RESEARCH

Christian Schwarzkopf

Fostering Innovation and Entrepreneurship

Entrepreneurial Ecosystem and Entrepreneurial Fundamentals in the USA and Germany

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Christian Schwarzkopf
Karlsruhe, Germany

Karlsruhe Institute of Technology, Germany, 2015

OnlinePlus material to this book can be available on
http://www.springer-gabler.de/978-3-658-13511-9

ISBN 978-3-658-13511-9 ISBN 978-3-658-13512-6 (eBook)
DOI 10.1007/978-3-658-13512-6

Library of Congress Control Number: 2016936553

Springer Gabler

Printed on acid-free paper

This Springer Gabler imprint is published by Springer Nature
The registered company is Springer Fachmedien Wiesbaden GmbH

Acknowledgements

I would like to thank my thesis advisor Professor Rothengatter for having given me the opportunity to write about this exciting topic, for his continuous and great support, as well as for his valuable feedback throughout the years of this dissertation.

I would also like to thank my Professors, Orestis Terzidis and Andreas Oberweis, for their valuable feedback and motivation.

Many thanks go to my family and their support, especially my father Professor Schwarzkopf for his intense feedback and valuable discussions.

Finally, I would like to thank all the persons who have helped me to master this thesis, by giving advice and feedback, participating in the surveys, and by providing me with insights – from an investor's perspective, from academia as well as from an entrepreneur's perspective.

Last but not least, thanks to my business partner Tim, who supported my aspiration to pursue this doctoral thesis throughout this long period.

Christian Schwarzkopf

Abstract

Entrepreneurship and innovation have been identified in politics and in industry as crucial elements for economic success. In this context, the importance of a successful entrepreneurial environment is mentioned, and sometimes the term ecosystem is also being used. Yet the fairly new term Entrepreneurial Ecosystem has not been sufficiently defined, analyzed and developed, in order to understand what it actually stands for. The major goal of this thesis is to develop a holistic concept of an Entrepreneurial Ecosystem – taking economic, social and personal aspects into account – and identify areas, in which Germany nowadays can improve and learn from the USA. In the beginning, the areas of innovation and entrepreneurship have been analyzed, showing that innovation is all about implementation of new things in a market, and entrepreneurship is about persons that are part of the innovation process, by starting business with an invention or a new business aspect that they bring into the economy, according to their own believes and goals.

Not everyone can become a successful entrepreneur, because the necessary inherent abilities cannot be learned or taught. However, these qualities alone are not enough to guarantee success. Success factors of startups and its entrepreneurs have been part of an analysis and have been supplemented by two surveys the author conducted among investors and entrepreneurs. The surveys especially revealed that self-motivation, and the combination of individual ability and skills of the entrepreneurs were considered by both groups as the most important success criteria.

A comparison between the United States and Germany showed that today the US indeed is a more entrepreneurial country and has had, on average over the last years, about 40 times more available venture capital than Germany. Its open culture, its recent 200+ years of immigration history, as well as its investor friendly tax policy and its entrepreneur friendly bankruptcy laws all together favor the foundation and growth of new ventures in the US.

As a role model for global entrepreneurship, the US success factors, as well as the literature research and the surveys have helped to identify the four important areas of an Entrepreneurial Ecosystem. These areas occur in a circular form creating 4 independent circles, starting from the personal characteristics in the center to the impersonal business qualities and activities on the outside parameter. Every circle has its own distinct qualities and characteristics. Among them are abilities and skills in the “Personal Circle”, family and friends in the “Private Circle”, higher education and training in the “Educational Circle” and business world and culture in the “Public and Business Circle”. For the purpose of this study of entrepreneurial phenomena and their

success relation, the focus is on Germany and its needs for improvement, which are necessary to overcome the under-financing of startups and to induce a more pro-entrepreneurial climate. Encouraging the legal person – company or corporation – to invest parts of their yearly profits into venture capital is one of the potential solutions. Furthermore, looking into how the German state can encourage and motivate more successful entrepreneurs, inventors as well as investors to participate in startup businesses and companies. Eventually, a more unified and business open-minded Europe creates one huge common domestic market, in which startups could grow as large and as fast as startups can in the USA.

