RESEARCH

Eric Weber

Advisory Boards in Startups

Investigating the Roles of Advisory Boards in German Technology-Based Startups

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Leipzig, HHL Leipzig Graduate School of Management, Dissertation, 2016

ISBN 978-3-658-15339-7 ISBN 978-3-658-15340-3 (eBook)
DOI 10.1007/978-3-658-15340-3

Library of Congress Control Number: 2016948813

Springer Gabler

Printed on acid-free paper

This Springer Gabler imprint is published by Springer Nature
The registered company is Springer Fachmedien Wiesbaden GmbH
The registered company address is: Abraham-Lincoln-Strasse 46, 65189 Wiesbaden, Germany

Preface

Das Themenfindung für die vorliegende Dissertation wurde maßgeblich beeinflusst durch ein Praxisprojekt während meiner Zeit als Wissenschaftlicher Mitarbeiter am Stiftungsfonds Deutsche Bank Lehrstuhl für Innovationsmanagement und Entrepreneurship. Die hohe praktische Relevanz des Themas und die Lücke in der akademischen Literatur motivierten mich zur Anfertigung der Arbeit. Mein Dank gilt daher zunächst Markus H. Michalow als Initiator dieses Praxisprojekts sowie der gesamten HHL-Community und dem Gründernetzwerk SMILE, welche mein Interesse am Thema Unternehmertum erst richtig weckten.

Ich bedanke mich bei meinem akademischen Betreuer und Lehrstuhlinhaber Professor Dr. Andreas Pinkwart nicht nur für die Betreuung und die hilfreichen Hinweise zur Anfertigung dieser Arbeit, sondern auch für das Vertrauen, welches mir in verschiedenen anderen Projekten am Lehrstuhl und darüber hinaus zu Teil wurde.

Weiterhin insbesondere danke ich insbesondere Vivek Velamuri, Christian Comberg und Philipp Veit für den akademischen Austausch sowie meinen Lehrstuhlkollegen Franziska Greim, Anja Hagedorn und Dorian Proksch für die moralische, inhaltliche und adminstrative Unterstützung. Die wertvolle und enge Zusammenarbeit mit den studentischen Hilfskräften des Lehrstuhls, insbesondere Alice Riedel und Lars Radscheidt, leistete dankenswerterweise einen wichtigen Beitrag zu dieser Dissertation. Ebenso mein Korrekturleser Stewart Tunnicliff.

Den größten Anteil an der Fertigstellung dieser Arbeit hat jedoch meine liebe Frau Anne Weber, welche mich während der Promotion immer angetrieben und motiviert hat sowie oft großes Verständnis für meine zeitlichen Verpflichtungen aufbringen musste. Danke!

Herzlichen Dank auch für die Unterstützung meiner Eltern.

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IV Abbreviations

AB	Advisory board
BOD	Board of Directors
CEO	Chief Executive Officer
COO	Chief Operating Officer
CTO	Chief Technology Officer
D&O	Directors and Officers
DCGK	German Corporate Governance Code
EU	European Union
GEM	Global Entrepreneurship Monitor
ICR	Intercoder Reliability
ICT	Information and Communication Technology
IPO	Initial Public Offering
KPI	Key Performance Indicator
LLC	Limited Liability Corporation
NTBF	Newly-founded Technology-Based Firms
NYSE	New York Stock Exchange
OECD	Organisation of Economic Co-operation and Development
SB	Supervisory Board
SME	Small- and Medium-sized Enterprise
SOX	Sarbanes-Oxley Act
US	United States (of America)
VC	Venture Capital
VCs	Venture Capitalists or Venture Capital Funds
VIF	Variance Inflation Factors

