Abstract: Globalization is an increasingly pervasive factor in the economy, and due to the increasingly international market and competition, it is becoming progressively difficult for firms in traditional, mature industries in high-wage countries to remain competitive. This thesis highlights the case of the Småland-Blekinge region that is performing paradoxically well, largely due to a manufacturing industry that continues to prosper in the region, contradicting conventional predictions regarding economies of agglomeration, industrial manufacturing and competitiveness. Following an extensive literature review on industrial districts, learning and innovation, several key themes are extracted through a coding process based on a series of interviews with representatives from twelve SMEs in the district. The industrial and socio-economic characteristics of the industrial district, including profound diffusion of knowledge through strong informal networks, are found to set the preconditions for learning and innovation activities that take place in the district. The structure facilitates external economies - such as knowledge spillovers - and collaborative innovation, making the aggregate output of an integrated system of many small, geographically proximate firms highly significant – while simultaneously allowing the individual firm to retain one of its most important competitive advantages, namely, its flexibility.

Key words: Industrial districts, socio-economic structure, external economies, SMEs, learning and innovation modes, LMT innovation strategies
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Chapter I: Introduction

Background

Globalization is an increasingly pervasive factor, not only on the international arena, but also on the national and sub-national level (Crafts & Venables, 2001). Decreasing transportation and communication costs, radical technological innovations, competition from low-cost labour countries and a progressively international market, make it increasingly difficult for firms in mature, traditional industries in developed countries to remain competitive; in particular for firms in industries that are located in non-core, or rural regions (OECD, 2011).

The OECD (2011, 2012) concluded in repeated reports that the Småland-Blekinge region - the rural periphery of an urbanized and highly developed country - although being weak in a national context, is performing surprisingly well in an international context, and has thus defied conventional predictions related to theories of economic agglomeration and traditional knowledge about industrial manufacturing and competitiveness. The relative success of the four counties that make-up Småland-Blekinge, is something of a paradox according to OECD (2012), since the four counties have managed to establish and maintain industrial growth and development (measured in productivity growth) despite a relative geographical “isolation” together with comparatively high wages and a comprehensive welfare state. The success of the four counties relies almost solely on *low-to medium technology, and small-to-medium-sized enterprises (SMEs)* according to the OECD (2011, 2012), whose activity in turn depends almost exclusively on supplying major Swedish corporations higher up in the value chain, often located outside the region. What is remarkable about this situation is that the firms in the region have managed to compete successfully in mature, traditional industries which in many other OECD regions and countries have lost out to developing country competition. However, the situation is fragile, since competitive pressure from developing countries continues to intensify, making it increasingly difficult for small firms in high-wage countries, to maintain competitiveness in low-to medium technology manufacturing.
Previous Research

There is an increasing consensus in academic and policy debate, that knowledge, learning and innovation are key factors to achieving economic growth and competitiveness (Boschma, 2013). Innovation and technological changes are however, both in academia and policy discussions, commonly equated with research-intensive, high-technology industries, and institutional frameworks of innovation systems are progressively more adapted and structured to promote high-tech industries, whereas low-technology manufacturing in the past has been deemed incompatible with traditional drivers of a knowledge-based economy (Hirsch-Kreinsen, 2008; Jensen et al, 2007). At the same time, mature and low-technology industries have an employment share of more than 60 percent in most of OECD countries (Palmberg, 2001; Schmierl & Köhler, 2005) and represent more than 90% of the manufacturing output in the European Union, the USA, and Japan (Robertson, Smith & von Tunzelmann, 2009).

Recent research conducted on low-tech and medium-tech industries (Cappellin and Wink, 2009), such as the manufacture of metal goods and textiles, contradicts the mainstream notion that only science-based, high tech industries have an important role to play in the economy and sheds light on the importance of innovation outside R&D intensive sector (Robertson et al 2009). There is, however, a growing awareness that mature sectors are not without challenges, in particular regarding innovation and the necessity to frequently conduct changes and updates in product and process technologies (Hirsch-Kreinsen, 2008; Robertson & Smith, 2008) and that due to the increasingly globalized economy, low-technology activities rarely manage to survive in industrialized economies, but are often subject to relocation to newly industrialized or developing economies (Robertson et al, 2009).

The fact that small, low-tech firms in a mature industry remain competitive in an industrialized economy – as in the case of Småland-Blekinge - is therefore a contradictory phenomenon. The phenomena of successful industries has albeit, been heavily explored by e.g. Marshall (1920) with the “Marshallian Industrial Districts” and the successful performance of traditional industries has been researched, e.g. with the neo-Marshallian industrial districts (Tappi, 2001). Noteworthy is also the strand of research in the 1980-90s, focusing on the municipality of Gnosjö located in Jönköping County, in Småland, where low-tech manufacturing has been very of successful (Karlsson & Larsson, 1993). Gnosjö has a unique social, cultural and institutional fabric,
with a remarkable inter-firm co-ordination and cooperation, with competing firms joining together to handle orders that are too large for single firm to handle, that according to Johannison (2010) is the reason why the district has managed to stay resilient and overcome predictions of demise. Although the entire Småland-Blekinge region is renowned for being one of the most business-friendly in Sweden and the regional business mentality is typically described as ‘toughness, ingenuity and entrepreneurship’ (Regionen, 2014), the research about Gnosjö has however, so far been held exclusive to and believed to be unique for the Gnosjö district. It remains unclear whether the competitiveness of SMEs in the low-to medium technology manufacturing industry in Kalmar County – also in Småland - is due to the same factors as identified in Gnosjö or the result of other preconditions and factors.

Aim and Justification
The aim of this study is to gain a deeper understanding of the production and socio-economic structure of the manufacturing district in Kalmar County, in the Småland-Blekinge region, in order to shed light on how this affects the innovation capacity and competitiveness of low- to medium technology SMEs in said district, in an increasingly globalized economy where learning and innovation is of crucial importance. The main research questions with three sub-questions are formulated as follows;

- **How does the production and socio-economic structure of the manufacturing district in Kalmar County affect the innovation capacity and competitiveness of low-to medium technology SMEs in the industrial district?**
- **What are the main production and socio-economic structural characteristics of the manufacturing district in Kalmar County?**
- **What structural changes have recently taken place in the manufacturing district in Kalmar County?**
- **How do SMEs in the low-to medium technology-manufacturing industry in Kalmar County innovate?**

By illustrating the main characteristics of the manufacturing district in question, light will be shed on both the preconditions SMEs in the district have as well as how these affect the firms’ ability to learn and innovate and hence, their competitiveness. This will
address the identified research gap, having both theoretical implications and empirical implications. At the moment, the case is a paradox, whereas if a better understanding of the underlying factors was achieved, regional policy could be enhanced, both when promoting such factors in the specific region to encourage continued growth, or when attempting to establish similar factors in other regions.

Outline of Thesis

The outline of the thesis is as follows; following this first Chapter, Chapter II will present a literature review of the main theories relating to the investigation of the topic that later is used for the development of interview guides. Chapter III explains the types of qualitative data that are used for the study, followed by (Chapter IV) a comprehensive outline of the research design and method employed in this study, including a discussion of the constraints regarding validity, reliability and generalizability placed on this study due to the employed methods. Chapter V presents the secondary empirical data used in the study, followed by (Chapter VI) an introduction of the actors and the primary empirical results obtained from interviews. Chapter VII gathers all the earlier threads in a discussion of the interviews based on the theoretical framework, followed by Chapter VIII that summarizes the whole study's results and highlights the conclusions made. The final chapter also includes suggestions for further research on the topic.
Chapter II: Literature Review

There is an extensive amount of research conducted in fields related to industrial districts and low- to medium technology industries, as well as on knowledge, learning and innovation. This chapter will give an overview of the various strands of theories, followed by a theoretical synthesis that gathers the different theories and demonstrates their inter-relatedness in the context of this study.

The Marshallian Industrial District

Alfred Marshall (1920) recognized the presence of agglomeration forces in ‘industrial districts’, when he identified the rise of localized industries and their enduring anchoring in specific districts. Agglomeration economies occur when firms receive increasing returns to scale, either due to factor endowments, policy advantages, the development of new transport facilities or the decline in transport costs. In agglomerated areas, there tends to be a spatial concentration of activity, i.e. the location of a disproportionate large number of firms in a specific market. The prevailing economic discourse had for a long time been that the factory system where manufacturing processes are concentrated with a high degree of vertical integration was technically superior to that of technically less integrated but geographically concentrated production systems (Becattini, 2002). Marshall (1920) however, argued how a system of many small, geographically concentrated factories, with an extensive division of labour between firms specialized in different phases of the value chain of the same production process, was an efficient system of manufacturing and an alternative to the traditional model of large, vertically integrated production units. Marshall (1920) argued that economies of agglomeration, that traditionally were thought to be limited to large-scale production units, can in fact be secured by small factories, provided that there was a large number in the same trade, spatially concentrated in the same district.

These benefits Marshall termed ‘external economies’ (Becattini, 2002). The external economies, or the agglomeration forces as they are described by Duranton and Puga (2004), are the positive effects exogenous to the firm’s productive process and are the key factors behind innovation capacity in localized industrial districts (Tappi, 2001; Trippl & Bergman, 2013; Belussi & Caldari, 2008; Duranton & Puga, 2004);
(i) *Knowledge spillovers or Learning Mechanisms*: circulation of local knowledge, hereditary skills and the possibility to monitor, learn, and imitate successful firms will provide firms with knowledge beyond what they can achieve on their own;

(ii) *The rise of supplier industries and subsidiary trades or Sharing Mechanisms*: the growth of specialized supplier industries are of great advantage to the local firms and include the gains from a wider variety of input suppliers in the form of forward and backward linkages, allowing firms to procure intermediate goods at lower costs;

(iii) *Labor market effects or matching mechanisms*: localization of industries will promote the emergence of a highly specialized labor market which local firms can take advantage of and improve the expected quality of match between firms and workers.

The Marshallian industrial district is further characterized by a *combination of competition and cooperation*. The competition stems from the presence of many firms, while cooperation stems from the fact that firms specialize in particular phases of the productive process, each phase not being isolated from but rather functional to others resulting in firms that ought to be considered competitors, cooperating to compensate for their individually small size. It is this informal cooperation, without any centralized control, that allows small and medium firms to compete against large firms (Belussi & Caldari, 2008).

Marshall’s work however, went beyond pure economic factors, and also included socio-cultural aspects to explain economic development in industrial districts, including the concept of the ‘Industrial Atmosphere’, i.e. the presence of a “collective identity and shared industrial expertise that gradually develops in industrial districts and facilitates interaction, localized knowledge circulation, and the creation and diffusion of innovation” (Tripl & Bergman, 2013;4), thus touching upon the mutual influence between the economic and the social system, where the economic relationships are influenced by the social ones and vice versa (Tappi, 2001; Becattini, 2002).
The Neo-Marshallian Industrial District

Marshall's ideas of localized external economies of scale were revitalized by Italian researchers in the 1970s-80s, based on the industrial development in the so-called Third Italy, which - despite being located in areas that ought not have been attractive according to theories of industrial localization (due to insufficient infrastructure), seemingly outdated organizational forms (family owned SMEs), being active in mature sectors with limited growth prospects (mainly textiles, leather goods and furniture), the initial technological superiority of industrial giants as well as the comparatively lower labor costs of other competitors – had remarkably prosperous industries in terms of employment, sales and profits as well as exports (Becattini, 2002; Trippl & Bergman, 2013; Rabellotti et al 2009; Tappi, 2001).

