Germany’s Leadership Circles In The Technical Industry
- Possibilities Of Making Leadership Training More Effective

Bachelor Thesis

by

Antje Weyermann

Mid Sweden University Östersund

Department of Social Sciences

Tutor: Eva Sandberg
Examiner: Lars-Anders Byberg

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Abstract

A good leadership inside a company is able to improve a company’s performance. This thesis tries to highlight the importance of an effective leader for a company and how a company is able to enhance their performance by upgrading leadership training. Therefore, this work concentrates on the technical industry in Germany to find a standardized leader image regarding biographical characteristics, which offers the requirements for modulating leadership development methods or rather leadership training to it.

The existing literature gave information about the duties and responsibilities of a leading person and the major contributors to an effective leader. Beyond that, information has been gathered about the educational background of the leadership circles in Germany’s top companies to draw a conclusion about the composition of the leadership ranks in Germany’s technical companies. Besides, leadership development methods have been analyzed from which leadership training is emphasized as the most important for this study.

In order to gather the missing information, a qualitative research has been conducted, giving the information about the standard leaders as a male, studied engineer, who did not experience leadership soft skills during his academic education. From this it follows, that it is possible to adapt leadership training in terms of knowledge transfer of leadership soft skills especially to fill the gaps of the technical audience.
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1 Introduction

1.1 General approach

“An investment in knowledge pays the best interest.”

– Benjamin Franklin

Already in the 18th century Benjamin Franklin (1706 - 1790), US author, diplomat, inventor, physicist, politician and printer, detected that an investment in knowledge is highly beneficial.

With regard to a company, knowledge is a fascinating source of success. With knowledge, staff members are able to improve dealing with duties and responsibilities, reach decisions that are well directed and implement new ideas faster. Knowledge enables the acceleration of processes, the optimization of performance and reduction of costs. In addition, it allows perceiving excess demand in markets in order to open up a new market (cf akademie.de, 2009).

In consideration of those statements, knowledge is a highly beneficial “investment” for a company. If an enterprise invests in knowledge dexterously, a better performance will be the result.

This study tries to help companies in the technical industry in Germany on improving their performance by adapting teaching methods especially to the needs of their leadership ranks. With regard to the teaching methods this study emphasizes the importance of leadership training and its effectiveness for all members of an organization.

This work deals with the importance of effective leadership within an enterprise. Illustrating this an explanation about what implies being a leading person and what constitutes an effective leader is made.

In addition, this study explains what is leadership training and why is it of utmost importance to implement it in a company’s business system.

In delimiting this work, a special focus on the technical industry in Germany has been made. This delimitation did not happen arbitrarily, but with a special purpose.
During this study, the reader will notice that in the technical industry in Germany, a leader’s standard image will emerge. This leader has a technical educational background, more than 20 years of work experience and is male. Now this study helps to understand why those biographical characteristics are requiring adaptations in the system of leadership training.

Due to the fact that during their studies, students of technical studies have a jam-packed curriculum, that is loaded with subjects that treat merely technical know-how, they are not able to acquire soft skills that could help them handle their business life in their future working environment. While students of study fields that treat leadership or the like get soft skills to take with them, technical students are thrown in at the deep end. Now, that engineers are very likely to become leaders in the technical industry in Germany, this study tries to enhance leadership training for them to fill the gaps of soft skill knowledge.

This study is an approach to make “investment” in knowledge more effective to improve the performance of companies in the technical industry in Germany.

1.2 Problem Definition

A good leadership performance is a requirement for a beneficial company outcome. It has become generally accepted that leaders are not born out but a result of education, experience, coaching, self-reflection and training. Today companies, agencies and trainers offer training programs for various reasons and support in many aspects. Due to the fact that in Germany one can find in the upper and middle management nearly standardized academic curriculum vitae, the present study deduces that in one single industry a career path is even more unitary.

This thesis tries to find out if it is possible to discover a unified career path in the technical industry in Germany with the objective of adapting leadership training to this type of education. More precisely this study tries to help technical leaders concerning their lack of general knowledge of leadership basics and establish another point of contact for them compared to leaders who experienced those leadership basics during their educational past.
1.3 **Background of the scientific problem**

In Germany, technical education is composed of merely mechanical, engineering, physical and practical contents. Since Germany stands for innovative technical accomplishments and engineering efforts and is market-leading in medical, automotive and solar engineering many engineers and persons with a technical formation compose the leadership circles of numerous companies in Germany. The problem of this type of leadership ranks, is that they did not experience leadership knowledge during their educational or rather academic background but nevertheless become leaders as fast as any person who is skilled with leadership knowledge or even faster. On this account, a special leadership training adapted to the special needs of the technical leadership circles should be picked up in the technical industry to close the gaps in education of technical leadership staff. The author tries to find out if it is useful to differentiate leadership trainings of technical leaders and leadership training of other leaders stemming from different study fields.

1.4 **Delimitation of the problem**

The delimitations are made firstly concerning the examination of industry fields. Since a study for all German companies or rather industry fields would have been vast and enormously extensive, this research concentrates on the technical industry. Moreover, it is very likely to find standardized career paths in this industry, so that it is an excellent subject for study. Secondly, the decision to delimit the research of Germany has been made because Germany is well known for a considerably large and representative technical industry.

1.5 **Research questions**

In order to delimit the complex of problems and restrict the examination there are several research questions that form the basis of this study. The following questions help to make an approach of this topic:
1. Can we find a standardized career path one can take to become leader of a technical company?

2. If there is a standardized career path, is it possible to adapt further leadership development methods especially to the needs of this group to make them more efficient?

1.6 The purpose of the study

A company’s main goal is to be beneficial and obtain positive outcome. The element that has a considerable share in this issue is a good leadership. A good leader will increase organizational performance and therefore it is elementary to have skilled and well-prepared leading personnel.

The purpose of this study is to elucidate the necessity of an adaption of leadership training in the technical industry. There are several leaders in technical companies who are likely to be unprepared for their demanding position because their studies or former education have not treated this topic. Obviously those persons with nearly no knowledge about leadership become leaders in the technical industry in Germany in the end. The need of particular and extra trainings becomes concrete.
2 Theoretical Part

In this chapter, the theoretical background of this study will be discussed. First there is a definition and explanation of leadership and being a leader in a company. The part of leadership also implies what contributes to an effective leader and what conditions are required to be a good leader.

Furthermore, the image of Germany’s leadership circles is drawn within the chapter “Educational background of German leaders”. This image refers to their scholar, academic or miscellaneous educational backgrounds.

Another third abstract treats the topic about leadership development and discusses why it is important to train leaders and which are the ways and methods to do so.

2.1 Leadership

2.1.1 Determination of Leadership and Management

As the boundaries between the definitions of ‘manager’ and ‘leader’ are a bit blurry, there is a need to define the differences. Dubrin (2004) defines the functions of the management as the following: “planning, organizing, directing (or leading), and controlling” (Dubrin, 2004, p.4). Furthermore, he adds that leadership deals with, “change, inspiration, motivation and influence” (Dubrin, 2004, p.4). The major differences between management and leadership are that management is more scientific and formal than leadership and that in addition leaders must be visionary and motivating. Subsequently, Dubrin states that leadership produces change, whereas management produces predictability and order. Beyond that, managers do have to implement a vision, whilst leaders create it.

So all in all, one can generalize that a leader should be an inspirational figure that motivates and is visionary, while a manager has to handle scientific and more formal aspects.

However, a rigid vision of the duties and responsibilities is inadequate because “[e]ffective leaders are also managers, and effective managers are also leaders” (Dubrin, 2004, p.6).
To avoid entanglement in use of the two terms manager and leader in the Anglo-American and German sense Haedrich, Kaspar, Klemm and Kreilkamp (1998) filtered the main contents of both ideas.

