EVALUATION OF ENTREPRENEURSHIP EDUCATION AT UNIVERSITIES WITH FOCUS ON THE IMPACT LEVEL

A SYSTEMATIC LITERATURE REVIEW

Master's Thesis
to obtain the academic degree of
Master of Science
in the Master’s Program
General Management
STATUTORY DECLARATION

We hereby declare that the thesis submitted is our own unaided work, that we have not used other than the sources indicated, and that all direct and indirect sources are acknowledged as references.

This printed thesis is identical with the electronic version submitted.

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Place, Date                     Place, Date

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Signature                      Signature
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Abbreviations

CAIPO  Context-Administration-Inputs-Process-Outcomes
CIPP   Context-Input-Process-Product
EE     Entrepreneurship Education
EI     Entrepreneurial Intention
EIs    Entrepreneurial Intentions
FET    Further Education Training
GB     Great Britain
GDP    Gross Domestic Product
GEM    Global Entrepreneurship Monitor
GUESSS Global University Entrepreneurial Spirit Students’ Survey
HEI    Higher Educational Institution
HEIs   Higher Educational Institutions
IFP    Innovation Fastrack Programme
IT     Information Technology
LDC    Least Developed Countries
OECD   Organization for Economic Co-operation and Development
SME    Small and Medium Sized Enterprises
SPEED  Student Placements for Entrepreneurs in Education
US     United States
UK     United Kingdom
1. Introduction

1.1. Problem Statement

From a global perspective, entrepreneurship has been recognized as a key driving force for economic growth.\(^1\) In 1947 Entrepreneurship Education (EE) at Higher Educational Institutions (HEIs) derived from the first course at the Harvard Business School.\(^2\) Since this point of time, entrepreneurship courses at universities have developed rapidly around the globe. In South Carolina, the first Master of Business Administration emphasized on entrepreneurship was launched in 1971, with the first graduates one year later.

The number of entrepreneurship programs offered at HEIs grew from 300 universities in the 1980s to 1,050 in the 1990s in the United States (US).\(^3\) In comparison, 2005 about 1,600 business schools have started to provide entrepreneurship courses for their students.\(^4\) The significant growth rate of EE has led to the assumption that different entrepreneurial outcomes can occur through entrepreneurship programs at universities.\(^5\)

One explanation for the rapid growth of entrepreneurship programs at universities and other HEIs is the expectation of graduates to develop skills and knowledge that enables them to start innovative and growth-oriented ventures.\(^6\) For example, EE can have a positive impact on enhancing skills in venture creation, attitudes, and knowledge.\(^7\) Further, it is assumed that EE at universities has an impact on the number of graduates that start a new venture, as well as on the overall career development.\(^8\) According to Kailer\(^9\) EE itself can act as a catalyst for economic growth.

EE and its impact can be defined as follows:

“Entrepreneurship education relates to content, methods, and activities supporting the creation and development of knowledge, competences and experiences that make it desirable and feasible for students to initiate and participate in entrepreneurial value creating processes.”\(^10\)

\(^1\) Moberg (2014, p. 7)  
\(^2\) Kuratko (2005, p. 581)  
\(^3\) Kuratko (2005, p. 582)  
\(^4\) Kuratko (2005, p. 583)  
\(^5\) Nabi and Liñán (2011, p. 327)  
\(^6\) Kailer (2007, p. 221)  
\(^7\) Greene and Saridakis (2008, p. 666)  
\(^8\) Rideout and Gray (2013, p. 346)  
\(^9\) Kailer (2007, p. 221)  
\(^10\) Moberg et al. (2014, p. 13)
Reviews about EE are primarily emphasizing on short-term effects like Entrepreneurial Intentions (EIs) or attitudes. Further, a significant number of reviews are concentrating on the equivocal impact of EE on behavior and mindset of participants of entrepreneurship courses. However, fewer researchers are discussing the impact of EE at universities and HEIs. For example, in the last five years sole about 100 articles have been counted that are reviewing the impact of EE at universities of HEIs. One notable systematic review from the researchers Nabi et al. that is focusing on the impact of EE in HEIs has been identified. However, no review that is emphasized on articles evaluating EE at universities and with a specialized focus on the impact level could be founded. Therefore, conducting a systematic literature review that is addressing the evaluation of EE at universities and HEIs with the spotlight on the impact level is needed, to minimize the existing gap in the academic literature.

For analyzing the different levels of impact of EE at universities and HEIs the four-step evaluation framework developed by Kirkpatrick and Kirkpatrick is used. The main focus is on the fourth level (result level) to evaluate the measurable outcome of EE. Whereby, articles that are fitting to level one to three (reaction, behavior, and learning) are not excluded from the review, to ensure a complete understanding of the effectiveness of EE at universities and HEIs.

1.2. Objective and Research Questions

Based on the presented problem statement this Master’s Thesis aims to provide a systematic review of empirical studies, published between the years 1990 to 2017, that are emphasizing on the outcome of EE at universities and HEIs. Through a systematic literature review presenting the state of research in the field of tertiary EE and its impact is possible.

The aim is to provide a systematic literature to examine the impact of higher EE at different levels and to specialize on the measurable outcomes To achieve the determined aim the research method is based on the systematic literature review of Tranfield, Denyer, and Smart. Through two independent literature analysis which are built on

11 Nabi, Liñán, Fayolle, Krueger, and Walmsley (2017, p. 278)
12 Nabi et al. (2017, p. 278)
13 Kirkpatrick and Kirkpatrick (2006, p. 21)
14 Kirkpatrick and Kirkpatrick (2006, p. 21)
15 Tranfield et al. (2003)
defined inclusion and exclusion criteria, relevant articles are selected and then examined descriptively and contentwise. In this Master’s Thesis the following three research questions are formulated to accomplish the objectives:

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the main research findings regarding evaluation of higher entrepreneurship education with focus on the impact level?</td>
</tr>
<tr>
<td>Which effects of higher entrepreneurship education with the emphasis on measurable impacts can be identified?</td>
</tr>
<tr>
<td>Which measurable impact indicators are frequently applied by authors/research institutions and take a main part in the ongoing scientific discussion?</td>
</tr>
</tbody>
</table>

Fig. 1: Research Questions\(^{16}\)

\(^{16}\) Source: Own graphical presentation
1.3. Structure of the Master’s Thesis

1. Introduction
   1. Problem Statement
   2. Objective and Research Questions
   3. Structure of the Master’s Thesis

2. Theoretical Background
   1. Definitions
   2. Theoretical Frameworks
      1. Kirkpatrick’s Four-Step Model
      2. CIPO Model
      3. CAPO Model
      4. Storey’s Six Step Model
   3. Higher Educational Institutions
   4. Reaction
      1. Reaction
      2. Learning
      3. Behavior
      4. Results

3. Methodology – Systematic Literature Review
   1. Why Literature Reviews?
   2. Research Process
      1. Planning the Review
      2. Conducting the Review
      3. Reporting and Dissemination
Fig. 2: Structure of the Master's Thesis

17 Source: Own graphical presentation
As illustrated in the figure above (Fig. 2) the Master’s Thesis is consisting of five chapters. Chapter one provides a short introduction about the importance of EE and its rapid growth around the globe. Further, the problem statement is explained that leads finally to the main objectives and research questions of the Master’s Thesis.

Chapter two provides a theoretical background including the definitions of entrepreneurship, EE, and universities and HEIs. Moreover, four evaluation frameworks are described that are frequently used in the academic literature to analyze the impact of EE. Whereby, the applied framework for this Master’s Thesis is explained in detail, for the others an overview is provided. At the end of this chapter, relevant research topics that are needed to answer the research questions are identified.

Chapter three is dealing with the used methodology in this thesis. At the beginning, an explanation why a literature review is conducted is given. Further, a theoretical input of the execution of a research process as well as a detailed review protocol of how the review was conducted of this Master’s Thesis is described. Finally, a table of all selected articles that are used for this literature review are presented.

The main part of the Master’s Thesis is shown in chapter four, in which the results are analyzed and presented. At the beginning of the chapter a descriptive analysis of the selected studies is included. Part of this descriptive analysis are the media and development, rankings and databases of publications as well as a comparison of the impact levels. The second part is dealing with the analysis of the content and is categorized based on the used framework. The reader is informed by different identified levels of impact about the outcome of EE at universities and HEIs. For each impact level a table displaying the relevant studies with the main findings. At the end of each level, a short recap of the different results of the described studies is offered.

In the concluding section five, a summary of the main findings is provided, and the research questions are answered. Moreover, the limitations of this Master’s Thesis are examined in the final chapter.
2. Theoretical Background

At the beginning of an exhaustive systematic literature review, it is relevant to highlight the theoretical basis of the theme and create overlaps of the topic and its notional background. Therefore, this chapter is in the first part dealing with the definitions of entrepreneurship, EE, and HEIs, which should provide an overview and a better understanding of the issues the review is concerned. However, this section is not only about the clarification of terms, but it also discusses different theoretical evaluation models of EE in the second part of this chapter. As an essential framework in this field the Four-Step Model of Kirkpatrick\textsuperscript{18} can be identified, and for that reason, the systematic literature review builds the basis on this model and its four different levels of evaluation. Kirkpatrick’s Four-Step Model\textsuperscript{19} is theoretically explained below in contrast to the other frameworks in more detail because of its high significance in the topic of evaluating EE in general. This framework gives the review a logical structure and serves as a guiding thread through the systematic literature review. The emphasis of this Master’s Thesis, namely the evaluation of EE at universities with a focus on the impact level, is on the fourth level of the model both theoretically and when conducting the review.

2.1. Definitions

In this subchapter describing items like entrepreneurship, EE and Higher Educational Institution (HEI) seem to be essential to get a better understanding of the subject, to establish a theoretical ground for the theme and to obtain a more general knowledge for the systematic review ahead. The definition of such terms is as well fundamental concerning the limitations and categorization for that specific topic and if or how there exists a linkage between them.

2.1.1. Entrepreneurship

Entrepreneurship is worldwide one of the most discussed themes both in the universal community and in the work-related periphery.\textsuperscript{20} The Organization for Economic Co-Operation and Development (OECD) sees entrepreneurship as a multifaceted concept,\textsuperscript{21} where the literature is abundant about its theory and meaning.\textsuperscript{22} Due to this variety of literature, no lack of definitions in this field and for what entrepreneurship stands for

\textsuperscript{18} Kirkpatrick and Kirkpatrick (2006)
\textsuperscript{19} Kirkpatrick and Kirkpatrick (2006)
\textsuperscript{20} Papulová and Papula (2015, p. 515)
\textsuperscript{21} Organization for Economic Co-Operation and Development OECD (2008, p. 19)
\textsuperscript{22} Papulová and Papula (2015, p. 515)
Theoretical Background

exists. Authors define entrepreneurship from different points of view, and therefore it seems relevant to find out which definitions emerged over time and in what different directions the interpretations for entrepreneurship are heading context specific.

Concerning most of the literature, the origin of the term entrepreneurship refers to the French economist Richard Cantillon in the year 1755 who was the first person that coined the phrase entrepreneurship and described it as self-employment. He determines entrepreneurs as porters of tentativeness because first, they are purchasing products at intended prices and afterward selling them at precariously prices. In a way, Cantillon’s meaning of entrepreneurship is about an entrepreneur’s role which is situated between two or more actors.

In their article “Defining the Entrepreneur”, Filion mentions apart from Cantillon the author Joseph Alois Schumpeter who is also a pioneer in the field of entrepreneurship. Schumpeter is the author who is often associated with defining entrepreneurship respectively entrepreneurs as innovators and thus, he describes an entrepreneur as “…the innovator who implements change within markets through the carrying out of new combinations.” According to Schumpeter, this new concept comprises five different forms:

- “The introduction of a new good…;
- …the introduction of a new method of production…;
- …the opening of a new market…;
- …the conquest of a new source of supply of raw materials or half-manufactured goods…;
- …the carrying out of the new organization of any industry…”

This approach and definition of entrepreneurship equate this term with the term innovation, primary in the business sense where the main target is to use innovative methods for identifying and exploiting new market opportunities.

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23 Moberg (2014, p. 16)
24 Papulová and Papula (2015, p. 515)
25 Ahmad and Seymour (2008, p. 6)
26 Ahmad and Seymour (2008, p. 7)
27 Filion (2008, p. 3)
28 Filion (2008, p. 3)
29 Ahmad and Seymour (2008, p. 8)
30 Ahmad and Seymour (2008, p. 7)
31 Schumpeter (1997)
32 Schumpeter (1997, p. 66)
33 Ahmad and Seymour (2008, p. 8)
Another prominent scholar is Peter Drucker\textsuperscript{34} with the work “Innovation and Entrepreneurship” in 1985, who characterizes entrepreneurship, as well as Schumpeter, from an innovative point of view. Drucker’s understanding of entrepreneurship is:

“Innovation is the specific instrument of entrepreneurship. It is the act that endows resources with a new capacity to create wealth.”\textsuperscript{35}

Further on, Wennekers and Thurik\textsuperscript{36} examine the connection between the two terms entrepreneurship and economic growth. Due to this determination, they establish another representative definition of entrepreneurship:

“Entrepreneurship is the manifest ability and willingness of individuals, on their own, in teams, within and outside existing organizations, to:

- perceive and create new economic opportunities (new products, new production methods, new organizational schemes and new product-market combinations) and
- introduce their ideas in the market, in the face of uncertainty and other obstacles, by making decisions on location, form and the use of resources and institutions.”\textsuperscript{37}

Moreover, entrepreneurship can arise in different contexts\textsuperscript{38} and in different types of businesses and firms including all sectors.\textsuperscript{39} It covers the motivation and capacity of a person independently or inside an organization to identify an opportunity with the target to generate new value and economic success.\textsuperscript{40} The Commission of the European Communities\textsuperscript{41} argues that “Entrepreneurship is the mindset and process to create and develop economic activity by blending risk-taking, creativity and/or innovation with sound management, within a new or an existing organization.”\textsuperscript{42}

An additional central term definition of entrepreneurship according to the Business Dictionary is:

“The capacity and willingness to develop, organize and manage a business venture along with any of its risks in order to make a profit. The most obvious example of entrepreneurship is the starting of new businesses.”\textsuperscript{43}

\textsuperscript{34} Drucker (1985)  
\textsuperscript{35} Drucker (1985, p. 30)  
\textsuperscript{36} Wennekers and Thurik (1999, p. 27)  
\textsuperscript{37} Wennekers and Thurik (1999, p. 46)  
\textsuperscript{38} Commission of the European Communities (2003, p. 5)  
\textsuperscript{39} Commission of the European Communities (2003, p. 6)  
\textsuperscript{40} Commission of the European Communities (2003, p. 5)  
\textsuperscript{41} Commission of the European Communities (2003)  
\textsuperscript{42} Commission of the European Communities (2003, p. 6)  
\textsuperscript{43} WebFinance Inc. (2018)
Due to the fact, that this Master’s Thesis analyzes the effectiveness of EE at universities with a focus on the impact levels, specific and additional definitions of the term entrepreneurship seems fundamental. The most commonly used definitions of entrepreneurship in general and which at the same time look on the focus of this work, namely on the impact level of results, are the following ones:

- “The creation of new enterprise…;
- …the creation and emergence of new organizations…;
- …the process by which individuals – either on their own or inside organizations – pursue opportunities without regard to the resources they currently control;
- alertness to new opportunities…;
- …identification, evaluation and exploitation of opportunities…;
- …judgmental decision-making under uncertainty…;
- …and the creation of new economic activity….”

The definitions of entrepreneurship above were chosen and extracted from the paper “Assessing the Impact of Entrepreneurship Education – From ABC to PhD”, which fit to the theme of this Master’s Thesis and constitute, on the one hand, the vocational and outcome side like new venture creation or self-occupation and on the other hand, the behavior side like taking actions and reconsidering them.

Concerning all these definitions of entrepreneurship, an essential part in the rear of the term plays the person who is the creator and leading actor of the business. Such an individual is defined as an entrepreneur. The definitions of entrepreneurship are closely related to the characteristics of an entrepreneur, and due to that linkage between these two terms, it is important to define as well the item entrepreneur and for what it stands for.

Filion describes that the definition of the term entrepreneur should consist at the minimum of six elements which are innovation, opportunity recognition, risk, action, use of resources and added value. Putting together these elements: “An entrepreneur is an actor who innovates by recognizing opportunities; he or she makes moderately risky

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44 Moberg (2014, pp. 16–17)
45 Moberg (2014, p. 17)
46 Papulová and Papula (2015, p. 515)
47 Papulová and Papula (2015, p. 515)
49 Filion (2008, p. 8)
decisions that lead into actions requiring the efficient use of resources and contributing an added value."\textsuperscript{50}

The Commission of the European Communities\textsuperscript{51} exposes that an entrepreneurial attitude of people includes "…a readiness to take risk and a taste for independence and self-realisation".\textsuperscript{52} Further on, for them "Entrepreneurship is about people…", which they define as entrepreneurs, and about "…their choices and actions in starting, taking over or running a business, or their involvement in a firm’s strategic decision-making".\textsuperscript{53}

According to the literature, there exist often no clear and single definition of an entrepreneur and for what it truly stands for, because it often depends on the viewpoint and the research focus of the person who creates the definition.\textsuperscript{54} However, Filion outlines the domain of entrepreneurship with the assertion that "…studies entrepreneurs, entrepreneurial actors and entrepreneurial environments."\textsuperscript{55} Moreover, based on the diverse definitions of entrepreneurship discussed in this section, the following inference can be derived, which outlines the most important terms once again:

- "Entrepreneurs are those persons (business owners) who seek to generate value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets."\textsuperscript{56}
- "Entrepreneurial activity is the enterprising human action in pursuit of the generation of value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets."\textsuperscript{57}
- "Entrepreneurship is the phenomena associated with entrepreneurial activity."\textsuperscript{58}

2.1.2. Entrepreneurship Education

EE is an essential part of this Master’s Thesis because of the evaluation of EE at universities. Therefore defining the term EE seems apart from the term entrepreneurship necessary for this work.

\textsuperscript{50} Filion (2008, p. 8)
\textsuperscript{51} Commission of the European Communities (2003)
\textsuperscript{52} Commission of the European Communities (2003, pp. 5–6)
\textsuperscript{53} Commission of the European Communities (2003, p. 5)
\textsuperscript{54} Filion (2008, p. 8)
\textsuperscript{55} Filion (2008, p. 10)
\textsuperscript{56} Ahmad and Seymour (2008, p. 14)
\textsuperscript{57} Ahmad and Seymour (2008, p. 14)
\textsuperscript{58} Ahmad and Seymour (2008, p. 14)
In the history, many educators had the opinion, that entrepreneurship could be taught easily. For them, entrepreneurship was a kind of skill set, which a person gain trough several years of doing. Nevertheless, after some years the analysis and reflection of EE showed, that entrepreneurship cannot be taught, whereas experience reached more significance. Names like Bill Gates, Steve Jobs or Debbie Fields have no university degree but are all successful in their business and as entrepreneurs, which underlines, that at that time the professional experience was more important than education. So, on the one hand, authors argued that education is more crucial for an entrepreneur while on the other hand experience should be more vital for starting a successful venture. This kind of conflict has led to a rich amount of different collaborative educators, like entrepreneurs, academically qualified persons, investors or professionally qualified people, who all figured out that EE is essential.\textsuperscript{59} Due to that, the first entrepreneurial course was taught at the Business School of Harvard in the year 1947 and from that point of time the importance and size of EE enhanced significantly.\textsuperscript{60}

The article “Evaluation of EE: planning problems, concepts, and proposals for evaluation design”, from Norbert Kailer\textsuperscript{61} underlines the importance to increase the number of start-ups and the success of businesses for the economy and the labor market globally. He also highlights to improve the support for young entrepreneurs, because several studies show that there exists a strong connection between entrepreneurial competencies and knowledge and the economic success of new business ventures. Moreover, a lot of investments of the public have given rise to an enormous growth of the supply side of different forms of training, coaching or financial aspects of nascent entrepreneurs or new enterprises. Considering all those aspects, for Kailer “Entrepreneurship education is a growth industry itself” and “…entrepreneurship is the fastest growing discipline at universities”.\textsuperscript{62} Other scholars as well figured out that the interest in EE increased dramatically in the recent years and as already mentioned above, EE is a booming issue. However, EE still cannot keep pace with the process of the research done concerning entrepreneurship.\textsuperscript{63} There exists no single and absolute definition of EE\textsuperscript{64} but rather several approaches and findings from different authors who point out the meaning of EE and how EE can be defined.\textsuperscript{65}

\textsuperscript{59} Neck and Greene (2011, p. 56)
\textsuperscript{60} Hoppe (2016, p. 15)
\textsuperscript{61} Kailer (2007)
\textsuperscript{62} Kailer (2007, p. 221)
\textsuperscript{63} Moberg (2011, p. 6)
\textsuperscript{64} Kailer (2007, p. 221)
\textsuperscript{65} Rasmussen, Moberg, and Revsbech (2015, p. 7)
Stampfl and Hytti\textsuperscript{66} describe EE based on three different forms, which are “Learn to understand entrepreneurship”\textsuperscript{67}, “Learn to become entrepreneurial”\textsuperscript{68} and “Learn to become an entrepreneur”\textsuperscript{69} and which also occur in the objectives of EE programs.\textsuperscript{70} The first role is about persons who are interested in entrepreneurship and explore\textsuperscript{71} cerebrally for what entrepreneurship stands for and for what it is about.\textsuperscript{72} Thus, this form deals with the following questions: “What entrepreneurs do?”\textsuperscript{73}, “What is entrepreneurship?”\textsuperscript{74}, “Why are entrepreneurs needed?”\textsuperscript{75} and “How many entrepreneurs do we have?”\textsuperscript{76}.

Further on, the second form that defines EE is about individuals, who want to get to know and learn about entrepreneurship and entrepreneurial behavior in the working atmosphere and in which profession or career they fit best. The most important point is that people get the feeling of an entrepreneurial process and afterward gain knowledge and learn from the process. This knowledge from the learning process is reached through different types of team works like workshops or projects.\textsuperscript{77} The central question which discusses and defines the second rule is: “I need to take responsibility of my learning, career and life; how to do it?”\textsuperscript{78} Additionally, the third role views EE as a phase for arranging students with entrepreneurial activities. In the focus of this form are such EE programs, which include mini businesses or different workshops where experimenting and trying out how entrepreneurship works take the center stage.\textsuperscript{79} As a result, the last role and definition of EE relates to the following three questions: “Can I become an entrepreneur?”\textsuperscript{80}, “How to become an entrepreneur?”\textsuperscript{81}, “How to manage the business?”\textsuperscript{82}

Hisrich\textsuperscript{83} defines EE and the focus of EE programs as follows: “Generally, entrepreneurship education programs focus on three main areas: education including degree and non-degree courses and training, research, and practical applications.”\textsuperscript{84} The
author refers particularly to courses about entrepreneurship offered by universities, which focus on the one hand on skill identification and the practical and academic research, and on the other hand, on a wide variety of practical activities like guest lectures, seminars or enterprise development centers which cover the field of entrepreneurship and new venture creation.

In their article “A Taxonomy of EE: Perspective on goals, teaching and evaluation”, Rasmussen, Moberg and Revsbech, argue that a definition of EE should include all important aspects about the professional and educational context as well as a clear distinction between entrepreneurship and EE. The authors define EE in their article as: “Content, methods and activities that support the development of motivation, competence and experience that make it possible to implement, manage and participate in value-added processes”. Furthermore, there exist several different approaches and findings which underline the meaning and the aims of EE. As such aims, the authors mention the following ones:

- EE has the aim to train and qualify more people, who should become entrepreneurs.
- EE has the aim to provide students with skills, which should be or can be used in different situations of life like for personal or social developments.
- EE can lead to more innovation or creative understandings in other areas.

All in all, the objective of EE is to inspire people to start a new business. The main focus of EE is on how to develop or launch a new business and which processes should be considered when starting a business. EE also deals with the question of how to grow and manage a successful business and with what it can be reached. The extension of skills, competencies, and behaviors are essential for an effective business.

### 2.1.3. Higher Educational Institutions

In this section, the terms university and HEI are explained to provide an overview of the different definitions and to clarify what is meant by the terms. According to the Oxford Dictionary universities are a form of higher education institutions. They are described as
places where students study for their degrees. Moreover, academic research is done at universities.\textsuperscript{91}

Other definitions, for example, the definition from Meriam Webster are assisting the meaning from the Oxford Dictionary. For instance, Meriam Webster defines the term university as an institution for higher learning. Furthermore, this institution is providing facilitates for research and teaching, within this definition a clear division between undergraduates the bachelor’s degrees and graduates master’s degrees and doctorates is made.\textsuperscript{92}

Explicitly a university is defined as follows: “an institution of higher learning providing facilities for teaching and research and authorized to grant academic degrees; specifically: one made up of an undergraduate division which confers bachelor's degrees and a graduate division which comprises a graduate school and professional schools each of which may confer master's degrees and doctorates.”\textsuperscript{93}

In general, with higher education, it is meant a level beyond the secondary level of education\textsuperscript{94}. Therefore, this Master Thesis is focusing on entrepreneurship education at the tertiary level. In Europe, an available public database of tertiary education institutions does exist, which is offering data from 2456 higher educational institutions in Europe\textsuperscript{95}. The European Tertiary Education Register was able to conduct a systematic analysis of how the landscape of HEIs in Europe has changed\textsuperscript{96}. About on half of the existing HEIs in Europe were founded after 1976, and 182 HEIs were established before 1800. This data shows that this expansion of HEIs in Europe took part in the 1970s\textsuperscript{97}. The landscape of HEIs in the United States differs from the Europe ones. The institutions that were founded in the colonial era, before 1781, still have an essential meaning in the United States. A famous example of HEIs that are founded during that time are Harvard, Yale, Columbia, Brown, Princeton, Dartmouth, William and Marry, Pennsylvanian, and Rutgers.\textsuperscript{98}

Furthermore, the institutional framework of universities has changed during the last decade. This change is related to new technologies that enable universities to install

\textsuperscript{91} English Oxford Dictiononaires (2017, n.p)
\textsuperscript{92} Merriam-Webster (2017b, n.p)
\textsuperscript{93} Merriam-Webster (2017b, n.p)
\textsuperscript{94} Merriam-Webster (2017a, n.p)
\textsuperscript{95} European Commission (2017, n.p)
\textsuperscript{96} Benedetto (2017, p. 1)
\textsuperscript{97} Benedetto (2017, p. 2)
\textsuperscript{98} Thelin (2011, p. 1)
cross-border academic programs. Moreover, part of the difference is associated with the deregulation of higher education sectors by governments as well as the inclusion of new market-based policies to ensure a capable and efficient university system.\textsuperscript{99} Several studies are examining that the system of higher education in the US is the most market-oriented system worldwide.\textsuperscript{100}

According to Baum and Payea\textsuperscript{101} students attending an HEI are obtaining personal and financial benefits. Furthermore, the public, for instance, the state, is profiting from graduates of universities or HEIs.\textsuperscript{102} Benefits from individuals include:

- Higher earnings after graduation for all groups (racial/ethnic and gender);
- Increasing income gap between graduates from HEIs and high school graduates;
- Measurable benefits from gathered experiences at HEIs.\textsuperscript{103}

On the other hand, the society is profiting as well. These benefits are:

- The lower level of unemployment;
- Higher contribution to tax revenues;
- Lower smoking rates (better personal health);
- A higher level of civic participation.\textsuperscript{104}

Therefore, HEIs and universities have a positive impact on the individuals itself as well as on the whole society. As mentioned above, one main benefit for individuals is the higher earning. It is examined that college graduates are receiving on the average 73 percent more than individuals with secondary level graduation.\textsuperscript{105} Furthermore, a social benefit is, for example, the higher level of civic participation. On the average 29 percent of adults are acting as a volunteer in an organization. Among graduates from HEIs and universities, the percentage of volunteers rises to 46 percent.\textsuperscript{106}

\textsuperscript{99} Dill (2003, p. 136)
\textsuperscript{100} Dill (2003, p. 137)
\textsuperscript{101} Baum and Payea (2005, p. 7)
\textsuperscript{102} Baum and Payea (2005, p. 7)
\textsuperscript{103} Baum and Payea (2005, p. 7)
\textsuperscript{104} Baum and Payea (2005, p. 7)
\textsuperscript{105} Baum and Payea (2005, p. 9)
\textsuperscript{106} Baum and Payea (2005, p. 22)


2.2. Theoretical Frameworks

2.2.1. Kirkpatrick’s Four-Step Model

Kirkpatrick’s Four-Step Evaluation framework was created to evaluate training programs which support the determination of the effectiveness of such programs. In general, various aspects have to be considered at the planning and implementation stage of any training program.\textsuperscript{107} Moreover, there are three reasons for evaluating training programs. One reason is to identify improvement activities for future applications, a second reason for evaluation is to determine if a program should be stopped or continued. The third mentioned reason is to establish the existence of an existing training program.\textsuperscript{108} Through the review of the programs, tangible positive results can be displayed to the managers and assist them to decide, in times of downsizing which programs can be cut and which ones have a positive impact on the company.

Through the application of the framework trainers are enabled to communicate the effectiveness of their programs to the managers.\textsuperscript{109} To analyze the impact of a training programs four supportive level are determined. These levels are (visualized in Fig. 3):

1. Reaction
2. Learning
3. Behavior
4. Results\textsuperscript{110}

In the figure below (Fig. 3) the two levels that are marked yellow are evaluated during and at the end of the educational activity. And the two levels that are marked red are evaluated after the educational activity.