1 Introduction

1.1 The underlying problems of startups

The underlying problem of this study is that many young and innovative companies fail and become bankrupt within their first years. This has been empirically proven by many different research studies on entrepreneurship such as the Global Entrepreneurship Monitor (GEM) Germany (Sternberg/Vorderwülbecke/Brixy 2014) or the 'KfW-Gründungsmonitor 2014' (Metzger 2014). It is clear that many young companies fail within the first few years after they are founded. According to the GEM the fear of failing in Germany is much higher than in other developed countries, significantly harming entrepreneurial activities. Ripsas/Tröger (2015) estimate that nearly one third of the newly founded companies in Germany stop their business within the first three years due to different reasons such as deficient liquidity, unforeseen imponderabilities in technology development or conflicts within the founding team. However, such a high failure rate is not only a special problem in Germany, but it can be confirmed worldwide (Wilson/Wright/Altanlar 2014) and therefore it is widely accepted in entrepreneurship research that failure and entrepreneurial activity are affiliated to each other. Thus, starting a new company is a problem of risk allocation and risk management (Pinkwart 2002). New venture creation seems to be a complex process under special conditions, embedded into social structures within a surrounding network of interactors such as founders, investors, employees, customers and many more (e.g. Stinchcombe 1965, Larsen/Starr 1993, Busenitz/Barney 1997, Greve/Salaff 2003). Compared to market incumbents with a significantly smaller failure rate, new ventures face several disadvantages or liabilities.

According to transaction cost theory by Williamson (1985) startups face higher monetary or non-monetary transaction costs than established companies when they are engaged in exchanges (Pinkwart 2002). Since business entities are self-interested as well as opportunistic and rationality is bounded, implicit or explicit contracts are necessary to define the transaction and this can cause initiation costs, bargaining costs, handling costs, enforcement costs and adaption costs. Among others, uncertainty and specificity are important factors that moderate the costs

E. Weber, *Advisory Boards in Startups*,
DOI 10.1007/978-3-658-15340-3_1

caused by a transaction. Due to the usually higher levels of uncertainty and specificity in young startups, they have to cope with higher transaction costs and benefit from mechanisms that reduce these.

Under the umbrella of the well-known term ‘liabilities of newness’ Stinchcombe (1965) subsumes four different aspects, which may lead to higher death rates of newly founded firms. First of all, in new companies all team members have to define their individual roles. It is costly to establish new roles, including different responsibilities, tasks and relations, while the learning capacity of individuals is limited and additionally no one can provide guidance. Also the entrepreneurs themselves have to legitimize their new role within this social system by conforming existing images or stereotypes, by positioning themselves through the purposeful selection of ideas, team members and goals and by defining their own rights and duties (Middleton 2012). Secondly, the invention of those roles is restricted by creativity, capital and time constraints. Very often this process creates temporary inefficiencies, which can only be solved if new team members take responsibility instead of being followers. Thirdly, in new organizations team members need to rely on strangers, since it takes time to establish relationships of trust. In many cultures, individuals may feel traditionally unfamiliar with this. Lastly, young firms have to create new network ties with potential customers, suppliers and partners, which again requires time and resources. As an unknown, new market entrant they have no legitimacy. All of these aspects are linked with a high level of uncertainty, especially in knowledge-intensive businesses, because entrepreneurs have no information about historical trends, market reactions, past performances or routines (Busenitz/Barney 1997, Penrose 1995, Erakovic/Tchaka 2010). Although uncertainty can be reduced by gathering more information or by adding additional members to the founding team (increasing the combined area of competence), there is always some unavoidable uncertainty when remedies become too expensive, time-consuming or are simply not available (Penrose 1995). Therefore, entrepreneurs need to be risk takers, with a tolerance of ambiguity (acceptance of situations with unclear outcomes), an internal locus of control (believe that their own actions directly influence outcomes) and self-efficacy (Shane/Locke/Collins 2003). This allows them to rely on decision-making biases and heuristics like intuitive decision-making,

overconfidence or representativeness, when complexity and uncertainty grows (Van Gelderen/Frese/ Thurik 2000, Van den Heuvel/Van Gils/Voordeckers 2006). At the same time those behavioral patterns create a high risk of failure, which increases the likelihood of failure. As a result of those liabilities of newness, a higher proportion of young companies fail compared to established companies (Freeman/Carroll/Hannan 1983).

