalize a location specific advantage that would be hard to get if they were in a more remote location. Taking advantage of the country specific advantages and tools to help a SME internationalize is an excellent source for domestic based location specific advantages.

3.2.2 Foreign location

There are several location specific advantages in the foreign market that an SME can benefit from. These advantages can be categorized as economic, social and political (Texas A&M University 2010). These factors can seriously influence the competitive advantage both positively and negatively.

When looking at the location specific advantages in foreign markets, the economic advantages are more tangible and easier to gauge. These advantages include the quantity and quality factors of production, size and scope of the market, transportation, telecommunications and other infrastructure (Texas A&M University 2010). The level of development, or lack thereof, can impact how an SME can benefit from the location specific advantages. For example, an SME with a technological advantage would have an advantage over local competitors that would enhance the internationalization capabilities. An alternative advantage could also be a SME is simply interested in exploiting the technological advantages of the host country in order to alleviate technological weakness at home (Patel & Vega 1999, 146). Regardless of the advantage the SME gains from the foreign market it is important to note that these location specific advantages may be only good for the specific market and may not be transferrable (Tahir & Larimo 2004, 102).

The social advantages can also be referred to as the cultural advantages. Some key social advantages can include psychic distance, general attitude towards foreigners, language, cultural differences, power distances as well as attitude toward free enterprise (Texas A&M University 2010). Traditionally, it has been perceived that businesses tend to expand to markets with a low a psychic distance from that of the domestic country. Psychic distance is the degree that some foreign markets will be perceived as being nearer to home than others when evaluated in psychic terms (Ellis 2008, 353). This was to overcome the lack of skills and experience that managers may have had about international expansion operations. However, with more market integration, more globalization the skills a firm needs are more available in the domestic markets. Therefore, firms now seem more likely to enter new markets based on the size of the market (Ellis 2008, 353). Still, having specific knowledge of business practices and the socio-characteristic can be a good source of internationalization capabilities for the company over its competitors. Of course, as with FSA, it is more beneficial if this knowledge is unique to the organization and embedded.

Other location specific characteristics that can impact internationalization are the political advantages. These advantages are country or region specific and include government policies towards foreign direct investment, international production and cross firm trade (Texas A&M University 2010). These aspects of the foreign location will determine how easy it is to enter a foreign market and knowledge of these characteristics is a source of competitive advantage for an internationalizing SME.

The challenge for an internationalizing SME is how to combine these advantages for the benefit of the SME. It is important to note that these foreign location characteristics are closely tied directly to the firm specific advantages and the network specific advantages. Having the skills to create effective strategies, which take advantage of

these location-based elements, can create internationalization capabilities that are beneficial to the firm.

3.3 Network specific advantages

Networks are vital to help a SME's to compensate for the resource limitations arising from the small size of the company (Liao & Welsch 2003, 150). To compensate, SME's need to develop network specific advantages that an SME can utilize in order to overcome the lack of resources and increase its chances of success in internationalization.

3.3.1 Types of networks

There are many different types of networks that a firm could have embedded. They can be formal or informal and cover a wide range from social networks to political networks. For SME's internationalizing and in search for network specific advantages, a network consists of actors and relationships (including subsidiary relationships) that impact the organization (Fletcher 2008, 955). These networks can be domestic or international and can vary in terms of complexity and involvement.

There are several key network areas that can affect the internationalization of the business according to Fletcher. These networks range from institutional networks to social and market networks (2008).

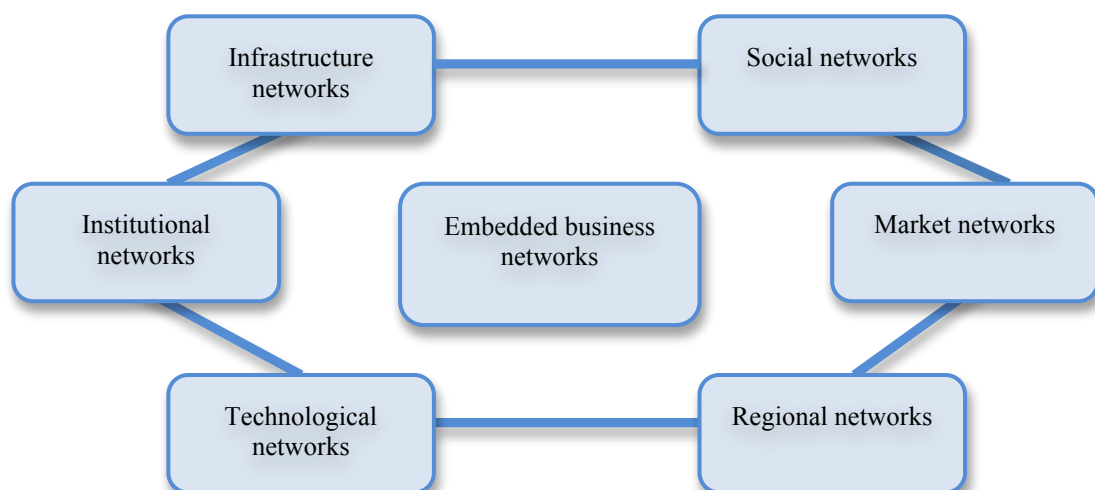


Figure 2 Types of embedded business networks (Fletcher 2008, 956)

A firm may benefit from one or all of the types of networks that Fletcher (2008) has outlined. For SME's, market and regional networks are both very important for the success of the firm in the foreign markets. Technological and institutional networks are important as sources of innovation and technical advantage over competitors and social networks provide access to resources and relationships to replace missing competencies or enhance them.

Social networks and relationship value can provide an added advantage to the firm. Social capital involves all the individuals, and organizations, with specific resources that can facilitate action and contribute to the value-creating process of other actors in the network. The three types of actors that can form a firm's key relationships in business networks are the customers, business partners and governing agencies. (Westerlund & Svahn 2008, 494)

By taking advantage of these social networks, a SME can create company specific advantages by securing rare and valuable resources but also by bring knowledge and feedback from the customers and partners back to the firm. The firm can do this by creating relationship value in relation to activities that directly impact competitive advantage.

When looking at software SME's, Westerlund and Svahn (2008, 495) identified 3 key areas that directly impacted the quality of the firms' core competencies:

- Relationships involved in research and development activities
- Relationships involved in marketing and distribution activities
- Relationships that facilitate and support the business of the focal firm

By being able to manage these key relationships in the company's embedded networks. Creating social capital through network ties can provide the firm with access to resources, knowledge and information that it may not have or be too expensive to acquire. The benefits can occur in access, timing and referrals (Liao & Welsch 2002, 154). An SME in its internationalization phase will have more indirect resources to draw from over a firm who has to go out and gain these competencies independently.

Market and regional networks focus of the network perspective is on the market and the firms' relationship to it (Fletcher 2008. 955). These relationships can be between firms, key actors and competitors. How well a firm can penetrate these networks will also determine if it is able to access surrounding regional networks from the market network. For an SME who is in an early growth stage this can be challenging as penetrating the market specific networks can be difficult particularly if dominated by larger players. However, if they can get in and leverage the knowledge and resources gained then it could be a great source for a network specific advantage.

It is important to note that business activities are embedded not only in markets but also in regions, countries and groups of countries (Fletcher 2007, 955). Regional

networks are also important and can be a source of local expertise that would not be available to the internationalizing SME's otherwise. This knowledge can be an invaluable source of competitive advantage over companies who do not take advantage of not only the market-based networks but the regional based networks as well.

Technological and institutional networks include actors who can help an SME gain an advantage from a variety of external actors. These actors can include individuals and organizations such as universities, R&D institutions, component and equipment providers as well as technological gurus (Westerlund & Svahn 2008, 495). Plugging into these networks has been important particularly important for companies in the productization phase but it can also be helpful to gain assistance in the internationalization phase. For example, organizations, like Finland's TEKES, offer programs that help the company develop its internationalization strategy as well as its technology for foreign markets (Tekes 2010).

These networks can be domestic or foreign and can provide sources of innovation, more efficient parts, better production methods, etc. They can be government funded agencies or educational institutions. Any one of these points can be used to create a unique characteristic that the firm can use to create a network specific advantage that could benefit an SME.

3.3.2 Networks and the SME

Networks are very important to any SME internationalizing. Which networks, and what type of networks are beneficial, depends on the needs of the company and its location in the market. It is also dependent on what resources the firm already has imbedded, the current mode of international operation and previous and existing relationships (Johanson & Vahlne 2003, 88). These 3 factors can impact which networks the SME needs in order to create network specific advantages that can then be converted into internationalization capabilities.

Networks are an excellent source of external resources but when combined with the firm and location specific advantages they can gain additional value and use synergy to create international capabilities that an SME can use to help them reach foreign markets. However, if the SME gets involved in networks that are not beneficial for their market, or their stage of development, then valuable resource can be wasted. Therefore, it is important to ensure the networks have characteristics that are beneficial to the firm.

4 INTERNATIONALIZATION CAPABILITIES

As already discussed, SME's can create unique characteristics that enable them to internationalize more successfully by incorporating a blend of firm, location and network specific advantages. Also, it has been presented that successful internationalization characteristics can come from a range of sources which may vary depending on the stage of growth the SME is in. However, it is important to note that not only must a firm create and utilize these unique resources but they must also find a way to blend them together to create a more dynamic internationalization capability. Then they must select the advantages most appropriate for the market and mode of operation that the SME will employ. This is important because the firm does not want to waste resources developing a characteristic that may seem interesting but has no value for the internationalization effort.