The neo-Marshallian industrial district preserved several features of the original Marshall district, such as external economies and the competition-cooperation factor (Belussi & Caldari, 2008; Becattini, 2003). In the neo-Marshallian ID however, the role of the ‘industrial atmosphere’ and the socio-cultural underpinnings of economic activity in a region (Tappi, 2001), was emphasized, with Becattini (1990, 2002) in particular highlighting the importance of a complex socio-economic setting. Here the social community and the industrial sphere tended to merge, and firms frequently engage in intensive interactions and exchanges of personnel between suppliers and customers, and cooperation amongst competitors to solve problems of over-capacity, respond to new demands of flexibility, share risk, stabilize markets and share innovation. There are therefore, two aspects to the neo-Marshallian industrial district; the ‘industrial district’ with the vertical disintegration and horizontal integration between firms, the division of labour and productive specialization (Bellandi, 1995) and the ‘local social system’ embedding the former, consisting of the local socio-economic productive system, i.e. the ‘industrial atmosphere’ (Becattini, 1990).

Characteristics of the Neo-Marshallian Industrial District

The ‘industrial district perspective’ focuses on the economic relationships and networks, and productive structures in the district. Becattini (1990) stresses that firms tend to specialize in one or a few phases of the production process. The firms of the district usually belong to one industrial branch, but can in a broad sense be divided into two groups: small subcontracting firms, performing routine activities that usually include
production of components of the final product and are often subcontracted by the firms manufacturing the final product; and the core industry that acts as final assemblers and who employ resources in innovative activities, such as engineering, innovation, marketing and product design and thus are the informal leading firms that interact with the market (Alberti, Sciascia, Tripodi, & Visconti, 2008; Tappi, 2001).

The second perspective focuses on the local social system of a relatively homogenous system of historical and cultural heritage, ethic values of work and activity, together with a set of institutions, firm linkages, and cultural, social and communitarian linkages between workers, entrepreneurs and local institutions (Perulli, 1990; Tappi, 2001). Granovetter’s (1985) refers to this as ‘embeddedness’, i.e. that behavior and institutions are constrained by ongoing social relations and that inter-firm linkages between supplier and customer are dependent on informal ties and trust that go beyond the contractual relationship (Harrison, 1992). In fact, the prevalent embeddeddnes in the system is a reason for the paradoxical practice of co-operative competition (Harrision, 1992). Dei Ottatti (2002) adds that collective capital such as trust and social integration, which is essential for the formation and maintenance of industrial districts, is not only derived from a common socio-cultural background, but dependent on conscious human action. The key characteristics of the dynamic development in this industrial district can hence be summarized as follows (Rabellootti et al 2009):

i) spatial concentration and high specialization among firms in different phases of the production process creating considerable division of labour;

ii) long-standing traditions and competences in craft work, entrepreneurship in a local innovation culture, and the management of mainly small, often family-owned firms which are more flexible towards market change;

iii) a widely shared value system, based on a relatively homogenous social and cultural background, diffused through a dense network of formal and informal institutions, providing the underpinnings for local collaboration and creating a strong local identity and solidarity;

iv) Intense interaction between the industrial sphere and the local social sphere;

v) Co-operation and competition taking places simultaneously in different fields, with firms having manifold relationships to each other, as a result of the ‘embeddedness’ of the industrial district (Ock Park, 1996);
Significant role of local and regional policy organizations, providing infrastructure, collective services and collective strategy, and in the role of ‘social coordinator’, creating a favorable institutional context responsive to small firm needs (Alberti et al, 2008; Cooke 2001; Trippl & Bergman, 2013).

The combination of these factors results in “flexible specialization”, i.e. a competitive strategy that depends on highly specialized firms, equipped with multi-use equipment, multi-skilled personnel and an innovative leadership, which allows the firm to remain flexible in the face of changing market conditions and business environments (Perulli, 1990). Flexible specialization allows SMEs to compete with the large-scale production of large enterprises (Capecchi, 1990; Ock Park 1996) and has even been acknowledged as an alternative to traditional large-scale, mass production (Pyke, Becattini, Sengenberger, 1990; Pyke & Sengenberger, 1992).

The transformation of the Neo-Marshallian Industrial District
Changing external conditions in the economy, with the increasingly globalized nature of the economy, radical technological innovation, diversification and entry of external firms, were the main driving forces behind the structural changes that have taken place in the neo-Marshallian districts since the 1990s (Belussi & Sedita, 2009). The long-term competitiveness and growth dynamics of the neo-Marshallian industrial district was increasingly doubted (Rabellotti et al, 2009). The criticism focused on the limitations of a self-sustaining production system which is dominated by small firms and e.g. Bianchi (1998) argues that the small size and specialization in traditional sectors was a major structural weakness, preventing the districts to respond to changing external conditions. Nevertheless, some empirical evidence point to the opposite, i.e. that these districts have performed better than average (Becattini & Dei Ottati, 2006).

Despite common characteristics, different districts followed highly heterogeneous evolutionary trajectories (Belussi & Sedita, 2009). One reason for varying district dynamics might be strong individual firms, whose individual firm strategies according to Belussi, Sedita & Pilotti (2008) can shape micro-founded changes. The various evolutionary trajectories include;
- Complete disappearances due to inability to compete in low-cost production against manufacturers in developing countries;
- Structural change and moving toward the service sector;
- Changing structural features and shifting specialization from the production of final goods to that of the machinery required for their manufacture;
- Enhancing technological capabilities and upgrading the quality of products and thus increasing specialization in medium-high quality products (Becattini & Dei Ottati, 2006; Rabellotti et al 2009).

In general, two common overlapping trends can be identified. First, a *hierarchization* with small industrial firms increasingly being replaced as the main dynamic agent and driving force of structural change by medium-sized firms, often organized in business groups. The transition to medium-sized firms and groups was according to some authors a necessary change, since small scale was an obstacle to participation in global value chains, outsourcing and innovation (Rabellotti et al 2009; Randelli & Boschma, 2012). Second, a transition from the traditional deep specialization within the district’s own geographical area, to increasing *internationalization*, including outsourcing of intermediate, low value added activities, the creation of new production units abroad closer to the potential market, and stronger integration into global production networks and value chains, often creating local, small multinational companies, simultaneously as new MNCs entered the districts (Belussi, 2011; Belussi & Sedita, 2009; Bigarelli & Solinas, 2003; Rabellotti et al 2009). The importance of geographical proximity to build trust for the formation and functioning of districts decreased in favour of nonlocal embeddedness according to Ock Park (1996).

Due to increased integration into innovation systems at higher spatial levels, establishment of more complex relationships ‘inside’ and ‘outside’ the district with political and economic institutions as well as increased internationalization, the neo-Marshallian industrial district went from being a relatively closed system, to a more open one. With various transformations in terms of sector specialization, organizational forms, internationalization and innovation strategies, the industrial districts moved towards much greater heterogeneity (Rabellotti et al 2009).
Innovation Strategies
There is strong theoretical and empirical evidence supporting the notion that agglomeration economies might be very conducive to innovation activities (Duranton & Puga, 2004; Fritsch, 2000; Storper, 2011). Spatially concentrated districts might have an efficient matching of local labour skills and extensive knowledge spillovers which promotes mainly incremental - but nonetheless important - process and product innovations (Marshall, 1920). On the other hand, due to the specialization, the width of the skill base of the labour pool can be limited, which might result in poorer learning opportunities according to some authors (Boschma, Eriksson & Lindgren, 2013).

Innovation in Industrial Districts
Learning and innovation activities in the neo-Marshallian industrial district is conditional on the districts socio-economic structure, with informal relations and diffusion of tacit knowledge, exchange of ideas and information and the ease of transmission via intense, face-to-face user-supplier linkages in strong local networks, and also due to the competitive-cooperative relationships amongst the firms (Becattini, 1990; Belussi & Pilotti, 2002; Capello & Faggian, 2005). A district’s innovation capacity thus depends to a significant extent on the willingness of actors to cooperate and combine different expertise to continuously improve products and processes, and on genuinely shared goals. Consequently, innovation activities are here often highly collaborative in nature (Ottatti, 2002; Trippl & Bergman, 2013).

However, the availability of knowledge in districts can be questioned. Since tacit knowledge is personal and highly specific and cannot be easily transferred by word-of-mouth, it is focused within a few small nodes (Lissoni, 2001). This relates to the role played by leading firms - often medium-sized and/or MNCs - which is that of a bridge between the local small firms and non-local knowledge. Allen (1977) introduces the concept of ‘gatekeepers of knowledge’, which are a small group of actors at the core of an information network, who are more exposed to external sources of information. ‘Gatekeepers’ are the first to absorb, translate and code external knowledge, which later other actors in the region can adopt (Morrison, 2008).

By acting as filters that screen and select external knowledge for the local knowledge system, leading firms affect the quality of knowledge that is diffused in the district and are thus, not only the core of the subcontracting network, but also of the
information and knowledge network. By shaping the nature of knowledge transfer within the district, gatekeeper-firms play a central role in shaping the overall innovation capacity as well as the district itself (Boschma & Ter Wal, 2006; Lissoni, 2001; Rabellotti et al, 2009). This type of learning system resembles Belussi and Pilotti’s (2002) ‘Dynamic evolutionary system’, with a few very innovative firms in the core, around which the district is organized. Other learning systems include: ‘Weak learning systems” (with focus on craft-based skills and few or non-existent innovation opportunities) and ‘Systems absorbing some outside circuits of knowledge’ (where firms are able to combine existing internal knowledge with new, external ideas and thus activate knowledge absorption processes).

Due to its inherit nature of small firms specialized in traditional, mature industries, which per se, require modest investments in formal R&D, technological innovation activity in neo-Marshallian districts is of modest levels (Asheim, 2000; Becattini, 1991; Bellandi, 1992; Dei Ottati, 2002; Rabellotti et al 2009; Tödtling, 1992). Nevertheless, SMEs in these districts carry out extensive development in the daily operations, and incrementally upgrade product and process quality and enhance the flexibility of the organization structures. It is this continuous adaptation and innovation on which the competitiveness of the district depends (Belussi & Pilotti, 2002; Dei Ottati, 2002; Rabellotti et al 2009).