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Abbreviations

Bn	Billion
BA	Business Angel
BRIC	Brazil, Russia, India and China
BVK	(Bundesverband Deutscher Kapitalbeteiligungsgesellschaften)
CRM	Customer Relationship Management
ERP	Enterprise Resource Planning
EUR	Euro (Currency)
EXIT	Sell of the complete or parts of the company, especially to return the money to the investors
GDP	Gross Domestic Product
IAS	International Accounting Standard
IP	Intellectual Property
IPO	Initial Public Offering
K	Thousand
M	Million
OCEAN	Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism
PE	Private Equity
PMI	Project Management Institute
ROI	Return on Invest(ment)
SME	Small Medium Enterprise
SWOT	Strengths Weaknesses Opportunities Threats
T	Trillion
TEA	Total Early-Stage Entrepreneurship Activity, age 18-64 in the first 3.5 years
US/USA	United States of America
USD	US Dollar (Currency)
VC	Venture Capital

1 Introduction

1.1 A Rationale for Innovation & Entrepreneurship

Innovation can change our lives extensively, regardless of whether it is the food business, the medical sector, transportation, the energy industry or even information itself. Actual improvements and new introduced products have led to a longer life expectation, higher standard of living and a variety of options already available for many people on our planet. We can travel the world; indulge ourselves in leisure activities and use high-tech equipment like a smart phone to call a friend from the top of a mountain, while measuring the speed and height distances. Many things we take very often for granted, without recognizing the tremendous development behind it made by mankind. We might not need all of these innovations in our lives nor do they come without problems, but we have to embrace the chances and challenges to move on. We need new medical treatment to heal deadly diseases; new technology is necessary for clean energy production, enhanced water treatment and food production in order to feed billions of people in the future.

Since our society has become so exceptionally depended upon technology, there is no alternative to the continuous quest for more and better solutions in our work and private life. With the incredible high debts of almost every large nation, we are actually doomed to grow and expand globalization efforts. Yet this growth is closely connected with innovation, because our planet offers limited resources that need to be more intelligently used, reused as well as rebuild. This can only be done through further innovation, which means products, services or methods that find an implementation in practice. And this necessary growth is never over when seeing it on an international scale. China and India for example, with a population of more than one billion inhabitants each, are still far away from the standards of living of their European or US counterparts, thus need nearly endless growth to close the gap. They are a symbol and hope for an ongoing growth. Furthermore, founding new companies is also the best way to create jobs all over the world and thus offer personal freedom, peace and access to a higher standard of living.

Since 1980, America's Fortune 500 companies for example have cut more than 5 million jobs, whereas new small and medium companies, thereafter, have created more than 34 million jobs (Kuratko 2005). These founders, or entrepreneurs as one can also call them, stimulated the growth of the economy and continue to shape the globalized world. This globalization and economic growth will help nations to prosper and hopefully live in peace (Jones 2013; Marquardt 2005). It is also the author's opinion that people, who have jobs and who can create their future, are less inclined to go to war or become

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DOI 10.1007/978-3-658-13512-6_1

dangerous fanatics. The more they have sometimes to lose, the more they care about balancing the relations with others in order to maintain their status. Certainly, an imbalance by too much wealth, power and greed can also lead to acts of war and injustice. It is more than 2000 years ago when Aristotle already proclaimed in *The Nichomean Ethics* the golden mean and not to pursue anything to an excess – not even good fortune (Aristotles 350AD, p.VII.12.).

Despite the social and political change through economic developments, which is stimulated by innovation, new technology has also aided nations in their quest for political and personal freedom. Smart phones on the one hand, combined with social network services like Twitter on the other hand are one of the most recent examples of informing the world about discrimination and terror, thus leading to the "Arab Spring" in Tunisia, Egypt and other Middle East Nations.

New technology does not have to be life threatening. Which person really wants to live without the communication or other new technology we use every day? Listening to music, watching TV, taking a car, flying in a plane, talking on and using a smartphone, having a refrigerator, surfing the Internet and many other technology based innovations.

All this shows that innovation is one of the key leverages for change; a question, however, still remains: Who drives the innovation and brings ideas as well as inventions into the markets? Originally, individuals, who have invented products, do not necessarily need to introduce them to the public. This requires another person to bridge the gap between supply and demand. It involves someone, who sees opportunities and seeks to achieve them with new methods – a classic situation for businesspersons not inventors. This businessperson, who does not wait, if inventions or ideas find their way to the customer, but finds the way by him or herself. He or she is someone, who might need to break rules and stand-alone against the opinion of others. Innovation is in many cases hard to achieve and, thus, needs to be rewarded with extra benefits, due to the risk of failure entering a market with a new product or service. Usually this is connected with financial rewards. However, more social entrepreneurs can be found (The Economist 2006), who are mainly compensated by the positive benefits they bring to society and not themselves.