4.1 Sourcing firm, location and network specific advantages

By looking at the sources of internationalization capabilities from the perspective of firm, location and network specific advantages one can see that a SME can draw on different types of capabilities from a variety of sources. For example, when looking at location specific advantage, the internationalization capability could come from either a local or foreign source. In the case of networks, the capabilities could come from social, market (foreign or domestic) or technical networks. These networks could be either formal or informal as well. The point is that when even looking at 3 categories, as a source of internationalization capabilities, there is still a wide range of capabilities to choose from. Selecting the most relevant capabilities is the next challenge for an SME.

For the firm it is important to first look at what capabilities (firm, location, network) they have, or have access to, and then select the ones that they feel are most relevant to their internationalization process. Which capabilities are most relevant depends on the industry, the mode of operation and the stage of development the SME is currently in. Even in the same industry, companies at different stages of development may require different capabilities. Once determined, the SME needs to check those capabilities to see if they have value or rare characteristics that would make them uniquely valuable to the firm. Figure 3 shows how internationalization capabilities from multiple sources can be filtered and developed into more specific dynamic capabilities.

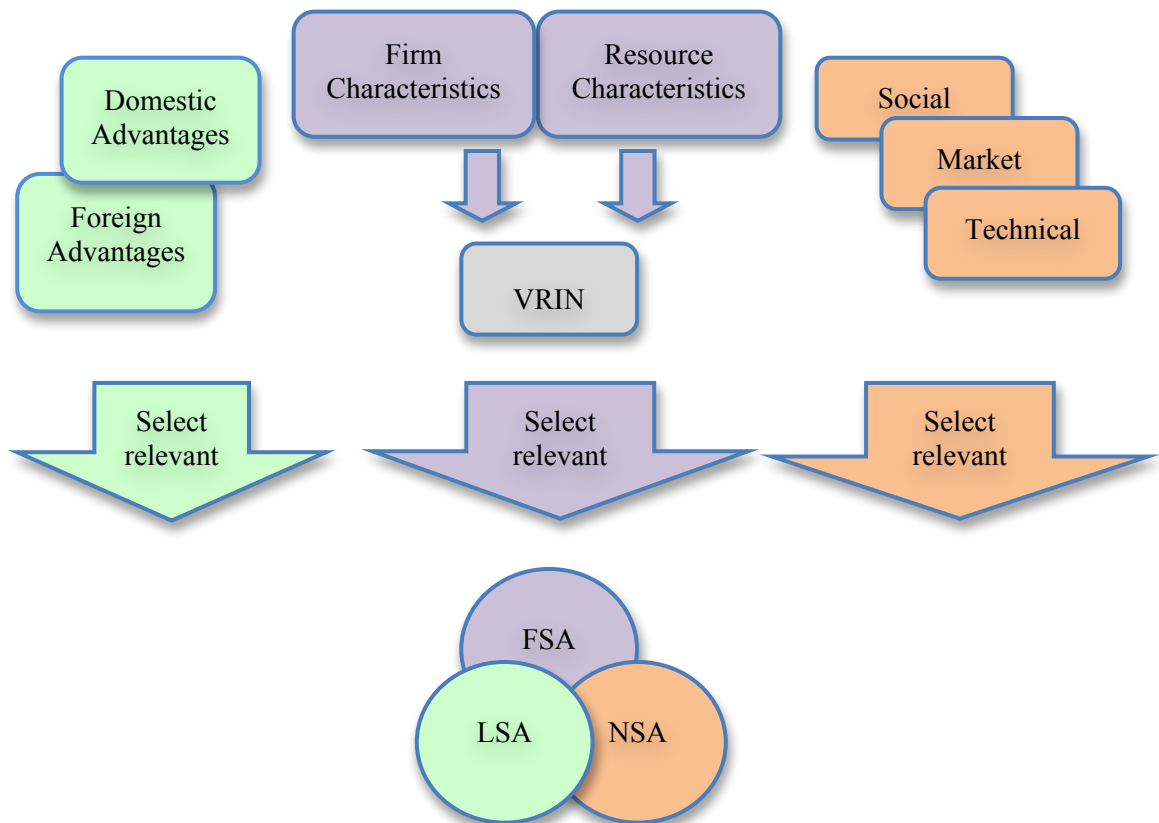


Figure 3 Sourcing firm location and network specific advantages

As demonstrated in figure 3, the three sources of specific advantages discussed earlier are broken down into seven sub categories. For location specific advantages they are broken down into advantages that come from foreign sources and those that come from domestic sources. Firm specific advantages, they are sub-categorized by those that come from the firm and those that come from other external resources. Lastly, network specific advantages are broken down into advantages stemming from social, market and technical networks.

From there, selecting relevant capabilities needs to be guided by specific criteria based on the SME's current needs. The criteria are dependent on the industry, stage of SME's growth and stage of the SME's internationalization. Each capability should also go through a check to see if it is valuable, rare, imperfectly inimitable or non-substitutable which will make it more valuable to the SME (Barney 1991, 105). Once the SME has gone through the process and has selected the relevant advantages, which are hopefully unique, then they can look at ways to combine them to gain additional benefits and more valuable internationalization capabilities. However, first the SME must select the relevant capabilities.

4.2 Selecting relevant capabilities

Which capabilities are relevant to the firm depends on the industry and the stage of growth the SME is in. Also, depending on the firm, a capability could mean something different for one company than it does for another. For example, a network specific advantage could be accessible through a network for valuable resources such as finance, suppliers, information or knowledge (Liao & Welsch 2002, 153). In fact, not every company will need access to the same resources through their network. Some may need offshore financing while others may have already secured their financing and instead need a new source of supply to reduce production costs. For them, sourcing and supplier management capabilities would be the most valuable capability in their current phase of internationalization.

As the internationalization needs of a SME change, the organization may also gain access to new resources and capabilities that become available as a result of growth from their internationalization efforts. Figure 4 shows how these new resources can be brought back to the SME and added to their internationalization capabilities.

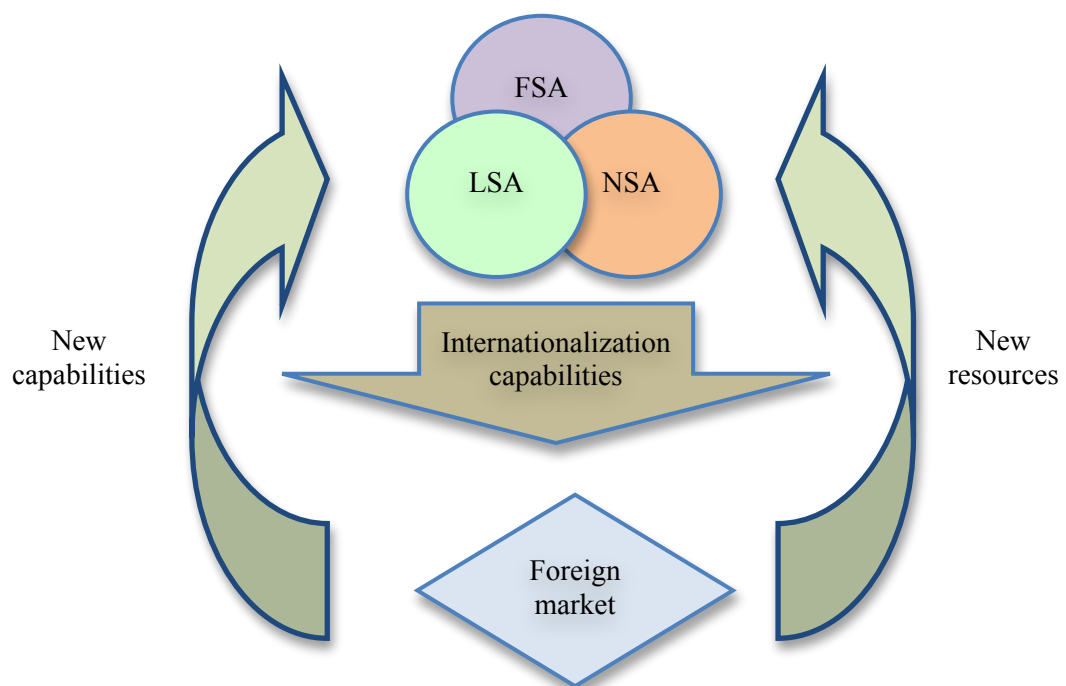


Figure 4 New sources of firm, location and network specific advantage

These new resources and capabilities brought in from foreign markets and experience may also help open other markets that were previously inaccessible because the SME lacked the appropriate resources or skills. However, the ability to identify and incorporate these new resources and capabilities is in fact an internationalization capability as well and if the SME does not possess it then the advantage may be lost.

Identifying and defining individual capabilities that benefit a high-tech SME is relatively easy as many of the problems they have can be common within others in their industry and country. However, combining various elements of the firm, location and network specific advantages to make something useful and relevant can be challenging.

4.3 Combining advantages

As a technology based SME internationalizes it should do so proactively, with a clearly defined goal and strategy. Then the firm should collect the resources and knowledge needed to put them into effect. These resources will form the internationalization capabilities the firm will rely upon to help it open new markets more effectively.