**Forms of Knowledge and Innovation**

The innovativeness of a district not only depends on its internal social capital, but also on the access to and ability to absorb new information and knowledge (Cohen & Levinthal, 1990; Rosenfeld, 2003; Tödtling & Trippl, 2005). Two different modes of learning and innovation can be distinguished; The *Science-Technology-Innovation (STI) and Doing-Using-Interacting (DUI)* approach by Jensen, Johnson, Lorenz and Lundvall (2007) describes different learning mechanisms and depicts two ideal modes of learning and innovation that are associated with different knowledge-sourcing activities at different spatial scales (Trippl, 2011). The STI mode is common in research-intensive, high-tech industries, whilst DUI dominates in traditional industries and unlike the former, its learning mechanisms are less based on formal scientific methods, codified science, and technical knowledge, and aims
less at developing radical innovations, and more on practical learning-by-doing (Heidenreich, 2009; Hirsch-Kreinsen, 2008).

The two modes distinguish between global and local knowledge, and explicit (know-what, know-why) and implicit (know-how, know-who) knowledge, which according to Jensen et al (2007) all are important for innovation, although the DUI mode depends to a greater extent on local and implicit/tacit knowledge sources, and STI on the opposite. Implicit/tacit knowledge in the DUI mode is mostly acquired on the job, as employees are faced with on-going changes and practical problems that need solving, and additional know-how and know-who knowledge is sourced almost exclusively from local suppliers and clients (Grillitsch & Trippl, 2013). The transfer of tacit knowledge is conditional on close face-to-face interaction and relational and geographical proximity amongst actors, in order for this type of experience-based learning to succeed (Amin & Cohendet, 1999).

Due to the focus on informal learning-by-doing and locally sourced knowledge, the majority of innovation activities that occur in DUI firms are incremental modifications of products and processes, based on existing knowledge. The DUI-mode of learning often occurs as an unintended by-product of the firm’s regular production and marketing activities but Jensen et al (2009) argue that the DUI-mode can be intentionally supported by building structures that enhance and better utilize knowledge, for instance, by organizational practices that promote learning and knowledge exchange (Jensen et al, 2009). Isaksen and Karlsen (2011) argue, however, that no ‘pure’ form exists, but that firms and industries often rely on a combination of the two modes. In fact, Asheim, Boschma and Cooke (2011) and Robertson and Smith (2008) point out that it is increasingly important in the contemporary economy - especially for firms in mature industries - to manage a diverse array of knowledge from different sources, channels and spatial scales and it is even suggested that firms that combine STI and DUI modes of innovation are more innovative than those that rely on a single mode (Isaksen & Karlsen, 2011; Jensen et al, 2007; Trippl, 2011). In other words, in order to remain competitive, district firms need to go beyond dependence on linkages with actors inside the district (Cafferata & Mensi, 1995).
LMT Innovation Strategies

Traditional industries - including sectors such as manufacturing of machinery and equipment, basic metals, wood, paper and pulp, rubber and plastics (Hirsch-Kreinsen, Jacobson & Robertson, 2006) - as those found in the neo-Marshallian industrial districts, often have low or none R&D expenditure (i.e. 0-3.0% R&D expenditure to turnover ratio) and are thus referred to as 'low-and-medium-technology' (LMT) industries by Hirsch-Kreinsen (2008). Although LMTs invest less in formal R&D, they nevertheless have strong innovation capacity and generate incremental innovation developments in products and processes that in aggregate form have a considerable impact. Three typical innovation strategies have been identified in LMT firms (Hirsch-Kreinsen, 2008):

a) *Step-by-step product development*; individual product components are continuously modified material-, function- and quality wise, without altering the structure and technological principle of the product itself. These products, characterized by low complexity, come from slowly changing process technologies due to high costs in changing, and include suppliers to the automotive industry and manufacturers of metal products and wood;

b) *Customer-oriented strategy*; aims to improve market position and is common in industries that demand continuous variation of product lines, e.g. textile-clothing, leather and furniture industry, where the design and the technical upgrading of products, rapid response to changing customer preferences, skilful branding and expansion into new market segments is important.

c) *Process specialization*; aims primarily at optimizing and continually cultivating technical and organizational process structures. Typically, this includes industries with high levels of automation and integrated process technologies that can achieve extremely high levels of process performance and precision, such as the woodworking industries, the manufacturing of sheet forming, plastic parts, mechanic components, paper and parts made of aluminum. As a byproduct of improving technical and organizational processes, the product quality is improved as well.

Although these strategies differ regarding main objectives, business areas and developments paths, all are characterized by the reliance on in-house experience-based knowledge and learning-by-doing, a high importance of embodied technologies and
strong network cooperation with specialized suppliers and to some extent, customers (Abernathy & Utterback, 1978; Hirsch-Kreinsen, 2008).

Theoretical Synthesis
Individual small firms may face considerable difficulties in competing with large scale production units, due to the latter's access to economies of scale. Although these benefits often are difficult to attain by individual small firms, Marshall (1920) early on observed several 'external economies' that can be secured by small firms, provided that there was a large number of them spatially concentrated in the same industry and district, and specialized in different phases of the same production process. Such industrial districts offer an efficient manufacturing system alternative to the traditional mass-producing production units. The original Marshallian Industrial District however, does not differentiate between different types of industrial districts, whereas the Neo-Marshallian school offers an extension suitable for the case of this study, i.e. its focus on clusters of small firms in traditional industries and its insights on processes of change in such industrial districts.

The structural characteristics of the district, e.g. the age and type of industry as well as the networks internally and externally will affect the sources and spatial scales firms source knowledge from, as well as how firms apply this knowledge into innovation activities – either via formal Science-Technology-Innovation, via informal Doing-Using-Interacting or a combination of both. Firms and industries in the traditional, mature sectors are dominantly low- to medium technology level industries, which is another important factor to take into consideration, since the technology level will affect both the capacity and outcome of innovation activities. In the case of low- to medium technology - the outcome will most likely be incremental innovations. However, despite common traits, low- to medium technology industries can innovate along slightly different patterns, regarding process, product and design. Consequently, the innovation ability and strategy, as well as outcome of any innovation activity, is indirectly conditional on the industrial districts characteristics, and in order to fully grasp how individual firms learn and innovate, it is crucial to establish district’s structure.
Chapter III: Qualitative Data

This study employs both primary and secondary qualitative data. For the first part of the study, secondary sources – i.e. data generated in another purpose than that of the study in question (Ghauri & Gronhaug, 2010) – from reports and data, mainly published by the OECD and local regional policy organizations, will be employed. The data extracted from the secondary sources will allow a better understanding of the context but moreover aid in the identification and narrowing down of the area of research (Merriam, 2009). With the aid of the secondary sources, the suitable variables will be extracted, constituting the basis for the creation of appropriate themes and questions for the second part of the study, that is, the collection of primary data for the specific purpose of the study (Ghauri & Gronhaug, 2010) via qualitative subject interviews.

The firms that are the focus of this study are Small-and-Medium-Sized Enterprises (SMEs) and the definition that will be used throughout this paper is; Micro enterprises and small enterprises have 1-10 and 11-50 employees respectively, and turnovers and balance sheet totals of less than €2 and €2-10 million respectively, whereas medium-sized enterprises have 51-250 employees, an annual turnover not exceeding €50 million euro and/or an annual balance sheet total not exceeding €43 million euro (European Commission, 2006).
Chapter IV: Methodological Framework

The aim of this study is to develop new rather than confirm existing hypotheses, and the study thus has a qualitative ‘exploratory’ design (Saunders, Lewis & Thornhill, 2007). The main advantage of conducting an exploratory study is its flexibility and adaptability to new, emerging facts (Adams & Schvaneveldt, 1991). There are three principal ways of conducting exploratory research, including literature search, expert/subject interviews and focus group interviews (Bryman, 2012). This study applies a combination of the first two methods; firstly, a thorough literature search is conducted to establish context and to identify the relevant theoretical framework, on which the second part - in-depth subject interviews - is based.

Aim of Interviews
The aim of conducting interviews was both to discuss on a more general level the region and its industrial districts to receive a general idea of the context, and to extract deeper insights into matters such as industrial organizational forms, networks, co-operation and competition, local institutions, and learning and innovation. The reason for going about this in a somewhat circumspect manner was to avoid asking direct questions of ‘why’ and ‘how’, to avoid skewed answers due to feelings of pride or bias.

Sampling for Interviews
A probability-sample is rarely possible in a qualitative study, but it is suggested that a purposive method of sampling is applied instead (Merriam, 2008; Saunders, Lewis & Thornhill, 2007), where critical cases are selected to further the development of concepts and to explore the relationships between these cases. The sample of SMEs will be drawn from the county of Kalmar, with the region of Blekinge first being excluded since its characteristics do not correspond to the aim of this study, with its high share of high-tech industries and large firms. Considering the similarities found in the remaining three counties, the narrowing out of Jönköping and Kronoberg ought theoretically to be random. By focusing on one county, a more thorough collection and analysis of data can be conducted, than if the sample had been spread thinly across all four counties.

The second step in the sampling process was to select the workshop-vehicle branch, both for its significance in share of employment and number of firms, but also
traditional and mature nature. The third step was to select leading firms in the industry – both for analytical purposes and further access to samples - and using the ‘snowball method’, suppliers of the leading firms were added to the sample. In addition, based on an overview by RFKL (2012c) of the different subsectors in the branch, the local Näringslivsregistret (Kalmar Kommun, 2014), was cross-referenced with a national industry network (Metal Supply SE, 2014), which allowed me to locate additional micro and small firms in the specific branch in the region, and those with available contact information were included in the sample and contacted. Since it in hermeneutics is not possible to know in advance how many interviews are needed, the size of the sample was determined by ‘empirical saturation’ (Corbin & Strauss, 2008); i.e. when no new information emerges beyond what already is established. I concluded that after twelve interviews clear enough patterns had emerged from the empirical data to cover the theoretical framework and fulfill the aim of the study.

The Interview Technique
In exploratory studies, semi-structured interviews are recommended to gain deeper insights than a more rigid, structured interview would not allow and where an unstructured interview would make comparisons more difficult (Saunders, Lewis, Thornhill, 2007; Wisker, 2009). Semi-structured interviews, which are quite common in qualitative research in general, are based on using key themes, flexible questions and follow-up questions (Merriam, 2009). A semi-structured interview has several benefits, including leaving room for variation in the question, which allows the interviewer to react and adapt the interview according to the development of it, whilst having a structure for support (Ghauri & Gronhaug, 2010). Using such a technique allowed me to be as ‘non-directive’ (Seale, 2000) as possible whilst being guided by a topic guide, which allowed for greater freedom when asking open questions, ensuring that the interviewees were not pushed into desired answers, fitting the predetermined theoretical framework. For this reason, the questions were rarely asked in the same order or manner, but brought up according to how the interview developed. This method allowed for at times unplanned, but nonetheless valuable information to surface, which would not have been possible with an entirely direct interview technique.