Brüderl/Schüssler (1990) found a non-linear relationship between firm age and mortality. The death rate in an early phase of development is very low, since the company lives from initial resources and entrepreneurs exhaustively monitor performance and hesitate to give a final judgment by abandoning the premature business. Later on, if initial resources are consumed and heavy monitoring stops, startups fall victim of typical failure, which increases mortality. Therefore, this effect is called liabilities of adolescence (Brüderl/Schüssler 1990).

The length of the adolescent phase increases with the size of the initial resource input. This also confirms the liability of smallness approach, which says that limited financial and human resources of new ventures lead to a higher sensitivity to crisis, lower market power and in consequence to higher mortality (Freeman/Carroll/Hannan 1983, Brüderl/Schüssler 1990, Pinkwart 2002). Following Barney (1991) "*firm resources include all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness*" (Barney 1991, p. 101). From a strategic perspective the usefulness of resources is determined by their value to a company, their rareness on the market, their imperfect imitability and their imperfect substitutability (Barney 1991). With physical capital resources (including technology, equipment, plants and access to raw materials), human capital resources (including training, experience, judgment, intelligence and relationships of individuals involved in a company) and organizational resources (including formal structures, planning methods, monitoring and coordination systems and intra- and inter-organizational network ties) he distinguishes three different types of resources that are necessary to implement strategies to create value and thus to achieve competitive advantages. Due to these

liabilities of smallness, young firms do not have a buffer to react to market contradictions (Clarysee/Knockaert/Lockett 2007).

If startups begin to internationalize very early, they additionally face liabilities of foreignness in their international markets resulting from additional costs of managing an unfamiliar environment with cultural, political and economic differences and the need to coordinate their business over long distances (Zaheer 1995). To overcome those liabilities of foreignness new ventures need to spend more resources, which is in conflict with the liabilities of smallness they need to nevertheless conquer.

Furthermore, growth and survival in small businesses are dependent on the amount of available resources, since a firm can be described as an assembly of different resources, with managerial capabilities among the most important (Penrose 1995). Managerial capabilities are "*the bundles of complementary resources ... administrative skills, routines, and physical assets with the flexibility to generate adaptive and valuable inputs*" (Miller 2003, p. 964). Based on a literature review Barbero/Casillas/Feldman (2011) distinguish between four different types of managerial capabilities:

- Human resources capabilities, which include functions such as selecting team members, establishing incentive and compensation structures and training options, attracting other executives and board members.
- Organizational capabilities, which contain the establishment of organizational models and professional management methods, such as mission, vision, clear objectives, strong leadership structures, task delegation or control mechanisms.
- Marketing capabilities, which allow using customer knowledge for a market oriented search of growth and differentiation opportunities, which are necessary for product improvements or new product development, sales and marketing strategies and many other activities.
- Financial capabilities that include cash-flow management, financial reporting, financial resource acquisition, cost control and monitoring.

While entrepreneurial teams and small businesses usually possess some resources like knowledge, experiences and motivation, they miss most others, especially capital resources and organizational resources and due to time constraints they have to

acquire them externally (Stubner/Wulf/Hungenberg 2007). Especially in high-tech industries the internal supply with managerial capabilities as well as financial and non-financial resources is insufficient in most cases, causing an increased dependence on access to external resouces (Colombo/Croce/Murtinu 2014). Contrary to some previous studies, the relationship between access to external resources and growth is not linear or causal, since the successful exploitation of external resources is limited to sufficient managerial capabilities and long term inter-organizational relationships (Furlan/Grandinetti/ Paggiaro 2013). In other words, even if a new venture has sufficient access to resources, sustainable growth will not automatically be the outcome, since growth is a process that needs managerial capabilities to manage external relationships and collaboration over time. Thus, these managerial capabilities of entrepreneurs limit new venture growth and therefore growth and survival can be seen as a function of the ability, management knowledge and skills and aspiration of business managers (Wiklund/Shepherd 2003, Gibb/Dyer 2007, Colombo/Croce/Murtinu 2014).

