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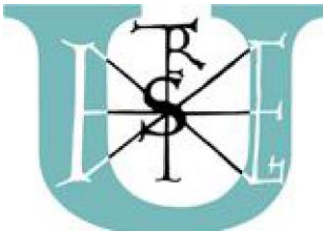

Szent István University

Doctoral School of Management and Business Administration

PhD Thesis

Dynamic Capabilities and Growth of small and medium sized enterprises- a study among companies in North Rhine-Westphalia (Germany)

By

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Gödöllö

2017

10.14751/SZIE.2017.088

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Abstract:

The small and medium sized enterprises (SME) within the European Union have been objects of great scientific interest during the last decade. But not only on a European level: The importance of SME for every member state caused by the huge economic relevance and resulting vital political importance led to an increased attention of the scientific community.

The particularly pronounced flexibility of the SME as well as their abilities to innovate and to find tailored solutions for their customers is the SMEs` hallmark. However, there is no unique understanding about the definition of SME neither for Europe nor for Germany. Additionally important is to understand, to which extend the dynamic capabilities of the SME are decisive for their success and growth.

The dynamic capability approach, the nature and the relevance of dynamic capabilities are largely theoretically explored, as well as growth models and the relevant growth factors. However, the number of field work results is relatively small. In order to follow the latter research line and to fill the gap partly between the theoretical insights and the needed field work data by this research had been carried out.

A focus was set on the role of relevant dynamic capability approach factors´. The aim was to shed some light on the correlation between these factors and the growth of SME. In order to narrow down the very complex "concept" of SME with all its possible or conceivable natures, definitions and sectors where SME can be found, a selection was made among German SME by analysing those in the manufacturing sector within North-Rhine Westphalia, as an economically very important area for the entire German economy, by a questionnaire which focussed on dynamic capability elements and growth.

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INTRODUCTION

The important role played by small and medium enterprises (SMEs) in economic and social development of many countries has continued to grow in recent decades, largely determined by the high weight in the business, and his decisive contribution to economic growth, job creation and global competitiveness of the economy as a whole. What has led to the growth of these SME occupies an important position in the economic agendas of public administrations and social agents.

While the growth of SMEs has been a topic of continuing interest especially in times of crisis, it leads to an added significance, given that the economic climate has caused to sharpen some of the weaknesses of these businesses. These weaknesses can be noted by a low productivity, difficulties in obtaining capital or credit, access to new technologies, innovation and talent recruitment, which have directly influenced their competitiveness and consequently in the decreased ability to generate wealth and employment. As an example, in the case of the Spanish economy, the destruction of SMEs amounted to 51,769 firms in 2011 (-1.6% reduction from 2010), causing a drop of - 5.47% in the total number employees, which meant a reduction of 404,000 jobs.

On the other hand, interest in the growth of SMEs not only manifests from a macroeconomic point of view. From the business world, this has been an objective of most companies, taking into account that considered an indicator of current and future competitiveness, reflected in the value of their market. Simultaneously, it has been found that growth brings to these businesses, additional doses of strength and confidence that directly affect their long-term survival.

In view of these considerations, boost growth and a higher level of entrepreneurship in the small business sector is an issue that occurs as a challenge and a necessity, and therefore demands a broader understanding of the factors that help or hinder this growth, facing government policies and entrepreneurial efforts.

In this regard, the study of the growth of SMEs is an issue that has been on the focus of several surveys. Several studies within this area demonstrate that main macroeconomic benefits were not produced, as one might assume, by the major companies but by SMEs, attracting the interest of researchers in the business context, as an object of practical study. Expanding the basic research line e.g. of Birch (1989), a large number of studies has valuable contributions, both theoretical and empirical, from different knowledge areas such as Business Administration, Psychology, or Economy.

Despite the large number of studies have focused on this, a detailed analysis of the most recent

literature shows that even there is no consensus as to which factors have bigger influences on the growth and how they exert this influence (Davidsson, 2010). This lack of consensus may be due in large parts to the multidisciplinary nature of the phenomenon, which has caused a high degree of fragmentation in the literature and makes comparative analysis between studies difficult.

From the external point of view, the relationship of the growth environment has been studied from different theoretical points of view, mainly from the perspective of the Economy of Organizations and Strategic Adaptation. Most research results highlights the role of the sector and its characteristics structural and external factors associated with growth (Wiklund et al. 2009).

1. SMALL AND MEDIUM-SIZED ENTERPRISES IN GERMANY

1.1 Definitions of SME

When trying to define SME - Small and Medium-sized Enterprises -, it is striking that there are various different approaches across countries to classify this kind of enterprise. As a rule, quantitative approaches use statistical figures on variables like the number of employees and the annual turnover to distinguish SME from large enterprises. The official definition of the European Union as stated in the Commission Recommendation of May 6, 2003, distinguishes three classes of SME and limits the number of employees to 249, while in the definition of the German IfM ("*Institut für Mittelstandforschung*", Institute for Research on the "SME"; explanations below) there are only two classes of SME that may employ up to 499 employees. Besides, there are further differences concerning the use of additional criteria. Figure 1 gives a detailed overview of the quantitative differences between the EU and IfM definition of SME.

EU/European Commission					
Size	No. of Employees		Annual Turnover		Annual Balance Sheet Total
Micro	up to 9	and	up to € 2 m	or	< € 2 m
Small	10 – 49		€ 2 m - € 10 m		€ 2 m - € 10 m
Medium	50-249		€ 10 m - € 50 m		€ 10 m - € 43 m
SME	< 250		≤ € 50 m		≤ € 43 m
IfM Germany					
Size	No. of Employees		Annual Turnover		
Small	up to 9		< € 1 m		
Medium	10 – 499		€ 1 m – 50 m		
SME	< 500		≤ € 50 m		
Large	> 500		> € 50 m		

Figure 1: European Commission and IfM Definitions and Categorizations of SME.

Source: Hergenröther, 2013: p. 3; Böttcher, 2013: p. 2.

Furthermore, the EU definition requires SME to be autonomous enterprises, that is, they have to be sufficiently independent. According to the new common EU definition of January 1, 2005, an enterprise is autonomous if it complies with one of the following criteria (European Commission, 2005: p. 16, 2007):

- The enterprise is completely independent, i.e. there are neither own participations of the enterprise in other enterprises nor participations of other enterprises in this enterprise.
- The enterprise in question has a holding of less than 25 % of the capital or voting rights (whichever is higher) in one or more other enterprises, and outsiders do not have a stake of 25% or more of its own capital or voting rights, provided the outsider enterprises are not linked.
- The enterprise owns *in total* less than 25% of the shares of linked enterprises, and linked outsiders own *in total* less than 25% of its shares.

Other, unlinked enterprises each own between 25% and 50% of its shares, provided they are of one of the following types: public investment corporations, venture capital companies, universities or non-profit research centres, institutional investors, or autonomous local authorities with annual budgets of less than € 10 million and fewer than 5 000 inhabitants.

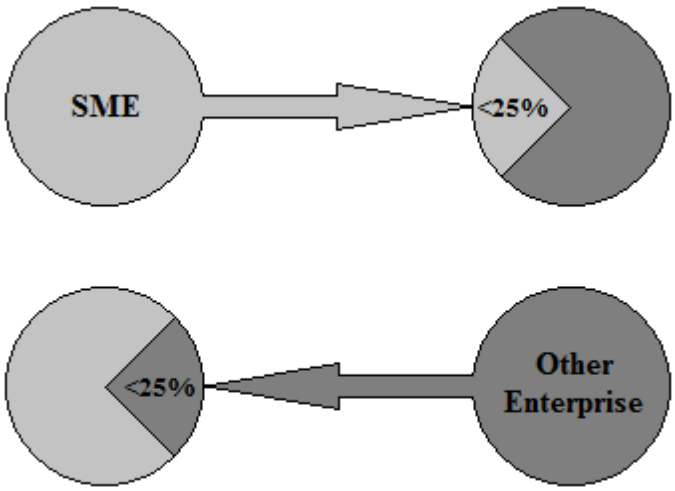


Figure 2: Autonomous Enterprise.

Source: European Commission, 2005: p. 17.

If an autonomous enterprise is within the limits of the quantitative criteria presented in Figure 1, it belongs to the group of SME as defined by the European Commission. However, even an enterprise which is not autonomous can qualify as an SME, but has to take into account the effect of the outside shareholdings when checking its data against the quantitative limits. In this case, the Commission distinguishes between partner enterprises and linked enterprises (European Commission, 2005; 2007).

Partner enterprises are engaged in major financial partnerships with other enterprises, but without effective direct or indirect control over the other on either side. Hence, these enterprises are neither autonomous nor linked to one another. To be classified as a partner, an enterprise has to meet one of the following criteria (European Commission, 2007):

> It owns between 25% and 50% of one or more other enterprises, or they own between 25% and 50% of its shares, provided the other enterprises are not linked
>
> It owns in total between 25% and 50% of the shares of linked enterprises, or these own in total between 25% and 50% of the enterprise in question

When calculating its figures to check them against the SME definition limits, a partner enterprise

must add to its own data the figures that correspond to the shareholding.

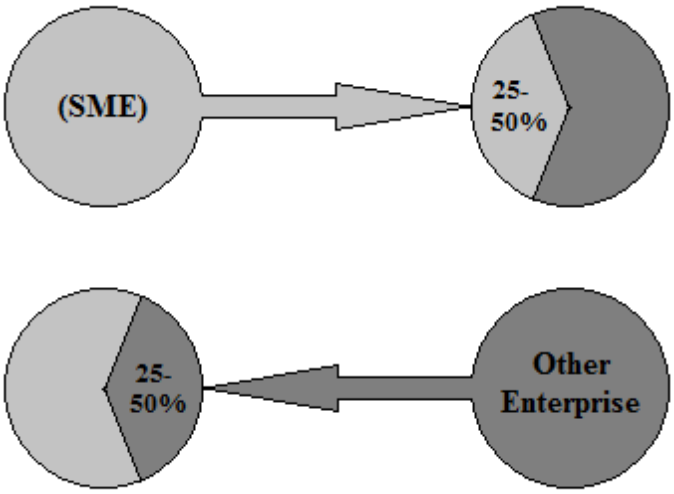


Figure 3: Partner Enterprises.

Source: European Commission, 2005: p. 20.

Enterprises which are subject to direct or indirect control by another enterprise or have themselves the ability to exercise a dominant influence on other enterprises are defined as linked enterprises. A typical example of this kind of enterprise is the wholly-owned subsidiary (European Commission, 2005: p. 23). Expressed in figures, an enterprise is classified as linked if it owns more than 50% of the shares of one or more other enterprises, or another enterprise owns more than 50% of the enterprise in question. In this case, the enterprise must add to its own data the entire figures of the other enterprise to determine if it complies with the quantitative EU requirements for SME (European Commission, 2007).

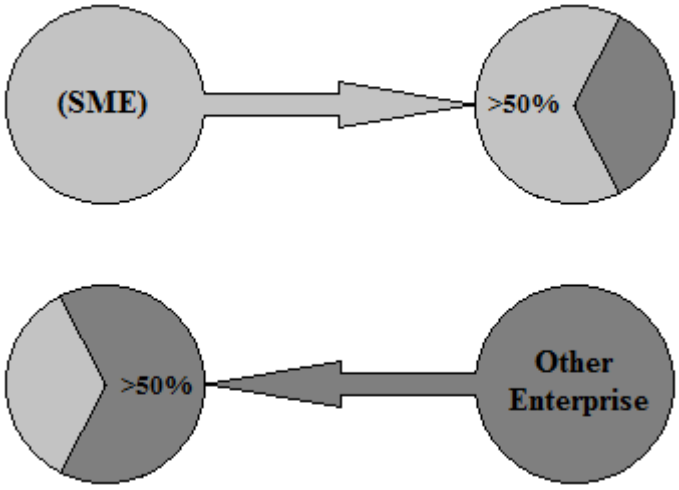


Figure 4: Linked Enterprises.

Source: European Commission, 2005: p. 24.

Finally, the new common SME definition excludes enterprises if 25% or more of their capital or voting rights are directly or indirectly controlled by one or more public bodies other than the ones mentioned above. This is mainly because public ownership may provide these enterprises with certain – mainly financial – advantages over privately financed enterprises (European Commission, 2005: p. 21).

In spite of the specific quantitative German definition presented in Figure 1, the term SME (or the German translation KMU-) is less common in Germany than in other countries. Instead, the term "SME" is preferably used, which basically refers to enterprises of similar size and characteristics, but also describes features that go far beyond mere quantitative considerations. The definition of the German "SME" includes economic as well as social and psychological factors, which are crucial for the understanding of the peculiarities, significance and performance of this specific group of independent economic actors (Günterberg/Kayser, 2004: p. 1).

Hence, though referring principally to the class of small and medium sized enterprises, the term SME in addition has a strong qualitative dimension that adds to the mere figures a certain business philosophy (Böttcher, 2013: p. 4) featuring the following characteristics (Holz, 2013: p. A2; Böttcher, 2013: p. 4):

- Enterprises of the German SME are owned and predominantly managed by a family

- There is a close connection between owner and company
- The owners are liable for economic as well as financial risks
- As a rule, owners have a long term view and focus on sustainability. They often think in generations rather than quarterly results.
- There are favourable personal relations with important stakeholder groups
- Enterprises of the SME often combine regional roots with global ambitions and activities.

The close ties between owner and enterprise strongly influence the behaviour and performance of privately owned SME, and qualitative factors like the combination of private ownership and personal responsibility for the activities of the enterprise as well as the personal liability for the financial risks explain the role of the SME as an extraordinary important economic and outstanding social factor in Germany (Günterberg/Kayser, 2004: p. 2).

However, at least as far as public support programs are concerned, the EU definition more and more gains significance in Germany and partly displaces the traditional German definition (Günterberg/Kayser, 2004: p. 4).

1.2 Size and Characteristics of the German SME

The resilience and good performance of the German economy during the last decade to a great extent has its roots in a strong and stable SME segment. Often referred to as the "backbone of the German economy", the German SME with its longstanding record of high employment and productivity increasingly raises interest abroad, where decision makers are keen to learn from the German model (BMWi, 2013: p. 2). Obviously, there are specific factors unique to the German SME which account for its success and superior performance as well as its stabilizing role in the German economy. To analyze these factors in further detail, this section takes a closer look at the peculiarities and good practices of the SME segment in Germany.

To provide a broader view and to finish this chapter a definition of SME in the United States is added. Following the OECD definition "Small and medium-sized enterprises (SMEs) are non-subsidiary, independent firms which employ fewer than a given number of employees... the United States considers SMEs to include firms with fewer than 500 employees. Small firms are generally those with fewer than 50 employees, while micro-enterprises have at most 10, or in some cases 5,

workers. Financial assets are also used to define SMEs." (OECD, 2005: p.17).

Like in other European countries, the SME segment in Germany is an extremely important segment of the economy and comprises a high share of the total number of German enterprises.

Size*	Enterprises		Turnover		Employees (subject to social security contributions)	
	Number	Share	In € 1000	Share	Number	Share
Micro	3,237,878	90.0	544,077,967	10.9	3,915,319	15,6
Small	278,459	7.7	583,988,226	11.7	4,717,064	18.7
Medium	64,137	1.8	752,035,727	15.1	5,221,382	20.7
SME	3,580,510	99.5	1,880,101,920	37.8	13,853,765	55.1
Large	16,738	0.5	3,098,835,582	62.2	11,311,521	44.9
Total	3,597,248	100.0	4,978,937,502	100.0	25,165,286	100.0

Table 1: Quantity of Enterprises of Different Size in the German Economy (2009[1]).

* As defined by the European Commission

Source: Günterberg, 2012: p. 16

As Table 1 reveals, there are approximately 3.6 million small and medium-sized enterprises in Germany compared to a good 16,000 large companies. The vast majority of these SME in turn are

[1] Latest available data

micro-enterprises with up to 9 employees and an annual business volume of less than 2 Million €.

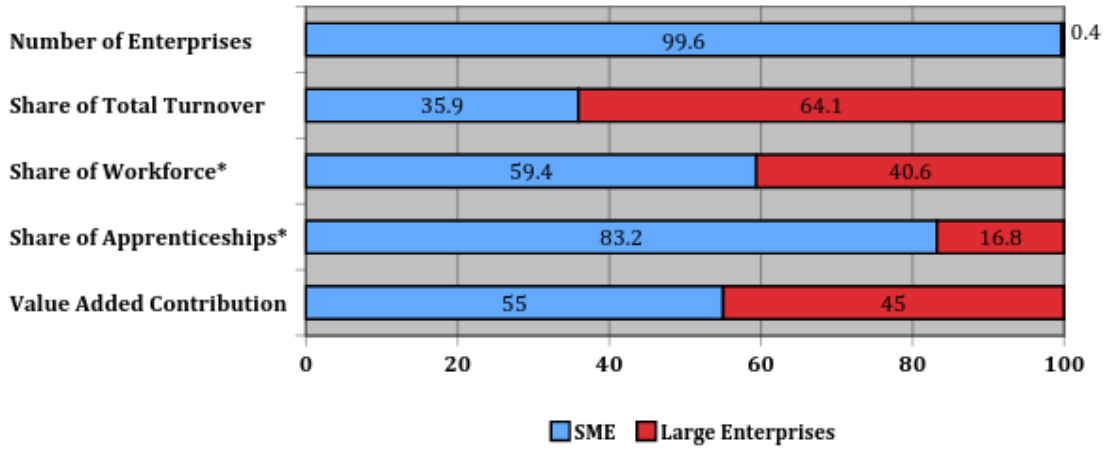


Figure 5: Significance of SME in the German Economy (IfM Definition, 2014).

* Subject to social insurance contribution

Source: IfM, 2014.

According to Figure 5, 99.6 % of all companies in Germany are SME, compared to the EU average of 99.8%. Furthermore, SME employ about 60% of the German workforce and educate 83% of the apprentices in Germany. The training provided in this segment contributes decisively to the comparatively low level of youth unemployment in Germany (BMWi, 2013: p. 3). As one might expect, the shares of turnover and value added contribution lack somewhat behind, but SME still account for nearly 36% of the total turnover and contribute 55% to the value added.

However, the peculiarities of the German SME and the reasons for its outstanding strength, performance and significance for the German economy cannot be explained with these statistical figures alone. According to the Development Loan cooperation is to a great deal the unique structure of the SME that - together with favourable credit ratings, investor confidence, wage restraint, and labour market reforms - accounts for the success of German SME even during the latest economic crisis (Tchouvakhina/Schwartz, 2013: p. 1).

Following this argumentation, the most striking structural difference between German and other European SME is diversity in various respects. First of all, there is a greater diversity in size, since there are larger SME in Germany compared to other European countries. While micro-enterprises dominate the SME segment everywhere in Europe, the proportion of larger SME is still much

greater in Germany than anywhere else (Tchouvakhina/Schwartz, 2013: p. 1). The average rate of 8% for small and medium-sized enterprises within the EU-27 is significantly lower than the German rate of 17%, and other large EU countries even show lower proportions (see Figure 6).

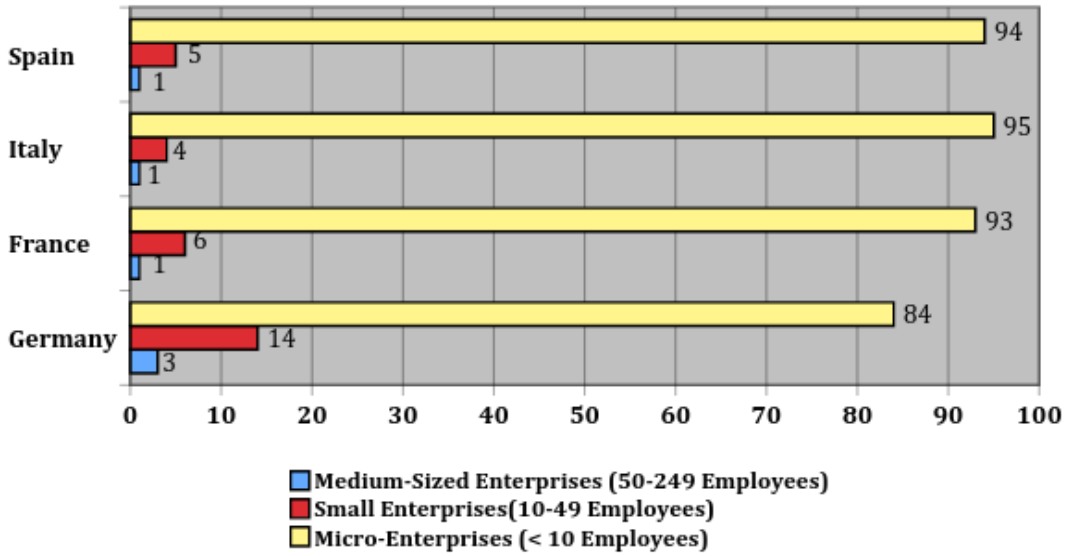


Figure 6: Size Distribution of SME in Germany and Selected Large European Countries (2014, in %).

Source: Tchouvakhina/Schwartz, 2013: p. 1.

This specific size distribution with a substantially greater share of larger SME has major implications for the standing of SME in Germany (Tchouvakhina/Schwartz, 2013: p. 1). Not only is the average turnover of German SME (€ 1.3 Million) significantly higher than in other large EU countries (France: € 0.9 Million; Italy and Spain: € 0.5 Million) but the diversity in size also strengthens the vertical value chain: Beginning with large corporations, parts of the value chain can be shifted onto large SME, parts of theirs to medium-sized SME, and, finally, parts of the medium-sized SMEs' value chain can be transferred to small enterprises. As a result, continuity of flow down the value chain is ensured.

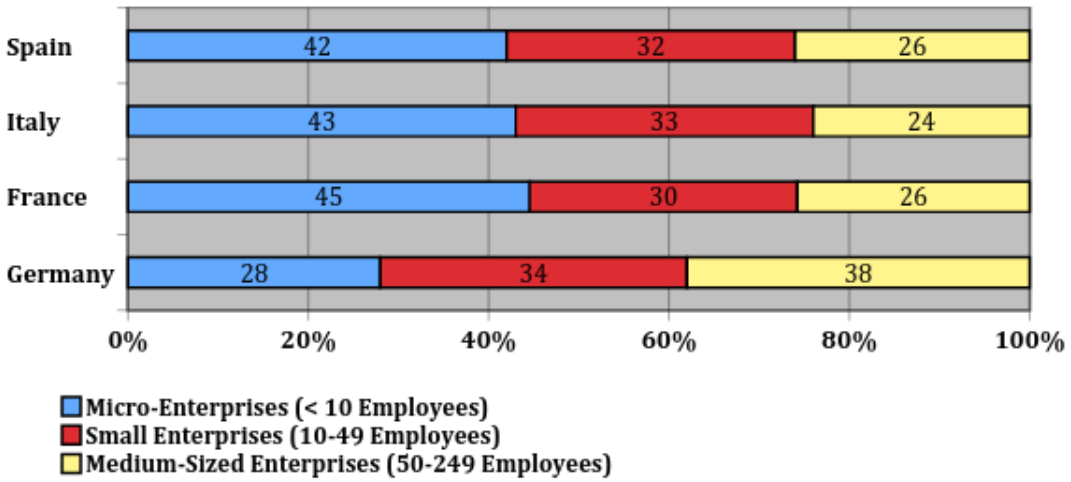


Figure 7: Contribution of Different SME Types to Total SME Value Added in Germany and Selected Large EU Countries

Source: Tchouvakhina/Schwartz, 2013[2]: p. 1.

Apart from diversity in size, the German SME are also more evenly distributed over the different sectors of the economy. Contrary to other industrialized countries, which increasingly feature a marked bias on the service sector (tertarisation), there is still a comparatively strong industrial focus in the German SME segment.

Figure 8 first reveals that about three-fourth of the German SME belong to the service sector.

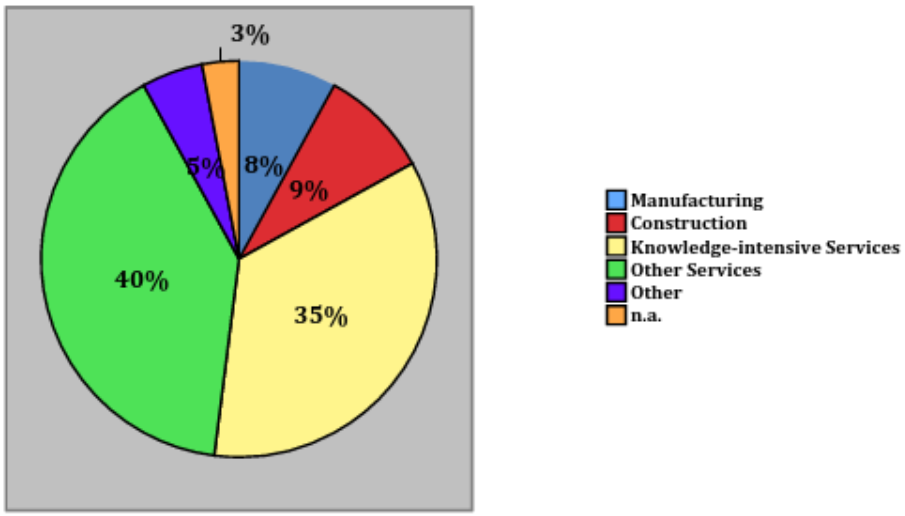


Figure 8: Sectoral Distribution of SME (Number of Enterprises).

[2] Latest available data

Source: Tchouvakhina, 2013[3]: p.4.

On the other hand, however, there is a greater number of larger SME in the manufacturing industry, employing a significant share of the workforce and accounting for a great deal of revenues in the sector. Hence, though most of the SME belong to the service sector in Germany as well, the industry sector continues to play an important role in the SME segment (Ziegenbalg et al., 2010: p. 14; Tchouvakhina/Schwartz, 2013: p. 2; BMWi, 2103: p. 7):

In Germany 46% of total SME revenues originate from industrial activity, compared to an average of 41% within the EU-27.

One out of five German SME employees works in the industrial sector, significantly more than in other major industrialized countries (see Figure 9).

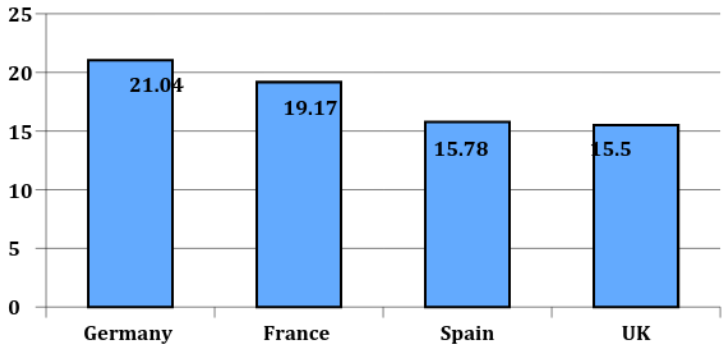


Figure 9: Share of SME Employees Working in the Industrial Sector (2014).

Source: BMWi, (2014).

Though these differences may appear rather small, there is still a more even distribution of SME activity across economic sectors in Germany, a setting that considerably increases stability against external shocks. In case of asymmetric external shocks, as was the case during the 2008 economic crises, less affected sectors can provide a buffer against economic downturn (Tchouvakhina/Schwartz, 2013: p. 2).

An important issue for the German SME in the manufacturing industry is the industrialization process in emerging countries. Because of their increased demand for high quality equipment and machinery, these markets represent a major trade partner for export-oriented German SME in the

[3] Latest available data

industrial sector. Especially larger SME are engaged in the manufacturing businesses with a significant orientation toward foreign markets, and these companies are highly productive, show high investment ratios, and are responsible for a substantial share of employment. While this exposure in the markets of the emerging countries also bares a certain risk, these larger SME engaged in the manufacturing industry represent an important stimulus for growth and increase the competitiveness of the economy as a whole (Tchouvakhina/Schwartz, 2013: p. 2).

Further critical factors for the success of German SME are high R&D investments and cluster activities (Lehnfeld, 2013: p. 2; Böttcher, 2013: p. 11; Tchouvakhina/Schwartz, 2013: p. 2). Clusters are specific supplier-customer structures with a strong regional focus, which offer various advantages.

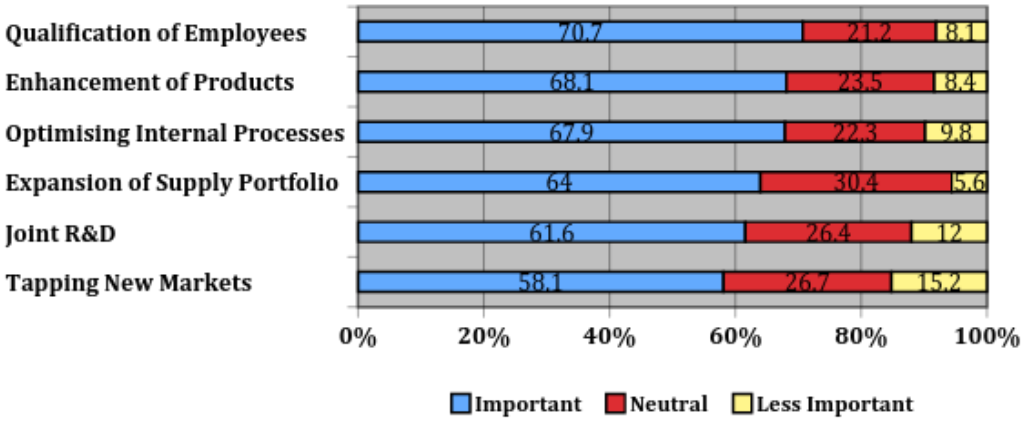


Figure 10: Importance of Cooperation between Supplier and Customer.

Source IFM/Böttcher, 2013[4]: p. 12.

Figure 10 provides an overview of the multiple benefits cluster cooperation between suppliers and customers may offer. Furthermore, empirical data indicate that companies engaged in clusters show superior growth, have an increased likelihood to survive, and are more innovative (Tchouvakhina/Schwartz, 2013: p. 2). Decisive factors for the realization of these advantages are the benefits that emerge from geographic proximity, facilitating the exchange of technological knowledge and know-how. Industrial joint research in many clusters also includes academic research institutions supporting the development or invention of new products and services (Lehnfeld, 2013: p. 2). This provides SME with the opportunity to participate in sophisticated R&D without capital-intensive construction of specific R&D premises. Nevertheless, German

[4] Latest available data

SME increasingly invest in R&D and are highly innovative. Between 2004 and 2011 R&D expenditures increased by around 86%, and in 2011 the German SME spent approximately € 9.5 billion on research and development (see Figure 11).

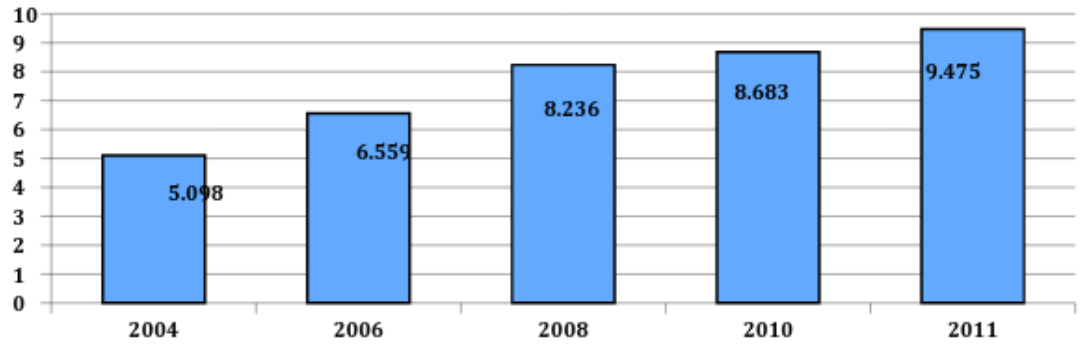


Figure 11: R&D Expenditures in German SME 2004 -2011 (< 500 Employees, in € m).