A guide with themes that would be brought up during the interview was sent out to the interviewees a few days before hand and a more developed version of the
interview guide – see Appendix Item 1-2 for both guides – was used as point of departure during the interview. Managers of various positions were interviewed in medium-sized firms, whereas in micro- and small enterprises, the interviewee was often the current owner and/or the founder, since it was reasoned that these ought to have the greatest insight on the topic. The interviews were all conducted at the offices of the interviewees to ensure convenience and that the interviewees feel at ease during the interviews. For the same reason, the interviews were conducted in Swedish, which is the mother tongue of all interviewees. Thus, all direct quotes from the interviews were carefully translated into English by the interviewer to avoid skewing the answers. The interviews were recorded and following the interview, transcribed in Swedish. The transcript was then sent out to each respective interviewee before it was coded; not only because obtaining feedback from respondents before publishing the results is an ethical matter (Svensson & Starring, 1996) but also yet another way of ensuring validity in the study (Silverman, 2001). By receiving respondent feedback, I could ensure that the answers were correctly understood and interpreted and avoid imposing my own bias on the answers.

Operationalization

The collected data was analyzed using ‘Qualitative content analysis’ which is the most prevalent approach to qualitative analysis of data (Bryman, 2012) and Kvale and Brickman (2009) explain it as aiming to identify underlying themes in the material, coding it into categories, allowing for an overview of how frequent specific themes occur and comparison between themes. More specifically, a combination of thematic analysis – i.e. the extraction of key themes or codes from qualitative data for analysis (Bryman, 2012) – and ethnographic content analysis (ECA)- which entails initial categorization of themes/codes, while allowing for refinement of these and the generation of new ones during the process of analysis (Altheide, 1996) – was employed.

As a basis for the aforementioned, a form of ‘open coding’ was used. Open coding, which is introduced together with grounded theory, is the most commonly used framework for analysis of qualitative data and can be summarized as the “process of breaking down, examining, comparing, conceptualizing and categorizing data” (Straus and Corbin, 1990:61), yielding concepts that are grouped and used to form categories. A thematic analysis in combination with open coding will imply a more interpretative
approach, where the researcher, by probing deeper with follow-up questions, not only searches for manifest but also latent content, to gain a better understanding of events and phenomena (Bryman, 2012).

The operationalization of the analysis plan was executed as follows; first and foremost, a coding-schedule based on the pre-existing theoretical framework was created. This coding schedule was kept flexible throughout the period of data collection, to allow for the generation of additional codes. The data generated from interviews was following the interviews broken down into these themes, and then examined and compared. This allowed me to identify consistencies, inconsistencies and trends between the interviewed actors. The themes were later used to discuss, in the light of the theoretical framework, the industrial and socio-economic structure of the district, and preconditions and strategies of firms in the manufacturing district.

Validity, Reliability and Generalizability
Secondary sources of data that originate from official documents published by governmental organizations, firms or other actors of interest can be questioned due to the risk of bias (Merriam, 2009). The risk of bias from interviews is naturally much higher, especially due to the use of purposive sampling, which from an early start entails a ‘planned bias’, but the bias of both the secondary and primary sources will be controlled for using validity and reliability tests.

Internal validity (that a conclusion is correctly derived from the original premises) (Merriam, 2009), external validity (that the study is measuring what it actually intends to study and thus can be generalized), and reliability (the stability of the measurement instruments and variables, ensuring that the outcome is not merely random) (Ghauri & Gronhaug, 2010), are necessary to take into consideration to produce a valid and reliable results (Yin, 2009). An efficient method to confirm validity in qualitative studies is triangulation - a method of applying several perspectives to the research, to ensure a holistic description of the studied phenomenon (Svensson & Starring, 1996; Wisker, 2009). This study will employ data and method triangulation; triangulation of data presented in the OECD reports with data from two other sources, namely leading firms, and micro and small enterprises will strengthen then validity of both secondary and primary data sources. The study’s reliability will be strengthened by ensuring transparency throughout the process, by recording and transcribing
interviews and giving account for longer extracts of data in the final report, including the questionnaire used during the interviews (Silverman, 2001) and using direct quotations (Oliver, 2011). The transcripts themselves are available at request, but not published due to wishes of confidentiality.

The choice of a qualitative, explorative research design, conducted using document analysis and interviews, will limit this study's epistemological claims. Since the study will draw a sample from a limited number of firms in one county, and just one representative from each organization, and due to changing conditions affecting the subjectivity of the respondents, it could be argued that this study cannot give an entirely generalizable account of the preconditions, challenges and strategies of firms in the entire district. It is however, not the intention to make such claims due to the aforementioned reasons. Instead, based on the transparent sampling technique and using analytical-theoretical generalization (Yin, 2009), I will be able to extend the theory to which the phenomenon studied is linked. This will allow for more extensive applicability of the study than a generalization of the study itself would permit.

Ethical Considerations
The matter of ethical issues needs to be taken into consideration to ensure the validity of primary sources in particular. When conducting interviews, the results might be limited depending on the researcher’s abilities of collection and interpretation, and the high risk of subjectivity, including the risk of unethical procedure where the researcher chooses between the available data to present the desired results (Kvale, 1997) is also present, as is the common issue of leading questions in qualitative interviews. However, leading questions can be appropriate to use to confirm the reliability of the interviewer’s interpretation of the answers, thus reducing the risk for misinterpretations of unclear answers. In addition, the ethical aspect of the study will be ensured by obtaining feedback from the respondents before publishing the results; doing this, I can ensure that I have correctly interpreted answers and avoid imposing my own bias on the answers. Most importantly, by receiving feedback, I could avoid publishing information that the interviewed firms wished to keep confidential. Due to the significant number of interview partners who wished to remain anonymous, I decided to give all respondents complete anonymity and simply refer to them as either 'Micro, Small or Medium', depending on their size.
Chapter V: The Manufacturing Industry in Småland-Blekinge

This chapter provides a comprehensive overview of the regional context and the industrial district in Småland-Blekinge, as well as the industrial profile in Kalmar County specifically. Based on OECD (2011, 2012) reports as well as local government publications, the purpose of this section is to provide a context for the following chapter.

The Regional Context
The OECD 'Territorial Review of Småland-Blekinge' (2011, 2012) examines the Swedish region of Småland (counties of Jönköping, Kronoberg and Kalmar) and the county of Blekinge, with all four counties corresponding to the OECD Territorial Level 3 (TL3) Eurostat classification. More specifically, the four counties, characterized by low overall density of population, are classified as 'predominantly rural' TL3s \[1\]. The region is characterized by levels of income and GDP per capita below the Swedish average – a gap that has not decreased in late years. Leading up to the recent crisis, three of the counties recorded GDP growth rates per capita either along or below the national average and Kalmar County, which had the second lowest initial GDP per capita, achieved the lowest growth rate, due to industrial restructuring, with several large manufacturing industries disappearing. The four counties were severely hit by the 2008 crisis, and this is partly a reflection of the region’s sectoral profile, with specializations in manufacturing which implies higher exposure to fluctuations in the business cycle and trade contractions.

Although the counties perform unspectacularly in a Swedish context, in an international comparison with other ‘predominantly rural’ TL3 regions with high initial productivity levels, but low productivity growth rates, Småland-Blekinge consistently exceeds the average rate of productivity growth by almost one percentage point (0.85) over the period of 1995-2007; amounting to a total productivity premium of almost 11 \% over the period and only 30\% of all high-productivity rural regions have recorded higher rates. The initial levels in the region were well above the OECD average at the beginning of the period, suggesting both that the counties are relatively wealthy to start with but also dynamic by OECD standards (OECD, 2011, 2012).

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\[1\] When more than 50 \% of the population lives in rural communities (OECD, 2012)
The Industrial District

The entire Småland-Blekinge region is, measured in production figures more specialized in manufacturing than Sweden in general. Småland in particular is specialized in low- to medium technology manufacturing industries, with little evidence of any trends towards high-tech sectors, with the counties having the highest share of employment in manufacturing in the country (ranging 35-43% of total employment in non-financial business) with the Swedish average being 23.5%, and the lowest shares in employment in services (47-51% compared to the national average of 63%). The economic structure of the counties is rather similar, with the three Småland counties to a significant degree being specialized in various sub-branches of manufacturing, such as the manufacturing of plastic, rubber products, machinery and equipment. Nevertheless, despite the similarities, the business cycles of the counties frequently diverge, due to the small size of the economies, making the development of one or two large employers highly significant (OECD, 2012).

Another common characteristic of the counties is a strong small-business-culture; with the industrial fabric in three of the counties mainly consisting of SMEs (the exception is Blekinge, which has the largest share of employment in large firms in Sweden). These SMEs are to major part subcontractors and increasingly second-level subcontractors to e.g. the automotive industry. It is these low-to medium technology SMEs – which mainly supply major Swedish corporations outside the region - that have sustained the counties’ prosperity according to OECD (2011). In general, knowledge-intensive enterprises remain underrepresented in all three counties of Småland. Although there has been some attempts to expand into more service- and technology driven industries, this has not been enough to lift the region from the being the least specialized counties in knowledge-intensive industries in country; e.g. Kalmar has the second lowest share of knowledge-intensive activities in Sweden. Once again, Blekinge is the exception, with the third highest specialization in high-technology industries in Sweden. The region’s strong specialization in LMT manufacturing could according to OECD (2011, 2012) represent a challenge for future growth, as competitive pressure from other regions and countries with lower labor costs increases.

The traditional subcontracting business model found in the region is common to the Swedish industrial culture, with a few large multinational corporations on which more or less the whole region’s development depends, and with backward
linkages all the way down to local SMEs. However, many of these clients are not as
‘Swedish’ anymore (e.g. in the automotive industry) and the SMEs increasingly face the
risk of first-level subcontracting being outsourced to lower-wage countries. The OECD
(2011, 2012) recommends breaking away from the subcontracting business model,
which not only will make SMEs less dependent on few large corporations, but also
increase their control and flexibility – two attributes that will be important in the future
economic framework. However, although SMEs in the past have been considered
limiting due to the difficulty of mass-production in such enterprises, today “[SMEs] are
the engine of the European economy. They are an essential source of jobs, create
entrepreneurial spirit and innovation in the EU and are thus crucial for fostering
competitiveness and employment” (European Commission, 2006:3) and having a SME
industrial structure, is believed to be beneficial for retaining competitive advantages in
an increasingly globalized economy, since such organic business structures allow for

As of late, several action plans have been implemented to strengthen the
regional industry, including ventures such as ‘Trästrategi Småland’, Industriellt
Utvecklings-centrums Innovationsarbete’, interaction between the Linneaus University
and the business sector through the establishment of Linneaus Technical Center and
Information Engineering Center. There are also plans to establish a Technical College in
eastern Småland. To support internationalization in the region, ‘consultation checks’ are
offered by the Regional Council amongst other things (RFKL, 2012b). The OECD (2011,
2012), RFKL (2012a) and Tillväxtverket (2012) have however, identified several
challenges that firms in the region are facing, such as the dominance of a low-skilled
work force and lack of a high-skilled work-force, and poor infrastructure affecting