Unfortunately, the high dependence of firm success on managerial capabilities could overexert the real prerequisites of many entrepreneurs. An empirical investigation Feltham/Feltham/Barnett (2004) revealed that 75 percent of small family business owners feel that their company is either dependent or very dependent on them as individuals. If this self-evaluation might be considered biased due to claims of good governance, in reality this dependence may be even bigger, especially in young firms with liabilities of newness. But during the early phase of entrepreneurial development managerial capabilities of founders face cognitive limits (Penrose 1995, van Gelderen/Frese/Thurik 2000, Feltham/Feltham/Barnett 2004, Stubner/Wulf/ Hungenberg 2007, Kor/Misangyi 2008), which increase failure rate and mortality. Besides limited managerial capabilities, entrepreneurs are confronted with time constraints, which empirically lead to the fact that 65 percent of small business CEOs had to take decisions in at least three of five major functional areas (Feltham/Feltham/Barnett 2004). Founding a company needs a big personal sacrifice of time, which also has huge impacts on the family life of entrepreneurs which may, in some cases, reduce the available time budgets further (Höppner 2006). The great

dependence on managerial capabilities of the founding team, which are undeniably limited, is an additional reason for the high death rates of new ventures.

At the same time, during the entrepreneurial process, there is no stable requirement of managerial capabilities, since corporate objectives and demands change. Some scholars refer to this as 'dynamic capabilities'. Hence, growth is an ongoing and uncertain process of adjusting available technological and managerial capabilities - which become inadequate - and creating new superior ones. Even if a company survives the aforementioned liabilities of the early phases, this transitional process raises the demand for new capabilities, suitable to handling the upcoming opportunities and threats (Zahra/Filatotchev 2004). As an example, decision-making mainly based on overconfidence and representativeness or other biases or heuristics is beneficial in the early phases, but it is not becoming more sophisticated in later, more mature, phases of venture development (Busenitz/Barney 1997). Also the corporate governance requirements are changing during the transition from an entrepreneurial to an adolescent firm (Wirtz 2011). Thus, Mintzberg/Waters (1990) confirmed in a longitudinal case study that structures and strategies were elaborated and standardized with the growing age and size of a company. Again, this was not a linear development, but an unsteady repetition of expansion (entrepreneurial, risk-taking mode, spending resources) and consolidation (planning mode, setting and reassessing strategies) cycles. Those strategies are related to different managerial capabilities with a need for a "strategic fit", which means that the chosen strategy is consistent with available managerial capabilities (Barbero/Casillas/Feldman 2011). While marketing and financial capabilities are important for both market expansion and product innovation, which are major obstacles in early phases, human resources capabilities are a central need for product innovation, but not crucial for market expansion. The authors found no differences for organizational capabilities and thus they concluded that there is a general importance of those capabilities regardless of the chosen strategy.

Altogether, higher transaction costs, liabilities of newness and adolescence, liabilities of smallness and foreignness for international new ventures, as well as boundaries of managerial capabilities limit growth and therefore cause high death rates of new ventures. And if a young firm survives successfully, growth itself leads to a changed

demand of managerial capabilities. This problem is a crucial concept in entrepreneurship research that often tries to analyze the reasons why many young companies fail (e.g. Gibb Dyer/Ross 2007, ZEW 2010), which factors and resources influence failure, success or growth (e.g. Barney 1991, Penrose 1995) and which personality traits are important (e.g. Boyd/Vozikis 1994).[1] Compared to a relatively intensive study of problems and the status quo, which gained much attention in recent years, potential instruments and ways to solve the problem have often been disregarded. However, there are also widespread solutions in different fields. For example, newly developed management approaches for young firms such as the lean startup model (Ries 2010) or the business model canvas (Osterwalder/Pigneur 2010) might help entrepreneurs to solve problems of complexity and help to avoid risks and thus they have gained popularity in the last years.

More research should be dedicated to those instruments that support entrepreneurs and help to reduce the high failure rates. Entrepreneurs have several possibilities to compensate these discussed liabilities, particularly those that refer to limited managerial capabilities, taking changing demands during the entrepreneurial process into account. On the one hand they could improve their own set of capabilities internally by developing them through training or further education as well as by enlarging the founding team or employing key staff members. On the other hand entrepreneurs could utilize external sources such as different kinds of advisors, who are not directly involved in the business.