In the Anglo-American area, the idea of a manager stands for every person with personnel responsibility. However in the German speaking area the term ‘manager’ usually describes the upper layer of the executive personnel. For every other person with managerial responsibility the term ‘leader’ is common (Haedrich, Kaspar, Klemm, Kreilkamp, 1998).

2.1.2 What implies being a leader?

The easiest way to describe a leader, is to define him as a person that “leads or guides” (The American Heritage Dictionary of the English Language, 2009).

However, guidance and lead do not describe the diversity of leadership in practice. Kumar and Hsiao (2007) describe a leader as, “a person who has the ability to inspire and motivate others to do what he wants them to do with a feeling that they enjoy it” (Kumar and Hsiao, 2007, p.18). A precise definition cannot be given because there are a great many articles about leadership. In any case Dubrin (2004) tries to explain leadership giving 6 definitions:

- “Interpersonal influence, directed through communication toward goal attainment
- The influential increment over and above mechanical compliance with directions and orders
- An act that causes others to act or respond in a shared direction
- The art of influencing people by persuasion or example to follow a line of action
- The principal dynamic force that motivates and coordinates the organization in the accomplishment of its objectives
- A willingness to take the blame (as defined by legendary football quarterback Joe Montana)” (Dubrin, 2004, p. 3)
The work of company leaders consists of highly qualified tasks, which are complex and difficult to control within an organization (Baetghe, Denkinger and Kadritzke, 1995). A leader who is working, for example in a technical company, not only has to cope with tasks from development, construction, production or technical areas, but also with sales and marketing issues (Faust, 2002). Consequently, a leader’s range of knowledge must be high and distinct.

They are decision-makers, who have to be able to evaluate quickly the most important facts and come to a well thought out decision in short time. In addition, they are representatives of the company – from the inside and outside. Loyalty and high commitment are two of the most important factors they have to show the company they are working for.

Besides Dubrin (2004) name 9 roles that a leader has to perform. First, he has to be a *figurehead*, as mentioned above, that means acting as a representative for the company. Likewise, the first one is the second role, in which the leader has to function as a *spokesperson* to the inside, as well as to the outside of the company. Furthermore a leader has to be a good *negotiator*, as well as a *coach and motivator*; he has to be able to build teams and integrate himself in them, too, in other words, he has to be a *team builder* and *team player*. The seventh role implies being able to serve as a technical expert or adviser as a *technical problem solver*. Therefore, a leader has to keep up with what is happening outside of the organization for being able to improve the company’s performance and function as an *entrepreneur*. The ninth role a leader has to perform is the one of a *strategic planner*, which contains setting a vision and direction for the organization and guiding the enterprise (cf Dubrin, 2004).

Dubrin (2004) elucidates that leadership is needed at all levels of a company and that a person not assigned to a formal leadership position also can practice it to some extent.

Nevertheless, there are some aspects that argue against leadership in organizations. First, Dubrin (2004) mentions that leaders can be substituted by closely-knit teams of highly trained workers, intrinsic satisfaction with work, computer technology, and professional norms, which cause the needlessness of a leading person.
Secondly, he elucidates another anti-leadership argument, namely that a leader is irrelevant in most organizational outcomes because the situation is more important.

However, the present situation shows that leaders are still existent in nearly every company in the world.

2.1.3 Leadership effectiveness

Being a good leader depends on several variables. Leadership effectiveness is one of the key components that could be responsible for the positive or negative performance of a company. Nevertheless, the composition of leadership effectiveness can be grasped, according to Dubrin (2004).

As one can see in Figure 1, leadership effectiveness is dependent on the following four factors: leader characteristics and traits, leader behaviour and style, group member characteristics, and the internal and external environment. Leadership characteristics and traits are the personal inner qualities possessed by leader that make him function effectively in many situations. Furthermore, leader behaviour and style describe the way a leader acts and conducts in certain circumstances. The group member characteristics refer to the features the members of the group possess. Finally, with the internal and external environment is meant the surroundings of the leader. Those four elements influence leadership effectiveness and make a contribution to the performance of a leader. A harmonic interplay of all four elements will cause the leader’s ability for achieving and outstanding performance, while a problematic relationship between the factors will lead to an impairment of the leader’s efficiency.

The arrows in Figure 1, show that there is a reciprocal influence from one element to another, so that for example the group member characteristics are influenced by the leadership behaviour and style and vice versa.
2.2 Educational backgrounds of German leaders

Before taking a closer look on the results of the educational backgrounds of company leaders in the technical industry, there are several researchers who have provided a general overlook over educational backgrounds in the executive suites in Germany. Educational backgrounds of company leaders are part of *elite research*, which is an area of sociology.

*Elite research* refers to many aspects of the upper classes of the economy, such as among others their family background, religious denomination, marital status, values and principles and the educational background.

This work will concentrate on the educational part of *elite research* with the question asked, if there is a standardized career path in Germany one can go to become a leader of a technical company. In the present research, we shall investigate, within the educational backgrounds, the issue of an apprenticeship the branch of study, if a university degree has been achieved, and the probability to find a doctoral candidate or a person with an even higher degree.

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1 Cited in Dubrin, 2004, p.22
2.2.1 Apprenticeship

An apprenticeship is industrial training that a person can realize inside an organization. Today there are 344 occupations in Germany requiring vocational training (Bundesministerium für Wirtschaft und Technologie, 2009). In Germany, apprenticeship is built in form of a dual system, that means that most of the time the apprentice is trained inside the company, but has to attend a vocational school as well.

In this context, Buß (2007) found valuable education patterns during his research.² Buß discovered, that today about 33% of Germany’s top managers have completed an apprenticeship (Buß, 2007, p.30). Every third top manager in Germany has finished his or her training. This is a declining number, because Eberwein and Tholen identified in 1990, 55% with a completed apprenticeship at that time (Eberwein and Tholen, 1990).³

This contrast is demonstrated starker in the “German Journal of Industrial Relations”, where an evident tendency to the academization is shown by the fact that 89% of the respondents graduated and only 11% ran through an vocational training (The German Journal of Industrial Relations, 2005, p. 288).⁴

The functional direction of the vocational training had been mostly technical- and natural scientific.

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² Parts of his sample were chief executive officers, chairmen of the supervisory board or members of the executive boards, consequently the top managers, of the top 100 companies in Germany in the reference year 2000. Those were managers of the biggest quoted German companies, which were represented in the DAX 30. Moreover, he implied German top managers from foreign companies, if the companies’ turnover met the criteria of size and as well persons in companies, which were no corporation, but a family-run concern of equal size. For his investigation, he chose the instrument of the semi-structured interview and evaluated the data exploratively and qualitatively.

The companies he analyzed originated with 20% from the chemical- and pharmaceutical, with 17% from the vehicle- and engine constructing industry, from the trading-, traffic- and service industry with 16%, as well as from the electrical industry with 16%. In addition, there were 10% companies from the energy industry, 9% from the banking sector, 7% from the insurance industry and 5% of the textil- and food industry. Because of the 17% companies originating from the vehicle- and engine constructing industry this study is highly interesting for the present research.

³ Cited in: Buß, 2007, p.30

⁴ Interviewees have been members of the board of directors of German companies. Those companies were mainly with 36% from the chemical industry, 21% from the energy business and sector of public utilities and 15% from the metal- and electrical industry.
However, Buß states that top managers accentuated the importance of the practical experience they gained while being on vocational education and that these years had been really formative.