Source: Lehnfeld, 2013: p. 2.

As a consequence, there is a high share of innovators among German SME: In 2010, 54% of German SME brought product or process innovations to market, compared to an EU average of 34% (BMWi, 2013: p. 12). Furthermore, many of the SME belong to the group of the so called "hidden champions", world market leaders in niche markets producing industrial goods rather than consumer goods (Lehnfeld, 2013: p. 3). Traditionally, Germany accounts for a great deal of these enterprises and occupies the first place position in the global ranking. In 2012, 1300 of a global 2700 hidden champions were German enterprises, a number more than 3 times higher than that of the USA (366) ranging on the second place in the ranking (Lehnfeld, 2013: p. 3). Though some of them are larger companies, there is still a high share of SME among the German hidden champions.

To a great extent, the stability of the German SME is due to sound financing models ensuring financial independence (BMWi, 2013: p. 13):

- SME of the German SME finance most of their investment from own equity and bank loans
- A smaller part of the investment is financed via public-sector assistance
- Only little use is made of alternative, more risky forms of financing like mezzanine or venture capital

- The average equity ratio of German SME has experienced a steady growth in the past decade

Since German SME tend to finance their investment with own resources, they are also in a good bargaining position in negotiations with banks and are rather likely to get favourable credit terms (Lehnfeld, 2013: p. 2).

Between 2002 and 2013 the equity ratio increased by more than 8 percentage points within the SME segment (KfW, 2013: p. 2). This positive trend applies to SME of all sizes and segments, in manufacturing, crafts, trade, and construction (DSGV, 2012: p. 5). However, larger SME on average have a higher equity ratio compared to smaller enterprises (see Figure 13).

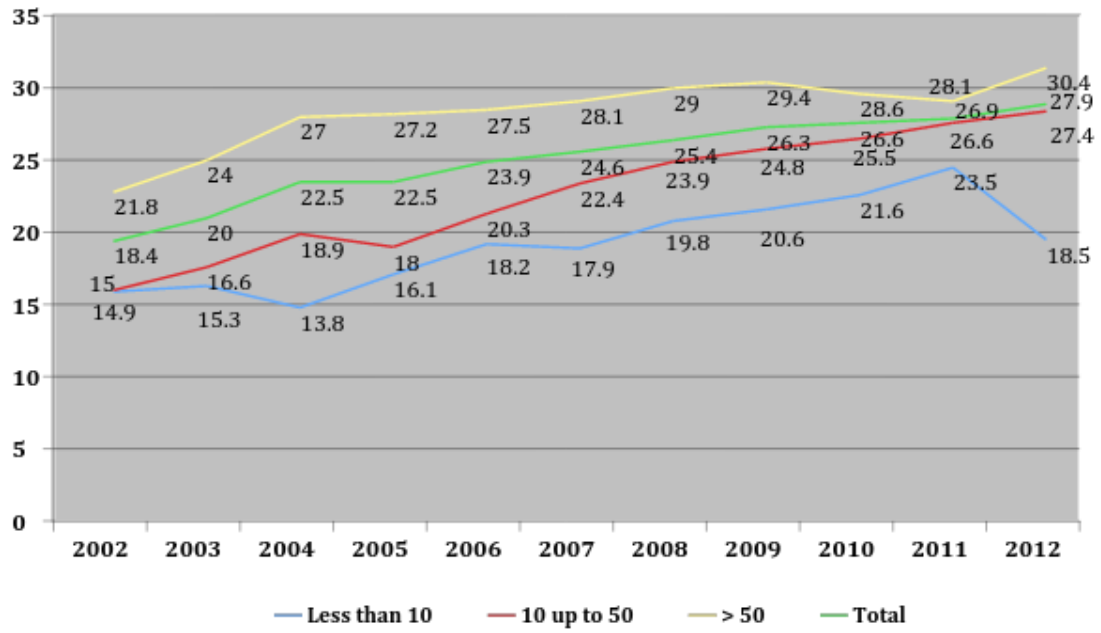


Figure 12: Equity Ratio in German SME Segment by Employment Size Classes 2002-2012.

Source: KfW, 2013[5]: p. 2.

[5] Latest available data

As already mentioned, about 80% of apprentices in Germany learn their profession in SME of the German SME. As a consequence, SME contribute to a great deal to the comparatively low rate of unemployment among young people in Germany, which is currently about 5 % in Germany compared to more than 18 % on EU level. (German Federal employment services, 2016).

A key element of the training system in German SME that is commonly regarded as a model is the dual education system or dual apprenticeship, which guarantees high quality of training and contributes to satisfy the growing demand for skilled labour in Germany (BMWi, 2012: p. 11). The outstanding feature of the dual education systems is the combination of classroom-based and on-the-job training over a period of two or three years, turning apprentices into specialists to meet the companies' individual needs (Bozoyan et al., 2014: p. 8). As a consequence, a high share of apprentices are taken on as employees after the training (70% in production based industries). Altogether, the system currently applies to about 350 professions, and the German Chambers of Industry and Commerce as well as the German Confederation of Skilled Crafts (Central Union of German Crafts- ZDH) in close cooperation with the German government ensure that exacting standards and high quality of training are maintained across Germany (Bozoyan et al., 2014: p. 8). Table 2 provides an overview of the key features of the German dual education system.

Organized by	Private Sector	+	Public Sector
Carried out as	Training at the work place (practice)	+	Classroom tuition (theory)
Conducted in	Companies	+	Part-time vocational schools
Financed by	Companies	+	Federal states, local municipalities
On the basis of	Training Contract	+	Compulsory attendance at vocational School
Regulated by	National laws and regulations	+	Laws and regulations of the Federal states
Regulated in	e.g. Vocational Training	+	e.g. school laws, curricula

	Act 348 Training Directives		
Supervised by	Business chambers in cooperation with trade-unions	+	School supervision bodies
Certified with	Nation-wide recognized certificate		

Table 2: Key Features of the Dual Apprenticeship System in Germany.

Source: IfM / Holz, 2013: p. 29.

Holz (2013) lists some decisive good practice factors and facts of the German dual system:

- The dual apprenticeship system is commonly regarded as a key factor for the sustainable competitiveness of the German economy
- The system ensures steady supply of skilled employees
- The system highlights a consensus-oriented public-private partnership
- Training is developed jointly by business associations, trade unions and the federal government in an institutionalized framework
- There is a high-quality training according to uniform national standards with nationwide acknowledged certificates
- The dual system facilitates the building-up of national occupational labour markets and improves nationwide labour mobility
- The system fosters easy transition into regular employment
- There is a high level of participation on part of the companies
- Monitoring of quality levels is guaranteed

Summing up, the significance and outstanding performance of the German SME can be explained by the following factors (BMWi, 2012: p. 1):

The special culture of family businesses in the German SME fosters sustainability of the companies' development in many ways. Main features are stable consumer relations and solid

expansion strategies. In addition, a long-term view concerning business relations prevails resulting not least in reliability and a high standard of quality.

As a rule, companies have deep-rooted links to their specific region, resulting in a higher responsibility of action.

Sustainability is also an important issue concerning the employment policy. During the latest crisis, constant human resources policy of German SME made them an anchor of stability. At the same time, the dual system of vocational training combining theoretical education and the acquirement of necessary practical skills provides German enterprises with high skilled employees meeting their specific demand. However, some studies conclude, that the competitiveness of the German SME could be threatened (Sommer, 2015, pp: 1512).

SME of the industrial sector employ a great deal of the total workforce and are particularly innovative and successful in international markets.

German SME are embedded in clusters and rest upon reliable structures meeting their specific needs. In this context, chambers and business associations play an important role, since they represent their interests and handle important public sector tasks.

As a rule, SME are based on sound financing models and are often supported by local savings- and cooperative banks with a special focus on the financing of SME.

1.3 SME in North Rhine-Westphalia

North Rhine-Westphalia located in the west of Germany is the fourth-largest of the 16 German federal states, covering an area of 34,098 square kilometres. However, with approximately 17.8 million inhabitants in total and 523 inhabitants per km^2 it is the most populous and the most densely populated federal state in Germany. Actually, North Rhine-Westphalia is more densely populated than Japan or the Netherlands (NRW Invest, 2012: p. 5). The biggest cities are Cologne, Dortmund, Essen, Duisburg and the state capital Düsseldorf, and the most important metropolitan areas are the Rhineland and the Ruhr area.

	Total	Percentage of German Total
Area	34,098 sq. km	9.5%
Population	17.8 m	21.7%
Population Density	523 inhabitants / sq. km	
Employment	8.8 m	21.4%
Gross Domestic Product	€ 568.9bn	22.1%
GDP per capita	€ 31,893	
Private Consumption*	€ 321.6bn	23.0%
Exports	€ 176.2bn	16.6%
Imports	€ 204.0bn	22.5%
Foreign Direct Investment**	€ 189.8bn	27.1%

Table 3: Economic Overview North Rhine-Westphalia.

Source: NRW Invest 2012, p.4.

Furthermore, approximately 150 million people live within a 500 kilometres radius of the state capital Düsseldorf, a number representing one third of all consumers in the EU with 45% of the purchasing power (NRW Invest, 2012: p. 5). With its gross domestic product of almost € 569bn, North Rhine-Westphalia generates the biggest share of the German GDP, and outperforms entire countries like Turkey (€ 555bn), Switzerland (€ 457bn), Poland (€ 370bn) or Argentina (€ 320bn) in this respect (NRW Invest 2012, p. 5). Per Capita GDP in NRW is approximately on the level of the German average of € 31,914 (2011; Bozoyan et al., 2014: p. 2).

Figure 13: Location of North Rhine-Westphalia and the Ruhr Area in Germany.

Source: Hartmann, 2010: p. 7.

When analysing the role of SME in North Rhine-Westphalia, it first seems convenient to take a brief look at the structural changes the federal state went through in the past decades. Though North-Rhine Westphalia with its large scale coal and steel industry in the Ruhr area had been one of the key regions of the German "Economic miracle" after World War 2, first signs of decline had already casted a shadow on the highly specialized, mainly resource-based Ruhr economy. As a matter of fact, the demand pull emerging from the reconstruction needs and the Korean War in the early 1950s only postponed the emerging structural crisis, since the industrial cluster of the so

called “Montankomplex”, comprising also enterprises from the power generation and chemical industry, increasingly lost significance in a changing economic environment. While in the beginning of the twentieth century large scale coal mining represented an important location factor for energy intensive steel production and coal-based chemical processes, changes in technology and increasing international competition in the course of the century more and more undermined the Ruhr economy’s significance and profitability (Bross/Walter, 2000: p. 5f.).

Time Period	Phase	Characteristics
From 1840	Industrialization with strongest growth phase between 1894 and 1914	Large scale coal mining and development of coal chemistry Introduction of mass production of iron and steel Foundation of large enterprises Strong immigration
1914-1945	First signs of crisis	Economic depression, World Wars I and II, dismantling of product lines after WW II End of product cycle of coal mining
1945- end of 1950s	Rapid growth	Temporary demand pull due to reconstruction and Korean war caused (the building-up of) over-capacities
1960s - today	Restructuring and transition	Crisis of coalmining and closure of pits: international competition and locational disadvantages due to changed technology Absorption of workers in other sectors (1960s) Steel crisis in 1974 with overall decline of the region

Table 4: Development and Structural Change in the Ruhr Area.

Source: Hartmann, 2010: p. 10.

Inasmuch, as Hartmann notes, "…the economic history of the Ruhr area can be seen as a blueprint for a region whose initial success led to subsequent downturn (Hartmann, 2010: p. 9). In spite of the early signs of the crisis, the restructuring process began rather late and proceeded quite slow. Among the reasons for the hold-up of the badly needed reorientation towards a more diversified industry structure were the large, rigid organizational structures with conglomerates and cartels, a specific hierarchical structure between SME (especially mechanical engineering) and dominant large firms, the development of a disorganized and unplanned urban structure with poor infrastructure, a strong political lobby in favour of the traditional industries, and last but not least, the main political goal of minimizing social disparities (Bross/Walter, 2000: p. 6 f.).

In an environment of a large scale coal and steel industry relying heavily on economies of scale and strong vertical integration, SME were rather scarce, extremely specialized, and more often than not completely dependent from the coal and steel complex. R&D efforts were left to the large enterprises with only limited impact on the region, so the endogenous potential in the local SME segment was rather low. In addition, poor links to partners outside the industry or region and a very specialized labour force "resulted in a heavy legacy that hindered flexible adaptation and reorientation of the dominant production cluster" (Bross/Walter, 2000: p. 7).

Nevertheless, in the wake of the devastating steel crisis of 1974, the focus changed from a passive accommodation of declining industries towards a new policy of structural change with a strong focus on regionalization and diversification, also strengthening the role of SME (Hartmann, 2010: p. 11). The lessons learned from the socio-economic history of North Rhine-Westphalia in general and the Ruhr area in particular are that diversification and regional innovation potential play a crucial role, "…since lock-in effects in regional specialization very often lead to poor regional innovation performance caused by low absorptive capacities for R&D results" (Hartmann, 2010: p. 12). Still, the Ruhr area with nearly 6 million inhabitants is one of the world's largest industrial agglomerations even today (Bross/Walter, 2000: p. 7).

A closer current look at North Rhine-Westphalia as a whole reveals a structure of complementary specialization between the Ruhr area and the other regions of the federal state (Hartmann, 2010: p. 18 f.): The Rhine-land features – much more than the Ruhr area - a high concentration of higher value production oriented services and a good performance with respect to the development of new technologies, while the region around Aachen with an important technical university and the Cologne area with its media cluster are highly dynamic. Since the mid-1990s, several new production clusters in the Ruhr area and North Rhine-Westphalia in newly emerging sectors

developed, such as environmental technology, media technology, or social care, among others. In addition, other new technologies increasingly play an important role in the economy of the region, among them new materials, manufacturing technology and power engineering. In 1999, Roland Berger Consulting identified in a study appointed by the regional government six latent or potential regional clusters in North Rhine-Westphalia: Energy Technology, Logistics and Mobility, Information and Communication Technologies, Medical Technology, New Materials, and Micro Technology (Roland Berger, 2001). In 2001, chemistry, tourism, water technology, machinery and equipment, design, industrial technology and materials, as well as mining engineering were added to the list (Hartmann, 2010: p. 19). In this setting, like in Germany as a whole, SME play a crucial role for the local economy.

Even in view of the large size of North Rhine-Westphalia, the large number of SME is striking compared to other German Federal States.

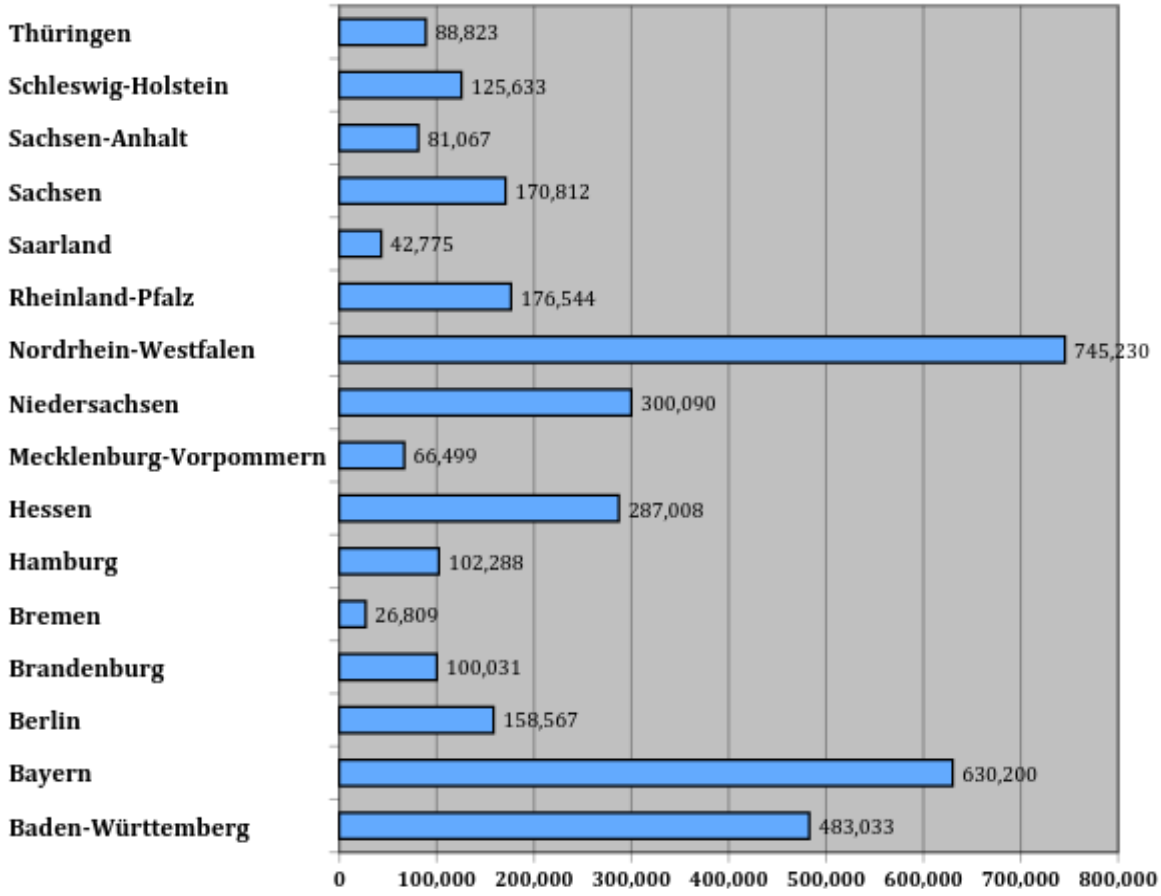


Figure 14: Number of SME by Federal States (2011, < 250 Employees).

Source: Günterberg (2012), p. 72.

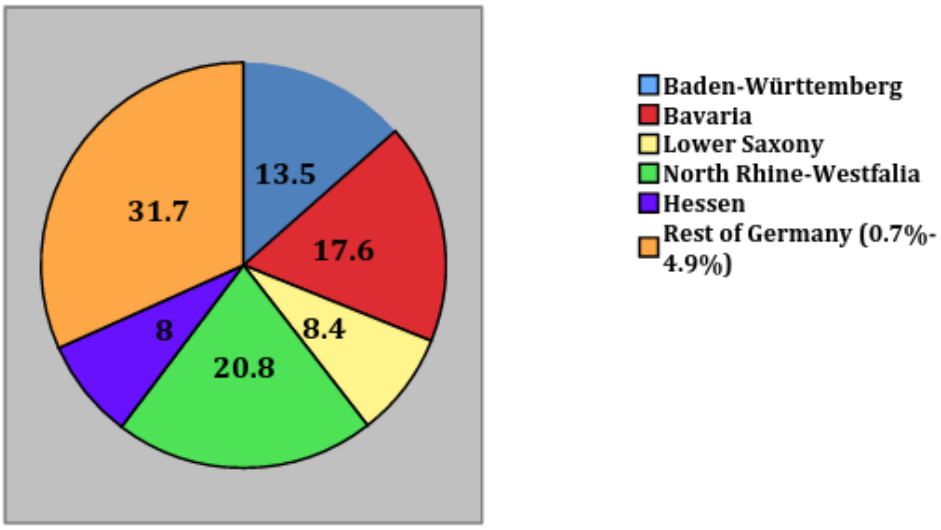


Figure 15: SME Distribution over German Federal States (Number of SME in %).

Source: Günterberg 2012, p. 72

Figure 18 illustrates that North Rhine-Westphalia shows the biggest share of SME of all federal states and together with Bavaria and Baden-Württemberg accounts for more than 50% of all SME in Germany.

Table 5 shows the economic weight of SME in selected economic sectors of North Rhine-Westphalia as determined by the "Federal authorities for statistics and data North-Rhine Westphalia.

Size	Enterprises		Employees		Turnover	
	Number	%	Number	%	€ Million	%
	Mining and Quarrying					
SME	214	95.9	2 575	5.5	480	12.8
Micro	110	49.2	244	0.5	21	0.6
Small	87	39.2	1 351	2.9	205	5.5
Medium	17	7.5	979	2.1	254	6.8
Large Enterprises	9	4.1	44 210	94.5	3 261	87.2

Total	223	100	46 785	100	3 741	100
	Manufacturing					
SME	42 060	97.2	722 431	48.1	90 462	28.7
Micro	25 237	58.3	100 288	6.7	6 584	2.1
Small	12 932	29.9	250 740	16.7	25 901	8.2
Medium	3 890	9.0	371 402	24.7	57 977	18.4
Large Enterprises	1 233	2.8	779 671	51.9	224 912	71.3
Total	43 293	100	1 502 101	100	315 374	100
	Energy and Water Supply					
SME	301	76.0	7 705	9.5	3 140	4.1
Micro	95	24.0	321	0.4	90	0.1
Small	99	25.0	1 372	1.7	460	0.6
Medium	107	27.0	6 012	7.4	2 590	3.4
Large Enterprises	95	24.0	73 763	90.5	73 271	95.9
Total	396	100	81 468	100	76 411	100
	Construction					
SME	28 651	99.9	245 646	89.9	20 983	77.0
Micro	21 100	73.6	75 138	27.5	4 774	17.5
Small	7 026	24.5	125 091	45.8	10 382	38.1
Medium	525	1.8	45 416	16.6	5 827	21.4
Large Enterprises	34	0.1	27 635	10.1	6 253	23.0

Total	28 684	100	273 281	100	27 237	100

Table 5: Enterprises in North Rhine-Westphalia by Economic Sections.

Source: Radmacher-Nottelmann, 2008: p. 28 f.

Size	Enterprises		Employees		Turnover	
	Number	%	Number	%	€ million	%
	Wholesale and Retail Trade; Repair of Motor Vehicles and Personal and Household Goods					
SME	88 137	99.1	645 487	54.1	121 072	34.1
Micro	69 284	77.9	224 005	18.8	21 515	6.1
Small	15 727	17.7	247 540	20.8	42 135	11.9
Medium	3 126	3.5	173 942	14.6	57 421	16.2
Large Enterprises	836	0.9	547 389	45.9	234 357	65.9
Total	88 973	100	1 192 876	100	355 429	100
	Hotels and Restaurants					
SME	28 730	99.9	187 282	87.7	6 532	81.5
Micro	24 043	83.6	79 499	37.2	3 004	37.5
Small	4 340	15.1	77 832	36.4	2 310	28.8
Medium	348	1.2	29 951	14.0	1 219	15.2
Large Enterprises	29	0.1	26 337	12.3	1 478	18.5
Total	28 759	100	213 619	100	8 010	100
	Transport, Storage and Communication					

SME	19 203	99.0	206 371	29.3	19 243	16.4
Micro	14 027	72.3	45 252	6.4	2 728	2.3
Small	4 188	21.6	82 581	11.7	6 671	5.7
Medium	988	5.1	78 538	11.1	9 844	8.4
Large Enterprises	201	1.0	498 912	70.7	98 399	83.6
Total	19 403	100	705 283	100	117 642	100
	Real Estate, Renting, and Business Activities					
SME	140 995	99.6	646 061	65.4	59 338	66.2
Micro	127 135	89.9	249 393	25.3	20 057	22.4
Small	11 580	8.2	196 313	19.9	19 816	22.1
Medium	2 279	1.6	200 355	20.3	19 466	21.7
Large Enterprises	530	0.4	341 167	34.6	30 342	33.8
Total	141 525	100	987 228	100	89 680	100

Table 6: Enterprises in North Rhine-Westphalia by Economic sections, continued.

The author points out that data concerning the activities of smaller enterprises are hard to get, and corresponding statements therefore are of limited reliability (Radmacher-Nottelmann, 2008: p. 24). However, the data presented in Table 5 cover the entire sector of producing industries (mining and quarrying, manufacturing, energy supply, and construction) and parts of the service sector. Data for agriculture, hunting, and forestry, financial intermediation, education, health and social work as well as other community, social and personal service activities are not included.

It must be noted that the data presented are based on estimations and therefore may differ from those of similar statistics. Furthermore, for methodical reasons, economic activities are not ascribed to single business plants but to the respective headquarters. This means plants of North Rhine-Westphalia enterprises situated in other federal states of Germany are included in the

statistic. Hence, the data do not exactly represent the activities in North Rhine-Westphalia but rather the activities controlled from there. Radmacher - Nottelmann notes that these shortcomings may nevertheless be acceptable, since the main objective of the study is to provide insights in the structure of the economic sectors (Radmacher-Nottelmann, 2008: p. 24).

The data reveal among other things, the strong economic weight of the chemical and metal processing industry. Figure 19 shows the shares of different operating industries of SME in North Rhine-Westphalia.

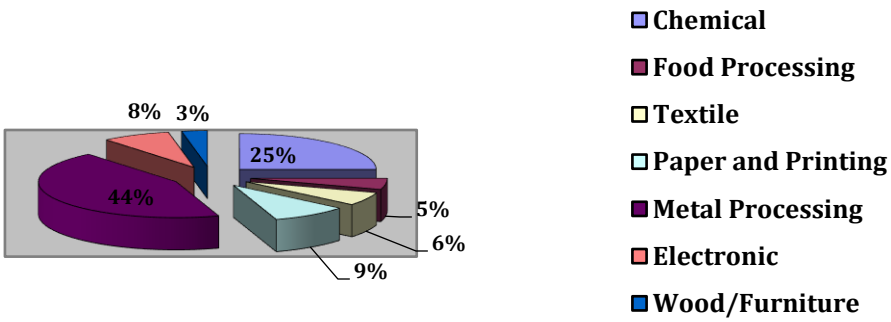


Figure 16: Operating Industries of SME in North Rhine-Westphalia.

Source: NRW EFAA 2013: p. 7.

2. DYNAMIC CAPABILITIES AND SME GROWTH MODELS

2.1 Dynamic Capabilities

2.1.1 Theoretical Background

The Dynamic-Capabilities-approach is based on the "resource based view", a new understanding of strategic management introduced as a reaction to the prevailing market based approach in the late 1980s. While the market based view highlights the positioning of an enterprise in the market as a decisive factor for competitiveness and success and consequently calls for the adaption of the enterprise to the market, the resource based view takes the capabilities of an enterprise as a starting-point to choose an adequate market (e.g. Eriksson, 2014, p: 71) in spite of some critical reflection about the Dynamic capabilities approach in general (e.g. Giudici et. al, 2012, pp: 436).

According to Porter (1990), the market based view places little emphasis on the impact of individual firm attributes on a firm's competitive position. Rather, it has adopted two simplifying assumptions to explain the impact of a firm's environment on its performance (Barney, 1991: p. 100):

- It is assumed that firms within an industry or strategic group are identical in terms of the strategically relevant resources they control and the strategies they pursue.
- Should – perhaps through new entry - resource heterogeneity develop in such an industry or group, it will not last because resources used by firms to implement their strategies are highly mobile, i.e. they can be bought and sold in factor markets.

On the contrary, the approach of the resource-based view to explain competitive advantages is based on two alternative assumptions (Barney, 1991: p. 101)

- Firms within an industry or group are heterogeneous with respect to the strategic resources they control
- These resources are not perfectly mobile across firms, so heterogeneity can actually be long lasting.

Resource-based models use the implications of these two assumptions to identify and analyse sources of sustained competitive advantage. In a notable article contributing to the dynamic

capability approach literature, Teece et al. put it this way:

> *"The resource-based approach sees firms with superior systems and structures being profitable not because they engage in strategic investments that may deter entry and raise prices above long-run costs, but because they have markedly lower costs, or offer markedly higher quality or product performance. This approach focuses on the rents accruing to the owners of scarce firm-specific resources rather than the economic profits from product market positioning.[…] Competitive advantage lies 'upstream' of product markets and rests on the firm's idiosyncratic and difficult-to-imitate resources."* (Teece et al., 1997: p. 513).

According to Barney (1991) or Wang and Rajagopalan (2015), firm resources are assets, capabilities, organizational processes, firm attributes, information, or knowledge a firm controls and which enable it to create and implement strategies that improve its efficiency and effectiveness. The variety of possible resources can be classified into three categories (Barney, 1991: p. 101):

- Physical capital resources: These include the physical technology a firm uses, its plant and equipment, geographic location, and its access to raw material.
- Human capital resources: This category covers the training, experience, judgment, intelligence, relationships and insight of individual managers and employees in a firm.
- Organizational capital resources: This category refers to a firm's formal reporting structure, its formal and informal planning, controlling and coordinating systems as well as informal relations among relevant groups.

Aiming at the identification of concrete criteria that distinct the market-based from the resource-based view, the resources can further be classified by tradability and tangibility.

	Tradable	Non-Tradable
Tangible	Tangible assets	
Non-tangible	Intangible assets	Skills

Table 7: Classification of Resources by Tradability and Tangibility.

Source: Hölzner, 2009: p. 117.

According to the assumptions of the resource-based view presented above, competitive advantages mainly accrue from non-tradable, non-tangible skills. Based on this assumption, a third approach, the competence-based view, claims that it is not the mere existence of resources that determines the success of a firm, but also the capability to put them into practice (e.g. Klarner and Raisch, 2013, p:172).

However, both, the resource-based view as well as the competence-based-view are often criticized for being static models that lack the ability to explain the dynamic processes accounting for the formation and maintenance of competitive advantages under changing conditions (Eisenhardt/Martin, 2000; Wang Ahmed, 2007: p. 6). It is the dynamic capability approach that aims to fill this gap by describing strategies for the building-up and maintenance of capabilities and competitive advantage.

2.1.2 Definitions of Dynamic Capabilities

Teece et al. point out that, though well-known companies like IBM or Philips succeeded in "global competitive battles" by following a strategy of accumulating valuable technology assets, a resource-based strategy like this is often not sufficient to achieve a sustained competitive advantage (Teece et al., 1997: p. 515). As a matter of fact, even companies with a large stock of valuable technology assets sometimes lack useful capabilities (e.g. Beske et al, 2014: pp. 133). Rather, winners in the global competition stand out by showing timely responsiveness as well as rapid and flexible product innovation based on the capability to effectively coordinate and redeploy internal and external competencies. These abilities to achieve new forms of competitive advantage are referred to as "dynamic capabilities" to express the two key elements that distinguish the approach from previous views in its main focus (Teece et al., 1997: p. 515):

> The term "dynamic" stands for the ability to renew competencies to meet the demands of an ever changing business environment. Timely and innovative responses are crucial prerequisites for success in a surrounding of rapid technology change and a hard to determine nature of future competition and markets, where time-to-market and timing are critical.
>
> The term "capabilities" highlights the importance of strategic management to appropriately adapting, integrating and reconfiguring internal and external organizational skills, resources and functional competencies in a changing environment.

In this context, organizational competencies are defined as appropriate organizational routines and processes that are based on firm-specific assets assembled in integrated clusters of individuals and groups e.g. quality, systems integration (Teece, 2014, pp:20). These competencies typically are viable for multiple product lines and even may extend to alliance partners outside the firm. Core competencies are specific to a firm's products and services and their value depends on the endowment of the firm relative to its competitors as well as on how difficult it is to replicate them (Teece et al., 1997: p. 516; Sitkin et al., 2011).

However, apart from the dynamic capabilities definition presented by Teece et al. there is a plethora of different further characterizations in the scientific literature. Table 7 presents a selection of various definitions.