As highlighted earlier, three sources of internationalization capabilities are the firms' internal knowledge and experience, location specific factors and networks the firm is involved in. Given the scarcity of resources, a technology SME needs to select those resources most relevant and then combine them to make effective capabilities. Once defined and acquired, the SME then needs to implement them.

By incorporating the right combination of firm, location and network specific advantages a SME can develop stronger internationalization capabilities that the firm can then draw upon to improve their chances of international success. Each of these sources of internationalization advantages has their own unique and specific attributes that can contribute to an internationalizing SME. A firm can select or develop capabilities from any of the advantage areas. However in the spirit of how technology firms in Germany take the best from both the Uppsala and Innovation internationalization models, as mentioned earlier in chapter 2, a SME should try to take the best advantages from all of key groups and if possible combine them to create effective internationalization capabilities.

For example, if the SME is able to incorporate advantages from their geographic location (either foreign and domestic) with advantages gained from their network connections then they could be create an internationalization capability that would be more effective and less of a strain on resources than either capability would independently. Figure 5 shows how this would work in relation to a technology SME trying to secure their needed safety certifications for a new market.

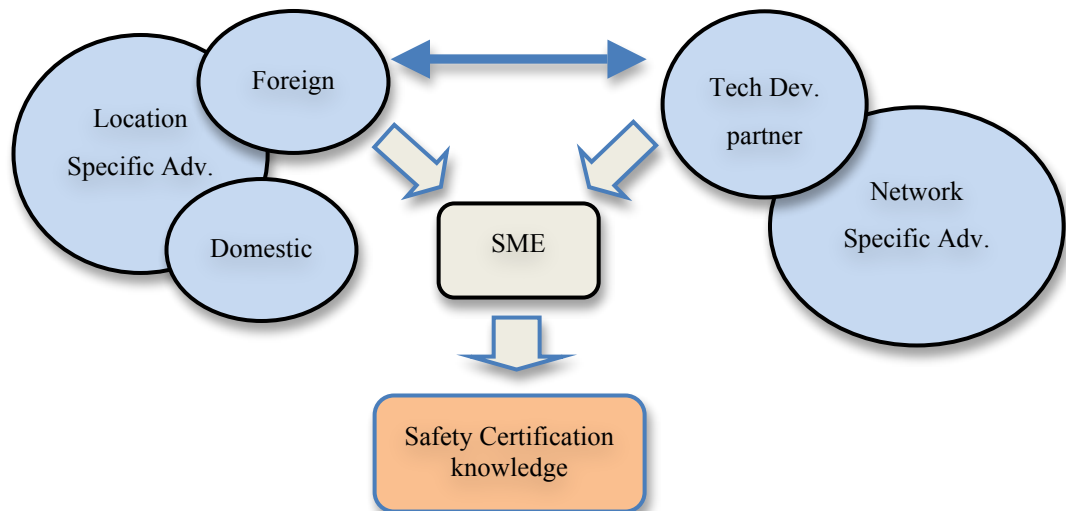


Figure 5 An example of creating international capabilities

In this example, a SME may be able to take advantage of knowledge on the safety certification process or requirements gained from a technology development partner in their network in the target foreign market. If the technology development partner has a connection with the market perhaps he can help identify the correct procedure or even a local source for key components to make safety requirements easier. Then perhaps the SME uses local representatives, partners or agents to contact or find an exploit these advantages. Together it all creates an internationalization capability to handle certification issues without having to spend precious financial resources on a consultant who probably would only provide the guidelines and no additional benefits. Once understood and acquired, this new internationalization capability could also be valuable in other markets as there may be similarities in the procedures and needs of the certification.

The more integrated the three elements can be, the more dynamic and effective the international capability can be for the firm. However, selecting the most relevant and valuable advantages and then combining the three elements together can be a challenge for any organization. Also, the internationalization capabilities need to be relevant to the SME and their business model. There are multiple variations of international capabilities and some are not even useful to the organization. Determining how to put all the elements together can be a challenge. However, before doing that the firm should first determine where it is going and what method of internationalization is it going to use.

4.3.1 Different types of international business modes affect advantages

There are several modes of international business that a SME can incorporate to reach international markets. What method is used will determine exactly what strategy is needed and what specific advantages would need to be employed to give the best relevant internationalization capabilities. The three most common modes of international business are direct export, strategic alliances with foreign partner and direct sales where the SME handles customers directly.

Direct export occurs when the domestic company uses an independent organization that is located in the foreign market area. This relationship can be a foreign-based distributor, reseller or agents (Albaum & Duerr 2008, 330). The key characteristic is that the SME is working with a foreign partner who is between the company and the end customer. This relationship is much more insular for the SME and different than a strategic alliance. The firm in this mode of international business would be at arm lengths from the end customer and would therefore need skills that are more designed to deal with partners rather than end customer interaction.

A company who engages in direct export would need more firm specific advantages such as knowledge of internationalization models and how to cope with cultural distance while developing the business relationship with the foreign partner. Also, the network specific advantages needed would perhaps focus more on export development from a domestic supported approach like export development groups or marketing clusters.

Strategic alliance is another method that exporting SME's may use to enter a foreign market. A strategic alliance can consist of contract manufacturing, joint ventures, licensing or management contracts (Albaum & Duerr 2008, 277). Like direct exporting, these types of arrangements usually involve a foreign partner but the nature of the arrangement is more involved and usually more complicated. For these types of transaction a different set of internationalization capabilities are needed from a different set of selected firm, location and network specific advantages.

A company using a strategic alliance model would need to focus more on network specific advantages from the perspective of finding the best potential partner in the foreign market. An SME using this method would also need to secure the best advice from legal partners for contracts and agreements. Perhaps the company may even secure that knowledge internally by hiring a legal expert. This would then make the knowledge a resource characteristic and a firm specific advantage and therefore make that a relevant internationalization characteristic.

Own sales are another way for an SME to internationalize. This simply involves selling directly to the end customers in the foreign market. This may be the most resource intensive mode of internationalization but could be used if the markets are

close in terms of geography or cultural distance. To use this mode of internationalization the SME would have to have capabilities and resources to support those efforts. The capabilities needed would need to be those that ensure efforts as effective as possible in order to not waste valuable resources.

An SME using this mode of international business would need more firm specific advantages such as embedded knowledge of the local markets and perhaps language skills if the foreign market uses a different language other than the domestic one. Another possible advantage would be location specific. A company selling directly in a foreign market may have a location specific advantage over a company trying to do the same but from a much further distance. This could even be more relevant if the industry has a higher degree of personnel selling needed or there are advantages from close cultural distance.

Which mode of internationalization is used, and the speed in which it progresses, depends on the product, the industry and the experience of the key actors in the firm (Jones 1999, 19). Each mode requires the SME to incorporate and deploy a different set of firm, location and network specific advantages. Which are the best modes of international operation depends on the stage of development the company is currently in and the resources available. Another factor to determine what mode is best is also dependent on the industry and stage of growth the company (Jones 1999, 16).

Each SME has to determine which internationalization mode is best for them based on their growth phase, industry and available resources and then determine which internationalization capabilities they would need. The firm has to determine how they can secure those resources and what relevant advantages would they gain to utilize and secure new revenue and market share in foreign markets.

4.3.2 Specific advantages for internationalization modes

As mentioned earlier, every industry has its unique characteristics. However, which internationalization mode a SME uses can also require a different set of capabilities derived from the firms' advantages. The following table gives a general outline of what firm, location and network specific advantages are most needed, or gained, from these three different forms of internationalization.

Table 1 FSA, LSA and NSA vs internationalization modes (Jones 1999, 16)

	Direct Export	Strategic Alliance	Own Sales
FSA	-Knowledge of international sales channel structures -Knowledge of how to cope with cultural distance	-Knowledge of complex partnership legal agreement -Strategic alliance knowledge	-Knowledge of local market - Communication capabilities -Financial resources to support new market entry
LSA	-Close to infrastructure -Financial resources -Knowledge clusters	-Close to port of exit -Close to partners	-Close to foreign market - Close to suppliers
NSA	-Part of export development groups -Learn best practices -Participate in loose or structured clusters	-Finding right partners -Securing correct expertise to evaluate alliance	-Finding customers in foreign market

Which firm, network and location specific advantages are most valuable depends on what mode of internationalization the firm uses. What characteristic needs will be relevant to utilize to gain new revenue and market share in foreign markets is also dependent on the industry and stage of growth the company is in (Jones 1999, 16).

Securing as many of the relevant specific advantages as possible will increase the probability of the SME securing sustainable growth. It is also important to mention that which advantages are relevant to the SME also depends on the business area, the resources available to the SME and the individual business case. However, there are some firm, location and network specific advantages are more commonly associated with certain modes of internationalization.

Incorporating these capabilities into the firm will give the SME an additional advantage to succeed with their entry into a foreign market. How successful these internationalization capabilities will be depends on their relevance to the firm, the stage of growth of the firm and the industry as a whole. Having these capabilities will not guarantee success but will only ensure the SME has the best tools for the job.

4.4 Synthesis

To summarize, SME's traditionally have looked at internationalization from the view of incremental steps and developing skills gradually in house. The markets they select are close to home as well as close in psychic distance. However, in cases where there is a small domestic market like Finland, the need to reach foreign markets is important for a SME's survival. Unfortunately, for a SME the resources needed may be either unavailable or too expensive to acquire internally. Therefore they need to look to other sources to create and develop successful internationalization capabilities.