2.2.2 University studies

Taking a closer look on the university background of leaders in Germany it is striking that the majority of the managers completed their university studies. Generally it is to say that nowadays it becomes inevitable to graduate if one wants to make a career. Faust (2002) points out that for persons under 40 a university degree is indispensable. Faust clarifies his statement by specifying that that 95,4% of the persons under 40 who are in a leading position hold a university degree; whereas only 73,9% of the persons between 40 and 50 and 71,2% of the persons above 50 possess an academic degree (Faust 2002, p.73).5

Thus, it is inevitable to acquire a high university degree for a young ambitious person when he or she aims a leading position. One reason for this necessity is the educational expansion, which leads to the academization of our society. Confirming this statement are 82% of the top managers from the 100 top companies in Germany who have completed their studies, some of them on continuation education (Buß, 2007, p.36). In former studies, similar tendencies are reported. Kruck (1972)6 identified a percentage of graduates of 74% and Poensgen (1982)6, as well as Eberwein and Tholen (1990)6, received a rate of 82%. One trend Buß highlights, is as well that there is a movement to the academization of the top management in Germany. Apparently, the more demanding the position the more important becomes a university degree.

However, not only the fact to have obtained a university degree is giving direction to a leader’s career, but rather the field of study he graduated in. In Germany, there are 4 big fields of studies, which are predominant in the executive suites.

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5 Faust’s investigation consisted of expert interviews and about 50 depth interviews with executive managers coming from different levels and functions within a company. He carried out four case studies in Germany in three big and medium sized industrial enterprises. Moreover, he executed written interviews with 1000 evaluated questionnaires in the end.

6 Cited in: Buß, 2007, p.33
Hradil and Imbusch (2003) found out that 98.9% of all managers in Germany have studied either law or business studies or engineering or natural sciences (Hradil and Imbusch, 2003, p.318). Thus, a position in the board of managers can be achieved with a delimited number of study fields. Figure 2 illustrates what Buß (2007) found out about the predominance of study fields in the executive suites of Germany’s top 100 companies. Dominating with 28% are business studies, followed by engineering sciences with 18%. The third field to mention with 16% legal studies, which is curty ahead to the natural sciences with 13%.

![Figure 2: Field of study of the top management (n = 61) (cf Buß, 2007, p.34, translated)](image)

It becomes obvious that in Germany’s executive suites, the choice of a new top manager is made between the graduates of business studies, legal studies, engineering- and natural sciences. In addition, Buß (2007) alludes that there is a growth of economists as well as engineers and natural scientists in the line of managers under 55 and features that in the future business studies and engineering sciences will arrange the top management positions among each other.

Beyond that, Hartmann (1996) investigated the study field of top managers in consideration of the company’s industry.

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7 Part of Hradil and Imbusch’s sample have been 200 multiple directors of a German company.
In the chemical and electrical industry, one can find predominantly natural scientists and engineers. In the chemical industry, there are 37% natural scientists, preponderantly chemists, 26% jurists and economists. In the electrical industry, natural scientists and engineers exist with 45%, on equal position with the economists, those though far ahead of the jurists (Hartmann, 1996, p.47). However, Hartmann states that in other industries engineers and natural scientists come off badly and that the image of the dominance of them in the executive suites in Germany is a myth.

2.2.3 Doctorate

The conferral of a doctorate includes an autonomous scientific paper, a dissertation and a viva voce, a special form of an oral exam. Today, a doctorate is presumed to be a synonym for staying power and a correct estimation of one’s own capacities (cf Hartmann, 1996).

In his study, Buß (2007) conducted a rate of top managers who received a doctorate amount to 47% (Buß, 2007, p.36). This is a number that does not differ immensely from studies from former years, meaning that one can detect a continuing trend. From Figure 3, one can take the different levels of a doctor’s degree that are existent in the top management in Germany. Obviously, a normal doctor’s degree takes priority over higher academic degrees, but as well over a simple university degree without a conferral of a doctorate.
Splitting up the top managers who did a doctor’s degree into their branch of industry, Hartmann (1996) detected that the lowest rate of those who received a doctorate can be found with 18% in trade. Little better than the trading business comes off the electrical industry with 30%. However, on the other side there is the chemical industry with 76% and the banking industry with 64% of postdoctoral top managers (cf Hartmann, 1996, p. 54).

In any case, Buß (2007) states that nowadays, a conferral of a doctorate is not very capable to separate oneself from bulk. More definite with his prediction is Hartmann (1996) and predicts a decline of higher academic degrees because in Germany, those degrees are too time consuming and in the end not very beneficial for one’s career. He does not become clear if in the future an MBA degree will replace a doctor’s degree, but that an MBA will never achieve the status in Germany as it has in the USA.

### 2.2.4 Additional findings – the scarceness of women in Germany’s leadership circles

During this research one finding is very striking and is noteworthy - women are considerably underrepresented in Germany’s leadership circles.

The samples of the studies mentioned above, imply practically no female participants. For example, part of Hradil and Imbusch’s (2003) sample reviews 200 multiple directors of a German company, which among them only one woman.
Also, rather significantly, in Buß’s (2007) sample, there is a total absence of a female presence, because in none of the 100 top companies a female person holds one of the top management positions.

2.3 Leadership development

2.3.1 The importance of leadership development
To begin with leadership development, is a time consuming and expensive affair for employers. For leaders, it is a sacrifice of their precious time and personal affairs. Why then is it so important to develop actual and future leaders?

There are several reasons why a company should put a reasonable amount of effort into those kinds of programs. An indicator of the effectiveness of those kinds of programs are the $37 billion of global investment in development programs several years ago and an even more escalating rate in these days (Boyatzis et al., 1996).

First of all, Mabey and Finch-Lees (2008) bring forward the argument that managerial capabilities are among others a mayor contributor to the national productivity. O’Mahoney and Van Ark (2003) highlight that the EU’s poor productivity in relation to the USA and other industrialized countries is a result of the inferior management quality in SMEs, especially in the use of information and communication technology.

A more focused perception has to be made when looking at the leader as an individual. With a leading position comes along, high responsibility. Nowadays, leaders have to be able to gather and use information that has not been collected via observation, assumption or experience by themselves. Additionally, they have to master the connection between experience and theory, assumption and abstraction, intuition and system and observation and long-term planning (cf Buß, 2007). Leaders who are not prepared for their demanding task, suffer overtaxing and the risk to fail in their job.

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8 Mabey and Finch-Lees (2008) include in the term ‘management development’s, as well as the development of leaders in an organizational context. This makes their findings relevant for the present study.
Furthermore, Dubrin (2004) explains that the ability to lead others effectively is rare and is even more rare at the highest levels of an organization, because the tasks that need to be managed at those higher levels necessitate an enormous range of leadership skills.

Companies should emphasize the importance in training leaders, because a good trained leader increases organizational performance (cf Fiedler, 1972). Fortunately, several agencies, companies and individual trainers offer training programs especially for leaders to develop their soft skills and business acumen.

2.3.2 The diverse ways of acquiring leadership skills

2.3.2.1 Leadership Development

Leading persons develop their soft skills in many kinds of ways. Dubrin (2004) mentions that on one hand, leadership skills can be acquired via leadership training or leadership development programs but similarly through education, job experience, coaching, self-awareness and self-discipline. First, education constitutes potentials in a person, which are acutely important for a leader. Thinking patterns applied via education can serve as a base for decision-making processes, problem solving or conflict clearance. A learned pattern will contribute to a more structured way of working and acting thus to a more efficient work. Moreover, education helps to achieve advancements in one’s career and path of life.