Teece	"The firm's ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments" (Teece et al., 1997,p.509)
Eisenhardt/Martin	"The firm's processes that use resources – specifically the processes to integrate, reconfigure, gain, and release resources – to match and even create market change. Thus, dynamic capabilities are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die." (Eisenhardt, Martin, 2000, p.1105).
Teece	The ability to sense and then seize opportunities quickly and proficiently (Teece, 2000).
Griffith/Harvey	"A global dynamic capability is the creation of difficult-to-imitate combinations of resources, including effective coordination of inter-organizational relationships, on a global basis that can provide a firm with a competitive advantage (Griffith, Harvey, 2001, p.597).
Rindova/Taylor	Dynamic capabilities evolve at two levels: a microevolution through "upgrading the management capabilities of the firm" and a macroevolution associated with "reconfiguring market

	competencies".(Rindova/Taylor, 2002)
Zahra/George	Dynamic capabilities are essentially change-oriented capabilities that help firms redeploy and reconfigure their resource base to meet evolving customer demands and competitor strategies. (Zahra/George, 2002)
Zollo	"A dynamic capability is a learned and stable pattern of collective activity through which the organization generates and modifies its operating routines in pursuit of improved effectiveness." (Zollo/Winter, 2002, p.339).
Macpherson et al.	Dynamic capabilities refer to the ability of managers to create innovative responses to a changing business environment (Macpherson et al., 2004)
Alsos et al.	There are four generic dimensions of dynamic capabilities: 1) external observation and evaluation, 2) external resource acquisition, 3) internal resource reconfiguration, and 4) internal resource renewal (Alsos et al., 2007)
Makadok	"Dynamic capabilities can be disaggregated into the capacity (1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets." (Makadok, 2001, p.387)
Cillo et al.	Dynamic capabilities are processes based on knowledge – they especially regard knowledge creation, knowledge integration, and knowledge reconfiguration (Cillo et al., 2007).
Augier/Teece, 2009	"The ability to sense and then to seize new opportunities, and to reconfigure and protect knowledge assets, competences, and complementary assets with the aim of achieving a sustained competitive advantage." (Augier/Teece, 2009, p.410)

Table 8: Selected Definitions of Dynamic Capabilities in the Scientific Literature.

Source: Kuulivainen 2011, p. 38; Barreto 2009, p. 260.

According to Wang and Ahmed, "…the emergence of dynamic capabilities has enhanced the RBV by addressing the evolutionary nature of firm resources and capabilities in relation to environmental changes and enabling identification of firm- or industry-specific processes that are critical to firm evolution" (Wang/Ahmed, 2007: p. 31). The reaction to environmental changes is a crucial element of the dynamic capabilities approach (e.g. Ding et al, 2013, p: 147), since capabilities can become irrelevant or even rigidities in a changing environment and "firms may create a "competency trap" for themselves, becoming ever better at an ever less relevant set of processes" (Wang/Ahmed, 2007: p. 33).

2.1.3 Components of Dynamic Capabilities

Based on existing empirical findings, three main components of dynamic capabilities can be identified that enable a firm to integrate, transform, renew and rebuild their competences and resources and are suitable to explain the mechanisms of linking internal resource advantages to external competitive advantage: adaptive capability, absorptive capability, and innovative capability (Talaja, 2012, p: 158 or Vanpoucke et al, 2014, pp: 446).

According to Zhou and Li, "*adaptive capability* refers to a firm's ability to reconfigure resources and coordinate processes quickly and effectively in order to adequately respond to rapid environmental changes" (Zhou/Li, 2010: p. 225). Inasmuch, they capture the essence of dynamic capabilities. Wang and Ahmed put the focus on opportunities and define adaptive capability "as a firm's ability to identify and capitalize on market opportunities" (Wang/Ahmed, 2007: p. 13). The authors note that adaptive capability differs from the notion of adaptation in so far as adaption describes an end state of survival, while adaptive capability is more focused on effective search and balancing exploration and exploitation strategies and, "manifested through the inherent flexibility of the resources available to the firm and the flexibility in applying these resources, is closely linked to the resource perspective" (Wang/Ahmed, 2007: p. 13). Measures for adaptive capability include the ability to adapt the product-market scope to respond to external opportunities, to scan the market, monitor customers and competitors, to adequately allocate resources and to quickly respond to changing market conditions (Laaksonen,2016,pp:18).

Absorptive capability refers to the ability of a firm to assimilate and exploit new knowledge acquired from external sources, and firms with a high level of absorptive capacity are likely to harness new knowledge to enhance their innovative activities (Zhou/Li, 2010: p. 225). Inasmuch it relates to recognizing the value of new external information and the capability to absorb and use it (Talaja, 2012: p. 156). Cohen and Levinthal add that "…the ability to evaluate and utilize outside knowledge is largely a function of the level of prior knowledge" (Cohen/Levinthal, 1990: p. 128).

Hence, a high absorptive capability manifests itself in a high ability to learn, integrate external information and to transform it into firm-specific knowledge (Wang/Ahmed, 2007: p. 15). Absorptive capacity can be critical for the success of firms facing external technological change, and differences in absorptive capacity across firms show up in various forms. According to Wang and Ahmed, efficient, successful adopters (Wang/Ahmed 2007, p. 15 f.):

> Show long-term commitment of resources in the face of uncertainty, while commitment of less efficacious adopters is limited and reversed at the first sign of failure;
>
> learn from various partners and own research and experience to develop first-hand knowledge of a new technology, whereas less successful adopters are limited to competitive imitation and second-hand knowledge;
>
> thoroughly analyse new technology and share information within multidisciplinary teams, while less efficient adopters confine themselves to superficial analysis and a functional structure;
>
> develop and utilize complementary technologies;
>
> show a high level of knowledge and skills in areas relevant to applying the new technology.

Finally, *innovative capability* is defined as the ability to develop new products and markets (Talaja, 2012: p. 156). Here, a crucial element is the alignment of strategic innovative orientation and innovative behaviours and processes (Wang/Ahmed, 2007: p. 16). Innovative capability is a measure for the link between a firm's resources and capabilities and the relevant product market.

Based on these component factors, Wang and Ahmed (2007) introduce an integrated framework for the concept of dynamic capabilities, incorporating relevant antecedents and consequences. The corresponding model is depicted in Figure 20.

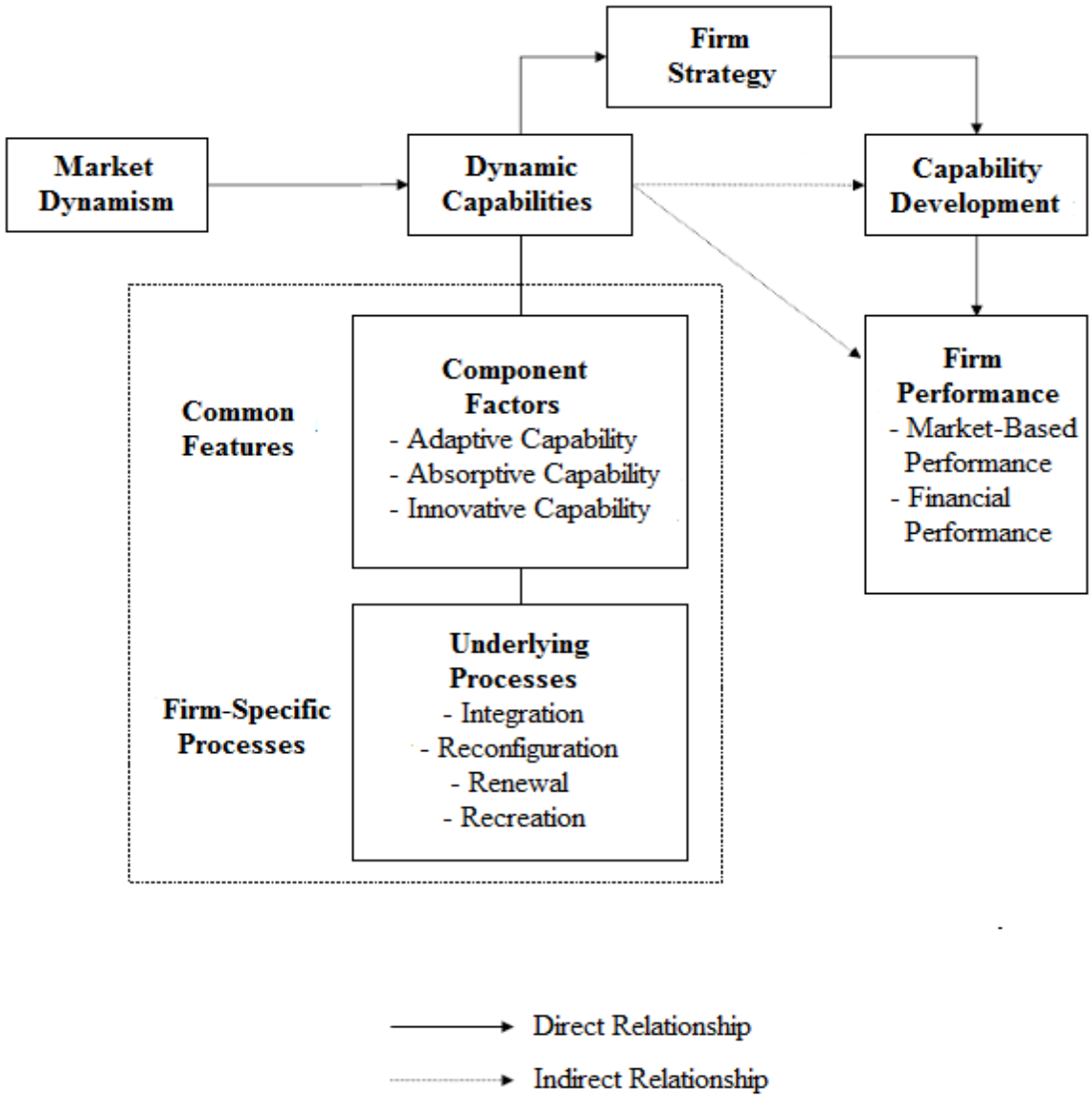


Figure 17: Wang and Ahmed Research Model of Dynamic Capabilities.

Source: Wang/Ahmed, 2001; p. 19.

The authors conclude that the effects of dynamic capabilities on capability development and firm performance are rather complex: "a firm strengthens particular capabilities as directed by its own strategic goals; and when capability development and firm strategy are effectively aligned, a firm's dynamic capabilities lead to better performance and hence sustained competitive advantage" (Wang/Ahmed, 2007: p. 27).

2.1.4 SME and Dynamic Capabilities

According to Kuuluvainen (2011), the acquisition of strategically important resources can lead to a competitive advantage, and there are significant relations between opportunity search and resource acquisition processes. Hence, in advance of the process of resources acquirement, a firm has to identify the resources needed and to choose appropriate combinations from possible alternatives. Training enhances the ability of a firm to develop new skills and abilities and allow the management to expand their vision and entrepreneurial orientation, "in terms of searching and evaluating new opportunities as well as reconfiguring resources and competencies" (Kuuluvainen, 2011: p. 51).

However, Ó hÓbain and O'Gorman (2012) use a critical realist methodology to study dynamic capabilities requirements in a SME context and find that a more holistic approach is required rather than simple investments in training and development. In fact, they come to the following conclusions (Ó hÓbain/O'Gorman, 2012: p. 11 f.):

- The interaction between higher-order learning, the ability of the firm to identify, assimilate and exploit new knowledge, and the use the entrepreneur is able to make of his network of business contacts determines the capability to adequately change the resources of the firm.
- Changes in the firm's dynamic capabilities have the potential to feedback into social capital and organizational learning, since learning may lead to new contacts and new contacts may offer new insights or perspectives on business issues.
- As the firm's dynamic capabilities evolve, they are likely to influence absorptive capacity in the nature and direction of searches for new knowledge.
- The interaction between the above mentioned factors has the potential to foster organizational learning, avert impending myopia, and to positively feed the development of the organization by creating the realization of the need for change in the firm's resources base and by providing mechanisms to purposefully achieve change.

The authors add that the levels of investments in learning customary in larger enterprises may not be suitable for SME since their needs for coordination and standardization of processes are quite different (Ó hÓbain/O'Gorman, 2012: p. 12). They claim that it would be more appropriate for smaller enterprises to invest at a suitable level consistent with their individual needs.

2.2 Growth of SME

2.2.1 Theoretical Framework

Basically, growth models for SME can be divided into three groups: stochastic or random models, deterministic or static models, and stages models (Farouk/Saleh, 2011: p.3 f.). Stochastic models were the first approaches to describe growth phenomena in SME. Based on the supposition that there are too many factors affecting growth, none of which has a dominant effect, it is assumed that the growth of firms is perfectly random and cannot be predicted by any groups of variables.

Stages Models assume that firms progress through different stages, typically including existence, growth, take-off and maturity (Farouk/Saleh, 2011: p. 4). Popular contributions to this approach are, among others, the models developed by Steinmetz (1969), Greiner (1972) and Churchill and Lewis (1983). Churchill and Lewis describe the evolution of 5 main characteristics (management style, organization, and extent of formal systems, major strategy, business and owner) as a SME progresses through 5 stages (existence, survival, success-disengagement, success-growth, take-off, resource maturity). Another example of similar structure, the stages growth model of Scott and Bruce (1987), is depicted in Table 9.

	Stage 1: Inception	Stage 2: Survival	Stage 3: Growth	Stage 4: Expansion	Stage 5: Maturity
Stage of Industry	Emerging, fragmented	Emerging, fragmented	Growth, some larger competitors, new entries	Growth, shakeout	Growth, shakeout or major, declining
Key Issues	Obtaining Customers, Economic production	Revenues and expenses	Managed growth, ensuring resources	Financial growth, maintaining control	Expense control productivity, niche marketing in decl. industry

Top Management Role	Direct supervision	Supervised supervision	Delegation, coordination	Decentralization	Decentralization
Management Style	Entrepreneurial, individualistic	Entrepreneurial, administrative	Entrepreneurial, coordinate	Professional, administrative	Watchdog
Organization Structure	Unstructured	Simple	Functional, centralized	Functional, decentralized	Decentralized, functional
Product and Market Research	None	Little	Some new product development	New product innovation, market research	Production innovation
Systems and Controls	Simple bookkeeping, eyeball control	Simple bookkeeping, personal control	Accounting systems, simple control reports	Budgeting systems, sales and production reports, delegated control.	Formal control, systems management by objectives
Major Source of Finance	Owners, friends and relatives, suppliers leasing	Owners, suppliers, banks	Banks, new partners, retained earnings	Retained earnings, new partners, secured long-term debt	Retained earnings, long-term debt
Cash Generatio	Negative	Negative/ breakeven	Positive but reinvested	Positive with small	Cash generator,

n				dividend	higher dividend
Major Investments	Plant and Equipment	Working capital	Working capital, extended plant	New operating units	Maintenance of plant and market position
Product Market	Single line and limited channels and market	Single line and market, but increasing line and channels	Broadened but limited line, single market, multiple channels	Extended range, increased markets and channels	Contained lines. Multiple markets and channels

Table 9: Scott and Bruce SME Stages Growth Model.

Source: Scott/Bruce, 1987, p. 48.

However, stages models are often criticized for their marked bias on internal factors and a lack of application in longitudinal studies necessary to clearly understand the process of growth (Kuuluvainen, 2011: p. 5).

The deterministic approach on the contrary aims at identifying diverse internal and external variables suitable to explain SME growth, such as individual characteristics, strategies and practices that are significantly related to growth (Farouk/Saleh, 2011: p. 4). However, the ability of the deterministic approach to explain small business growth is limited and difficult to apply in different contexts (e.g. industry or country), because of the complex nature of growth phenomena and the marked heterogeneity of SME. As a matter of fact, as Menuhin and Hashai note, it is the idiosyncrasy in the development of firms emphasized in the resource based view and dynamic capability approach "…that makes it difficult to come up with firm growth models that explain capability development in terms of more general mechanisms" (Menuhin/Hashai, 2005: p.3 f.). Nevertheless, there exist a lot of approaches to explain firm growth with deterministic models, some of which are analyzed in further detail in section 2.3.2.

In the context of dynamic capabilities, the approach of Penrose (1959), stating that growth is an evolutionary process based on the cumulative growth of collective knowledge about the external business environment and on internal capital and human resources, is widely used as a starting

point (Kuuluvainen, 2011: p. 23).

Gibb and Davies (1990) point to the vast variety in types of SME and the multidisciplinary nature of the variables affecting their growth, and conclude that "…there is no single theory which can adequately explain small business growth and little likelihood of such a theory being developed in the future" (Farouk/Saleh. 2010: p.5). They further state that there are four basic types of approaches to firm growth (Kuuluvainen, 2011: p. 23 f.):

> Personality-dominated approaches: These approaches focus on the influence of personality and capability of the entrepreneur on growth, including his personal goals and strategic business aspirations.
>
> Firm development approaches: The aim of this kind of approaches is to characterize the growth pattern of a firm across various stages of development and to analyse the factors affecting this growth process.
>
> Business management approaches: Approaches of this type focus on the importance of business skills and the role of functional management, planning, control and formal strategic orientation in terms of shaping the growth and performance of the firm in the market
>
> Sectoral and broader market-led approaches: These approaches focus on the identification of small firm growth constraints and opportunities in the context of regional development or the development of specific industrial sectors such as SME in high tech-sector.

Growth Determinants

In spite of the criticism and widely spread questioning of the general applicability of wide-ranging growth models, there are many popular approaches trying to explain firm growth with a variety of variables referring to various dimensions such as the entrepreneur's characteristics, different attributes of the organization, or environmental conditions.

In a comprehensive approach, Zhou and de Wit (2009) identify three dimensions of determinants of firm growth, each in turn comprising several measurements. Since their list of determinants contains a broad range of variables typically used in deterministic approaches to explain firm growth, it is used here to provide an overview and explanation of relevant determining factors. These determinants and their influence on firm growth as expected by Zhou and de Wit are depicted in Table 10. This chapter describes the theoretical framework by using the four dimensions analogically.

Category	Determinants*	Expected Relationship*
Individual Dimension		
Personal Traits	Need for achievement	+
	Risk taking propensity	+
	Internal locus of control	+
	External locus of control	-
	Self-efficacy	+
	Extraversion (including sociability)	+
Motivation	Growth motivation	+
Individual Competencies	Managerial skills	0
	Specific skills	+
Personal Background	Individual age	-
	Gender	+/-
	Education	+
	Experience	+
Organizational Dimension		
Firm Attributes	Firm age	-
	Firm size	-
Organizational Structure	Centralization	+
	Decentralization	+
	Formalization	0
	Standardization	0
	Specialization (task or skill)	+

	Departmentalization	+
Strategies	Market orientation	+
	Entrepreneurial orientation	+
Firm Specific Resources	Financial capital availability	+
	Human resource development	+
	Finance performance	+
Dynamic Capabilities	Organizational learning	+
	Business model (preparedness to grow)	+
Environmental Dimension		
	Market Dynamism	+
	Technology Dynamism	+
	Heterogeneity	+
	Competitive Intensity	-
	Munificence	+
Growth Barriers		-

Table 10: Determinants of Firm Growth According to Zhou and de Wit.

*as determined from literature review

Source: Zhou/de Wit, 2009: p. 12

Individual Determinants

To begin with, as to individual determinants of SME growth, the entrepreneur's decisions are supposed to be of crucial importance, and previous studies indicate that an entrepreneur's personality attributes, growth motivation, individual competencies and personal background are most important factors affecting the growth of a firm (Zhou/de Wit, 2009: p. 5).

The *need for achievement* can be defined as "…the capacity to set high personal though obtainable goals, the concern for personal achievement rather than the rewards for success and the desire for job-relevant feedback […] rather than for attitudinal feedback" (European Commission, 2012: p. 48). It is the motivation to do well and achieve a goal to a certain set of standards (Širek/Močnik, 2010: p. 4). Scientific research implies that the need for achievement is the principle determinant

of entrepreneurial behavioural orientation and is related to independence orientation, risk-taking propensities and perception of control (Širek/Močnik, 2010: p. 4). Successful entrepreneurs excel in this respect and typically show an above average need for achievement by striving adequately for performance, and, if necessary, by competing (European Commission, 2012: p. 48). Previous studies give reason to believe that the need for achievement is positively related to firm growth (Zhou/de Wit, 2009: p.5).

Risk taking propensity is another important feature, since an entrepreneur is usually characterized as someone who seeks opportunities, faces uncertainties, and takes risks (Zhou/de Wit, 2009: 5). Though empirical evidence indicates that entrepreneurs are moderate rather than high risk takers (Širek/Močnik, 2010: p. 4) and only few studies show a significant role of risk taking propensity in entrepreneurial activity, it is commonly assumed that risk taking propensity has a positive impact on firm growth (Zhou/de Wit, 2009: p. 5; European Commission, 2012: p. 46).

The notion *"locus of control"* refers to a person's perception of control concerning the outcomes of events. It shows the person's tendency to believe that the outcome of events is within his or her sphere of influence, also resulting in the acceptance of personal responsibility rather than attributing the cause of events to fate (Širek/Močnik, 2010: p.4). Accordingly, individuals with an external focus of control tend to believe that the outcome of events is out of their control, while people with an internal locus of control are typically convinced that the outcome of events is crucially influenced by their own actions and decisive behaviour. Generally, entrepreneurs are considered to have an internal locus of control, one of the main motivations to start and develop an own business with the intention to let their actions have a direct impact on the results (Zhou/de Wit, 2009: p. 5f.).

Self-efficacy (self-belief, self-assurance, self-awareness, feelings of empowerment) can be defined as the belief in one's ability to perform a certain task successfully (European Commission, 2012: p.49). It is a critical prerequisite for social learning and social confidence, i.e. acquiring appropriate positive attitudes and believing in own ideas. In the entrepreneurship literature self-efficacy is regarded as a crucial attribute of people who recognize and exploit opportunities (Grant, 2012, p: 466). Inasmuch, the inherent curiosity and innovative thinking to develop new strategies foster the ability to take advantage of opportunities and remain receptive to competing new products and technology in changing markets in order for the firm to stay competitive and grow (Zhou/de Wit, 2009: p.6).

The notion *"extraversion"* is derived from psychological theory ("the Big Five") and refers to a person's ability to build and maintain relationships. This includes quantity and intensity measures

and is related to high energy levels, positive emotion, excitement, and sociability (Zhou/de Wit, 2009: p.6). Individuals with a marked sociability are more likely to engage in developing social networks, resulting in stronger relationships with suppliers, customers and partners. The ability to develop networks of this kind in turn can foster venture success and the growth of venture, so a positive relationship between extraversion and growth is suggested (Zhou/de Wit, 2009: p. 6).

The personal attributes of the entrepreneur described above are regarded as necessary but not sufficient preconditions for growth, and therefore may not necessarily result in actual growth unless the entrepreneur shows sufficient *growth motivation* (e.g. Danneels, 2011, p:28). Firm growth is also a function of intrinsic motivation, ambition and well-directed engagement, and not every entrepreneur wants his business to grow beyond a certain scale. Some are motivated primarily by the idea of being "their own boss" and therefore do not wish to delegate key functions and be restricted in their control and decision making (Zhou/de Wit, 2009: p.6).

Individual competencies are defined as the knowledge, skills and abilities to execute a specific job. Skills are an important element of entrepreneurship key competence (European Commission, 2012: p.52), and - contrary to managerial skills – specific competencies like technical and industrial skills are assumed to have a significant impact on firm growth (Zhou/de Wit, 2009: p. 7).

The *personal background* covers personal characteristics like gender, age, education and experience (Zhou/de Wit, 2009: p. 7). Though the effect of gender is not unambiguous, male entrepreneurs are on average still supposed to have higher growth ambitions due to fewer constraints in time, experience, and resources. Furthermore, growth ambitions are assumed to be negatively correlated to age (due to declining dynamism), and positively correlated to experience (high degree of self-confidence, tacit knowledge of organizational routines and skills required to find and utilize resources, effectiveness in managing new ventures, existing network of employees, suppliers, investors and customers, high level of industrial specific knowledge) and the education level (appropriate use of opportunity and resources, ability to make rational decisions).

Organizational Determinants

A further important dimension with apparent influence on firm growth is organization. Basically, "…firm growth can be determined by the degree of effectiveness and capability with which firm-specific resources such as labour, capital and knowledge are acquired, organized, and transformed into sellable products and services through organizational routines, practices and structure" (Zhou/de Wit, 2009: p. 8).

As to *firm age*, Coad et al. find that younger firms are better able to convert employment growth into subsequent growth of sales, productivity and profit (Coad et al., 2010: p. 22). They speculate that this may be due to a higher flexibility, superior capacity to learn and adapt to new human resource configurations as well as a higher ability to internalize new employees than older firms, which are supposed to be too entrenched in established habits. In a study among Spanish firms over the years 2002-2009, Ciriaci et al. make the following observations concerning the influence of firm age and size on growth persistence (Ciriaci et al. 2012, p. 2):

> Smaller and younger innovative firms tend to grow faster in terms of employment and total sales than larger firms, but the jobs they create are not necessarily persistent over time
>
> Among the fastest growing firms, the smaller and younger innovative have some difficulties to innovate at a later business stage and for this reason are not able to base their sales on successive waves of innovation. The latter proved to be strength of larger innovative companies.
>
> Larger innovative firms tend to grow more gradually in employment, but at the same time with less discontinuity than smaller innovative firms.

Indeed, several empirical studies indicate that younger firms show higher growth rates than older firms, and smaller firms grow relatively fast since they have to a achieve a minimum size to be efficient (Zhou/de Wit, 2009: p. 8; Datta, 2010, p: 288; Wang C. et al, 2015: pp.28). As a result, both firm age and firm size are assumed to be negatively correlated with growth.

The *organizational structure* of a firm determines the distribution of tasks between labour units and the coordination mechanisms between them (Zhou/de Wit, 2009: p.10). This distribution can be described by several dimensions like specialization, centralization, formalization and departmentalization. The notion specialization describes how tasks are distributed among firm members (Meijaard et al., 2002: p. 6). Centralization refers to the extent to which formal control is concentrated in a central decision-making authority, and formalization describes the degree to which rules, norms and procedures are specified, promoted and adhered to (Huang et al., 2009: p.3) . Departmentalization is a measure for the number of departments involved in organizational activities and the number of managerial levels (Zhou/de Wit, 2009: p. 10). Based on the findings of Meijaard et al. (2002), Zhou and de Wit suppose that specialization, departmentalization and both a marked centralized as well as a evidently decentralized structure have a positive impact on firm growth (Zhou/de Wit, 2009: p. 10).

On the other hand, Jaworski and Kohli (1993) find that low formalization and limited centralization facilitate the development of market orientation and vice versa. *Market orientation* as a firm strategy can be considered an important determinant of growth, since the ability to successfully sell products or services to customers naturally plays a decisive role for firm performance. The notion market orientation comprises dimensions like customer orientation, competitor orientation and an inter-functional coordination (Zhou/de Wit, 2009: p. 9).

The notion *"entrepreneurial orientation"* refers to specific styles, ways and practices of decision making in an enterprise. Firms with an entrepreneurial orientation stand out for autonomy, competitive aggressiveness, proactiveness, innovativeness and the willingness to take risks (Laukkanen et al. 2011: p. 2). Autonomy describes independent activity in pursuing business concepts or visions and competitive aggressiveness can be defined as the intensity of a firm's efforts to outperform competitors, characterized by a combative attitude and forceful reactions to competitors' actions (Zhou/de Wit, 2009: p. 9). Innovativeness refers to a predisposition to engage in creativity and experimentation to develop new products and services and strive for technological leadership via R&D. The willingness to take risks manifests in bold actions by venturing into the unknown, substantial borrowing, or committing significant resources to ventures in uncertain environments. Finally, Proactiveness describes an opportunity-seeking, forward-looking perspective characterized by the introduction of new products or services ahead of competitors and acting in anticipation of future demand (Rauch et al., 2009: p.7). It is assumed that firms with a marked entrepreneurial orientation are able to outperform competitors and may experience high growth rates.

As to *firm specific resources,* the resource based view claims that financial resources and human capital are most important determinants of small business growth. Financial resources are assumed to be of particular importance for the promotion of firm growth, since financial resources can easily be converted into other types of resources suitable to foster innovation and pursue new growth opportunities (Zhou/de Wit, 2009: p. 10).

The human capital of a firm covers knowledge, skills, and experience of the total workforce. Basically, employees are considered as the most important resource of SME and human capital is considered as a crucial factor for achieving a competitive advantage (e.g. Day et al., 2016: p: 66). According to a longitudinal study conducted by Rauch et al. (2005), German business owners consider human resources to be the most important factor determining the growth of SME.

Zhou and de Wit define *dynamic capabilities* as strategic routines (e.g. R&D, new product development) and strategic decision making (e.g. entering in a new market), which aim at

achieving new resource combinations to foster firm growth (Zhou/de Wit, 2009: p.11). They argue that due to constraints in resources, SME are forced to reconfigure, reallocate, and recombine their resources in order to achieve desired goals, and operationalise dynamic capability with the constructs "organizational learning and "scalability".

While R&D creates explicit and technical knowledge within firms, organizational learning externalizes the implicit knowledge embedded in individuals and specific groups to organizational knowledge. Since an organization's endowment of knowledge can be developed and expanded through learning processes, overall quality of organizational knowledge can be leveraged, and the aspects of organizational learning include cross functional teamwork, the interconnectedness of various parts of the organization, and the mechanisms for knowledge sharing (Zhou/de Wit, 2009: p.11).

The term scalability originates from the telecommunication and software engineering segment and its analogy in the business context describes a desirable capability to handle growing amounts of work or the readiness to grow. Hence, scalability implies that the individual business model of a firm that converts its resources and capabilities into economic value offers the potential for growth, through the effective recombination of resources, structure and strategy (Zhou/de Wit, 2009: p. 11).

Environmental Determinants

Last but not least, the environmental context is another dimension which is supposed to have a decisive influence on firm growth. Basically, environmental conditions relevant for the growth potential of firms can be captured with different dimensions, such as market dynamism, technology dynamism, heterogeneity, hostility and munificence.

Market dynamism, like *technology dynamism* can be measured by the level of environmental predictability (Zhou/de Wit, 2009: p.12). Eisenhardt and Martin describe moderately dynamic markets as markets where change occurs frequently but along roughly predictable and linear paths, with relatively stable industry structures, clear market boundaries and well-known players (Eisenhardt/Martin, 2000: p. 1110). On the contrary, in highly dynamic ("high velocity") markets change becomes nonlinear and less predictable, market boundaries are blurred, successful business models are unclear and market players (buyers, suppliers, competitors) are ambiguous and fluctuating. Basically, it is assumed that changes in society, politics, market and technology provide more opportunities for growth (Zhou/de Wit, 2009: p.12), and according to Wang and Ahmed, empirical evidence implies that market dynamism is a key driver for firm evolution (Wang/Ahmed, 2007: p.7).

Munificence refers to the "support" provided by a favourable environment (e.g. market potential, access to required resources) and therefore is also supposed to foster growth. So is *heterogeneity*, indicating the complexity of environment concerning the concentration vs. dispersion of organizations, since it is assumed that small firms active in niche markets find growth opportunities more easily in heterogeneous markets than in homogeneous ones. On the other hand, *hostility* poses threats to a firm in the form of increased intensity of competition, and therefore reduces growth opportunities for small firms (Zhou/de Wit, 2009: p. 12).

Growth Barriers

Growth Barriers represent an additional determinant naturally obstructive to firm growth. Compared to large enterprises, SME are assumed to be more likely to face growth barriers such as institutional barriers or financial barriers (Zhou/de Wit, 2009: p. 12). Institutional barriers occur mainly in the context of a firm's interactions with government and refer to unfavourable legalization, legislation, taxation or regulation schemes. Financial barriers refer to a lack of financial resources as a result of credit constraints or a lack of external debt or equity capital. Due to marked information asymmetries, banks are often more cautious when it comes to providing loans to SME, and for the same reason SME are more likely to be charged higher interest rates and asked for higher collaterals and guarantees (Zhou/de Wit, 2009: p. 12).