Eventually, we need to embrace both, the inventors and entrepreneurs, in order to bring more innovation to society and think of ways to support and encourage their aspirations.

The thesis will especially cover various US and German market aspects such as venture capital, history, geography, culture & society, economic markets, government

regulations, character traits and top performing companies – with its research results being of use and application in other countries.

1.2 Innovation and Entrepreneurial Background

Invention, entrepreneurship and innovation in general come from very different social, academic or business backgrounds. Some entrepreneurs have never finished high school like Germany's Rheinhold Würth, who took over the father's little supply store after his death and expanded it extensively to a global billion-dollar company. Others like the Americans Bill Gates of Microsoft or Mark Zuckerberg of Facebook never finished university, but went on building up their company. The British Richard Branson never even started at a university, and still was very innovative and successful in founding and developing the Virgin Group. Larry Page, founder of Google, obtained a Bachelor degree in Engineering and a Masters Degree in Computer Science and before finishing his PhD at Stanford University founded Google.

The goal of this thesis is, therefore, to identify the influencing factors that lead to success. Due the author's proximity and passed closed connections to the university, some close relations of innovation coming from an academic influence are inevitable. That could range from a technology being developed at a university to close contacts with young entrepreneurs that have studied at university later founded companies.

Since universities and research foundations, however, have a long history of bringing out new companies and are deeply involved in technology development, many ideas and inventions have their roots in academia. However, where implementation is lacking, innovation fails. One of the first hypotheses of this thesis is, therefore, that higher education is an essential element to the Entrepreneurial Ecosystem and must be constantly adjusted and improved (compare section on hypotheses 2.2).

Eventually, this thesis will expand to include a variety of influencing factors on entrepreneurship, aside from focusing on academia.

1.3 German & US Market

Germany has become one of the most successful and wealthy nations in this world. It dominates many industries like automotive, machinery or chemical and has invented and implemented many products. Nevertheless, especially during the last years, more and more questions are being raised in Germany, why countries like the US or South Korea lead in many modern industry sectors, like Digital Economy, Biotechnology or Entertainment products and devices, although these sectors do not require natural resources but smart, well educated and creative people. Even though Entrepreneurship, venture capital and startup incubators require no natural resources, the US still

outperforms Germany in these areas – they are the benchmark for successful entrepreneurship in the world. Due to the fact that both countries are economic super powers and have produced hundreds of great entrepreneurs and thousands of companies in the past century, it has especially become important today, 2009-2014, to compare them in the field of entrepreneurship and venture capital. This up-to-date comparison between these two countries, hopefully, may give some decisive insights to which elements of an Entrepreneurial Ecosystem are important and what type of person it takes to be successful in the world of tomorrow.

1.4 An Entrepreneurial Ecosystem

The study of innovation and entrepreneurship as the major field of study requires the consideration of several important aspects, such as the process of innovation, its implementation, the financing and the existing market constellations and the influences of Academia as well as family, friends or co-workers. The major task of this thesis will be identifying, understanding and clustering these important surrounding factors that influence the founder and explain his or her success. These and other factors form the so-called Entrepreneurial Ecosystem. The thesis will further try to design this Entrepreneurial Ecosystem from a macro perspective, and thus rather developing a generally accepted nationwide ecosystem, in which other micro Entrepreneurial Ecosystem from the perspective of a certain founder or a certain region can fit in without any contradiction.

It is necessary to understand and describe, what is really meant by an Entrepreneurial Ecosystem on each level of perspective, and how it is connected and functioning, in order to derive and develop means of improvement. This approach goes along with maxims of many other business people like the former major of New York and successful entrepreneur Michael Bloomberg, who is known for his statement "*If you can't measure it, you can't manage it*" (M. Bloomberg 2013). Eventually, it shall be possible to understand the system's elements and dynamics in the entrepreneurial context and enrich it with new ideas and designs.