Secondly, experience is maybe the most essential part of acquiring leadership skills. “Without experience, knowledge cannot readily be converted into skills” (Dubrin, 2004, p.468). In this regard, a broad on-the-job experience will help to develop the needed business acumen.

Leaders have to find their own ways of achieving the set goals. In addition, superiors and associates serve as role models of ‘how to’ or ‘how not to’ act. In any case personal experiences made early in life, called “pivotal life experiences”(Dubrin, 2004, p.471), also redound to leadership skills in the way that the leader recognizes the capacity to make things happen.
Thirdly, mentoring means the coaching of a person by an experienced and knowledgeable leader. The coached person, the protégé, should adopt desired skills and recognize ineffective skills as undesirable.


The present study gives more focus on leadership development programs and leadership training, wherefore those topics are separately discussed in chapter 2.3.2.2. “Leadership Training”.

2.3.2.2 Leadership Training

2.3.2.2.1 Leadership and Management Training
The explanation in chapter 2.1. “Determination of leadership and management”, shows the set of problems that arise between the two definitions of ‘leadership’ and ‘management’. Hence the termination of leadership and management training implicates as well the need of further determination.

Dubrin (2004) presents leadership development as a program focusing on personal growth, leadership style, strategy formulation, influence, motivation and persuasive communication. Whereas management development is an event that deals with hundreds of topics within the functions of planning, organizing, controlling and leading but is also aimed at leadership development.

Nevertheless, Mabey and Finch-Lees (2008) do implement in their termination of ‘management training’ the development of managers as well as the development of leaders in an organizational context, so that they do not draw an exact line between management and leadership training. However they mention that there is a difference between management and leadership development but do not go into detail.
2.3.2.2 Leadership training and programs

There are several viewpoints from which leadership training can be examined. First of all, Mabey and Finch-Lees (2008) mention, that the sponsors or rather the senior executives, promote leadership development because they want to create the desired company image.

Another viewpoint Mabey and Finch-Lees (2008) describe is the one of the participants or non-participants. The participants may feel exclusive and rewarded for their job well done. Moreover, they can feel the selection as a symbol of their value but also on the other hand as a form of punishment. The non-participants could feel excluded and neglected.

It is important to add that there are different methods of leadership development at different management levels. In this spirit, vision setting and change are part of the development program of the general management, whereas motivation and coaching are the main issues in the development of the middle and first management. Nonetheless, is it of utmost importance to include current and future organizational needs to lead over from theoretical learning to the practical significance (Dubrin, 2004).

Beyond that, there are different types of leadership training that require further explanations. Dubrin (2004) highlights six types of development programs. In practice, the borders between those programs are a bit fuzzy and they often overlap. Content of those programs are the accretion of the leader’s self-awareness and the discovery of his or her personal dreams and talents, such as it is aimed in the Feedback Intensive Program or the Personal Growth Program. Furthermore, the transfer of business values and the company vision is treated in the Socialization Program, while problem solving and creativity within a new set of people are the main aspects of the Action Learning Plans. On the other hand, the Conceptual Knowledge Program is the university approach, which means that it communicates the conceptual understanding of leadership, while the Skill Based Programs focus on ‘how to’ apply this knowledge.
2.4 Conclusion and analysis of the theoretical chapter

Concerning educational background, we can affirm that in our society it becomes unavoidable to acquire a university degree to become part of the top management. The achievement of an apprenticeship brings along a good work and life experience but is today no longer a necessity in German executive suites. However, the older generation of leaders, which is still a majority, has completed an apprenticeship. Nonetheless, a university degree is something more prestigious not only because of the skills one receives but also because it reveals something of one’s own path of life, that is evaluated positively. Moreover, not only the fact that a person has acquired a university degree is determining but also the field of study as well as the acquirement of further academic degrees. Nevertheless, it depends on the industry which field of study and additional academic degree is advantageous.

In terms of leadership development, it has to be mentioned that it is a very important factor of a company because it upgrades the human resources inside of an organization. The leading persons or as well high-potentials that are chosen to participate in a leadership development program will acquire leadership knowledge that will help to increase organizational performance. Leadership skills can be acquired in several ways such as education, experience or training among others. While the person in charge for acquiring leadership skills via experience, self-awareness, self-discipline and education is the leading person itself, mentoring and leadership training is mostly initiated on the account of the company. While mentoring rests mostly on the skills of the person ‘mentor’, leadership training can be variegated, adapted and extended individually to the participant’s needs.

2.5 Deduction to the present study

By reason that there is a high occurrence of engineers and natural scientists in the chemical and electrical industry and as well a high percentage of engineers in the 100 top companies in Germany, from which are 17% from the vehicle- and engine constructing industry, we can transfer this knowledge to the present study and expect that our study will have as a result leaders stemming primarily from engineering
studies (Buß, 2007, p.12). Moreover, with regard to the present study one can hypothesize that there will be also a good portion of graduates from business studies because those graduates hold the majority in Germany’s leadership circles. Concerning the conferral of a doctorate, one can assume that the present sample will consist of some postdoctoral leaders. Due to the fact that it is not the top management that is the focus of the study we can deduce that leaders in lower positions are less likely a post doctoral leader, than those in higher leading positions. Consequently, the standard leader supposed to be part of the sample will be an engineer or economist with a completed apprenticeship and no conferral of a doctorate.

Due to the additional findings one can educe that mainly men will be part of the sample. Besides that, there are nearly just men in the leadership ranks in Germany, engineering studies are predominantly visited by male persons. This deepens the Federal Statistical Office in Germany, according to which, in 2005 only 21% of first year students where female and beyond that female participation is not significantly rising [Statistisches Bundesamt Deutschland 2005, p.51]. A woman occupies every tenth engineering post in Germany [VDI 2005]. To draw a conclusion, from that one can infer that part of this sample will be mainly men.

Considering that leadership training can be variegated, adapted and extended individually, this study concentrates on leadership training because it can be adapted to the special needs of an audience with a technical educational background.

In summary, this study tries to identify if it is useful to adapt leadership training concerning the educational background of leaders stemming from a technical company. This adaptation could take place in Dubrin’s (2004) Conceptual Knowledge Program or as well in the Skill Based Program, because in this context it is important to communicate the conceptual knowledge and ‘how to’ apply it by reason that persons with a technical background have not heard of it previously in their educational past.
The personal development and content of other programs has the same importance for people who have never heard anything of leadership as well as for people who have background knowledge.
3 Research Method

3.1 Research Design

This study is based on the hypothesis that if there is a technical educational background in the leadership circles of the technical industry there could be the possibility to adapt leadership training in this industry to the special needs of technical participants.

3.1.1 Research purpose

The high probability of engineers or persons with a technical educational background to become a leader in a company in Germany is an interesting field to study. The question that has been asked previously was, “Are there in fact that many engineers in the leadership circles as supposed?” There was a need to find as many leaders with technical educational background as possible because when this study really wants to adapt leadership training it should be done on nearly homogenous leadership ranks. Consequently, the focus was made on the technical industry because in this industry it was most likely to find leaders with a technical background. The focus on Germany was chosen to delimit the number of probable companies as well as Germany is known for its impressive and captivating technical inventions and reliability.

In the actual research area, the data about educational background of leaders in the technical industry in Germany is very scarce or rather non-existent. It was possible to find data about educational backgrounds of all kinds of companies in Germany, but not especially about leaders originating from the technical industry. However, precisely this type of data is the basis needed for the present study.

3.1.2 Research approach

For the purpose of finding technical educational backgrounds in Germany’s leadership ranks in order to adapt leadership training methods and approaches the author chose a qualitative method to investigate the on hand problem.
3.2 Data Collection

This research was realized to fill the gap in consisting research of educational backgrounds of leaders in the technical industry. Moreover, it was important to investigate the previous attendance of leaders in the technical industry. If they attended previous leadership trainings it was also interesting to find out if they found it useful, informative and appropriate for their needs.