There are three sources of internationalization capabilities this thesis focuses on to help SME's in their internationalization process. They are the firm, location and network advantages that a company has or can obtain. Which capabilities are needed depends on the industry, the stage of growth of the SME as well as the mode of operation. Once the SME has determined its mode of international operation, it needs to determine which capabilities are relevant and incorporate those internationalization capabilities into the firm. If possible, capabilities that are rare, valuable, inimitable and non-substitutable will give the SME the best chance of success. The needed capabilities can also change depending on the development of the firm as a new market may yield location or network specific advantages, that were not available to the SME previously, and be a new source of internationalization capabilities for the firm. However, it is important to note that having these capabilities is not a guarantee of success for any hi-tech SME entering a foreign market. They only increase the probably of success if they are valuable and deployed effectively.

The green technologies industry in Finland is a growing an important industry for Finland. Using SME's in this industry, this thesis will now try to identify which firm, location and network specific advantages are most beneficial to these companies. This involves interviewing three companies and identifying what helped them be successful in their current stage of growth.

5 METHODOLOGY

The objective of this research is to identify successful internationalization capabilities in Finnish SME's that work in the environmental technology sector. Another purpose of the study is to determine if these internationalization capabilities come from firm, network or location specific advantages and if they were generated from domestic or foreign sources.

The results of the interviews have been analyzed and those identified capabilities have been grouped together. The grouped capabilities were then checked for common threads that can tie these internationalization capabilities together to create dynamic capabilities. These dynamic capabilities became the base to create guidelines that other SME's in the environmental technology industry could use to help them be more effective in their internationalization process.

The results of the study should benefit other SME's in the environmental technology industry who are looking to utilize or acquire resources for their internationalization process. It should help SME's in this industry identify more easily what works first rather than working through a more expensive trial and error approach to find the right internationalization capabilities for them.

5.1 Research approach

This research is a deductive study conducted at the firm level. A deductive approach starts with existing theory and then one or two hypothesis can be deduced from the empirical evidence (Eriksson & Kovalainen 2008, 18). The empirical study for this thesis incorporates the same approach by using the existing theories of SME internationalization and multi-national corporations to create the framework for the study. From there the research will look for evidence of successful internationalization capabilities within the framework of the theory.

This thesis uses a qualitative research approach for the empirical study. The qualitative method is primarily used when interpretation and understanding of the results needs to be done through reality and social constructs (Eriksson & Kovalainen 2008, 4). Because the goal of this research is to identify what internationalization capabilities were actually successful, it needs to look at what the case companies did in reality and apply it in context of their business. For this reason the qualitative approach was selected as the best approach to best understand and interpret the results of the data.

The challenge to this approach is that the data collected from the interviews will be skewed by the personnel experiences of the interviewee. However, these experience need to be part of the research because it helps identify what capabilities worked for

these case companies in their internationalization process. The need for reality to be part of the interpretation and understanding of the research is why a qualitative approach is needed for this study. It is important to note that not all the interviewees are familiar with the theoretical framework. Therefore, the researcher will have to look at the data collected from the case companies and in some cases match it to the theoretical framework.

5.2 Data collection

The empirical study focuses on three SME's who are based in Finland and have started their internationalization process. These companies are in various stages of internationalization and the study will uncover what capabilities have helped them to internationalize more effectively.

The case company selection process started by creating a pool of companies who met the key selection criteria. The search criteria consisted of 3 key elements:

1. The company must have been founded in Finland
2. The company has an international ambitions
3. The company needs to be an SME
4. The company must be active in the environmental technology sector

These criteria are important to ensure that the companies participating in study fit the right theoretical framework of the study. Using the selection criteria as a filter, a search was then conducted using a variety of resources. Key resources used in the search were:

- Publications: High-Technology Finland
- Websites: cleantechfinland.com
- Google search: Green technologies Finland

From these sources, a list of 10 companies was compiled. Invitations to participate in the study were then sent out to all the companies on the list. A follow phone call with the companies resulted in narrowing down the list to the three case companies who consented to participate in the research. The case companies that were finally selected are in various stages of the internationalization process and uses a variety of internationalization modes. All the companies participating in the study are in the environmental technology industry and they are SME's according to the definition set out by the European Union. The EU definition is that a SME is defined as a company that has less than 250 people and less than 50 million EUR in turnover (European Commission 2011). Once the case companies were selected then data collection began.

Data collection combined both primary and secondary data sources. Secondary data was collected on the case companies, as well as the environmental technology industry, prior to the interviews so there was a frame of context for the interview. Having existing knowledge of the organization, product offering and where they operate allowed the interviewer to focus more on the core issue during primary data collection. The primary data collection was done to identify which types of internationalization capabilities that environmental technology SME's in Finland found most valuable. This data was collected from one-on-one interviews. The interviews were done face to face with the key person responsible for the internationalization operations in the case company. Although there were set questions prepared, the interview was conducted in a more conversational style. This interview style resembles more of an everyday conversation and the lines between interviewer and interviewee are more blurred. (Eriksson & Kovalainen 2008, 103)

The reason the semi-structured style was used was that the interviewee may not be familiar with all the theoretical concepts so the interviewer can clarify as needed. Also, the interviewee may say something that the interviewer may recognize as important to the objectives of the research and can then guide the discussion to explore it further.

The purpose of the interviews is to discover what capabilities and resources existing SME's have employed in their internationalization efforts. It is also attempting to determine how they acquired them and if they stem from firm, network or location specific advantages. The data collected from the interviews was also used to determine whether or not those efforts were successful. The interview questions have been structured to gather the information needed and are based on the following operationalization table.

Table 2 Operationalization table for interview questions

Research question	Sub questions	Operational equivalents	Related factors	Interview questions
How environmental technology SME's in Finland can combine firm, location and network specific advantages to create internationalization capabilities.	How can environmental technology SME's in Finland attain the necessary firm, location and network specific advantages?	Internationalization operations	Firm advantages	What people within the organizations were vital to your internationalization process. Why?
				What knowledge/experience in the organization were vital to your internationalization process. Why?
			Location advantages	What advantage did you gain from this location
				Did you gain any knowledge/expertise/resources from the target markets you entered (what & when)
			Network advantages	What networks did you use in your internationalization
				Who were the most important actors in the networks
	How can environmental technology SME's in Finland combine these advantages to develop internationalization capabilities?	Strategic planning	Selecting relevant	What knowledge did you gain from the network
				What abilities unique to this firm made internationalization possible
				What benefits were there to being located in...
			Combining advantages	Identifying combinations from interview responses

Given the wide range of terminology and their varying level of understanding of the concepts of firm, location and network specific advantages, the interview questions are structured to more open so that the interviewee is not forced into trying to learn new terminology but can openly discuss what advantages his/her firm drew from to aid in their internationalization process.

The interview questions are provided in APPENDIX 1. The interviews were recorded so that they can be reviewed later for information that may have been missed during the interview itself.

5.3 Data analysis

Upon completion of the interviews the data was then put through a coding process to organize the data collected. Coding is the process of taking raw data and moving it to something more applicable and coherent to the research concern (Auerbach & Silverstein 2003, 35). The data from the interviews was organized in order to discover patterns within that organizational structure that will help identify what successful capabilities the case companies used in their internationalization. For this study, the data was put through the following coding process:

1. Selecting the relevant data for further analysis
2. Placing relevant ideas into a table sorted by theoretical categories
3. Organize themes by grouping repeating ideas into coherent categories
4. Develop theoretical constructs by grouping the themes into more abstract concepts consistent with the theoretical framework
5. Create a theoretical narrative in terms of the theoretical constructs

Using this coding process provides a method for organizing the data from the interviews and discovering patterns within the framework of the research (Auerbach & Silverstein 2003, 31). The data analysis started with placing the relevant data collected from the case company interviews into the following table.

Table 3 Table for collecting relevant data from case companies

	Location Specific Advantages	Firm Specific Advantages	Network specific Advantages
Domestic sources			
Foreign sources			

The data collection table organizes the data according to the key sources of internationalization as section three. These data collection tables were filled out after the interview so that the interviewer has time to focus on the discussion with the interviewee in order to ensure the relevant data is brought to light. During the review of the recordings of the interview, information relevant to the internationalization process

is placed into a box marking it is a firm, network or location specific advantage. The criteria used for this sorting process is outlined in section three. The data will be also be differentiated if the source of the advantage is a foreign source or a domestic one. As each case companies path can be different the data collection table may be adjusted to fit the company results. However, the core categories and data differentiation remained intact. Any additional information that may be relevant to the case company, or give context to the data placed in the table, will be added to the case company data analysis as narrative text.

Once the data is transcribed for each case company into a table, then the data was further categorized in a single table similar to the one used for the case company data collection.