2.3 Selected Growth Models

2.3.1 The Model of Chrisman, Bauerschmidt and Hofer

Chrisman et al. (1998) first refer to the model of new venture performance presented by Sandberg and Hofer (1987) and claim that, according to strategic management theory, their list of performance determinant dimensions - industry structure, venture strategy, and the founding entrepreneur – should be extended to include the resources and the organizational structure, processes and systems developed by the venture to implement its strategy and achieve its objects (Chrisman et al., 1998: p. 5). The authors try to determine diverse elements and the significance of these contributing factors to new venture performance based on a comprehensive literature review (e.g. Love et al., 2015:pp 28). As to the influence of the *entrepreneur*, Chrisman et al. argue that though empirical findings are not unambiguous, the entrepreneur's behaviour and decisions are likely to be relevant, since they constitute the foundation for the determination of the type of venture, the strategies used, the identification and acquiring of necessary resources, and the development of an appropriate organization (Chrisman et al., 1998: p. 10). The behaviour and decisions in turn are supposed to be functions of the entrepreneur's skills, experience, personality and values (Swoboda et al., 2016: p. 141). Table 10 provides a list of entrepreneurial variables assumed to be related to firm performance.

Variable	Elements/Features/Essentials/Characteristics
Personality Characteristics	Autonomy, confidence, initiative, locus of control, need for achievement, need for affiliation, need for power, personality type, risk-taking propensity, self-reliance, tolerance for ambiguity
Values and Beliefs	Contribution to society, power, security, status, wealth
Skills	Communication skills, financial skills, interpersonal skills, managerial skills, manufacturing skills, marketing skills, organizational skills, personnel skills, Technical skills
Experience and Education	Age, entrepreneurial parents, experience in founding companies, experience in high-growth organizations, experience in large firm, experience in similar positions,

	formal education, general management experience, industry experience, pre-start-up training, shared experience of founders, start-up experience
Behaviours and Decisions	Ability to focus on essentials, decision-making process, flexibility, goal direction, length of workday, management style, organizing, planning, problem analysis, risk-reducing behaviour

Table 11: Entrepreneurial Variables Affecting New Venture Performance.

Source: Chrisman, et al., 1999: p. 11.

The choice of *Industry structure* is considered to be possibly the most important strategic decision since according to Porter (1980), it will influence the probability of success as well as the likelihood that a new entrant will survive long enough to be successful. Chrisman et al. distinguish between an absolute effect (the attractiveness of the industry with respect to business opportunities determines possible returns and the probability of survival) and a relative effect (moderating effect on its relative performance, fostering the acquirement of rare resources and choice of adequate strategies) of industry structure on venture performance.

Variable	Elements
Structural Characteristics	Degree of industry concentration/fragmentation, elasticity of demand, entry barriers (access to distribution channels, brand image, capital requirements, cost advantages independent of scale, economies of scale, experience curves, product differentiation, switching costs), exit barriers, industry profitability, industry value added, industry failure rate, industry sector, key success factors, opportunity to create high barriers subsequent to entry, product heterogeneity, stability of demand, stage of industry evolution, size and growth rate of industry, substitute products, technical and regulatory changes.
Industry Rivalry	Aggressiveness of competitors, competitors' commitment, diversity and dependence on industry, degree competitors have established positions, degree of exposure to competitive attack, excess capacity, excess cash, borrowing position, level of

	competition, presence of small firms with weak positions
Nature of Buyers and Suppliers	Concentration, heterogeneity, importance to success, number, relative size.

Table 12: Industry Structure Variables Affecting New Venture Performance.

Source: Chrisman, et al., 1999: p. 13.

The role of *business strategy* is to specify the way a firm competes in a given industry in terms of products, customers, and technologies. In order to succeed in its target market and grow, a firm requires a clear strategy for developing and deploying resources to achieve and maintain a competitive advantage (Bingham et al., 2015: p. 1805). Though business strategy is of crucial importance in all stages of firm development, the focus changes as a firm develops: in the early stages strategy is mainly concerned with securing and deploying resources, while in later stages of growth the focus shifts to the manner in which those resources should be redeployed to maintain momentum (Chrisman et al., 1998: p. 15).

Variable	Elements
Planning and Strategy Formulation	Breadth and depth of planning efforts, formality of strategic planning, frequency of planning, functional area planning, consideration of multiple alternatives, quality of strategic planning, rational and rapid decision making.
Goals and Objectives	Ambitiousness of goals, targeted market share, targeted profitability
Strategic Direction	Ability to maintain initial strategy, aggressiveness of strategy, clarity and breadth of strategy
Entry Strategy	Entry wedge used (new products or services, parallel competition, franchising, geographic transfer, supply shortage, tapping unutilized resources, customer sponsorship, government sponsorship, supplier sponsorship), order of entry (pioneer, early. late)
Competitive Weapons	Cost position, differentiation (product attributes, marketing mix attributes, service, technology), innovation, integration

	(forward/ backward), pricing strategy, strategic positioning.
Segmentation	Extent of differentiation by market segment
Scope	Breadth of products offered, services offered, customer groups served, customer functions satisfied, technologies utilized.
Investment Strategy	Administrative functions, engineering, marketing, manufacturing, R&D
Political Strategy	Alliances with competitors, customers, suppliers, government or other stakeholders

Table 13: Business Strategy Variables Affecting New Venture Performance.

Source: Chrisman, et al., 1999: p. 14.

As to *resources* themselves, Chrisman et al. point to the importance of distinguishing between tangible and intangible assets, since there are significant differences in the way these types of assets influence a venture's chances of survival and success. Contrary to tangible assets, intangible assets lack well-defined markets and pricing mechanisms and therefore are difficult to assess (Chrisman et al., 1999: p. 17). Though both are important determinants of firm strategy and performance, tangible resources such as capital, credit, land, facilities, or labour are more important for the *survival* of a venture, while its *success* will depend primarily on intangible assets like networks, functional skills, or know-how. Since intangible assets are more complex, difficult to imitate, substitute, and hard to obtain through trade or development, and the reasons for their value are more ambiguous, they build a viable foundation for sustained competitive advantage.

Variable	Elements
Intangible Assets	Access to capital markets, distribution channels, labour markets, suppliers, and raw materials, completeness of management team, contracts, culture, databases, employee flexibility and specialization, functional skills (financial, manufacturing, marketing, technical), geographic location, intellectual property, licenses, outside consultants (accountants, bankers, government sponsored, professional, university, venture capitalists), reputation, social networks, trade secrets, trained professional managers
Tangible	Current assets (accounts receivable, cash, inventory, prepaid expenses,

Assets	supplies), equipment and machinery, facilities (plant, offices), financing (long term/short term debt, equity), initial size, land

Table 14: Resource Variables Affecting New Venture Performance.

Source: Chrisman, et al., 1999: p. 16.

An *organization's structure, processes, and systems* define the way it implements its strategy by (Chrisman et al., 1999: p. 18):

- choosing and building a structure for the division of work,
- the coordination and integration of functions,
- facilitating information flows,
- managing processes of recruitment, training, and succession, and by
- motivating, measuring and controlling behaviours of the organization's members.

Empirical research indicates that organizational structure, processes, and systems (or the congruence of these elements) are associated with firm performance (e.g. Meijaard et al. 2002; Peteraf, 2013: pp. 1389). Tough there are ambiguous effects in the early stages of growth concerning a trade-off between probabilities of survival and success, as soon as a firm has reached maturity, its performance is positively related to decreased centralization, increased formalization, and functional specialization. The authors further point to the fact that organizational structure, processes and systems seem to be most important to firm survival during periods in which a firm proceeds from one growth stage to another. However, the structure and processes must always be well aligned with the environment and strategy of an enterprise.

Variable	Elements
Organizational Structure	Board of director's role, centralization/decentralization, delegation (administrative decisions, implementation decisions, line function decisions, strategic decisions), flexibility, formality, number of hierarchical levels, organic vs. mechanistic structure, participative management
Systems and Processes	Control (financial, functional, start-up process), human resources (compensation, hiring/firing), management information, speed of implementation of new processes and systems

Ownership Structure	Dispersion of ownership among employees, share of equity owned by founders

Table 15: Organizational Structure, Systems, and Process Variables Affecting New Venture Performance.

Source: Chrisman, et al., 1999: p. 19.

Chrisman et al. conclude that the extension of the model with the consideration of resources as well as organizational structure, processes and systems is consistent with theoretical and empirical scientific literature, and that there is an intimate relationship between the five factors considered that determines the performance of new ventures.

2.3.2 The Model of Baum, Locke, and Smith

Baum et al. (2001) use various elements of the constructs "entrepreneur", "competitive strategy" and "environment" to determine the contributing factors of small firm growth with two different models: a direct effects model investigating only direct effects of individual elements on firm growth, and a direct and indirect effects model allowing for additional indirect effects on growth via interdependencies between elements.

The different dimensions cover the following elements (Baum et al, 2001: p. 292 f.):

Traits and Motives: Tenacity, proactiveness, and passion for work are considered as entrepreneurs' traits, since these properties are commonly regarded as important factors for the successful establishment and operation of new ventures (Farjoun et al., 2001: p. 830). In addition, individual competencies are used, divided into general competencies (organizational skill; opportunity recognition skill) and specific competencies (industry skill, technical skill). Finally, individual motivation is considered, capturing the elements vision, growth goals and self-efficacy, because both theory and empirical findings imply a significant impact of these constructs on business performance.

Competitive Strategy: Strategy is described by three general business-level choices: focus, low cost, and differentiation. The notion focus refers to a narrow scope in competitive strategies, for example the restriction to a specific set of customers, segment of a products line, or geographic market. A low cost strategy aims at efficient-scale production with a consistent pursuit of cost minimization in all functions of an organization and at serving price-sensitive customers. Finally, differentiation refers to the creation and industry-wide marketing of innovative, high quality

products or services to offset the need for a low-cost position. These strategies are chosen because, according to Porter, they are viable approaches for dealing with environmental forces, and firms that do not select one of these strategies are inevitably "stuck in the middle", and therefore almost always doomed to failure (Porter, 1980: p. 42).

Environment: Baum et al. focus on dynamism, munificence, and complexity as important dimensions of environment. They define dynamism as negative stability manifesting itself in the rate of market and industry change and the level of uncertainty concerning forces that are beyond the control of firms. Munificence refers to the support of the environment to foster organizational growth and the notion complexity stands for the level of organizational concentration in the environment.

In addition, size is considered as a potential contribution factor to determine small firm growth, since size may have a systematic influence on other concepts of interest and empirical findings imply that it is an important determinant of firm performance (Baum et al, 2001: p. 295).

Based on a sample of 414 entrepreneurs, the authors use LISREL 8 and PRELIS 2 to perform confirmatory factor analyses and test their hypotheses (Baum et al, 2001: p. 296). To quantify venture growth as the dependent variable, they calculate three measures: average annual percent sales growth, employment growth and profit growth. The results for the direct effects model indicate that specific competencies, motivation and competitive strategies have a significant impact ($t > 2.0$; $p < 0.5$) on venture growth (see Figure 21). However, a closer look at the impact of competitive strategies reveals that firms pursuing a strategy of differentiation through high quality and/or innovation achieve the fastest growth, while firms with low cost or focus strategies actually experience negative growth. On the other hand, neither traits general competencies, nor environment show a significant direct impact on venture growth.

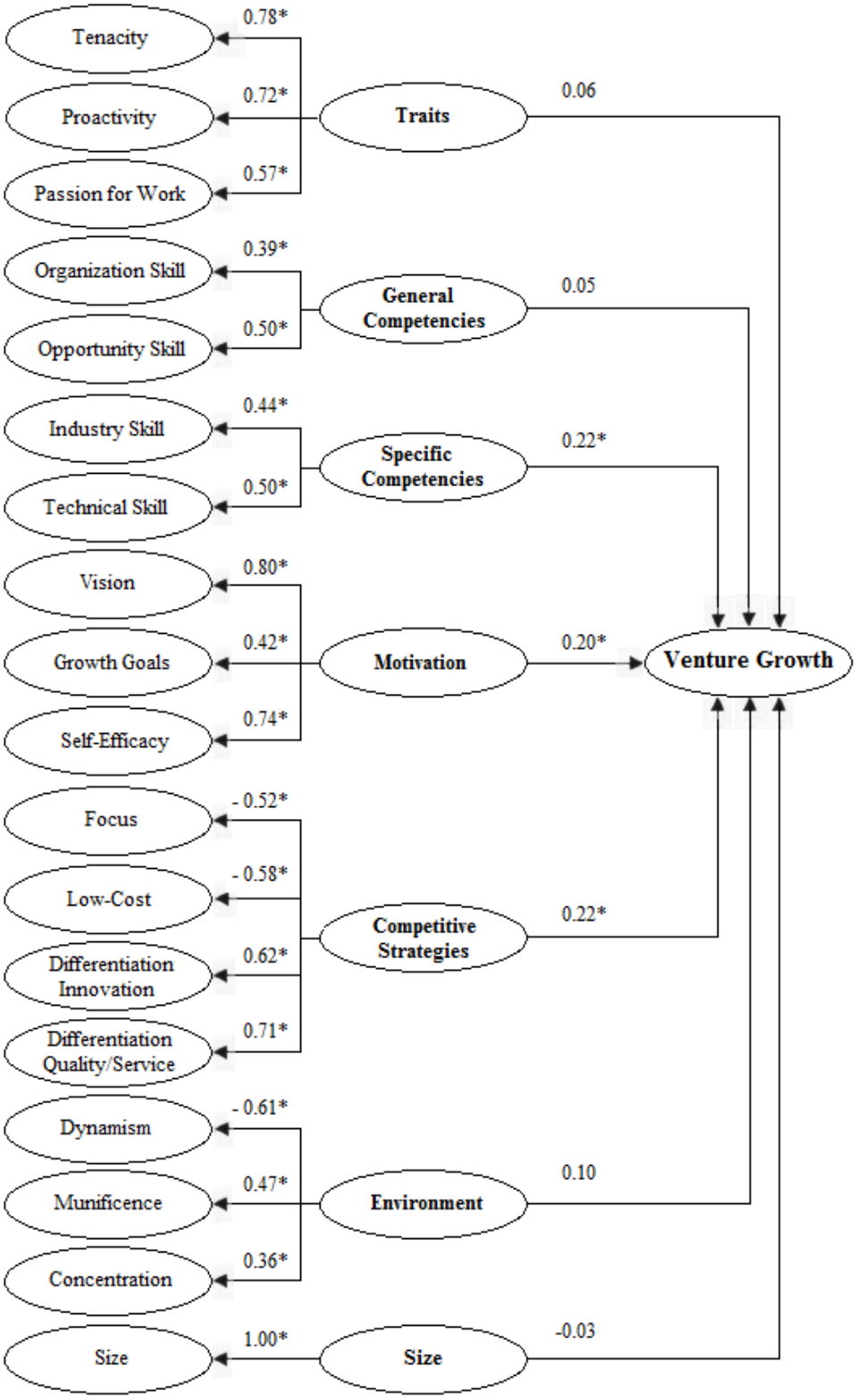


Figure 18: Direct Effects Model According to Baum et al.

* $p < 0.5$

Source: Baum et al., 2001: p. 298

In the second variant of their growth model, Baum et al. additionally consider the following potential indirect effects (Baum et al, 2001: p. 294 f.):

The entrepreneur's traits (tenacity, proactiveness, passion for work) have positive effects on his or her general and specific competencies (industry skill, technical skill). The greater the entrepreneur's trait, the greater is his or her situational motivation, vision, goals self-efficacy (e.g. Madsen, Desai, 2010: pp.454). The general competencies of an entrepreneur (organizational skills, opportunity recognition skills) positively influence his or her specific competencies. The general competencies of an entrepreneur have positive effects on his or her situational motivation. The greater the entrepreneur's traits, the greater are the likelihood that the firm will select one of the recommended strategies (focus, low cost, or differentiation). The general competencies of an entrepreneur have positive effects on the likelihood that one of the recommended strategies will be chosen. The greater the entrepreneur's motivation, the greater is the likelihood that one of the recommended strategies will be chosen. Environmental stability, munificence, and simplicity will be related to a firm's propensity to select a focus, low cost, or differentiation strategy.

The testing of the direct and indirect effects model confirms the significant direct impacts of specific competencies, motivation and competitive strategies on venture growth, and further reveals significant indirect effects of traits, general competencies and environment (Figure 22).

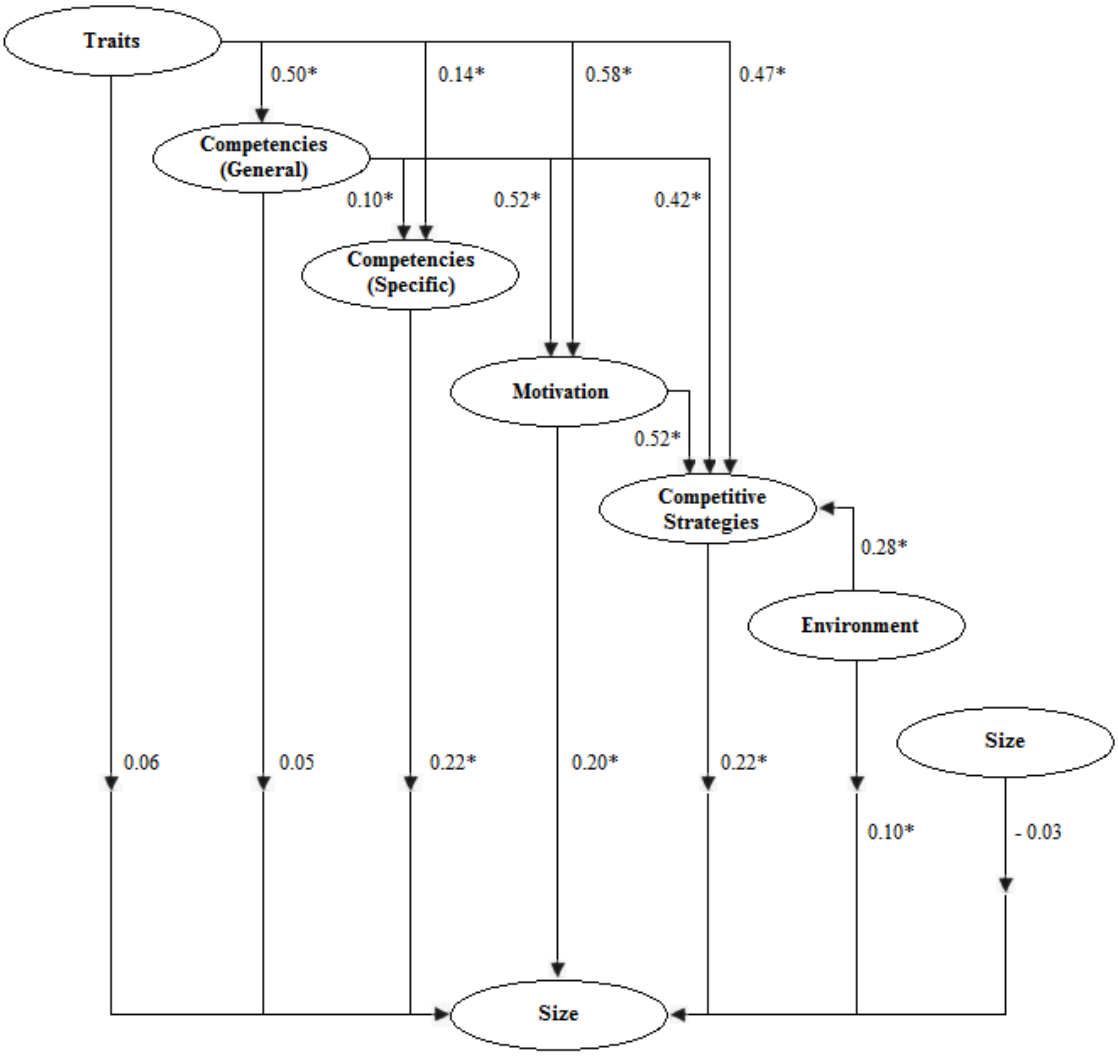


Figure 19: Direct and Indirect Effects Model.

* $p < 0.5$

Source: Baum et al. (2001), p. 300

Based on these results, Baum et al. draw the following conclusions concerning the direct and indirect impacts of the various factors (Baum et al., 2001: p. 299 ff.):

Traits: Though empirical research had not uncovered direct performance relations, the entrepreneur's traits are important for venture success since they influence the skill sets that are developed, the level of entrepreneurial motivation, and strategy.

Competencies: The authors conclude that the highly significant direct effects of specific competencies imply an important role of technical and industry competencies as a form of expert power that facilitates the implementation of the entrepreneur's vision and strategy and may

constitute a competitive advantage competitors find hard to identify and imitate.

Situational motivation: Self-efficacy, striving for difficult goals and performance are closely related, and organizations led by highly motivated and confident entrepreneurs are likely to reflect their character, which may further enhance performance.

Competitive Strategies: Baum et al. explain the (unexpected) negative correlation between focus and low cost strategies and venture growth with the specific industry context of their sample, because the firms analysed were geographically constrained craft manufacturers. However, they emphasize the influence of individual differences on the choice of competitive strategies and conclude that traits, competencies, and motivation offer important explanations of strategic decision making.

Environment: The authors note that the significance of the indirect effects of the environment via strategy is consistent with the structure → conduct (strategy) → performance in industrial organization economics. However, the low direct impact of the environment on venture growth as indicated by the results of the study is surprising and implies that entrepreneurs have more control over their small firms than some theories suggest.

2.3.3 The Model of Wiklund, Patzelt and Shepherd

In a similar way as Zhou and de Wit do, Wiklund et al. (2009) differentiate between several groups of dimensions which they assume to have an influence on small firm growth. They refer to these dimensions as "theoretical perspectives" and examine the theoretical constructs that are salient within each of them. Finally, they link them to each other and to growth. In detail, they distinguish between the perspectives "entrepreneurial orientation", "environment", "strategic fit", "resources", and "growth attitude".

As to *entrepreneurial orientation*, the authors' first point to the unclear association between entrepreneurial activities and small business growth and note that both individuals as well as firms can be entrepreneurial e.g. Su et al., 2011: p. 560). According to Wiklund et al., "entrepreneurial orientation involves a willingness to innovate in order to rejuvenate market offerings, take risks in order to try out new and uncertain products, services and markets, and to be more proactive than competitors toward new marketplace opportunities" (Wiklund et al., 2009: p. 353 f.).

In their research model they conceptualize entrepreneurial orientation through the following constructs (Wiklund et al., 2009: p. 368):

- Risk taking 1 (gradually, timid incremental behaviour vs. bold ranging acts)
- Risk taking 2 (proclivity for low risk projects vs. strong tendency to take high risks)
- Proactiveness 1 (strong tendency to follow competitors in introducing new products and ideas vs. the attempt to stay ahead in product novelty or speed of innovation)
- Proactiveness 2 (favouring the tried and true vs. growth, innovation, and development orientation)
- Proactiveness 3 (attempt to cooperate and coexist with competitors vs. a tough "undo-the-competitors" philosophy)
- Innovativeness 1 (emphasis on the marketing of the true and tried products or services vs. emphasis on R&D, technological leadership, and innovation)
- Innovativeness 2 (no new lines of products or services within the last 3 years vs. large number of new lines of products or services)
- Innovativeness 3 (changes in products lines have been of minor nature vs. dramatic changes in product lines)

The *environment* of a small enterprise is a decisive factor for growth, because it offers growth opportunities that can be exploited. Important elements are location, industry growth rate, or market maturity. However, since many small firms tend to develop profitable and expanding market niches difficult to describe by common, market-wide variables, specific dimensions for small firms' environments have been investigated like munificence, turbulence, heterogeneity, hostility, dynamics, customer structure and competition (Wiklund et al., 2009: 354). Accordingly, the influence of the environment is investigated with the following constructs:

- Dynamism (necessary rate of change of market practices, lifetime of products, predictability of competitors' actions, consumer demand and tastes, changes in product/service technology)
- Hostility (aggressiveness of environment, price competition, competition in product innovation)
- Heterogeneity (Nature of competition for various products offered)
- Change in dynamism (degree of change in growth opportunities in the environment, in the innovation of new operating processes and new products and services, in research and development)

- Change in hostility (degree of change in the predictability of competitors' market activities, change in the aggressiveness of competitors' market activities)
- Change in heterogeneity (degree of change in the needed diversity for production processes and marketing tactics)

Strategic fit refers to the fit between the strategic orientation of a firm and the environment it competes in, as the ideas of a universally beneficial entrepreneurial orientation and industry attractiveness is somewhat overly simplistic. In other words, strategy and environment conditions must match if firm growth is to be enhanced.

The firm *resources* are measured in terms of employees, sales, size of management team, number of employees with university degrees, board size, investment by external owner, or manager's' experience and knowledge, age, ethnicity, and gender. In detail, the constructs used to measure the firms' resources component are the following (Wiklund et al., 2009: p. 369):

Firm resources (number of employees, sales, size of management team, people with tertiary degrees, percentage of firm sold to new owners in the past 3 years, size of firm compared to competitors, availability of capital, delegation/distribution of responsibility, size of board of directors)

Human capital of entrepreneur (highest level of completed education, number of management courses completed, education in managing or engineering, management experience in previous firms, number of persons managed, management experience in rapid growth firms, duration of experience, age, nationality [native?], gender, family tradition concerning entrepreneurship, number of own start-ups, industry-specific experience, other present firm involvement)

Network resources (importance - as a source of ideas and advice when making important decisions - of consultants, lawyers, regional development funds and similar government support agencies; importance of chartered accountant, bank, contact, spouse and family; importance of customers, suppliers, or employees as a source of ideas and advice)

Since *growth attitude* cannot be taken for granted, a more diverse view of the motives and attitudes underlying economic behaviour is of great importance when analysing determinants of firm growth. In detail, the following constructs were used for the growth attitude measurement (Wiklund et al., 2009: p. 370 f.):

Goals (self-fulfilment [creativity], high standard of living in financial terms, time for family and leisure, benefits from own work [personal benefits]; high profits, control over the firm's operations, resilience of the firm, high quality products or services [stability], position in society, independence, management of other people [power], increase in sales, increase in the number of employees)

Favoured work tasks (strategy, marketing, operations, accounting)

Expected consequences of growth (work conditions: devoting time to preferred work tasks; firm characteristics: would it be considerably easier or more difficult in terms of work required, employee well-being, personally income and other economic benefits, independence in relations with customers, suppliers and lenders, in terms of resilience, product and service quality delivered, value of firm; growth intentions: magnitude of growth in terms of sales and employment)

Based on these measures, the authors develop an empirical model to determine the contributing factors of small business growth. Using a two-step partial least square analysis (PLS) approach, they first analyse the direct effect of entrepreneurial orientation on growth and the effect of resources, environment and attitude on entrepreneurial orientation. In a second step, they allow for additional direct effects of resources, environment, and attitude on growth. In both cases, growth is measured with the following indicators:

Employment growth (Increase of/in FTEs within one year)

Sales growth (actual year's sales compared to previous year's sales)

Sales growth compared to competitors (sales development over the past 12 months compared to sales development of competitors)

Value growth compared to competitors (increase or decrease of market value over the past 12 month relative to competitors)

Wiklund et al. find that the full integrative model (step 1) explains only little (13%) of the variance in growth, while in the revised model (step 2) explained variance increases substantially (to 30%). They conclude that attitude and components of the environment (dynamism, hostility, and dynamism increase) have a direct effect on small business growth, while components of resources (resources of the individual, network resources, and resources of the firm) as well as attitude,

industry, and components of the environment (dynamism, dynamism increase, hostility increase, heterogeneity increase) have an indirect influence on small business growth via entrepreneurial orientation ((Wiklund et al., 2009: p. 362). Figure 23 depicts the structure of the model and the results for a sample of 465 small business managers.

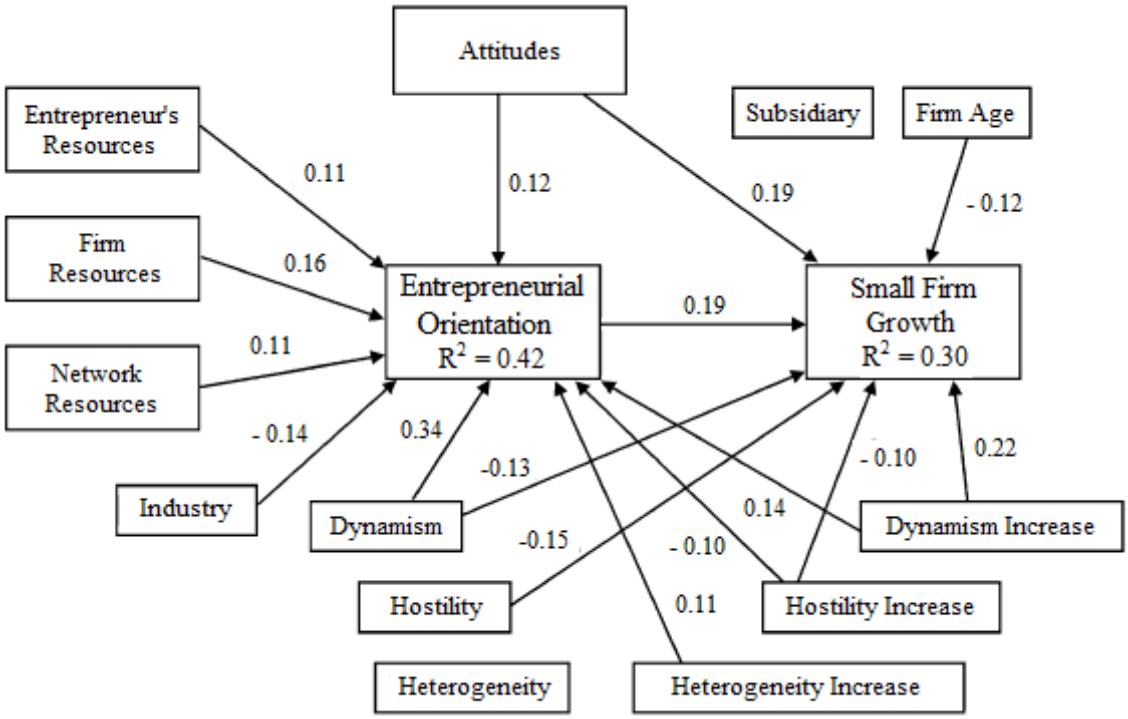


Figure 20: Results for the Revised Small Business Growth Model developed by Wiklund et al.

Source: Wiklund et al., 2009: p. 359

The authors' further point to the particularly interesting finding that resources had only indirect effect on growth, i.e. the effects were fully mediated by the construct of entrepreneurial orientation (Wiklund et al., 2009: p. 366). According to the authors, this finding is consistent with the resource based view as interpreted by Eisenhardt and Martin (2000), who claim that in addition to the resources themselves, a firm needs appropriate organizational and strategic processes to convert resources into value creating strategies.

3. THEORETICAL METHODOLOGY FRAMEWORK

In this chapter the latter considerations analyzed in the previous chapters are used to establish the hypothesis to be tested in part five. As one might expect, dynamic capabilities play a central role in this examination, together with the constructs "growth attitude", "intellectual capital", "market orientation" and the requirements of a dynamic environment. The various interrelations between these variables are explored and assembled to build an integrative model for the determination of SME growth factors.

A fundamental requirement for every empirical study is a sound and representative data base. This involves several problems and decisions to be made. First of all, given the analyses insights found above, an appropriate method must be found to conceptualize and measure the constructs used, i.e. to find a way to grasp and measure the intellectual capital, dynamic capabilities, degree of growth attitude etc. (Arend, 2014: p.35), inherent in the companies examined. Of course, this is also true for the "growth"-construct as the target variable of the investigation.

Furthermore, an appropriate method is required to gather the necessary data needed to conduct the empirical investigation. Among the variety of research methods, the survey method is chosen here to collect the necessary data, since this is virtually the only practicable way to get data on attitudes, perceptions, strategies, and resources in the necessary amount (Širek/Močnik, 2010: p. 9). Consequently, a look at previous scientific work reveals that most empirical studies actually use the survey approach to gather data (Baum et al., 2001; Baum/Locke, 2004; Wiklund et al, 2009; Messersmith/Wales, 2011;) though this method has a serious drawback in view of the development-process-character of growth that actually should be examined over time: historical growth is used as the dependent variable and is collected at the same time with the explanatory variables to measure a company's current situation (Širek/Močnik, 2010: p. 9). That is, in fact, data on explanatory variables are collected today to explain the growth of the past, so the basic principles of cause and effect are violated. However, this limitation is modified by the researchers with the assumption that explanatory variables do not change significantly during the period of interest (Širek/Močnik 2010: p. 9).