To fill in those informative gaps, primary data was needed because secondary sources did not provide the exact data.

In order to gather all this kind of information the author chose semi-structured interviews to on the one hand gather the information needed but on the other hand come to know issues that would not have come up in a structured interview or in a survey.

As Marschan-Piekkari and Welch (2004) state, “semi-structured interviews allow the researcher to ask each interviewee essentially the same set of questions, but also allows the interviewee to share insights on topics or issues that would never come up using only surveys.” (Marschan-Piekkari and Welch, 2004, pp.34-35).

3.2.1 Execution of data collection

Particularly in this study, it was necessary to collect primary data because secondary data did not provide the required information.

In this research project, secondary data could provide background information and bring up the necessary set of data to constitute the thesis that in the technical industry it is very likely that leaders have a technical educational background.

To prove this thesis and adduce evidence primary data was needed. Additionally, new perceptions and facts could be collected via this methodology.

In the run up to the telephone interview process numerous emails have been sent out to various companies. A more detailed report about the companies is made in 3.2.2 “Selection and accessibility of participants”. This email contained an explanation of purpose and a short content summary of this study.
The email was written in a form of a request for an interview, illustrating the time amount and topic of the interview.

The majority of the semi-structured interviews have been executed via telephone interview. This decision was made because of the sometimes big distance between the company and the author. In addition, the interviewed leaders had limited time resources and perceived a telephone interview as a smaller investment of time.

### 3.2.2 Selection and accessibility of participants

First of all it is to say that part of the sample of the present research have been persons with managerial responsibility that means leaders in the German-speaking sense.

The majority of potential participants was chosen via the company index of “Chancen im Ingenieurberuf. Das VDI Bewerbungshandbuch 2008” published by the VDI Beruf und Gesellschaft⁹. The companies listed in this register should provide as a basis for engineers to orientate themselves and as an opportunity to address those companies for future applications. Those companies have been selected because 74 companies out of a total of 109 companies were technical companies.

The first contact has been established via email. Due to the fact that it is very hard to find out the email addresses of the leaders first hand the emails were addressed mainly to the human resources department, because they are most likely aware of the members of the leadership circles in their company.

All in all 79 technical companies have been contacted. Seventy-four technical companies have been selected via the company index of “Chancen im Ingenieurberuf. Das VDI Bewerbungshandbuch 2008” published by VDI Beruf und Gesellschaft (2008).

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⁹ VDI is the association of German engineers (Verein Deutscher Ingenieure), which is one of the biggest technical-scientific associations in Europe. In Germany this association is known as the spokesperson of engineers and the technique, as well as the leading institution for further education and exchange of experiences of technically qualified employees and executive managers. Its aim is to transfer technical knowledge as a service for every engineer and natural scientist, for companies, the State and the public (cf. Verein Deutscher Ingenieure, 2009).
Family members and friends have submitted the other companies. The latter have been contacted personally or via telephone; this was possible because the author received the direct contact details.

In the latter case, it was possible to carry out interviews with every single contact. In two of the selected companies, it was possible to interview more than one leading person.

In the first case on the contrary, there were some difficulties. That is to say, that the rate of return of the companies contacted via email was very scarce, so that six companies answered positively and were disposed to be interviewed. Unfortunately, only four were available for interviews in the middle of January, so that the rest dropped out, because the execution time of the interviews ended in the first days of january. From this it follows that two interviews resulted from the 74 contacted companies.

On the other hand sixteen companies replied negatively, that is to say were not willing to do an interview by various reasons. These were among others:

- generally no participation interrogations
- too much requests for interrogation
- company holidays
- limited capacities

In addition, seven companies could not be contacted, because the responsible person was out of office by reason of pregnancy leave or leave of absence.

Unfortunately, forty-four companies did not reply at all.

All in all, twelve interviews with leading persons have been realized.

3.2.3 The interview
The questions asked during the interview were divided into three parts.

The first part contained five questions relating to the person and the position he or she holds. The second part referred to the educational background from the scholar to the academic educational background and the third part contains questions with regard to the experience made with leadership training.
This question frame contained closed as well as open-ended questions. Open-ended questions in which the respondents should give some of their own experience and opinions were only relevant in part three, because in the first two parts facts about the curriculum vitae mostly did not necessitate personal opinions or additions. The third part of the interview was held the most loosely of the three, because every experience with leadership training was individual and personal, so that it was necessary to adapt this part individually.

The first part served to get an image of the age and gender of the participator, as well as his or her position. In addition, the second part answers the question if the participant has a technical educational background. Finally, the third part gives information about the leadership trainings completed. Before asking questions in this part the interviewer explained the basics of what is leadership training, which topics it treats and how a company can execute them. Then the interviewee was asked questions, which should give personal insights into the feelings and experiences made with leadership training.

The interviews were carried out in German, because only German companies were part of the sample and part of this study.

### 3.3 Research Quality and Validity

In order to check the quality and validity of this research, the book “Research Methods in business studies. A practical guide.” written by Ghari and Grønhaug has been consulted.

First of all, one must mention that one threat immensely affected this research. Ghari and Grønhaug (2005) mention that “specific events external to the study that occur at the same time and which may affect the response”(Ghari and Grønhaug, p.65, 2005). The research was strongly affected by this historic threat, because the execution time of the interviews has been some weeks before, during and some days after Christmas. On this account, many enterprises were on the one hand extremely occupied with their last business activities before Christmas and the end of the year and the leaders were not willing to participate in the interviewing process.
On the other hand, many companies or rather leaders had started their Christmas holidays, some even in the middle of December and therefore were not able to participate. These circumstances affected immensely the participation process. Another important fact, that played a decisive role in the validity of this study. Ghari and Grønhaug (2005) mention the external validity, which refers to the question “whether the findings can be generalized, for example to other settings or periods, beyond the study”. However, this will be explained via the four types of validity Ghari and Grønhaug explain in conjunction with the validity in qualitative research. Accordingly, the validity can be interpreted in a “descriptive, interpretative, theoretical and generalizable” way (Ghari and Grønhaug, p. 216, 2005). The descriptive validity in this research is preserved because the respondents all answered directly to the interviewer. The interviewer recorded the answers in written form that implies that the answers cannot be falsified by a flawed report. The first two parts of the interview will be totally valid in this sense, however the third part is very subjective and personal and consequently difficult to measure in the means of descriptive validity. The theoretical part of this research is based on existing literature, which is verified with the referenced citations. The interpretative validity shows how good the interpretation is. With regard to this research the author interpreted the existing results to the best of her knowledge. Concerning the gathered data via the interview there was not much room for interpretation, so that there interpretative validity is preserved. On the contrary, the conclusion is indeed based on the existing facts though an interpretation of the author. The theoretical validity is also preserved because the author reviewed adequate secondary literature and selected carefully the appropriate set of data. The generalizable type of validity for this study cannot be seen as met. The little participation and therefore small primary data collection delimitate the generalizability of this study. Hence this study is valid for these particular situations. For reasons of data protection, no company or leading person will be named. Even though the twelve participants do not constitute huge data volume, they have been assigned a number for reasons of simplification.
3.4 Possible limitations of this research

This research possesses some limitations that must be named relating to this study. The first limitation that must be named, is the problematic execution time of the interviews.

Due to the fact that the interviews where held at the end of the year some potential participants were on holidays or in their end of year closing preparations and therefore not available for any kind of interview. It is likely for this reason the weak rate of return, mentioned in abstract , 3.2.3 “The interview”, came off.