Industrial Profile of Kalmar County
According to SCB (2012), Småland-Blekinge has 51,756 firms registered, with 14,251 in
Kalmar County. Of these 90 % are micro-enterprises with 0-10 employees (RFKL, 2013).
Micro- and small enterprises employ close to 50 % of the workforce, but micro-firms are
growing both in employment-share and value added (12 and 14% respectively), closely
followed by small firms with 11-50 employees in employment share and value added (ca
5 and 10% respectively). Medium-sized firms are performing well seen to employment-
share (10% annually) but only growing 5% in value added. Large firms, with +500 employees are growing negatively in both aspects (Grufman Reje, 2014). The manufacturing industry in turn accounts for 14% of firms in the county, namely close to **2000 firms** (Regionfakta, 2014) and although the manufacturing industry has seen a drastic decline in the number of employees of 21% between 2000-2008 (RFKL, 2012a), it still represents a third of the Gross-Regional-Product, and employs 25% of all work force in the county (RFKL, 2013) – whereas the national average lies at 19% (Oskarshamn Kommun, 2014). Different sub-branches of the manufacturing industry, that all are largely composed of SMEs and involved in low-to-medium technology manufacturing, can be identified in the county according to Grufman Reje (2014);

- Workshop and vehicles (400 firms and 20% of all employees, but negative growth in employees of 15% annually);
- Construction (1300 firms and 14% of all employees, but with annual growth of employees of 30%);
- Wood and furniture (180 firms and 6, 4% of employees);
- Electronics (<100 firms and 2, 8% of employees);
- Plastic (<100 firms and 2% of all employees);
- Paper/pulp (<50 firms and 2% of employees).

RFKL (2012a) presents comparatively high value-added figures for the different branches, ranging from 900 000 SEK/employee in the workshop-vehicle branch to 300 000 SEK/employee in the wood and furniture branch. However, these figures can be misleading: the number for workshop-vehicle is heavily influence by the five largest firms – Scania, Xylem, Metallfabriken Ljunghäll, Gunnebo and Elajo Mekanik. These firms not only employ half of the work force in the branch, but with these excluded, the remaining firms – which mainly are subcontracting micro- and small enterprises - only have a value-added of 500 000 SEK/employee.
Chapter VI: Presenting the Actors and Interviews

This chapter will first briefly introduce the actors that participated in the interviews in the order that they were interviewed and a short background on the year of foundation, geographical location and manufacturing specialization of each firm is given. Following this presentation, the findings from the interviews will be presented.

The Actors

1. Medium Sized Enterprise A (150 employees)
   Interviewee: Managing Director

   ‘Medium Sized Enterprise A’ was founded in 1655 and remains one of the oldest, still operating companies, in Sweden. The production of iron products has varied during history, but after being purchased by a MNC 1968, the production changed to its current focus; the development and production of electric motors as well as related components and products where the former is included. The company was sold to another company in 2001, and then re-organized anew and today consists of three sister-companies.

2. Medium Sized Enterprise B (167 employees)
   Interviewee: Corporate Planning Director

   ‘Medium Sized Enterprise B’ was founded in central Kalmar County in the 1970s and mainly supplied the automotive industry with welding equipment. In the mid-1990s, the company was incorporated into a MNC and is today the Nordic headquarters of the group. The company produces robot control systems and standard components for the European market. Their customer base includes most of the manufacturing industries, such as arc welding, coating, cutting and assembly.

3. Small Enterprise A (12 employees)
   Interviewee: Part-owner

   The company was founded in the 1980s and specializes in sheet metal. They cooperate with both small and larger companies and focus on a flexible production that allows delivery of high quality products at short notice.
4. **Micro Enterprise A (4 employees)**

*Interviewee: Founder and Current owner*

The company, founded in the 1980s in central Kalmar County, is specialized in construction machinery and construction tools.

5. **Micro Enterprise B (7 employees)**

*Interviewee: CEO and Managing Director*

‘Micro Enterprise B’ was founded in the 2000s and specializes in supplying mainly wholesalers in the independent automotive after-market with brake fitting kits and accessories.

6. **Small Enterprise B (29 employees)**

*Interviewee: Purchase Manager*

‘Small Enterprise B’ was founded in the 1970s and operates across a wide range of machining tasks, specializing on complex machine components. The firm remains family-owned and operates as a subcontractor to the engineering industry with customer manufacturing. The company was *incorporated by one customer* in 2012.

7. **Medium Sized Enterprise C (200-225 employees)**

*Interviewee: Administration Director*

‘Medium Sized Enterprise C’ is a world-leading manufacturer of tube-filling machines, with customers in the cosmetic, toothpaste, food and pharma industries. The company dates back to late 19th century, whilst the current form and name was established in the 1980s. The company first internationalized in the 1950s and today exports 97% of all production. In 2008 the company was *incorporated into a global business group*.

8. **Small Enterprise C (30 employees)**

*Interviewee: CEO and Part-owner*

‘Small Enterprise C’ was founded in the 1980s on Öland and is today specialized in precision tool manufacturing and manufactures both specific pieces and smaller series.
The company has recently, together with another local company, established a production facility outside Sweden.

9. **Micro Enterprise C (6 employees)**
   *Interviewee: Part-Owner*

The company was founded in the 1990s on Öland and re-constructed in 2009 when the new owners took over. The firm operates as a sub-contractor to the engineering industry, with ‘Medium Enterprise C’ as a main client.

10. **Medium Sized Enterprise D (235 employees)**
    *Interviewee: Director Sales & Marketing*

‘Medium Sized Enterprise D’ is one of the world’s largest producers of brake noise and vibration damping solutions for industrial and automotive purposes. Their main product is shims that are installed in car and commercial vehicle brake systems. The company was founded in the 1980s in Kalmar, and is part of a global industrial group, which dates back to the early 20th century.

11. **Micro Enterprise D (3-4 employees)**
    *Interviewee: Owner*

‘Micro Enterprise D’ was founded in Kalmar County in the 1970s and has extensive experience in the sheet-metal industry. Today the company handles all kinds of sheet metal strips and sheet roofing of galvanized, paint or copper plate roofs.

12. **Small Enterprise D (40 employees)**
    *Interviewee: Manager Production and Marketing*

‘Small enterprise D’ was founded in central Kalmar County in the 1990s and has, together with an extensive machinery, expertise in laser cutting, rolling, machining and powder coating, amongst other production activities. The company is mainly a sub-contractor to the manufacturing industry, but aims to offer complete solutions and become their customers’ sole supplier.
The Interviews

The transcripts and summaries (available at request, but not published due to wishes of confidentiality) of the conducted interviews, have been subject to a conceptual, open coding, in order to extract themes to be used to analyze the characteristics of the industrial districts and how these affect SMEs' innovation capacity and competitiveness. The categories were formulated based on the previously introduced theoretical framework and the key concepts that the theories regarding industrial districts, knowledge, learning and innovation emphasize. Additional aspects that interviewees brought up during the interviews have been included as well, to avoid omitting information that might not have been included or emphasized in the initial theoretical framework. Fourteen themes were found, and as illustrated, these turned out to be important to varying degrees. The following section will present each theme and the actors' views on it; all themes and views have been summarized in Table 1 below.
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<th>Coded categories</th>
<th>Specializ. in Phase of Production Process</th>
<th>Geograp. Proximity in Value Chain</th>
<th>Role of Personal Relations</th>
<th>Competitio and Cooperatio n</th>
<th>Flexibility</th>
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<th>Lack of High-Skilled labour</th>
<th>Regional Policy Instituti ons</th>
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<td><strong>5/12</strong></td>
<td><strong>12/12</strong></td>
<td><strong>12/12</strong></td>
</tr>
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A (+) indicates that the themes was emphasized as important during the interview.
A green field indicates that a majority of firms found the theme important.
A red field indicates that a minority of firms found the theme important.

Table 1 Result of open coding of interviews
Specialization in One or Few Phases of the Production Process

Strong specialization in one or few phases of the production, was present in all but one firm, but particularly prominent amongst micro- and small enterprises. The leading firms with a larger capacity were often are able to cover several phases of the production process, but nevertheless, remained focused in a specific niche. Most Medium sized enterprises are specialized in assembling the final parts of the product before sales, as is ‘Micro B’ AB, whereas the majority of the micro- and small enterprises are specialized in earlier part of the process, namely the processing of sheet metal or manufacturing of components. The only exception is ‘Small enterprise D’, which is strategically widening their production to cover several phases.

Geographical Proximity in the Value Chain

The geographical proximity in the value chain varies from company to company. In general, small and micro enterprises are more geographically proximate to clients and even often dependent on a few local customers internal to the region. For many of the smaller firms for which personal interaction was important, the geographical proximity forward in the value chain was a facilitating factor. Amongst micro- and small firms, suppliers are however, a combination of local and national.

The medium-sized and leading firms have more international networks and external value chains, but although they have the majority of their customers outside the region or Sweden, many of them retain local suppliers: “We are dependent on proximity, since it is short runs and fast delivery times” (Medium C, 2014; 04:30). The main exception is ‘Medium B’ which is supplied by its mother-company, and ‘Medium D’ which has almost all their clients and main suppliers abroad.

Role of Personal Relations

The importance of face-to-face interaction and close, personal relationships varies slightly between companies, however, there appears not to be a general difference between larger and smaller firms. Personal relationships are particularly important with clients that are local and internal to the district, and many small [family-owned] firms have long-established relations to customers; “We all know each other. It becomes more of a personal relationship.” (Micro A, 2014; 08:05), where this element; ”is an indispensable part of operations” (Small A, 2014:1). This type of business relationships is
according to several firms time-saving and more efficient. The importance of this factor varies amongst medium-sized firms, although none denies the significance of having personal, close relations. Medium-sized firms have most of their clients external to the region, and those relationships are not as dependent on face-to-face interaction or personal relations.

**Competition and Cooperation**

Due to heavy specialization in one specific phase of the production process that is slightly different between firms, eight firms argue that they do not have any competitors in the traditional sense *internal* to the district. Due to varying customer-specified products and different niches, the competition amongst firms in the region is not so strong that it would prevent cooperation. Due to the small size of the enterprises, individual firms frequently seek help from similar firms since one firm rarely has all the equipment and material needed. This help involves e.g. the lending of tools and equipment, providing materials, sharing of information and knowledge and even in some instance, handling part of an order, that another firm cannot handle on its own; “*If we did not have such relations, we smaller companies would not make it*” (Micro A, 2014; 16:28). It was suggested that it was worth joining together, even if one might lose out on the individual profit, “*Even if one thinks about himself, you want to bring jobs to the region*” (Small A, 2014; 2) and with a smaller capacity per firm, to succeed is “*depending on cooperating*” (Micro B, 2014; 09:01). According to several firms involved in such cooperative activities, this phenomena is very common in the region, has been for a long time, and in some cases, cooperation amongst firms has even increased.