Alternatives to increasing managerial capabilities internally seem especially to be rather limited. In the short-term it is not feasible to create additional knowledge or to develop many new capabilities, since the individual learning capacity ('absorptive capacity') is restricted (Zahra/Filatotchev 2004). Hence, as Zahra/Filatotchev (2004) argue, companies need a strategic flexibility and innovation culture to allow organizational learning as well as benefitting from an integration of externals as team members or employees or by building network ties. But it is also especially complicated in new ventures to acquire additional managerial capabilities on the

[1] A comprehensive analysis of the development of entrepreneurship research has been published by Landström/Benner (2010) and Landström/Harirchi/Aström (2012).

market due to restrictions of financial resources and time, necessary for the integration of new members (Penrose 1995). One other obvious alternative is to form as diverse teams as it is possible with a suitable number of team members, since this increases the availability and range of cumulated capabilities and experiences (Penrose 1995, Minichilli/Hansen 2007). Also Wirtz (2011) argues the heterogeneity of the top management team supports growth, as long as it adds a certain level of "constructive" conflict. Contributing to these findings Colombo/Croce/Murtinu (2014) observed, that a higher number of owner-managers[2] increases firm performance, because it provides an enlarged level of resources and competences without increased coordination costs (horizontal agency costs), since all actors have a comparable level of involvement and thus similar intentions. However, this possibility is restricted by business needs such as a manageable ownership structure, limited resources necessary for integrating additional managers and disadvantages in social interactions within teams that are too large. The likelihood of conflict in larger teams increases, while the level of trust may decrease with heterogeneity and the size of the managing team (Minichilli/Hansen 2007). Additionally, the more complex the managerial team becomes, the higher is the share of time required for coordination and this reduces the given amount of time for integrating new team members or developing individual capabilities (Penrose 1995). While experience and routine will increase managerial capabilities over time, improvements may be necessary in the short-term, due to the indispensable flexibility required especially in highly uncertain, but complex high-tech startup environments. If the entrepreneurial process negatively raises the demand of additional managerial capabilities, it may become crucial to exploit external sources.

Therefore, it is widely accepted that entrepreneurs need external support in general and some kind of advice in particular, according to their individual configuration, type and the status of their company and growth rates (Robson/Bennett 2000, Grundei/Talaulicar 2002, Minichilli/Hansen 2007, Kor/Misangyi 2008, Viljamaa 2011, Furlan/Grandinetti/Paggiaro 2013). While internal managerial capabilities might be sufficient during the early phases, in the long-term outsiders become more and more important to fulfil changing demands of growing ventures. Flexibility and self-

[2] Per definition these are shareholders that are actively involved in the management.

containment are very important during the early phases of a venture, but growth leads to higher complexity, making outside support essential (Fox 1982, Jonovic 1989, Daily/Dalton 1992). Also increasingly knowledge-intensive, competitive and rapidly changing startup environments with shorter technology cycles force companies to be proactive, entrepreneurial, innovative, and risk-accepting (Gabrielsson 2007), causing the positive influence of external expertise in contributing to venture creation, development and survival (Viljamaa 2011). Due to the great potential value of external advice many companies use different types of advisors and the most trusted ones can become very influential with a huge impact on the development of the firm based on either direct (advising) processes as well as more subtle processes (Strike 2013).

At the same time research based on small- and medium-sized companies (SME) revealed a general reluctance of small-business managers to use external advisors, since they are afraid to invest scarce financial resources or time capacities, they are not aware of the need or see the danger to loose control or confidential information (Sharma/Chrisman/Chua 1997, Bennett/Smith 2004, Gibb Dyer/Ross 2007, Viljamaa 2011, Strike 2012). Especially during very early phases of venture development, when founders own a high percentage of shares, they may have comparable attitudes.

Entrepreneurs can choose between various types of external support with different types of relationships. While some relationships might be based on contractual agreements, others are entirely informal. Strike (2012) distinguishes between formal advisors, who are either employed or partially own a company or are hired experts and informal advisors, who are informally engaged, often with a personal relation to managers.