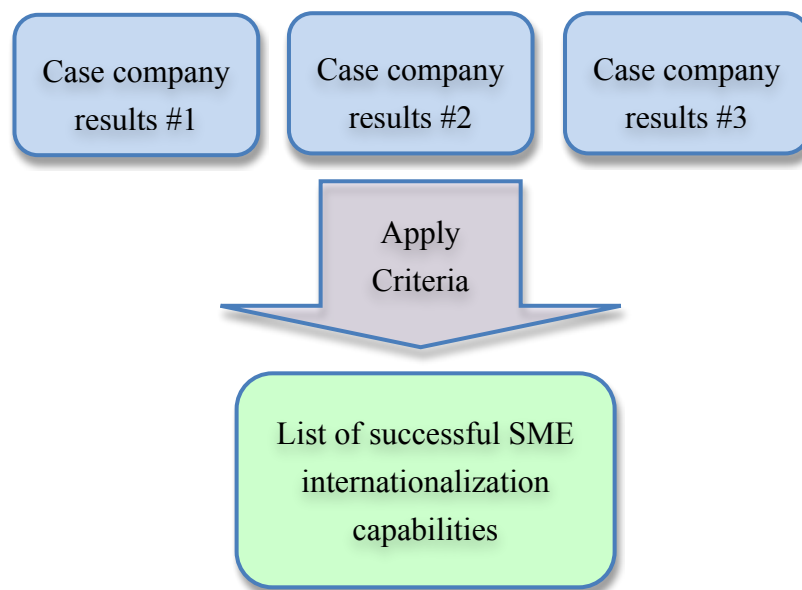


Figure 6 Model for analyzing and focussing data

The difference is that in the second grouping of the data will be done by focusing on repeating ideas. The criterion for the focussed table is that an idea appears in two of the three case companies participating in the study. If so, then that data will be added into the focussed table and will be analyzed further. The goal of the analyses is to develop theoretical constructs and abstract ideas that are consistent with the theoretical framework (Auerbach & Silverstein 2003, 39). From there, the theoretical conclusions can be drawing and the guideline recommendations will be created.

5.4 Evaluation of the study

Evaluating the reliability and validity of qualitative research is different than that of quantitative research. Where a quantitative study focuses on reliability and validity, a

qualitative study focuses more on credibility, dependability, the ability to confirm and transferability of the research (Lincoln & Guba 1985, 300). For this research, the trustworthiness is judged by the criteria outlined in the following table.

Table 4 Trustworthiness criteria (Sinkovics, Penz & Ghauri 2008, 696)

	Credibility	Dependability	Confirmability	Transferability
Research Construct	Built on established theory and extends proven research design	Based on sample selection & data collection methods being applied without bias	Coherence to background assumptions	Functional and conceptual
Purpose	Focuses on establishing a match between the constructed realities of respondents and those of the researcher	Focuses on the stability of the results over time	Researchers need to demonstrate that their data and the Interpretations drawn from it are rooted in circumstances	Dependent on which prominent conditions overlap or match

Using the criteria above to evaluate the research conducted on SME's in the environmental technology industry in Finland one can see that the research does work to conform to the principles of good qualitative research.

Credibility of the research is based on established internationalization theories/models set out in section two. Both the Uppsala and New Innovation models are established, accepted and referenced in current internationalization literature. The theories of firm, network and location specific advantages for a firm are also well established and form the construct for the research portion of this study. These theories are outlined in section three. The research uses a qualitative approach that is consistent with other studies referenced in this research report.

Dependability of the selection of case companies for the study was not done randomly. However, the companies that were approached were selected based on pre-selected criteria as listed in section 5.2. From the ten companies approached, three case companies were then selected from the respondents willing to participate in the study. For the three case companies selected, primary data collection was done in face-to-face interviews with predetermined questions and was recorded for later reference and to check for clarity if needed. Secondary data was collected through electronic resources and done before the interview took place.

Confirmability was achieved by using predetermined questions to guide the interview. Using pre-determined questions helped the researcher to keep the focus and coherence to the background theory. The questions were formulated based on the Operationalization chart (Table 2). Using the Operationalization table to formulate the questions helped keep the interview questions focussed on the relevant theory and enhance the confirmability of the study. One critical point to note is that not all the participants were familiar with the concepts of firm, network and location specific advantages as presented in the theory so clarity had to be provided by the researcher. These clarification points could guide or influence the answers slightly as the researcher explained the points in more detail.

Transferability was achieved by making the questions for the research not company or industry specific. Therefore, a larger sample group in the same industry should yield the same results. Also, the research questions themselves are generic enough that they could be applied to other SME's in Finland. However, a larger sample group would be needed to confirm that these results are transerable to other SME's. Because the theory behind it is not industry specific the results of the research should be an accurate representation of what other SME's would face in Finland.

Using the above criteria, one can see that the research should be credible, dependable, confirmable and transferable. However, from a critical perspective it is important to mention that there is a small probably of researcher bias resulting from the interviewer having to explain or clarify theoretical points to the interviewees. This could result in unintentionally guiding the interviewee's next answer. Also, another critique is that a wider sample group could be needed to confirm that the results are transferable to other SME's in the environmental technology sector.

6 INTERNATIONALIZATION CAPABILITIES IN THE CASE COMPANIES

The purpose of this research is to identify successful internationalization capabilities within the case companies and then, using the theoretical framework, create a series of theoretical narratives to help other SME's in the environmental technologies sector internationalize more efficiently. For this research, three case companies from Finland have been selected and interviewed according to the criteria set up in section five.

6.1 Case companies

The following are the results from the interviews with the three case companies. The interviews were conducted one on one in a conversation style and digitally recorded for later review. The information gained from the interviews has been separated into tables as outlined in the data analysis section. The tables are also sub categorized if the capability comes from a foreign or domestic source.

6.1.1 Case company Greenlux

The first case company designs LED luminaries for business and public entities and have been in business for over 4 years. Founded in 2007, the company's core values are: energy awareness, innovativeness, safety and high quality products. The company has two main product lines designed to offer a novel alternative to traditional fluorescent luminaries. The GLG series is specially designed for lighting parking garages, warehouses and cold storages and the GLP series light panels are used in the offices, hallways and public spaces. (Greenlux 2011)

The company is still early in its internationalization process and prefers to use a direct export approach incorporating resellers and distributors. The initial target countries are also close in psychic distance to Finland as well. Case company had an issue that people had doubts of general lighting by LED. They were unsure it could be effective and that it could provide the savings projected. Therefore, the company focused on direct selling using their existing contacts, networks and experience to gain a solid first test case. This good independent test case was key to growth of the SME.

As a result of these initial direct selling efforts, the company's products were delivered and installed at Arlanda Airports parking garage at the beginning of 2009. As a result of using the LED lights, the airport had over 70% energy savings and by 2011 has already paid back the initial investments on the product. From this test case, which

was verified by independent testing from Swedish Energy, channel partners started to look at the product as a serious solution. Now the company is present in Scandinavia, Middle-Europe, Australia and the UK.

Getting the proof of concept with measured savings, which was verified by Swedish Energy, was key to the growth of the company. The business model then changed from direct selling to direct export through key channel partners to great growth and further market exposure. However, it is important to note that using the direct export channels would not have been successful without the direct selling effort done by the company using the company's in-house knowledge and existing contacts.

The results of the interview with the CEO Mikael Broman (conducted on 04.05.2011 at the case company's head office) have been placed in the following table:

Table 5 Results of interview with Greenlux

	LSA	FSA	NSA
Domestic	<ul style="list-style-type: none"> -Scandinavia is the home market -Big partners are close (i.e. Germany, Sweden) -Advantage gained from Tekes development funds -Manufacturing in Finland reinforces quality image vs poor Asian competitors 	<ul style="list-style-type: none"> -Managers entrepreneurial spirit -Knowledge of Swedish market (first cases) -Knowledge of how projects develop and how to find key players -International work experience -Establishing personal relationships with key actors -Ability to build a better LED product -Key people with industry contacts in the company 	<ul style="list-style-type: none"> -Network through informal cluster Cleantec Finland (Looking to partner with parallel companies to share contacts and make introductions)
Foreign	<ul style="list-style-type: none"> -Was easy to get feedback from Swedish test case 		<ul style="list-style-type: none"> -Distributors are known to each other – getting in is vital -Gained benefits from external testing partners – using their facilities (good for comparison) -Some ideas come from the target countries

Greenlux is a good example of a company in the early stages of internationalization. Their initial focus was on selling directly to the end customer but then transitioned into direct expo once they gained important validity from the Swedish market.

6.1.2 Case Company Naps Systems

The second case company is a provider of solar energy solutions using photovoltaic modules, control units and batteries. The company combines these technologies to create full service packages. The company is one of the oldest players in the market and they have over 30 years experience in the photovoltaic market and focus on intelligent system design and extensive consultations systems. The company is also interested in difficult markets/countries that their competitors would not be very interested in. (Naps Systems 2011)

The company was formed in the beginning of 1980 as part of Neste. From there it developed into a unit inside Neste with offices in 10 countries. In 2001, the company became an independent organization and began working to be self-sufficient and profitable. As a result the internationalization model changed from direct sales through a subsidiary network to direct export through local agents and resellers.

Naps Systems has over 90% of its business outside of Finland and its' solutions are sold in over 50 countries. The company also has subsidiaries in Sweden, Germany and Estonia. Including the subsidiaries the company has 140 employees and their preferred method of internationalization is through local resellers and agents.

Due to the fact that case Naps Systems started off as a unit of Neste, the table is also sub-categorized to before and after the split. For the study only the advantages that were beneficial for the internationalization will be considered but it is interesting to note the difference between internationalization capabilities needed for an SME vs a large organization. For example, gaining firm specific advantages through acquisitions of other companies may not be very practical for a SME.