Cooperation is less common amongst medium-enterprises, since they often have the capacity to handle complex orders on their own and rarely need to look for support. In other words, the phenomenon of cooperative-competition is mostly common amongst micro- and small enterprises with strong *internal linkages*, and less so when the competitors are external to the region, and when the firm is larger.

**Flexibility**

Due to lack of capacity for larger production, none of the firms have mass production in the traditional sense, but instead mainly work on customized products, at times in slightly larger series or batches. However, due to the customized nature of products, the
production needs to remain highly flexible in order to adjust to customer preferences, sudden order changes or impromptu orders: "One has to be prepared for changes late in the process, if [the client] wants certain details sooner than planned from the beginning" (Micro C, 2014; 04:04). All interviewed firms – in particular micro- and small enterprises – underlined the importance of retaining flexibility in production. Although medium-sized firms try to remain flexible, it appears as if the flexibility becomes more difficult to achieve in larger firms, especially when the firm has grown very much in a short time.

Interaction with Local Social Sphere

The few firms that are located in smaller towns play a more significant role in the local community. In these cases most of all employees come from the same town and have done so for generations, and local word-of-mouth can affect firms for the better or the worse. For instance, “the town and the company are closely associated, at least in popular speech [...] There is an incredible commitment [...] with several generations having worked here in some form” (Medium A, 2014; 02:22). The remaining firms do not in general have much interaction with the local social sphere. Although several companies mention the value of there being hereditary skills, a strong tradition and mentality of craft work in the region, and one company was actively sponsoring local sports clubs, and another explained how they had a social responsibility towards the local community due to their size, companies usually do not have any extensive interaction with the local social community.

Lack of High-skilled Labour

Access to labour and in particular high-skilled labour, is crucial for the continued development of the district. However, the majority of firms directly expressed difficulties in finding competent labour in the region, since the industry is growing smaller as well due to the lack of engineering educations in the region; “now that there is not much industry anymore, it is becoming increasingly difficult to find, for instance, automation engineers and mechanical engineers“ (Medium C, 2014; 10:41). The pool of low-skilled labour is not the issue, but rather access to more high-skilled, well educated labour; “To find people for the production and the somewhat easier tasks, that usually works fine. When it comes to more qualified specialists that we need sometimes, then it can be more difficult to find people” (Medium D, 2014; 09:25).
Role of Regional Policy Institutions

Most of the firms have been in contact with local and regional policy institutions, such as the municipality and the Regional Council, at least once. The frequency of interaction however, varies strongly. A few companies regularly participate in organized meetings with e.g. the Regional Council and medium-sized firms in general, have more interaction with these institutions and work actively with the municipality and the university, trying to promote engineering educations in the region, and explain the importance of nurturing a cooperative relationship with the local municipality. For micro- and small enterprises in general this interaction was not as extensive and at times not enough. Some firms even directly found the local municipality as neglecting and ignorant of the needs of small firms, and in some cases even to be a hindrance; “The municipality is mostly interested in tourism [...] that is what they are focusing on, they do not care much about industry. They are in fact completely disinterested” (Small C, 2014; 08:20) and “I don’t know if [the municipality] is 100 percent sympathetic to having companies here actually” (Micro C, 2014; 07:28). The role of the regional policy institutions varies strongly between municipalities depending on how much each municipality chooses to invest in industrial activities: “I think that [this] municipality has divided it so that everyone gets an equal share. But I don’t know how it works in Kalmar or in other places.” (Micro D, 2014; 07:18).

Internationalization

There is a considerable variety in the degree of internationalization of business activities among firms, with five firms being strongly internationalized with the majority of their annual sales going to foreign markets. These firms are mostly medium-sized enterprises, but there are a few smaller firms as well, such as Micro B. Most of the firms with international sales, however, still often have local or regional suppliers due to lower transport costs and shorter lead times. The majority of micro- and small enterprises have very low levels or no international activities. These firms are often specialized in the earlier parts of the production process and purchase raw-materials from local/regional suppliers and then sell their products to local customers; “It is actually mainly our customers that work against international markets” (Small B, 2014; 04:50). The significant exception is ‘Small Enterprise A’, which has a production subsidiary outside Sweden. What most interviewed firms had in common, was the belief that the
degree of internationalization had increased in the past and would continue to increase in the future. However, increased globalization was not thought to necessarily increase the threat from foreign firms, since “transportation costs are too high” (Small A, 2014; 3), but at the same time, ‘Medium C’ emphasized the danger in ignoring the potential threat from such competitors, with the risk of being surprised in the future.

Knowledge Sources
The majority of firms have large pools of hereditary knowledge and craft-skills, to which they can turn to in case of difficulties or need of new knowledge. In other words, firms - in particular micro- and small enterprises - rarely have any conscious sourcing activities external to the firm, but prefer to look for knowledge in-house. Often micro- and small enterprises would turn to employees who: “knows a lot since he has been working with this his whole life, so we can consult him” (Micro D, 2014; 16:26), as would medium-sized firms; “we do have good competences in-house so to speak” (Medium D, 2014; 23:45).

Only if the firms were unable to find adequate information in-house, would they turn to the immediate network and linkages internal to the district, such as local suppliers and customers. In some instances, the local municipality or Regional Council would be a source of information. A majority of the interviewed companies thought that it was easy to source information and knowledge in the local industry and that there in general was an atmosphere of ‘sharing’ in the industry; “It’s relatively easy to acquire information if you have a good information-exchange […] I think it is so that you do not get better help than the information you give. So it becomes a giving-and-taking-relationship” (Micro B, 2014; 24:20). This was in much degree related to the cooperative nature of the relationship between the firms, i.e. firms would often have larger pools of information and knowledge available if they cooperated with other firms and had close relationships with their suppliers and clients. A minority of firms found the availability of knowledge within the industrial district limited due to confidentiality reasons, with firms not wanting to share their trade-secrets, and expressed the wish for this to change.

External sourcing of knowledge from outside the district was as a rule limited to medium-sized firms in the district. The majority of the micro- and small enterprises that had few or none external customers and suppliers also had a limited sourcing of external knowledge. Only one small firm – ‘Micro B’ – had utilized external sources of knowledge through their international network. The medium-sized firms that
sourced knowledge externally to the district, would primarily, “turn to our mother-company if it is something they can help us with” (Medium B 2014; 26:03) or their group headquarters. Sometimes, firms would turn to national – external to the region - industrial associations, groups and networks, as well as various kinds of media, for new information and knowledge. However, the extra-regional exchange of knowledge remains limited, since most firms do not want to turn to external actors, and risk displaying their difficulties: “We do not want our information, how we do things, to come out, we keep it confidential” (Medium D, 2014; 23:34).

**Informal Learning-by-Doing**

None of the micro- or small enterprises had formal R&D departments, but relied on informal learning-by-doing in the daily activities. First and foremost, problems are solved using the extensive in-house knowledge, skills and experience-based expertise employees have: “our employees are very committed and involved and help each other solve problems” (Small A, 2014:2). Development of specific products takes place together with clients – internal to the district; “product development occurs more in the daily operations, often together with customers” (Micro B, 2014; 04:40).

The extent of formal R&D varies amongst medium-sized firms as well; ‘medium enterprise A’ has no formal department but relies on employees to solve problems in the daily operations, whilst ‘Medium C’ and ‘Medium D’ have independent R&D departments, and ‘Medium B’ shares a R&D department lead by the mother-company. However, alongside the formal R&D, medium-sized firms also emphasize the importance of informal learning through as in-house problem-solving during everyday-activities in the production department and through interaction with customers both internal and external to the district: “there is development taking place all the time in the daily operations. We develop new products, or improve the products we have daily” (Medium D, 2014; 14:45).

**Incremental Innovation**

All interviewed firms emphasized the importance of continuous improvements of both products and process technologies, i.e. the focus lies on incremental modifications of existing products and processes. All firms, but particularly micro- and small enterprises, are as a rule restricted to operating according to specific orders, and product
development mainly takes places in cooperation with customers internal (in the case of micro- and small firms) and external (in the case of medium-sized firms) to the district, in the form of advice on possible improvements and modification, without changing the nature of the product itself; “We cannot change the shell, but we can do small adjustments and develop components and parts to improve it – without changing the structure in itself” (Small A, 2014:2). In addition to this, continuous improvements of the process technologies, to make them more efficient and flexible, take place in-house, less dependent on the customers; “There is a lot going on with the process, with many new, modern tools. […] To shorten down programming times and processing times” (Small C, 2014; 14:21). There were however, exceptions, such as ‘Medium B’ and ‘Small D’, which began developing new products before finding a customer for it; We have a few products of our own and we invest quite a lot in them to achieve more stability” (Small D, 2014; 00:20). Several firms expressed the desire to develop their own products to reduce dependence on customers, but explained how lack of resources often was an obstacle.
Chapter VII: Discussion

Based on the themes and concepts that were extracted from the interviews and presented in the previous chapter, the following chapter will analyze the overall regional context and the characteristics of the industrial district, the knowledge sourcing and learning activities as well as the innovation strategies identified, in the light of the theoretical framework established earlier on in this paper.

The Regional Context

The Småland-Blekinge region displays several macro-characteristics of the typical Marshallian and Neo-Marshallian Industrial District. First and foremost, with its location in an area that according to traditional theories of industrial localization, ought not be attractive - due to its insufficient infrastructure, its seemingly outdated organizational forms (SMEs and at times family-owned), its focus on a mature sector with limited growth prospects (workshop and craft-work, wood and furniture etc), as well as the increasing competition of low-labour cost competitors - the area in several aspects resembles the neo-Marshallian industrial district. Despite not being a core region in Sweden, the area has as mentioned an unusually high concentration of firms in the manufacturing industry, which - despite an evolutionary trajectory towards the service sector that is gaining ground in the region as a whole - remains an important employer both in share of employees and value added. This industrial, spatial concentration of manufacturing SMEs enables firms to reap the benefits of a traditional Marshallian agglomeration force, i.e. the sharing mechanism and the rise of supplier industries and subsidiary trades that can be seen in the considerable networks of suppliers and sub-contracting firms operating in specialized industries, such as the automotive industry.

The manufacturing district in Småland-Blekinge differs from the Neo-Marshallian industrial district in two significant ways. First of all, Småland-Blekinge does not appear to benefit from matching mechanisms and labour market effects. The highly specialized labour force in the region is mostly low-skilled and together with the low education level in the region, it appears as if firms are facing increasing difficulties of sourcing high-skilled labour in the district. This could interpreted as that a structural change has taken place in the district, in the form of an increased demand in higher technological abilities and that therefore, despite the technically large size of the labour
pool in the manufacturing industry, the low level of education is causing difficulties for firms in finding competent, high-skilled labour. Second, there is a relative *shortage of contact with regional policy institutions* in the district. In several cases, the policy organizations have according to firms failed to create a *favorable institutional context* that is responsive to small firm needs. Although medium-sized enterprises have more successful contact with such institutions, the difference is not related to firm size but rather which municipality is in question. Consequently, the region (or even Kalmar County) appears to lack a comprehensive, cohesive and uniform strategy on how to address small firms’ needs in the entire region.