3.1 Measurement of constructs

This section describes the selection and definition of the various items used to measure the single constructs. The items are chosen on the basis of a broad literature review, put together on the questionnaire and finally are assessed by the respondents according to a five-point Likert-scale.

3.1.1 SME Growth

When choosing an adequate measure for the growth of the SME examined, it is useful to take a look at previous studies to ensure convenience and comparability of the results. Basically, there are various indicators used for growth measurement in the empirical research literature (Ardishvili et al., 1998; Delmar, 1997; Lee et al., 2002; Wakkee et al., 2015):

- Sales
- Employment
- Physical output
- Assets
- Profits
- Market share

Basically, the heterogeneity of growth measures impairs the accumulation and comparability of results. This is also true for one single indicator, since sales or employment growth, for example, can be measured in absolute or relative terms and over different periods of time. The distinction between absolute and relative measures is especially important in case of SME, because absolute measures tend to ascribe higher growth to larger firms, whereas it is far more easy for small firms to reach higher relative growth rates (Delmar et al., 2003: p.9).

As to the validity and reliability of growth measures, Delmar et al. (2003) recommend using sales and/or employment as growth indicators. They argue, first of all, that firm sales and employment development are the most widely used indicators in empirical growth research. Furthermore, data on these variables are easy to obtain. Finally, Delmar et al. state that the other indicators mentioned above have "obvious shortcomings that limit their applicability outside of very special contexts" (Delmar et al., 2003: p.10): Indicators like market share and physical output are only comparable when the firms examined have a similar product range. Equally, asset value is highly related to the capital intensity of an industry and very sensitive to changes over time. Lastly, though profits are an obvious and reliable indicator of success, there is only an evident relationship between profits and size in aggregates of firms or, for individual firms, over long periods of time.

A look at previous empirical growth studies further reveals that despite the criticism mentioned above, the relative measurement of growth has been most widely used so far (Ndofor et al. 2013: pp. 1125; Schmitt and Raisch, 2013: p.1216). The period of growth considered in previous studies

also varies and in most cases is whether one year, three years or five years. Obviously, however, the majority of studies consider the SME growth over a time period of five years.

Hence, to obtain feasible results and assure comparability with previous studies, it seems to be convenient to use relative sales as growth measure for SME that are considered here for a time interval of three years.

3.1.2 Attitude towards Growth

The attitude towards growth is measured according to a scheme introduced by Wiklund et al. (2003). To measure growth attitude, the authors ask the respondents to assess an 100% increase in the number of employees within 5 years with respect to various consequences of this growth. Respondents with a clear opinion (mainly negative or mainly positive) are asked for a more precise assessment using a seven-point scale ranging from very negative to very positive (Wiklund et al., 2003: p. 14). The authors state that the explication of a specific amount of growth within a defined period of time is important since the attitude towards growth may vary significantly with these variables. An alternative approach for the measurement or definition of growth would be to use sales development as the corresponding variable or both, employee and sales growth. They conclude, however, that the employee measure is superior since in this case symmetry between the independent and the dependent variable is assured.

As to the consequences considered, the growth of an enterprise may lead to various significant changes with respect to management requirements, workloads, maintenance of control etc. The most important belief variables identified by a literature review conducted by Wiklund et al. are the following (Wiklund et al., 2003: p. 17):

Workload: Would the manager of an SME have to work more or less hours?

Work tasks: Would he or she be able to spend more or less time on favoured work tasks?

Employee well-being: Would the employees of the SME enjoy their work more or less than before? Does the work atmosphere change in a positive or negative way?

Personal income: Would the personal income of the enterprise's manager and other disposable economic benefits increase or decrease?

Control: Would the manager's ability to survey and control operations change in a negative or positive way?

Independence: Would the firm's independence with respect to customer, supplier and lender relations decrease or increase?

Survival of crises / strength: Would it be easier or harder for the firm to survive a severe crisis?

Product/Service quality: Would it be easier or harder for the enterprise to maintain product or service quality?

Based on these variables, the questions for the determination of growth attitude in this study were chosen. The criteria for the measurement of the attitude to growth as they are used within the questionnaire are depicted in Table 16.

Turnover growth is a very important goal.
Turnover growth is the most relevant criteria for my decisions.
Turnover growth decides on the survivability of our company.

Table 16: Measurement of Attitude towards Growth.

3.1.3 Financial and Intellectual Resources

According to Wiklund et al. (2009), all theoretical constructs pertaining to resources are formative inasmuch as each indicator provides a unique aspect to the complete construct (Wiklund et al., 2009: p. 360). A closer look at related empirical literature reveals that among the various types of resources like financial capital and intellectual capital (consisting of human, structural and relational capital) are those with the most significant influence on firm growth.

First of all, the construct of financial capital refers to the availability of capital to foster and enhance SME growth. Since this variable is comparatively consistent and definite, the prevalent method to measure it is to use a single item aiming at the respondents' perception of the appropriateness of financial capital availability in their enterprises.

As to the measurement of human capital inherent in an enterprise, popular items used in empirical growth research are the amount or extent of knowledge, skills, experience and employee satisfaction. These items are also used in this study. Bearing in mind, that the intellectual capital is crucial and very important for SME in general (Wiklund et al., 2009) a focus is set on these elements by a 3 item 1-5 scale question.

3.2 Dynamic Capabilities

Generally, the measurement of dynamic capabilities is associated with limitations concerning the specificity of the respective contexts. Hence, items used to measure dynamic capabilities in one empirical study may not be suitable for other work because the circumstances differ too much. As a result, there is little consensus in previous empiric growth research about the question which criteria to use for dynamic capability measurement (Helfat, 2000; Wang/Ahmed, 2007).

In this study, the measurement of dynamic capabilities is based on the above presented disintegration of the construct introduced by Teece (2007), i.e. the questionnaire focuses on the three elements presented in this approach:

- "Search for opportunities": This group of items refers to the enterprises' efforts concerning the exploration of the environment to detect new technologies of interest for the future firm development, new trends in consumption and changes in consumer demand, new markets for products and services, and the observation of competitors' activities.
- "Capability to profit from opportunities." Here, information is gathered on reaction times needed to profit from new opportunities, the assignment of resources, the development of adequate business models, the handiness of resources, and the ability to organize teamwork between the functional divisions of the enterprise.
- "Revise/Update strategic resources": This comprises the assessment of the adequateness of resources and potentials, of cooperation with other enterprises, the development of new resources, skills, and know-how, expenditures for employee training, efforts to develop and acquire new technology, the integration of know-how and capabilities within the firm and the incorporation of external know-how to develop new resources.

Altogether, 5 items are used to measure the firms' efforts in dynamic capabilities including the ability of sensing, seizing and reconsidering as described in the previous chapters.

3.2.1 Dynamism of Environment

The measurement of environmental dynamism also follows closely the approach of Wiklund et al. (2009) which in turn is based on the work of Miller and Friesen (1982) and Miller (1987). However, other than these authors who consider six dimensions ("dynamism", "hostility",

"Heterogeneity", "change in dynamism", "change in hostility", and "change in heterogeneity"), this study confines to use the dimensions dynamism and hostility of the environment. As to the determination of environmental dynamism, the following five questions are asked and examined (Wiklund 2009, p. 368).

- To keep up with markets and competitors, the firm must change its marketing practices very often / only rarely
- The rate with which products or services become obsolete is high / low
- It is very / not at all difficult to predict the actions of competitors
- Demand and consumer preferences are nearly impossible to calculate / quite predictable
- Product and production technology are customary and do not change significantly over time / are changing considerably at a high rate

Hostility of environment is captured with the following interrogation:

- The environment represents a big / hardly any threat for the survival of the enterprise
- Tough price competition in the industry is a big / hardly any threat for the enterprise
- Competition in product quality or product innovations is no / a big threat in the particular industry
- Shrinking product markets represent no / a big threat for the industry
- Scarce supply of labour and/or materials represents no significant / a big threat in the industry
- Interference of authorities represents no / big threat in the particular industry

3.2.2 International Market Orientation and Family Ownership

Finally, the degree of international market orientation is measured mainly by the simple question, if the SME do have international business and if so, in how many countries. The percentage of the turnover realized in foreign markets as compared to the total turnover of an SME is not a focus set within this explorative study, but might be an interesting area for further scientific fieldwork.

4. RESEARCH METHODOLOGY

4.1 Derivation of the Hypotheses

Basically, there is an ongoing scientific dissension on the adequacy of the "Exploratory Factor Analysis" (EFA) and the CFA, with proponents for either method. Based on the correlations between the items of a particular survey, the EFA produces a set of factor pattern coefficients and by this allows determining and exploring the factor structure of a test, including the number of factors, the amount of variance explained, the factor pattern coefficients, and the factor correlations. On the other hand, the EFA is strongly data driven involves some subjective decisions and is less suitable to assess the adequacy of the overall structure of a proposed model (van Prooijen/van der Kloot, 2001, p. 778). The CFA can be used to test a model where the relations between observed variables and latent factors and the relationships among the factors themselves are specified. Inasmuch, it serves as a tool to either confirm or reject a preconceived theory (Hair et al., 2010: p. 693).

Proponents of the CFA claim that, before analysing data, researches should have a strong theory underlying their measurement model, and, consequently, CFA is typically used in data analysis to examine the expected causal connections between variables. According to EFA supporters, on the other hand, CFA is over applied and often used in inappropriate settings and with poor theoretical foundation (Hurley et al., 1997: p. 667). Altogether, however, each method may be appropriate in different situations: while EFA is often considered to be more suitable in the early stages of scale development since it shows how items load on the (non-hypothesized) factors, CFA is superior where measurement models have a well-developed underlying theory for hypothesized patterns of loadings. Plausibly, it seems to be convenient to start with utilizing EFA and later on continue with CFA (Hurley et al., 1997: p. 667). According to Gerbing and Hamilton (1996), EFA can contribute to the specification of a model when applied prior to cross-validation using CFA. Finally, a SEM can be used to assess the structural model.

4.1.1 Influence of Dynamic Capabilities on SME Growth

To begin with, the central relationship between dynamic capabilities and SME growth as described in the theoretical considerations of chapter 2 is captured and analyzed with the Hypotheses. As described, Growth is a complex phenomenon and cannot be generally equalised with an increase of the companies' turnover, which would be too short –sighted. As for the derivation of the

Hypotheses and for the research field work, however, growth is measured by the increase of the turnover as one highly relevant, important element in connection with the dynamic capabilities. The economic success, measured by the turnover, is used for this study because the correlation between dynamic capabilities with the (economic) success is in the centre of the focus. Especially, as already mentioned, scientific literature indicates that there is a positive and significant relationship between the dynamic capabilities of an SME and its performance and growth (prospects). According to the theoretical assumptions, distinct dynamic capabilities enable firms to timely react to changes in the environment and, as a consequence, to gain and maintain competitive advantages and increase profit. This is true for theoretical work (Eisenhardt/Martin, 2000, Zollo/Winter, 2002; Teece, 2007; Helfat et al., 2007; Helfat/Peteraf, 2009; Barreto, 2010) as well as for empirical studies (Makadok, 2001; Liao et al., 2003; Song et al., 2007; Pohjola/Stenholm, 2012).

These implications are analyzed here by using an approach similar to the ones of Teece (2007) and Zahra et al. (2006), which put the focus on the role of opportunity gathering and selection for the development and exploitation of dynamic capabilities. Zahra et al. (2006) define dynamic capabilities as "…the abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by its principal decision-maker(s)" and add that the creation and use of dynamic capabilities correspond to the decision-makers' perception of opportunities to productively change existing routines and/or resource configurations (Zahra et al., 2006: p. 3). Consequently, dynamic capabilities as a special quality determine a firm's ability to pursue opportunities in new and potentially more effective ways, depending on the management's willingness and ability to undertake and implement the corresponding changes (Helfat et al., 2014). This view is consistent with the conclusions of several other authors like Rindova and Taylor (2002), who state that dynamic management capability is a crucial prerequisite for a firm's ability to spot and exploit opportunities in evolving environments, or Lee et al. (2002), who find that the ability to conceptualize the capability to cope with environmental changes by identifying and exploiting opportunities is an important source of competitive advantage.

According to Teece (2007), it is convenient for analytical purposes to disintegrate dynamic capabilities into three components (Teece, 2007: p. 1319):

The capability to sense and shape opportunities and threats

The capability to grasp opportunities

The capability to maintain competitiveness through enhancing, combining, protecting, and, in case of need, reconfiguring the enterprise's assets

In this context, the key strategic function of executives is the allocation, reallocation, combination and recombination of resources and assets to react to new opportunities and reconfiguration requirements (Chen et al., 2012). Altogether, this requires skills to identify and exploit complementarities and manage co-specialization (Teece, 2007: p. 1319).

To sustain dynamic capabilities, SME executives need various leadership skills, and an important task of the management is to achieve "semi-continuous asset orchestration and corporate renewal, including the redesign of routines" (Teece, 2007: p. 1335). Continuous efforts to build, maintain, and adjust the complementarily of products or services, systems, routines and structures are needed to maintain competitiveness and achieve superior profitability and sustained growth. Hence, to minimize internal conflict and maximize complementarities and productivity inside the enterprise, measures like asset alignment, co alignment, realignment, and redeployment have to be taken continuously.

As a result, SME growth requires continuous or at least periodical reconfiguration and/or adjustment of the resource base (especially financial and human capital) and product or service offerings by using dynamic capacities which help to keep up with market requirements

The market is characterized by great openness resulting from globalization, frequent changes in consumer demand and technologies and corresponding short product life cycles. The main elements of the enterprise's resource base are the following:

> *Financial capital:* allows investments in new resources and is the result of the actions taken by the enterprise's management in the past
>
> *Human capital* can be defined as skills as well as explicit and tacit knowledge that the work force has acquired through schooling, on-the-job-training, and other types of experience. It can be divided into the sub-categories education (prior knowledge), experience and learning (Hien, 2009: p. 433).

Previous research on firm growth suggests that entrepreneurial orientation of a firm or its executives is another important factor to foster firm growth (Wiklund, 1998; Zahra/Covin, 1995; Trahms et al., 2013). Defined as innovative, proactive and risk-taking behaviour, entrepreneurial orientation and its impact on firm growth has been investigated theoretically (e.g. Lumpkin/Dess, 1996) as well as empirically (e.g. Lumpkin/Dess, 2001, Wiklund/Shepherd, 2005, Covin et al., 2006; Wiklund et al., 2009; Kraus et al. 2012), and though some studies imply that different

dimensions of entrepreneurial orientation may have diverse effects on firm performance, the positive effect of the construct of entrepreneurial orientation on firm growth is pretty unambiguous. Wiklund and Shepherd (2005) confirm the positive influence of entrepreneurial orientation on growth and financial performance and add that the effect is moderated by the dynamism of environment and capital availability.

Though there is a common consensus with regard to the positive effects of dynamic capabilities and entrepreneurial orientation on SME growth, the respective magnitude of the effects is another question of interest yet to analyse (Wilhelm, 2015: pp. 327). Some authors suggest that entrepreneurial orientation and dynamic capabilities have a complementary character in as far as the ability to constantly reconfigure the resource base and a management attitude characterized by innovativeness, proactiveness and a moderate risk-taking propensity mutually amplify each other and, as a consequence, both characteristics in combination do have a positive effect on SME growth that is stronger than the sum of the isolated effects of each of these properties (e.g. Jiao et al., 2010).

Against this background, hypothesis 1 claims a significant relationship between dynamic capabilities measured by the ability to detect and exploit opportunities and SME growth measured by the increase of the turnover:

H1: The systemic integration of an SME's ability to detect opportunities and take adequate decisions to exploit and continuously approve its resource base has a positive influence on the growth of small and medium sized enterprises.

4.1.2. Influence of Resources on SME Growth

The literature review of chapter 2 further identified a firm's resources as potential determinants of growth. As already mentioned above, the model in this study focuses on financial capital and intellectual capital, the latter as the most relevant aspect of human capital within a company. In this sense the human capital in a whole includes the intellectual of a company concerning the skills and vocational knowledge of its employees, which is in focus of this research. These constructs are supposed to influence growth not only directly, but also indirectly, since they foster the development of dynamic capabilities and nurture the adaption of entrepreneurial orientation towards growth which in turn has a positive influence on SME growth.

H2: Intellectual capital has a positive influence on SME growth.

H3: The better the availability of financial capital, the bigger is the growth.

4.1.3 Influence of Growth Attitude

The management's attitude towards growth is another important potential determining factor of growth. Previous scientific research implies that a positive attitude towards growth, manifested in a strong motivation and the willingness to take adequate measures timely, determines the opportunities to expand the business and realize growth. Again, it is assumed that there is a direct and indirect effect via entrepreneurial orientation.

H4: The growth attitude taken by the management directly influences SME growth in a positive way.

4.1.4 Dynamism of Environment

Empirical growth research also provides evidence of a significant influence of the business environment on SME growth. The dynamism of the environment, manifested in frequent changes in demand and technology, short live cycles, and the repercussions of an ever-increasing globalization with open markets seems to be one of the most influential factors on firm growth (Baum et al., 2001; Wiklund/Shepherd, 2003; Wiklund et al., 2009). Since the factors mentioned above induce a tough competition and make great demands on the enterprises and their managements, they are naturally supposed to have a negative influence on growth. However, this negative direct effect in turn is supposed to be mediated by the development of dynamic capabilities and, what's more, provides the opportunity to outperform competitors by showing a superior entrepreneurial orientation.

H5: The dynamism of the environment has a direct negative influence on SME growth

4.1.5 International Market Orientation

Finally, in addition to the common factors identified by previous research, this study investigates the influence of family ownership, that may lead to an advanced commitment, and an international market orientation, measured by the extent of a firm's activities in countries abroad.

H6: International market orientation has a positive influence on growth

Summarized, the following table depicts the hypotheses to be tested:

H1:	The systemic integration of a SME's ability to detect opportunities and take advantages to exploit and continuously approve its resources base has a positive influence on the growth of small and medium sized enterprises.
H 2:	Intellectual capital has a positive influence on growth.
H 3:	The greater the availability of financial capital, the greater is the growth of SME.
H 4:	The growth attitude taken by the Management directly influences SME growth in a positive way.
H 5:	The dynamism of environment has a direct negative influence on SME growth.
H 6:	International market orientation has a positive influence on growth.

Table 17: Summarized Hypothesis.

Figure 25 summarizes the established conceptual model for the research fieldwork by using the hypotheses above:

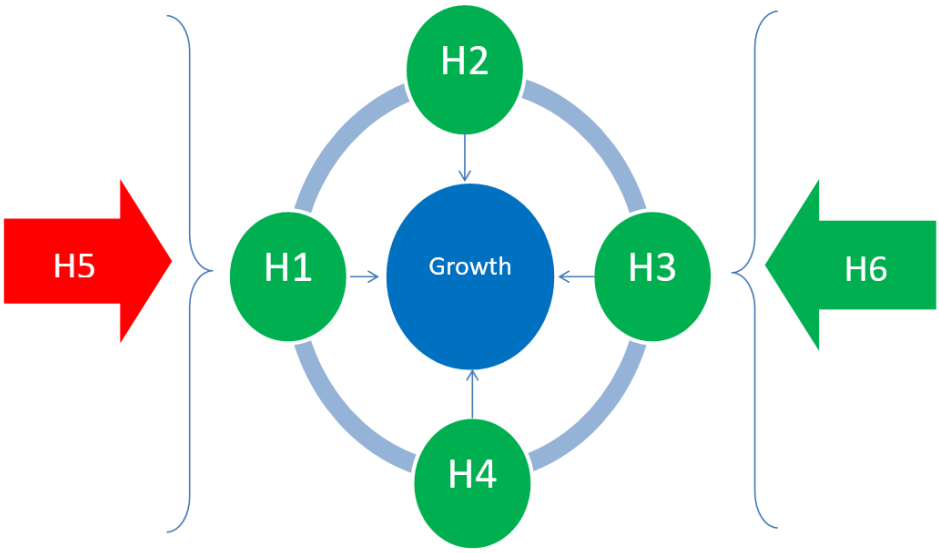


Figure 21: Hypotheses and conceptual model.

Source: own elaboration

4.2. Sample description

The study focuses on small and medium sized enterprises of the manufacturing sector in North Rhine-Westphalia with a labour force ranging from 10 to 250 employees, potentially a number of about 3900 enterprises. The randomly chosen companies were listed in the Chambers of crafts and the Chamber of Trade indexes. To check for comprehensibility and suitability of the questions, a pre-test was conducted during summer 2015 by questionnaires with 30 representatives, randomly chosen SME. During this pre-test the questionnaire`s usability was confirmed. By another 73 questionnaires with companies from September 2015 until the end of 2015 overall 103 questionnaires - based results were generated and used for the hypotheses testing. The meaning of the SME for the economy in general has been described in chapter one and fostered the decision to focus on SME Additionally the focus on SME had been in the centre of the author's´ PhD studies which focussed on SME from different perspectives and as a result obtained from this several publications obtained (e.g. Fonger, J. (2016), Reich, M., Fonger, J. (2013)).

The fieldwork was conducted between September 2015 and the end of December 2015. Each questionnaire was filled out during the attendance of the author by the owner or parts of the Management Board of each questionnaire. These allowed answering questions during the interview if necessary and to avoid inquiry questions, as well as it allowed separating independent from dependent variables (see explanations below). Additionally, it could be ensured to the owners or Managers, that any data will be used only for research and completely anonymously. By a pre-test with 30 companies during the summer of 2015 and by another 73 CEOs of SME from September 2015 until the end of 2015 the results were finally collected. This led to a number of

overall 103 interviews, i.e. 103 completely filled out, valid responses. The data gathered includes the turnovers for 2014. Caused by the German tax system, which gives the companies typically a two- years time frame to establish and finalise their return of tax applications. From this point of view, the data is still relatively up-to-date; especially as there is no more current data available. Additionally and even more important, the focus of the research is set on the development of the companies by testing the period of growth during a three year time frame, namely from 2012 to 2014. In this regard the tendencies and general assumptions are about to be tested.

Following Chang, the questionnaire and the setting was established in a way that allowed to separate the independent from the dependent variables (Chang et al., 2010: pp.178-182) in order to avoid common-method variance. Concrete, the questions for the number of employees and the development of the turnover were separated from each other. In all the cases the questionnaires were filled in as described above, during the attendance of the author. By this, as another advantage was generated: a correct reliable process was assured.

4.3 Descriptive summary

The field work results are described descriptively in this subchapter to give a summarizing overview before moving ahead to test the Hypotheses and to reflect on the results and then to finally establish the conclusions and findings. Before answering content-related issues the respondents were asked to state the sales turnover figures for the last 3 years, their number of employees as well as their founding year. As the data set was split into companies with positive and negative growth the description differentiates between these results; for the further testing of the Hypotheses only the companies with positive growth were taking into account.

The figures below show the distribution of companies (in total and percentage) according to their individual sales growth, the development of growth in EUR and the age of the companies. The SMEs are presented individually depending on their positive or negative growth. The figures are self-explaining by their titles:

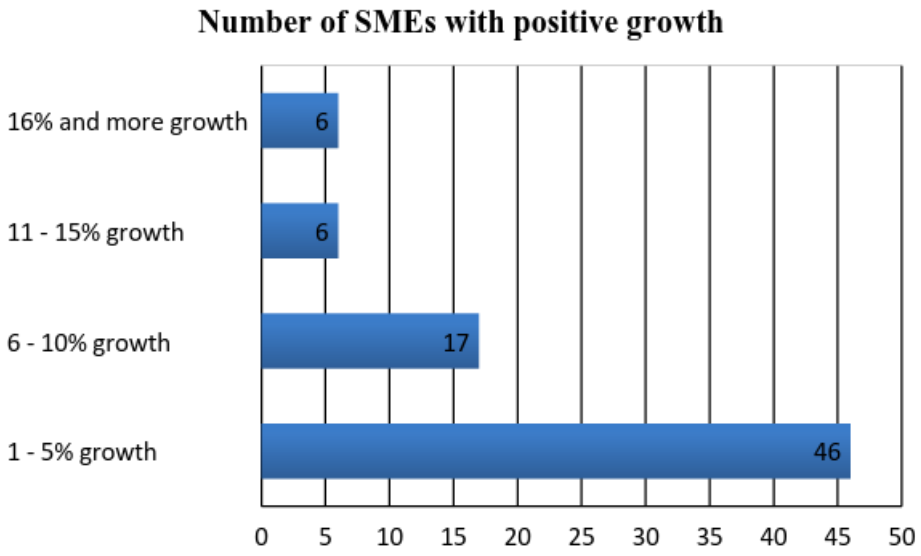


Figure 22: Number of SMEs with positive growth in %.

Source: own elaboration

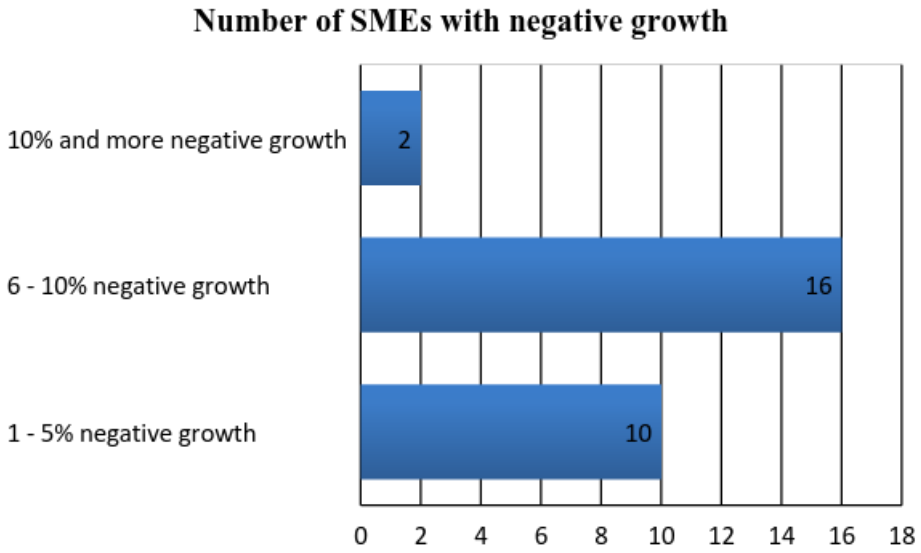


Figure 23: Number of SMEs with negative growth in %.

Source: own elaboration

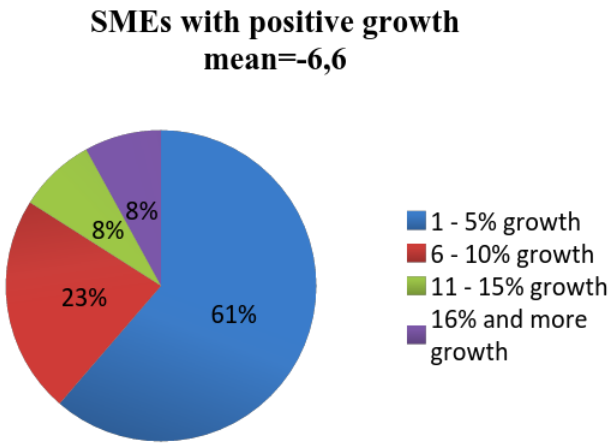


Figure 24: SMEs with positive growth in %.

Source: own elaboration

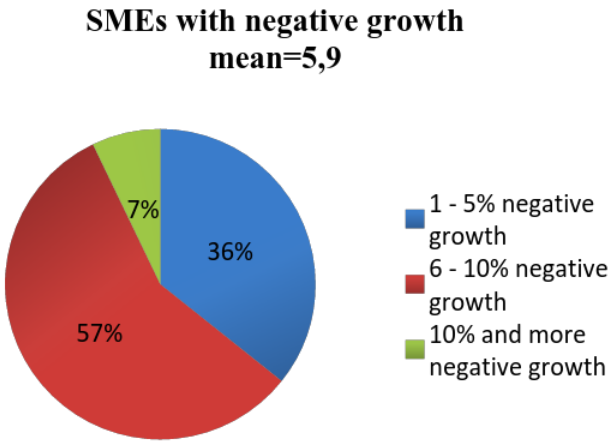


Figure 25: SMEs with negative growth in %.

Source: own elaboration

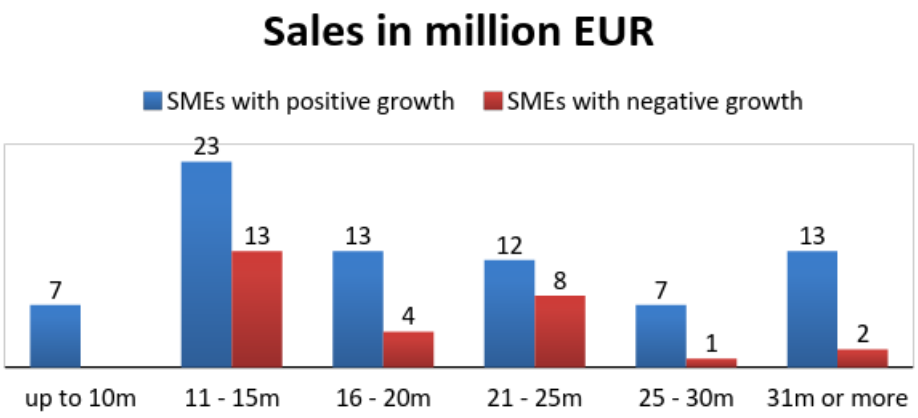


Figure 26: Sales in million EUR for SMEs with positive and negative growth.

Source: own elaboration

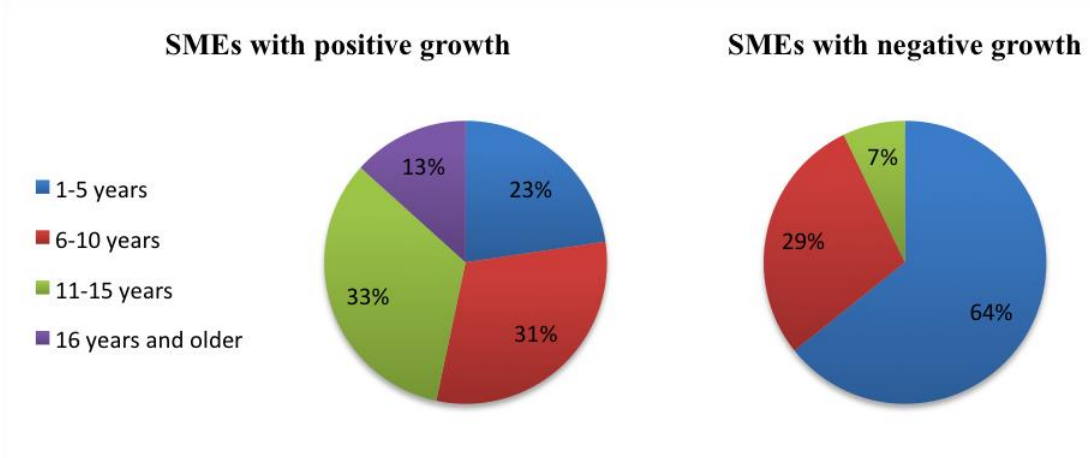


Figure 27: Distribution of the Company Age in 2015.

Source: own elaboration

The latter figures show the structure of the companies based on their answers. Some aspects shall be highlighted:

- The differences of the structure between companies with negative growth and positive growth do differ from each other in almost all respects.
- The levels of the turnover sales of those companies with negative growth are lower than the ones for positive growth.
- The older companies are more affected by a negative growth than younger companies are.