The second limitation is the sample itself. The interviewed sample consisted of different levels of leaders. Ten people with the position as head of department have been interviewed, one of which was the chief executive officer and one who was the chief executive officer and simultaneously the owner of the company. Within the ten heads of department there are also differences to mention. While there are seven heads of department who are leading a technical department, such as the manufacturing department, systems engineering department or mechanics department, there are also three heads of department who are leading a business department, such as the controlling department, marketing and human resources department and the sales and distribution department. However, it was a purpose of this research to identify the educational background of all leaders in the technical industry, so that it was legitimate to investigate as well the educational backgrounds of the heads of business departments.

The third limitation refers to the different company sizes. The sample of leaders worked in different companies of different company sizes. There is, for example, one company that is with eleven members of staff very little as opposed one very famous company with 7000 members of staff in Germany alone. Moreover, there are six leaders who are coming from two different companies, which leads to twelve leaders coming from eight different companies.

A fourth limitation is that all leaders were male. There were no females in the research group, which is a finding as well as a limitation. There was no female person who was willing to participate in this research.
A fifth limitation could be that during the telephone interviews the interviewer took notes about what has been said. It is possible that not all information was taken down. However the interviewer did her best to record everything.

### 3.5 Conclusion

In summary, this chapter deals in the first place with the issue at the base of the research project. It is discussed why this study was important to conduct and why it is important to analyze the leaders of the technical industry in Germany. This chapter contains information about why a qualitative research method has been chosen. The primary data has been collected basically via semi-structured telephone interviews, in which the participants interviewed have been chosen by the company index published by the association of German engineers. Other interviews could be realized personally with those participants, who have been proposed by family members and friends.

The questions asked during the interview were about the person and his or her position in the company, his or her educational background and their opinion and experience with leadership training.

In addition, this chapter gives detailed information about the quality and validity of this research, as well as possible difficulties, which could limit this study in certain areas.
# Research Results

In this chapter, the results gained via the semi-structured interviews are evaluated and presented. The results are all based on the answers given by the twelve interviewed persons.

Here, the reader will see that the stereotype leader in the technical industry is a male person and around 49 years old. The average leader in the technical industry went to a secondary school and graduated with a university-entrance diploma. After that, he either undertook a technically directed apprenticeship or went directly to university. In accordance with this general profile, they would then have gone onto university and graduated studies in Mechanical Engineering but would not have obtained any further academic degrees; consequently he would not have a doctorate. Regarding the leadership training experience, the average leader in the technical industry has attended some leadership trainings that mainly treated the topics of conflict management or criticism talk. Moreover, this varies greatly depending on the company he is working for at which the stage in his career he was able to attend those education methods. Generally, the mainstream leader in the technical industry thinks that leadership training is useful and a necessary addition to personal leadership experiences.

The presentation of the results is divided into three parts, according to the division of the three parts of the interview.

## 4.1 Personal information and operating position

In this section the gender, years of birth and the position inside the company is evaluated.

We must first underline that 100% of the participants were male. No female that fills that kind of leading position was interviewed.
The average age of the participants is 49. The oldest participant was born in 1947, while the youngest one was born in 1970, so that the range of age is 23. The median in this case is 1960, which is concordant with the average value.

Concerning the position of the aforesaid persons, the majority was head of department. Only two of the participants were chief executive officers and one of those two was simultaneously the owner of the company.

It is possible to split up again the heads of departments into two groups. Out of those ten leaders seven were heads of a technical departments, among others of the manufacturing department, mechanics and technique department, construction department and systems engineering department. The other heads of departments were leading rather business departments, namely the sales and distribution department, the controlling department and the human resources and marketing department.

### 4.2 Educational background

In this section, the educational background beginning from the most important findings to the less important findings are listed.

Initially it is to say that out of the twelve participants 91.67% had completed academic studies. Only one person did not even start to study, but based his knowledge background on 3 different apprenticeships though.

Regarding their fields of study it is interesting to see that nine persons out of twelve studied the same field of study, namely Mechanical Engineering. As one can see in Figure 4, two persons studied business studies and one person did not study at all. Consequently, two fields of study, Mechanical Engineering and Business Studies, are part of this sample.
With reference to other academic degrees the result of this study is that two persons had a doctor’s degree. No one owned a higher academic degree than a doctorate.

As indicated in Figure 5, the majority of the participants completed an apprenticeship. Out of the twelve leaders 58,33%, that is to say seven persons, answered positively to the question if they had finished their training. Contrary to that, 41,67% did not make an apprenticeship at all. Among the first mentioned ones, those seven leaders with a completed apprenticeship, 85,71% thus six participants made a technically directed apprenticeship. The other 14,29%, so to say one person completed a business directed apprenticeship.
Concerning schooling, 83.33% of the participants attended a secondary school and completed it with a diploma from a German secondary school qualifying for university admission or matriculation. Another 16.67%, that is to say two persons attended firstly just an elementary school, but obtained a higher degree afterwards. However one of those two persons did not graduate with a university-entrance diploma, but with a General Certificate of Secondary Education; this is the person who did not go to a university.

In Table 1, the information of 4.1. “Personal Information and operating position” and 4.2. “Educational background” are concentrated and listed.
### Table 1: Personal information and educational background overview

<table>
<thead>
<tr>
<th>Participant number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
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<tbody>
<tr>
<td>Gender</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Operating Position</td>
<td>Head of manu-factory</td>
<td>Head of sales and distribution department</td>
<td>Head of mechanics and technique</td>
<td>Head of controlling</td>
<td>Owner and CEO</td>
<td>Head of construction</td>
</tr>
<tr>
<td>School</td>
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<td>Secondary school</td>
<td>Secondary school</td>
<td>Secondary school</td>
<td>Secondary school</td>
<td>Secondary school</td>
</tr>
<tr>
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<td>University-entrance diploma</td>
<td>University-entrance diploma</td>
<td>University-entrance diploma</td>
<td>University-entrance diploma</td>
<td>University-entrance diploma</td>
</tr>
<tr>
<td>Completion of apprenticeship</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Type of apprenticeship</td>
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<td>-</td>
<td>-</td>
<td>Industrial mechanic</td>
<td>Welding engineer</td>
<td>Design draftsman</td>
</tr>
<tr>
<td>University studies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Field of Study</td>
<td>Mechanical Engineering</td>
<td>Mechanical Engineering</td>
<td>Mechanical Engineering</td>
<td>Business Studies</td>
<td>Mechanical Engineering</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>Highest Academic Degree(^{10})</td>
<td>Diplom (FH)</td>
<td>Diplom</td>
<td>Dr. + Diplom</td>
<td>Diplom (FH)</td>
<td>Diplom</td>
<td>Diplom</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Participant number</th>
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<th>11</th>
<th>12</th>
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<tbody>
<tr>
<td>Gender</td>
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<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Operating Position</td>
<td>CEO</td>
<td>Head of Human Resources and Marketing</td>
<td>Head of systems engineering</td>
<td>Head of manu-factory</td>
<td>Head of mechanics</td>
<td>Head of systems engineering</td>
</tr>
<tr>
<td>Highest school-leaving degree</td>
<td>General Certificate of Secondary Education</td>
<td>University-entrance diploma</td>
<td>University-entrance diploma</td>
<td>University-entrance diploma</td>
<td>University-entrance diploma</td>
<td>University-entrance diploma</td>
</tr>
<tr>
<td>Completion of apprenticeship</td>
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<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Type of apprenticeship</td>
<td>3 apprenticeships as Calibration technician</td>
<td>Banker</td>
<td>-</td>
<td>-</td>
<td>Mechatronic engineer</td>
<td>-</td>
</tr>
<tr>
<td>University studies</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Field of Study</td>
<td>-</td>
<td>Business Studies</td>
<td>Mechanical Engineering</td>
<td>Mechanical Engineering</td>
<td>Mechanical Engineering</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>Highest Academic Degree(^{10})</td>
<td>-</td>
<td>Diplom</td>
<td>Dr. + Diplom</td>
<td>Diplom</td>
<td>Diplom (FH)</td>
<td>Diplom</td>
</tr>
</tbody>
</table>

\(^{10}\) Before the adjustment to the Bachelor-/Mastersystem Germany had its own academic degrees. The German “Diplom” is until now the most common academic degree. In this case, the “Diplom” stands for a graduated engineer or a degreeed businessman. The addition, “FH” at the end of some academic degrees marks that a person obtained their degree at a university of applied sciences.
4.3 Leadership training experiences

The research results presented in this chapter are more complex to present than in the last two preceding articles. This is because the information given here is based on personal opinions and experiences.