According to Robson/Bennett (2000) the most important sources for external support in SMEs are accountants, lawyers/attorneys, bankers, friends and relatives, customers and suppliers, consultants, chambers and associations, local enterprise and public sector agencies. In addition, Höppner (2006) adds universities and the internet as other sources for external advice. Another important source of external advice can be Venture Capitalists (VCs) if they are invested in a company (Rosenstein et al. 1993). While accountants (Gooderham et al. 2004) and banks

(Han et al. 2014) are used by a majority of small firms, other kinds of advisors are consulted less frequently. Generally it seems that the smaller the company, the less likely it is to use professional external advisors. Accordingly, asking friends and relatives is typically done in early phases of venture development, which indicates the importance of low costs and trusted feedback during this stage (Robson/Bennett 2000, Shaw 2006). Later on, asking banks not only for money, but also for support in financial questions is usual and it reduces the risk of financial problems, while trust and embeddedness of bank consultants deepen over time (Han et al. 2014). Public sector agencies offer assistance programs and are popular especially in rural areas, although there are matching problems between service providers and demand (Schwartz/Bar-El 2004) and it was empirically analyzed that users of public sources tend to be less profitable (Robson/Bennett 2000) and satisfied with the performance (Gooderham et al. 2004). However, possible reasons could be that profitable and successful new ventures need fewer advisors or they simply use other, more specialized sources, because they can afford it. With this broad range of various alternatives in mind, many entrepreneurs use different sources of advice to benefit from the combined level of expertise (Robson/Bennett 2000, Horan 2003, Gibb Dyer/Ross 2007).

As an additional opportunity entrepreneurs can use different kinds of governing boards such as boards of directors (BOD), supervisory boards (SB) or advisory boards (AB), depending on the legal framework (see chapter 2.2).[3] Corporate governance is heavily influenced by legal frameworks and with unified or one-tier corporate governance systems and separated two-tier corporate governance systems there are two dominent fundamental approaches with different adaptions worldwide. While management and supervision are unified in one board, usually called BOD, in one-tier systems, they are strictly separated in two-tier systems as a ‘management board’ and a SB (Mallin 2010).

However, in both systems many young and old companies use ABs, which can be designed according to the current needs of a company without many legal

[3] See chapter 2 for detailed definitions. This study excludes ABs as a marketing-related instrument as described by Marshall/Heffes (2003), Fawcett et al. (2006), Carter (2008) or Drew (2012).

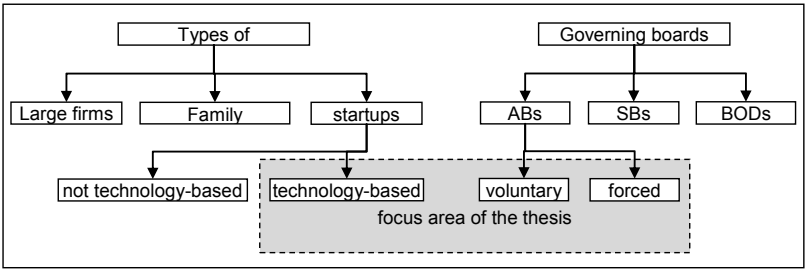
restrictions, and therefore suitable to being used as a corporate governance tool in dynamic entrepreneurial environments (Merkel/Posner 2002, Bygrave/Zacharikis 2014). Besides other roles[4] and functions they can be understood as an internal opportunity to expand managerial capabilities (Hsiao/Brown 2009). At the same time, most kinds of governing boards usually include a more or less high share of outside members, who add external expertise and resources to a company. Aronoff/Ward (2011) claim external advisors are no substitution for active governing boards with outsider involvement, because the relationship with external advisors is closer to an employee relationship. While governing board members are usually respected individuals and role-models for managers, external advisors are fostered to be impartial, objective and clear and they have the purpose to earn money and usually they do not attend governing board meetings. Vice versa it can be argued that ABs are not a substitution for consultants, because they might provide strategic advice during decision processes on a managerial level based on their experiences, but time constraints prevent them from gaining a sufficient level of know-how to concretely solve single problems like consultants can on a more operative level (Klaus 1991). In most cases ABs and external consultants have a rather complementary role.