\textsuperscript{107} Kirkpatrick and Kirkpatrick (2006, p. 3)
\textsuperscript{108} Kirkpatrick and Kirkpatrick (2006, p. 19)
\textsuperscript{109} Kirkpatrick and Kirkpatrick (2006, p. 20)
\textsuperscript{110} Kirkpatrick and Kirkpatrick (2006, p. 21)
With these four levels, trainers can evaluate their programs step by step, whereby each level is necessary and has an impact on the next level. Moreover, moving from one level to another the process is becoming more time-consuming and complicated. However, it is providing valuable information. Trainers have to consider all four levels to get adequate results and should not leave out one level to accelerate the evaluation process. It is mentioned that all levels are equally relevant for the evaluation process. Therefore, trainers should start the evaluation process by taking into account the desired results which have to be matched with the expectation of the managers. Through the involvement of the managers, trainers convey them a feeling of ownership which can help to achieve support from the managers. As a next step, the trainers have to determine what skills, attitudes, and knowledge is leading to their desired outcomes. Finally, the results have to be presented by the trainers. In this chapter, the four levels that are enabling an evaluation of training programs, are examined in detail. Moreover, this framework is used for the systematic literature in this Master Thesis, whereby the focus on the fourth level.

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111 Source: Own graphical presentation
112 Kirkpatrick and Kirkpatrick (2006, p. 21)
113 Kirkpatrick and Kirkpatrick (2006, p. 26)
2.2.1.1. Reaction

Evaluation of the response is necessary to answer the question to what extent the participants believe that the training program is relevant to their job, favorable and engaging. It is similar to the evaluation process of the satisfaction of consumers. Measuring the reaction is necessary because if participants are not satisfied trainers must react on that. Otherwise, trainees will not be motivated to learn. Moreover, a worse reputation through a worse word-to-word by former participants can be avoided. Through happiness sheets, the effectiveness of training programs can be identified, and potential options for improvement can be derived from it as well.114

Four main reasons for evaluating the reaction are examined. First, through the happiness sheets, valuable feedback with suggestions and comments for improvements are generated. As a second reason, it is mentioned that trainees get the information that their trainers are interested in them, are here to help them and are willing to improve themselves and their programs. Further, quantitative data is generated, that can be displayed to managers and other interested or involved persons. Moreover, trainers can use the generated quantitative information to establish performance standards for future training programs. Therefore, getting feedback from trainees is essential, mostly reaction sheets or happiness sheets are used for the evaluation. However, some of them are not effective. Hence, some guidelines are available to ensure maximum benefit from the leaves.115 These guidelines are:

- Determination of desired results
- Generating quantitative results
- Foster written suggestions and comments
- Ensure 100 percent response (immediate)
- Ensure honest answer
- Development of acceptable standards
- Measuring against standard and act
- Communicate reaction as appropriate116

Applying these guidelines will help trainers to maximize their benefits from the happiness or reaction sheets.117

114 Kirkpatrick and Kirkpatrick (2006, p. 27)
115 Kirkpatrick and Kirkpatrick (2006, p. 27)
116 Kirkpatrick and Kirkpatrick (2006, p. 28)
117 Kirkpatrick and Kirkpatrick (2006, p. 28)
The first guide deals with the determination of desired results. Hence, trainers have to define what they want to measure. In each training program, it is essential to get reaction to the trainers as well as to the subject. However, it is crucial to separate this two parts in the reaction sheets. Additional to this information trainers can ask their trainees about the facilities, the handouts, the meals, the schedule and so forth.\footnote{Kirkpatrick and Kirkpatrick (2006, p. 28)}

The next guideline proposes to use a form of a questionnaire that generates quantitative data. Typically, each trainer prefers different types of questionnaires; some tend to use open questions others are preferring checking boxes. According to this framework, the ideal way is generating the maximum information with the minimum amount of time.\footnote{Kirkpatrick and Kirkpatrick (2006, p. 28)} Therefore, Kirkpatrick's evaluation model is offering four exemplary reaction sheets that can be used by the trainers.\footnote{Kirkpatrick and Kirkpatrick (2006, p. 29)}

Furthermore, trainers should encourage written comments from the participants. Through these comments, a conclusion of the reason for trainees' reaction can be drawn. Moreover, potentials for improvements can be identified from these additional comments.\footnote{Kirkpatrick and Kirkpatrick (2006, p. 34)} It is suggested that the evaluation sheets should not be passed out at the end of the program because then people tend to leave the layers blank. Hence, including the evaluation in the program, and handing out the evaluation sheets during the course, can lead to written comments from the participants. Another possibility would be to handle out the evaluation sheets right at the beginning of the program and to empathize within the program on the importance of these comments.\footnote{Kirkpatrick and Kirkpatrick (2006, p. 35)}

Another guideline for the reaction level of this framework, it to get 100 percent of response immediate. That means that trainers should ensure, that they get the feedback from the participants after they are leaving the room. It is not suggested to send them the evaluation sheets via e-mail with the intention that the participants can send them back when they have finished the evaluation. One reason, for this, is that some participant will not send it back, and another reason is that is not a relevant identification of the reaction of the whole course.\footnote{Kirkpatrick and Kirkpatrick (2006, p. 35)}
Getting honest response from the participants is important as well. To fulfill this guideline feedback sheets should not be signed by the participants or personalized in another way. Therefore, the feedback sheets should be collected together to ensure that the feedback is anonymous. Otherwise, the likelihood that participants will not give an honest response will be higher.\textsuperscript{124}

Developing acceptable standards is another guideline of the reaction level. This guideline means that a numerical tabulation should be used for the feedback sheets. For example, a five-point scale (5= excellent; 4= very good; 3= good; 2= fair; 1= poor).\textsuperscript{125} Various other, standards can be developed from trainers, however, they have to be numerical.\textsuperscript{126} After generating these standards, different aspects of the program should be evaluated and then compared with the predefined standards. If the standards are not met, an appropriate reaction is necessary, like changing the facilities, the objectives or to modify the whole situation. Other possibilities would be to accept the unsatisfactory situation or to change the standards.\textsuperscript{127}

The last guideline is to communicate the results, of the feedback sheets. Usually, in companies, the Human Resource department or other interest departments want to have access to the generated feedback. If this is the case, trainers have to show them the feedback sheets or at least provide a summary of the results.\textsuperscript{128}

Summing up, measuring the reaction of course participants is vital because mainly decision of top-managers to quit or support the training programs are depending on the feedback sheets. Therefore, getting tangible data that can be displayed to the managers is necessary.\textsuperscript{129}

2.2.1.2. Learning

Evaluation learning is the second level of Kirkpatrick's Evaluation model. In this level, learning is measured, whereby it is said, that a trainer can teach three points: attitudes, knowledge, and skills. Measuring learning is relevant because unless one of the three learning objectives are accomplished, there will be no change in behavior (see. level 3). However, if solely the change in behavior would be measured, and there is no change,
the conclusion that no learning took place would be drawn. Therefore, it is necessary to evaluate the learning as well. Otherwise, it can be overseen that learning took place, but for example, because of the anxiety of the participants, no behavior took place. Hence, in this case, the inference of no change in behavior means that no learning took place would be wrong.\textsuperscript{130}

The framework is providing guidelines for the learning level that trainers can follow. These guidelines are:

- Application of a control group (if practical)
- Evaluation of skills, knowledge, and attitudes at the beginning at the end of the program
- Use a paper-and-pencil test to evaluate knowledge and attitudes
- Use a performance test for evaluating skills
- Ensure a response rate of 100 percent
- Take appropriate actions\textsuperscript{131}

The first guideline at this level is to use a control group. For the evaluation of a training program, a control group would be a group that has not attended the training program. The other group who participated in the course is called in this framework experimental group. A control group is used to get evidence that change took place, because of the training program. Using a control group is not practical in small companies, where one training program exists, for example, all supervisors are trained together. However, in larger sized companies, which are offering more training programs and no simultaneous training of all supervisors took place, the usage of a control group is practical. If a control group is used, is has to ensure that the experimental group and the second used group are equal in all critical characteristics.\textsuperscript{132}

The next guideline is to evaluate skills, knowledge, and attitudes at two times. It is suggested to assess this at the beginning and at the end of a training program to identify if learning has taken place. For evaluation change in attitudes or increase in knowledge, a paper-and-pencil test can be used.\textsuperscript{133} This part of the evaluation of learning process is necessary to analyze the effectiveness of a program. If no improvement in knowledge or

\textsuperscript{130} Kirkpatrick and Kirkpatrick (2006, p. 42)
\textsuperscript{131} Kirkpatrick and Kirkpatrick (2006, p. 43)
\textsuperscript{132} Kirkpatrick and Kirkpatrick (2006, p. 43)
\textsuperscript{133} Kirkpatrick and Kirkpatrick (2006, p. 44)
change in attitudes can be examined, it can be expected that there will be no or less change in behavior as well.\textsuperscript{134} Moreover, through a performance test the skills, that have increased or not during the program, can be evaluated. Whereby, the evaluation of qualifications is useful after finishing the training program.\textsuperscript{135}

As in level 1 (reaction) getting 100 percent response from the groups is required at this level as well. If this is not possible, trainers have to select a sample that is statistically representative for the entire group.\textsuperscript{136} Finally, instructors have to take appropriate actions out of the results at this level. That means that trainers should not blame the participants for not learning. Instead, instructors have to take steps to become more efficient.\textsuperscript{137}

2.2.1.3. Behavior

The third level of Kirkpatrick's Evaluation Model is the behavior level. Measuring the behavior is more challenging than evaluation reaction and learning. One reason is that a change in behavior cannot be predicted. Further, a change can only take place if former participants have the opportunity to change. Moreover, it can occur that participants are not applying, for several reasons, what they have learned in the course.\textsuperscript{138}

The guidelines for the behavior level are as follows:

- Application of a control group (if practical)
- Allow time for a change in behavior
- Evaluation at the beginning and the end of a program
- Survey and/or interviews
- Get 100 percent response (or using a representative sample)
- Repeat the evaluation
- Keep in mind cost versus benefits\textsuperscript{139}

Using a control group can give evidence that change in the behavior of the experimental group is related to their participation in a program.\textsuperscript{140} Whereby, as mentioned above, the control group has to be equal in critical characteristics. Otherwise a comparison is not meaningful.\textsuperscript{141} Allowing time for a change is the next provided guideline. That means that

\textsuperscript{134} Kirkpatrick and Kirkpatrick (2006, p. 46)
\textsuperscript{135} Kirkpatrick and Kirkpatrick (2006, p. 49)
\textsuperscript{136} Kirkpatrick and Kirkpatrick (2006, p. 49)
\textsuperscript{137} Kirkpatrick and Kirkpatrick (2006, p. 50)
\textsuperscript{138} Kirkpatrick and Kirkpatrick (2006, p. 52)
\textsuperscript{139} Kirkpatrick and Kirkpatrick (2006, p. 53)
\textsuperscript{140} Kirkpatrick and Kirkpatrick (2006, p. 53)
\textsuperscript{141} Kirkpatrick and Kirkpatrick (2006, p. 54)
evaluating behavior makes no sense until trainees had the opportunity to apply new behavior. Therefore, the instructor should plan some time, before evaluating level 3.  

At the planning stage of a training program, it is necessary to determine the pursued behavior of the participant after finishing the course. At the beginning of the course, the behavior of the trainees can be evaluated. After finishing the program, the behavior of the participants is measured again, to examine if it has changed or not.

The next guideline suggests surveying or interviewing persons who know the behavior. That means that at least one of the following persons should be interviewed and/or surveyed: trainees, their supervisors, their subordinates, or others who are familiar with the behavior.

Getting 100 percent response, therefore, to interview all trainees is a purposely possible. However, at this level, selecting typical trainees for an interview that are representative for the whole course group is a suggested option as well. Another possibility would be to interview that person who did not change the behavior and to analyze why that particular person differs from the group. Furthermore, repeating the evaluation is necessary. In this framework, no exact time for the repetition is given. However, it is suggested to do the first evaluation of behavior after two to three months and to repeat it after about six months.

The last guideline at this level is to keep in mind costs versus benefits. With this, it is meant to consider the costs of a training program with regard to the benefits out of it, as it is made with any other investment as well. In many organizations, the time trainees and trainers within the company spend time on it is a typical considered matter of expense. Additional costs could be for example the honor of extern instructors or seminars. Benefits derive from changes in behavior and the final result of it.

### 2.2.1.4. Results

The resulting level is the most crucial level of the evaluation framework. Further, it is the most complicated part of this framework to analyze the outcome of a training program.
This phase enables an organization to determine if the changes in behavior are efficient for the cooperation.\footnote{Kirkpatrick and Kirkpatrick (2006, p. 69)} Further, this level is complementing the whole evaluation process. Nevertheless, it can be divided into several sub-steps of evaluation. For example, identified categories are the ultimate value, business results and return on investment.\footnote{Dočekal and Dvořáková (2015, p. 3748)} Kirkpatrick's evaluation framework is providing for this level guidelines as well. These guidelines are:

- Use a control group (if practical)
- Allow time to achieve results
- Evaluation at the beginning and the end of a program
- Repeat the evaluation
- Be satisfied with the evidence\footnote{Kirkpatrick and Kirkpatrick (2006, p. 65)}

As in levels reaction, learning and behavior using a control group is a useful method to analyze if changes occur because of a training program or not, is highly relevant at the result level as well. In this level, the same two reasons for using a control group are mentioned.\footnote{Kirkpatrick and Kirkpatrick (2006, p. 65)} However, how a control group can be defined and why it is necessary is mentioned in the level before and will therefore not examined at this level in detail.

Another guideline at the result level is to allow time to achieve results. Therefore, to measure or to evaluate the obtained results immediately after finishing a training program is not recommended. In this framework, it is said that trainers have to allow time that changes can take place and then measure the results. However, no exact time span how long trainers should wait is given, because in many cases it depends on characteristics of the training programs.\footnote{Kirkpatrick and Kirkpatrick (2006, p. 66)}

Furthermore, the framework recommends conducting the evaluation process at two points of time. The judgment of the program at the beginning and then repeating it at the end is recommended. That is suggested at the behavior level as well.\footnote{Kirkpatrick and Kirkpatrick (2006, p. 66)} The next guideline dealing with the repetition of the evaluation at the appropriate time is implemented in this framework because changes can occur at any time. Therefore, an
organization has to decide how often, and at which points of time they want to repeat the evaluation.\textsuperscript{156}

The next guideline is considering the cost versus benefits. In general, to evaluate this at level 4 is less than at level 3 (change in behavior). Typically. Relevant figures are through the whole evaluation process generated and therefore, available for the trainers. However, at this point, it is mentioned that measuring the effectiveness of a training program regarding the ROI (return on investment) is not expedient. Moreover, the money spent on evaluation of training programs should not exceed the benefits. Hence, the right balance of costs versus benefits is recommended, which means that the more beneficial a training program is more resources can be used for it.\textsuperscript{157}

The last guideline at this level is considering the expected evidence from the managers.\textsuperscript{158} Regarding an appropriate evaluation, trainers should know about the expectation of their supervisors. Otherwise, it could happen that trainers are not achieving reasonable evidence for their managers. Consequently, they will not be satisfied with the given evidence. Hence, to avoid this scenario, the expectations have to be determined.\textsuperscript{159}

Summing up all four levels of Kirkpatrick’s evaluation framework are equally relevant. At level one, the focus is primarily on the satisfaction of the participants, trainers and the organization.\textsuperscript{160} Typically, questionnaires are used that are given to the participants at the end of the program. The second level is dealing with the evaluation of learning. Therefore, it has to be examined what the trainees have learned at the end of each program, like new facts or techniques. The frequent technique of gathering this information are exams. The next level is evaluation the behavior of the participants, with the focus on changes in that. Hence, this level is examining if trainees changed their behavior at their workplaces because of the training program. Observation of former participants or interviews with them is a recommended tool at this level. The fourth level is dealing with the evaluation of the results. Tangible or measurable outcomes of a training program are targeted. Therefore, at this level, the impact on the company level is analyzed. Possible outcomes can be increased sales, improvement of quality or cost reduction.\textsuperscript{161}

\textsuperscript{156} Kirkpatrick and Kirkpatrick (2006, p. 67)  
\textsuperscript{157} Kirkpatrick and Kirkpatrick (2006, p. 67)  
\textsuperscript{158} Kirkpatrick and Kirkpatrick (2006, p. 67)  
\textsuperscript{159} Kirkpatrick and Kirkpatrick (2006, p. 68)  
\textsuperscript{160} Kailer (2007, p. 232)  
\textsuperscript{161} Kailer (2007, p. 233)
In this Master’s Thesis, the impact of entrepreneurship education on higher education is evaluated based on this framework. Whereby, the focus is on measurable outcomes. Therefore, the results of this Master’s Thesis are based on level four, evaluation of results.

2.2.2. CIPP Model

This subsection exhibits the Context-Input-Process-Product (CIPP) Evaluation Model, which is a framework for directing the evaluation of different programs, systems, institutions, personnel, companies or products. The model was evolved in 1960 with the reason for improving and reaching accountability, especially in school programs in the US. In the beginning, the primary focus was to advance the teaching and learning side in downtown schools, yet through the years the model devised more to an educational program, not only in the United States but also in the whole world. The model had been applied in many different sectors like schools, universities, businesses, individual teachers and other service which want to enhance their services.\(^{162}\)

The name of the model, CIPP, emerged through the assembly of the first letters of the four core concepts of the model, which are:

- Context;
- Input;
- Process;
- Product evaluation.\(^{163}\)

Zhang et al.\(^{164}\) expose that the model “…is configured especially to enable and guide comprehensive, systematic examination of social and educational projects that occur in the dynamic, septic conditions of the real world…” In their article “Using the Context, Input, Process and Product Evaluation Model (CIPP) as a Comprehensive Framework to Guide the Planning, Implementation, and Assessment of Service-learning Programs” the authors mention that this model for evaluating EE has the objective to determine improvements for specific project issues.\(^{165}\) Hence, they figured out that the framework “…is…uniquely suited for evaluating emergent projects in a dynamic social context”.\(^{166}\)

\(^{162}\) Stufflebeam (2003, p. 31)
\(^{163}\) Stufflebeam (2003, p. 31)
\(^{164}\) Zhang et al. (2011, p. 61)
\(^{165}\) Zhang et al. (2011, p. 62)
\(^{166}\) Zhang et al. (2011, p. 62)
Comprising, the main function of the evaluation model is “…not to prove, but to improve”.

In the next paragraphs, the general schema and the meanings of the four different types of evaluation of the CIPP Evaluation Model will be discussed. Fig. 4 illustrates the whole model with its various components and its relations between the elements.

The model (see Fig. 4) represents three different circles including the inner circle, the circle which encompasses the inner circle and the outer circle. The inner circle displays the core values which are essential for the beginning of evaluation, and thus, the original term of this model and of evaluation is value. Next, the circle, which surrounds the core values, concludes four evaluative elements that are related to the program, and which are designated as goals, action, outcomes, and plans. The outer circle consists of the four main components of evaluation, which have been already mentioned above. Each component in this circle is associated with a specific element of evaluation from the middle circle.

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167 Stufflebeam (2003, p. 31)
168 Source: Own graphical presentation on the basis of Stufflebeam (2003, p. 33)
169 Stufflebeam (2003, p. 32)
170 Stufflebeam (2003, p. 33)
171 Stufflebeam (2003, p. 32)
Moreover, the regular arrows display, that there exists a relation between the core values and the evaluative elements. So, a foundation of core values is fundamental, that then the four peculiar elements can be deduced. Such core values are, for example, human rights, use of resources in an efficient way or the safety of products.\textsuperscript{172} Further on, the double arrows show that there is a mutual link between each of the elements in the middle circle and each of the components of evaluation in the utter circle. An example of a mutual link between these two circles is presented by the goal element and the context component. For instance, the function of determining goals increase the issue for a context evaluation and which in return generates useful information to confirm or advance the goals.\textsuperscript{173}

As shown in Fig. 4 the key components or types of evaluation of this model are context, input, process, and output. A short description and an overview of the main objectives of these four types are given below.

The main objectives of the component \textbf{Context Evaluation} are:
- Identification of the target group and assessing their needs;
- identification of barriers to meet the needs;
- identification of resources to address the needs;
- evaluation if goals reflect the assessed needs;
- provision of demand orientied criteria for evaluating the outcome.\textsuperscript{174}

Due to these objectives, the emphasis of this evaluation type is on the identification of the needs of a target group and based on that identification, criteria for goals are determined, and outcomes can be evaluated.\textsuperscript{175}

The second type is \textbf{Input Evaluation} and the main direction “...is to help prescribe a course of action by which to make needed changes”.\textsuperscript{176} Objectives of this evaluation type are defined as follows:
- Identification and assessment of:
  - system capabilities;
  - alternate program strategies;
  - the design concerning the realization of the strategy;
  - plan of staff, budget, and schedule and

\textsuperscript{172} Stufflebeam (2003, p. 33)
\textsuperscript{173} Stufflebeam (2003, p. 32)
\textsuperscript{174} Stufflebeam (2003, p. 40)
\textsuperscript{175} Stufflebeam (2003, p. 39)
\textsuperscript{176} Stufflebeam (2003, p. 44)
Theoretical Background

Process Evaluation deals with the review of the plan implementation and includes the whole process documentation.178 The objectives of the evaluation type process are defined as:

- Identification or prediction of defects concerning the work plan;
- Identification or prediction of defects concerning the implementation;
- Provision of feedback due to managing the process;
- Recording and judgment of the work effort.179

The last component of the CIPP Evaluation Model is identified as Product Evaluation with the intention “...to measure, interpret, and judge an enterprise’s achievements.”180 Determined aims in this segment are:

- Collection of descriptions;
- Evaluation of outcomes;
- Relate these two objectives to goals, context, input, and process;
- Interpretation of their merit and worth.181

Summing up, the CIPP Evaluation Model is a framework, which consists of the evaluation types of context, inputs, process, and products and therefore, it can be used in different disciplines and sectors. It is a model, which can be adapted and is applicable in many different areas like for example in the basic school education, but also in higher education, which is the most important aspect when considering this Master’s Thesis.182

2.2.3. CAIPO Model

Another commonly used concept of evaluation is Easterby-Smith’s model, developed in Great Britain (GB) at the University of Lancaster, which emphasizes on management development,183 mainly on management training courses.184

177 Stufflebeam (2003, p. 40)
178 Stufflebeam (2003, p. 47)
179 Stufflebeam (2003, p. 40)
180 Stufflebeam (2003, p. 50)
181 Stufflebeam (2003, p. 40)
182 Stufflebeam (2003, p. 31)
183 Kailer (2007, p. 236)
184 Easterby-Smith (1986, pp. 45–46)
Easterby-Smith argues in his book that the framework is “…intended to distinguish a number of aspects of a programme or an event, each of which might form the primary focus for evaluation.” Therefore, the framework differentiates the following five elements or levels for evaluation: Context, administration, inputs, process, and outcomes and because of the initial letters of these five levels, the framework is known as the Context-Administration-Inputs-Process-Outcomes (CAIPO) Model. Apart from a short description of the evaluation levels below, Tab. 1 provides an overview of the focuses of the different features.

<table>
<thead>
<tr>
<th>Level of Evaluation</th>
<th>Focus of the Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>General conditions outside and beyond the program</td>
</tr>
<tr>
<td>Administration</td>
<td>Specific training and developmental activities and decisions surrounding them; Program management</td>
</tr>
<tr>
<td>Inputs</td>
<td>Methods and people who are integrated in management training or management development</td>
</tr>
<tr>
<td>Process</td>
<td>Processes in the training activities</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Person’s capability and implementation of the capability in the job</td>
</tr>
</tbody>
</table>

Tab. 1: Overview of the CAIPO Evaluation Model

The evaluation level Context investigates and finds out reasons why the program is funded and what role the various stakeholders play in this process. This phase is related to the goals of the stakeholders and figures out the function of the evaluation program. The Administration level describes Easterby-Smith as “…a catch-all phrase intended to include a focus on the mechanism of nomination, selection, and briefing before any training commences, and follow-up activities whether initiated by an immediate boss or part of some post-course evaluation.” Furthermore, evaluating the administration of training and development includes the kind of process which investigates grounds why managers are sent out to training courses. Additionally, the Inputs feature discusses the variety of teaching methods and their potential impact. Such type of inputs are

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185 Easterby-Smith (1986, p. 46)  
186 Easterby-Smith (1986, p. 46)  
187 Source: Own graphical presentation on the basis of Kailer (2007, p. 234)  
188 Easterby-Smith (1986, pp. 46–47)  
189 Easterby-Smith (1986, p. 48)
lectures, role plays, business games, tutors, lecturers, counseling and appraisal sessions that are evaluated through questionnaires where people are asked about the used methods and what they think of them. The fourth level is Process which approaches three different facets. The first facet evaluates the description and occurrences during a training or developmental activity. This phase builds the basis for the second aspect, which deals with the understanding of the experiences of the activities of the participants. The last aspect of this evaluation level is about the examination of specific dimensions and aspects of the process like finding out why conflicts between participants and tutors emerge during courses.\textsuperscript{190} Last but not least, the Outcomes level investigates the outcome of training and development courses. According to Easterby-Smith the outcomes “...distinguish between a person’s potential which may change, or be affected, by some form of training or development, and the implementation of that potential in the form of behaviour, relationships, attitudes at work, or elsewhere.” The outcomes of such persons capabilities can be divided on the one hand, into quantitative learning like knowledge and skills and qualitative learning as a matter of cognitive and affective behavior. On the other hand, it can be classified into the development like the ability to learn from experiences, confidence or self-efficacy.\textsuperscript{191}

Finally, this CAIPO Model is an evaluation design framework\textsuperscript{192} which possesses a significant role in the assessment of training courses because the concept can “...most easily be illustrated in relation to courses...”.\textsuperscript{193} A cornerstone of the decision process in the model is that the evaluators have to decide which level they prefer, how vital each level is to them and on what level their focus is on.\textsuperscript{194}

2.2.4. Storey’s Six Step Evaluation Model

The Six Step Model developed by David Storey at the University of Warwick in Great Britain is an evaluation model which focuses on the evaluation of Small and Medium Sized Enterprise (SME) programs.\textsuperscript{195} This model recognizes six approaches that are ranked from step one to step six concerning sophistication, whereby the first step exhibits

\textsuperscript{190} Easterby-Smith (1986, pp. 49–51)
\textsuperscript{191} Easterby-Smith (1986, pp. 53–54)
\textsuperscript{192} Easterby-Smith (1986, p. 45)
\textsuperscript{193} Easterby-Smith (1986, p. 60)
\textsuperscript{194} Kailer (2007, p. 233)
\textsuperscript{195} Kailer (2007, p. 230)
low sophistication, and the sixth step ends up with high sophistication.\textsuperscript{196} Fig. 5 illustrates these six steps and for what they stand for.

![Fig. 5: The six steps of Storey’s Evaluation Model\textsuperscript{197}]

Furthermore, Storey\textsuperscript{198} does not only discerns between the six steps, he as well distinguishes between the monitoring stage which comprises the steps one to three, and the evaluation stage which includes the steps four to six. The core difference between the two stages is, that the monitoring stage refers to the view of the participants, while the evaluation stage emphasizes on non-participants. Storey argues that the evaluation stage deals with “…attempts, demonstrating analytical rigor, to determine the impact of policy initiatives”. Monitoring, on the other side, refers to “…documents activity under the programme or reports participant’s perception of the value of the scheme.”\textsuperscript{199} In Fig. 6 this separation of the monitoring and evaluation stage with its corresponding steps is shown, followed by a short description and problems of the different steps.

\textsuperscript{196} Storey (1998, p. 12)
\textsuperscript{197} Source: Own graphical presentation on the basis of Storey (1998, p. 13)
\textsuperscript{198} Storey (1998, p. 12)
\textsuperscript{199} Storey (1998, p. 12)
Step 1 in the monitoring stage deals with the characteristics of take-up schemes. This step for example questions how many firms participated in a specific scheme, what size such firms have and which sectors and locations they pursue. Furthermore, it addresses the subject matter of money and expenditures spent on the schemes. Though, in step one also some problems can arise concerning the results. For instance, there are no results in the sense of policy effectiveness or about the achievement of the stated goals.

Step 2 stands for the participants of the course and their view and opinion about the schemes. For Storey this step “…seeks to obtain the viewpoint of the firms both on the effectiveness of the scheme and on its accessibility and which is associated with the main problem of this step, namely results of this step are often only related to policy delivery and not to policy effectiveness.