1.5 Motivation

It is obvious in the comparison to the United States, that Germany needs more entrepreneurs and people, who want to start their own business. The more people create their own business, the higher the chances are that many of these companies create value and bring innovation to our society. Therefore, Germany has to become an entrepreneurship friendly environment. It means that Germany has to be open for any kind of new company foundation, rather than only focusing on high-tech industry, which is a part of the German culture, where things have to be 100% correct and on the surface

be useful as well meaningful. Nevertheless, some entrepreneurs have to try several startups, till they find the right one and become successful enough to implement something big, sustainable or important. Especially in the early stage of an idea or company, it is hard or impossible to judge, whether it will be a success and in which direction it will turn. That is why the Germans as a whole, the government and the business and research institutions need to embrace also small and simple ideas instead of the perfectly founded and highly developed concepts. They all need to be encouraged, to think "outside the box" and globally from the beginning, without automatically judging these progressive thinkers and daydreamers. For many industries the time is over, in which a company can slowly grow in its domestic market and expand gradually abroad. The world is too connected, and business people scout the world for new concepts and products to be copied or reshaped in another country. In this context McDougal (McDougal 1989) already spoke in the late 1980s about the development of international startups that saw their business and markets to be global from the beginning of their operations.

Thus, all modern entrepreneurs must adopt the characteristics of being open minded, thinking globally, while still performing and understanding their job profoundly.

The author believes that some of these kinds of entrepreneurs exist in Germany but need to be stimulated, trained and formed to meet the needs of the future. Entrepreneurs should also be publically and privately supported, thus creating more value and innovation for society. One key element necessary for this support lies in the improvement of the whole Entrepreneurial Ecosystem in Germany. The stakeholders, whether public or private, the customers and the business community as a whole need to be encouraged to understand the importance of the overall concept of entrepreneurship, and all must play a positive active part in its development.

2 Methodology

There are four main questions:

- Why do most recent successful Internet companies and innovation come from the USA?
- Why do US venture funds take the risk of investing much earlier in many unproven startup concepts at higher evaluations?
- Why is the US environment for startups so much more pro-entrepreneurial?
- Why are many German advisors engaged in the entrepreneurship field, even though they have no experience in it?

Finding answers to those questions, understanding the differences of the German and US environment for entrepreneurs and eventually, deriving potential improvements became the initial goal of this thesis. The idea was then to develop a concept that bears all the relevant aspects of entrepreneurship & innovation, which lead to success.

The first hypothesis of this paper is that these relevant aspects and the environment of the entrepreneur can help to explain, what is meant by the so-called Entrepreneurial Ecosystem.

2.1 Approach

The general approach of the thesis can be divided into seven major parts:

1) Getting a deeper understanding of the subject through a first literature research
2) Generating further hypotheses
3) Examining the present state-of-the-art research
4) Generating specific primary data with input from experts (surveys among investors and entrepreneurs)
5) Comparing the US and German entrepreneurship culture in detail
6) Defining a conceptual framework for the Entrepreneurial Ecosystem
7) Deriving improvement areas

At the start of generating ideas for this thesis in 2008, there was considerable information on startups' successes, but hardly any information on Entrepreneurial Ecosystems. 2-3 years later, more and more reports and papers came out trying to use and define the term Entrepreneurial Ecosystem, but have not reached a level of a comprehensive definition.

In the beginning, the research goal is to review the general opinions in Germany and the US ecosystem. And then, based upon the actual entrepreneurial experience of the author, generate his hypotheses.

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DOI 10.1007/978-3-658-13512-6_2

The main primary and secondary data collection for the analysis shall consist of

- Secondary data through studies and comparisons of journals, books, magazines, newspapers, relevant website etc.
- Primary data through surveys among investors and entrepreneurs from various countries
- Primary data through interviews with experts – especially from the United States and Germany – such as investors, managers and academics

Eventually, the results of this analysis will help deriving and designing a holistic Entrepreneurial Ecosystem. The final step will then be to identify where improvements can be made and to propose potential solutions for them.

2.2 Hypotheses

After first research steps on the subject, it was possible to come up with the following hypotheses. There are general hypotheses with more abstract statements and very specific ones with concrete assertions for specific goals and results.

The initial hypotheses are the following:

- A generally accepted Entrepreneurial Ecosystem can be defined from a macro perspective.
- Improving parts of the Entrepreneurial Ecosystem can increase a founder's success chances.
- Success means fulfilling more than just financial aspects.
- Higher education and universities are part of the Entrepreneurial Ecosystem.
- The German national Entrepreneurial Ecosystem lacks behind in comparison to the US.
- An entrepreneurial venture is mistakenly viewed as a linear sequence of an chronological event; it should be seen as a circular development.

Basic assumptions

- Entrepreneurship is linked to innovation.
- Individuals and institutions can help startups to become more successful.
- The government can foster entrepreneurship.
- A key for today's business improvement and success lies in smart cooperation and internationalization.

It is however not the goal of this thesis to prove the hypotheses by developing a universally valid model. The goal is to find a comprehensive definition and concept for the Entrepreneurial Ecosystem, and thus being able to better understand entrepreneurship, innovation and their influencing factors. The hypotheses are helping guideposts in the process of this general goal.