Therefore, in the perspective of founders governing boards including ABs are an additional, but not exclusive opportunity to increase managerial capabilities, especially in important fields such as control, strategy setting and investor relations. Besides managerial capabilities, they can also expand the visibility and network or a company and thus address other liabilities of newness and smallness (Henseler 2006, Woywode/Keese/Tänzler 2012).[5] As Brunnige/Nordqvist (2004) sum up: "*The need for entrepreneurial capacity and competence can be fulfilled in various ways. In some cases management may believe that it has alone the necessary resources to handle successfully the strategic renewal and to meet the new requirements awaiting the firm as a result of the change. If this is not the case, resources have to be acquired elsewhere. One interesting option in this respect is an enhancement of the board's service role*" (Brunnige/Nordqvist 2004, p. 92). For sure the improvement of corporate governance mechanisms can also contribute to an increase in the

[4] See chapter 3.2 for an analysis of different board roles and their theoretical foundations.
[5] See chapter 3.2 for a discussion of different board roles.

likelihood of success in young firms. Therefore, research in this field is doubtlessly relevant in practice but at the same time provides intriguing knowledge for researchers. As Garg (2014) argues: "*Overall, the intersection of entrepreneurship and corporate governance is an exciting territory with many rich research opportunities to break new ground and enrich existing areas of research"* (Garg 2014, p. 116). The topic of this thesis addresses this intersection with a focus on a special corporate governance instrument, namely ABs that can be either introduced voluntarily by a company or that can be forced by its shareholders[6], in the context of technology-based startups.

Figure 1: Focus area of the thesis



(Source: own illustration)

1.2 Motivation, goal and research questions

Considering the underlying problems that cause such high failure rates of startups, much more attention should be drawn to potential solutions and instruments. In practice, ABs are a frequently used corporate governance instrument. Since there is no legal restriction to report the establishment of ABs to any governmental registration office (such as the Handelsregister in Germany), the total number of ABs as well as the share of companies with such a board can only be estimated. Several studies investigated the percentage of companies using ABs, but results vary widely among different samples considered in the study. Findings may differ significantly between samples of family businesses and startups, between US and Germany,

[6] See chapter 2.3 for further details.

between small and large companies and many other characteristics. The following table provides an overview of various, empirical estimations to give an overall impression:

Table 1: Usage of advisory boards in different countries and companies

Author (Year)	Country	Type of company	Estimation
Ward/Handy (1988)	US	SMEs	5 % (n=147)
Richter/Freund (1990)	Germany	SMEs	55,8% (n=258)
Krimsky/Ennis/ Weissman (1991)	US	Biotech firms	32,7 % (n=889)
Grundei/Talaulicar (2002)	Germany	Biotech and IT startups	~ 21 % (n=62)
Fahed-Sreih/Djoundourian (2006)	Lebanon	Family businesses	21 % (n=114)
Henseler (2006)	Germany	Family businesses	13 – 40 % (meta study)
Höppner (2006)	Germany	Family businesses	29,13 % (n=206)
Wallau/Adenäuer/ Kayser (2007)	Germany	Industry businesses	7,8 % (n=438)
Lambrecht/Lievens (2008)	Belgium	Family businesses	~ 29% (n=17)
Achenbach/May/Rieder (2009)	Germany	Family businesses	> 50 % (n=ca. 500)
Kroemer/Köhler/Musch (2012)	Germany (Saxony)	SMEs	10 % (n=41)
Lamsfuß/Wallau (2012)	Germany	Family businesses	36 % (n=403)
Woywode/Keese/ Tänzler (2012)	Germany	Mid and large family businesses	~ 23 % (n=318)
BDC (2014)	Canada	SMEs	~6 % (n=1047)

(Source: own illustration)

Without concrete estimations some other authors mentioned the frequent use and growing trend of ABs in Australia (Walker 2012), Canada (Dimma 2000), the US (Isaacson/Mitchell/Star 1994, Casper 2000, Morkel/Posner 2002) or worldwide (Power 2014). With regard to the target group of the present study, the findings of Grundei/Talaulicar (2002), who found ABs in 21 percent of their sampled German IT- and biotech startups are most relevant.