Step 3 is the last step in the monitoring stage and scrutinizes if the participation of a company in such initiative or course leads to additionality or if companies participate

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200 Source: Own graphical presentation on the basis of Storey (1998, p. 13)
201 Kailer (2007, p. 232)
202 Storey (1998, pp. 13–14)
203 Kailer (2007, p. 232)
204 Storey (1998, p. 16)
205 Storey (1998, p. 17)
anyway and without specific reasons or intended results. Additionality includes for example further jobs and provides differences for the firm concerning the performance.\(^\text{206}\)

A problem which often exists in this step is that firms provide specific answers for the questioners which they want to hear.\(^\text{207}\) Therefore, firms can proceed with their business without any problems, because if questioners assume such responses from firms,\(^\text{208}\) the quality of the answers cannot be checked and due to that, questioners have no more impact on it.\(^\text{209}\)

**Step 4** is the first step in the evaluation stage and compares "...the performance in firms assisted by the policy with those which have not been assisted. The inference is that any difference in the performance of the two groups can be attributed to the impact of the policy." Examples for such comparisons are employment growth, sales growth or survival rate, whereas employment and sales growth of assisted companies are compared with typical firms, and survival rates of assisted companies are compared with firms of the general economy.\(^\text{210}\) However, Storey mentions also a problem in this step, namely assisted firms are not typical of firms when considering the whole economy.\(^\text{211}\)

**Step 5** is about the comparison of assisted firms with matched firms, whereby matched firms are identified as the control group, and matching should influence the performance of such companies. This comparison takes place on the one side, based on four factors which are age, sector, ownership and geography, and on the other side over the same period of time. Moreover, step five is as well as the four steps before, associated with problems which are divided into technical and inferential problems. Technical problems can arise during perfect matching of all four criteria because concurrent matching of these factors can be difficult.\(^\text{212}\) Inferential problems concern sample selection bias which include that more motivated companies apply but differences in performance are more attributed to scheme and not to motivation.\(^\text{213}\)

The last step, **Step 6**, covers the comparison of assisted firms with matched firms and simultaneously take account of selection bias. For this approach, statistical techniques and random panels can be used.\(^\text{214}\) Nevertheless, Storey argues that problems can occur

\(^\text{206}\) Storey (1998, pp. 18–19)
\(^\text{207}\) Kailer (2007, p. 232)
\(^\text{208}\) Storey (1998, p. 20)
\(^\text{209}\) Kailer (2007, p. 232)
\(^\text{210}\) Storey (1998, p. 22)
\(^\text{211}\) Storey (1998, p. 23)
\(^\text{212}\) Storey (1998, pp. 25–26)
\(^\text{213}\) Kailer (2007, p. 232)
\(^\text{214}\) Storey (1998, p. 30)
with these approaches like for example the uncertainty of academics about statistical adaptation.\textsuperscript{215}

Summing up, the monitoring and the evaluation stage distinguish from each other because on the one hand, monitoring is more about the collection of information of firms participated in the scheme, and it seeks the opinion of the recipients. Whereas, on the other hand, the evaluation stage compares the performance of the participants with other companies or persons.\textsuperscript{216}

\textsuperscript{215} Storey (1998, p. 32)
\textsuperscript{216} Storey (1998, p. 35)
3. Methodology – Systematic Literature Review

This following systematic literature review should provide a systematic view of all current international research findings according to EE at universities and the focus on the impact. So, this scientific work strives to figure out what impact such education has on students.

At the beginning of this section, it will be discussed which kind of literature reviews exist and why a systematic review has been chosen for this work. Then a theoretical foundation of the research process is given before the review process including its different steps is described.

3.1. Why Literature Reviews?

As already mentioned in the title of this academic work, the research method which is used to evaluate EE at universities with a focus on the impact level is a literature review. The decision for conducting a systematic literature review is, that it “…can help practitioners…by summarizing large bodies of evidence and helping to explain differences among studies on the same question”.\(^{217}\) Tranfield, Denyer and Smart argue that “…the literature review process is a key tool, used to manage the diversity of knowledge for a specific academic inquiry.”\(^{218}\) Moreover, a systematic literature review grounds on strategies, which try to limit bias, and which include a broad search of all appropriate articles. From this wide variety of articles, precise selection criteria are determined which pick out the relevant articles for the review.\(^{219}\) The aim of such a review is often “…to enable the researcher both to map and to assess the existing intellectual territory…”\(^{220}\) and to set one or more specific research questions to generate further current existing knowledge.\(^{221}\)

In addition to it, a literature review as a research method can be divided in general into two types of reviews, which are:

- Systematic reviews or
- traditional or narrative reviews.\(^{222}\)

\(^{217}\) Cook, Mulrow, and Haynes (1997, p. 376)  
\(^{218}\) Tranfield et al. (2003, p. 208)  
\(^{219}\) Cook et al. (1997, p. 377)  
\(^{220}\) Tranfield et al. (2003, p. 208)  
\(^{221}\) Tranfield et al. (2003, p. 208)  
\(^{222}\) Tranfield et al. (2003, p. 209)
The key distinction between a systematic review and a narrative review lies on the extension of minimizing bias and errors of the two review methods. Therefore, if there exists the aim to provide an unbiased conclusion, more probably a systematic review method will be chosen. On the other hand, a narrative review method has the aim to provide a conclusion which is less likely an unbiased summary. According to Tranfield, Denyer and Smart, a system review distinguishes from a narrative review “…by adopting a replicable, scientific and transparent process…”, and has the objective “…to minimize bias through exhaustive literature searches of published and unpublished studies”. A systematic literature review is also associated with a plan and protocol of the decisions, processes, and conclusions of the reviewer. Furthermore, a narrative review is often broad in scope, whereas a systematic review often focuses on contributions to a specific field or question. Systematic reviews play among others a major role in providing an evidence-base, instead of narrative reviews which usually provide no evidence-base. Concerning the selection of articles, the systematic review implies a selection based on previously determined criteria, whereby the narrative review does not specify on criteria. Tab. 2 summarizes the most significant differences between these two literature review methods.

<table>
<thead>
<tr>
<th>Literature Review</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Feature</strong></td>
</tr>
<tr>
<td>Question</td>
</tr>
<tr>
<td>Selection</td>
</tr>
<tr>
<td>Sources and search</td>
</tr>
<tr>
<td>Inferences</td>
</tr>
</tbody>
</table>

Tab. 2: Differences of narrative and systematic reviews

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223 Cook et al. (1997, pp. 377–378)
224 Tranfield et al. (2003, p. 209)
225 Tranfield et al. (2003, p. 209)
226 Cook et al. (1997, p. 378)
227 Tranfield et al. (2003, p. 209)
228 Cook et al. (1997, p. 378)
229 Source: Own graphical presentation on the basis of Cook et al. (1997, p. 378)
To answer the research questions in this work, to figure out what impact EE at universities has on students and due to the above mentioned reasons with what a systematic literature review is featured, a systematic literature review seemed an essential scientific research method and was therefore chosen for this Master’s Thesis.

### 3.2. Research Process

For building a theoretical ground and a basic knowledge of a literature process, and as well get insights how a literature review can be conducted, at first a research process which consists of six steps is described in general according to the authors Machi and McEvoy.\(^{230}\) After this theoretical foundation the research design used for this work is presented. The structure of this research design follows the recommendations from Tranfield, Denyer and Smart.\(^{231}\)

#### 3.2.1. Theoretical Foundation

Machi and McEvoy\(^{232}\) describe the literature review in their book “The Literature Review” as “…an organized way to research the chosen topic”. This kind of organized way is determined as a research process, which includes different steps and where each step directs to a next step. Thus, conducting a literature review is described as a development process\(^{233}\) with the aim to better understand, to qualify and to answer the established research question.\(^{234}\)

The entire research process from Machi and McEvoy is depicted in Fig. 7 and includes the following six steps:

- Step 1: Selection of a topic;
- Step 2: Search the literature;
- Step 3: Develop the argument;
- Step 4: Survey the literature;
- Step 5: Critique the literature;
- Step 6: Write the review.\(^{235}\)

\(^{230}\) Machi and McEvoy (2012, pp. 4–6)  
\(^{231}\) Tranfield et al. (2003, p. 214)  
\(^{232}\) Machi and McEvoy (2012, p. 4)  
\(^{233}\) Machi and McEvoy (2012, pp. 4–5)  
\(^{234}\) Tranfield et al. (2003, p. 212)  
\(^{235}\) Machi and McEvoy (2012, p. 5)
A successful literature review process begins with the selection of a research topic (Step 1). The interest in a specific practical problem is often reflected in the research topic and the result of it. The most important point is that the interest statement of the topic is converted into a well-defined academic statement which guides the researcher to an appropriate academic discipline. So, the key tasks for developing a convenient topic are to determine the language, to specify the problem of interest and to draft the academic viewpoint. Moreover, helpful for retaining and explaining plans and ideas from this step is a journal, where the critical issues can be written down.

Searching the literature (Step 2) deals with searching for the data that is essential for the topic of the review. It contains only the data, which “…provide the strongest evidence to support the thesis.” Steps in this subcategory searching the literature are:

- Scanning and mapping the data;
- select and organize the data and
- document the data.
Furthermore, developing the argument (Step 3) is on the one hand about the logical classification of the findings and next on the other hand, about the argumentation and analysis of the cases and the findings. It is fundamental that the relevant data is at first organized and then elucidated what is already established about the topic.240

Surveying the literature (Step 4) outlines that the analyzation and organization of the data are necessary to present afterward the results concerning the current knowledge of the topic.241

The next step is the literature critique (Step 5), which construes the evidence found in step four. So, the cornerstone of this step is that the evidence warrants the statement of the thesis and analyses how the research question already can be answered with the current knowledge.242

Finally, the last step in the process of a literature review is writing the review (Step 6). The outcomes and findings of the review are shown in a document with the objective that the audience understands the delivered message of the research.243

All in all, as a conclusion of the theoretical basis of the diverse steps in a review process the authors define the result of a research process as:

“A literature review is a written document that presents a logically argued case founded on a comprehensive understanding of the current state of knowledge about a topic of study. This case establishes a convincing thesis to answer the study’s question.”244

3.2.2. Review Method

The objectives of this Master’s Thesis are the evaluation of EE at universities with focus on the impact level and to answer the defined research questions. To answer these questions and to generate a scientific overview of the topic impact of EE at universities with the focus on measurable outcomes, this Master’s Thesis follows the research method of a systematic literature review based on the methodology from Tranfield et al.245. This fundamental scientific activity246 emerged in the medical science247 and

240 Machi and McEvoy (2012, p. 6)
241 Machi and McEvoy (2012, p. 6)
242 Machi and McEvoy (2012, p. 6)
243 Machi and McEvoy (2012, p. 6)
244 Machi and McEvoy (2012, p. 4)
245 Tranfield et al. (2003)
246 Tranfield et al. (2003, p. 209)
247 Tranfield et al. (2003, p. 207)
ensured a review process which relies on structure, transparency, and traceability.\textsuperscript{248} In their article “Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review”, the authors provide three stages for the structure of a research process, which are planning, conducting and reporting the review (see Fig. 8).\textsuperscript{249}

\begin{figure}[h]
\begin{center}
\begin{tikzpicture}
\node (stage1) {Stage I:}
ode[below=of stage1] (stage2) {Stage II:}
ode[below=of stage2] (stage3) {Stage III:}
ode[below=of stage3] (stage4) {• Planning the review}
ode[below=of stage4] (stage5) {• Conducting the review}
ode[below=of stage5] (stage6) {• Reporting and Dissemination}
\end{tikzpicture}
\end{center}
\caption{Stages of the systematic literature review process\textsuperscript{250}}
\end{figure}

These phases are used for the conduction of the systematic review for this Master’s Thesis, and therefore, this literature review has been developed in the followed three steps (see chapters 3.2.2.1, 3.2.2.2, 3.2.2.3).

\subsection{3.2.2.1. Planning the Review}

The beginning of a systematic literature review is identified as the planning phase, which is subdivided into three phases (see Fig. 9), namely the identification for the need of a review, the preparation of a proposal for the review and the development of a review protocol.\textsuperscript{251}

\begin{footnotesize}
\begin{itemize}
\item\textsuperscript{248} Tranfield et al. (2003, p. 209)
\item\textsuperscript{249} Tranfield et al. (2003, p. 214)
\item\textsuperscript{250} Source: Own graphical presentation on the basis of Tranfield et al. (2003, p. 214)
\item\textsuperscript{251} Tranfield et al. (2003, p. 214)
\end{itemize}
\end{footnotesize}
Prior the first phase of the planning stage of the review is the development of a review panel, which seems useful for the whole process of conducting a scientific work. A review panel consists of persons who are familiar with the methodology and the theory of the theme.\textsuperscript{253} Such a panel “…should help direct the process through regular meetings and resolve any disputes over the inclusion and exclusion of studies”.\textsuperscript{254} In this Master’s Thesis the review panel consists of two people, who fulfill the tasks of the review panel and which was especially helpful for discussion of results or purification of obscurities. The planning stage begins with the identification of the need for a review and includes the definition and clarification of the scope of the research field associated with the formulated research questions. The refinement of the research process is also a part of this phase.\textsuperscript{255} The determination of the requisiteness of the literature review can be derived from the Problem Statement (chapter 1.1), whereas the identification of the scope of the research field (e.g., EE at universities and impact level) and the defined research questions can be deduced from chapter 1.2. Moreover, in the section 2.2.1, the focus of the research field is identified based on a theoretical model.

The second phase in this stage is about the preparation of a proposal for a review with the purpose to summarize and evaluate the relevance and the size of the existing literature. It is fundamental to delineate the topic in the literature and to derivate the gained insights from this literature.\textsuperscript{256} The summary and evaluation of the relevance of the existing literature has been taken place in parts of the Problem Statement (chapter 1.1), whereby the delimitation of the literature and the gained perceptions have been conducted based on the Evaluation Model described in chapter 2.2.1.

\textsuperscript{252} Source: Own graphical presentation on the basis of Tranfield et al. (2003, p. 214)
\textsuperscript{253} Tranfield et al. (2003, p. 214)
\textsuperscript{254} Tranfield et al. (2003, p. 214)
\textsuperscript{255} Tranfield et al. (2003, p. 214)
\textsuperscript{256} Tranfield et al. (2003, p. 214)
Furthermore, the third and last phase in this stage is about the development of a review protocol which “…is a plan that helps to protect objectivity by providing explicit descriptions of the steps to be taken.” According to this definition, the review protocol involves information like the research questions of the study, research criteria (keywords) which are relevant for the identification of the publications and as well criteria of inclusion and exclusion of the studies. Fig. 10 presents a review protocol concerning this systematic literature review.

257 Tranfield et al. (2003, p. 215)
258 Tranfield et al. (2003, p. 215)
Methodology – Systematic Literature Review

- Research questions (Chapter 1.2):
  - What are the main research findings regarding evaluation of higher EE with focus on the impact level?
  - Which short-term and long-term effects of higher EE with the emphasis on measurable impacts can be identified?
  - Which measurable impact indicators are frequently applied by authors/research institutions and take a main part in the ongoing scientific discussion?

- Determination of Keywords (Chapter 3.2.2.2.a):
  - Keyword Group 1
  - Keyword Group 2

- Identification of Research Results in three databases + Google Scholar (Chapter 3.2.2.2.a):
  - EbscoHost
  - Emerald
  - Science Direct
  - Google Scholar

- Selection of articles:
  - Criteria of inclusion and exclusion (Chapter 3.2.2.2)
  - Abstract screening
  - Define categories due to abstract screening

- Evaluation of articles:
  - Reading articles
  - Assign articles to the relevant categories

- Analysis of Results:
  - Descriptive Analysis (Chapter 4.1)
  - Content Analysis (Chapter 4.2)

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Fig. 10: Review protocol of the systematic literature review²⁵⁹

²⁵⁹ Source: Own graphical presentation
3.2.2.2. Conducting the Review

The second step is to conduct the planned literature review. Relevant research fields have to be identified, inclusion and exclusion criteria for the selection or articles have to be determined at this step. Further, the collect data has to undergo an assurance of quality. The following figure (Fig. 11) illustrates the next steps of the systematic literature review.

Fig. 11: Conducting stage of the systematic literature review

3.2.2.2.a Identification of Research Results

To conduct the systematic literature, review the electronic databases EBSCO, Elsevier (Science Direct) and Emerald were chosen. Moreover, Google Scholar was used to add relevant scientific articles that are not founded through the other databases. This step is necessary because grey literature like conference reports, dissertations or statistical reports are analyzing the research topic as well. The used databases in this Master Thesis’ are shown in the table below (Tab. 3).

<table>
<thead>
<tr>
<th>Database</th>
<th>Internet access</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBSCO</td>
<td><a href="http://www.ebsco.com">www.ebsco.com</a></td>
</tr>
<tr>
<td>Elsevier (Science Direct)</td>
<td><a href="http://www.sciencedirect.com">www.sciencedirect.com</a></td>
</tr>
<tr>
<td>Emerald</td>
<td><a href="http://www.emerald.com">www.emerald.com</a></td>
</tr>
<tr>
<td>Google Scholar</td>
<td>scholar.google.at</td>
</tr>
</tbody>
</table>

Tab. 3: Overview of used databases

Furthermore, for conducting a systematic literature review, the identification of relevant keywords was necessary. Through scanning research papers about the evaluation of entrepreneurship education at universities that are most cited, first relevant keywords

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260 Source: Own graphical presentation on the basis of Tranfield et al. (2003, p. 214)

261 Source: Own graphical presentation
could be identified. The identified keywords have been written down and are used as a basis to identify further keywords. Finally, two groups of keywords could be examined. These two groups are shown in Fig. 12.

Fig. 12: Identified keywords for conducting the systematic review

These two groups of keywords are used to formulate search queries for the selected electronic databases. Whereby, it is defined that at least one of the keywords has to mentioned in the title of the articles, and at least one of the keywords from group two has to be mentioned in the abstract of an article. This combination was selected because an adequate number of hits was gathered.

In the following table (Tab. 4) the query used in the electronic database EBSCO is displayed.

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Source: Own graphical presentation
Methodology – Systematic Literature Review

Tab. 4: Query EBSCO

TI ("entrepreneurship education" OR "tertiary education" OR "higher entrepreneurship education" OR "entrepreneurship at university" OR "entrepreneurship at higher educational institution" OR "higher education institution" OR "hei") AND AB ("effectiveness" OR "evaluation" OR "impact" OR "outcome" OR "start-up" OR "startup" OR "evaluation result" OR "organizational result" OR "economic performance" OR "economic growth" OR "entrepreneurial activity")

As it is examined in the table above (Tab. 4) at least one of the predetermined keywords out of group one has to be mentioned in the title (TI). Furthermore, at least one of the keywords from the second group has to be included in the abstract (AB). This is guaranteed by using the word OR in the search query. Moreover, the keyword groups are linked with the word AND. That means that articles that for example are fulfilling the first criteria namely having one of the keywords in the title but none of the keywords from group two in the abstract are excluded from the review and vice versa. Further, several limitations have been set within the database EBSCO. The first limitation is that sole articles are included if the full text is available. Moreover, the sources are limited to Academic Journals and Journals. The languages are limited to articles either written in English or German. Further, the search was scrutinized to the databases ERIC, Business Source Premium, Entrepreneurial Studies Sources and EconLit. Furthermore, the search is limited to articles published between the years 1990 and 2017. These exclusion criteria are in common with the overall defined inclusion and exclusion criteria that are applied in this Master’s Thesis (see. Tab. 17 & Tab. 18). Out of this research, 213 articles have been founded. After removing exact duplicated from the result, 155 articles are left.

Then the same combination of keywords was used to search for relevant articles in the database Science Direct. In the following table (Tab. 5) the used query is shown.

263 Source: Own graphical presentation
As it can be examined out of the query, the same procedure of searching was used in Science Direct as in the database EBSCO. The filter criteria open access and the period between the years 1990 to 2017 were selected. Moreover, the defined inclusion and exclusion criteria (Tab. 17 & Tab. 18) are applied. As a result, 23 articles have been identified.

The same procedure was applied within the database Emerald. Again, the search is limited to articles where the access is given. Further, the search is scrutinized to articles that are published between the years 1990 and 2017. The following table shows the query used in the database Emerald (Tab. 6)

Using this query in total 50 articles were found that met the determined criteria.

Summing up by using the same combination of keywords as well as the same inclusion and exclusion criteria within all three electronic databases (EBSCO, Science Direct, Emerald) in total 228 articles that fitting to the research topic of this Master’s Thesis have been identified.

Tab. 5: Query Science Direct

Tab. 6: Query Emerald

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264 Source: Own graphical presentation
265 Source: Own graphical presentation
To ensure an international state of research no geographical limitations of the search results was set. Moreover, this Master Thesis is focusing on English or German-speaking literature.

3.2.2.2.b Selection of Research Results

On the basis of two independently conducted literature research articles have been identified and selected. On the one hand, literature was searched in electronic databases, EBSCO, Elsevier, and Emerald, with the combination of two keyword groups. On the other hand, grey literature, report and other relevant articles are searched via an open literature research with Google Scholar. Considered literature are conference papers, reports, publication from universities, dissertations, statistical reports and scientific articles.

First, the database queries based on the combination of the two keywords groups (Fig. 12) within the chosen databases (Tab. 3) were used to select relevant articles. As mentioned in chapter 3.2.2.2.a, the queries were limited to the publication period and certain databases. In EBSCO the database query has been limited to the databases ERIC, Business Source Premium, Entrepreneurial Studies Sources and EconLit. Within the other two electronic databases used, no limitation regarding databases was set.

Second, relevant literature that was not identified within the first research process has been added via Google Scholar. Especially, statistical reports, publications from universities, dissertations and scientific articles were added. After the identification of relevant literature for this Master’s Thesis, the selection process started.

Based on the determined inclusion and exclusion (Tab. 17 & Tab. 18) articles that are not fulfilling the criteria are excluded from the literature review. As a first step, all the abstract from the identified articles have been read to exclude the ones where the content is not fitting to the research questions of the Master’s Thesis. Therefore, articles that are not focusing on the impact of entrepreneurship education at universities or at other tertiary educational institutions have been excluded. Moreover, articles that are not focusing on entrepreneurship education have been excluded from the sample. As a second step, the journal ranking of each journal was checked. In total, three different journal rankings have been considered:
The following conversion table (Tab. 7) was applied for the selection process of this Master’s Thesis:

<table>
<thead>
<tr>
<th>VHB Jourqual</th>
<th>ABS</th>
<th>JCR Impact Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4*</td>
<td>≥ 3</td>
</tr>
<tr>
<td>A</td>
<td>4*</td>
<td>≥ 2</td>
</tr>
<tr>
<td>B</td>
<td>3*</td>
<td>≥ 1,5</td>
</tr>
<tr>
<td>C</td>
<td>2*</td>
<td>≥ 0,7</td>
</tr>
<tr>
<td>D</td>
<td>1*</td>
<td>≥ 0</td>
</tr>
</tbody>
</table>

Tab. 7: Conversion rable of journal rankings

Journals that are rated below “C” of the German Academic Association for Business Research (VHB) “Jourqual 3” rating, or below “2*” of the British Association of Business Schools (ABS) “Academic Journal Quality Guide 2015”, or below 0,7 of the “Journal Citation Report (JCR) Impact Factors from Thomson Reuters, are not include in the sample. However, articles and reports that are fitting to the research questions and either are not ranked or have a lower ranking are included in the sample as well. A detailed analysis of the articles per journal ranking is displayed in the chapter 4.1 Descriptive Analysis.

After this first selection process an Excel – sheet was generated to code the left articles and analysis them based on the chosen research method. Moreover, the primary research objectives were analyzed. The detailed verification regarding the relevance of content was based on three criteria:

1. To ensure a high degree of representativeness selected studies have to focus on the impact of entrepreneurship education or entrepreneurship programs at universities or HEIs.

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267 VHB-JOURQUAL 3 (2015)
268 In Cites Journal Citation Reports (2016)
269 Source: Own graphical presentation on the basis of Bouncken, Gast, Kraus, and Bogers (p. 581)
270 Bouncken et al. (2015, p. 581)
2. The investigated impact or outcome has to be based on the entrepreneurship education. Hence, studies that are focusing on circumstance beyond entrepreneurship education are not included in the sample.

3. The investigated impact of entrepreneurship education in the studies has to meet the impact levels of Kirkpatrick’s Evaluation framework\textsuperscript{271}.

The following figure (Fig. 13) is displaying the described selection process of the identified articles and other relevant scientific work.

Fig. 13: Selection process of articles\textsuperscript{272}

\textsuperscript{271} Kirkpatrick and Kirkpatrick (2006)
\textsuperscript{272} Source: Own graphical presentation
Further, only studies that are empirical are included in the sample. Hence, reviews are excluded from this review. At the end through the literature review, on the basis of the determined inclusion and exclusion criteria, 87 research findings are included in the sample. The following table (Tab. 8) all included studied are listed in chronological order.