Starting out as part of a large organization also created some other unique that the SME had to overcome. One issue that made internationalization more challenging was that the company was used to operating with access to excessive financial resources. Once the company became independent it was hard to adjust the corporate culture to be more focus on being a profitable healthy business. As a result, year after year the company recorded a loss. Eventually, the investors became frustrated with the organization and when things started to take off the investors were weary of putting more money in.

The company subsidiaries are mainly focussed on manufacturing or a specific target segment. For most sales efforts the company uses a direct export approach through agents and resellers. There was one attempt where the company tried to set up a subsidiary office in the Middle-East but gave up after 2 years efforts and very little result. It was the only time the company broke away from the local representative model that has been the more successful method for the company.

The results of the interview with CEO Timo Rosenlöf (conducted 04.04.2011 at the company's head office) have been placed in the following table:

Table 6 Results of interview with Naps Systems

	LSA		FSA	NSA
Before 2001 (Company was part of Neste/ Fortum)	<ul style="list-style-type: none"> -Started as part of Neste/Fortum and had access to capital resources. -HQ was in Finland next to parent companies 		<ul style="list-style-type: none"> -Acquired additional expertise and resources from acquisition of unit from Sony Ericsson. -One of the first movers in the field (building knowledge and brand) 	<ul style="list-style-type: none"> -Network benefits came from parent company Neste/Fortum
		LSA	FSA	NSA
After 2001 (Company became an independent SME)	Domestic	<ul style="list-style-type: none"> -Small home market (mostly cottages) -Only series solar power company in Finland 	<ul style="list-style-type: none"> -Since 2001 model changed to more local representatives -Sell to difficult markets (unique expertise -Scientific knowledge in Finland -Staff has global business experience -Over 30 years experience in the market 	<ul style="list-style-type: none"> - Uses Tekes to stay connected with Finland networks
	Foreign	<ul style="list-style-type: none"> -Gain benefits from grid connected system operation in Germany (brings practical innovation & best practices) 	<ul style="list-style-type: none"> -Industry knowledge (Business still dependent on government support (feeding tariffs) 	<ul style="list-style-type: none"> -All foreign networks are informal networking -Work with industry level organization (closed door networks)

Naps systems is a good example of a company who is more established and a more known player in the market. They incorporate several different modes of internationalization depending on the sector or the target country. They have also evolved as the company has grown to take advantages of new resources as they become available.

6.1.3 Case company Zen Robotics

Case company three is a manufacturer of waste disposal systems using robotics. The company consists of 20 people and was founded in 2007. These unique waste sorting systems allow for more effective and efficient recycling of materials or can be used to recycle hazardous materials that are too dangerous for humans to interact with. The company plans to revolutionize recycling and tackle the growing waste crisis. (ZenRobotics 2011)

The company has spent the first few years of the company's life developing unique robotics that can sort refuse more effectively. Now that the solution is almost ready for production, the company is preparing for its commercialization phase and product launch in the beginning of 2012. However, it is important to note that the internationalization efforts have already been underway for some time and a network of agents is already in place for the official product launch.

From the beginning, the plan for the company was to be born global as the domestic market is too small for sustainable growth. The company will use direct export as its mode of internationalization with a focus more on agents and resellers. The target market area will be Europe initially and expand to other markets later. There will also be a sales channel that will focus on system integrators doing larger waste disposal systems.

Due to the fact that the product is just becoming commercially available, the pre-internationalization efforts have focused on brand awareness and the product benefits over technical specifications. Early marketing, branding and sales efforts have already resulted in several letters of intent to purchase units once full-scale production begins. However, the company is taking its time to ensure that the product matches quality expectations and production can be done en mass.

In the pre-launch phase the company seems to rely more on its local in-house expertise for internationalization. There is a wealth of internationalization and industry experience to draw on in the organization that has helped them better prepare the product and the internationalization. Also beneficial was the in-house experience in marketing which has driven the commercialization efforts so far.

Although there appears to be a strong focus on advantages gained from domestic sources it is important to note that market feedback from agents and the non-domestic labour pool has also been highlighted as a source of advantages for the internationalization effort.

The results of the interview with CCO Rainer Rhen (conducted on 11.08.2011 at the company's head office) have been placed in the following table:

Table 7 Results of interview with ZenRobotics

	LSA	FSA	NSA
Domestic	<ul style="list-style-type: none"> - Being in Europe allows them to reach a variety of countries which are close - Access to skilled educated people -Finnish technology well received abroad -Finns relatively unknown and therefore no social stigma (neutral opinions) -Country size forces need to be born global 	<ul style="list-style-type: none"> -Strong marketing expertise (reduces costs) -Strong brand development expertise (differentiation) -Internationalization expertise 15 years -Lots of entrepreneurial experience -Know how to keep costs low very cost conscious -High knowledge base (PHD's) - Benefitted from Nokia downsizing -Well thought out internationalisation plan (experience) 	<ul style="list-style-type: none"> -Media networks -Tekes development funding
Foreign	<ul style="list-style-type: none"> -Get feedback from agents in market specifications -Get feedback on market needs 	<ul style="list-style-type: none"> -Diverse working team 1/3 non-Finns 	

ZenRobotic is a company who has recently initiated their internationalization efforts in preparation for their product launch. The skills and advantages they need at the

beginning of their commercialization efforts are interesting when compared to the case companies who have a more established presence in the market.

6.2 Cross case analysis

Using the data from the case company interviews an analysis to determine which internationalization capabilities were beneficial to all three case companies can now be done. As seen in the results section, the internationalization capabilities have again been segmented to show if those capabilities came from firm, location or network specific advantages. It is also sub-categorized to show which came from domestic and which came from foreign sources.

Taking the results collected from the case companies, it is now important to identify and sort out the advantages that are most beneficial to companies in the environmental technology field. To determine if those advantages have an industry wide implication, the selection criteria set out earlier will be used to filter out the data. The criteria is that a capabilities needs to be present in at least 2 of the case companies. If a capability is present in at least 2 of the case companies then it will be classified as beneficial to SME's internationalization for green technology companies in this study.

6.2.1 Sorting relevant capabilities

Based on the criteria set out early, the interview results have been analyzed for which capabilities could be applied to the environmental technologies industry. From the results of the case company interviews the following firm, location and network specific advantages for Finnish firms in environmental technologies industry has been identified:

Table 8 Common internationalization capabilities

	LSA	FSA	NSA
Domestic	-Small home market	-Good international work experience	-Benefit form local development funding
	-Close to big markets in Europe	-Entrepreneurial experience	-Participating in lose cluster (mostly Europe)
	-Finnish technology well-received abroad	-Strong scientific knowledge in Finland	
Foreign	-Getting feedback from local partners		-Gain access to resources in foreign markets

After the selection criteria were applied to the data it is easy to see the relevant capabilities that can be applied to the industry as a whole. It is interesting to note that from all the internationalization capabilities that the case companies identified there were not so many relevant capabilities that apply to the industry as a whole based on the selection criteria.

Although each of the case companies listed many unique characteristics that they gain from their firm, location and network specific advantages, it seems there are not so many that are common to all companies. However, from the capabilities that can be applied to companies in the environmental technology industry we can see that they are distributed almost equally across firm, location and network specific advantages. It is also interesting to note that most of the internationalization capabilities common to case companies are domestic based.

6.2.2 Domestic and foreign based advantages

When looking at the domestic-based advantages, it becomes clear that there are several key advantages that SME's can use in their internationalization. It is interesting to note that one recurring location advantage was that the Finnish domestic market is too small and forces SME's to internationalize early. Although it is not an internationalization capability, it does show that SME's in the environmental technology sector are almost forced and motivated to internationalize early. This point coming out in the research also validates the initial premise of the study that there is a need for companies in small countries like Finland to internationalize early. It could also means that the experience

and expertise needed for internationalization is more readily available in Finland than in a country that focuses more on domestic markets.

On the domestic firm level, the research also identified advantages gained from the experience and knowledge of the people involved in the internationalization process. More specifically, the knowledge of internationalization and entrepreneurship were highly valued by the case companies. Scientific knowledge also came out as a valuable advantage in the research. However, it was more in terms of product development and as a source of an image of quality. Because Finland enjoys a reputation as a science and technology hub people expect that the quality and ingenuity of the products is high as well.

Another key domestic advantage, which came out in the analysis of the results, is that Finnish SME's benefit from being physically closer to larger markets in Europe. However, being close to these foreign markets also allows for the SME's to gain access to some foreign-based advantages as a source of internationalization capabilities. Although the SME's did not gain as many advantages from foreign sources they did from domestic sources, they did highlight two key areas where they gained successful internationalization capabilities. The research shows that the SME's interviewed gained valuable feedback from local partners and access to networks in the target countries. Access to these knowledge and resource pools was also very helpful to the internationalization processes of the SME's.

6.2.3 Firm, location and network based advantages

When looking at the capabilities sorted by advantages one can see the same capabilities in a bit of a different way than when looked at from a purely domestic and foreign perspective. For example, when looking at location specific advantages, Finland's position close to big players helps them gain access to local knowledge through partners who share a low psychic distance.