In the questionnaires, the respondents evaluated several statements in six different categories using a 5-point Likert scale from 1 “fully disagree” or, respectively, “insufficient” and 5 “completely agree” or, respectively “fully satisfactory”. The following table shows these categories and the given statements to which the respondents had to reply to:

Category	Statement
1. Dynamic Capability The company explores the business environment to the assessment of:	a. Relevant new technologies
	b. Changed consumption trends and customer needs
	c. New markets to conquer
	d. Potential business models to max out chances
	e. Effectiveness of company function due to documented processes within the units
2. Intellectual Capital	a. Level of employees and their competencies
	b. Training hours above average
	c. Work of employees towards product and process development
3. Available financial Resources	Effect of the Availability of financial resources during the last 3 years on the firm's development
4. Management Attitude towards Growth	a. Importance of growth
	b. Sales growths as main criteria for decisions
	c. Dependence of survivability on sales growth
5. Dynamic of the Environment	a. Change of marketing strategy in order to keep up
	b. Frequency of production technologies within the branch
	c. Transparency of competitors and their activities
6. International Level	Whether or not the company was active outside of its own country

Table 18: Categories and Statements of the questionnaire (2015)

Source: own elaboration.

In the first subject „Dynamic Capabilities", the respondents were asked whether or not their companies explore the business environment by analyzing and committing resources regarding five different items with a question for each. The table and the figures below show the distribution

of answers (in percentage of total) to each statement given and the mean value. Additionally they are divided according to the economic growth of the SMEs, i.e. negative or positive growth.

Dynamic Capabilities

	SMEs with positive growth					SMEs with negative growth				
	Occurence of variables					Occurence of variables				
	1 fully disagree	2	3	4	5 completely agree	1 fully disagree	2	3	4	5 completely agree
Item 1	12,00%	18,67%	29,33%	25,33%	14,67%	25%	28,57%	17,86%	14,29%	14,29%
Item 2	10,81%	21,62%	29,73%	20,27%	17,15%	25%	28,57%	17,86%	17,86%	10,71%
Item 3	10,67%	20%	29,33%	22,67%	17,33%	21,43%	32,14%	17,86%	10,71%	17,86%
Item 4	8%	22,67%	33,33%	20%	16%	25%	25%	21,43%	7,14%	21,43%
Item 5	10,67%	25,33%	25,33%	24%	14,67%	21,43%	32,14%	17,86%	7,14%	21,43%

Note: Totals may not add up due to rounding

Table 19: Overview Distribution of answers to: Dynamic Capabilities.

Source: own elaboration

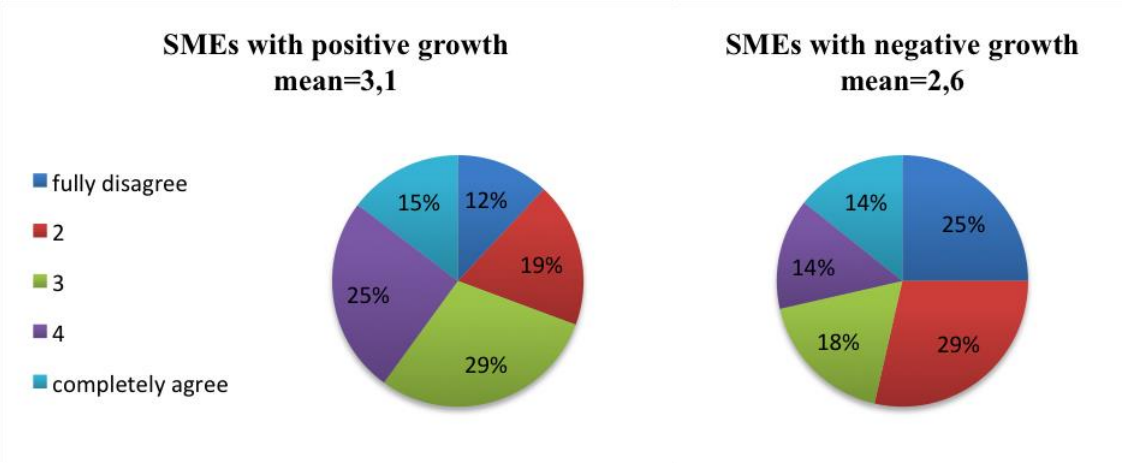


Figure 28: Distribution of answers to: Dynamic Capabilities – Relevant new technologies.

Source: own elaboration

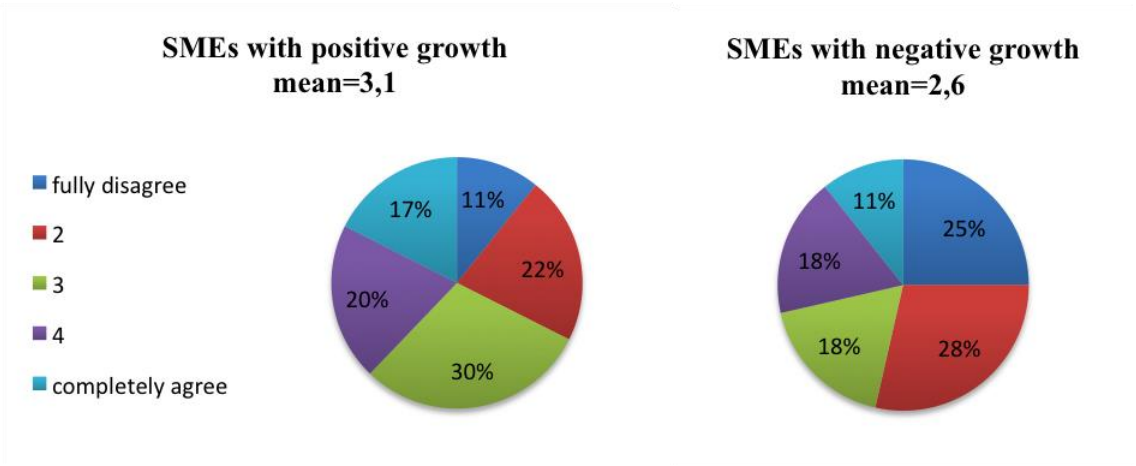


Figure 29: Distribution of answers to: Dynamic Capabilities – Changed consumption trends and customer needs.

Source: own elaboration

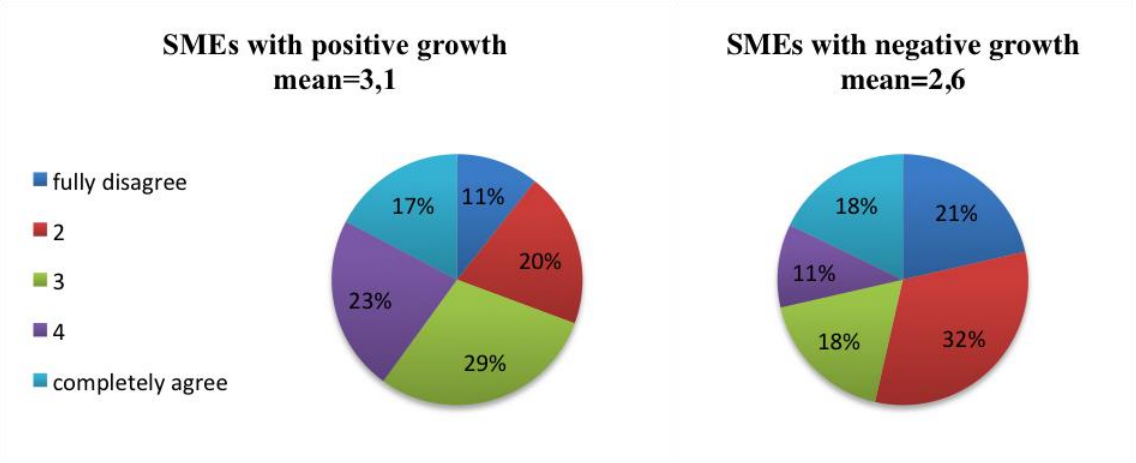


Figure 30: Distribution of answers to: Dynamic Capabilities – New markets to conquer.

Source: own elaboration

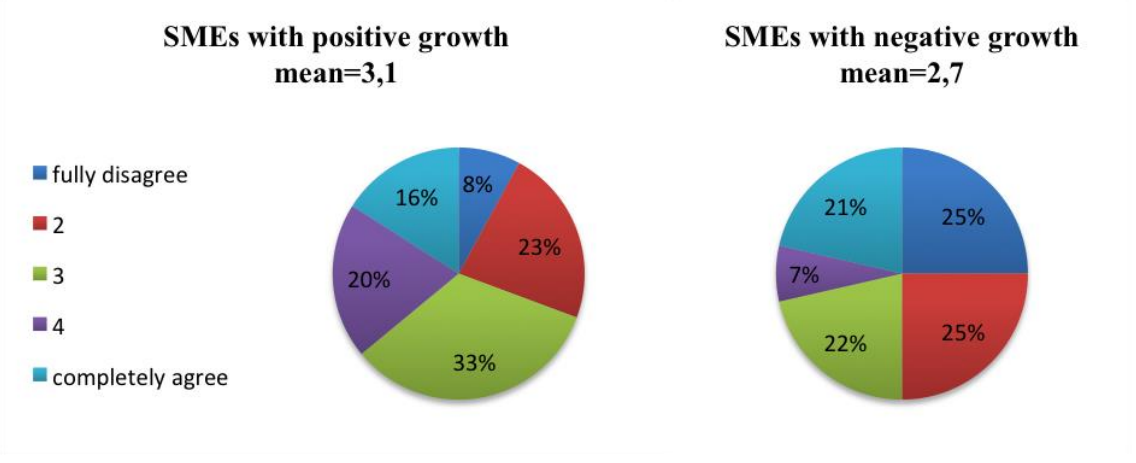


Figure 31: Distribution of answers to: Dynamic Capabilities - Potential business models to max out chances.

Source: own elaboration

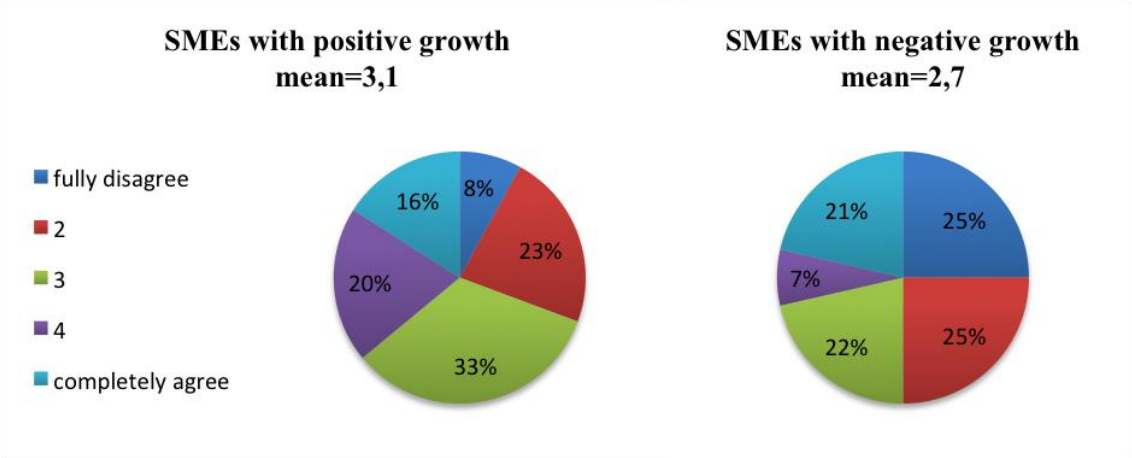


Figure 32: Distribution of answers to: Dynamic Capabilities - Effectiveness of company function due to documented processes within the units.

Source: own elaboration

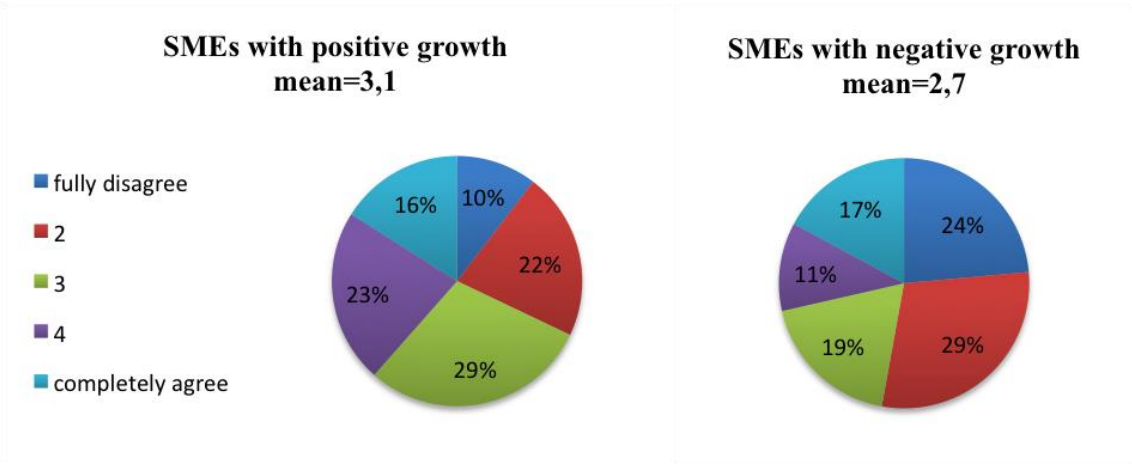


Figure 33: Overall distribution of answers to the 5-question category Dynamic Capabilities.

Source: own elaboration

The next subject "Intellectual Capital" contains 3 statements concerning the quality of the company's employees and their work. Again, the table and figures show the distribution of answers to each of the three given items, divided by negative and positive growing SMEs.

Intellectual Capital

	SMEs with positive growth					SMEs with negative growth				
	Occurence of variables					Occurence of variables				
	1 fully disagree	2	3	4	5 completely agree	1 fully disagree	2	3	4	5 completely agree
Item 1	4%	24%	41,33%	16%	14,67%	10,71%	32,14%	25%	14,29%	17,86%
Item 2	4%	21,33%	45,33%	16%	13,33%	10,71%	28,57%	28,57%	17,86%	14,29%
Item 3	5,33%	22,67%	40%	18,67%	13,33%	10,71%	32,14%	25%	14,29%	17,86%

Note: Totals may not add up due to rounding

Table 20: Overview Distribution of answers to: Intellectual Capital.

Source: own elaboration

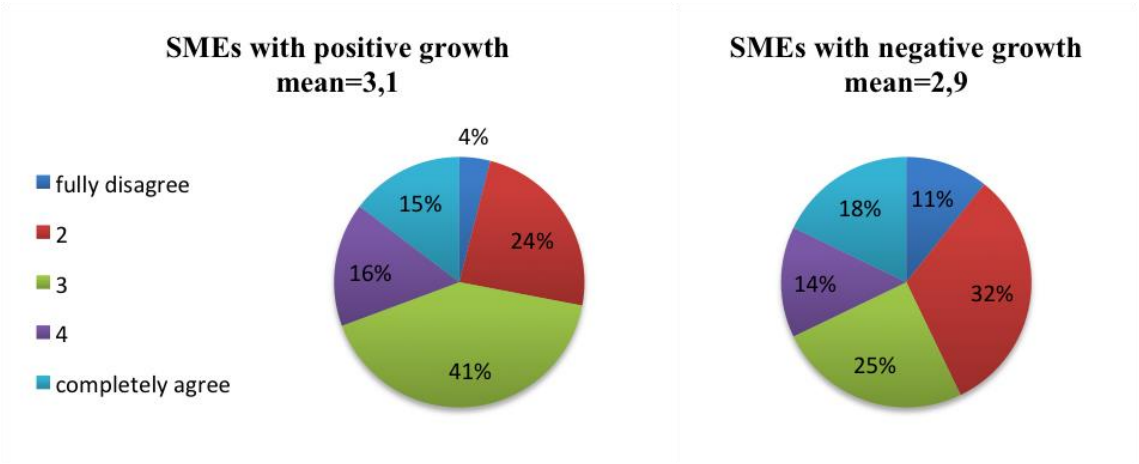


Figure 34: Distribution of answers to: Intellectual Capital - Level of employees and their competencies.

Source: own elaboration

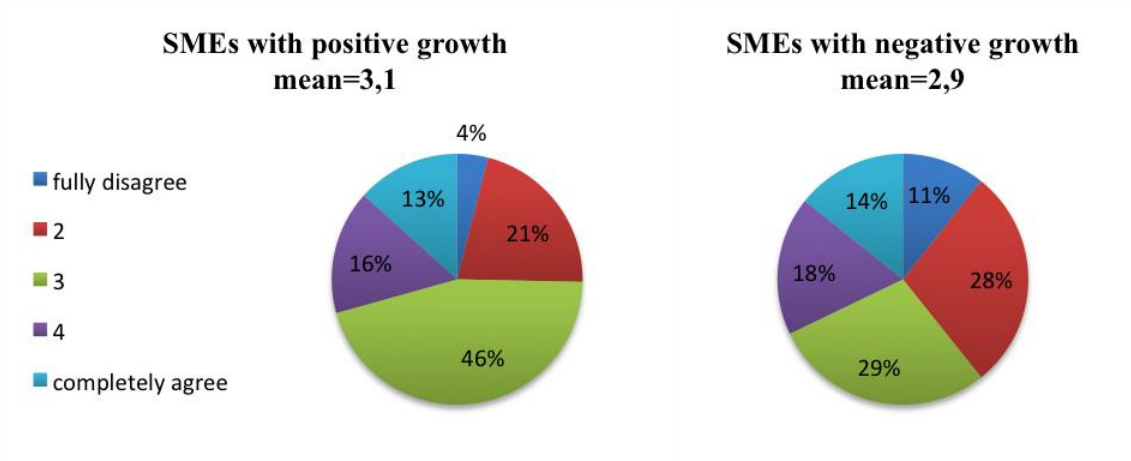


Figure 35: Distribution of answers to: Intellectual Capital - Training hours above average.

Source: own elaboration

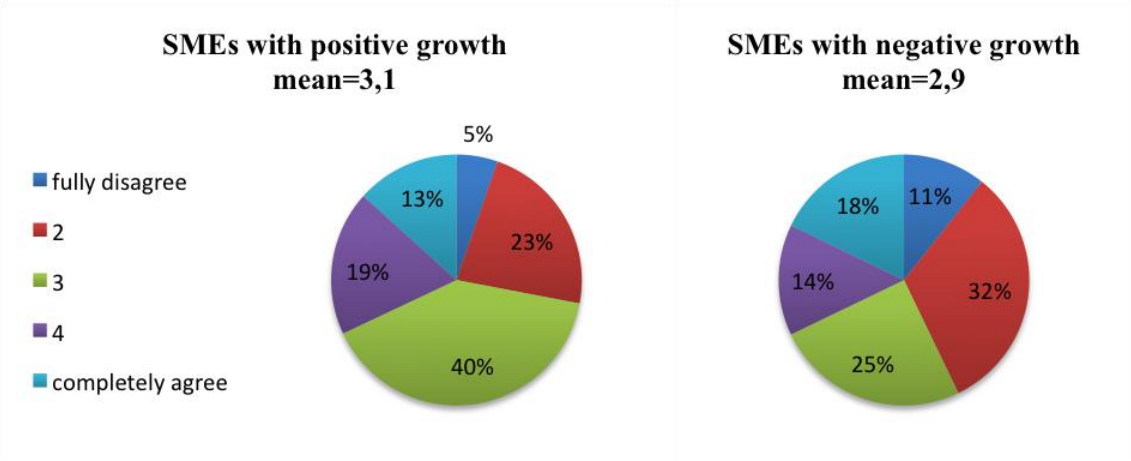


Figure 36: Distribution of answers to: Intellectual Capital - Work of employees towards product and process development.

Source: own elaboration

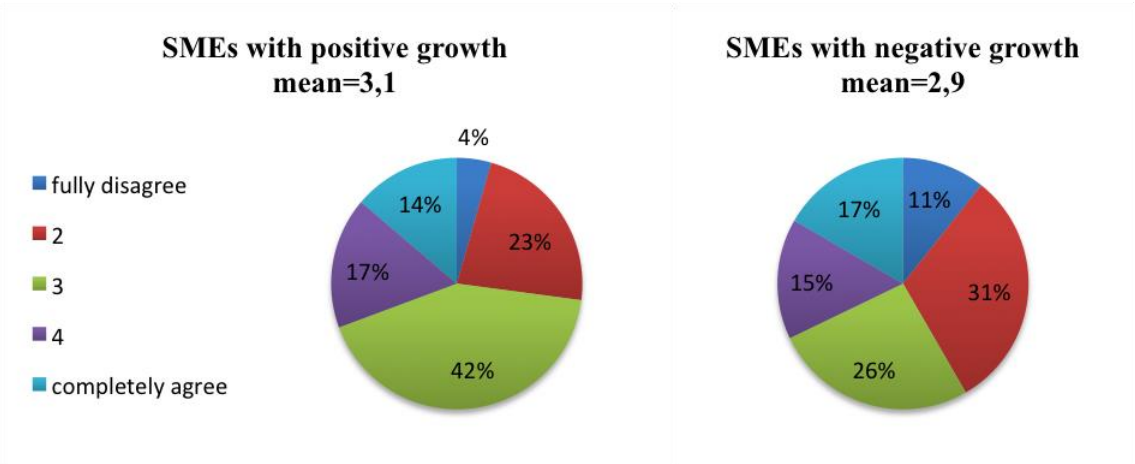


Figure 37: Overall distribution of answers to the 3-question category Intellectual Capital.

Source: own elaboration

In the section "Available Financial Resources" the respondents were asked to evaluate the effect of the availability of financial resources during the last three years on the firm's development. The table and the two figures show the distribution of answers, divided into negative and positive growing SMEs.

Available Financial Resources

	SMEs with positive growth					SMEs with negative growth				
	Occurence of variables					Occurence of variables				
	1	2	3	4	5	1	2	3	4	5
	fully disagree				completely agree	fully disagree				completely agree
Item 1	14,67%	13,33%	24,00%	21,33%	26,67%	10,71%	35,71%	21,43%	17,86%	14,29%

Note: Totals may not add up due to rounding

Table 21: Overview Distribution of answers to: Available Financial Resources.

Source: own elaboration

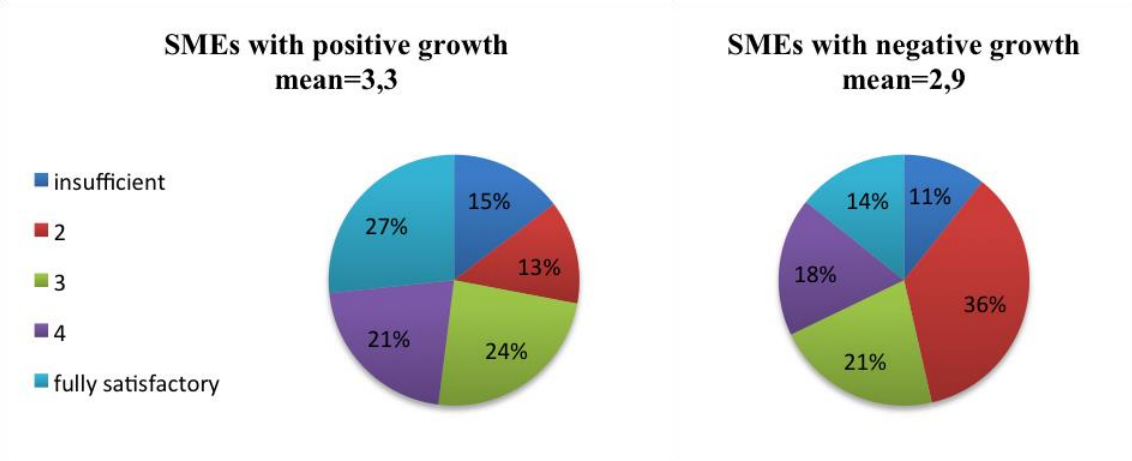


Figure 38: Distribution of answers to: Available Financial Resources - Effect of the Availability of financial resources during the last 3 years on the firm's development.

Source: own elaboration

The fourth category "Management Attitude towards Growth" includes three statements about the importance of sales growth towards different factors. The table and the figures show the distribution of answers, divided into negative and positive growing SMEs.

Management Attitude towards Growth

	SMEs with positive growth					SMEs with negative growth				
	Occurence of variables					Occurence of variables				
	1 fully disagree	2	3	4	5 completely agree	1 fully disagree	2	3	4	5 completely agree
Item 1	20%	20%	26,67%	17%	16%	25%	28,57%	28,57%	3,57%	14,29%
Item 2	18,67%	24%	26,67%	13,33%	17,33%	14,29%	39,29%	21,43%	10,71%	3,15%
Item 3	22,67%	16%	28%	17,33%	16%	25%	28,57%	28,57%	7,14%	10,71%

Note: Totals may not add up due to rounding

Table 22: Overview Distribution of answers to: Management Attitude towards Growth.

Source: own elaboration

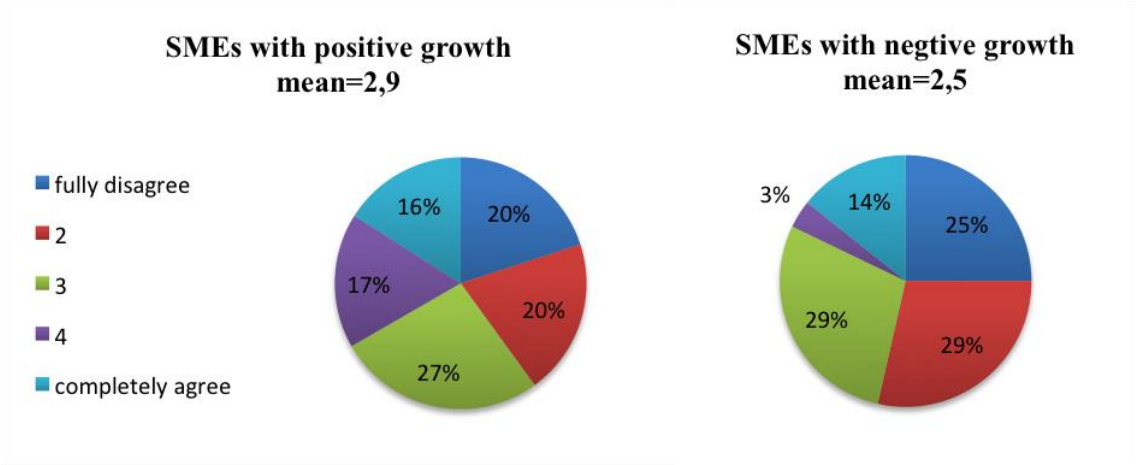


Figure 39: Distribution of answers to: Management Attitude towards Growth - Importance of growth.

Source: own elaboration

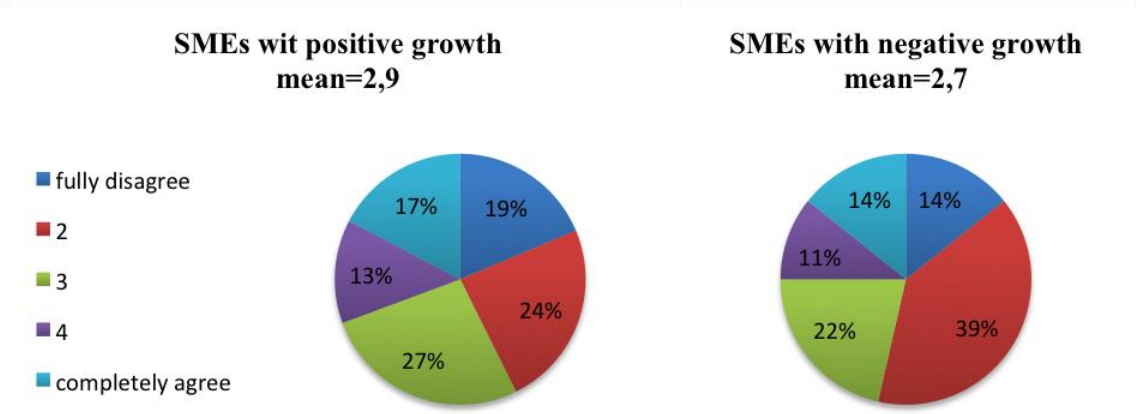


Figure 40: Distribution of answers to: Management Attitude towards Growth - Sales growth as main criteria for decisions.

Source: own elaboration

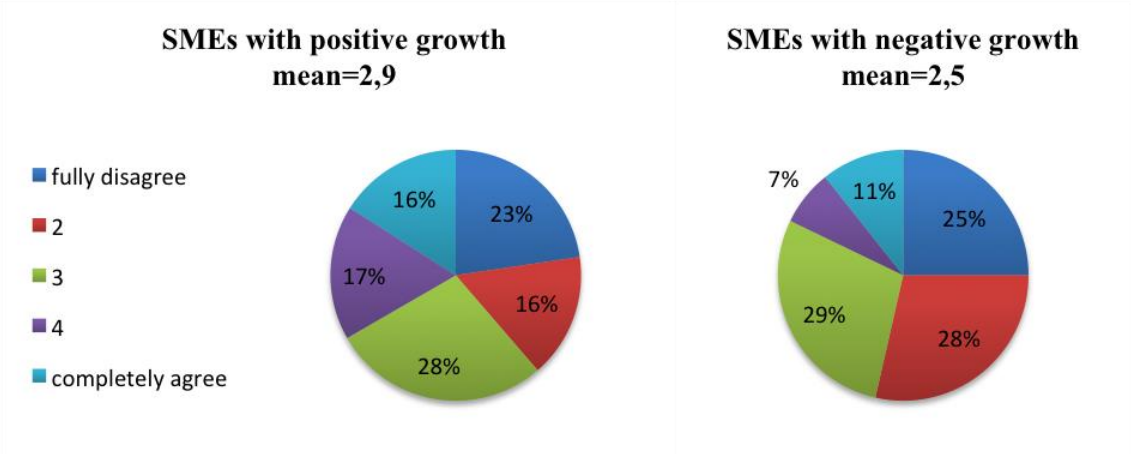


Figure 41: Distribution of answers to: Management Attitude towards Growth - Dependence of survivability on sales growth.

Source: own elaboration

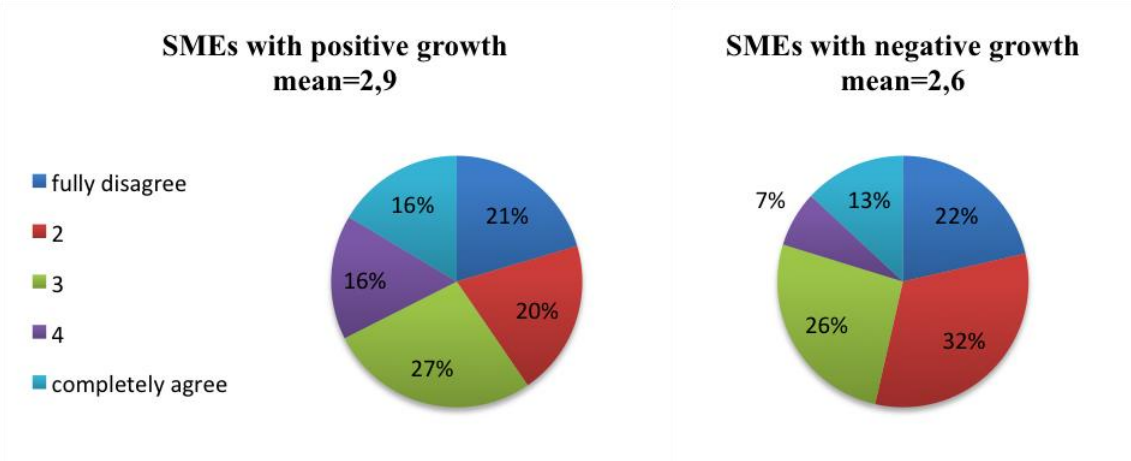


Figure 42: Overall distribution of answers to the 3-question category Management Attitude towards Growth.