<table>
<thead>
<tr>
<th>N°</th>
<th>Author</th>
<th>Year</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fellhofer, K.</td>
<td>2017</td>
<td>The Power of Passion in Entrepreneurship Education: Entrepreneurial Role Models Encourage Passion?</td>
</tr>
<tr>
<td>2</td>
<td>Kailer, N., &amp; Hora, W.</td>
<td>2017</td>
<td>Entrepreneurial Intentions and Activities of Students at Austrian Universities: Global University Entrepreneurial Spirit Students’ Survey 2016</td>
</tr>
<tr>
<td>3</td>
<td>Sørensen, K. B., &amp; Davidsen, H. M.</td>
<td>2017</td>
<td>A Holistic Design Perspective on Entrepreneurship Education</td>
</tr>
<tr>
<td>4</td>
<td>Farhangmehr, M., Gonçalves, P., &amp; Sarmento, M.</td>
<td>2016</td>
<td>Predicting entrepreneurial motivation among university students: The role of entrepreneurship education</td>
</tr>
<tr>
<td>7</td>
<td>Lahn, L. C., &amp; Erikson, T.</td>
<td>2016</td>
<td>Entrepreneurship education by design</td>
</tr>
<tr>
<td>8</td>
<td>Maresch, D., Harms, R., Kailer, N., &amp; Wimmer-Wurm, B.</td>
<td>2016</td>
<td>The impact of entrepreneurship education on the entrepreneurial intention of students in science and engineering versus business studies university programs</td>
</tr>
<tr>
<td>10</td>
<td>Bell, R.</td>
<td>2015</td>
<td>Developing the next generation of entrepreneurs: Giving students the opportunity to gain experience and thrive</td>
</tr>
<tr>
<td>11</td>
<td>Fayolle, A., &amp; Gailly, B.</td>
<td>2015</td>
<td>The Impact of Entrepreneurship Education on Entrepreneurial Attitudes and Intention: Hysteresis and Persistence</td>
</tr>
<tr>
<td></td>
<td>Authors</td>
<td>Year</td>
<td>Title</td>
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<tr>
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<td>-----------------</td>
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<td>16</td>
<td>Man, T. W. Y., &amp; Farquharson, M.</td>
<td>2015</td>
<td>Psychological ownership in team-based entrepreneurship education activities</td>
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<tr>
<td>18</td>
<td></td>
<td>2015</td>
<td>Putting Entrepreneurship Education Where the Intention to Act Lies: An Investigation Into the Impact of Entrepreneurship Education on Entrepreneurial Behavior</td>
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<tr>
<td>19</td>
<td>Apergis, N., &amp; Fafaliou, I.</td>
<td>2014</td>
<td>The determinants of business start-ups in tertiary education: Evidence for Greece through a panel data approach</td>
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<tr>
<td>20</td>
<td>Daghbashyan, Z., &amp; Hårsman, B.</td>
<td>2014</td>
<td>University choice and entrepreneurship</td>
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<tr>
<td>23</td>
<td>Küttim, M., Kallaste, M., Venesaar, U., &amp; Kiis, A.</td>
<td>2014</td>
<td>Entrepreneurship education at university level and students’ entrepreneurial intentions</td>
</tr>
<tr>
<td>24</td>
<td>Lange, J., Marram, E., Jawahar, A. S., Yong, W., &amp; Bygrave, W.</td>
<td>2014</td>
<td>Does and entrepreneurship education have lasting value?</td>
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<tr>
<td>25</td>
<td>Mayer, I., Kortmann, R., Wenzler, I., Wettels, Á., &amp; Spaans, J.</td>
<td>2014</td>
<td>Game-Based Entrepreneurship Education: Identifying Enterprising Personality, Motivation and Intentions Amongst Engineering Students</td>
</tr>
<tr>
<td>26</td>
<td>Moberg, K.</td>
<td>2014</td>
<td>Assessing the Impact of Entrepreneurship Education: From ABC to PhD</td>
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<tr>
<td>27</td>
<td>Nasr, K. B., &amp; Boujelbene, Y.</td>
<td>2014</td>
<td>Assessing the impact of entrepreneurship education</td>
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<tr>
<td>28</td>
<td>Newbold, K. F., &amp; Erwin, T. D.</td>
<td>2014</td>
<td>The education of entrepreneurs: An instrument to measure entrepreneurial development</td>
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<td>Støren, A. L.</td>
<td>2014</td>
<td>Entrepreneurship in higher education: Impacts on graduates’ entrepreneurial intentions, activity, and learning outcome</td>
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<td>30</td>
<td>Burrows, K., &amp; Wragg, N.</td>
<td>2013</td>
<td>Introducing enterprise – research into the practical aspects of introducing innovative enterprise schemes as extra curricular activities in higher education</td>
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<td>31</td>
<td>Dehghanpour Farashah, A.</td>
<td>2013</td>
<td>The process of impact of entrepreneurship education and training on entrepreneurship perception and intention: Study of educational system of Iran</td>
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<td>32</td>
<td>Karlsson, T., &amp; Moberg, K.</td>
<td>2013</td>
<td>Improving perceived entrepreneurial abilities through education: Exploratory testing of an entrepreneurial self efficacy scale in a pre-post setting</td>
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<tr>
<td>33</td>
<td>McCrea, E. A.</td>
<td>2013</td>
<td>Adding to the Pedagogical Portfolio: Launching a Student Business in a Semester Course</td>
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<td>34</td>
<td>Noyes, E., &amp; Delgiannidis, L.</td>
<td>2013</td>
<td>Grasping Change: Visualizing International Technology Adoption for Entrepreneurship Education</td>
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<td>35</td>
<td>Poblete, C., &amp; Amorós, J. E.</td>
<td>2013</td>
<td>University Support in the Development of Regional Entrepreneurial Activity: An Exploratory Study from Chile</td>
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<td>36</td>
<td>Rae, D., &amp; Ruth Woodier-Harris, N.</td>
<td>2013</td>
<td>How does enterprise and entrepreneurship education influence postgraduate students’ career intentions in the New Era economy?</td>
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<td>37</td>
<td>Ulvenblad, P., Berggren, E., &amp; Winborg, J.</td>
<td>2013</td>
<td>The role of entrepreneurship education and start-up experience for handling communication and liability of newness</td>
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<td>Vanevenhoven, J., &amp; Liguori, E.</td>
<td>2013</td>
<td>The Impact of Entrepreneurship Education: Introducing the Entrepreneurship Education Project</td>
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<td>39</td>
<td>Volery, T., Müller, S., Oser, F., Naepflin, C., &amp; Rey, N.</td>
<td>2013</td>
<td>The Impact of Entrepreneurship Education on Human Capital at Upper-Secondary Level</td>
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<td>Z. Solesvik, M., Westhead, P., Matlay, H., &amp; N. Parsyak, V.</td>
<td>2013</td>
<td>Entrepreneurial assets and mindsets: Benefit from university entrepreneurship education investment</td>
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<td>Drummond, C. K.</td>
<td>2012</td>
<td>Team-Based Learning to Enhance Critical Thinking Skills in Entrepreneurship Education</td>
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<td>43</td>
<td>Elmuti, D., Khoury, G., &amp; Omran, O.</td>
<td>2012</td>
<td>Does Entrepreneurship Education have a Role in Developing Entrepreneurial Skills and Ventures’ Effectiveness?</td>
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<td>44</td>
<td>European Commission.</td>
<td>2012</td>
<td>Effects and impact of entrepreneurship programmes in higher education</td>
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<td>45</td>
<td>Gilbert, D. H.</td>
<td>2012</td>
<td>From chalk and talk to walking the walk: Facilitating dynamic learning contexts for entrepreneurship students in fast-tracking innovations</td>
</tr>
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<td></td>
<td>Authors</td>
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<td>Lean, J.</td>
<td>2012</td>
<td>Preparing for an uncertain future: the enterprising PhD student</td>
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<td>48</td>
<td>Rae, D., &amp; Woodier-Harris, N.</td>
<td>2012</td>
<td>International entrepreneurship education: Postgraduate business student experiences of entrepreneurship education</td>
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<tr>
<td>49</td>
<td>Sandhu, N., Hussain, J., &amp; Matlay, H.</td>
<td>2012</td>
<td>Entrepreneurship education and training needs of family businesses operating in the agricultural sector of India</td>
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<td>Tessema Gerba, D.</td>
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<td>The context of entrepreneurship education in Ethiopian universities</td>
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<td>Dutta, D. K., Li, J., &amp; Merenda, M.</td>
<td>2011</td>
<td>Fostering entrepreneurship: impact of specialization and diversity in education</td>
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<td>Ekpoh, U. I., &amp; Edet, A. O.</td>
<td>2011</td>
<td>Entrepreneurship Education and Career Intentions of Tertiary Education Students in Akwa Ibom and Cross River States</td>
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<td>Kirby, D. A., &amp; Ibrahim, N.</td>
<td>2011</td>
<td>Entrepreneurship education and the creation of an enterprise culture: provisional results from an experiment in Egypt</td>
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<td>56</td>
<td>Li, Z., &amp; Liu, Y.</td>
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<td>Entrepreneurship education and employment performance: An empirical study in Chinese university</td>
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<td>Lourenço, F., &amp; Jayawarna, D.</td>
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<td>Enterprise education: the effect of creativity on training outcomes</td>
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<td>58</td>
<td>Pittaway, L., Rodríguez-Falcon, E., Aiyegbayo, O., &amp; King, A.</td>
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<td>The role of entrepreneurship clubs and societies in entrepreneurial learning</td>
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<td>Sánchez, J. C.</td>
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<td>University training for entrepreneurial competencies: Its impact on intention of venture creation</td>
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<td>Azim, M. T., &amp; Akbar, M. M.</td>
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<td>Gordon, I., &amp; Jack, S.</td>
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<td>#</td>
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<td>63</td>
<td>Janssen, F., &amp; Bacq, S.</td>
<td>2010</td>
<td>Cultural and Outcomes-Related Issues in Implementing an Interdisciplinary Cross-Campus Entrepreneurship Education Program</td>
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<td>64</td>
<td>Packham, G., Jones, P., Miller, C., Pickernell, D., &amp; Thomas, B.</td>
<td>2010</td>
<td>Attitudes towards entrepreneurship education: a comparative analysis</td>
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<td>65</td>
<td>Woodier-Harris, N. R.</td>
<td>2010</td>
<td>Evaluating the impact of SPEED on students’ career choices: a pilot study</td>
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<td>66</td>
<td>Cruz, N. M., Rodriguez Escudero, A. I., Hernangomez Barahona, J., &amp; Saboia Leitao, F.</td>
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<td>The effect of entrepreneurship education programmes on satisfaction with innovation behaviour and performance</td>
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<td>67</td>
<td>Dominguiinhos, P. M. C., &amp; Carvalho, L. M. C.</td>
<td>2009</td>
<td>Promoting business creation through real-world experience</td>
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<td>Petridou, E., Sarri, A., &amp; Kyrgidou, L. P.</td>
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<td>Entrepreneurship education in higher educational institutions: the gender dimension</td>
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<td>Wilson, F., Kickul, J., Marlino, D., Barbosa, S. D., &amp; Griffiths, M. D.</td>
<td>2009</td>
<td>An analysis of the role of gender and self-efficacy in developing female entrepreneurial interest and behavior</td>
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<td>70</td>
<td>Yu Cheng, M., Sei Chan, W., &amp; Mahmood, A.</td>
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<td>The effectiveness of entrepreneurship education in Malaysia</td>
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<td>72</td>
<td>Hamidi, D. Y., Wennberg, K., &amp; Berglund, H.</td>
<td>2008</td>
<td>Creativity in entrepreneurship education</td>
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<td>73</td>
<td>Harris, M. L., &amp; Gibson, S. G.</td>
<td>2008</td>
<td>Examining the entrepreneurial attitudes of US business students</td>
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<tr>
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<td>Matlay, H.</td>
<td>2008</td>
<td>The impact of entrepreneurship education on entrepreneurial outcomes</td>
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<td>75</td>
<td>Millman, C., Matlay, H., &amp; Liu, F.</td>
<td>2008</td>
<td>Entrepreneurship education in China: a case study approach</td>
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<td>76</td>
<td>Russell, R., Atchison, M., &amp; Brooks, R.</td>
<td>2008</td>
<td>Business plan competitions in tertiary institutions: Encouraging entrepreneurship education</td>
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<td>77</td>
<td>Vincett, P. S., &amp; Farlow, S.</td>
<td>2008</td>
<td>“Start-a-Business”: an experiment in education through entrepreneurship</td>
</tr>
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<td>78</td>
<td>Alarape, A. A.</td>
<td>2007</td>
<td>Entrepreneurship programs, operational efficiency, and growth of small businesses</td>
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<tr>
<td>80</td>
<td>Souitaris, V., Zerbinati, S., &amp; Al-Laham, A.</td>
<td>2007</td>
<td>Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources</td>
</tr>
</tbody>
</table>
In chapter 6.3 (Appendix) a table (Tab. 20) that is displaying the analyzed articles categorized per impact level is provided. Moreover, in chapter 6.2 a table (Tab. 19) in which all included articles are listed including the research design of each article.

3.2.2.3. Reporting and Dissemination

The third step of the systematic literature review conducted in this Master’s Thesis is about reporting and dissemination (Fig. 14).

Based on the fact that a high degree of potential impact categories concerning the effect of EE at universities and HEIs exist a restriction of impact levels is required in this Master’s Thesis. The examination of potential impact indicators shows that the effect of EE is evaluated on different levels. Researchers are focusing on signs that are influencing EE; others are examining outcomes of EE.

Tab. 8: List of included studies

<table>
<thead>
<tr>
<th></th>
<th>Author(s)</th>
<th>Year</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>81</td>
<td>Hegarty, C.</td>
<td>2006</td>
<td>It’s not an exact science: teaching entrepreneurship in Northern Ireland</td>
</tr>
<tr>
<td>82</td>
<td>San Tan, S., &amp; Ng, C. K. F.</td>
<td>2006</td>
<td>A problem-based learning approach to entrepreneurship education</td>
</tr>
<tr>
<td>83</td>
<td>Henry, C., Hill, F. M., &amp; Leitch, C. M.</td>
<td>2004</td>
<td>The Effectiveness of Training for New Business Creation: A Longitudinal Study</td>
</tr>
<tr>
<td>85</td>
<td>Lee, L., &amp; Poh-Kam, W.</td>
<td>2003</td>
<td>Attitude Towards Entrepreneurship Education and New Venture Creation</td>
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<td>86</td>
<td>Galloway, L., &amp; Brown, W.</td>
<td>2002</td>
<td>Entrepreneurship education at university: a driver in the creation of high growth firms?</td>
</tr>
<tr>
<td>87</td>
<td>Chatterji, M.</td>
<td>1998</td>
<td>Tertiary Education and Economic Growth</td>
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</table>

Source: Own graphical presentation

Source: Own graphical presentation on the basis of Tranfield et al. (2003, p. 214)
Taking into consideration the Four-Step-Evaluation Framework, explained in chapter 2.2.1 different levels are determined to evaluate the overall effectiveness of a training program. Through an aggregated view of the mentioned frameworks in chapter 2.2 as well as through reading the selected research articles of this systematic literature review, the authors decided to focus on the following impact levels:

1. Skills and Knowledge
2. Entrepreneurial Intention
3. Pedagogical Methods
4. Outcome in general
5. Business Start-Ups
6. Economic Growth
7. Career and Employment
8. Regional Development
9. SME and Family Firm Engagement

275 Kirkpatrick and Kirkpatrick (2006, p. 3)
4. Results of the Systematic Literature Review

Tranfield, Denyer and Smart\(^{276}\) expose that a systematic review is useful when the research is well documented, and the practitioners understand easily from which and how the research papers have been derived. Due to the author's suggestions of a two-stage report, in this chapter the existing literature is evaluated in a two-level analysis process. The first part provides a descriptive analysis of the scientific theme, whereas the second part approaches a content analysis which gives indications about the results of the review.\(^{277}\)

4.1. Descriptive Analysis

The following descriptive analysis of the scientific reviewed theme includes an analyzed set of categories with the aim to provide a broad descriptive report of this field.\(^{278}\) This set of categories which should give an explanation about the reviewed topic, are the used media of publications, the development of publications, the rankings of the includes studies, the used databases, the four levels with their number of articles and as well the categories of the impact level including the number of articles.

4.1.1. Media of Publications

Relating to Fig. 15 and Fig. 16, it is illustrated that there exist a broad range of journals where articles are published in the field of the evaluation of EE at universities with a focus on the different impact levels. Overall, 39 different journals are included, whereas 26 journals contain respectively solely one article (see Fig. 16). These journals which contain just one article are not listed separately in this work. From the remaining 13 journals (entire 39 journals less 26 journals with one paper each), Fig. 15 shows that the most appropriate media of publication is the journal Education+Training with 18 papers, followed by the Journal of Entrepreneurship Education with six articles and the Journal of Small Business and Enterprise Development as well the International Journal of Entrepreneurial Behavior & Research with five papers each.

Further articles have been obtained from the journals:

- Journal of Small Business Management with four papers;

\(^{276}\) Tranfield et al. (2003, p. 218)
\(^{277}\) Tranfield et al. (2003, p. 218)
\(^{278}\) Tranfield et al. (2003, p. 218)
International Journal of Management Education, Academy of Management Learning & Education and International Entrepreneurship and Management Journal with in each case three papers;


Moreover, the rubric “Others” with four papers is also depicted in Fig. 15 and is related to gray literature. These articles have not been published in any journals, they rather were selected from the authors due to context conformity with the topic and are therefore incorporated in the literature review.
Fig. 15: Media of publications - Part 1279

Source: Own graphical presentation

1279 Source: Own graphical presentation
Fig. 16: Media of publications - Part II

Source: Own graphical presentation
### 4.1.2. Development of Publications

![Fig. 17: Development of publications](source)

Considering all papers which are used for the content analysis of the systematic review and their specific year of publication, Fig. 17 was derived. It presents the number of articles which are published from the year 1990 to the year 2017, whereby from the year 1990 to 1997, 1999 to 2001 and in the year 2005 no articles were released. Thus, concerning the time frame from 1990 to 2017, articles were published in 16 years out of 28.

Due to that, the diagram starts with the year 1998 which was the first year of a publication. In 2002 and 2003 respectively only one paper was published, and in the year 2004, two papers were published. From the year 2006 to 2017, every year a publication took place. Furthermore, Fig. 17 shows that the development of publications in the field of the evaluation of EE at universities with the focus on the impact level has become over the years a research issue. Especially, the years 2011 to 2015 register an increase in the research activities in this field, whereby the number of publications reached the peak in the years 2012, 2013 and 2014 with eleven published papers per year. As of the year 2016, the number of publications which are acquired in the review declined with six papers in the year 2006 and three papers in the year 2017.

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281 Source: Own graphical presentation
4.1.3. Journal Ranking

Fig. 18: Journal ranking

Taking into consideration all articles that are included in this systematic literature review. In total 87 articles have analyzed regarding the journal ranking. To provide an adequate overview, three different journal rankings are taking into consideration (Tab. 7) was used to categorize the articles. Possible rankings are: A+, A, B/B, C and D. However, some articles or reports are published in journals or other media platforms that are not ranked at all. These articles are displayed with N.R (not ranked).

As it can be examined from Fig. 18 primarily selected publications in this systematic literature review have no journal ranking (24 articles). Followed by 23 reports that are ranked with D, and 20 articles are listed with a C ranking. Nevertheless, some well ranked publications are included in systematic literature review as well. For example, five are categorized in level A+, and nine articles have an A level. Furthermore; three articles are ranked with B, and another three articles are ranked with C/B.

Source: Own graphical presentation
4.1.4. Databases

Within the systematic literature review of this Master's Thesis, four different electronic databases have been used to identify relevant articles. These four databases are Emerald, Science Direct, EBSCO and Google Scholar, which are visualized in the figure above (Fig. 19).

Most relevant articles were gathered from the database Google Scholar. Considering all publications that are included in this systemic literature review 47 percent are selected from the database Google Scholar. 27 percent of the included articles were founded through the electronic database EBSCO. Almost the same amount of publications were gathered through the database Emerald. Less relevant in this Master's Thesis was the database Science Direct, two percent of the articles are received from there.

Source: Own graphical presentation
4.1.5. Comparison of Reaction, Learning and Behavior Level to Result Level

Fig. 20: Comparison of impact levels

Fig. 20 presents the number of articles which are used for the content analysis of the systematic literature review in connection with the different categories of the evaluation levels. In total 10 distinct categories can be identified, whereas the first three ones which are skills, entrepreneurial intention (EI), and pedagogical methods are associated to the levels reaction, learning and behavior. The other seven categories are connected to the result level which builds the main part of this Master’s Thesis.

Fig. 20 shows that the first three categories are providing the highest numbers of articles used for the content analysis of the review with 17 articles (skills), 36 articles (EI) and 31 articles (pedagogical methods). For the other seven categories which are counting to the result level, a lot less articles have been identified for the review, namely five articles for SME & family firms, six articles for economic growth, 12 articles for outcome, 16 studies for career and employment which builds the highest part regarding these seven categories, five articles for regional development, seven articles for demographic characteristics and 15 studies for business start-ups. Considering this graph, out of the seven categories of the result level the category of outcome, career and employment and business start-ups contain the highest number of articles. Nevertheless, in comparison of the number of identified articles for the first three categories (levels of

284 Source: Own graphical presentation
learning, reaction, and behavior) to the other seven categories (results level), it is evident that more literature exists and research has been done for the first three levels than for the result level.

4.2. Content Analysis

4.2.1. Reaction, Learning and Behavior Level

In this subchapter studies which are focusing on the impact of EE at universities and HEIs on skills and knowledge, EI and pedagogical methods are analyzed. These three categories refer to the first three levels of Kirkpatrick’s evaluation framework, namely to the reaction, learning and behavior level.\(^{285}\) The articles concerning these three levels are solely described in short for getting an overview of the whole framework and the overall picture of the effectiveness of EE at universities or HEIs, in contrast to the fourth evaluation level, which is identified as the main part of this work and evaluated in detail in chapter 4.2.2.

4.2.1.1. Skills and Knowledge

In this chapter, the studies which are concentrating on the impact of EE at universities and HEIs on the development of skills and knowledge are discussed. This skill and knowledge level is associated with the second level of Kirkpatrick and Kirkpatrick’s framework, the learning level.\(^{286}\) Out of 17 studies of the sample of this evaluation level, three articles are discussed at the beginning in more detail due to their high journal rankings and which are articles that present a VHB ranking greater or equal B, an ABS ranking greater or equal 3* or and JCR Impact Factor greater or equal 1.5. Whereas, on the other side, the other 14 studies are analyzed briefly after the evaluation of the three highly journal ranked studies.

Henry, Hill, and Leitch\(^{287}\) published the study in a ranked journal and examined the outcome of EE training programs. The data was collected through a longitudinal research study from 35 participants of a training scheme over a three-year period,\(^{288}\) and by the use of questionnaires.\(^{289}\) This study is figuring out a positive relationship between the training program and the outcome of graduates concerning skills and knowledge.

\(^{285}\) Kirkpatrick and Kirkpatrick (2006, pp. 21–23)
\(^{286}\) Kirkpatrick and Kirkpatrick (2006, p. 42)
\(^{287}\) Henry et al. (2004, p. 265)
\(^{288}\) Henry et al. (2004, p. 256)
\(^{289}\) Henry et al. (2004, p. 257)
Members of the EE program indicate that such program has a positive influence on the development of their skills and knowledge, like for example:

- Business skills and knowledge;
- skills concerning starting a new business;
- skills of realizing the amount of time and work;
- financial skills;
- networking and motivations skills;
- skills of confidence.²⁹⁰

The authors argue that the above mentioned skills and the gained knowledge are the most stated ones within the participants of EE. Therefore, entrepreneurship training programs impact the development of skills and knowledge of the participants positively.²⁹¹

Further on, Ohland, Frillman, Zhang, Brawner, and Miller²⁹² examine as well the effect of EE and entrepreneurial programs of universities on skills and knowledge. The researchers figured out that EE training programs have a positive impact on skills of students. Especially teamwork and leadership skills are the outcome of the training and the highly reached improvements of the graduates who participated in the training scheme of entrepreneurship.²⁹³

Another published study in a ranked journal from Pittaway, Rodriguez-Falcon, Aiyegbayo, and King²⁹⁴ examines entrepreneurship clubs and their effect on students learning. Such a club is a teaching tool to develop and enhance the student’s entrepreneurial skills and to educate their entrepreneurial interest.²⁹⁵ Furthermore, these entrepreneurial clubs are essential for EE at universities or HEI and build a part in this education as extra curriculum actions.²⁹⁶ Thus, such entrepreneurial clubs have a positive impact on different skills and knowledge supply of students. The authors found out in their study that the outcome of the entrepreneurial program are the following skills gained through students participated in such a program:

- Teamwork and organizational skills;²⁹⁷
- leadership skills;
- skills for managing a team;

²⁹⁰ Henry et al. (2004, p. 264)
²⁹¹ Henry et al. (2004, p. 264)
²⁹² Ohland et al. (2004, p. 295)
²⁹³ Ohland et al. (2004, p. 295)
²⁹⁴ Pittaway et al. (2011, p. 37)
²⁹⁵ Pittaway et al. (2011, p. 40)
²⁹⁶ Pittaway et al. (2011, pp. 38–39)
²⁹⁷ Pittaway et al. (2011, p. 46)
skills for presenting and negotiating and
networking skills.\textsuperscript{298}

Drummond\textsuperscript{299} found out that the investigated entrepreneurial program of team-based learning has a positive impact on student’s skills. Team-based learning, in this case, involves interactions between different entrepreneurial groups which provide students with the skills of critical thinking of different themes.\textsuperscript{300}

Russell, Atchison, and Brooks\textsuperscript{301} figured out in their study that EE at universities and HEIs boasts a positive impact on the entrepreneurial development of skills of graduates. The authors mentioned an increase in self-confidence or the propensity of taking risks.\textsuperscript{302}

Moreover, Matlay\textsuperscript{303} examined that specific EE education at universities leads to an improvement of the general business knowledge and the entrepreneurial skills of students. The researcher analyzed that acquired skills and knowledge due to EE are the awareness of business risks of the graduates, enhanced knowledge and skills in business strategy, marketing, marketing research, finance, human resources, business planning and business ideas of students.\textsuperscript{304}

Further on, Hegarty\textsuperscript{305} identified as well an impact of EE at universities in terms of skills and knowledge, whereby in this study the core skills set of students after EE includes the gained knowledge and understanding of entrepreneurship and an entrepreneurial process, professional and practical skills concerning a new venture project and key skills in creativity and innovation. The author McCrea\textsuperscript{307} presents nearly the same outcome of EE of students concerning skills, as the authors mentioned before, namely teamwork, communication and coordination skills, skills in the development of a marketing strategy or skills in understanding an entrepreneurial process.

The authors Rae and Ruth Woodier-Harris ascertained as well in their study that EE has an influence on students skills like for example effective teamwork skills, creativity and innovation skills, skills for planning a new venture project, personal, organizational skills

\textsuperscript{298} Pittaway et al. (2011, p. 52)
\textsuperscript{299} Drummond (2012, p. 57)
\textsuperscript{300} Drummond (2012, p. 57)
\textsuperscript{301} Russell et al. (2008, p. 136)
\textsuperscript{302} Russell et al. (2008, p. 136)
\textsuperscript{303} Matlay (2008, p. 390)
\textsuperscript{304} Matlay (2008, p. 390)
\textsuperscript{305} Matlay (2008, p. 391)
\textsuperscript{306} Hegarty (2006, p. 327)
\textsuperscript{307} McCrea (2013, p. 36)
or effective presentation and communication skills.\textsuperscript{308} Comparing the last mentioned study with the study from Rae and Woodier-Harris from the year 2012, just a few other skills regarding the impact of EE on skills are identified like skills of financial planning or skills in market research.\textsuperscript{309} Nevertheless, skills in planning new businesses, teamwork skills or skills of creative thinking have been as well figured out by the researchers in this study.\textsuperscript{310} Ulvenblad, Berggren, and Winborg\textsuperscript{311} analyzed also in their study that academic EE has a positive influence especially on communication skills of graduates which lead to more openness and more flexibility concerning adaption of the students.

More other authors evaluated as well the impact of EE at universities or HEIs on skills and knowledge and came to similar results like the above mentioned authors and their studies. For example, Bell\textsuperscript{312} figured out that students had a better understanding of innovation and creativity in a business process after an EE module. Yu Cheng, Sei Chan, and Mahmood\textsuperscript{313} determined that skills in problem solving and decisions making, presentation and marketing skills, leadership skills and business planning skills have a positive impact on students after an entrepreneurial program. Furthermore, Elmuti, Khoury, and Omran\textsuperscript{314} argued that good EE at universities impacts positively interpersonal skills of students like social competences, motivation skills and innovative and creativity skills which in turn leads to an improvement of the venture efficiency. Further on, Isaacs, Visser, Friedrich, and Brijila\textsuperscript{315} possessed that EE impacts student's skills, attitudes and knowledge consisting of three types of skills and stated as different educational forms which are business related skills (education for entrepreneurship), skills of knowledge and understanding (education about entrepreneurship) and learning skills (education through entrepreneurship).

For summarizing this subsection, two research studies provide the key facts of what impact EE has on skills and knowledge. The European Commission figured out in their study that higher EE has a positive impact on student's skills and knowledge, whereby the essential ones mentioned by graduates after their EE program are creativity, motivation, analytical skills, adaptability and networking skills.\textsuperscript{316} The last examined study

\textsuperscript{308} Rae and Ruth Woodier-Harris (2013, p. 937)  
\textsuperscript{309} Rae and Woodier-Harris (2012, p. 648)  
\textsuperscript{310} Rae and Woodier-Harris (2012, p. 648)  
\textsuperscript{311} Ulvenblad et al. (2013, p. 198)  
\textsuperscript{312} Bell (2015, p. 42)  
\textsuperscript{313} Yu Cheng et al. (2009, p. 562)  
\textsuperscript{314} Elmuti et al. (2012, p. 96)  
\textsuperscript{315} Isaacs et al. (2007, pp. 625–626)  
\textsuperscript{316} European Commission (2012, p. 10)
is from the author Moberg\textsuperscript{317} who found out that EE has two different effects on a student’s skill set and therefore two distinct forms are identified. On the one hand, academic EE has an impact on non-cognitive skills, like creativity, activeness, and skills of initiating a new venture, whereas, on the other hand, the impact is on cognitive skills which include gaining knowledge and skills of how to evaluate a new business idea or how to create a venture.\textsuperscript{318}

Comparing the studies in this subcategory of skills and knowledge, a similar picture of the authors and their results concerning the impact of EE on skills and knowledge are identified. Most of the authors mention the same type of skill set effected through entrepreneurial education at universities or HEIs.

### 4.2.1.2. Entrepreneurial Intention

In this section, the impact of EE at universities or HEIs in EI is analyzed. Based on the used Four-Step Evaluation framework\textsuperscript{319}, which in this literature review, EI does not fit in the fourth level (result level)\textsuperscript{320}. However, to provide a bride research focus articles that are examining the impact on EI are not excluded from the literature review. In total 36 articles have been identified that are dealing with the effect of tertiary EE on EI.

One article published in a well ranked journal figured out that EE affects students perceived behavioral control and attitudes in the medium term.\textsuperscript{321} However, no significant impact has been identified that EE has an effect on EI in the short term as well.\textsuperscript{322} Moreover, another study shows the result that IT-based EE at universities has an impact on the noticed behavioral control as well as on EI.\textsuperscript{323} Further, other researchers figured out that besides EE the personal creativity has a positive effect on EI.\textsuperscript{324}

Karimi, Biemans, Lans, Chizari, and Mulder\textsuperscript{325} examine if academic EE has an impact on students’ EI as well. A sample of 320 students from six universities in Iran was used.

\textsuperscript{317} Moberg (2014, p. 92)
\textsuperscript{318} Moberg (2014, pp. 92–93)
\textsuperscript{319} Kirkpatrick and Kirkpatrick (2006)
\textsuperscript{320} Kirkpatrick and Kirkpatrick (2006, p. 69)
\textsuperscript{321} Fayolle and Gailly (2015, p. 85)
\textsuperscript{322} Fayolle and Gailly (2015, p. 87)
\textsuperscript{323} Hejazinia (2015, p. 251)
\textsuperscript{324} Hamidi, Wennberg, and Berglund (2008, p. 316)
\textsuperscript{325} Karimi et al. (2016, p. 189)
in this study. The researchers have identified that no a relationship between EE and EI is existing.

Harris and Gibson mentioned that courses in entrepreneurship are targeted to specific personal characteristics of individuals that can influence the effectiveness of EE. Moreover, gender can influence the result if EE has an impact on EI or not. For example, in this study, it was figured out that male students have a higher EI after passing entrepreneurial courses than female students. Mayer, Kortmann, Wenzler, Wetters, and Spaans have analyzed the impact of EE on EI based on certain characteristics of individuals as well.

Rauch and Hulsink were examining if EE at universities of HEIs has an impact on EI likewise. The study shows the result that EE has a significant positive impact on perceived behavior and controls, attitudes and EI. Similar to the effects of Fayolle and Gailly the researchers could identify that the entrepreneurial behavior has an impact on EI in the medium term, after 18 months. In the short-term EE has sole an impact on entrepreneurial behavior. The researchers Vincett and Farlow, as well as the study from Wilson, Kickul, Marlino, Barbosa, and Griffiths are dealing with the impact of EE on EI likewise.

Vanevenhoven and Liguori conducted a study by using a sample of 2,500 professors that are teaching entrepreneurship at colleges and universities around the globe. The study was designed to analyze the effectiveness of EE toward the impact on students’ EI. It was shown that EE can have a positive impact on EI but can hinder students to become entrepreneurs as well. Therefore, the overall suggestion from the researchers is to redesign the curriculum based on the changing needs of the customers. Apergis and Fafaliou; Kerrick, Cumberland, and Choi; and the researchers Kirby and Ibrahim are dealing with the relationship between EE and EI as well.

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326 Karimi et al. (2016, p. 193)
327 Karimi et al. (2016, p. 201)
328 Harris and Gibson (2008, p. 575)
329 Harris and Gibson (2008, p. 576)
330 Mayer et al. (2014, p. 240)
331 Rauch and Hulsink (2015, p. 190)
332 Rauch and Hulsink (2015, p. 199)
333 Vincett and Farlow (2008)
334 Wilson, Kickul, Marlino, Barbosa, and Griffiths (2009)
335 Vanevenhoven and Liguori (2013, p. 319)
336 Vanevenhoven and Liguori (2013, p. 324)
337 Apergis and Fafaliou (2014)
338 Kerrick et al. (2016)
339 Kirby and Ibrahim (2011)
Another study published in a well-ranked journal from the authors Volery, Müller, Oser, Naefplin, and Rey\(^{340}\) have investigated the hypothesis if a relationship between entrepreneurship related personality traits, or beliefs, or competencies, or knowledge and EI is existing. The results show that a significant positive relationship between personality traits, and beliefs and EI is existing. No correlation between EI and competencies and knowledge could be identified.\(^{341}\) Further, it was examined that EI among students declined after passing entrepreneurship courses.\(^{342}\) Lean mentioned that through entrepreneurial classes some skills are well trained, but students are less prepared for managing finances and people.\(^{343}\) The researchers Poblete and Amorós\(^{344}\) have examined that EE at HEIs has no impact on students’ intention to become entrepreneurs. Dehghanpour Farashah\(^{345}\) identified that the likelihood of having EIIs is increasing by 1,3 percent after completing an entrepreneurship course. Further, the researchers Farhangmehr, Gonçalves, and Sarmento\(^{346}\) mentioned that EE does not influence the motivation of students to become entrepreneurs.