Especially the way how a company is financed and the technological complexity may have an influence on the introduction of ABs. According to Schefczyk/Gerpott (2001) many VCs strongly encourage portfolio companies without legally required SBs[7] to introduce ABs instead, not only as additional control mechanism, but also as a platform to provide management support. Additionally, many authors link ABs to knowledge-intensive areas such as Life Sciences as well as Information and Communication Technologies (ICT), since AB memberships of experts such as

[7] For a short analysis of SBs in German entrepreneurial firms see Bassen (2002).

professors that add knowledge and reputation can be often found in those cases (Krimsky/Ennis/Weissman 1991, Audretsch/Stephan 1996, Casper 2000, Morkel/Posner 2002, Elfring/Hulsink 2003). Also in Germany technology transfer from from research institutes to startups is of growing importance (Pinkwart/Heinemann 2004).

All in all, ABs in technology-based startups are a common phenomenon in practice that should gain some additional attention in research. However, an even more widespread use of ABs is prevented by a lack of knowledge and education (Jonovic 1989, Kroemer/Köhler/Musch 2012) as well as a missing recognition of an overall advisory need by many founders and a general reluctance towards external influences due to pride and a high sensitivity in issues that effect managerial freedom (Nash 1988, Höppner 2006). Also potential leakage and disclosure of confidental information through ABs is another reason for not introducing ABs, which is especially relevant in knowledge-intensive technology-based firms (Zahra/Filatotchev 2004, Erakovic/Tchaka 2010). Although there a examples of startups who directly start with an AB from scratch, overall it still seems relatively unusual to establish ABs in the very early phases of venture development.

Therefore, the **practical purpose** of this dissertation is to describe the status quo of AB usage in technology-based startups and to develop recommendations, for both young firms and their stakeholders, on how to use ABs in a fruitful way. Through a better awareness, they will have the possibility to decide if they should introduce voluntary ABs or how they should react if they are forced to introduce an AB by third parties. Furthermore, they may derive useful ideas on how to organize ABs and how to staff them with different types of AB members according to the given circumstances. AB members also benefit from an overview of different practices, which allows them to evaluate their own activities and experiences and maybe to improve their own behavior in some cases. Also for investors who frequently acquire shares of startups this dissertation may give useful recommendations on how different AB roles may influence the satisfaction of entrepreneurs with the AB and the performance of the company. This will help entrepreneurs to understand the AB construct which is seldom part of scientific or practice-oriented entrepreneurship literature.

Besides its practical relevance, the thesis also addresses several **gaps in academic research**. The claims of Morkel/Posner (2002) and BDC (2014) who said that literature does not cover the topic of ABs in startups sufficiently can be confirmed. Appendix 1 presents a literature review on empirical literature on governing boards including 58 studies. It provides a representative collection of some of the most important empirical studies and it gives an impression of the characteristics of past and current research. It is not intended to provide a complete archive of governing board literature, but to provide an indication of typical questions, research designs and samples. As it will be explained immediately, there are three major gaps of governing board research that become obvious: firstly, it is biased towards BODs in one-tier systems, secondly it mainly concentrates on large firms and to some extent on family businesses and lastly it is focused on easily accessible board characteristics and quantifiable input-output relations, neglecting the social character of interaction. According to a presentation by Mike Wright on SME governing boards at the Strategic Management Society Conference (September 2014 in Madrid) six potential research fields that partially overlap with the previously developed gaps, would benefit current corporate governance and strategy research:[8]

- *Contributions of governing board members according to their previous experiences*
- *Composition of governing boards*
- *Comparison of startup, family firm and large firm governing boards*
- Quantitative or *qualitative research on different governing board types such as BODs or ABs*
- Heterogeneity of investors
- Process or longitudinal studies.

Also studies such as Zahra/Pearce (1989), Sharma/Chrisman/Chua (1997), Shleifer/Vishny (1997), Hermalin/Weisband (2003), Bammens/Voordeckers/Van Gils (2011) further confirm these identified gaps, which will be elaborated now:

[8] Gaps that will be addressed in the given study are highlighted by italics.