3 Knowledge Base

3.1 History of Innovation

For many people the term innovation stands for progress, success and something new in our lives. Some might think of their first iPhone, others of solar panels on their roof. But innovation is so much more; it moves our society forward, but brings also new challenges along. It keeps mankind in a continuous competition for customer demand and creates as well as destroys jobs (Kollmann 2006).

Originally, the word derives from the Latin verb *innovare* meaning to create or renew something (Stowasser et al. 1998). The Merriam-Webster Dictionary defines it as the introduction of something new or a new idea, method or device (Merriam-Webster 2010b). The earliest sources of the word *innovatio* can be found in some Latin Church texts of Tertullian around 200 BC and Augustin around 400 BC with the meaning *renewal* and *change* (Müller 1997, p.9). When Dante was using the term *innovare* (Dante 13th century, p.303) in the early 14th century, he was talking about a renewal of his rimes. Machiavelli (Machiavelli 1513) however was referring with his *innovatori* for the first time about men, who stood for change and new things, which they wanted to implement. These thoughts have to be reexamined again in the chapter on Entrepreneurship 3.4. Shakespeare used the word *innovate* in the context of political change, somehow like Machiavelli did (Müller 1997, p.54). Today's understanding of innovation in a more technical and economic sense was mainly formed by Schumpeter (Schumpeter 1939) in the 20th century, and probably also influenced by Machiavelli. Often, inventions and innovations get mixed up or are used similar. However, modern research, especially Schumpeter, clearly distinguishes between an invention and innovation, with the former being part of the latter. The missing element is implementation in a market. Schumpeter sees innovation combining factors in a new way and bringing them to life or converting the invention into the market (Schumpeter 1939, pp.85–88).

Leonardo da Vinci is often regarded as the greatest inventor of all times, and he can serve to point out the difference between invention and innovation. Many of his inventions like airplane prototypes, tanks or robotic knights had never been implemented during his life, and thus never be in use (Davinci Innovations 2008). Centuries later, people may have been inspired by his concepts and inventions to implement them and make them an innovation. This is the essence of Schumpeter's thought, that it takes other people – entrepreneurs – to actually implement the new ideas or inventions (compare the following section on Defining Entrepreneurship & Entrepreneur 3.4).

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A question is, how and when did this constant and systematic process of renewing and introducing new things, what we today call innovation, occurred for the first time? This form of modernization must have happened from the early days of mankind on. Whether it was the wheel or the invention of iron, it always moved society forward. But there might have been an invention and its introduction, which has triggered a chain event and professionalized the innovation process. One idea is that it could have started more than two thousand years ago, with the invention and introduction of a military product: the stirrup. The stirrup is said to be the first military innovation that led to a professionalized continuous development of armament and new products. Its first appearance was about 200 BC in India, however modern stirrup types can be first traced back to China in the 4th century AD (Dien 1986). It took further four hundred years, till it reached Europe and made the knights cavalry much stronger and preparing the ground for the dominance of the feudal class (White 1966). But the effect was even bigger, because this technical combat advantage inspired an on-going improvement, first in a military context, later it swept over to civilian areas. In addition, the stirrup stands for those inventions that lead to a leapfrog and not simple an efficiency improvement. Being implemented, such inventions lead to innovation that stands for a revolution and not evolution in their market or environs – similar to the invention of the wheel that has revolutionized civilian and military life. In contrast, a comparison of the stirrup with the chariot, which also improved warfare, shows that the chariot rather was an efficiency improvement. The high price, complexity and disadvantage in certain terrains of the chariot stands against the simplicity, low price and total appliance of the stirrup on all horses (Derby 2001), which led to its strong and complete market penetration, and therefore can be seen as an innovation of today's understanding.

3.2 Three Potential Waves of Innovation Development

Kondratjew (1926) has introduced the idea of 50-60 years longing waves describing economic development since the end of the 18th century. For him each cycle or wave begins with an introduction of new technology, which was in the beginning the appliance of the steam engine type by James Watt in the 1774 (Deutsches Museum 2000). Schumpeter took the concept by Kondratjew further and actually coined the term "Kondratjew wave" in his work of the Business Cycles (Schumpeter 1939, pp.173–174). Schumpeter also believed in the creating power of destruction and innovation was the mean of creation. Neither Schumpeter nor Kondratjew described in depth, however, the differences between these revolutionary changes and their different origins and motivations. A question would be, why did someone innovate and who was influencing him or her?