Souitaris, Zerbinati, and Al-Laham\(^{347}\) are addressing the research question if courses in entrepreneurship are increasing the attitudes and intentions among the participants. A sample consisting of students from two European universities located in France and England that have an excellent reputation was used.\(^{348}\) The results examine that EI is raising among students after passing entrepreneurship courses.\(^{349}\) Lanero, Vázquez, Gutiérrez, and García, as well as the author Sánchez\(^{350}\) have identified the positive impact of EE on EI. Moreover, the European Commission is providing data about EI.

Pittaway et al.\(^{351}\) have analyzed the entrepreneurship clubs about their impact on students learning. In this study an entrepreneurship club is defined as a teaching tool that supports the development of entrepreneurial skills, by teaching, inspiring and encouraging entrepreneurial interests among students. Guest speeches of entrepreneurs, networking events, competitions, and seminars are activities that are

\(^{340}\) Volery et al. (2013, pp. 432–433)
\(^{341}\) Volery et al. (2013, p. 437)
\(^{342}\) Volery et al. (2013, p. 441)
\(^{343}\) Lean (2012, p. 545)
\(^{344}\) Poblete and Amorós (2013, p. 173)
\(^{345}\) Dehghanpour Farashah (2013, p. 878)
\(^{346}\) Farhangmehr et al. (2016, p. 862)
\(^{347}\) Souitaris et al. (2007, p. 568)
\(^{348}\) Souitaris et al. (2007, p. 574)
\(^{349}\) Souitaris et al. (2007, p. 585)
\(^{350}\) Sánchez (2011, p. 249)
\(^{351}\) Pittaway et al. (2011, p. 37)
supported by the clubs. The results show that the engagement in clubs leads to a shift in students self-confident. The data examines that through entrepreneurship clubs students are especially more self-confidence in starting a new venture, developing new projects, venture creation and engaging in different aspects of venture formation.

In 2015 the authors Pittaway, Gazzard, Shore, and Williamson were examining the role of students clubs at universities as well. In many cases, clubs are including activities like networking events, talks by entrepreneurs or other business people, competition and training workshops. In this study, two different entrepreneurial clubs were compared, whereby it was figured out that one club is more focused on learning by doing while the other club is emphasized on social learning. A further difference in enhancing the intention of members to become entrepreneurs was identified by the researchers. One club has a positive impact on the EI in the short-term, and the other has no significant impact. Nevertheless, both clubs have a positive effect on enhancing the intention among club members to start a career as entrepreneurs. Other authors like Karlsson and Moberg; Lange, Marram, Jawahar, Yong, and Bygrave; Kailer and Hora; Kailer, Wimmer-Wurm, Knapp, and Blanka; and Z. Solesvik, Westhead, Matlay, and N. Parsyak are providing data about the relationship between EE at universities and HEIs and students’ EI.

Furthermore, another study published in a well ranked journal is focusing on the impact of EE on EI was conducted by Gielnik et al.. Especially this article is highlighting the action-based entrepreneurship learning and its effects. Therefore, a general model that is including long-term and short-term training outcomes was created. The results show that EE is positively related to business creation. Students that completed training courses are more willing to start a new venture than students who did not complete. Hence, action-based entrepreneurship learning has a positive impact on the entrepreneurial goal intention. Moreover, the author Bell; Nasr and Boujelbene
and the researchers Küttim, Kallaste, Venesaar, and Kiis\textsuperscript{366} have identified a positive impact of EE on EI.

Maresch, Harms, Kailer, and Wimmer-Wurm\textsuperscript{367} have emphasized the relationship between EE and EI as well. These researchers are analyzing the impact of EE on EI taking into consideration specific fields of study.\textsuperscript{368} The results show that female students have lower EI than EI of male students, while older students have a higher level of EI than younger ones. Further, the researchers figured out that pro-entrepreneurial attitudes are linked positively to EI. Moreover, subjective norms have a negative impact on the EI among engineering and science students.\textsuperscript{369} The authors Kassean, Vanevenhoven, Liguori, and Winkel\textsuperscript{370} have identified that EE can have a positive and a negative impact on EI as well.

Moberg\textsuperscript{371} is analyzing in his Ph.D. thesis the factors that have an impact on EI. Especially the relationship between EI and entrepreneurial self-efficacy, attitudes, and social norms are focused. The results show that social norms and beliefs have a significant impact on EI. Within the scale dimension of entrepreneurial self-efficacy sole the noticed level of exploration skills affects the EI of students.\textsuperscript{372}

Summing up, based on these 36 articles that are dealing with the impact of EE on students' EI it can be said that more studies identified a positive relationship between EE and EI. Nevertheless, a few studies published mixed results, for example, it was examined that EE often has sole a positive impact in the medium term. While in the short term often no impact could be identified. Furthermore, some studies showed results that EE leads to a decline in EI, and some researchers could not find any relationship among EE and EI. However, in general, it can be said that EE has a positive impact on EI.

\subsection{Pedagogical Methods}

This subsection is dealing with studies that are analyzing the effectiveness of EE at universities and HEIs on pedagogical methods and teaching tools. In total 31 studies have been associated with pedagogical teaching methods, whereas again three articles

\textsuperscript{366} Küttim et al. (2014, p. 665)
\textsuperscript{367} Maresch et al. (2016, p. 172)
\textsuperscript{368} Maresch et al. (2016, p. 172)
\textsuperscript{369} Maresch et al. (2016, p. 175)
\textsuperscript{370} Kassean et al. (2015, p. 697)
\textsuperscript{371} Moberg (2014, p. 131)
\textsuperscript{372} Moberg (2014, p. 131)
will be discussed at the beginning in more detail due to their high journal rankings. High journal ranked articles present a VHB ranking greater or equal to B, an ABS ranking greater or equal to 3* or and JCR Impact Factor greater or equal 1,5. The other remained 28 studies are solely mentioned for providing an overview of this broad research field.

Pittaway et al.\textsuperscript{373} examined in their study specific entrepreneurial programs for EE at universities to increase and develop entrepreneurial learning for students. In the study such entrepreneurship programs are defined as entrepreneurship student clubs where students gain benefits of entrepreneurial learning through simulating learning with for example learning by doing or learning from entrepreneurs. Data for the study was gathered from 54 students who were involved in such clubs through interviews and an e-mail survey.\textsuperscript{374} The authors found out that this special type of EE has a positive impact on students and their entrepreneurial mindset because in such entrepreneurship clubs students gain knowledge through learning by doing and through engaging in practical actions which lead to more concrete experiences for the students. Moreover, the results of the study exhibit that within this entrepreneurship clubs students make sense of reflective learning due to observing them and afterward reflecting their experiences.\textsuperscript{375} Finally, this kind of teaching method emphasizes on enhancing the interest of entrepreneurship for students, increase knowledge for new venture creation and extend entrepreneurial knowledge from current entrepreneurs.\textsuperscript{376}

Another high ranked journal study published by Pittaway et al.\textsuperscript{377} concentrated as well as the authors mentioned in the previous paragraph, on the role of entrepreneurship student clubs in the sense of EE of students. Such clubs are included in many universities due to raising the understanding of entrepreneurship within students.\textsuperscript{378} The definition of such clubs has already been defined in the chapter 4.2.1.1 and the authors figured out that entrepreneurial clubs play a significant role in EE because students are allowed to participate in collaborative entrepreneurship learning. Furthermore, the results of the study show that students participate in entrepreneurial clubs for enhancing their curriculum vitae and in turn improve their career choices. Increasing awareness and knowledge of starting a new enterprise,\textsuperscript{379} learning by doing, expand entrepreneurial experiences, action based learning, social learning, learning due to making mistakes and

\textsuperscript{373} Pittaway et al. (2015, 1)
\textsuperscript{374} Pittaway et al. (2015, 19)
\textsuperscript{375} Pittaway et al. (2015, 24)
\textsuperscript{376} Pittaway et al. (2015, 28)
\textsuperscript{377} Pittaway et al. (2011, p. 37)
\textsuperscript{378} Pittaway et al. (2011, p. 52)
\textsuperscript{379} Pittaway et al. (2011, p. 52)
managing the emerged problems are counted as essential aspects why students participate in such EE programs. As well, the simulation of entrepreneurial learning in the clubs have a positive influence on students in comparison to the standard curriculum. According to this investigation, specific pedagogical methods of EE have a positive impact on students and their entrepreneurial learning.\textsuperscript{380}

Further on, the authors Edelman, Manolova, and Brush\textsuperscript{381} are dealing with the research question if the gained knowledge of entrepreneurship at the tertiary educational level is sufficient and similar to the activities of nascent entrepreneurs in practice and thus the study investigated a more general view of teaching entrepreneurship. The researchers found out that EE at universities or HEIs does not include all relevant activities which are necessary for creating a new enterprise in practice. In a way, EE according to the curriculum do not cover all the critical points which are needed for nascent entrepreneurs, and therefore the authors found out a gap between the context of teaching entrepreneurship to students in classrooms and what is imparted to them, and the real practice of entrepreneurship and starting a new business. In this study EE at universities or HEIs do not influence entrepreneurial students in an entirely positive way, due to the missing practical actions in their education.\textsuperscript{382}

Summing up, the previous three studies show that on the one hand, EE has a positive impact on students, but on the other hand, it can influence as well students in a negative way, as the third study explicitly highlights.

The next paragraph (bullet points) gives an overview of the remained 28 studies of the selected 31 studies for this category concerning the systematic review. These 28 studies are also dealing with pedagogical and teaching methods of EE. Nevertheless, due to this high number of studies in this subcategory and due to the lying focus of this Master’s Thesis on the result level and not on the learning, reaction and behavior level, solely the name of the authors of the remaining studies of this pedagogical methods category are listed below and not described in detail:

- Azim and Akbar\textsuperscript{383}
- Bell\textsuperscript{384}

\textsuperscript{380} Pittaway et al. (2011, p. 53)
\textsuperscript{381} Edelman et al. (2008, p. 63)
\textsuperscript{382} Edelman et al. (2008, p. 64)
\textsuperscript{383} Azim and Akbar (2010)
\textsuperscript{384} Bell (2015)
Burrows and Wragg
Dehghanpour Farashah
Dominguinhos and Carvalho
Drummond; Lahn and Erikson
Fellnhofer
Gilbert
Hegarty
Isaacs et al.
Jansen, van de Zande, Brinkkemper, Stam, and Varma
Janssen and Bacq
Kailer and Hora
Kailer et al.
Kassean et al.
Lahn and Erikson
Lange et al.
Man and Farquharson
McCrea
Millman, Matlay, and Liu
Moberg
Noyes and Deligiannidis
Rae and Ruth Woodier-Harris
San Tan and Ng
Sørensen and Davidsen

385 Burrows and Wragg (2013)
386 Dehghanpour Farashah (2013)
387 Dominguinhos and Carvalho (2009)
388 Drummond (2012)
389 Fellnhofer (2017)
390 Gilbert (2012)
391 Hegarty (2006)
392 Isaacs et al. (2007)
393 Jansen et al. (2015)
394 Janssen and Bacq (2010)
395 Kailer and Hora (2017)
396 Kailer et al. (2014)
397 Kassean et al. (2015)
398 Lahn and Erikson (2016)
399 Lange et al. (2014)
400 Man and Farquharson (2015)
401 McCrea (2013)
402 Millman et al. (2008)
403 Moberg (2014)
404 Noyes and Deligiannidis (2013)
405 Rae and Ruth Woodier-Harris (2013)
406 San Tan and Ng (2006)
407 Sørensen and Davidsen (2017)
4.2.2. Result Level

4.2.2.1. Outcome in General

4.2.2.1.a Overview

One category of impact which has been identified in this Master Thesis is the outcome level. Mainly the researchers are examining the effect of EE on the motivation, innovation, and creativity. In total 12 relevant articles are analyzed in this chapter. The following table (Tab. 9) is providing an overview of the studies focusing on the outcome of EE. Moreover, the main research findings of each paper are included in the table.

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Title</th>
<th>Main Findings</th>
</tr>
</thead>
</table>
| Pittaway, L., Rodríguez-Falcon, E., Aiyegbeyo, O., & King, A. (2011) | The role of entrepreneurship clubs and societies in entrepreneurial learning | - Entrepreneurship clubs are extra curriculum activities of EE and are enhancing entrepreneurial activities.  
- Entrepreneurship clubs have a positive impact on the motivation of students. |
| Hytti, U., Stenholm, P., Heinonen, J., & Seikkula-Leino, J. (2010) | Perceived learning outcomes in entrepreneurship education: The impact of student motivation and team behaviour | - EE has no or in some cases a negative impact on students that are intrinsically motivated to study entrepreneurship.  
- Extrinsically motivated students are stratified with the outcome of EE. |
| Kailer, N., & Hora, W. (2017) | Entrepreneurial Intentions and Activities of Students at Austrian Universities: Global University Entrepreneurial Spirit Students’ Survey 2016 | - Austrian nascent and active founders are starting a new venture because of different motives.  
- The primary stated reasons are that starting a business allows them to create value.  
- The primary stated motive to start a business among Austria nascent and active founders is to advance their development of career. |
| Yu Cheng, M., Sei Chan, W., & Mahmood, A. (2009) | The effectiveness of entrepreneurship education in Malaysia | - EE is not meeting the expectations of students (is leading to dissatisfaction). |

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408 Tessema Gerba (2012)  
409 Yu Cheng et al. (2009)  
410 Yusoff et al. (2012)
| Ulvenblad, P., Berggren, E., & Winborg, J. (2013) | The role of entrepreneurship education and start-up experience for handling communication and liability of newness | ■ EE has an impact on innovation.  
■ Ventures started from individuals that have experienced EE at a university a more innovative than that business that is initiated by individuals that are lacking this educational background. |
| Støren, A. L. (2014) | Entrepreneurship in higher education: Impacts on graduates’ entrepreneurial intentions, activity, and learning outcome | ■ EE has a positive impact on the innovation process but less on the ability to start a new venture. |
| Bell, R. (2015) | Developing the next generation of entrepreneurs: Giving students the opportunity to gain experience and thrive | ■ EE has a positive impact on the degree of innovation within a business process.  
■ EE act as a catalyst for knowledge creation and innovation. |
| European Commission. (2012) | Effects and impact of entrepreneurship programmes in higher education | ■ The entrepreneurship alumni group have significantly more opportunities to come up with new innovative ideas as an employee than the control group with no EE background.  
■ Male alumni have more opportunities to show creativity in a paid employment than female alumni. |
■ Individuals that have a high degree of post-training creativity have a higher post-training outcome. |
| Ghina, A., Simatupang, T. M., & Gustomo, A. (2014) | A Systematic Framework for Entrepreneurship Education within a University Context | ■ A framework is presented that provides an overview of entrepreneurship learning at universities, including factors that have an impact on the success of EE. |

Tab. 9: Outcome – List of literature

### 4.2.2.1.b Literature Analysis Outcome

Pittaway et al.\(^{412}\) have analyzed the entrepreneurship clubs about their impact on students learning. In this study an entrepreneurship club is defined as a teaching tool that supports the development of entrepreneurial skills, by teaching, inspiring and encouraging entrepreneurial interests among students. Guest speeches of

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\(^{411}\) Source: Own graphical presentation  
\(^{412}\) Pittaway et al. (2011, p. 37)
entrepreneurs, networking events, competitions, and seminars are activities that are supported by the clubs. Moreover, it is examined that these clubs are part of the EE at HEIs as extra curriculum activities. A qualitative research approach was applied by the authors, including data collection through unstructured interviews of students and academic adviser, semi-structured telephone interviews with students involved in an entrepreneurship club and email postcards which were sent to various entrepreneurship clubs. The research shows that these entrepreneurship clubs have an impact on the motivation of students. Primarily, the club members are motivated to gain practical experience and are willing to help each other. Further to improve transferable skills, personal enjoyment and the option to put a business idea into practice is fostered by the clubs. Therefore, the outcome of entrepreneurship clubs is to enhance entrepreneurial business activities, rather than promoting students to get employed.

Hytti, Stenholm, Heinonen, and Seikkula-Leino are examining the perceived learning outcomes of EE while taking into account the motivation as well as the effect of team behavior. Through a questionnaire which was sent out to students enrolled in an entrepreneurship course at a university, data was collected. The researchers figured out that, whether EE has an impact or not, is depending on the motivation of each student. A person that is extrinsically motivated to study entrepreneurship is mainly not interested in becoming an entrepreneur. However, individuals that are intrinsically motivated stated that starting a new venture is a career option for them. Further, intrinsically motivated students are not satisfied with the learning outcomes. The authors suggest that universities and HEIs should target their entrepreneurial programs to intrinsically motivated students to generate a positive impact of EE. For extrinsically motivated students EE is leading to positive learning outcomes, however, often the respondents mentioned that they are satisfied when at the end a business idea is finalized. According to Kailer and Hora, founders are starting their own business based on different motives and goals. Based on a sample of nascent Austrian entrepreneurs (n=196) and active entrepreneurs (n=212), the most frequent stated cause to start an own business is to generate a value which is in line with their

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413 Pittaway et al. (2011, p. 40)
414 Pittaway et al. (2011, p. 38)
415 Pittaway et al. (2011, p. 44)
416 Pittaway et al. (2011, p. 46)
417 Hytti et al. (2010, p. 592)
418 Hytti et al. (2010, p. 593)
419 Hytti et al. (2010, p. 598)
420 Hytti et al. (2010, p. 600)
421 Hytti et al. (2010, p. 598)
422 Kailer and Hora (2017, p. 22)
personality. Other reasons like earning money are less relevant for both groups. From another report with respondents consisting of nascent entrepreneurs (n=167) and active ones (n=127) from Austria is was figured out that the primary stated motive to start a business is to advance the career in the business world.

Yu Cheng et al. analyzed the effectiveness of EE based on a sample of postgraduate and graduate students in Malaysia. The authors came to similar results than Hytti et al. that EE is not meeting the expectations of the students, which can lead to dissatisfaction among the students. Moreover, due to the misalignment EE is a waste of resources. Due to other studies, EE can lead to essential returns for society, investment in EE to target the programs to the students’ expectations and needs will be necessary.

Ulvenblad et al. tested the hypothesis that EE enhances the ability to handle communication and liability of newness. Data was collected in two steps. First, a questionnaire was sent to students from EE universities, in a second step data from entrepreneurs with no EE experience was collected. Out of this data, the researchers came to the result that EE has an impact on innovation. It is examined that business ventures started from individuals with EE background at universities are more innovative than business started from an individual that lacks the experience of EE in a university context.

Another study published in a ranked journal that is focusing on the impact of EE on graduates’ learning outcome is from the researcher Støren. The analyze is based on data collected through a survey among master graduates and bachelors. One-third of the respondents stated that EE has an impact on their competences regarding the innovation process, as well on their ability to take the initiative. 15 percent reported that EE is providing business ideas, and 13 percent stated that EE offers a basis for starting a business. Further, the researchers Cruz, Rodriguez Escudero, Hernangomez Barahona, and Saboia Leitao figured out that EE has an impact on the satisfaction

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423 Kailer and Hora (2017, p. 22)
424 Kailer et al. (2014, p. 31)
425 Yu Cheng et al. (2009, p. 559)
426 Yu Cheng et al. (2009, p. 561)
427 Yu Cheng et al. (2009, p. 563)
428 Ulvenblad et al. (2013, p. 187)
429 Ulvenblad et al. (2013, p. 196)
430 Ulvenblad et al. (2013, p. 203)
431 Støren (2014, p. 796)
432 Støren (2014, p. 800)
433 Støren (2014, p. 804)
434 Cruz et al. (2009, p. 209)
with the innovation behavior. Thus, it can be argued that EE at universities or HEIs have a positive effect on innovation.

Further, Bell\textsuperscript{435} figured out that EE has a positive impact on innovation in the business process. The researcher collected data through reflective essays, from students that completed an entrepreneurship learning module.\textsuperscript{436} Through the entrepreneurship course, students stated that knowledge about innovation and how ideas can be constructed was created.\textsuperscript{437}

Further, a report published and conducted by the European Commission\textsuperscript{438} analyzed the impact of EE at HEIs. The research is covering a limited number of HEIs in Europe. Data was collected through a survey among alumni with EE experience, and a control group which no EE background.\textsuperscript{439} Through entrepreneurial competencies, the innovation in work life can be fostered. The report examines, that as an employee persons of the entrepreneurship alumni group have a significant higher degree of options to come up with innovative ideas than the individuals from the control group. Moreover, gender differences are existing; male alumni have better chances to show creativity in their job than female alumni.\textsuperscript{440} The following figure (Fig. 21) is displaying the results of the report regarding the impact of EE on innovation and creativity.
Lourenço and Jayawarna\textsuperscript{442} are examining the impact of EE on the creativity of nascent entrepreneurs. Therefore, the researchers used a quantitative approach, with a sample of 384 Ph.D. students and scholars of an entrepreneurship scholarship program. Further, five researchers of this field are involved in this study.\textsuperscript{443} The results show that EE has an impact on post-training creativity. Moreover, it is examined, that individuals that have a high degree of post-training creativity have a higher post-training outcome than individuals that perceive a lack of creativity.\textsuperscript{444}

Ghina, Simatupang, and Gustomo\textsuperscript{445} have developed an EE framework which is based on the input-process-output-outcome model. The framework provides an overview of entrepreneurship learning at universities, including factors that have an impact on the success of EE.\textsuperscript{446} Moreover, the relationship between the stakeholders (students, institutions and the staff members) is displayed. According to Ghina et al.\textsuperscript{447} the impact of learning outcomes is dependent on the quality of input and process. With input quality, for example, the students’ ability to learn is mentioned. An example of the process quality is to improve the ability to learn. These two factors have an impact on the output quality, hence, the characteristics, career choice, and competencies of graduate entrepreneurs.

\textsuperscript{441} Source: European Commission (2012, p. 69)
\textsuperscript{442} Lourenço and Jayawarna (2011, p. 224)
\textsuperscript{443} Lourenço and Jayawarna (2011, p. 229)
\textsuperscript{444} Lourenço and Jayawarna (2011, p. 237)
\textsuperscript{445} Ghina et al. (2014, p. 16)
\textsuperscript{446} Ghina et al. (2014, p. 14)
\textsuperscript{447} Ghina et al. (2014, p. 16)
Furthermore, the output quality has an impact on the outcome quality, for example, the characteristics of successful entrepreneurs.\footnote{Ghina et al. (2014, p. 16)}

4.2.2.1.c Recap

Summing up, out of the 12 analyzed studies that are examined in detail in this chapter, it can be argued that EE in generating a positive outcome. Moreover, EE has an impact on the motivation, innovation or creativity of entrepreneurship students. For example, one study figured out that through EE the motivation of graduates to start a new venture is enhanced. However, another study examined that the level of motivation is dependent on the personal motivation of students. Therefore, it is mentioned that if a person completing an entrepreneurship course is extrinsically motivated, EE has a negative impact, but if this person is intrinsically motivated, EE is positively correlated to the encouragement of creating a new venture.

Furthermore, it was examined that EE influences innovation. Hence, businesses started by graduate entrepreneurs are more innovative than ventures created by individuals with no EE background. The post-creativity is boosted from EE as well. To sum, up it is import that EE at universities or HEIs is meeting the needs and demand of students. Otherwise, it can lead to dissatisfaction and demotivation. If the curriculum of academic entrepreneurship programs is well designed, EE has a favorable effect on the motivation, innovation, and creativity.

4.2.2.2. Business Start-ups

4.2.2.2.a Overview

In this section studies which are focusing on the relationship between EE at universities and HEIs and the creation of new business ventures are examined. Whereby, this impact level can be divided into three subcategories: (1) Start-Ups; (2) Venture Effectiveness and (3) Networking. In total 15 studies are categorized in this level of impact. The following table (Tab. 10) is providing an overview of the studies including the main findings of the analyzed research papers.
<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Title</th>
<th>Main Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dutta, D. K., Li, J., &amp; Merenda, M. (2011)</td>
<td>Fostering entrepreneurship: impact of specialization and diversity in education</td>
<td>■ EE has a significant positive impact on the probability of future venture creation. Managerial competencies are useful for launching a new venture.</td>
</tr>
<tr>
<td>Henry, C., Hill, F. M., &amp; Leitch, C. M. (2004)</td>
<td>The Effectiveness of Training for New Business Creation: A Longitudinal Study</td>
<td>■ Two years after completing an EE training program the percentage of self-employed grew from 0 percent to 8. Training programs have a positive impact on venture creation.</td>
</tr>
<tr>
<td>Vincett, P. S., &amp; Farlow, S. (2008)</td>
<td>“Start-a-Business”: an experiment in education through entrepreneurship</td>
<td>■ Through unconventional entrepreneurial training programs, many ventures have been started. 50 percent of the 51 participants started a business.</td>
</tr>
<tr>
<td>Kailer, N., Wimmer-Wurm, B., Knapp, M., &amp; Blanka, C. (2014)</td>
<td>Entrepreneurial Intentions and Activities of Students at Austrian Universities: Global University Entrepreneurial Spirit Students’ Survey 2013</td>
<td>■ 5.3 percent of Austrian respondents are nascent entrepreneurs. ■ 4.5 percent of Austrian respondents have started a new venture.</td>
</tr>
<tr>
<td>Kailer, N., &amp; Hora, W. (2017)</td>
<td>Entrepreneurial Intentions and Activities of Students at Austrian Universities: Global University Entrepreneurial Spirit Students’ Survey 2016</td>
<td>■ 8.1 percent of Austrian respondents are nascent entrepreneurs. ■ 5.8 percent of Austrian respondents have started a new venture.</td>
</tr>
<tr>
<td>Dominguinhos, P. M. C., &amp; Carvalho, L. M. C. (2009)</td>
<td>Promoting business creation through real-world experience</td>
<td>■ Case Study about the entrepreneurship program “Comecar” is examined, with the overall aim to assist participants to launch a new Start-Up.</td>
</tr>
<tr>
<td>Støren, A. L. (2014).</td>
<td>Entrepreneurship in higher education: Impacts on graduates’ entrepreneurial intentions, activity and learning outcome</td>
<td>■ The program has a success rate of 41 percent (hence out of 22 students, nine created a new venture).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ No positive relation between EE and venture creation has been identified. ■ EE is not contributing to generate an entrepreneurial mindset among masters’ graduates.</td>
</tr>
</tbody>
</table>
(2) Venture Effectiveness

<table>
<thead>
<tr>
<th>Authors</th>
<th>Title</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Elmuti, D., Khoury, G., & Omran, O. (2012) | Does Entrepreneurship Education have a Role in Developing Entrepreneurial Skills and Ventures' Effectiveness? | A significant positive relationship between EE and the effectiveness of an organization is existing.  
EE has a positive impact on any entrepreneurship venture. |

(3) Networking

<table>
<thead>
<tr>
<th>Authors</th>
<th>Title</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gordon, I., &amp; Jack, S. (2010)</td>
<td>HEI engagement with SMEs: developing social capital</td>
<td>EE is creating networks among students that are built on trust.</td>
</tr>
</tbody>
</table>

Tab. 10: Business Start-Ups – List of literature

4.2.2.2.b Literature Analysis Start-Ups

In this section, the impact of EE on the number of Stat-Ups is examined. In total ten studies could be identified that are focusing on this impact level. Edelman et al. are dealing with the research question if EE is enhancing the probability that nascent entrepreneurs will start a new business venture. Primarily, the researchers are focusing on the content of teaching. Therefore, they have used two data sources for their study. First, they are dealing with textbooks that are used at HEIs in the US. Second, data from a panel study about nascent entrepreneur practices is used. Through the measurement of the two variables “Start-Up activities” and “Enhancing the Probability of Start-Up” the authors are examining the current entrepreneurship educational practices and their relevance. A lack of correspondence between business practice and teaching could be identified. However, this study is limited to teaching contents that are mentioned in one of the analyzed textbooks. The authors argued that typically textbooks

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449 Source: Own graphical presentation
450 Edelman et al. (2008, p. 58)
451 Edelman et al. (2008, p. 59)
452 Edelman et al. (2008, p. 62)
are used as a guideline what is taught in class. Moreover, the importance of fostering the curriculum of EE to the needs of nascent entrepreneurs to enhance the number of Start-Ups has been identified.\textsuperscript{453}

Dutta, Li, and Merenda\textsuperscript{454} are analyzing the impact of EE on Start-Ups as well. Through a field study of former students of a public university in the US, data was gathered between the years 1998 and 2008. Measured variables are the “Venture Creation,” “Annual Income,” “Personal Net Worth,” “Specialized entrepreneurship education” and “Diversity of education initiatives.” The authors have identified a significant positive influence of the specialization on EE on the probability of future venture creation. Thus, if a person has EE background, the likelihood of entrepreneurial activities is higher than of a person without EE experience. Notably, the creation of managerial competencies is examined as useful for launching a new business.\textsuperscript{455} Summing up, EE and especially a specialization in entrepreneurship at universities is helpful for nascent entrepreneurs to become a successful business owner.\textsuperscript{456} Thus, out of this study, it can be said that EE has a positive impact on the number of business Start-ups.

Lee and Poh-Kam\textsuperscript{457} have examined the impact of EE on new venture creation, with the focus on the individuals attitudes toward EE. Therefore, the overall research question is to examine, if a relationship between the founding of a new venture and attitude towards EE is existing.\textsuperscript{458} With a sample of 11, 600 students from technical fields, as well as business management programs data was collected.\textsuperscript{459} Finally, the researchers came to the result that a positive relationship between attitudes towards EE and Start-Ups is existing\textsuperscript{460}. This result is in line with the findings from Dutta et al. where a positive impact of EE on Start-Ups has been identified as well.