First of all, it is important to mention how many of the participants had experience with leadership training. Figure 6 demonstrates the general participation of this sample at leadership training methods. We can infer from this figure that the majority of participants attended leadership trainings in the past. However, 33.33% of our participants, that means four of the respondents did not participate in any leadership training at all.

Consequently, after these findings only the eight persons who attended leadership training could be interviewed in terms of their experiences with leadership training. However, the whole sample was asked if they generally think that leadership training is useful. In this context, ten persons answered that they generally think that those programs are useful. Only two persons said, that they could not answer this question because they have not attended a training yet.

The majority named conflict management or criticism talk as major topics treated in their leadership trainings. Besides communication skills, return to work interviews or time management etc. are further contents mentioned by the respondents.
Some respondents were able to answer the questions which kind of training method helps them the most in learning soft skills. One respondent answered that for him it is very important to observe somebody’s ability to handle the leading task. Another one found that a personal coaching is most important and a third one thought that role-playing games show him the best way to do it. The other respondents did not have a favorite method of acquiring leadership skills via training.

Another finding is that leadership training is applied on four out of eight persons after their promotion to a leading position. One respondent mentioned that the selection of participants in his company happens at random and that he was very lucky he was chosen by chance, although he holds the position as a leader for many years. The other four persons were able to attend trainings before and after their promotions. Beyond that, the leaders were asked if they think that experience is sufficient for being an efficient leader. The respondents agreed that experience is not sufficient, but mentioned different attributes to a greater or lesser extend as important. One respondent argued that experience is important, but is insufficient for the task as a leader. He thinks that training prepares a leader and gives additional perceptions, methods and knowledge. Another interviewee gave the argument that leadership is something that runs in the blood and that a leader without the “leadership gene” will never be a good leader, regardless how many trainings or events this person is able to experience. The other respondents answered that leadership experience is very important but that it is necessary to amplify his or her knowledge, experience and personality with leadership training methods.

Besides, some of those leaders with a technical educational background reported that they felt some kind of lost before experiencing leadership training because they lacked in soft skills, like for example how to hold a meeting or how to handle difficult team members.

4.4 Conclusion

To conclude this chapter, one could pick up the statement from the beginning of this chapter.
It is possible to make out an average leader profile in the technical industry from those findings. This leader is male and about 49 years old. The youngest leader is 39 and the oldest is 62, so that there is a range of 23 years between the leaders’ ages. Concerning the educational background, it is possible to make out a typical career path of the technical leaders. In our sample, the respondents went to a secondary school and graduated with a university-entrance diploma. The majority of the sample completed a technical apprenticeship and went after that to a university to study Mechanical Engineering. Only one person took a complete business-oriented career path and completed his training as a banker and after that his studies in business. The studies are generally completed with a German “Diplom” and in two cases completed with a doctorate.

Regarding to the additional training methods for leaders the participants of this study mainly attended leadership trainings. The possibility and frequency of training-entities is very dependent on the importance the company attaches to such training methods. Almost every respondent thought that leadership training is a useful affair and necessary for being an effective leader.
5 Discussion

To begin with, one can make out a clear career pattern in the technical industry, so that the hypothesis that there is a unitary career path in the technical industry is virtually proven. The standardized career path discovered by the research demonstrates the biographical characteristics assumed through the theoretical interpretation. It is possible to extract from the theoretical findings that a university study is indispensable to be able to rise up in the leading circles. The 91.67% of university graduates in this research prove that the technical industry also demands this kind of education. With regard to the study field it was assumed that the sample stems from technical and business studies. This assumption is proven because 81.82% of our university graduated leaders studied Mechanical Engineering and the other 18.18% studied business. Consequently the majority of leaders in the technical industry study engineering.

Concerning the completion of an apprenticeship, it is not demonstrated that in the technical industry apprenticeship experience is required to ascend to a leading position. However, in this study we saw that the completion of an apprenticeship is independent from the subject’s age, whereas the theoretical findings stated that it was more common in the older generation of leaders. In fact, there is a majority with 51.33% of leaders with a completed apprenticeship, but this proportion is not very meaningful in terms of declaring that leaders have a completed apprenticeship in the majority of cases. That is because 51.33% is only a small majority and therefore we can deduce that in the technical industry generally is a good mixture of leaders with and without a completed apprenticeship.

As expected, the present study found some leaders who achieved a doctorate. Out of twelve persons two were postdoctoral leaders, thus 16.67% have a doctor’s degree.

With regard to the participation of leadership trainings, 66.67% had the chance to participate at such a training method. However, this means that 33.33% of the leaders did not participate in leadership training, which is quite an astonishing finding.

In order to combine those findings with the initial research questions, there will be a short repetition of the research approach.
“This thesis tries to find out if it is possible to discover a unified career path in the technical industry in Germany with the objective of adapting leadership training to this type of education.”

And the appendant research questions:

1. Can we find a standardized career path one can take to become leader of a technical company?

2. If there is a standardized career path, is it possible to adapt further leadership development methods especially to the needs of this group to make them more efficient?

The above listed attributes of the present sample gives rise to the statement that it is possible to find a standardized career path in the technical industry. Obviously, one is more likely to become a leader in the technical industry in Germany if one has a technical educational background or rather with studies in Mechanical Engineering. Strikingly, no women were present in this study, because there is generally a very low presence of women in Germany’s leadership circles as shown by the study executed from Buß (2007). As mentioned in abstract 2.2.4. “Additional findings – the scarceness of women in Germany’s leadership circles” he examined the top 100 companies in Germany and part if his sample were only men. Secondly, there is still a very low percentage of women studying engineering studies. The Federal Statistical Office in Germany states that in 2005 only 21% of first year students where female and beyond that female participation is not significantly rising [Statistisches Bundesamt Deutschland 2005, p.51] and that a woman occupies every tenth engineering post in Germany [VDI 2005]. Consequently, it is evident that the female rate in this sample had turned out to be pretty low. Hence a male engineer with more than 20 years of work experience is a standard leader in the technical industry in Germany. Apprenticeship experience strongly depends on the person if he completed one or not. The standard leader will not have doctor’s degree. Thus, the first research question is answered.
Leaders stemming from technical educational backgrounds have gaps in their soft skill knowledge. During their studies, their curriculum is loaded with technical knowledge and leaves no space for acquiring leadership skills. Kumar and Hsiao (2007) found the right term for this kind of difficulty, namely: “engineers learn ‘Soft Skills the Hard Way’”. This statement implies that engineers have to acquire their soft skills in leadership during their work time. After finishing university, engineers are equipped with a multiplicity of hard skills, the technical know-how, but their education lacks in the soft skills, that they in spite of everything need during their work experience.