The Industrial District

The manufacturing district in the Småland-Blekinge is characterized by a strong *spatial concentration of many small firms* with a *high degree of vertical disintegration* and in general, dependency on *geographically proximate* backward (medium-sized firms) and forward (micro- and small firms) linkages in the value chain. The SMEs in the manufacturing district are in general *specialized in different phases of the same production process*, hence creating an *extensive division of labour* in the district. The manufacturing district mainly consists of two types of firms: *subcontracting micro- and small enterprises* that produce components of the final product and a few *medium-size firms* that are the main customers of the former and usually assemble the final product and sell to the final customer. The smaller firms’ production is often dependent on one or few medium-sized or large firms, whereas the larger firms usually performs more varied activities at a larger scale, such as innovation, marketing and product design, thus becoming *leading firms* in the district, having more interaction both inside and outside the regional market. None of the interviewed firms in Småland-Blekinge have traditional mass production, but instead relied on *flexibility* in production of highly customized products, allowing firms – the smaller the easier - to develop *‘flexible specialization’*. In addition to the industrial production process, particular relationships patterns are identified; the phenomenon known as *‘cooperative competition’* is clearly present in the case of micro- and small enterprises in manufacturing industry in Småland-Blekinge. The cooperative competition stems from the presence of many small firms in the same industrial branch that are specialized in different phases of the production process, and therefore, are never directly competing against each other. Due
to their small size, firms in the region frequently cooperate, whether it is lending equipment or helping out on larger orders. This type of cooperation signifies a special industrial culture and ‘industrial atmosphere’ that appears to be increasing in importance, and that is closely related to the importance of informal ties and trust that often go beyond the contractual relationship. Micro- and small firms in particular are in this sense embedded in social relationships; a phenomenon not only beneficial for the cooperative nature of the relationships in the industry, but in many instances time-saving and more efficient.

Despite strong local social relationships, the interaction between the industrial district and the local social system is limited. The firms would benefit from the social sphere in the sense of values of ethics of work and strong firm linkages, stemming from long standing traditions and competence in craft work, but the existence of a local identity and solidarity is however, not emphasized.

Structural Change
In the age of globalization and increasing internationalization, conditions have changed for firms in the region. The entire manufacturing industry in Småland-Blekinge is highly exposed to business cycle fluctuations due to its specialization in LMT manufacturing and increasing competitive pressure from countries with lower labor costs. Unlike the case of Third Italy, the manufacturing district in Småland-Blekinge has - as is common in the Swedish industrial culture - had a strong subcontracting business structure, with a few large, multinational firms at the centre, with backward linkages down to local SMEs. With the exception of one medium-sized firm incorporating a smaller one, this SME based structure has survived against expectations into the new millennium in Kalmar County, and has not yet undergone a ‘hierarchization’. Rather, the manufacturing district in Kalmar County particularly is seeing a growth in number, employment share and value added amongst micro- and small enterprises. It does not appear as if these firms will be replaced as the main dynamic agent in the nearer future by medium- and large firms, although for Kalmar County, retaining a SME industrial structure could be beneficial in the long term.

Internationalization has as well only seen a limited progress in this district. The outsourcing of intermediate, low value added activities is largely absent. With the exception of one small firm that has established a production unit abroad and another
small firm that has the majority of sales outside Sweden, micro- and many small firms have little or no international activities, but internationalization has so far been limited to medium-sized firms that have almost solely international sales (although their backward linkages remain local). Several of the medium-sized firms however, are not Swedish anymore; one MNC entered the region in the 1990s and another global group has incorporated one medium sized enterprise into its global production network. In other words, individual firms have adopted different internationalization strategies, but in general it appears as if internationalization and size are interrelated, with larger firms having internationalized whilst smaller firms remain mainly locally focused. Considering the share of micro- and small enterprises in the district, the traditional deep specialization within the district’s own geographical area, the local embeddedness and importance of geographical proximity, has not been much altered.

Knowledge Sourcing and Learning

The innovation capacity of firms depends on the availability of information and knowledge as well as the firms’ capacity to absorb and learn from this knowledge. The presence of large pools of - often hereditary - tacit knowledge, large in-house skills and the dominance of in-house knowledge sourcing reveal a prevalent DUI mode of learning in the manufacturing district in Kalmar County. Geographically proximate suppliers and clients are the main source of any additionally needed knowledge that is mainly, following the DUI mode, sourced internally in the district. The district has a profound informal diffusion of knowledge and exchange of ideas and information, and hence, knowledge spillovers, which are facilitated by intense supplier-customer linkages in strong networks and also, the cooperative-competitive relationship between firms. The exchange of tacit knowledge demands close interactions between actors, with strong personal relations and face-to-face interaction allowing for more interactive and long lasting relationships.

External knowledge exploration, transfer and consequent absorption, does not characterize the district investigated strongly. The sourcing of knowledge external to the district is as a rule limited to medium-sized firms that have trans-regional business linkages. Being the ones exposed to external sources of information and knowledge, medium-sized firms, play the role of ‘gatekeepers of knowledge’, and create a bridge between non-local knowledge and local small firms. Both in their role as the center of
the subcontracting structure and as the node in the knowledge transfer and diffusion network, ‘leading firms’ can affect the general quality of knowledge in the district, as well as strategies and innovation capacity. This learning system closely resembles a ‘dynamic evolutionary system’, where learning and innovation opportunities are not scarce, but where the district is organized around - and often dependent on - a few very innovative, large firms in the core. Consequently, despite the circulation of knowledge in the district, the lack of direct external sourcing amongst micro- and small firms would imply vulnerability in the knowledge network, due to the heavy dependency on the strategy of a few principal firms to import new knowledge.

Innovation Strategies

Having a formal R&D department with significant R&D expenditure is not a common characteristic in the investigated district. Instead, the informal learning-by-doing development in the daily operations - with focus on solving concrete, practical problems, using new combinations of existing knowledge and past experience in new ways, to modify existing products and processes are common traits – reflects the industry's dominant DUI mode of learning and innovation. There are however, simultaneously aspects of STI strategies amongst medium-sized firms, that do have R&D departments and more actively invest in scientific research projects. There being a combination of DUI and STI to some extent in the district, could be beneficial, than had the entire district only relied on DUI, and could improve the district's overall innovation levels.

Due to the maturity of the market, changing customer preferences rarely result in drastic changes in products or processes, but rather incremental, based on new combinations of existing knowledge and experience-based learning. Essentially, learning and innovation in industries mainly employing DUI, is often an unintended by-product of the firm's regular production activities, which closely corresponds to the nature of LMT firms - which all micro- and small enterprises were found to be, and medium-sized enterprises to some extent. Despite the lack of formal R&D, the SMEs in Kalmar County nevertheless have strong innovation abilities. The SMEs in the district display primarily two different innovation patterns. First and foremost, continuous product development is an important strategy, but which almost exclusively takes place in projects with customers, with the firms’ input consisting of minor modifications – which is also why the SMEs’ input to innovation might not always be recognized independently, being
subsumed into the formal R&D processes of their customers. This results in a *step-by-step product development*, where the components of a product are gradually improved without changing the product itself. Second, SMEs work on optimizing and ‘cultivating’ technical and organizational process structures in-house in the daily operations - less dependent on customers - resulting in a *process specialization*.

The two innovation strategies are not mutually exclusive, but rather - due to the LMT nature of the firms - mutually dependent; often the process improvements are a by-product of efforts to improve the product, and in other cases, the improving of technical processes, would improve the product quality as well. The main difference is that whereas process development is the result of the individual firms’ efforts, product innovation is almost entirely dependent on the *collaborative nature* of the customer-client relationships, and the extent to which actors will share information and knowledge, cooperate and change their products. Consequently, innovation activities are predominantly collaborative in nature, as is common in the neo-Marshallian industrial district. Although a few firms have begun to independently work on product development independent - to reduce dependence on customers - and the majority express a wish to do so, the inherent issue with SMEs that prevents or slows down this process, is the lack of capacity and resources.
Chapter VIII: Conclusion

The aim of this study was to gain a deeper understanding of the industrial and socio-economic structure of the manufacturing district in Kalmar County, in the Småland-Blekinge region, and how this structure affects the innovation capacity and competitiveness of SMEs in the low- to medium technology sector in an increasingly globalized economy. Prior to providing an answer to the main research question, the sub-questions will be dealt with.

What are the main production and socio-economic structural characteristics of the manufacturing district in Kalmar County?

The manufacturing district in Småland-Blekinge is, first and foremost, characterized by a high specialization in specific phases of the production process and a considerable geographic proximity in that same value chain - mainly consisting of two levels of firms: micro- and small sub-contracting suppliers and medium-sized leading firms. The district has a traditional Swedish subcontracting SME structure with nodes of leading firms around which the district is organized. The high specialization makes mass-production uncommon, instead, the focus amongst firms lie on high degrees of flexibility in the production. Additionally, a cooperative-competitive relationships pattern exists amongst a majority of firms internal to the district, where competing firms join together to help each other. Facilitating the cooperative competitive relationship is the strong networks and personal relationships that inter-firm linkages are embedded in, which in turn result in a relatively open industrial atmosphere when it comes to sharing knowledge. Firms are thus affected indirectly by and benefit from soft noneconomic factors, such as the value system that encourages informal relations, trust, sharing and cooperation that constitute the ‘industrial atmosphere’. This means that some of the traits that were found to be decisive for the Gnosjö district’s competitiveness and resilience in the 1980s-90s can be identified in Kalmar County, with a remarkable inter-firm coordination and cooperation, and a strong social and cultural fabric. However, unlike Gnosjö – and the typical neo-Marshallian industrial district - direct interaction between the industrial sphere and the local social is limited and the institutional fabric is not very prominent with the role of regional policy institutions not being emphasized. Although
regional policy institutions according to several interviewees have failed to create a ‘favourable institutional context’, the majority of firms appear to have managed without any considerable support from such institutions.

What structural changes have recently taken place in the manufacturing district in Kalmar County?

The Småland-Blekinge region has of late experienced a structural change that to a high degree affects the industrial district; namely, the slow shift towards the service sector, with falling employment figures in the manufacturing industry. This together with the low education level in the region has resulted in a shortage of high-skilled labour in the district. Contradictory to expectations, no significant structural change concerning hierarchization has taken place of late in the region, although there are a few exceptions of large firms entering the district and medium-sized firms incorporating smaller ones. The Swedish industrial culture with a dominant SME structure appears to remain firm in place. In addition, little to none subcontracting in the region has been outsourced, and internationalization in general has seen limited progress in the district, with international activities mainly being limited to medium-sized firms. Consequently, the firms’ value chains remain firmly embedded within the districts own geographical area.

How do SMEs in the low-to medium technology-manufacturing industry in Kalmar County innovate?