Source: own elaboration

Frequency of commercial operations and activities of competitors are the topic of the category "Dynamic of the Environment". The table and figures below show the distribution of answers (in percentage of total) to each statement given. Additionally they are divided according to the economic growth of the SMEs.

Dynamic of the Environment

	SMEs with positive growth					SMEs with negative growth				
	Occurence of variables					Occurence of variables				
	1 fully disagree	2	3	4	5 completely agree	1 fully disagree	2	3	4	5 completely agree
Item 1	24%	45,33%	21,33%	8%	1,33%	0%	3,57%	17,86%	46,43%	32,14%
Item 2	22,67%	48%	18,67%	9,33%	1,33%	3,57%	3,57%	14,29%	57,14%	21,43%
Item 3	22,67%	49,33%	21,33%	5,33%	1,33%	0%	3,57%	14,29%	50,00%	32,14%

Note: Totals may not add up due to rounding

Table 23: Overview Distribution of answers to: Dynamic of the Environment.

Source: own elaboration

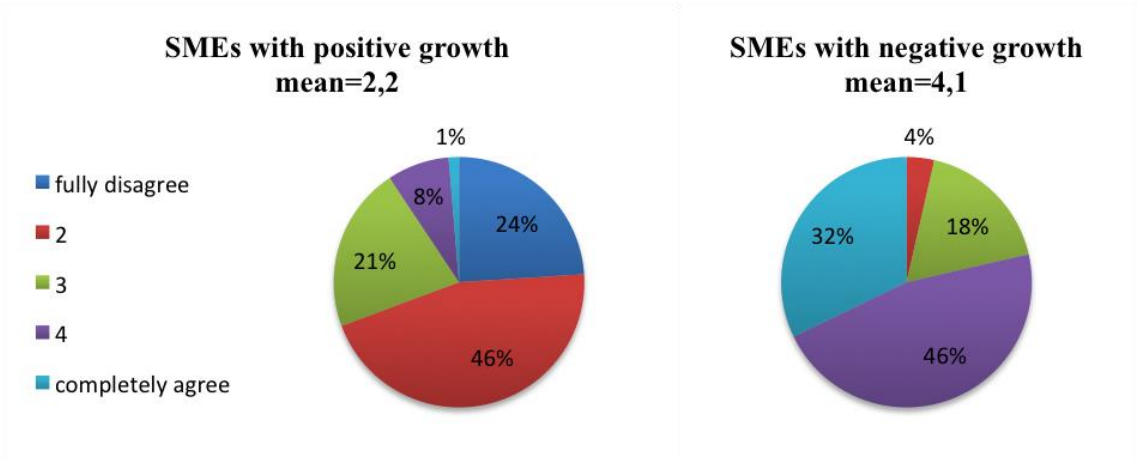


Figure 43: Distribution of answers to: Dynamic of the Environment - Change of marketing strategy in order to keep up.

Source: own elaboration

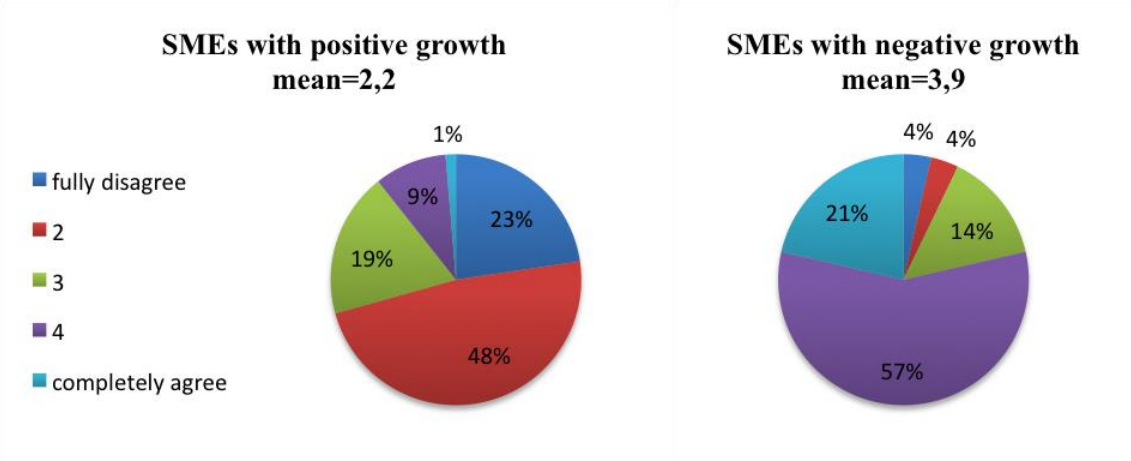


Figure 44: Distribution of answers to: Dynamic of the Environment - Frequency of production technologies within the branch.

Source: own elaboration

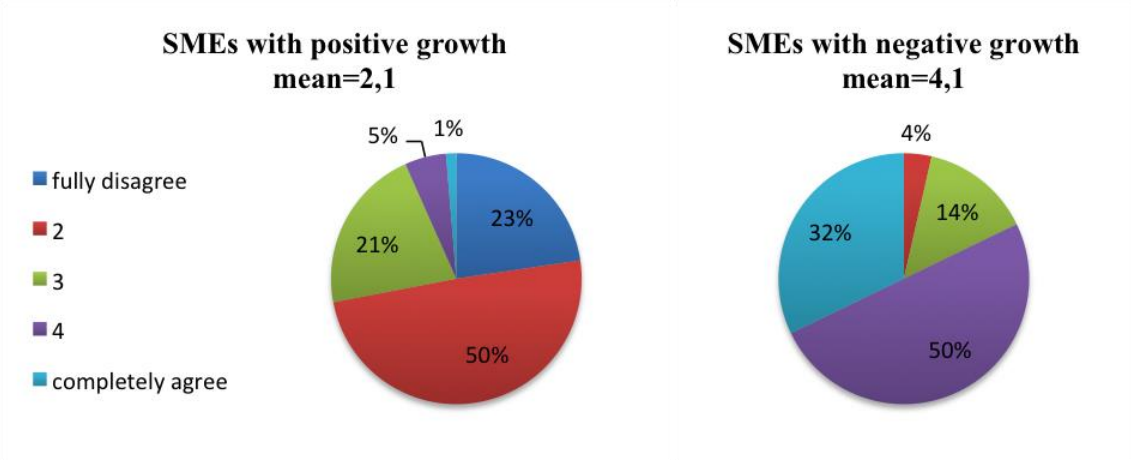


Figure 45: Distribution of answers to: Dynamic of the Environment - Transparency of competitors and their activities.

Source: own elaboration

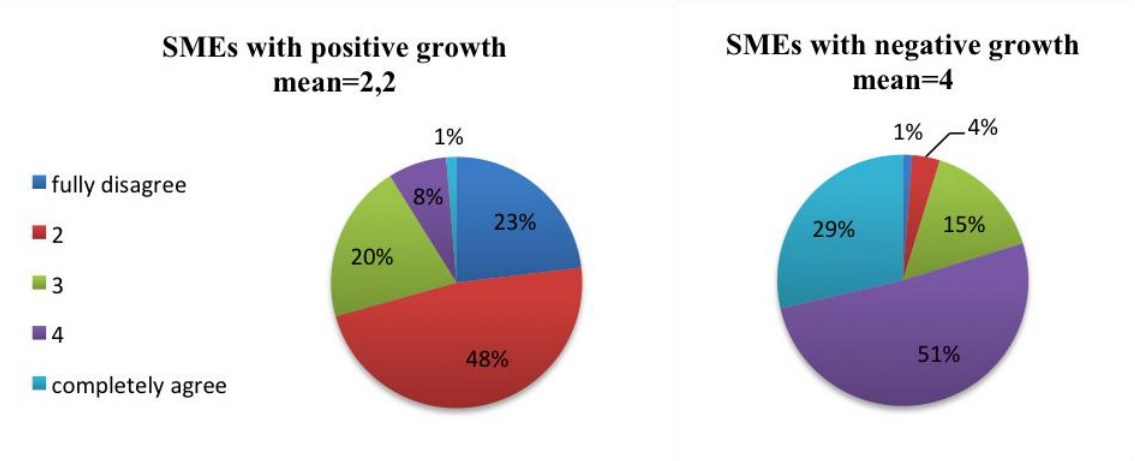


Figure 46: Overall distribution of answers to the 3-question category Dynamic of the Environment.

Source: own elaboration

In the last part of the questionnaire the respondents had to state, if their company was active in another country during the last three years. If so, they were asked to give the number of countries the company had business in. The table and figures show how many of the companies were involved in foreign operations and the second figure shows the amount of countries the SMEs were active in.

International Level

	SMEs with positive growth		SMEs with negative growth	
	Yes	No	Yes	No
International active	36%	64%	35,71%	64,29%

Table 24: Overview Distribution of answers to: International Level.

Source: own elaboration

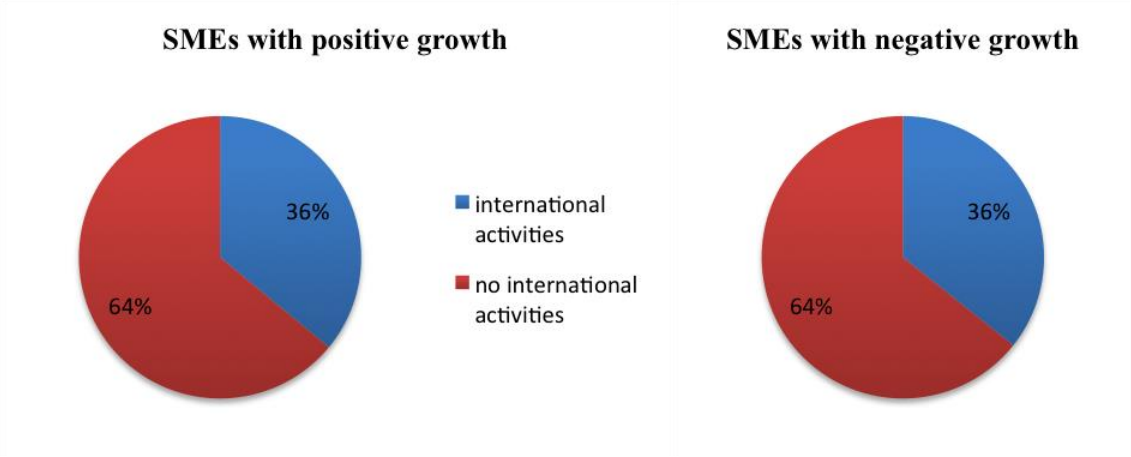


Figure 47: Distribution of answers to: International level - Whether or not the company was active outside of its own country.

Source: own elaboration

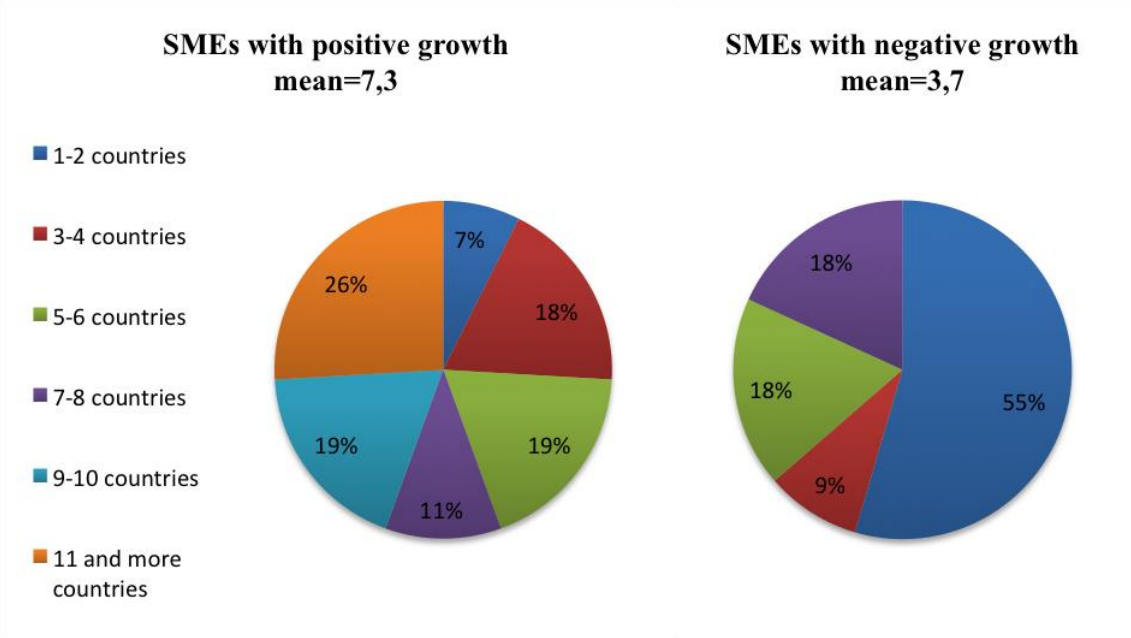


Figure 48: Distribution of answers to: International level – Number of countries the company was active in during the last three years.

Source: own elaboration

Finally table 25 depicts the mean, variances and standard derivation for each of the underlying parts of the questionnaire which correlate with the established Hypotheses. Again, the differentiation has been made between positive and negative growth.

		Mean	Variance	Standard Derivation
Dynamic Capabilities	SMEs with pos. growth	3,1	1,5	1,2
	SMEs with neg. growth	2,7	2	1,4
Intellectual Capital	SMEs with pos. growth	3,1	1,1	1
	SMEs with neg. growth	2,9	1,6	1,3
Available financial Resources	SMEs with pos. growth	3,3	1,9	1,4
	SMEs with neg. growth	2,9	1,6	1,2
Management Attitude towards Growth	SMEs with pos. growth	2,9	1,8	1,3
	SMEs with neg. growth	2,6	1,6	1,3
Dynamic of the Environment	SMEs with pos. growth	4	0,8	0,9
	SMEs with neg. growth	2,2	0,7	0,8
International Level (if yes)	SMEs with pos. growth	7,3	12,8	3,5
	SMEs with neg. growth	3,7	7,4	2,6

Table 25: Mean, variance and standard derivation.

Source: own elaboration

The differences between the results for the companies with a positive and negative growth are obvious. However, there is quite a difference among the categories. The differences between positive and negative growth of companies and their economic activities on an international level are worth being highlighted: Companies with a negative growth show significantly more often a lower level of activities on an international level. This follows the scientific mainstream, that SME with international activities yield better results as an ongoing trend for SME on a European level since many years (e.g. European Commission, 2010).

5. RESULTS

5.1. Testing of the Hypotheses

Following the data collected by the survey, the procedure was divided into two steps: Firstly the data set was analysed basically, in order to check "technically" with regard to the testing of the results concerning the consistency or the reliability, the entire data was taking into account. It is insofar necessary, as the explanatory power needs to base on an empirically proved data set. Secondly, the results of the survey led to a split data set. In the context of the hypotheses to be tested a further investigation concerning the SME with negative growth made no sense, because their correlation with the underlying items led to a loss instead to growth. As they were SMEs with a positive growth and with a negative growth, only the ones with positive growth were usable for further analysis. In this sense they would have been rejected from this survey because they are not part of the potential group of SME in North - Rhine Westphalia with growth. But it seemed appropriate, in order to get a complete documentation of the results and for a realistic representation of the survey, to collect data for those SME with negative growth, too. A decision not to use the data by simply not collecting the results would have been an irregular approach. Furthermore it would be an interesting challenge for further research work to do a more or less similar survey in order to find out whether there are similar results or e.g. totally contrary ones. The letter result would make perfectly sense: By this it is proved that the assumptions and items which established the hypotheses were correct to test growth, if they are not confirmed, it would necessarily lead to loss instead of growth. However, this would be a different approach and it would require a bigger database to be reliable especially to allow deductive statistics. For these reasons the further analysis only used the data of the companies with (positive) growth.

The table below summarizes the results by the means of the answers and the corresponding hypotheses and gives an overview about the number of items at the same time. During the testing of the hypotheses the used items were denoted as (in the order of the hypotheses 1 to 6) DC1- DC 5, Int_Cap1-3, Financial _cap, Attid_Growths 1- 3, Dynamic_Enviroment 1- 3, International.

	Growth i.% ´12-´14	Age/years	H1:pos. corr 5 items	H2:pos corr 3 items	H3:pos corr. 1 item	H4:pos. corr 3 items	H5:neg. corr. 3 items	H6:. pos.corr 1 item	if yes nr. of countries
Overall mean	2	8	3	3	3	3	3	2	2
mean pos. growth	5,9	10	3	3,1	3,3	2,9	2,2	1,6	2,6
mean neg. growth	-8,7	5	3	3,0	2,9	2,5	4,1	1,6	1,5

Table 26: Summary and means of the questionnaire.

Source: own elaboration

For the further multilinearity analysis (results in Table 21) the items were taken into account for the factor analysis. As a first step, an exploratory factor analysis is conducted (Backhaus et al. (2003), subjected to the aim to confirm the postulated scales. Followed by the internal consistency check of the scales by using Cronbach's alpha the reliability is analysed (Häder, 2006). Thereafter, the scales in multiple linear regressions will be done as well as a linear regression to the assumptions and injuries hereby associated consequences (see Backhaus et al., 2003). Then, the models with structural breaks and the impacts of structural changes on the estimates in the linear model are described. Similar effects on a linear model such as structural breaks have influential observations; such influential cases will be responded, too.

➢ Exploratory factor analysis:

In an exploratory factor analysis, the data must be checked firstly for their suitability for that process. This is done through the Bartlett's test of correlation and the Kaiser-Meyer-Olkin criterion. Here, the "measure of sampling adequacy" (short: MSA) are regarded as key figures. In the literature, there is not one special, all-purpose method to test whether the items are sufficiently correlated and whether they are suitable for an exploratory factor analysis. Therefore it is recommended to find several criteria for testing the correlations consulted. Furthermore, in the literature are no uniform guidelines for the decision how many of the indicators must meet certain criteria. This is another reason why it is recommended, to check the suitability with a variety of methods. If the majority of the criteria relating to the correlation established, one can assume that there is an adequacy of the data. Firstly, the procedure for Bartlett's test is described. That provides the Bartlett test where a p-value is lower than the significance level so that a significant correlation

between the items can be found. Furthermore, an MSA can be calculated for each individual item. The MSA is a quality measure, which represents information about the togetherness of the items and which is a measure of the suitability of items for factor analysis. The MSA can take values between 0 and 1. Items with values below 0.5 should be excluded from the factor analysis. The higher the MSA, the more it is a tribute for the suitability of the item. These recommended guidelines are stressed in the current literature. The table below shows the standard values with the associated "value" which are specified in the table below.

MSA	Suitability
≥ 0,9	"amazing"
≥ 0,8	"meritorious"
≥ 0,7	"pretty good"
≥ 0,6	"mediocre"
≥ 0,5	"miserably"
< 0,5	"intolerable"

Table 27: MSA.

Source: own elaboration

➢ Linear Regression

Below I will deal with the multiple linear regression (see Backhaus et al, 2003, p.45-116). In this statistical method, a dependent variable $Y_i, i = 1, \dots, T$ is explained by independent variables $X_{1i}, \dots, X_{ki}$. The index i indicates the observation scope. In the multiple linear regression a linear additive relationship is assumed, which can be described by the following mathematical model:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki} + u_i.$$

Here are $\beta_0, \beta_1, \dots, \beta_k$ the parameters of the model, which are estimated using the least squares method. In u_i are the associated error terms of the model. The linear regression or least squares method are subject to certain assumptions:

1. The model is "correctly" specified. This implies that:

a. it is linear in its parameters $\beta_0, \dots, \beta_k$,

b. it contains all relevant explaining variables and
c. The number of the parameters to be estimated $k+1$ is smaller than the observation scope n.

2. The error terms u_i have the expected value zero: $E(u_i) = 0$.
3. There is no correlation between the disturbance and the explanatory variables: $Cor\ (u_i, X_{ji}) = 0$, with $j = 1, \dots, k$.
4. The error terms have a constant variance σ^2:$Var\ (u_i) = \sigma^2$.
5. The disturbances do not correlate among each other: $Cor(u_i, u_{i+r}) = 0$ with $r \neq 0$. In this context it is denoted as autocorrelation.
6. There is no linear dependence between the explaining variablesX_k. In this context it is denoted as multi - co linearity.
7. The disturbances u_i are normally distributed.

If the assumptions 1-6 are fulfilled, then the least squares method provides estimations of regression parameters which meet the desirable characteristics of a linear estimator. There are undistorted and efficient estimations in a statistical context. The assumption 7 is important for the performance of tests of significance for the model parameters.

The linearity, see assumption 1, is reviewed by means of the RESET test, (Sonnberger et al., 1986). Actually this test verifies whether the functional form of the model is correctly specified. By designing the model, assuming that the independent variables affect linearly on the dependent variable, a significant result would lead to the suggestion that the functional form was specified incorrectly, and thus it might be more appropriate, to include a quadratic term in the model. If the result is not significant, however, it suggests that the functional form is useful. In this context, this means that the parameters are linear and thus fulfil the assumption above.

In case of violation of the assumption 2 a distortion of estimation flows into the constant model member β_0. The other estimated parameters are not affected by this distortion. Since the constant is not of central interest in this study, this assumption is not of interest for this study.

A violation of the assumption 1 by "forgotten" independent variables can create distortion of the estimates, if the forgotten independent variable correlated with one or more independent variables in the model. The effect of the forgotten variables "disappears" in this situation in the error term, which has the consequence that assumption 3 is in turn violated because a correlation between the error term and the variables included in the model can emerge. Nevertheless, it can be counterproductive in this situation to take more variables into the model, as this cannot provide efficient estimates, the least squares method, since the variance of the estimates is no longer

minimal. From this point of view, it is advisable for practical applications, to design economical models. In the present work it is assumed that all relevant factors are included in the models.

The adoption of homoscedasticity, the error terms that have constant variances, will be reviewed on residual plots. If an injury assumes this is statically called heteroscedasticity. Heteroscedasticity, as well as auto-correlation may affect the standard error of the model parameters. In violation of the assumptions 4 and 5 the least squares method is usually used to generate a small standard error. This results in significant model parameters that may not be significant under ideal conditions. The acceptance of homoscedasticity will also be checked by a formal test. The Bresuch-Pagan test provides a significant result.

Within the residual plots the points should evenly spread, so homoscedasticity can be assumed. The autocorrelation is also graphically checked with the Durbin-Watson statistic; see Backhaus et al. (2003). If the Durbin-Watson statistic provides a significant result, this indicates an auto - correlated interference. To hedge against autocorrelation a so-called "sandwich" estimator can be used. In the present study, I used the variance-covariance estimator of Newey-West (see Newey and West, 1987).

Under present multi - collinearity is the least squares method no longer able to affect a variable, the assigned "real" variables. Multicollinearity can arise when explanatory variables are highly correlated with each other. To identify potentially multi - collinearity generating variables variance inflation factors (VIF) are used in this study. These factors are determined for each explanatory variable. If a VIF greater than 10 this indicates that the corresponding variable generates a multi – collinearity. Variables having a VIF greater than 10 are excluded from the survey.

The normal distributed nature of the error terms is relevant for the testing of regression parameters. This is done via a residual analysis using quintile plots, see Hartung et al. (2005, pp 847- 849). Here, the inverse of the residuals and the quintiles of a normal distribution are plotted in a coordinate system. If the points are almost on a straight line, the normal distributed nature can be assumed. If the residuals are the deviations of the means of regression, the estimated values of the dependent variables are the observations of the dependent variable. For heavy injuries, e.g. skewness distributions of residuals, a transformation of the dependent variable can help. Applying the logarithm to the data, a skew distribution can be symmetric, so the transformed variables, the normal distribution can be considered fulfilled.

Formally, the residues can be formally described as:

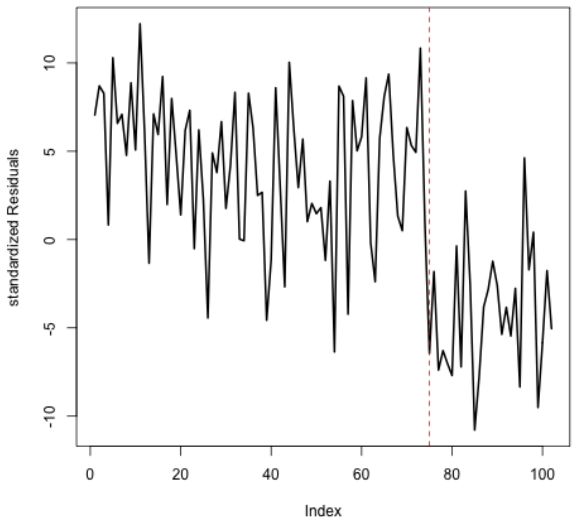
$\hat{u}_i = \hat{y}_i - y_i.$

$\hat{u}_i$ is the residue and $\hat{y}_i$ is the estimate of the dependent variable by means of the least squares method. Furthermore, in the present work modified residuals are considered, the so-called standardized residuals. As mentioned above, among others, the autocorrelation and homoscedasticity are checked by using the residuals. Since the ordinary residuals are typically auto correlated "by nature" and heteroscedastic (Fahrmeir et al. (2009), they are to examine the assumptions used the standardized residuals. They do not possess this property in contrast to the usual residuals. To determine the model quality the Akaike Information Criterion (AIC) is used, to (Fahrmeir et al., 2009). However, the AIC is a functioning measure of the model only if a number of models and their results are compared. The model fits "best", which provides the smallest AIC.

Furthermore, I had to deal with another problem in linear regressions, which do not, however, relates to the assumptions of the model. It can be assumed in the study results that the estimates for growth in company with a negative growth distinguish significantly from those with positive growth, in this context so called structural breaks. To check whether a structural break is present, the estimated values of the dependent variable can be viewed graphically. If the graph shows a significant level of change, it can be assumed that a structural break can be observed. Structural breaks within a model can affect the estimates of the model parameters enormously. It is recommended at the location of break structure to split the data set and to set up two independent models. Also, depending on the research background, only a subset of data has to be evaluated, which are on a similar level. Furthermore, individual cases, in this study the SME, differ greatly from each other and the estimated regression line can be influenced thereby, in this context so called influential cases. Using the Cook's distance (Fahrmeir, 2009), it should not be bigger than 1, otherwise, this case must be regarded as very influential. In this case, the questioned company should be removed from the analysis.

To test the dimensionality of the items of the scale DC, Int_Cap, Attid_Growths and Dynamic Environment a major axis analysis has been applied. The correlation of the items is carried out by means of the Bartlett test. This led to a significant result, $\chi^2(91) = 2371.06$ and p = 0. This fits to test a significant correlation between the items. Further, the suitability of the items was examined by the Kaiser-Meyer-Olkin criterion. The table below shows the result of the MSAs of items. The amount of the MSAs varies between 0.63 and 0.94. These calculations place all items larger 0.5 within the acceptable range. Here is Int_Cap1 with 0.61 the slightest aptitude among the items before. Nevertheless, they can be described as mediocre. DC2 appears as the most appropriate item with 0.94 and denotes an "amazing" ability. Nevertheless all the minimum items meet the suitability of a factor analysis. It is also suggested to run the Bartlett test for a significant

correlation, so all the items have been used for the factor analysis. The major axis analysis was performed with a varimax rotation. The following graph shows the rotated loading matrix. It shows that the matching items are uploaded and are clearly visible each one with its own factor. The dimensionality of the scales can therefore be assumed to be tested correctly. The reliability analysis showed high reliabilities imputed scales. The results can be found in the graph below. When installing a linear regression to examine the hypotheses structural breaks within the data showed, the graph shows the estimated values of the growth for the first regression model. The red vertical line indicates the index of the observation where the structural break occurs. For 74 indices a lower level is indicated than the average of the estimated growth (about 5%).



Graph 1: Reliability analysis.

Source: own elaboration

The following table summarizes the results of MSA for each item, the results of the factor analysis and the Cronbach's alpha results:

Item	MSA
DC1	0.87
DC2	0.94
DC3	0.87
DC4	0.88
DC5	0.89
Int_Cap1	0.63

Int_Cap2	0.81
Int_Cap3	0.71
Attid_Growths1	0.72
Attid_Growths2	0.79
Attid_Growths3	0.78
Dynamic Environment 1	0.70
Dynamic Environment 2	0.81
Dynamic Environment 3	0.72

Table 28: MSA.

Source: own elaboration

Item	Factor 1	Factor 2	Factor 3	Factor 4
DC1	0.98	-0.02	0.07	-0.05
DC2	0.95	-0.06	0.07	-0.04
DC3	0.97	-0.03	0.04	-0.03
DC4	0.94	-0.03	0.08	0.00
DC5	0.98	-0.01	0.04	0.01
Int_Cap1	-0.05	1.00	0.08	-0.01
Int_Cap2	-0.05	0.95	0.05	-0.01
Int_Cap3	-0.01	0.97	0.07	-0.02
Attid_Growths1	0.04	0.09	0.97	-0.07
Attid_Growths2	0.10	0.07	0.96	0.00
Attid_Growths3	0.08	0.07	0.96	-0.07
Dynamic Environment 1	-0.02	0.00	-0.07	0.98
Dynamic Environment 2	-0.05	-0.03	-0.03	0.93
Dynamic Environment 3	-0.01	-0.02	-0.04	0.97

Table 29: Factor Analysis.

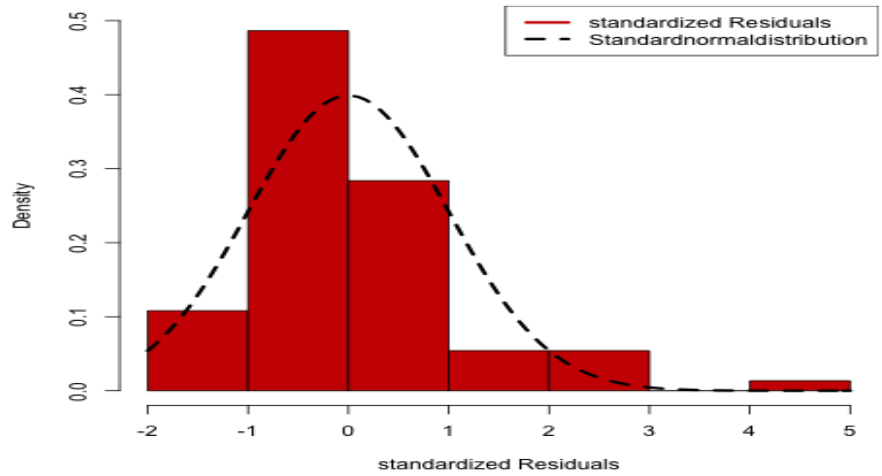
Source: own elaboration

Scale	Cronbach's α
DC	0.99
Int_Cap	0.98
Attid_Growths1	0.98
Dynamic Environment 1	0.97

Table 30: Cronbach's Alpha

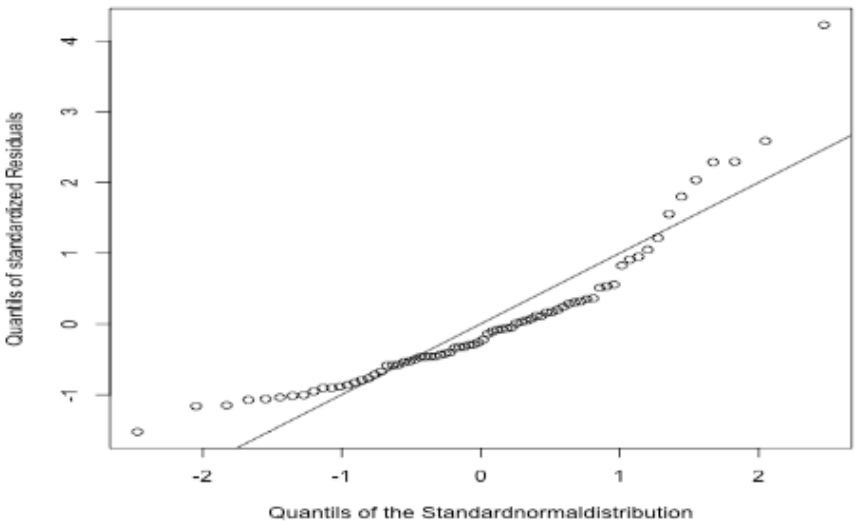
Source: own elaboration

For negative growth, the estimated growth is moving to about -5%. For further analysis, only a subsample is used, due to the structural break with SME with positive and negative growth. As described above the set with the SME with positive growth is used. When modelling by the means of SMEs with positive growth, a violation of the normal distribution assumption appeared. The distribution of the residuals is depicted in the histogram below by marked normal distribution density function and QQ plot.