For firm specific advantages, the focus of the SME's is primarily on expertise and knowledge capabilities of the personal. Along with strong scientific/technical knowledge, the SME's also benefit from human resources with strong international work experience and entrepreneurial understanding and spirit. All the case companies highlighted these capabilities as important to their success internationalizing.

When looking at the advantages the SME's gain from networks it was interesting to note that most companies only participated in soft informal networks. There was also links to funding from organizations like TEKES but the funding was more for product development rather than internationalization development. The network specific advantages were based on those that are important to internationalization and that help

gain access to foreign markets. These networks were offshore and primarily made up of agents, channel partners or industry experts. All three case companies networked with their industry peers.

There were several other interesting international characteristics that came up for each individual company but they were not shared by any of the others. For example, one SME found that being from Finland gave an advantage as it allowed him to differentiate from competitors in Asia who are known for cheaper lower quality substitutes. Another case company found an advantage in the fact that because so little is know of Finland they do not have political or social prejudices to overcome as SME in more well know countries might. It shows that even in an industry segment, what is needed to successfully internationalize can vary company to company. However, as these results did not meet the selection criteria they were not included in the analysis of the data.

6.3 Combining advantages

Now that common internationalization characteristics have been identified using the selection criteria, it is now possible to see how they can be combined to give those capabilities even greater value for the internationalizing green technology SME.

Unlike the individual data collection tables for the case companies, this table does not differentiate if the source of the capability is foreign or domestic. This is because the purposes of combing these capabilities is to gain a better understanding of the relationships between them and to form a set of guidelines a SME in a similar position can use. At this point, having the capability is more important then where it was sourced.

The capabilities identified from the case companies have now been placed in the following table so areas where there is some common ground between the three types of advantages can be identified.

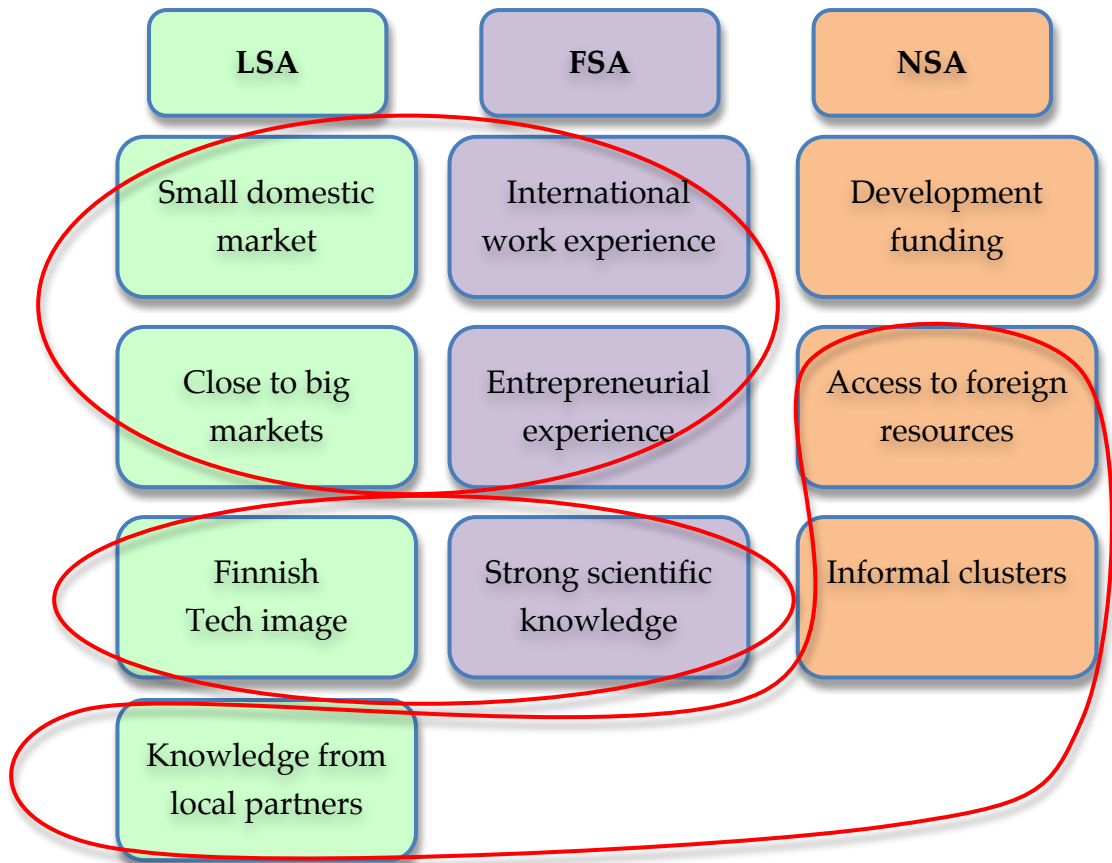


Figure 7 Common themes between specific advantages groups

Figure 7 shows a few places where there appears to be a common bond between the internationalization capabilities regardless of whether they are a location, firm and network specific advantage. These areas are identified as a cause and effect differentiation. For example, when looking at the location and firm specific advantages, the fact that Finland is a small country gives rise to the need for SME's in green technologies to internationalize to survive. This ties into the fact that the internationalization expertise is also an important capability, which is needed and present in the country.

Similarities can also be drawn between the technology image and knowledge gained from location and firm specific advantages. It is easy to see that the technological and knowledge aspects of Finland, particularly in the environmental technology industry, can benefit an SME on both a location and firm specific level. The knowledge gained for firm specific advantages comes from the good education structure, which is a location specific advantage. The same can be said for local market knowledge that can tie capabilities together from both the location and network specific advantages.

Now that commonalities have been identified in the group, they can be blended into more focused dynamic internationalization capabilities/guidelines. Using the three groupings from figure 7, we can summarize them into three theoretical guidelines.

1. Have international and entrepreneurial expertise to take advantage of larger markets from closer EU countries
2. Leverage Finland's brand as technology country while taking advantage of local knowledge resources
3. Assimilate local knowledge from partners and actively use resources in other countries.

These three theoretical narratives act as internationalization guidelines that can be applied to SME's in the environmental technology industry. This is due to the fact that the case companies all were in that industry segment. It is important to note that all the case companies in the study did employ a variety of these guidelines but none of the case companies used all of them.

6.4 Internationalization guidelines

By using the results of the selected relevant capabilities for environmental technology SME's in Finland, the above theoretical guidelines have been identified. These narratives combine internationalization capabilities from various elements of the business to create more dynamic internationalization capabilities. As mentioned earlier, these capabilities are more effective if they are valuable, rare, inimitable and non-substitutable. Then the capability is not only a strong resource for internationalization but also a source of competitive advantage for the SME.

The above three guidelines have been formulated so a SME, in the Finnish environmental technology sector, can use them to help internationalize more effectively.

6.4.1 *Have international and entrepreneurial expertise*

This dynamic internationalization capability combines two capabilities identified from the location specific advantages and two from the firm specific advantages. All four were identified as important successful internationalization capabilities to the SME's.

Table 9 International and entrepreneurial capabilities

LSA	FSA
Small domestic market	International work experience
Close to big markets	Entrepreneurial experience

Combing these together creates a dynamic capability that an SME, in the environmental technology industry in Finland, needs in order to increase their chances of success. Simply put, this dynamic capability is that a SME needs to have both international business and entrepreneurial expertise to take advantage of the larger markets in neighbouring EU countries. This addresses the need the Finnish SME's in environmental technology face as a result of a small domestic market that will be unable to sustain the company.

The need for international experience in SME internationalization is not a new idea. It has been well documented that due to the need to be born global, Finnish SME's need to have experience in international work experience and that these skills are important. They are important because the relevant knowledge and experience will help the people working in the internationalization process to do the job more quickly and effectively. They can also train and lead others in this process as well.

The value of entrepreneurial experience is also not a new idea. The need to be able to grow the company without a large budget or support structure is as important as knowing how to get into foreign market. Entrepreneurs are more adept and getting maxim results out of minimum resources and using other people's resources as well (Wee, Wei-Shi & Lee 1994, 30). This capability can help a SME overcome the financial constraints that come with being a born global company.

For the Finnish SME, this all means that by combining the knowledge of international work with entrepreneurial spirit would result in a dynamic capability that would allow a company to grow internationally, quickly and without an excess use of resources. The quickest way for a SME to acquire these skills and capabilities would be to hire or headhunt people experienced in SME growth and internationalization.

6.4.2 Leverage Finland's brand and incorporate scientific knowledge

The second quality the SME needs is the ability to harness Finland's image as technology leader country while taking advantage of domestic scientific knowledge to ensure that the product put forth matches that quality expectation. This combines two capabilities from the location and firm specific advantages.

Table 10 Finland's reputation and local knowledge

LSA	FSA
Finnish technology image	Scientific knowledge

Having a strong education infrastructure in science and technology is one key reason there are so many new technology based SME's in Finland. Finland ranks second among OECD countries in math and reading and number one in science education (Gaurdian.co.uk 2010). According to the OECD, Finland contributed 0.5% of the world share of scientific publications. Finland's spending on innovation and R&D in 2008 was 3.7% of the GDP. (OECD 2010)

Incorporating knowledge into the organization is important as a capability for any country but a SME has to do it in a way that enhances the internationalization goals of the company. For example, developing a solution that is ready to go to market rather than getting stuck in a product development loop is an important capability for a SME to have.