From this it follows that it is very likely that leaders with a technical educational background are overtaxed and less efficient as their colleagues stemming from studies that treat this topic. Nevertheless, this does not necessarily mean that leaders with a business background are better leaders. Students studying business or any field of study, which treats leadership have heard during their studies of the main aspects that form a good leader, team or company. They are better prepared because they know what are the essential parts of leadership and teamwork. They obtained the basic prerequisites to build on them with further training or educational methods. Those basic prerequisites do not exist in the education of a technical leader. Consequently, there should be another point of contact in their further education methods than with leaders stemming from different studies.

As we found out that there is a standardized leader with engineering studies predominant in the technical industry, we can say that an adaption of leadership training to the special needs of the engineering leadership circles is feasible and effective. An adjustment would not be effective if there is a potpourri of educational backgrounds because adaptations would have to be made to more groups, which causes more complexity and costs. An adaptation to one group could be possible, cost-effective and efficient. Therefore, another industry would not provide the same basic conditions to adjust leadership training as the technical industry in Germany does.

It is very likely that in another industry there is a greater intermixture of points of contact of leaders, which means a higher deviation of knowledge about leadership.
Now that it is taken for granted that leadership training is possible and effective in the technical industry, in Germany there should be taken a closer look on how this can be carried out. Judging from what the participants said, leadership training is not standard in technical companies, even though nearly every respondent believed that it is a useful activity. For this reason, it is important to establish understanding for the importance of leadership training in the minds of the people that are responsible for the educational system in the company. As discussed in the article 2.3.1 “The importance of leadership development” it is of utmost importance for a company to train their leaders to make them more effective. A highly effective leader will increase organizational performance and contribute to a good working-climate.

After establishing understanding for the importance of leadership training it is necessary to begin leadership training before the promotion to a leadership position. If someone is already in a leadership position, this person will be thrown in at the deep end. This is not unusual as discovered by this study. There were 50% who were only able to attend training after being promoted and this was sometimes even after several years in a leading position. Those participants said that said trainings were very helpful and one participant mentioned that he learned in those trainings, after several years of being in a leading position, how to hold a meeting. Intelligibly, this is not an effective way of applying leadership training.

After realizing that leadership is necessary and important to apply already on high-potentials rather than the first time on long-established leaders, a company should ask what and how should be trained. As discussed in chapter 2.3.2 “The diverse ways of acquiring leadership skills” there are several ways how to apply leadership training. It would be useless to adapt personality-development programs to the special needs of the technical industry because those programs should suit every individual.

In contrast to that, stand programs that should convey knowledge about leadership such as Dubrin’s (2004) Conceptual Knowledge Program or the Skill Based Program. At this point, an adaption with regard to the special needs of technical leaders can be made and in fact start with those programs with leadership knowledge from scratch. While leaders with a business background bring along a certain basic understanding, this must be put across first to leaders with a technical educational background. Henceforward the foundation for further leadership development is laid.
In addition, further leadership development methods can be applied, which can be now the same as for leaders stemming from studies other than technical ones, because participants are at this point on the same knowledge-level.

For a more detailed analysis on how adapted leadership training to the special needs of the technical industry can look like, another study is needed.

This study detects that there is a need for additional training for technical leaders. Training should provide the basic knowledge of leadership other leaders obtain during their university studies and should be offered before the promotion to a leading position.
6 Conclusions

This research resulted in the conclusion that companies in the technical industry in Germany do better when they adapt leadership training to the special needs of their leadership circles. Those companies can make a better outcome if they concentrate on making leadership training more efficient. More efficient leadership training with regard to technical leaders should meet two special requirements.

Firstly, the timing of time of the leadership training should be chosen precisely. In order to train a technical leader efficiently, this should be done before their promotion to a leadership position to fill the lack in their soft skill knowledge.

The second requirement for the special leadership training on leaders in the technical industry is that those aforesaid trainings should fill the soft skill gaps of technical leaders, so to speak acquire the basic knowledge or basic understanding of what is leadership. This knowledge is important and imparted by other studies but not by technical studies. Leaders in the technical industry are equipped with important technical know-how but lack in leadership soft-skills. Due to the nearly unitary university curriculum vitae in the leadership ranks in the technical industry in Germany, adaptations to that group are possible and reasonable. Furthermore, an adaptation in leadership training filling the needs of the technical leadership circles could make the whole enterprise more effective.

Taking a look at this from a wider angle, a leadership training that leads to more effective leadership has as a result a possible higher performance of the company. If this is true, adapted leadership training can lead to a higher performance of the whole technical industry in Germany.
List of References


5. Buß, 2007: *Die deutschen Spitzemanager. Wie sie wurden, was sie sind*, Oldenbourg.


Appendix

Appendix A English version of the interview frame

1. Part:

1. Year of Birth?

2. Gender?
   □ m □ f

3. Which position do you hold in your company?

2. Part:

4. Which school did you attend?

5. Your highest school leaving certificate?

6. Did you complete an apprenticeship?
   □ Yes □ No

7. If yes, which kind of apprenticeship?

8. Did you study?
   □ Yes □ No

9. If yes, which field of study?

10. Which kind of university did you attend?
    University
        University of applied sciences
        Miscellaneous: ___________________________

11. With which university degree did you graduate?

12. Did you achieve higher academic degrees?
    □ Yes □ No
13. **If Yes**, which higher academic degree?

   Dr.
   Dr. h. c.
   Prof. Dr.

3. **Part:**

14. Have you ever attended a leadership training?

   □ Yes       □ No

15. **If Yes**, Has this been before or after your promotion to a leading position?

   □ before   □ after   □ both

16. Which method during those trainings do you rate as the most effective one for you personally?

17. Do you think that leadership training methods are reasonable?

   □ Yes       □ No

18. Why?

19. Do you think that experience is sufficient for becoming an efficient leader?

   □ Yes       □ No
Appendix B  German version of the interview frame

1. Teil

1. Geburtsjahr?

2. Geschlecht?
   □ m   □ f

3. Was haben Sie für eine Position in Ihrem Unternehmen?

2. Teil

4. Welche Schule haben Sie besucht?

5. Welchen höchsten Schulabschluss haben Sie?

6. Haben Sie eine Berufsausbildung absolviert?
   □ Ja   □ Nein

7. Wenn JA, welche Berufsausbildung?

8. Haben Sie studiert?
   □ Ja   □ Nein

9. Wenn JA, welche Fachrichtung/Studienrichtung hatte Ihr Studium?

10. An was für einer Hochschule haben Sie studiert?

   Universität
   Fachhochschule
   Sonstiges: ___________________________

11. Welchen Hochschulabschluss haben Sie dadurch erworben?

12. Haben Sie höhere akademische Abschlüsse?
   □ Ja   □ Nein
13. **Wenn JA, Welche?**

Dr.
Dr. h. c.
Prof. Dr.

3. **Teil**

14. Haben Sie jemals ein Führungskräfte-Training absolviert?

☐ Ja ☐ Nein

15. Wenn JA, War dies vor oder nach ihrer Beförderung zu einer Führungsposition?

☐ vor ☐ danach ☐ beides

16. Was fanden Sie während dieser Trainings die effektivste Trainingsmethode?

17. Finden Sie Führungskräftefortbildungsmaßnahmen sinnvoll?

☐ Ja ☐ Nein

18. Warum?

19. Würden Sie sagen, dass Erfahrung als Führungskraft alleine ausreicht, um eine effiziente Führungskraft zu werden?

☐ Ja ☐ Nein