Graph 2: Standardized Residuals.

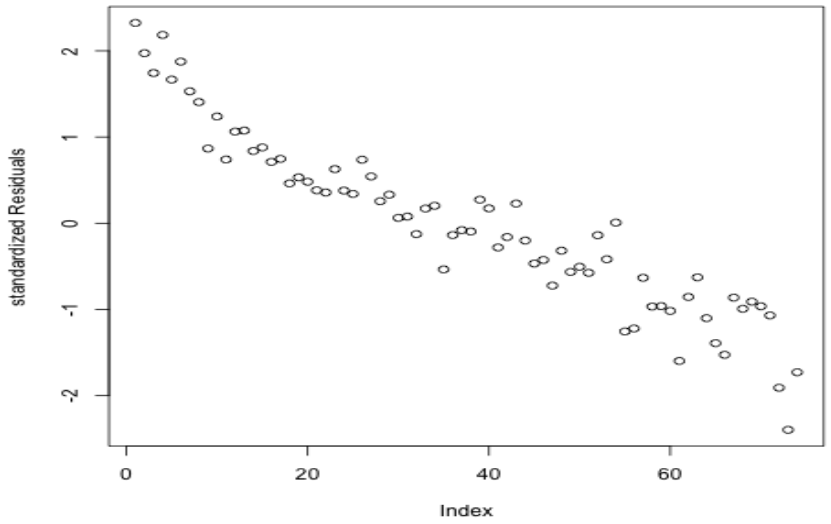
Source: own elaboration



Graph 3: Quintiles of Standard normal distribution

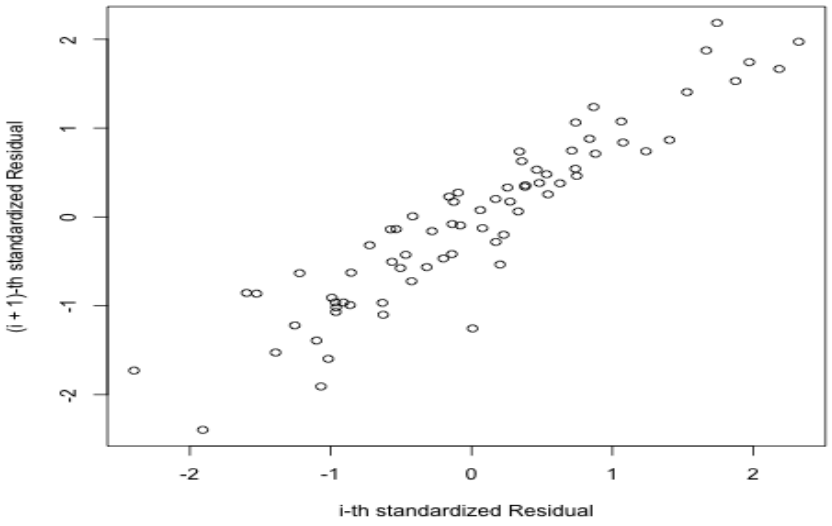
Source: own elaboration

In the histogram reveals a rather skewed distribution of the residuals. Also strong deviations from a normal distribution can be seen in the QQ plot. Under these aspects - the skewness of the distribution - a logarithmic transformation offers "to approach" the distribution of a normal distribution. The graph below denotes a logarithmic transformation of the data regarding the growth by building up the final model in order to investigate the verification of the hypotheses of this study. Furthermore hinted the structure of the data to autocorrelation in the model, which is the reason why the standard error by Newey-West has been corrected; the residual plot depicts the clearly visible infringement.



Graph 4: Residual plots.

Source: own elaboration

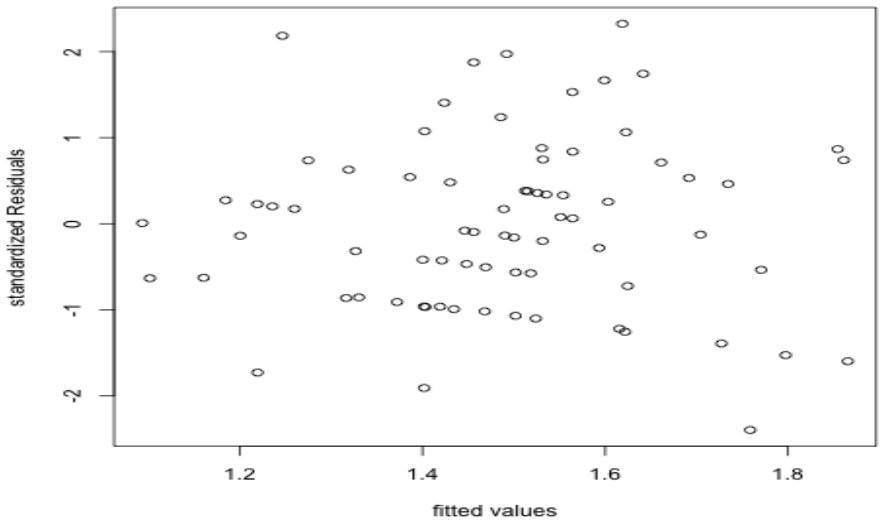


Graph 5: (i+1) Residuals.

Source: own elaboration

The residuals lead to a cam-or straight-like course in the plots. The result of the Durbin-Watson statistic for a significant autocorrelation is D = 0.14 and p = 0.000. The RESET test provides a non-significant result. Thus it can be assumed that the model was correctly specified with respect to the functional form, RESET (2, 65) = 1:08 and p = 0.343. Also there is no multicollinearity problem since the VIF are all smaller than 10. The examination of homoscedasticity showed no

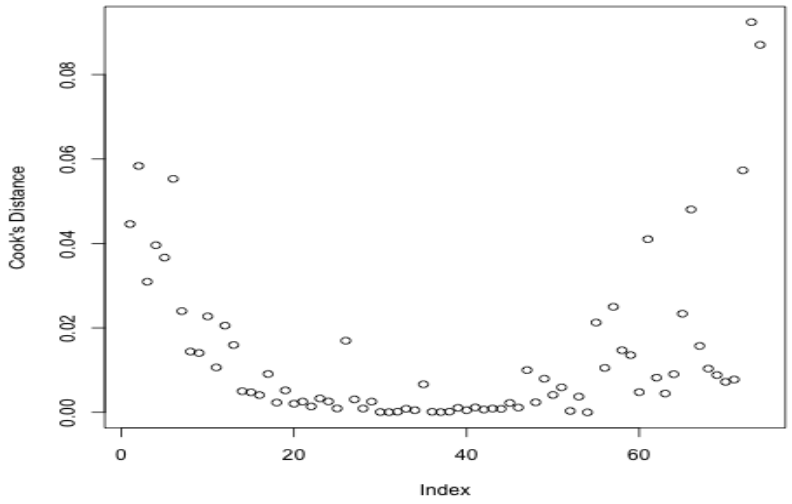
violations of this assumption. The dispersion of the residuals is uniform. For example there is no funnel-shaped arrangement of the residuals.



Graph 6: Residual plot.

Source: own elaboration

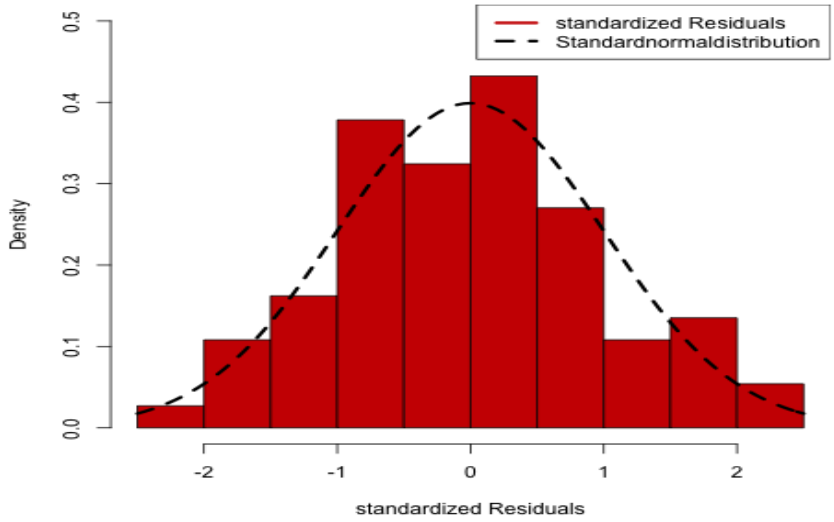
The Breusch-Pagan test does not provide a significant result, BP (6) = 12.17 and p = 0.0616. This also suggests that this assumption is fulfilled. Furthermore in the model are no influential cases either. The Cook's distances are all close to 0, see the following graph.



Graph 7: Cook´s Distance.

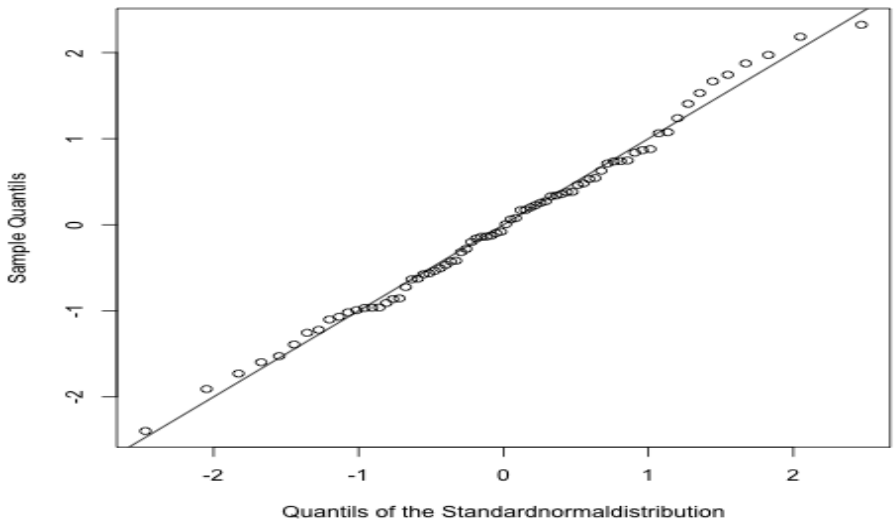
Source: own elaboration

Finally, the assumption of normal distribution of the residuals can be considered fulfilled. There are no new strong deviations from a normal distribution. The distribution has a skewness weak, compare the histogram. In Q-Q plot the points spread close to the guide, indicating a high correlation with a normal distribution.



Graph 8: Standardized Residuals.

Source: own elaboration



Graph 9: Sample Quintiles.

Source: own elaboration

The three main established models delivered, their order after, AIC amounting to 686.51, 464.82 and 180.74. Summarized all the assumptions are met or hedged against possible injuries.

5.2. Results discussion

General reflections:

This researches addresses to fill a gap between the largely explored theoretical insights on dynamic capabilities and field work results. The influence of Dynamic Capabilities on business growth has been largely explored theoretically in the literature, but there are quite few empirical studies. A questionnaire was elaborated on the basis of existing knowledge within the research plan. This questionnaire was be pre-tested on a reduced sample of SMEs and after that finally agreed and conducted.

The main objective of the thesis is to determine the main factors underlying the growth of SMEs in Germany during a five year window. A conceptual model was developed in order to establish the relationships between intellectual capital variables, financial capital variables and dynamic capabilities with business growth. The relevant number of companies for a survey was identified. The data gathered by this survey provides the results of the questionnaires containing a time-frame of three years, between 2012 and 2014. At first glimpse this period might be considered as not up-to-date. However, the background for this special timeframe can be explained by the fact that valid data for German SME is usually available at the end of the following year due to tax regulations. This means that results for 2014 are still relatively current as the data was conducted during the field work at the end of 2015. The most important focus and aim of this research was to show the development of the growth with regard to the dynamic capabilities. For this purpose the chosen time frame was constructive. Two further general considerations should be highlighted:

Firstly, the results of this research can be at least partly transferred for SME in entire Germany. As described in the previous chapter the area of North-Rhine Westphalia is often used for nationwide forecasts. The special meaning of SME within this sector and area for the German economy is largely recognised. North-Rhine-Westphalia in general and especially the Rhine- Ruhr area is therefore used to establish forecasts to be applied to Germany (e.g. BMWi, 2014). Although the results are limited since the companies are all situated in one area they can at least partly be applied to Germany and to a certain degree to companies within Europe. To get better results a study with a larger number of nation- wide companies would lead to more valid data.

Secondly, the attitude towards growth was evaluated by the questionnaires of the current

Managers, which might not be the same persons two years ago. Therefore the results might include a gap between the attitude of the current and former Mangers, if they were not identical. Notwithstanding, the current attitude is reflected by the questionnaire results and further compared with the development of growth which matches with the aim of this field work as latterly described.

Reflections with regard to the Hypotheses:

The testing results for Hypothesis one shows the positive correlation between growth and the firm´s ability to detect opportunities and take advantages to exploit and continuously approve its resources' base. This result goes hand in hand with the current scientific research results and stresses the meaning of the latter described competences of the companies (e.g. Love, 2015). However, the definition of growth used in this research, which is defined as the growth measured by turnover, could be defined from different point of views as well: In this sense growth can be defined as the increase of market share or market penetration etc. The correlation found here between the ability mainly to optimize internal competences and abilities is valid for the measured correlation between the growths of the turnover during a certain period of time. On the one hand this limits the expressiveness of the results. On the other hand, as the focus is set on the monetary meaning of growth, this is typically in the centre of the SMEs` focus or is at least directly comprehensible for owners or Managers of SME. The ability to optimize internal resources and competences are important elements of the dynamic capabilities, described in the previous parts, and is namely essential for the growths of the turnovers, although it doesn´t measure growths in the context of other definition approaches. To summarize the reflection of the testing results for Hypothesis one it can be stated that the positive growth correlates highly with the abilities described above, given that the underlying definition of growth for this research equals the growth measured by the turnover increases.

Reflecting on the results for Hypothesis two the insights move into a similar direction as they do for Hypothesis one: The definition of the intellectual capital, as used in this survey, follows as model of Teece and is a common approach for scientific research. However, it seems quite difficult to find a unique definition for intellectual capital fitting for any kind of SME, even if they are within the same sector. It is obvious that intellectual capital means a different set of competences, skills and qualifications depending on the range of products or services generated by the SME. The questionnaire was therefore having a different direction of impact: The existence of certain, needed intellectual capital is estimated and answered by the companies. It is obvious that the company intends to employ the staffs in the right amount and with the needed intellectual

capabilities, which allows the conclusion that the intellectual capital within the company, even if it differs from the intellectual capital structure of comparable SMEs, is linked with the growth of the company. The connection between these independent and depending variables is an important part of this research.

Hypothesis three "The availability of financial capital and growth correlates positively" might be considered as too obvious or self- explaining, because the need of financial capital could be suggested as an obviously needed requirement, this assumption would fall short in the light of the results of several current researches: Especially start-ups (e.g. within the IT sector) do not necessarily depend on financial capital on a high level. In their early phase their strategies often do not pursuit of growth but for example to generate the biggest possible share in the market (e.g. Barreto, 2010). In this context the social capital, which has not been a part of this research and its meaning is worth being mentioned. The results of researches show that the social capitals of start-ups do have an impact on the companies' performance, their growth attitude or to their decision-processes. The life-cycle phases the companies as well as the configurations of the social capital have several implications especially on their growth performance or their entrepreneurship (Pirolo et al., 2010). The conclusions of this research do not include the social capital which is not a dynamic capability by the chosen definition. However, it needs to be reflected as an example for the large number of influencing factors and elements. The dynamic within the IT sector is very high which leads to a large number of innovations and to resulting products and services. In the long run it seems inevitable to follow up with the development depending on the life – cycle phase of the products and processes. Financial capital in this sense is not a precondition for growth (e.g. Anderson et al., 2011). As for SME within the manufacturing sector, which were the objectives of this research, a certain access to financial capital is not a precondition either, but because of the technical development and the needed technical devices, machines and instruments it seems likely that a certain level of financial capital is needed facing the fast changing demands of the markets and the necessity to improve processes and products yielding for a higher effectiveness and efficiency.

Hypotheses four, "The attitude towards growth taken by the Management directly influences the increase of growth in a positive way", had to be rejected. The rejection of this Hypothesis requires some more differentiated considerations. To start off the basic assumptions for the establishing of this Hypothesis need to be recapped: A company would only grow if the owners or Managers want it to grow. If the will for this, the entrepreneurial orientation, does not exist then a significant increase of growth will not appear. However, the entrepreneurial orientation is not only a result of an economically defined strategy but it is strongly set by the cultural patterns which influence the

companies' leaders. This insight, the cultural influence on companies were basically researched and confirmed in current studies by Hofstede, who found out that the patterns do differ from each other not only within one country but also among European countries (Hofstede, 2010). Several other studies confirmed that the correlation with the risk- taking and the risk management are depending on the country they are in (e.g. Kreiser et al., 2010). Therefore the cultural behaviour or patterns set a framework that has a strategically meaning for the companies. This framework sets the limitations or borders for an entrepreneurial orientation and resulting for growth. In order to deliberate the insights that led to Hypothesis four it has to be taken into account, that there is a cultural risk- avoiding attitude among the German companies, especially for the German "*Mittelstand"*. The latter phenomenon was described earlier; these companies do have a risk-avoiding attitude which has been confirmed in current research results (e.g. KfW 2013). However, an analysis of the data could not show any difference between the results for the SME following the definition of the European Union of for the companies which were by definition part of the *Mittelstand.* By the rejection of Hypothesis four a new finding came up: It cannot be stated that the risk avoiding tendencies are a special cultural and economical phenomenon which is described as the *Mittelstand*. The data of this research shows that there is a risk-avoiding tendency of German SME in general as a cultural pattern and not only an element for this special German phenomenon *Mittelstand*. This finding is insofar new as the cultural patterns in Germany do influence German SME in general and do not have a correlation to Mittelstand companies only.

Hypothesis five "The Dynamism of environment has a direct negative influence on SME growth": This Hypothesis was verified and established by current studies (e.g. Nedzinskas, 2013) which could show that an environment with a big dynamic influences the growth negatively as a result of the uncertainties, risks which go hand in hand with an increasing dynamism. "Dynamic" in this context includes not only the rapid changing of the life-cycles duration of each product a process but also the changing that do influence the entire markets and do by this effect the companies indirectly. These are basically the impacts of the "globalisation" which lead to a general pressure to reduce costs and stay up-to-date with current developments in order to deal with the demands of the markets and customers. Another element for the changing of the environmental framework is, followed by the demographic change, a reduced number of potential staff. The decline of the population within Europe will lead to a massive lack of employees in the near future; the "war for talents" has already begun (Eurostat, 2014). This exacerbates the situation for SME because they are affected by the reduced labour force: the young generation, so called "generation Y" (people who grew up in the year 2000 or later) not only search for a job but for a meaning, a satisfaction

in their work-time. They consider that their employment is compatible with their future life plans in general which means family planning and free time. The SME need to find ways to employ these young people successfully although they are in concurrence with the big companies and have a several disadvantages: the big companies are able to provide a human resource management which allows a systematically and professional search for potential employees. Additionally the big companies offer a certain reputation, a structured a systematic training as well as support in order to move ahead. SME need to establish strategies and new paths to be successful in the future.

The verified Hypothesis six ”The International market orientation has a positive influence on growth“ showed that the companies with an international orientation are more often and more successful than companies who don´t. This insight fits in with studies by the European Commission not only for SME but also for big companies as well (European Commission, 2010). An international orientation offers a larger potential of customers and outlet markets but also includes a certain risks like non-payment risks or customs regulations etc. which need to be considered and requires a realistic consideration of chances and risks. The success of the companies who do implement an international pillar into their business portfolio show, that it is worth taking the risks and do the effort to enlarge the business area and to trade and to cooperate with companies abroad.

5.3 Conclusions and new scientific findings

Summarized all hypotheses were verified except for Hypothesis 4 “The growth attitude taken by the Management directly influences SME growth in a positive way” which was rejected. As described in the previous chapter, the testing of the remaining hypotheses led to distinct, positive results. By this chapter the earlier insight are summarized to allow an overview of the entire testing results. Before that, another interesting finding in addition to hypothesis number six, concerning the international orientation of the companies, which is more of a descriptive nature: Those companies with a positive growth are having an international relation with almost two times more companies than the ones with a negative growth. So to have a higher number of clients and customers on an international level leads by trend to a higher chance to generate growth. An expansion of the potential customers beyond the borders is an appropriate approach to generate growth.

H1:	Confirmed: The systemic integration of a SME's ability to detect opportunities and take advantages to exploit and continuously approve its resources base and has a positive influence on the growth of small and medium sized enterprises.
H 2:	Confirmed: The intellectual capital within the companies has a positive influence on growth
H 3:	Confirmed: The availability of financial capital and growth correlate positively.
H 4:	Rejected: The growth attitude taken by the Management directly influences SME growth in a positive way.
H 5:	Confirmed: The dynamism of the environment has a direct negative influence on SME growth.
H 6:	Confirmed: The International market orientation has a positive influence on growth.

Table 31: Results summary

Hypothesis 1 can be considered confirmed. It is indicated by the coefficients i.e. items DC which show positive algebraic signs (table 23). The correlation between the dynamic capabilities within the companies and growth was proved. This means especially, that the ability to implement a successful sensing and seizing of the environment and to react properly by adapting the range of products or services. In this meaning it also leads to the conclusion that dynamic of the environment and the markets demand quick and adequate reactions of the companies.

Hypothesis 2 can be considered confirmed. The intellectual capital of the companies is a meaningful element to generate growth. It is an overall requirement to implement necessary

developments to be equal with the demands of the markets and with the customers` needs which finally leads to growth which is defined as growth of the turnover for this research. Thus, not only the outcome with relation to technical progress or product extensions is supported by a certain intellectual capital. Furthermore the creativity and tendency towards innovation is only possible with a certain intellectual capital.

Hypothesis 3 can be considered confirmed. Although it might seem trivial it is worth checking the financial framework and conditions in order to generate growth. Especially start-ups in the IT sector could become successful with a relatively small capital-base by placing new products and services. However, away from these phenomenon's the companies of this study need a regular financial base if to generate growth.

Hypothesis 4 is not confirmed. The coefficients of attitude to growth have a corresponding negative algebraic sign to the respective hypotheses. This is the technical background of this insight and it doesn´t allow a distinct confirmation of the hypotheses. Among several theoretical explanation possibilities one assumption might be that the effect on the growth is in fact less important than expected. This would mean that a company would grow more or less independent from the Managers or owners intention. So in a way success would lead to growth if the dynamic and financial capabilities, the processes and product and the environment and so on are established successfully and following the demand of the markets. Growth would be a "function" of a successful management.

Hypothesis 5 is confirmed. The dynamism of the environment leads to a direct negative influence on growth. The higher the environmental dynamic is, the more it forces the entire company to react, reorganize, reassemble and develop its entire range of products and services. In this sense it is laterally reversed to the dynamic capabilities checked by hypotheses one. A highly dynamic environment can overburden the dynamic capabilities and, even if they are established and organized, influence growth directly negative.

Hypothesis 6 is also confirmed. An international orientation of the SME within this study led to positive growth. It is therefore important, as the SME in the manufacturing sector were usually, traditionally considered as the work bench for the big industries in particular the coal mining and steel sector in North Rhine Westphalia as described in the first chapters. The confirmation of this hypothesis shows that the internationalization of the SME can be found in any sector and region and constraints the changing structures summarized by the term globalisation.

The table below summarizes the results including the correlating coefficients (items) by each hypothesis:

Coefficient	Evaluation	Newey-West-standard error	p-value	VIF
Constant	1.78	0.52	0.001	
DC	0.02	0.15	0.903	1.08
Int_Cap	0.03	0.11	0.797	1.14
Attid_Growths	-0.01	0.06	0.904	1.05
Financial_Cap	0.04	0.07	0.561	1.02
Dynamic_Enviroment	-0.16	0.16	0.300	1.03
International	0.11	0.19	0.581	1.07

Table 32: Hypothesis testing results

Source: own elaboration

Partly restricted in terms of the samples´ size this explorative study allows several new scientific findings:

1. I could show that there is a correlation between the elements of the dynamic capabilities approach and growth among the tested companies. This means that

Analysing the responses of the companies I could add the results of a field study to the largely existing theoretical insights. I was able to show that growth and dynamic capabilities and bridged the gap partly between theoretical assumptions and tested results.

2. By this research the importance of the dynamic abilities for success of the companies was proved:

I was able to show that companies need to establish dynamic capabilities in order to generate growth. Solely good products and or services are themselves not sufficient to generate growth.

3. In my research I explored that an international orientation correlates positively with growth. This insight goes hand in hand with contemporary scientific assumption.

Due to fieldwork results, I could show that an international orientation is a part of a promising approach for German SME to generate growth.

4. I examined the interactions between the environment and the companies which are surrounded by it:

Based on the answers to the questionnaire I could show that a dynamic environment has a direct negative influence on growth.

5. I also highlighted that financial capabilities are needed in order to have a certain degree of freedom to generate growth:

This also is a very important finding since it proves that a certain amount of financial capital is needed to become or keep being a successful company. This assumption might seem like a bromide, however, it stresses that basic economic adoptions are still relevant.

6. Finally, I could show that there a risk-avoiding tendency of German SME as a cultural pattern and not only an element for the German Mittelstand phenomenon (the latter finding leads to a strong recommendation towards the Management members especially in the light of the fast changing frameworks caused by the globalisation or the demographic change to find a new approach and to accept risk in a reasonable extent).

APPENDICES

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M2. Questionnaire in English

QUESTIONNAIRE

BUSINESS PROFILE

1. Please indicate the (approximated) sales turnover figures for the last 3 years:
   a. 2012: _____ Euro
   b. 2013: _____ Euro
   c. 2014: _____ Euro

In which year was the company founded? _____

DYNAMIC CAPABILITIES

Our company explores the business environment by analyzing and committing resources to the assessment of the following aspects:

	Fully disagree				Completely agree
New technologies which could be relevant for the future development of our company	1	2	3	4	5
Changed consumption trends and customer needs	1	2	3	4	5
New markets to introduce new products or services	1	2	3	4	5
Potential business models which use the detected chances in a best possible way.	1	2	3	4	5
Every unit of our Company works with documented processes which lead to a more effective function of our Company.	1	2	3	4	5

INTELLECTUAL CAPITAL

Regarding the employees of the firm (human capital) indicate your agreement or disagreement with the following statements:

	Fully disagree				Completely agree
The competence of our employees as a whole is equal to the most ideal level	1	2	3	4	5
The number of training hours per employee is higher than average in our branch	1	2	3	4	5
Our employees work actively on the development of our processes and products	1	2	3	4	5

AVAILABLE FINANCIAL RESOURCES

The availability of financial resources during the last 3 years has been insufficient and a great impediment for our development or fully satisfactory for the firm's development

Insufficient 1	2	3	4	Fully satisfactory 5

MANAGEMENT ATTITUDE TOWARDS GROWTH

Please mark, which of the following statements describe the attitude of the Management best:

	Fully disagree				Completely agree
Growth is a very important goal	1	2	3	4	5
Sales growth is the main criteria for my decisions	1	2	3	4	5
Sales growth decides about the	1	2	3	4	5

survivability of the company					

DYNAMIC OF THE ENVIRONMENT

Mark the number in the scale that best approximates the actual conditions in your branch/industry:

	Fully disagree				Completely agree
Our company has to change its marketing strategy often to keep up with the market and with competitors	1	2	3	4	5
Production technologies within the branch change quickly and in major ways	1	2	3	4	5
The activities of competitors are pretty easy to be foreseen.	1	2	3	4	5

INTERNATIONAL LEVEL

Was the company international active during the last three years? Yes___No___

If yes, in how many countries? _____

M3. Questionnaire in German

FRAGEBOGEN

Unternehmensprofil

Geben Sie bitte den (geschätzten) Umsatz der letzten 3 Jahre an:

2012: _____ Euro

2013: _____ Euro

2014: _____ Euro

In welchem Jahr wurde das Unternehmen gegründet? _____

DYNAMISCHE FÄHIGKEITEN

Unser Unternehmen untersucht wirtschaftliche Rahmenbedingungen durch Analyse und mit Ressourceneinsatz zur Bewertung der folgenden Aspekte:

	Stimme überhaupt nicht zu				Stimme voll zu
Neue Technologien, die für die zukünftige Entwicklung des Unternehmens relevant sein können	1	2	3	4	5
Veränderte Konsumtrends und Konsumbedürfnisse von Kunden	1	2	3	4	5
Neue Märkte zur Einführung von Produkten oder Dienstleistungen	1	2	3	4	5
Potenzielle Geschäftsmodelle, die die erkannten Chancen am besten nutzen	1	2	3	4	5
Wir verfügen für alle Geschäftsbereiche über dokumentierte Verfahren, die zu einer effektiveren Arbeitsweise beitragen	1	2	3	4	5

INTELLEKTUELLES KAPITAL

Geben Sie bezüglich der Mitarbeiter des Unternehmens (Humankapital) Ihre Zustimmung bzw. Ablehnung anhand der folgenden Aussagen an:

	Stimme überhaupt nicht zu				Stimme voll zu
Die Kompetenz unserer Mitarbeiter ist insgesamt auf dem höchstmöglichen Niveau	1	2	3	4	5
Die Anzahl der Aus- und Weiterbildungsstunden pro Mitarbeiter liegt über dem Branchendurchschnitt	1	2	3	4	5
Unsere Mitarbeiter arbeiten aktiv an der Weiterentwicklung der Prozesse und Produkte mit	1	2	3	4	5

VERFÜGBARE FINANZIELLE RESSOURCEN

In welchem Umfang waren die finanziellen Mittel während der letzten drei Jahre für die Entwicklung des Unternehmens ausreichend oder nicht ausreichend?

Nicht ausreichend 1	2	3	4	Vollkommen ausreichend 5

EINSTELLUNG DER GESCHÄFTSFÜHRUNG ZUM WACHSTUM

Markieren Sie, welche der folgenden Aussagen die Haltung der Leitung des Unternehmens am ehesten beschreibt:

	Stimme überhaupt nicht zu				Stimme voll zu
Umsatzwachstum ist ein sehr wichtiges Ziel	1	2	3	4	5
Umsatzwachstum ist das entscheidende Kriterium für meine Entscheidungen	1	2	3	4	5
Umsatzwachstum entscheidet über die Überlebensfähigkeit des Unternehmens	1	2	3	4	5

DYNAMIK DES UMFELDS

Markieren Sei die Ziffer der Skala, die den Ist-Zustand in Ihrer Branche am besten darstellt:

	Stimme überhaupt nicht zu				Stimme voll zu
Unser Unternehmen muss seine Marketingpraxis häufig ändern, um mit dem Markt und den Mitbewerbern mitzuhalten	1	2	3	4	5
Fertigungstechniken in der Branche verändern sich schnell und entscheidend	1	2	3	4	5
Die Aktivitäten von Mitbewerbern sind recht leicht vorhersehbar.	1	2	3	4	5

INTERNATIONALE EBENE

War das Unternehmen innerhalb der letzten 3 Jahre international aktiv? Ja___Nein___

Wenn ja: In wie vielen Ländern war das Unternehmen aktiv? _____