Another ranked study from Henry et al.\textsuperscript{461} are focusing on the effectiveness of EE regarding the process business creation. The researchers collected data by conducting a longitudinal research lasting for more than three years.\textsuperscript{462} Through questionnaires, which were sent at five different points of time information to 35 participants information
was gathered. Whereby, the first stage, was before the training program has started, the second at half-way of the program, the third stage after completion, fourth stage one year after finishing the program, and the last stage two years after completing the training program. Furthermore, a control group was installed to maximize the validity of the results. One significant finding is the change in the employment status of the participants. At the beginning of the training program 86 percent were employed, 0 percent self-employed, 6 percent unemployed and 8 percent studying full-time. Two years after finishing the program, 61 percent are still employed, 8 percent are self-employed, 0 percent unemployed and 4 percent studying full-time. The following table (Tab. 11) is illustrating the results in detail.

<table>
<thead>
<tr>
<th>Status</th>
<th>Overall Change – (n = various, as indicated)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>At the Beginning (n = 35)</td>
</tr>
<tr>
<td>Employed (E)</td>
<td>30 (86%)</td>
</tr>
<tr>
<td>Self-employed (SE)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Unemployed (UE)</td>
<td>2 (6%)</td>
</tr>
<tr>
<td>Studying Full-time</td>
<td>3 (8%)</td>
</tr>
</tbody>
</table>

Tab. 11: Change in employment status (impact on start-ups)

This study is providing evidence for the positive relationship between EE training programs and the number of self-employment after finishing. The development of skills and knowledge is a possible explanation of the positive impact. Moreover, the access to networks through the offered training programs is examined as a catalyst for new venture creation.

Another study published in a ranked journal was conducted from the researchers Vincett and Farlow with the aim to investigate if two unconventional experiment in EE can help to enhance Start-Ups and to include the findings into conventional curriculums at universities. According to the authors, 50 percent of the participant (30 Bachelor of Business Arts students, 21 Master of Business Arts students) have started their business. Although, not all entrepreneurs have generated revenues at this time. Through the offered unconventional courses from the researcher, students learned to

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463 Henry et al. (2004, p. 257)
464 Henry et al. (2004, p. 258)
465 Source: Henry et al. (2004, p. 261)
466 Henry et al. (2004, p. 265)
467 Vincett and Farlow (2008, p. 274)
468 Vincett and Farlow (2008, p. 284)
optimize and plan a venture. Finally, after finishing the experiment, many real businesses were started. After the positive outcomes of this experiment, the program was expanded and was included in universities Master of Business Arts Program Innovation and Entrepreneurship.\textsuperscript{469}

Chrisman, McMullan, Kirk Ring, and Holt\textsuperscript{470} have investigated the impact of EE on the creation of new ventures as well. They focused on the question if entrepreneurship courses are positively related to Start-Ups.\textsuperscript{471} Through a questionnaire which was sent to a sample of nascent entrepreneurs that had experience with EE data was collected.\textsuperscript{472} Whereby, the variables “Start-Ups” as dependent and “number of entrepreneurship courses completed” as the independent variable are used to identify the impact of EE on venture creation.\textsuperscript{473} It was examined that courses in entrepreneurship at universities have a positive effect on the number of Start-Ups. Especially it is mentioned that EE is vital during the development process of a new venture. However, no significant relationship between the number of hours spent in the course, and Start-Ups has been examined.\textsuperscript{474}

Moreover, the authors Kailer et al.\textsuperscript{475} are providing statistical data about entrepreneurial activities in Austria. Through the research project, Global University Entrepreneurial Spirit Students’ Survey (GUESSS) activities of students regarding entrepreneurial actions are examined. Based on this project a national report for Austria is offered.\textsuperscript{476} The average student who has participated is 24,4 years old. Moreover, more female (64 percent) than male (35 percent) have engaged in the Austria GUESSS 2013. Furthermore, the sample consists of individuals at three different educational level, 50 percent are registered in a bachelor program, 41 percent in a master program, and 9 percent in a Ph.D. program.\textsuperscript{477} Out of the data, it is reported that out of the sample 5,3 percent (222 students) of the Austria respondents are nascent entrepreneurs.\textsuperscript{478} 4,5 percent (191 students) of the Austria respondents have started a new venture.\textsuperscript{479} In 2016/17 another report was published, whereby the number of nascent entrepreneurs

\textsuperscript{469} Vincett and Farlow (2008, p. 286)
\textsuperscript{470} Chrisman et al. (2012, p. 63)
\textsuperscript{471} Chrisman et al. (2012, p. 68)
\textsuperscript{472} Chrisman et al. (2012, p. 69)
\textsuperscript{473} Chrisman et al. (2012, 70-71)
\textsuperscript{474} Chrisman et al. (2012, p. 76)
\textsuperscript{475} Kailer et al. (2014, p. 3)
\textsuperscript{476} Kailer et al. (2014, p. 2)
\textsuperscript{477} Kailer et al. (2014, p. 4)
\textsuperscript{478} Kailer et al. (2014, p. 19)
\textsuperscript{479} Kailer et al. (2014, p. 24)
rose to 8.1 percent out of the Austria respondents (306 students).480 Further, the percentage of active founders of the Austria respondents (217 students) rose to 5.8 percent.481 Thus, the number of graduated entrepreneurs is steadily increasing in Austria. This result can be interpreted as a positive impact of EE at universities on the number of start-ups in Austria.

Dominguinhos and Carvalho482 conducted a case study based on an entrepreneurship training program to analyze the effectiveness of EE. The researchers focused on two categories: the number of created ventures and the number of chosen industries by the individuals. Moreover, interviews were conducted by interviewing the responsible persons for the program, as well as some trainees. The analyzed program is called “Comecar” which was developed in Portugal with the primary aim to promote the launch of new start-ups by graduates. In general, the whole program is divided between working environment and classroom. The entire program is lasting for six months.483 22 students, at the average age between 25 and 29 have attended this program.484 The result of this case study shows that in total nine new ventures were created out of this entrepreneurship training program. Hence, the developed program has a success rate of 41 percent.485 This case study examines that EE at HEIs is positively related to the number of Start-Ups.

Støren486 has published different results than the other authors mentioned above. Through a survey among graduates, with a total sample of 2827 master graduates, the impact of EE has been examined. This study has identified that no positive relation between EE and venture creation is existing.487 Further, it is mentioned that EE is not contributing to the entrepreneurial mindset of the master graduates. The findings examine that the participants showed little to no concern in starting their own business.488

4.2.2.2.c Literature Analysis Venture Effectiveness

Within the impact level business start-ups, the subcategory venture effectiveness is defined. In this subsection, studies that are focusing on the impact of EE on the effectiveness of a new venture are examined. Two articles have been identified that are

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480 Kailer and Hora (2017, p. 16)
481 Kailer and Hora (2017, p. 20)
482 Dominguinhos and Carvalho (2009, p. 150)
483 Dominguinhos and Carvalho (2009, p. 158)
484 Dominguinhos and Carvalho (2009, p. 159)
485 Dominguinhos and Carvalho (2009, p. 161)
486 Støren (2014, p. 806)
487 Støren (2014, p. 806)
488 Støren (2014, p. 810)
concentrated at this level of impact. The main findings are displayed table (Tab. 10) at the beginning of the impact level business start-ups.

Elmuti et al.\textsuperscript{489} have analyzed the impact of EE at universities on the development of skills that are crucial for the effectiveness of a new venture. The researchers surveyed in the United States with a sample of 170 entrepreneurs and future entrepreneurs. One of the survey group was enrolled in an EE training program and the other group consisted of individuals that want to become prospective entrepreneurs. Most individuals of the sample are categorized in the first group.\textsuperscript{490} One primary research objective was to determine if a relationship between EE indicators and venture effectiveness is existing.\textsuperscript{491} The researchers identified a significant positive correlation between EE and the efficiency of an organization.\textsuperscript{492} The authors came to the results that EE is a factor that has a significant positive impact on the effectiveness of any entrepreneurship venture.\textsuperscript{493}

Chrisman et al.\textsuperscript{494} figured out that EE has a positive impact on the quantity of venture creation, as mentioned above. However, in the same study, the authors came to the result that courses in entrepreneurship are not correlated to the performance of a new venture.\textsuperscript{495} Therefore, these results are not supporting the findings of Elmuti et al. Further research on the impact of EE at universities on the effectiveness of a new venture has to be done.

\textit{4.2.2.2.d Literature Analysis Networking}

Another subcategory that has been identified within the impact level business start-ups is the impact of EE on networking. In this section articles that are examining the impact of EE at universities are analyzed to identify the impact of EE on networking. Three articles have been designated that are fitting to this impact level. The main findings are presented in the table (Tab. 10) at the beginning of the chapter business start-ups.

Gordon and Jack\textsuperscript{496} used a qualitative approach to analyzed network activities of five individual business owners that participated in an entrepreneurship course at a university. The researchers figured out that though the EE training program a network of

\textsuperscript{489} Elmuti et al. (2012, p. 83)\textsuperscript{490} Elmuti et al. (2012, p. 89)\textsuperscript{491} Elmuti et al. (2012, p. 94)\textsuperscript{492} Elmuti et al. (2012, p. 95)\textsuperscript{493} Elmuti et al. (2012, p. 96)\textsuperscript{494} Chrisman et al. (2012, p. 76)\textsuperscript{495} Chrisman et al. (2012, p. 76)\textsuperscript{496} Gordon and Jack (2010, p. 522)
the participants has been created that was built on trust.\textsuperscript{497} Thus, through EE at HEIs networks among nascent entrepreneurs can be generated that can help entrepreneurs to start a new venture. Moreover, HEIs have the opportunity to profit from the generated networks by having access to entrepreneurs that can appear as guest lectors or mentors for future nascent entrepreneurs.\textsuperscript{498}

Further, a national report about Austria from the international GUESSS project from the years 2013 and 2016 are providing data about networks among students. The presented data show that having a university context is essential to meet partners for starting a business because of 38 percent of the Austria respondents (3315 students) intent to start a new venture with a fellow student.\textsuperscript{499} Moreover, the national report from 2013 shows that out to 222 Austrian students 44 percent tend to found their venture with peers that have the same educational background. This study examined the importance of the university to meet potential Start-Up partners.\textsuperscript{500}

\textbf{4.2.2.2.e Recap}

In this section, the effect of tertiary EE on business ventures was examined. Further, the chapter is divided into three subsections, start-ups; networking; and venture effectiveness. Most articles are focusing on the correlation between EE and start-ups. Overall, it can be said that launching a new business is positively effect by EE at universities and HEIs. Managerial competencies are helpful to create a new venture. Principally a positive relationship between EE and the number of start-ups could be identified by the researchers. However, a few studies show as a result that no or a negative correlation is existing.

Considering the impact of EE on the venture effectiveness, two articles could be founded that are focusing on this correlation. The results are not uniform; one study concluded that a positive relationship is existing, while the other study could not identify any impact of EE on the effectiveness of a new business. Furthermore, three papers are examining the effect of EE on networking, while a significant positive impact was discussed. Especially through specific social events, the students can build networks on trust.

\textsuperscript{497} Gordon and Jack (2010, p. 533)  
\textsuperscript{498} Gordon and Jack (2010, p. 533)  
\textsuperscript{499} Kailer and Hora (2017, p. 17)  
\textsuperscript{500} Kailer et al. (2014, p. 20)
4.2.2.3. Economic Growth

4.2.2.3.a Overview

Concerning the literature review, economic growth is identified as a category of the impact level which can be determined as an outcome of EE at universities. Tab. 12 shows an overview of the studies which refer to this impact category and which include in total six studies. Using the literature analysis of the selected papers, below the findings of the research studies according to economic growth are described.

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Title</th>
<th>Main Findings</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>■ Tertiary EE has a positive impact on human capital as a growth driver and displaces secondary EE regarding economic growth.</td>
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<tr>
<td></td>
<td></td>
<td>■ Positive impact of EE on economic growth in terms of contribution to the economy, creation of jobs and investments.</td>
</tr>
<tr>
<td>Lange, J., Marram, E., Jawahar, A. S., Yong, W., &amp; Bygrave, W. (2014)</td>
<td>Does and entrepreneurship education have lasting value?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ A high number of graduates in the business service sector and an increase in the engineering sector.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Positive impact of EE on economic growth regarding industry growth (industry sectors).</td>
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<tr>
<td></td>
<td></td>
<td>■ Fewer differences in active and nascent founders according to the impact on industry sectors.</td>
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<td></td>
<td></td>
<td>■ IT sector is the leader of nascent and active students founders.</td>
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<tr>
<td></td>
<td></td>
<td>■ Positive influence of EE on economic growth in terms of industry growth (industry sectors).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Entrepreneurship alumni are mainly active in the service sector.</td>
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<tr>
<td></td>
<td></td>
<td>■ Positive influence of EE on the annual turnover growth.</td>
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</tbody>
</table>

Tab. 12: Economic Growth - List of literature^501

^501 Source: Own graphical presentation
4.2.2.3.b Literature Analysis Economic Growth

Chatterji\textsuperscript{502} published the study in a ranked journal and investigates the importance of tertiary education in the economic growth process, measured on growth rates like the Gross Domestic Product (GDP) per capita or determined by the potential role of higher education in contrast to primary or secondary education. In the paper “Tertiary Education and Economic Growth”, the author examines if the education in higher institutions has an impact on the economic growth and the economic growth process,\textsuperscript{503} and in a way if tertiary education plays a potential role in increasing economic growth.\textsuperscript{504} In the calculation for analyzing the impact of tertiary education on the economic growth, the data set of the GDP per capita of 98 countries for the years 1960 to 1985 were used, where the number of countries consists of middle income countries, OECD countries and Least Developed Countries (LDC).\textsuperscript{505} The calculated outcome presents that a significant difference to the growth estimates from Barro exists, which are taken for the comparison of the results and which deal with the basic educational level.\textsuperscript{506} Such differences in the results are that LDC are growing more strongly when considering the aspect of higher education, in contrast to the estimates from Barro.\textsuperscript{507} Therefore, the author also argues, that tertiary education has on the one hand, an impact on countries, which are “...seeking to ‘catch up’ with the world leaders...”\textsuperscript{508} and on the other hand, less impact on current world leaders because their tertiary education is already almost at the maximum. Furthermore, the findings of the study referring to the role of higher education in contrast to primary or secondary education and their impact on economic growth are auspicious. This study outcome presents that tertiary education displaces secondary education regarding economic growth and as a driver of growth because tertiary education shows in every specification more significant results than the secondary education. Nevertheless, the author also mentions that it does not mean that secondary education is not important, much more it forms the basis for higher education.\textsuperscript{509} Due to the potential role of tertiary education an essential part plays the learning process of human capital which is characterized as one of the major drivers of an economic growth process\textsuperscript{510} and which can be influenced through the existence of political rights. According to the political rights, the author of this study argues that there will be more
growth when the country follows a more liberal style.\textsuperscript{511} Finally, the author states that tertiary education has an impact on economic growth, be it, for example the catching-up process of countries or due to policy agendas.\textsuperscript{512}

Another study from Lange et al. analyzes the effectiveness of EE at universities on economic growth. With a data sample of 3,775 alumni who graduated between a 25-year period from 1985 to 2009 from the Babson College (US), the data was collected through a survey including 55 questions. From these 3,775 alumni, 913 alumni have founded or co-founded one or more firms or businesses in which they are working full time and are therefore characterized as entrepreneurs.\textsuperscript{513} The researchers came to the result that there exists a positive impact of EE on economic growth, due to full time entrepreneurs who contribute to the economy in terms of creating new goods, services or jobs. Finally, the results of the study show that the grounded enterprises from the alumni students created more than 25,000 jobs with an investment of 50,000$ per job\textsuperscript{514} and for that reason, the positive impact of EE on economic growth is strengthened as well.

Galloway and Brown\textsuperscript{515} examine a different part of the impact level economic growth, namely the impact of EE at universities on a specific industry sector. Data was collected through a questionnaire given to alumni with a final sample size of 1,933 from the age between 18 and 64. The authors establish in their paper three hypotheses including the following one: “Entrepreneurship education in universities will increase the range of industry sectors represented by graduate businesses, specifically those associated with technology…”,\textsuperscript{516} and which is the essential one associated with this impact category of economic growth. The study focuses on the one side on graduates, who owned already a new business or are in an active process to start a new venture, and on the other side on the industry sector in which they already started or owned their venture. Galloway and Brown found out that the most concentrated industry sector of entrepreneurial alumni is the business service sector, followed by consumer services, the manufacturing, and construction sector and the extractive sector like mining and fishing. So, the concentration of the graduates in the business service sector leads to economic growth within this specific industry. Moreover, this high number of graduates in the business service sector is attributed to the field of study of the students, because over a third of

\begin{flushleft}
\textsuperscript{511} Chatterji (1998, pp. 352–353) \\
\textsuperscript{512} Chatterji (1998, p. 354) \\
\textsuperscript{513} Lange et al. (2014, pp. 14–15) \\
\textsuperscript{514} Lange et al. (2014, p. 24) \\
\textsuperscript{515} Galloway and Brown (2002, p. 401) \\
\textsuperscript{516} Galloway and Brown (2002, p. 401)
\end{flushleft}
the sample size of alumni entrepreneurs are graduates from the business faculty. Nevertheless, the proportion of the actual student sample of engineering is higher than the student sample of business, and therefore the authors argue that this range of industry sector should increase in the next years.

Kailer and Hora discuss in their report from 2016/2017 the same impact category of economic growth as Galloway and Brown, namely the industry sectors. Their study was conducted by 3755 questionnaires sent to students of 23 Austrian universities. The authors describe in their study that EE at universities affects economic growth regarding industry growth. They found out in which industry sector most of the Austrian active student founders start their business and what are the preferred industry sectors for nascent founders. Active founders can be identified as students, who are already self-employed or have their own business. 217 students that are 5.8 percent of the Austrian respondents can be identified as active founders, whereas 306 students, that are 8.1 percent of the Austrian respondents are nascent founders. Nascent founders can be defined as individuals who are trying to become self-occupied or create their own business. Fig. 22 depicts the industry sectors of the mostly started businesses by active student founders. Here the information technology (IT) and communication sector lead with 18 percent followed by the advertising and marketing sector with 11 percent and the human health, trade, and education and training sector with each 8 percent. Fig. 23 illustrates the preferred industry sectors among students, who are trying to start their own business. The industry sector leader of nascent founders is as well the IT and communication sector with 14 percent, followed by the human health and advertising and marketing sector with 12 percent each of them. Considering these two types of entrepreneurial founders, their focus on the industry type is quite similar. The preferred industry sector of active and nascent student founders is the IT and communication sector for both types. According to this study, it seems obvious that nascent founders who have a plan to start an own business in a specific sector realize their plan of an own venture or are already self-employed in their planned industry sector.

517 Galloway and Brown (2002, p. 403)
518 Galloway and Brown (2002, p. 404)
519 Kailer and Hora (2017, p. 21)
520 Kailer and Hora (2017, p. 3)
521 Kailer and Hora (2017, p. 21)
522 Kailer and Hora (2017, p. 18)
523 Kailer and Hora (2017, p. 20)
524 Kailer and Hora (2017, p. 16)
525 Kailer and Hora (2017, p. 21)
526 Kailer and Hora (2017, p. 16)
527 Kailer and Hora (2017, pp. 16–18)
Kailer et al.\textsuperscript{530} survey a country study of Austrian students for the year 2013 for the GUESSS project, which is an international cooperation of countries in the field of EI and entrepreneurial actions of students in diverse countries. This GUESSS report of Austria is based on a questionnaire where 149,587 students participated at 23 different universities and universities of applied science of Austria. The response rate lay at five

\textsuperscript{528}Source: Own graphical presentation on the basis of Kailer and Hora (2017, p. 21)
\textsuperscript{529}Source: Own graphical presentation on the basis of Kailer and Hora (2017, p. 18)
\textsuperscript{530}Kailer et al. (2014, p. 2)
percent and 4,220 questionnaires were taken into account. In this study the authors investigated nearly the same kind of issue as the authors Kailer and Hora in 2017, discussed in the paragraph before and thus, a comparison between these two studies can be carried out. They as well approach the theme of industry sectors of nascent and active founders according to the impact category economic growth. The definitions of nascent and active founders have been described already above and are similar to the definitions in this study. According to this study of 2013, 222 Austrian students, that are 5.3 percent are nascent founders and 191 students, that are 4.5 percent are active founders, which are compared to the numbers of the report in the year 2016/2017 lower. Fig. 24 illustrates the preferred industry sectors of nascent student founders for their venture creation, where the leader is the IT and communication sector with 20 percent, followed up by the health service sector with 14 percent and the advertising and marketing sector with 8 percent. Moreover, the study analyzes the industry sectors of active student founders, which are depicted in Fig. 25 and which shows that also the IT and communication sector, the health sector and the advertising and marketing sector are the sectors with the most percentages of students, where they already have their own business or where they are already self-employed. All in all, the outcome of this study is in line with the outcome of the previous study from Kailer and Hora, namely that the favored industry sectors of nascent and active student founders are the communication and the IT sector.

531 Kailer et al. (2014, pp. 2–3)
532 Kailer et al. (2014, p. 21)
533 Kailer et al. (2014, p. 27)
534 Kailer et al. (2014, p. 19)
535 Kailer et al. (2014, p. 24)
536 Kailer et al. (2014, p. 21)
537 Kailer et al. (2014, p. 25)
538 Kailer et al. (2014, p. 24)
539 Kailer and Hora (2017)
Furthermore, the European Commission\textsuperscript{542} published a report with the title "Effects and impact of entrepreneurship programmes in higher education" which investigates among others the effect of EE at HEIs on the economy. The data of the study was collected through a survey including alumni students HEIs in Europe who attended

\textsuperscript{540} Source: Own graphical presentation on the basis of Kailer et al. (2014, p. 21)
\textsuperscript{541} Source: Own graphical presentation on the basis of Kailer et al. (2014, p. 27)
\textsuperscript{542} European Commission (2012, p. 3)
entrepreneurship programs (entrepreneurship alumni) and alumni students of JADE, whereby both count as entrepreneurship alumni. JADE is defined as "...an international umbrella organisation of junior enterprises established and set up by students." Moreover, an alumni control group which is defined as a group of students that have not participated in this type of EE is also included in the survey. A sample size of 1,138 entrepreneurship alumni which already contain 288 JADE alumni and 1,443 control group alumni completed the questionnaire. Generally, the survey manifests that EE has an impact on the economic growth and the economy. It figures out results of the impact on the economic growth concerning the industry sector, where enterprises which are set up by alumni are mainly active in the service sector (see Fig. 26). This outcome is in line with the results from Galloway and Brown, where the business service sector presents core activities of entrepreneurship alumni. Further on, the researchers find out a significant influence of EE on the annual turnover growth in the context of economic growth, where entrepreneurship alumni reached a higher average on an annual turnover growth (50 percent) than the control group alumni which reached 43 percent. Summing up, the research study reveals that EE in specific entrepreneurial programs at universities has a higher positive impact on the annual turnover growth and the industry sector, especially on the business service sector as in contrast the alumni group who not participated in such EE programs at universities.

![Fig. 26: Industry sectors concerning businesses set up by alumni](image)

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543 European Commission (2012, p. 3)
544 European Commission (2012, p. 8)
545 European Commission (2012, p. 8)
546 European Commission (2012, p. 14)
547 European Commission (2012, p. 74)
548 Galloway and Brown (2002)
549 European Commission (2012, pp. 78–79)
550 Source: Own graphical presentation on the basis of European Commission (2012, p. 74)
4.2.2.3. Recap

Summing up the studies focusing on the impact of EE on economic growth, it can be reported that the researchers are presenting extensively similar results. The sample of the research differs between studies form a sample of 98 students or graduates to a large sample of 4,220 students and graduates.

Most of the authors figured out that EE programs at universities are fundamental for economic growth, especially for the growth of specific industry sectors. The IT and communication sector and the business service sector are identified as the most preferred industry sectors for graduates and active founders. Moreover, one author found out that tertiary education has a positive influence on so called ‘catching-up’ countries and LDC because for example, LDC are growing more strongly due to improved higher educational level in comparison to only basic educational level. On the other hand, higher education is less important for world leader countries because they generated almost their maximum. Another researcher examined a positive impact of EE on economic growth, the creation of new jobs or investments.

4.2.2.4. Career and Employment

4.2.2.4.a Overview

In this section, the studies which are focusing on the impact of EE at universities and HEIs on the career and employment are analyzed. In total 16 studies are in the data sample of this impact category, which can be classified into two subcategories: (1) Career and (2) Employment. The table below (Tab. 13) provides a general view of the research studies and their main findings.

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Title</th>
<th>Main Findings</th>
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<tr>
<td>(1) Career</td>
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</table>
- EE of graduates impacts positively the career options which they pursue, supports the career development of graduates further and enhances the career learning. |
Concerning perceived impact, female students gain more entrepreneurial knowledge through EE courses than male students. Participation in EE programs (e.g., SPEED program) leads to a positive effect on student's career decision, due to business creation or learning experiences during studies. EE at universities or HEIs has a positive influence on career.

EE has a positive impact on self-efficacy and on an entrepreneurial career. Connection between entrepreneurial self-efficacy and entrepreneurial behavior implies a positive impact of EE on the career path of graduates.

EE plays a significant role for identifying career options and goals. EE has a positive impact on career outcome and career decisions.

EE has a positive impact on entrepreneurial career outcomes. Successful entrepreneurial outcome is assigned to EE at HEI. Positive career development due to the number of active founders and number of jobs which are created. EE impacts the entrepreneurial career outcome of students positively.

Significant positive amount of active student founders. EE leads to motives for further career development. Positive impact of EE on an entrepreneurial career.

EE creates a positive impact on students and their attitude towards self-employment as a career option. Benefits of EE that students engender self-employment as a career option are significantly high. EE has a highly positive impact on the issue of employment of students.

Entrepreneurship and EE have a positive impact on employment performance.
4.2.2.4.b Literature Analysis Career

One subcategory of the impact level career and employment which has been identified in this Master's Thesis is the impact on career. Studies characterized in this impact level and focusing on EE at universities and HEI are assigned to the fourth level which is the result level of the used framework. Totally, eight relevant articles concerning this theme are analyzed in this subsection, which are listed in Tab. 13 at the beginning of the subitem (1) Career.

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551 Source: Own graphical presentation
The research conducted from Rae and Ruth Woodier-Harris\textsuperscript{(552)} is based on a short study concluding international students from an EE program in the United Kingdom (UK) and investigates the student’s perception of how their career making is influenced by EE. Primary data was collected from a rather small sample size of 60 international postgraduate students that are registered in an elective entrepreneurship course through a questionnaire survey, whereby just 28 students (46 percent) completed the survey.\textsuperscript{(553)} The outcome of the study strengthens the connection between EE on the one hand, in the personal development of students and on the other hand, in the rise of career learning for students. However, regarding the case of EE at universities in the UK, there exist less connection of EE of postgraduate and international students on career and enterprise development than for undergraduate students. Nevertheless, the researchers figured out that career progression is one of the most critical drivers in EE at HEI and universities at the national and international level, but as well for the specific case of the UK. In future, entrepreneurial development of career will become a significant driver also for postgraduate students. Summing up, the authors came to the result that EE of graduates impacts positively the career options which they pursue, supports the career development of graduates further and enhances the career learning.\textsuperscript{(554)}

Packham, Jones, Miller, Pickernell, and Thomas\textsuperscript{(555)} tested in their study the effectiveness of EE as a career option within European HEIs in the countries France, Germany, and Poland. The sample consists of 237 undergraduate students from the age 18 to 24, whereby 50.6 percent of the total students are male, and 49.4 percent are female.\textsuperscript{(556)} Considering the results of this study, the authors found out that EE and especially educational experience of entrepreneurship has a higher positive impact on an entrepreneurial career on men than on women. However, on the other side female students perceive more impact of entrepreneurial knowledge through EE courses than male students. All in all, EE has a greater effect on male graduates than on female graduates in the context of the career option to start a business, whereas regarding perceived impact female students profit more from the learning experience from EE courses. Due to this differences in EE, this study highlights that effective EE should be studied context and gender specific.\textsuperscript{(557)}

\textsuperscript{552} Rae and Ruth Woodier-Harris (2013, p. 926)
\textsuperscript{553} Rae and Ruth Woodier-Harris (2013, pp. 933–935)
\textsuperscript{554} Rae and Ruth Woodier-Harris (2013, p. 943)
\textsuperscript{555} Packham et al. (2010, p. 569)
\textsuperscript{556} Packham et al. (2010, p. 575)
\textsuperscript{557} Packham et al. (2010, p. 582)
Another study published in a ranked journal which is focusing on the impact of EE on career decisions of graduates is from the researcher Woodier-Harris. In this pilot study, 15 students were interviewed who participated in the Student Placements for Entrepreneurs in Education (SPEED) program of EE. Such program should help students in their career decisions of creating new businesses during their studies. Therefore, in this study the influence of the EE SPEED program on student’s career choices and employment is identified. The researcher of this study found out that students who participate in the SPEED program gain specific learning experience due to creating businesses during studying, which then leads to a positive effect on their career decision. Thus, it can be argued that EE at universities or HEIs has a positive effect on career.

Further, Wilson et al. figured out that specific EE of students is positively related to self-efficacy and to pursue an entrepreneurial career. Moreover, the researchers highlight an existing connection among entrepreneurial self-efficacy and entrepreneurial behavior, particularly expressive for graduates in early career stages. This connection implies a high influence of EE on the career path of graduates because those who feature high self-efficacy are more likely to create their venture after their graduation.