Mankind needed new products and achievements, in order to survive and adapt to the hard and changing life conditions. It was probably curiosity and unsatisfied circumstances that on the other hand have pushed peoples to look for new places to live and thereby redoing the circle of adapting and surviving.

3.2.1 First Wave of Innovation

Till the age of Mercantilism and later Enlightenment however, there were two prominent sources of power – the aspirations of the church and the monarchy – that have probably influenced people and society the most to move beyond this form of adaption and surviving. Only a few exceptions can be found, for example on the Greek Islands and in some parts of India or China, where philosophers and scholars have thought and developed ideas and concepts, without being concerned about existence, religion and politics (Babinotis n.d.). Further developments in those times, especially in technical or engineering areas, were mostly in the name, sponsored or inspired by religious leaders or a monarch – whether it was the construction of churches or castles, the design of ships or the invention of the stirrup. Thus, innovation went to a similar cycle as art, which was also primarily used to serve those two powers, painting the monarchs and their battles or telling religious stories (Kraußе 2005, pp.52–53). Therefore, early innovation also has to been seen in this context. This phase could be defined as the first wave of innovation – starting the analysis at the end of the ancient world, leaving out the discoveries and inventions in ancient Greece, Egypt or China. The introduction of the stirrup (see also 3.1) in Europe in the middle age, supporting the raise of feudalism from the 6th century on, could then be seen as the first innovation and thus marking the beginning of this innovation wave (Encyclopædia Britannica 2014).

3.2.2 Second Wave of Innovation

With the second wave of innovation during Mercantilism, new drivers and characteristics were added to the innovation process. In the beginning, it was wealth creation and stability for individual economies that led to state monopolies and the introduction of patents and business protection (Rothbard 2006, p.213ff) – which are today very typical business criteria. But later private individuals also profited from these changes. Although still being closely connected with the monarchs and the church, it was the raise of merchant dynasties in Britain, the Netherlands and later in Italy, as well as the banks that opened new frontiers for innovation, for themselves as well as for those in interaction with them (Magnusson 2002, p.21ff). New banking systems fueled the rise of financial institutions and businesses (Hoggson 2007, p.63,71ff); international trade and the shipping industry flourished and the printing of books set the ground for mass education. With improved vessels and navigation this international trade further

developed into globalization through colonization around the world (About.com 2014). With the improvement and invention of new instruments like the hammer piano in Florence around 1700 and the tuning fork in 1711 (Spiegel 1995) this time was also the beginning of the great musicians that reached their tipping point with Bach and the Baroque Age and from then on influencing music, opera, ballet and the music industry till today. The invention and introduction of the tuning fork for example can be seen as a classic innovation, although its purpose was not a monetary market penetration. It was introduced on the music market and improved the systematic tuning of instruments, which led to more constant and better music composition and replay. This also had an effect on the success of musicians and instrument makers, thus leading to modern understanding of financial success of an innovation.

3.2.3 Third Wave of Innovation

The third wave of innovation then came with the Industrial Revolution, reaching a level, where innovation is more comparable with our modern understanding. It was the time of great inventions and market introduction of the steam engine, the light bulb, or the automobile that connected innovation with business success. These opportunities were no longer only accessible to noblemen but also to the general public and spread over the world, from England to Germany and the US. That is probably the reason why most research and documentation on innovation starts in the early 18th century, with the rise of economics. Adam Smith (Smith 1776, p.10) was somehow describing innovation and the motivation of men to be part of it, without using the term innovation. “Kondratjew waves” therefore have their starting point in this third wave of innovation. It was the time, in which big companies and large corporations were founded and in which individual success created rich families from different backgrounds. It thus was also the beginning of corporate innovation, which has been further developed till today and has created institutions like the Bell Labs or modern think tanks in various companies.

The military importance and its requirement for better weapons, logistics and tactics however, has always been there throughout those waves – till today. And research and development in the military sector as well as the half military, half civilian area of aeronautics leads nowadays to more great innovation, which also influences and pushes civilian innovation further. And also the after effects of wars like civilian destruction or human injuries require innovation to reconstruct and heal. A good example is the research and application of Professor Joachim Kohn (2013), who is helping US veterans to heal and grow new skin or bones through a groundbreaking biochemical process. But also crises from natural catastrophes can inspire inventors and entrepreneurs to come up with new application or products, to help people and/ or seize business opportunities. Drones – rather known in a military use case – are getting developed to