SMEs in the manufacturing district in Kalmar County have large pools of [hereditary] tacit knowledge, and extensive in-house skills. Firms primarily look in-house for information and turn existing knowledge into new combinations. In addition, being characterized by intense supplier-customer linkages and cooperative-competitive relationships in strong, local networks, the district has a profound informal exchange of information and diffusion of tacit knowledge internally. The circulation of local knowledge through strong, cooperative relationships allows successful learning in the district through knowledge spillovers, which is a key factor behind innovation capacity in the district. A ‘dynamic evolutionary system’ of learning is identified in the district, with learning and innovation being organized around a few core firms, which both are at the
center of the business network, and the knowledge network as ‘gatekeepers of knowledge’, since external sourcing of knowledge in general is limited to medium-sized enterprises that have external suppliers and clients.

The focus on in-house and internal sourcing of knowledge primarily results in learning-by-doing development in the daily operations, with the aim to solve practical problems. Notwithstanding the lack of formal R&D or high technology levels, the firms in the manufacturing district express strong innovation abilities – albeit incremental in nature - mainly manifested in two strategies of incremental innovation; *Step-by-step product development* together with clients and independent *process specialization*. The innovation activities that do take place are mainly *collaborative* in nature and frequently the unintended by-product of daily operations. However, a trend is emerging of firms more consciously investing resources in innovation activities.

*(RQ)* How does the production and socio-economic structure of the manufacturing district in Kalmar County affect the innovation capacity and competitiveness of low-to medium technology SMEs in the industrial district?

The production and socio-economic characteristics of an industrial district set the preconditions for any learning and innovation activities taking place in the district, but does not make the development entirely path dependent. The traditional character and age of the industrial district in Kalmar County together with the small size of individual firms, do lower the probability of SMEs in the district employing extensive formal R&D, sophisticated channels of learning and radical innovations, but has also resulted in large pools of hereditary, tacit knowledge, allowing firms to perform profound in-house learning-by-doing and development in daily operations. However, a crucial part of the district’s structure is its complex network of many small firms with strong supplier-customer linkages and cooperative competition, which at its core, is entirely dependent on conscious human action and the willingness of individual actors to trust each other and collaborate. These strong networks facilitate an extensive diffusion of tacit knowledge, exchange of ideas and information internal to the district, and promote and facilitate learning and innovation in individual firms. This allows small firms to rely on inter-firm collaboration in everything from knowledge sharing, learning and innovation to production – which they themselves, due to their small size, might not have the
capacity to do. Similarly to Gnosjö, this strong inter-firm co-ordination and cooperation, has been a decisive factor contributing to the district’s competitiveness and resilience.

Although individual SMEs may not make a significant impact with their low-to medium tech incremental innovations, the sheer number of small firms in the industrial district will make the aggregate effect of innovations quite significant. It is in this aggregate form that SMEs in the manufacturing industry in Kalmar County are able to compete against large-scale mass-production units, both nationally and internationally. This system of many small, geographically concentrated firms, specialized in different phases of the same production process, can achieve something that individual small firms cannot, i.e. access to ‘external economies’, in particular sharing and learning mechanism, i.e. knowledge spillovers, all while allowing individual firms to retain one of the main benefits that come from small scale production, namely flexibility. It is this district-wide ‘flexible specialization’ - which is enabled by the district’s structure - that makes firms more responsive to changing market conditions, by facilitating continuous adaptation and innovation of product and process technologies, and on which the competitiveness of the industrial district depends. However, although the traditional Swedish SME-based subcontracting industrial structure has been successful in the past and allowed a successful transition into the new millennium, it is making the dynamics of the entire district and the majority of firms dependent on few large enterprises. This suggests that the main challenge facing the district might be internal, in that micro and small enterprises need to become less dependent on the few larger firms that exist, both as customers and as the gatekeeper of new knowledge, e.g. by broadening their customer base, developing independent products and establishing stronger knowledge linkages to actors outside the district.

To conclude, the structure of the industrial district in Kalmar County in the Småland-Blekinge region, sets the preconditions for learning and innovation and allows SMEs to reap the fruits of ‘external economies’, in particular knowledge spillovers, that facilitate stronger learning opportunities. At the same time, due to the informality of the structure, SMEs are able to retain their flexibility. The access to external economies in the district - underpinned by strong inter-firm coordination and cooperation - and the flexibility of individual firms, have been the crucial factors for the district’s competitiveness and resilience.
Future Research

This study offers some explanations on how SMEs in the low-to medium technology manufacturing industry in Kalmar County, in the Småland-Blekinge region, innovate and remain competitive in an increasingly globalized economy, and which factors play a decisive role. Several aspects of how this specific district differs from the traditional neo-Marshallian industrial district have been identified as well. However, this topic is far from being satisfactorily covered, due to the scope of this assignment.

A way forward would be to employ the variables that have been identified in this qualitative study, and translate them into more quantitatively measureable variables. In order to increase the understanding of this topic further, the research should be extended beyond the limited sample that was used in this study, and preferably, also include other sub-branches of the manufacturing industry as well as from different counties. This would shed light on whether the trends identified in this study are general, or merely limited to the specific sub-branch of manufacturing.

Although this study has pointed to the fact that regional policy institutions in some cases have failed to create favourable institutional contexts, SMEs nonetheless have managed to prosper. The question that emerges is whether the institutional conditions have inhibited firms from achieving their fullest potential, or whether these institutions are of less importance. The full the extent of policy institutions’ role and how decisive the institutional context is in this specific case, needs to be established further and in such a case, the regional policy institutions in question should be included in the sample as well, to shed a more objective light on the issue.

This study testifies to confirm the assumption that low- to medium technology industries that perform continuous, incremental changes to products and processes, are central to economic well-being, and that the success of Kalmar County and Småland-Blekinge region as a whole, almost entirely has depended on small-to-medium-sized, low-to medium technology enterprises. Despite a slow shift towards the service sector, the LMT manufacturing industry remains an important employer and value-creator in the Småland-Blekinge region. This industry will hence, continue to play a crucial role in the dynamics – not only of the districts itself – but also the region as a whole, and therefore, research on this topic will continue to be of highest relevance.
REFERENCE LIST


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**Interviews**

Medium A. (2014). *Transcript of Interview with Managing Director, Medium Enterprise A.* [Available at request.]

Medium, B. (2014). *Transcript of Interview with Corporate Planning Director, Medium Enterprise B.* [Available at request.]

Medium, C (2014). *Transcript of Interview with Administration Director, Medium Enterprise C.* [Available at request.]

Medium, D. (2014). *Transcript of Interview with Director Sales and Marketing, Medium Enterprise D.* [Available at request.]

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Small, C. (2014). *Transcript of Interview with CEO and Part-Owner, Small Enterprise C.* [Available at request.]

Small, D. (2014). *Transcript of Interview with Manager Production and Marketing, Small Enterprise C.* [Available at request.]
APPENDIX

Item 1

Intervju guide för intervju den dag/månad, klockan yy.yy
'Företagsnamn'

Ämne för Masteruppsats: 'Tillverkningsindustrin i Kalmar Län' med fokus på vilka förutsättningar små- och medelstora företag har, samt hur de arbetar strategiskt med inlärning, innovation och internationalisering etc. för att förbli konkurrenskraftiga.

Teman

*Produktion och specialisering*

*Relationer med leverantörer, klienter samt konkurrenter*

*Interaktion med den sociala sfären*

*Interaktion med regionala/lokala policy organisationer*

*Internationalisering av verksamhet*

*Kunskap, inlärning, R&D och innovation*
## Interview guide

<table>
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<tr>
<th>Questions</th>
<th>Follow-up questions</th>
<th>Theoretical connection</th>
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<tr>
<td><strong>1. Presentation/practical information</strong>&lt;br&gt;- Presentation of myself&lt;br&gt;- Project information: Purpose, publication, Anonymity if so desired</td>
<td></td>
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<tr>
<td><strong>2. Questions regarding their organization</strong></td>
<td>Field of work (industry)&lt;br&gt;What does the market look like? Mature? Slow-growing? High levels of price competition?</td>
<td>Manufacturing sector (MID, IID)&lt;br&gt;Low-medium Technology</td>
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</table>
| **3. What type of work do you do?** | Contact with final customer?<br>Do you produce on specific orders or mass-produce large batches?<br>
*How nisched is your product?*<br>How automated is your production? | Establish supplier/leading firm - (MID)<br>- Division of labour and strong specialization - specific phases of value chain (IID)<br>Flexible specialization or Mass production |
| **4. Where are your suppliers/clients located?** | What is the main pro/con of being geographically close to suppliers/clients?<br>How do you work with suppliers/clients; Face-to-face interaction?<br>How dependent are you on your customers?<br>Has this changed in the last 10 years? | Matching mechanisms (EoA)<br>The rise of supplier industries and subsidiary trades (MID)<br*
*External economies*<br>Few strong firms affect strategic decisions and trajectories of smaller firms (IID) |
<p>| <strong>5. Do you have any competitors in the region?</strong> | How do you interact with these?&lt;br&gt;Have you ever worked together with other firms to handle larger orders, innovation etc?&lt;br&gt;Has this changed in the last 10 years? | Cooperative competition (IID) |</p>
<table>
<thead>
<tr>
<th></th>
<th>How important are you for the local community and vice versa?</th>
<th>How would you describe the industrial atmosphere?</th>
<th>Traditions, social and cultural background - local identity and solidarity (IID) Industrial-social sphere interaction (IID, MID) Embeddedness (IID) Industrial atmosphere</th>
</tr>
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<tr>
<td>7.</td>
<td>Do you regularly/rarely come in contact with local/regional policy organizations?</td>
<td>Has this changed in the last 10 years?</td>
<td>Regional policy intervention, infrastructure, collective services and social coordinators? (IID) Support for start-ups and spin-offs (IID)</td>
</tr>
<tr>
<td>8.</td>
<td>Do you work much against international markets?</td>
<td>Has this changed in the last years?</td>
<td>Internationalization strategies, outsourcing, sales, integration into global production networks (IID)</td>
</tr>
<tr>
<td>9.</td>
<td>How do you go about when solving a problem?</td>
<td>From where do you source information/knowledge? Institutions? Is knowledge shared freely in the industry? Do you often benchmark, monitor or imitate? Has this changed in the last 10 years?</td>
<td>Local vs. Non-local knowledge sources In-house, internal, external knowledge sources Learning mechanisms (EoA) Knowledge spillovers (MID)</td>
</tr>
<tr>
<td>10.</td>
<td>[HOW] Do you work actively with innovation?</td>
<td>Do you have a formal research department or is the focus on informal learning-by-doing Do you ever cooperate with other firms when it comes to larger projects? What is you focus: products or the process Incremental changes? Has this changed in the last 10 years?</td>
<td>IID innovation strategies Collaborative innovation (IID) STI-DUI modes LMT innovation strategies</td>
</tr>
<tr>
<td>11.</td>
<td>What would you say are the main challenges in the nearer future?</td>
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