Although scientific and technological accomplishments are important, the image that Finland has as technology center is also valuable as an internationalization capability. Combining the embedded scientific knowledge with the technology image can also create a dynamic internationalization capability for the SME. A Finnish SME's in can take advantage of this capability simply by promoting the fact that the technology comes from Finland. Using this approach a SME may overcome issues of uncertainty over the viability of the technology over competitors from countries who do not enjoy the same reputation.

Using Finland's reputation to assist in their internationalization process may seem obvious but all three case companies in the study used this aspect as a way to promote their products in new markets. Based on the results of the study, this approach was at least successful to the SME's in the environmental technology industry.

6.4.3 Assimilate local knowledge and actively use resources

Understanding local markets and adapting to them is not a new concept in internationalization. In this case, when talking about local knowledge it is the local knowledge in the foreign market. For SME's, the need to assimilate this local knowledge from foreign partners is important. It is also important to actively use resources in other countries because it gives them access to knowledge and resources that the SME may not have in the domestic market. These capabilities were highlighted among all the case companies as important to their internationalization process.

This guideline combines three capabilities and advantages from both the firm and network specific advantages. Of the three dynamic capabilities for internationalization, it is the only one that incorporates network specific advantages identified by the case companies.

Table 11 Local knowledge and use of resources

FSA	NSA
Knowledge from local partners	Access to foreign resources
	Informal clusters

This guideline is somewhat related to the first as the knowledge of how to take advantage of international opportunities comes from international experience. However, it is not just knowledge on how to take advantage of these resources but the knowledge on how to take advantage of these resources effectively. This is where access to foreign resources may be helpful to an SME.

Using a combination of knowledge embedded in the firm and the information gained from local partners and informal clusters can help a SME gain resources they may not normally have access to. It is also possible that the resources the SME acquire are cheaper in a foreign market than it would be in the domestic market. It is important to note that having the knowledge based in the firm gives the SME the skills needed to identify and acquire those resources. A SME without those skills may struggle to acquire or utilize those resources or perhaps miss the opportunity entirely.

Although seemingly easy, this dynamic capability may be the most difficult to acquire effectively because it requires the ability to find and harness the resource as well as skills in cultural cross border dealings. Confidence in using international resources should not be an underestimated quality as well.

7 CONCLUSION

The purpose of the empirical study portion of this research was to identify common successful internationalization capabilities in SME's in the environmental technology industry in Finland. To accomplish this, three case companies in various stages of internationalization were selected and interviewed. The data from these three SME's was then analyzed according to the process outlined in section 5 and the capabilities that matched the selection criteria were identified. The result of the analysis process was a list of capabilities that were common to two or more of the SME's interviewed.

These identified capabilities were then grouped into a table that sorted them by firm, location and network specific advantages. Then using a cause and effect as a reference the data was grouped by capabilities that had similar qualities. The three categories that were formed by the grouping became the theoretical narrative that is the foundation for the recommendation guidelines. The purpose of the guidelines is to benefit other SME's who can use them to help internationalize more effectively.

As a result of the analysis process, three internationalization guidelines were identified. For example, the study showed that strong scientific/technical knowledge, strong international work experience and entrepreneurial understanding were all beneficial to the SME's. Therefore, it is the result of this study to advise other SME's to have international and entrepreneurial expertise to take advantage of larger markets from closer EU countries. Another key internationalization guideline was identified when the importance of Finland's image as technology leader country while taking advantage and the strong scientific knowledge base were highlighted in the research. Based on these results it is suggested that other SME's in this field leverage Finland's brand as technology country while taking advantage of local knowledge resources. Last but not least, the importance of local knowledge along with the skills to use foreign resources was also highlighted as important. This gives the SME's access to knowledge and resources that they may not have in the domestic market. It is important to mention that these capabilities were seen as important to all the case companies in the study. Therefore, it is the conclusion of this research that the third guideline should highlight the importance that SME's learn to assimilate local knowledge from their foreign partners and actively use resources in other countries.

It is important to note that these guidelines focus capabilities from all three sources of internationalization capabilities as outlined in the theoretical framework. These dynamic capabilities can combine a variety of different elements from the firm, location or network specific advantages highlighted earlier in the research. In doing so, a SME can focus its resources more effectively to take advantage of the capabilities that other SME's in the same industry found effective. It is also important to note that these guidelines can only be applied to environmental technology SME's in Finland. Further

study would be needed to confirm if these same guidelines could be applied to other SME's in other technology sectors. Also, further research would be needed to confirm that these guidelines could apply to SME's in other countries. One other area where the research could be furthered is looking at how a SME can source these internationalization capabilities and ensure they are unique to the firm.

The limitation of this study is that the guidelines formulated cannot be simply applied as a complete blanket solution to a SME with internationalization challenges. As companies vary, even in the same industry, it is up to those responsible for the internationalization strategy and implementation to take these guidelines and apply to their SME as needed and where they see fit. Given the wide variety of companies a SME may not find all the guidelines are completely applicable. It may be that one guideline is more important to one SME than it is to another even in the same industry. Also, the case companies in the sample all come from Finland and are in the environmental technology sector so these guidelines can only be verified to apply to them. Future research may reveal that these guidelines may also be applied to other technology based SME in Finland and perhaps even to SME's in other countries. Other areas of research that could also be expanded on is to look at how the modes of internationalization, and the stage of growth of the company, affect which internationalization capabilities are used successfully. Lastly, a more detailed study of each dynamic internationalization capability would also be beneficial in order to better understand how they impact SME's in Finland.

Internationalization is becoming more challenging for SME's in the shrinking global marketplace. More and more companies are fighting to compete over the same customers. Knowing what are the most effective capabilities, and being able to incorporate those successful capabilities into the internationalization strategy, will help SME's in Finland to reach and succeed in foreign markets more efficiently than their counterparts.

8 SUMMARY

The purpose of this study is to identify successful capabilities that Finnish SME's in the environmental technology industry use in their internationalization efforts. It was the goal of this study to create recommendation guidelines that other SME's in this industry could use to help them be more effective in their internationalization efforts. The research data collected identified successful internationalization capabilities that SME's have used to be successful in their internationalization efforts. The identified capabilities formed the basis of the recommendation guidelines presented in the study. It is the goal of this study that other SME's can use these guidelines to help guide them in their internationalization strategy.

Looking at more traditional internationalization theory, such as the Uppsala internationalization model, one can see that in the past internationalization was done on a step-by-step approach and focused primarily on those markets with a close psychic distance. However, in the changing and evolving international marketplace of today, more and more companies are forced to go abroad in order to survive and do not have time to develop expertise gradually. In the case of Finland, one reason SME's need to internationalize early is that the domestic market is too small and cannot support the needed growth for young SME's. Therefore, the decision to internationalize is usually made early and these companies follow the more modern Innovation related model of Internationalization. The challenge with internationalizing early is that it can put a strain on a SME's resources. These resources are usually limited so the companies need to quickly develop the needed internationalization capabilities so as not to put an addition strain on the resources. The company simply cannot afford to waste time and money on those capabilities that are not so effective.

In order to identify these successful capabilities, a theoretical framework was formed in order to study SME's in the environmental technology sector and find what has worked for them. The framework focuses on how a company can look to its own firm, location and network specific advantages for successful internationalization capabilities. To be effective, the study had to take into account the SME's internationalization mode and stage of growth. The study was conducted on three Finnish SME's, in the growing environmental technologies sector, and several common internationalization capabilities were identified to be helpful in their internationalization process.

The common capabilities that were identified were then categorized together to show not only what capabilities were identified but if they came from firm, location or network specific advantages. Once grouped, the results were then studied to see if combing several elements could create more dynamic capabilities. As a result, three dynamic capabilities were formulated as guidelines. These guidelines are designed so that a SME based in Finland, and in the environmental technology industry, could use

them to help them in their own internationalization process. These capabilities would be most applicable to a SME in the environment technology sector in Finland regardless of internationalization mode or stage of growth.

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APPENDIX 1 INTERVIEW QUESTIONS

1. Confirm company data
 - a. How long has the company been in business, how many employees, etc. (if needed)
 - b. Ask about background of interviewee

2. Determine stage of internationalization/mode of operation (draw timeline)
 - a. What year did the company begin the internationalization process
 - b. Was internationalization planned or just coincidence
 - c. What mode of operation did you use (reseller, JV, direct, etc)
 - d. How many countries are you currently present in

3. Discover which resources/advantages were important when internationalizing
 - a. What people within the organizations were vital to your internationalization process. Why?
 - b. What knowledge/experience in the organization were vital to your internationalization process. Why?
 - c. What advantage did you gain from this location
 - i. Local services (clusters, etc.)
 - ii. Ease of travel
 - d. Did you gain any knowledge/expertise/resources from the target markets you entered (what kind, when?)
 - e. What networks did you use in your internationalization (formal/informal)
 - f. Who were the most important actors in the network?

4. Assess how they developed those advantages and if is combined or single
 - a. What knowledge did you gain from the network
 - b. What abilities unique to this firm made internationalization possible
 - c. Were there any advantages from being located in...

5. Determine whether or not it was successful
 - a. How successful was your internationalization efforts?
 - b. What went particularly well in the internationalization?
 - c. Since there is always room for improvement, what you could have done better?