Rae and Woodier-Harris analyzed in their research study the effectiveness of EE of students on the career outcome. Based on a specific module for entrepreneurial learning the outcome is measured. Through an end-of-module evaluation survey over a two-year time period, the data was collected from international postgraduate students from two different business universities. 152 students in total participated in the module, where the response rate of the research evaluation lay at 60 percent (90 students). The researchers came to the results that entrepreneurship courses play a significant role in identifying career options and goals. Moreover, comparing the two years (2011 and 2012) it is evident that the module had a positive impact on the career outcome because the percentage of students who want to start their own business after graduation increased from three to seven percent from the year 2011 to the year 2012. This

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558 Woodier-Harris (2010, p. 473)  
559 Woodier-Harris (2010, p. 468)  
560 Woodier-Harris (2010, p. 463)  
561 Woodier-Harris (2010, p. 464)  
562 Woodier-Harris (2010, p. 473)  
563 Wilson et al. (2009, p. 114)  
564 Wilson et al. (2009, p. 114)  
565 Rae and Woodier-Harris (2012, p. 649)  
566 Rae and Woodier-Harris (2012, pp. 644–645)  
567 Rae and Woodier-Harris (2012, p. 649)
increase in the ambition of graduates to start an own business, was also a factor why students selected this tool. For instance, the outcome of the attendance of students in this specific EE program is the creation of an enterprise which is determined as a possible career option for graduates. Due to these arguments, EE has a positive impact on career decisions.

The purpose of the paper from Matlay is to examine the effect and influence of EE on the entrepreneurial outcome. Especially the impact on entrepreneurial career is essential for the analysis of this subcategory. The used research approach for evaluating the impact on the career is longitudinal, where telephone interviews were conducted from a period of ten years (1997 to 2006) with a target sample size of 64 student graduates from eight different HEI in the UK. The author investigates the impact of EE of graduates on entrepreneurial careers and career positions based on three different types of career time periods, which are: (1) Careers one year after graduation (Fig. 27), (2) Careers five years after graduation (Fig. 28) and (3) Careers ten years after graduation (Fig. 29). In Fig. 27 the career position of students one year after their graduation is illustrated, which highlights that none of the graduates of the research sample are unemployed. Most of the graduates are self-employed (29), followed by 26 respondents, who owned a micro-business. Fig. 28 illustrates the career position of students five years after their graduation, where the numbers changed a bit. There is still none of the respondents unemployed, whereby the number of self-employed graduates changed from 29 to 17. On the other side, the number of respondents who owned a micro-business increased from 26 to 34. Moreover, the figure shows that for the first time respondents are owners of small businesses after five years of graduation. Fig. 29 represents the career position of the research sample ten years after the graduation of students. There was still no unemployment after ten years, and only eight respondents were self-employed. The majority were still owners of micro businesses, whereas the number of owners of small businesses enhanced from 4 to 16. Finally, according to these career aspirations of the graduates, the authors came to the result that EE has a positive impact on entrepreneurial career outcomes. Because for example over the ten years of investigation, none of the respondents of the sample group became unemployed. Furthermore, it is obvious that there was a fast development from self-employment to

568 Rae and Woodier-Harris (2012, p. 649)
569 Matlay (2008, p. 382)
570 Matlay (2008, p. 391)
571 Matlay (2008, p. 388)
572 Matlay (2008, pp. 391–392)
micro and small businesses over the years. The author described this progress as a successful entrepreneurial outcome assigned to EE at HEIs.\textsuperscript{573}

Fig. 27: Career of students - one year after graduation\textsuperscript{574}

Fig. 28: Career of students - five year after graduation\textsuperscript{575}

\textsuperscript{573} Matlay (2008, p. 393)
\textsuperscript{574} Source: Own graphical presentation on the basis of Matlay (2008, p. 391)
\textsuperscript{575} Source: Own graphical presentation on the basis of Matlay (2008, p. 392)
According to the report from Kailer et al.\textsuperscript{577}, the researchers figured out that 4.5 percent (191 students) of Austrian respondents of the study are active founders. The authors examined that 55 percent of this active founders started their business during three years, and almost 14 percent had already grounded their start-up nine years ago.\textsuperscript{578} Fig. 30 shows the development of the number of employees of enterprises at the time of the study and in an view of five years. 73 percent of the firms in the sample group do not employ a person today, whereas in a period of five years the proportion of enterprises without employees decreased to 53 percent.\textsuperscript{579} Furthermore, the researchers figured out that including the active entrepreneurs with the employees from the start-ups today, about 400 jobs are created by these 191 active student founders.\textsuperscript{580} This consideration leads to a positive career development, and therefore the authors came to the result that EE impacts positively entrepreneurial career outcome.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{fig29.png}
\caption{Career of students - ten year after graduation\textsuperscript{576}}
\end{figure}

\textsuperscript{576} Source: Own graphical presentation on the basis of Matlay (2008, p. 392)
\textsuperscript{577} Kailer et al. (2014, p. 24)
\textsuperscript{578} Kailer et al. (2014, p. 24)
\textsuperscript{579} Kailer et al. (2014, p. 24)
\textsuperscript{580} Kailer et al. (2014, p. 24)
Another similar report from Kailer and Hora\textsuperscript{582} analyzed the impact of EE on career outcome through the determination of active founders. Active founders are students who have already their own business or are self-employed.\textsuperscript{583} Out of 3,755 Austrian respondents, 217 students that are 5.8 percent are already active founders\textsuperscript{584} and follow due to their EE a specific career path. The authors investigated the effect of EE on entrepreneurial careers like the creation of new firms.\textsuperscript{585} This effect is attributable to different motives and goals, where the most important ones for students in terms of entrepreneurial outcome are “…to advance my career in the business world” or “…do something that allows me to enact values which are core to who I am”.\textsuperscript{586} Due to the significant amount of active student founders and the mentioned motives for further career development, a positive effect of EE on an entrepreneurial career exist.

4.2.2.4.c Literature Analysis Employment

Within the impact level career and employment, the subcategory of employment came up. In this subchapter, research studies which emphasize the impact of EE on employment and employment performance are examined. Eight articles have been established that have their focus on this level of impact. The main findings of these research studies are shown at the end of Tab. 13 in the section (2) Employment.

\textsuperscript{581} Source: Own graphical presentation on the basis of Kailer et al. (2014, p. 24)
\textsuperscript{582} Kailer and Hora (2017, p. 20)
\textsuperscript{583} Kailer and Hora (2017, p. 20)
\textsuperscript{584} Kailer and Hora (2017, p. 20)
\textsuperscript{585} Kailer and Hora (2017, p. 22)
\textsuperscript{586} Kailer and Hora (2017, p. 22)
Ekpoh and Edet\textsuperscript{587} have explored the impact of EE on career intentions concerning employment of tertiary school students after the completion of their education. The focus of the study was finding out the attitude of students to employment and having a business after finishing university, and as well if EE can engender benefits for career options.\textsuperscript{588} With a data sample of 500 students from the economic, business administration and accounting and finance sector, data were collected by questionnaires. The researchers came to the results (see Fig. 31) regarding the preferred career options of students after finishing university, that the majority of students indicate employment (29.6 percent), followed by self-employment which indicates 26.8 percent and the third position is employment and part time business with 21.6 percent.\textsuperscript{589} Considering the research results, 26.8 percent of the graduates state that their preferred career option is self-employment. These results lead to the indication that EE creates a positive impact on students and their attitude towards self-employment as a career option. Moreover, the results according to the hypothesis if EE engenders benefits for student’s career options are identified as highly significant because the study evidence shows that EE creates an inspiring awareness for students and their business opportunity and equip students with the appropriate knowledge to realize the favored outcome of self-employment.\textsuperscript{590}

Summing up, the findings of this study describe, that EE has a highly positive impact on the issue of career and employment of students after graduation.\textsuperscript{591}

![Fig. 31: Priority of career options of tertiary educational students after graduation\textsuperscript{592}](image)

\textsuperscript{587} Ekpoh and Edet (2011, p. 172)
\textsuperscript{588} Ekpoh and Edet (2011, p. 175)
\textsuperscript{589} Ekpoh and Edet (2011, p. 174)
\textsuperscript{590} Ekpoh and Edet (2011, p. 175)
\textsuperscript{591} Ekpoh and Edet (2011, p. 176)
\textsuperscript{592} Source: Own graphical presentation on the basis of Ekpoh and Edet (2011, p. 177)
The authors Li and Liu\textsuperscript{593} explored in their research study that entrepreneurship has a positive impact on employment performance. Hence, this study aimed to figure out if entrepreneurship and EE have a positive influence on employment, and especially on employment performance.\textsuperscript{594} Nevertheless, the analysis not only approves the importance of EE and entrepreneurship on a theoretical basis, but it also provides empirical support for conducting EE and training of entrepreneurship. Moreover, the authors came to the result that EE is fundamental for young graduates and has a positive impact on them concerning securing good jobs and employment.\textsuperscript{595} The authors provide a more general view of employment and employment performance in this study, in contrast to the authors Ekpoh and Edet. However, the results of the study from Ekpoh and Edet are in line with the study results from Li and Liu.

Furthermore, the report from the European Commission\textsuperscript{596} from the year 2012 allocates data about the effects of EE on employment as well. The research method, sample size and data collection of this study have already been mentioned in chapter 4.2.2.3.b and are therefore not be explained further. The presented data show that improving entrepreneurship critical competences in the course of EE are essential to increase and influence employability for individuals. In the report employability is defined as an individual’s position finding a first job, maintaining a job, finding a new job in paid employment or self-employment. According to the three different sample groups entrepreneurship alumni, JADE alumni, and control group alumni, where its differences are also described already in the chapter 4.2.2.3.b, the study examined how EE influence the employability of alumni. The results of the study show that participants of entrepreneurial programs (entrepreneurship groups) exhibit later a higher rate of self-employment than the control group, that in contrast has not participated in EE programs.\textsuperscript{597} Furthermore, the researchers found out that the numbers of first work engagements of entrepreneurship graduates are higher right after their graduation compared to graduates from the control group.\textsuperscript{598} Subsuming these findings, a better employment status for entrepreneurship alumni is identified where EE effects the employability of alumni students positively. These results are in line with the results of the two analyzed studies above.

\textsuperscript{593} Li and Liu (2011, p. 202)
\textsuperscript{594} Li and Liu (2011, p. 198)
\textsuperscript{595} Li and Liu (2011, p. 202)
\textsuperscript{596} European Commission (2012, p. 67)
\textsuperscript{597} European Commission (2012, p. 67)
\textsuperscript{598} European Commission (2012, p. 68)
Another study published in a ranked journal was conducted by the researchers Premand, Brodmann, Almeida, Grun, and Barouni\textsuperscript{599} with the goal to measure the employment outcome of a new entrepreneurial study track. This new track offers activities like personal coaching or a specific business training for students which includes the generation of a business plan, with which it is possible to graduate instead of working out a thesis.\textsuperscript{600} The study was executed with to different groups, namely the treatment group which was assigned to the entrepreneurship track, and the control group which was assigned to continue with the standard curriculum.\textsuperscript{601} The results demonstrate that EE in this new study track leads to an increase in self-employment towards participants one year after they graduate. However, on the other side only 28 percent of the graduates of the control group were employed one year after they graduate, in comparison, 48 percent were unemployed. These results highlight that standard curriculum EE and so called slow school-work transition at universities have less impact on the employment of graduates than the new study track program.\textsuperscript{602} Therefore, this study is due to its negative impact of EE on employment, non-compliant with the three other previously discussed studies in the employment section.

Galloway and Brown\textsuperscript{603} investigated EE at universities as a growth driver for firms and question if EE at universities increases the rate of growth-oriented businesses. Through questionnaires students are asked about their attitude of entrepreneurship, and according to the question of the research study, the authors came to the result that the answers are encouraging. The results expose a high number (more than 30) and a positive impact of EE on self-employment of alumni entrepreneurs. Additionally, this high number of the alumni self-employment leads to another upcoming positive impact result of this category, namely three-quarter of the respondents employ a maximum of ten people which can be attributed to the high number of self-employment alumni entrepreneurs.\textsuperscript{604} Therefore, this is another study where EE positively impacts employment.

Nasr and Boujelbene\textsuperscript{605} are analyzing the impact and effects of EE of master’s degree students on their working life career and the transfer of knowledge gained in an EE program to their work in which they are employed. The study figured out that

\begin{footnotesize}
\textsuperscript{599} Premand et al. (2016, p. 322)
\textsuperscript{600} Premand et al. (2016, p. 322)
\textsuperscript{601} Premand et al. (2016, p. 314)
\textsuperscript{602} Premand et al. (2016, p. 317)
\textsuperscript{603} Galloway and Brown (2002, p. 401)
\textsuperscript{604} Galloway and Brown (2002, p. 402)
\textsuperscript{605} Nasr and Boujelbene (2014, p. 712)
\end{footnotesize}
entrepreneurship master programs positively influence the learning and knowledge transfer to the professional work and employment rates. For example, in the conducted study at the beginning of the EE training program half of the participants had the work status of unemployment. Nevertheless, after the program, the positive effects of the program were obvious because the unemployment rate declined to approximately 30 percent. Moreover, 65 percent of the participants mention that they could apply the gained knowledge and learning in training in their profession.\textsuperscript{606}

Støren\textsuperscript{607} conducted a study which focuses on possible effects of EE. For example, are graduates with EE during their studies more often self-employed in a time frame of six months after their graduation or have they already started their own business, compared to other graduates who gained not such experience of EE from higher institutions.\textsuperscript{608} The results of this study present that the number of graduates who are self-occupied or who started their venture as their second job are rather low for both types. Further on, the author explains that positive effects of EE are hard to find, even if there is a higher proportion among these two types, whereby on the other hand, a negative relationship is more easily concluded with a negative impact of EE on the employment or self-employment of graduates.\textsuperscript{609} Nevertheless, the research study figured out that self-employment rates of entrepreneurship graduates are after graduation much higher than half a year after graduation.\textsuperscript{610} Summing up, the outcome of this study is quite uniform to the results from the study of Premand et al.\textsuperscript{611} where EE at universities or HEI impacts negatively on employment and self-employment.

Finally, the last study of this subsection is from Gilbert\textsuperscript{612} who shows an example of an EE program in relation to increase employability. The EE program evaluated in this study is the Innovation Fastrack Programme (IFP) which is a learning tool where entrepreneurship students are confronted with real-world problems and opportunities resulting in a detailed view of the different elements of a learning process.\textsuperscript{613} Data was gathered through a questionnaire of a sample size of 132 students who participated in the four-year program of the IFP. The result of the study indicates a positive impact of this EE program on employability. For example, over 35 percent of the graduate students who participated in the program launched already their own business, which was highly

\textsuperscript{606} Nasr and Boujelbene (2014, p. 714)
\textsuperscript{607} Støren (2014, p. 806)
\textsuperscript{608} Støren (2014, p. 806)
\textsuperscript{609} Støren (2014, p. 806)
\textsuperscript{610} Støren (2014, p. 807)
\textsuperscript{611} Premand et al. (2016)
\textsuperscript{612} Gilbert (2012, p. 162)
\textsuperscript{613} Gilbert (2012, p. 156)
influenced by the necessary skills and capabilities for creating a successful business, gained through the IFP program. Moreover, the researcher figured out a strong link among the outcome of the IFP like skills extension and the increase in graduate employability, which indicates that EE due to the IFP program has a positive impact on this subcategory employment.

4.2.2.4.d Recap

Summarizing the impact level career and employment, the recap of this category is divided into two parts. The main results of the subcategory of career are discussed in the first part of this section, whereas in the second part the core findings of the subchapter employment are outlined.

All in all, the eight research studies from the field of the impact of EE on entrepreneurial career provide rather similar results in general but provide different findings or statements when the studies are analyzed in more detail. In general, all studies outlined that EE at universities and HEI and different entrepreneurship programs have a positive impact on entrepreneurial career outcomes, career options, and career choices. Several studies figured out that EE of students and graduates influence their career options, enhance their career learning and development, support the career decisions due to learning and experiences within their studies. Moreover, EE plays a significant role in setting career goals or in the progress of the different career types. Researchers of the articles outlined a positive effect of EE on career outcome due to the relatively high number of students who already have their own business and the jobs which are thereby created.

Summing up the second part of the impact category career and employment, the researchers emphasizing the impact of EE on employment and figured out that the diverse studies present quite equal results. Six out of eight authors figured out that EE at higher institution or universities has a positive impact on students and graduates regarding self-employment, employment and knowledge and learning transfer to the workplace. However, two authors out of eight argued in their research studies that EE at universities leads to a negative effect in employment, where one of this study examined that standard curriculum activities have less impact on the employment of graduates than in comparison other unique EE programs.

614 Gilbert (2012, p. 159)
4.2.2.5. Demographic Aspects

4.2.2.5.a Overview

Of the overall sample of 87 research articles, seven studies have their focus on the impact of EE at universities or HEIs on demographic characteristics. Considering these studies, six articles are concentrated on gender issues regarding EE, whereas one study is dealing with general demographic issues. The following table (Tab. 14) is providing an overview of the main results from the studies examined in this section, whereas the first six articles are associated to gender issues and the last one to general demographic issues.

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Title</th>
<th>Main Findings</th>
</tr>
</thead>
</table>
| Petridou, E., Sarri, A., & Kyrgidou, L. P. (2009) | Entrepreneurship education in higher educational institutions: the gender dimension | ■ EE has a more positive impact on male students than on female students in terms of career creation.  
■ EE has a more positive effect on female students than on male students in terms of creating a theoretical basis of entrepreneurial activities.  
■ Higher enrollment rates at universities for EE programs of male students than of female students. |
■ Entrepreneurial gap between men and women, but the gap begins to close after years of practical experience. |
| Kailer, N., & Hora, W. (2017) | Entrepreneurial Intentions and Activities of Students at Austrian Universities: Global University Entrepreneurial Spirit Students’ Survey 2016 | ■ Positive effect of EE on gender, because numbers of entrepreneurial actions of graduated men and women increased over the years.  
■ Gap between men and women, but the gap begins to close after years of practical experience.  
■ EE has a higher positive impact on male than on female students considering career options.  
■ EE has a higher positive impact on female than on male respondents in terms of perceiving entrepreneurial knowledge. |
■ Men are pursuing more entrepreneurship actions and activities than women.  
■ EE has basically a positive impact on male students. |

- More female students prefer a position as an employee than male alumni.
- More male alumni prefer self-employment in contrast to female students.
- Age differences of alumni’s employment.
- Young people prefer the employment preference of self-employment.
- Older people tend to a normal employee.
- EE at universities and HEIs has an impact on demographic characteristics like gender or age in the sense of employment performance, career options or other issues.

Daghbashyan, Z., & Hårsman, B. (2014) University choice and entrepreneurship

- EE of graduates in international ranked universities follow a more entrepreneurial activity.
- Entrepreneurial occupation is increasing with age, and it is higher for men than for women.
- Difference in the entrepreneurial attitude among graduates with native and foreign background.
- EE in business-oriented regions is higher than in other regions.
- Several demographic factors are influence by EE.

Tab. 14: Demographic Characteristics – List of literature

4.2.2.5.b Literature Analysis Demographic Aspects

Petridou, Sarri, and Kyrgidou investigate the effectiveness of EE considering the gender aspect and its differences. The research was drawn from to different universities with a total sample of 1,639 students, whereby 754 respondents were female and 855 respondents were male. The authors came to the result that female participation in EE programs in almost all scientific disciplines is lower than the participation of male students, which results in a lower work experience of entrepreneurship for women than for men. Moreover, the student’s attitude for participating in EE programs differs in terms of gender. For female students factors like gain knowledge, develop skills or networking are important in an EE program, whereas for men the initiation of an own new business in relation to the taken entrepreneurship course has priority. Additionally, there are higher enrollment rates at universities for EE programs of male students than of female students. Even if both have the same educational background and attend the same EE program, females are often less confident to initiate an entrepreneurial action than

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615 Source: Own graphical presentation
616 Petridou et al. (2009, p. 293)
617 Petridou et al. (2009, p. 294)
618 Petridou et al. (2009, p. 296)
619 Petridou et al. (2009, p. 302)
males. All in all, according to this study of evaluating the gender differences, EE has a greater positive effect on male students than on female students regarding the creation of a new career opportunity and a greater positive effect on female students than on male students in terms of creating a theoretical basis of entrepreneurial activities.  

Kailer et al.\textsuperscript{621} provide data about entrepreneurial activities of students in Austria. Through the research project GUESSS a national report of entrepreneurial actions among students of Austria is represented, where the impact of EE on demographic issues has been analyzed, with a sample size of 4,200 students.\textsuperscript{622} The authors investigated the gender rate of students due to their career choice as founders or successors directly after graduation and five years after graduation. Fig. 32 depicts that six percent of male and three percent of female graduates start an entrepreneurial activity as founders or successors directly after graduation, whereas in a five-year perspective both numbers increased to 27 percent of male and to 20 percent female respondents, who pursue an entrepreneurial career.\textsuperscript{623}

In the other report three years later from Kailer and Hora\textsuperscript{624} the same aspect has been examined with a sample of 3,755 students (see Fig. 33).\textsuperscript{625} They came to the results that eight percent of male and four percent of female graduates start an entrepreneurial action directly after graduation, whereas considering a five-year period 31 percent of male and 23 percent of female students pursue an entrepreneurial career, whether as a founder or as successor. The researchers stated that in both studies, EE has an impact on the gender aspect because the numbers of entrepreneurial actions of graduates increased within the years. Nevertheless, there exist still a gap between men and women, but the gap begins to close after the years of practical experience.\textsuperscript{626}

\textsuperscript{620} Petridou et al. (2009, p. 305)
\textsuperscript{621} Kailer et al. (2014, p. 2)
\textsuperscript{622} Kailer et al. (2014, pp. 2–3)
\textsuperscript{623} Kailer et al. (2014, p. 11)
\textsuperscript{624} Kailer and Hora (2017, p. 11)
\textsuperscript{625} Kailer and Hora (2017, p. 3)
\textsuperscript{626} Kailer and Hora (2017, p. 11)
Further, Packham et al. tested in their study the effectiveness of EE on career options regarding gender issues. The sample consists of 237 undergraduate students from the age 18 to 24, whereby 50.6 percent of the total students are male, and 49.4 percent are female. The results of this study show that EE has a higher positive force on male graduates in contrast to female graduates regarding their entrepreneurial career. However, on the other side female respondents perceived more impact of entrepreneurial knowledge through EE courses than male students. All in all, EE has a more significant impact on male students than on female students in initiating a business, whereas regarding perceived impact female students profit more from the learning experience from EE courses. Considering the results of this study and comparing it with the outcome of the study from Petridou, Sarri, and Kyrgidou, the authors of both studies came to rather same findings.

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627 Source: Own graphical presentation on the basis of Kailer et al. (2014, p. 11)
628 Source: Own graphical presentation on the basis of Kailer and Hora (2017, p. 11)
629 Packham et al. (2010, p. 582)
630 Packham et al. (2010, p. 575)
631 Packham et al. (2010, p. 582)
Another study that discusses the impact of EE on male and female students is provided from the authors Newbold and Erwin\textsuperscript{632}, who figured out through their study that entrepreneurship is a male-dominated field which means that men are pursuing more entrepreneurship actions and activities.\textsuperscript{633} Therefore, EE has basically a positive impact on male students. A suggestion from the authors to reach more females in entrepreneurial activities is the enhancement of curriculum registration rates which influence the EE programs.\textsuperscript{634}

In addition, the report from the European Commission\textsuperscript{635} examined as well the impact of EE of universities and HEI on demographic differences like gender or age. Details of the research method and sample are described in chapter 4.2.2.3.b in the paragraph of the European Commission study. The report exposed that male alumni are more interested in EE and show a greater concern in the field of entrepreneurship as female alumni.\textsuperscript{636} From these results, another outcome can be derived due to the analysis of gender differences, namely the difference between male and female according to employment preference. In the figure below (Fig. 34) it is shown, that more female students prefer a position as an employee than male alumni and more male alumni prefer self-employment in contrast to female students. Women also think that there exist fewer entrepreneurial opportunities for them compared to men because women often do not have the right capabilities for realizing an entrepreneurial activity. Therefore, women often want to avoid risk and are not so competitive as men. Besides, the researchers found out that there also exists a difference of age concerning alumni, which implies that relatively young people prefer the employment preference of self-employment, whereas older ones tend to a normal employee.\textsuperscript{637} Considering the above mentioned points from the research study, EE at universities and HEIs has an impact on demographic characteristics like gender or age in the sense of employment performance, career options or other issues.

\textsuperscript{632} Newbold and Erwin (2014, p. 166)  
\textsuperscript{633} Newbold and Erwin (2014, p. 166)  
\textsuperscript{634} Newbold and Erwin (2014, p. 167)  
\textsuperscript{635} European Commission (2012, p. 10)  
\textsuperscript{636} European Commission (2012, p. 12)  
\textsuperscript{637} European Commission (2012, p. 64)
Daghbashyan and Hårsmann\textsuperscript{639} examine in their paper the impact of EE of universities on student’s entrepreneurial career actions regarding several demographic characteristics like age, gender, regional basis or native-born individuals. The researchers came to the results that graduates who attended entrepreneurship courses in international ranked universities follow a more entrepreneurial activity, which concerns all educational areas except graduates from natural sciences. According to gender and age, the study figured out that entrepreneurial occupation is increasing with age and it is higher for men than for women.\textsuperscript{640} Furthermore, the findings indicate that there exists a difference in the entrepreneurial stance among graduates who exhibit a native or a foreign background. Native graduates show less interest in entrepreneurial actions than foreign graduates. Finally, the authors also ascertained that the interest of entrepreneurship and EE is higher in locations which are more business-oriented than in locations which are not as business-oriented.\textsuperscript{641} Summing up, there are several demographic factors which are influenced by EE.

\subsection*{4.2.2.5.c Recap}

Summarizing these seven research studies of the impact category demographic characteristics, the results imply that EE at universities and HEIs has a more positive impact on male students than on female students when considering the field of creating entrepreneurial activities. Moreover, the enrollment rates of male students at entrepreneurship programs at universities are much higher than the female rates.

\textsuperscript{638} Source: Own graphical presentation on the basis of European Commission (2012, p. 65)  
\textsuperscript{639} Daghbashyan and Hårsmann (2014, pp. 741–742)  
\textsuperscript{640} Daghbashyan and Hårsmann (2014, p. 741)  
\textsuperscript{641} Daghbashyan and Hårsmann (2014, p. 742)
Nevertheless, EE has a higher influence on female than on male respondents in terms of perceive entrepreneurial knowledge and development skills through EE programs. Most female graduates prefer positions as normal employees, whereas male graduates prefer self-employment. However, most of the studies figured out that entrepreneurship is according to the gender issue a male dominated field. Furthermore, there are some other important aspects analyzed by the researchers in this impact category. Age is an essential factor in EE and the career choices of alumni after graduation. Here younger people tend to the employment preference of self-employment whereas older people prefer the position as normal employees. The existence of differences in the decisions of graduates on their entrepreneurial activity according to their national or international EE are also highlighted. So, the outcome of these studies is rather broad and impacts EE and the several demographic factors differently.

### 4.2.2.6. Regional Development

#### 4.2.2.6.a Overview

Out of the overall sample of 87 articles, five articles are focusing on the relationship between EE at universities or other HEIs and the regional development. Whereby, two studies are concentrated on students from national universities (England and Greece), and three studies are explicitly focusing on the impact of higher EE on the regional development of a specific region. Analyzed regions are China, Chile, and South Africa. The following table (Tab. 15) is showing an overview of the main findings from the studies examined in this chapter.

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Title</th>
<th>Main Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gordon, I., &amp; Jack, S. (2010)</td>
<td>HEI engagement with SMEs: developing social capital</td>
<td>▪ Experiences in the HEI sector are beneficial to SME owners.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Universities and HEIs are connected through third mission activities to the regional development.</td>
</tr>
<tr>
<td>Petridou, E., Sarri, A., &amp;</td>
<td>Entrepreneurship education in higher educational institutions: the</td>
<td>▪ Greek female students show lower motivation to participate in EE programs at HEIs than their male counterparts.</td>
</tr>
<tr>
<td>Milliman, C., Matlay, H., &amp;</td>
<td>Entrepreneurship education in China: a case study approach</td>
<td>▪ Chines government perceive entrepreneurship as a solution to stop the growing unemployment.</td>
</tr>
<tr>
<td>Liu, F. (2008)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Gordon and Jack\textsuperscript{643} have analyzed data from five former students of the Lancaster University LEAD program. This program is a part-time leadership program that is lasting for ten months. All five previous students became an owner of an SME.\textsuperscript{644} This article was classified to the impact level of regional development because the data is considering sole data from the qualitative research focusing on the five former students from the LEAD program at the Lancaster University. The authors applied a qualitative research approach to examine networking activities of five SME owners that participated in the LEAD program between the years 2004 and 2006.\textsuperscript{645} The researchers generated data based on three methods: observing, informal interviews, and reviews of transcripts from the five persons.\textsuperscript{646} The authors figured out that experiences in the HEI sector are perceived as a positive impact and beneficial to SME owners or managers.\textsuperscript{647} Moreover, it is mentioned that universities and other HEIs are involved in regional economic development. Hence, universities are recently connected through third mission activities to the local development.\textsuperscript{648}

Petridou et al.\textsuperscript{649} are analyzing the gender dimension of higher entrepreneurship education in Greece. The authors gathered data from two educational institutions, the economic department of the AUTh (Aristotle University of Thessaloniki) and the accounting department of the TEITh (Technical Education Institution of Thessaloniki).\textsuperscript{650} Through a questionnaire data was collected from 714 AUTh students (344 females and

\begin{table}
\centering
\begin{tabular}{|l|p{10cm}|p{16cm}|}
\hline
Author(s) & Topic & \multicolumn{1}{c|}{Notes} \\
\hline
Poblete, C., & University Support in the Development of Regional Entrepreneurial Activity: & \begin{itemize}
  \item Universities in Chile have no impact on the entrepreneurial activity in their country.
  \item EE in Chile is not a contribution to the regional development in the form of an increased number of graduated entrepreneurs.
\end{itemize} \\
  J. E. (2013) & An Exploratory Study from Chile & \\
\hline
Isaacs, E., Visser, K., Friedrich, C., & Entrepreneurship Education and Training at the Further Education and Training (FET) Level in South Africa & \begin{itemize}
  \item HEIs in South Africa have not taken up the demand and commercial necessity for EE.
\end{itemize} \\
  Brijlal, P. (2007) & & \\
\hline
\end{tabular}
\caption{Regional Development -- List of literature\textsuperscript{642}}
\end{table}

\textsuperscript{642}Source: Own graphical presentation
\textsuperscript{643}Gordon and Jack (2010, p. 517)
\textsuperscript{644}Gordon and Jack (2010, p. 518)
\textsuperscript{645}Gordon and Jack (2010, p. 522)
\textsuperscript{646}Gordon and Jack (2010, p. 523)
\textsuperscript{647}Gordon and Jack (2010, p. 533)
\textsuperscript{648}Gordon and Jack (2010, p. 532)
\textsuperscript{649}Petridou et al. (2009, p. 291)
\textsuperscript{650}Petridou et al. (2009, p. 292)
370 males) and 925 TEITh students (410 females and 515 males). The researchers figured out that among the Greek students, female show lower motivation to participate in EE programs at HEIs in the majority of analyzed scientific disciplines. Moreover, it was figured out that Greek students from theoretically oriented departments like theology or philosophy have changed to the business sector. Further, different attitudes of students participating in EE programs among gender were identified in this study. Thus, females are more interested in developing skills, acquiring knowledge, networking and facing competition that their male counterparts. On the other side, male students perceive communication skills as the most essential skill for entrepreneurial activities. Summing up the results of this study, male students feel more capable of initiating any entrepreneurial activity than females, even if they came from a similar background and had received the same level of education. Hence, the authors are suggesting to modify the national curriculum in Greece to focus on motivating potential female entrepreneurs to start a new venture.

Millman et al. are examining the impact of EE in China based on a case study. The authors are analyzing EE based on the pilot program KAB which was first launched in Kenya 1996. In total 60 students from 10 different disciplines are enrolled in this program. After completing the pilot program, students were asked to give feedback. Out of this feedback, a list of potential problems of EE was developed. These problems are for example a lack of interaction between teachers and students, difficulties in managing teamwork, a lack of market research and limited class hours. Further, the authors have mentioned that the Chines government perceive entrepreneurship as a solution to stop the growing unemployment among youth and adults. Hence, EE in China is an option to enhance the number of highly trained and skilled graduate entrepreneurs.

Poblete and Amorós are analyzing the impact of EE at universities on the regional development in Chile. They gathered data from the GEM (Global Entrepreneurship Monitor). Whereby two studies with a total sample of 51 students from 12 different

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651 Petridou et al. (2009, p. 293)
652 Petridou et al. (2009, p. 294)
653 Petridou et al. (2009, p. 302)
654 Petridou et al. (2009, p. 305)
655 Millman et al. (2008, p. 802)
656 Millman et al. (2008, p. 809)
657 Millman et al. (2008, p. 810)
658 Millman et al. (2008, p. 813)
659 Millman et al. (2008, p. 814)
660 Poblete and Amorós (2013, p. 164)
661 Poblete and Amorós (2013, p. 164)
regions in Chile were conducted. The analysis shows that there is no significant correlation between educational support of universities and the number of graduate entrepreneurs. Nevertheless, it is mentioned that the total number of entrepreneurs has increased in Chile between 2007 to 2012. This study has examined that universities in Chile have no impact on the entrepreneurial activity in their country. Further, it has been identified that EE at universities has even no influence on the EI. Summing up, the authors figured out that EE in Chile is not a contribution to the regional development in the form of an increased number of graduated entrepreneurs.

Isaacs et al. have analyzed EE and training at the Further Education and Training (FET) level in the region of South Africa. This study is based on the recognition that one of the most significant limitations regarding economic growth is the low number of entrepreneurs. The authors generated data from telephonic interviews with a sample of 39 individuals including representatives from dominating leading schools in rural and urban regions of South Africa, which are offering entrepreneurship education programs. Out of this research, it was examined that HEIs in South Africa have not taken up the demand and commercial necessity for EE. Despite the high number of unemployment, no integration of EE in the curriculum of HEIs has been made. The authors mentioned in their study that there is a necessity for EE to pave the way for students to become entrepreneurs. In particular, it is recommended to include education for, about and through enterprises in the curriculum.

### 4.2.2.6.c Recap

Summing up the studies focusing on the impact of EE regarding its effect on the regional development, it can be examined that the researchers are presenting mixed results. Some authors figured out that EE programs at universities are beneficial for owner or managers of SMEs. However, on the other side, other studies examined that no significant impact of EE at universities on the regional development exists. For example, one research figured out that EE is not contributing to the local economic growth. Another study examined that EE programs at HEIs are helping to enhance the number of graduate entrepreneurs.

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662 Poblete and Amorós (2013, p. 165)
663 Poblete and Amorós (2013, p. 167)
664 Poblete and Amorós (2013, p. 171)
665 Poblete and Amorós (2013, p. 173)
666 Isaacs et al. (2007, p. 613)
667 Isaacs et al. (2007, p. 613)
668 Isaacs et al. (2007, 619-620)
669 Isaacs et al. (2007, p. 625)
670 Isaacs et al. (2007, 625-626)
One explanation for the mixed results of the impact of EE on the regional development is that the studies are focusing on different geographical areas. Moreover, the sample of the research differs from the studies from a sample of 1639 students, to a small sample of 5 students. Further, different research methods are applied which can lead to these non-uniform results as well.

Despite the inconsistent results of the studies, all authors are suggesting that an investment in the EE at universities and other HEIs will be a strategic option to reduce the number of unemployment and can act as a catalyst for the economic growth in a specific region. Hence, the collective opinion of the authors is that EE at universities or HEIs can have an impact on the regional development.

### 4.2.2.7. SME and Family Firm Engagement

#### 4.2.2.7.a Overview

One category of impact which has been identified in this Master’s Thesis is the SME and family firm engagement level. Whereby studies are classified in this impact level that are analyzing the effect of EE at universities or HEIs on SMEs and Family Firms. In total five relevant articles are examined in this chapter. The following table (Tab. 16) is providing an overview of the studies including the main findings of the research papers.

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Title</th>
<th>Main Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elmuti, D., Khoury, G., &amp; Omran, O. (2012)</td>
<td>Does Entrepreneurship Education have a Role in Developing Entrepreneurial Skills and Ventures’ Effectiveness?</td>
<td>A positive relationship between EE and the effectiveness of an organization could be identified. Entrepreneurs perceive EE, training and social competencies as the primary success items for launching and running an SME.</td>
</tr>
<tr>
<td>Cruz, N. M., Rodríguez Escudero, A. I., Hernangomez Barahona, J., &amp; Saboa Leitao, F. (2009)</td>
<td>The effect of entrepreneurship education programmes on satisfaction with innovation behaviour and performance</td>
<td>EE has a positive impact on the happiness with innovation behavior which is directly linked to satisfaction with performance.</td>
</tr>
</tbody>
</table>
Alarape, A. A. (2007)  
Entrepreneurship programs, operational efficiency, and growth of small businesses  
- Entrepreneurship programs have a positive impact on the development of managerial skills of small business owners and managers.  
- Developing entrepreneur-managerial skills can boost the performance of small firms.

Entrepreneurship education and training needs of family businesses operating in the agricultural sector of India  
- Owners of family firms in the agriculture sector in India has a lack of EE.  
- EE in general and financial training in particular is essential for the survival and growth of family firms.

Tab. 16: SMEs and Family Firms – List of literature

4.2.2.7.b  Literature Analysis SMEs and Family Firms

Gordon, Hamilton, and Jack\(^\text{672}\) published a study about EE programs at a university and its impact on SMEs owners and managers. A qualitative approach was applied to analyze the data from five owners of SMEs that completed the LEAD program at the Lancaster University. These five respondents are representatives for the sample of 67 participants of the program\(^\text{673}\). The researchers are emphasizing on factors that respondents stated as helpful for an owner of an SME\(^\text{674}\). The authors identified that networks among participants of the LEAD program were built that are based on trust. Through the inclusion of social elements in the entrepreneurship program, these networks are occurring. Further, the study examines that EE is enhancing the possibility to bring about change, what is linked to a positive development of an SME\(^\text{675}\). Moreover, it is figured out that a long-term implication for SMEs as well as for the owner and managers can occur through an engagement with a HEI\(^\text{676}\).

Elmuti et al\(^\text{677}\) have analyzed the impact of EE at universities on the development of skills that are crucial for the effectiveness of a new venture. The researchers surveyed in the United States with a sample of 170 entrepreneurs and prospective entrepreneurs. One of the survey group was enrolled in an EE training program and the other group consisted of individuals that want to become entrepreneurs in the future. Most individuals of the sample are categorized in the first group\(^\text{678}\). The results show that entrepreneurs perceive EE, training and social competencies as the primary success items for

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\(^{671}\) Source: Own graphical presentation  
\(^{672}\) Gordon et al. (2012, p. 768)  
\(^{673}\) Gordon et al. (2012, p. 776)  
\(^{674}\) Gordon et al. (2012, p. 778)  
\(^{675}\) Gordon et al. (2012, p. 799)  
\(^{676}\) Gordon et al. (2012, p. 800)  
\(^{677}\) Elmuti et al. (2012, p. 83)  
\(^{678}\) Elmuti et al. (2012, p. 89)
launching and running an SME.\textsuperscript{679} Moreover, a positive relationship between EE and the effectiveness of an organization (SME) could be identified.\textsuperscript{680}

Cruz et al.\textsuperscript{681} have analyzed the impact of EE on the business success. The study is focusing on the region of Castile and Lion in Spain.\textsuperscript{682} A sample of 354 entrepreneurs was selected out of an existing publicly available database.\textsuperscript{683} According to the authors, the sample is representative for a portion of entrepreneurs in Spain. Primarily the representatives of the sample are active in one of the four business areas: services (43 percent), industry (29 percent), commerce (24 percent), and agriculture (4 percent).\textsuperscript{684} The results indicate that EE has a positive impact on the happiness with innovation behavior which is directly linked to satisfaction with performance.\textsuperscript{685} The following figure (Fig. 35: Effect of EE on the satisfaction with performance\textsuperscript{Fig. 35}) shows the significant relationships and the positive impact of EE on the happiness with performance.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure35.png}
\caption{Effect of EE on the satisfaction with performance\textsuperscript{686}}
\end{figure}

\textsuperscript{679} Elmuti et al. (2012, p. 96)
\textsuperscript{680} Elmuti et al. (2012, p. 95)
\textsuperscript{681} Cruz et al. (2009, p. 198)
\textsuperscript{682} Cruz et al. (2009, p. 201)
\textsuperscript{683} Cruz et al. (2009, p. 200)
\textsuperscript{684} Cruz et al. (2009, p. 207)
\textsuperscript{685} Cruz et al. (2009, p. 201)
\textsuperscript{686} Source: Cruz et al. (2009, p. 209)
Cruz et al.\textsuperscript{687} finally mentioned that the satisfaction with performance is contributing to the high percentage of SMEs in Europe. Therefore, the recommendation was that nascent entrepreneurs should pass a course that is based on entrepreneurship, instead of general business courses.\textsuperscript{688}

Alarape\textsuperscript{689} analyzed the effect of entrepreneurship programs on the efficiency of small businesses. The researcher tested the hypothesis if owners or managers of small firms that attended an entrepreneurship program show better managerial practices, a higher gross margin, and higher growth rate than those that have no training in entrepreneurship. A cross-sectional study with a total sample of 224 entrepreneurs, and with a final amount of 62 respondents was conducted.\textsuperscript{690} The results examine a difference among the managerial practices between entrepreneurs participated in EE and those who did not exist. Small businesses managed by a person with EE background have better accounting and recordkeeping practices than small sized ventures managed by a person without EE experience. Further, the small businesses, managed by individuals with EE background, have a higher quality of inventory management.\textsuperscript{691} Moreover, EE has a positive impact on the marketing intelligence, 44.5 percent of the owners with EE experience are aware of their competitors. In comparison, sole 5.9 percent of the owner without EE aware of their competitors.\textsuperscript{692} However, entrepreneurship programs have no impact on the digitalization of small businesses.\textsuperscript{693} Summing, up EE, has a positive effect on the managerial practices of small sized organizations. The author argues that developing these managerial skills will enhance the performance of small businesses, mainly the growth-rate and gross-margin.\textsuperscript{694}

Sandhu, Hussain, and Matlay focused on the influence of EE and training on family firms operating in the agriculture sector in India.\textsuperscript{695} Data was generated through a semi-structured questionnaire, with a sample of 350 family firms. Out of the 122 respondents, ten interviews in the native language have been conducted.\textsuperscript{696} Primarily the family firms were managed by the founding generation (67 percent), second generation (25 percent), and third generation (8 percent). The respondents stated that their children are the first

\textsuperscript{687} Cruz et al. (2009, p. 210)
\textsuperscript{688} Cruz et al. (2009, p. 210)
\textsuperscript{689} Alarape (2007, p. 222)
\textsuperscript{690} Alarape (2007, p. 229)
\textsuperscript{691} Alarape (2007, p. 231)
\textsuperscript{692} Alarape (2007, p. 233)
\textsuperscript{693} Alarape (2007, p. 235)
\textsuperscript{694} Alarape (2007, p. 236)
\textsuperscript{695} Sandhu et al. (2012, p. 727)
\textsuperscript{696} Sandhu et al. (2012, p. 733)
choice for succession. However, often children have a lack of interest and not willing to undergo training in entrepreneurship. The researchers recommend to separate the family hierarchy from the succession choice and focus more on the necessity that possible successor should undergo EE training.\textsuperscript{697} The results examine that EE is essential for the survival and growth of the described family firms. Further, the study shows a lack of EE in general and a lack of financial education.\textsuperscript{698}

4.2.2.7.c Recap

Summing up, five articles, which were identified through the systematic literature review, are dealing with the impact of EE at universities and HEIs on SMEs and family firms. Overall, it can be said that tertiary EE has a positive impact on SMEs as well as on family firms. For example, certain entrepreneurship programs are including social elements that are enabling the development of networks that are built on trust. Furthermore, it was examined that EE is enhancing the opportunity to bring about change which is linked to a positive development of SMEs.

Moreover, EE at universities and HEIs is positively related to the effectiveness of SMEs, as well as to the satisfaction with performance. Additionally, based on the analyzed studies, completing courses in entrepreneurship is more useful, to manage an SME than to pass general business programs. Further, managers of SMEs with experience in EE have better skills for example in recordkeeping and accounting. Hence, EE has a positive impact on the managerial practices of SMEs.

The founding generation mainly manages family firms in developing countries, and the first choice for succession are the children. However, the children often have a lack of interest in completing entrepreneurship courses at universities. Through EE the growth and survival of family firms can be ensured.

All five articles that are focusing in the impact of EE on SMEs and family firms are examining similar results namely that EE has a positive impact, either on the overall effectiveness, or on managerial practices, or to generate network among participants of entrepreneurship programs.

\textsuperscript{697} Sandhu et al. (2012, p. 734)
\textsuperscript{698} Sandhu et al. (2012, p. 739)
5. **Conclusion**

5.1. **Summary of Main Findings**

This Master’s Thesis aims to provide an overview of the existing literature regarding the impact of EE at universities and HEIs. Through the categorization of diverse impact levels, the state of research between the years 1990 and 2017 is presented. Relevant results of the systematically collected literature are summarized and compared.

The following three research questions are answered through this scientific work:

- What are the main research findings regarding evaluation of higher EE with focus on the impact level?
- Which effects of higher EE with the emphasis on measurable impacts can be identified?
- Which measurable impact indicators are frequently applied by authors/research institutions and take a main part in the ongoing scientific discussion?

In general, it is examined that EE has a positive effect on various identified indicators. However, a small number of articles figured out that in some cases a negative or no effect of EE occur. Further, the authors from the analyzed studies are not using homogenous evaluation models or tools for scrutinizing the effectiveness of EE. Nevertheless, a high degree of similarities among the identified impact categories is remarkable.

The research questions are answered with chapter 4.2. Content Analysis in which the main research findings concerning the evaluation of higher EE are presented. In total, three types of non-measurable factors and seven types of measurable factors influenced by EE are determined. Non-measurable factors are skills and knowledge, EI and pedagogical methods. Measurable factors are outcome, business start-ups, economic growth, career and employment, demographic aspects, regional development and SME and family firm engagement. Moreover, frequently applied impact indicators are career and employment, followed by business start-up, outcome and demographic characteristics. Less frequently applied indicators are economic growth, SME and family firm engagement and regional development.

The non-measurable impact categories are included in the literature review to provide a coherent view of the actual state of research, whereby primarily well ranked journal
articles are described. Other selected studies are mentioned for the sake of completeness.

The main findings of this Master’s Thesis are that several studies figured out that EE of students and graduates influence their career options, enhance their career learning and development and support the career decisions due to the learning experiences. Furthermore, EE at higher institutions or universities has a positive impact on students and graduates regarding self-employment, employment and knowledge and learning transfer to the workplace. Moreover, launching a new business is positively effected by EE, especially the significant positive relationship between EE and their effectiveness of an entrepreneurship venture is noteworthy. The creation of networks among entrepreneurship students that are built on trust is another result of EE. Considering another measurable impact indicator, it has been figured out that the motivation, innovation, and creativity are effected by EE. Additionally, the results imply that EE at universities and HEIs has a more positive impact on male students than on female students when considering the field of create entrepreneurial activities. According to several studies, EE has a positive impact on the economic growth, the creation of new jobs and investments and is positively related to the effectiveness of SMEs. Conversely, no uniform results regarding the impact of EE on the regional development are presented.

All in all, the authors of this Master’s Thesis have examined that EE at universities and HEIs has more positive impacts on various effected indicators than negative impacts. Moreover, the authors are displaying the broad sphere of influence of entrepreneurial programs offered at universities or HEIs.

5.2. Limitations

Through the literature analysis of the impact factors of EE at universities and HEIs different impact categories could be identified. Based on the defined field of research and in the context of the three research questions the study was conducted. Nevertheless, limitations regarding the methodology and the interpretation of results of this Master’s Thesis are noteworthy.

First, this review is restricted to literature in the English language although German speaking literature are not explicitly excluded from the review no articles written in the German language are founded (language restriction).
Primarily the study consists of articles published in international journals and relevant results from other scientific and non-scientific media. Further, the review is limited to publications between the years 1990 to 2017, whereas the first notable article is from the year 1998. Another potential constraint in this work is that many included articles are published in lower, or none ranked journals (publication restriction).

The next possible limitation is the unrestricted geographical location. Through this criterion, the impact of EE on the regional development could be analyzed. However, the comparability of the findings is challenging due to the unequal educational system and level of developed and less developed countries (unlimited geographical location).

Moreover, based on the diverse research objectives from the authors the interpretation of results is demanding. The researchers focus on different entrepreneurial programs and courses regarding intensity and duration. Furthermore, most of the studies emphasize on the short-term instead of long-term effects of EE (research objectives).

Resting upon Kirkpatrick’s evaluation framework various levels of impact are determined. Studies that are categorized in level one to three (reaction, learning, and behavior) are not excluded from this review, and relevant findings are briefly examined, however the Master’s Thesis is mainly restricted to the fourth level (results) wherein the results of each article is analyzed and interpreted in detail (restriction of impact).

5.3. Future Implications

Based on the findings of this scientific work the authors are presenting recommendations for future academic research. Despite the fact that a high quantity of studies which are evaluating the effectiveness of EE at universities and HEIs the comparability of results is challenging. To enhance the ability to compare the indicators which are influenced by EE, the authors are suggesting to emphasize on predefined impact factors. This step is a possibility to improve the comparableness of the research findings. Through this action, the option to precisely measure and evaluate the effect of EE could be provided.

700 Kirkpatrick and Kirkpatrick (2006, p. 21)
701 Kirkpatrick and Kirkpatrick (2006, p. 21)
Moreover, the analyzed articles in this literature review are grounded on different theories and views. Further, no uniform evaluation framework or method is applied for measuring the impact of EE at universities or HEIs. To ensure the involvement of all relevant impact aspects, it is recommended to develop an evaluation model which is especially designed for measuring the influence of EE. This could lead to the circumstances that future researchers have to take into consideration all included prespecified impact indicators instead of focusing on solely one or a few factors.

Another implication for future research is to raise the number of long-term research studies. Through the conducted systematic literature review it was identified that hardly any studies that are examining the long-term effect of EE are existing. Entrepreneurial programs at universities and HEIs are lasting in many cases over several years and are time and cost intensive. However, it is less analyzed if any long-term effects can be generated through EE. Therefore, to guarantee that spent time and money are well invested the examination of long-term effects is necessary.

Finally, the authors are pointing out that the effectiveness of EE at universities and HEIs are well analyzed on a national and international base, however less well evaluated on a transnational basis. In terms of globalization it is suggested to increase the investigation of the transnationally impact of EE.
6. Appendix

6.1. Inclusion and Exclusion Criteria

**Inclusion Criteria**

<table>
<thead>
<tr>
<th>Description</th>
<th>1990-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publication Period</td>
<td>Journals, and grey literature</td>
</tr>
<tr>
<td>Keyword based search</td>
<td>Combination of keyword group one and keyword group two</td>
</tr>
<tr>
<td>Journal Ranking</td>
<td>VHB-Ranking, ABS Ranking, JIF (Thompson Reuters)</td>
</tr>
<tr>
<td>Language</td>
<td>English-Speaking, and German-Speaking</td>
</tr>
<tr>
<td>Content focus</td>
<td>Impact of Entrepreneurship Education at Universities</td>
</tr>
<tr>
<td>Geographical Location</td>
<td>Unlimited</td>
</tr>
</tbody>
</table>

Tab. 17: Inclusion criteria of the literature review

**Exclusion Criteria**

<table>
<thead>
<tr>
<th>Description</th>
<th>Before 1990 and after 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publication Period</td>
<td>Books</td>
</tr>
<tr>
<td>Type of Research</td>
<td>Review, conceptual frameworks</td>
</tr>
<tr>
<td>Language</td>
<td>Foreign language literature (not in common with Tab. 17)</td>
</tr>
</tbody>
</table>

Tab. 18: Exclusion criteria of the literature review

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702 Source: Own graphical presentation
703 Source: Own graphical presentation
### 6.2. Research Design of the Included Studies

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Title</th>
<th>Journal Ranking</th>
<th>Methodical Approach</th>
<th>Empirical Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fellnhofer, K.</td>
<td>2017</td>
<td>The Power of Passion in Entrepreneurship Education: Entrepreneurial Role Models Encourage Passion?</td>
<td>C - - -</td>
<td>x</td>
<td>2017 426</td>
</tr>
<tr>
<td>Kailer, N., &amp; Hora, W.</td>
<td>2017</td>
<td>Entrepreneurial Intentions and Activities of Students at Austrian Universities: Global University Entrepreneurial Spirit Students' Survey 2016</td>
<td>- - -</td>
<td>x</td>
<td>2017 3755</td>
</tr>
<tr>
<td>Sørensen, K. B., &amp; Davidsen, H. M.</td>
<td>2017</td>
<td>A Holistic Design Perspective on Entrepreneurship Education</td>
<td>- - -</td>
<td>x</td>
<td>2017 -</td>
</tr>
<tr>
<td>Farhangmehr, M., Gonçalves, P., &amp; Sarmento, M.</td>
<td>2016</td>
<td>Predicting entrepreneurial motivation among university students: The role of entrepreneurship education</td>
<td>- 1 -</td>
<td>x x</td>
<td>2016 465</td>
</tr>
<tr>
<td>Authors</td>
<td>Year</td>
<td>Study Title</td>
<td>Quality Score</td>
<td>Clarity</td>
<td>Usefulness</td>
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<tr>
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<tr>
<td>Kerrick, S. A., Cumberland, D. M., &amp; Choi, N.</td>
<td>2016</td>
<td>Intentions and Opportunity Identification</td>
<td>C</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lahn, L. C., &amp; Erikson, T.</td>
<td>2016</td>
<td>Entrepreneurship education by design</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Maresch, D., Harms, R., Kailer, N., &amp; Wimmer-Wurm, B.</td>
<td>2016</td>
<td>The impact of entrepreneurship education on the entrepreneurial intention of students in science and engineering versus business studies university programs</td>
<td>B</td>
<td>3</td>
<td>-</td>
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<tr>
<td>Premand, P., Brodmann, S., Almeida, R., Grun, R., &amp; Barouni, M.</td>
<td>2016</td>
<td>Entrepreneurship Education and Entry into Self-Employment Among University Graduates</td>
<td>-</td>
<td>3</td>
<td>2.84</td>
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<tr>
<td>Bell, R.</td>
<td>2015</td>
<td>Developing the next generation of entrepreneurs: Giving students the opportunity to gain experience and thrive</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>Fayolle, A., &amp; Gailly, B.</td>
<td>2015</td>
<td>The Impact of Entrepreneurship Education on Entrepreneurial Attitudes and Intention: Hysteresis and Persistence</td>
<td>B</td>
<td>3</td>
<td>2.87</td>
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<tr>
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<tr>
<td>Hejazinia, R.</td>
<td>2015</td>
<td>The Impact of IT-based Entrepreneurship Education on Entrepreneurial Intention</td>
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<tr>
<td>Author(s)</td>
<td>Year</td>
<td>Title</td>
<td>Journal</td>
<td>Issue</td>
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<tr>
<td>Man, T. W. Y., &amp; Farquharson, M.</td>
<td>2015</td>
<td>Psychological ownership in team-based entrepreneurship education activities</td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Rauch, A., &amp; Hulsink, W.</td>
<td>2015</td>
<td>Putting Entrepreneurship Education Where the Intention to Act Lies: An Investigation Into the Impact of Entrepreneurship Education on Entrepreneurial Behavior</td>
<td>B</td>
<td>3</td>
<td>2,42</td>
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<tr>
<td>Apergis, N., &amp; Fafaliou, I.</td>
<td>2014</td>
<td>The determinants of business start-ups in tertiary education: Evidence for Greece through a panel data approach</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Daghbashyan, Z., &amp; Hårsman, B.</td>
<td>2014</td>
<td>University choice and entrepreneurship</td>
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<td>Game-Based Entrepreneurship Education: Identifying Entreprising Personality, Motivation and Intentions Amongst Engineering Students</td>
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<td>Moberg, K.</td>
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<td>Støren, A. L.</td>
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<td>Rae, D., &amp; Ruth Woodier-Harris, N.</td>
<td>Entrepreneurial Activity: An Exploratory Study from Chile</td>
<td>2013</td>
<td>How does enterprise and entrepreneurship education influence postgraduate students' career intentions in the New Era economy?</td>
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<td>Ulvenblad, P., Berggren, E., &amp; Winborg, J.</td>
<td>The role of entrepreneurship education and start-up experience for handling communication and liability of newness</td>
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<td>Vanevenhoven, J., &amp; Liguori, E.</td>
<td>The Impact of Entrepreneurship Education: Introducing the Entrepreneurship Education Project</td>
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<td>Volery, T., Müller, S., Oser, F., Naepflin, C., &amp; Rey, N.</td>
<td>The Impact of Entrepreneurship Education on Human Capital at Upper-Secondary Level</td>
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<td>Team-Based Learning to Enhance Critical Thinking Skills in Entrepreneurship Education</td>
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<td>Does Entrepreneurship Education have a Role in Developing Entrepreneurial Skills and Ventures' Effectiveness?</td>
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<td>European Commission.</td>
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<td>From chalk and talk to walking the walk: Facilitating dynamic learning contexts for entrepreneurship students in fast-tracking innovations</td>
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<td>Rae, D., &amp; Woodier-Harris, N.</td>
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- Page numbers for each source are within parentheses next to the page number.
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<td>The context of entrepreneurship education in Ethiopian universities</td>
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<td>Pittaway, L., Rodriguez-Falcon, E., Aiyegbayo, O., &amp; King, A.</td>
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<td>Sánchez, J. C.</td>
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<td>Janssen, F., &amp; Bacq, S.</td>
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<td>Cultural and Outcomes-Related Issues in Implementing an Interdisciplinary Cross-Campus Entrepreneurship Education Program</td>
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<td>Dominguinhos, P. M. C., &amp; Carvalho, L. M. C.</td>
<td>2009</td>
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<td>Entrepreneurship education in higher educational institutions: the gender dimension</td>
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<td>Yu Cheng, M., Sei Chan, W., &amp; Mahmood, A.</td>
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<td>Creativity in entrepreneurship education</td>
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<td>Matlay, H.</td>
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<td>Henry, C., Hill, F. M., &amp; Leitch, C. M.</td>
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Tab. 19: Research design of the included studies

704 Source: Own graphical presentation
### 6.3. Overview of the Main Findings

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<td><strong>Outcome in General</strong></td>
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</table>
| Pittaway, L., Rodriguez-Falcon, E., Aiyegbaya, O., & King, A. | 2011 | The role of entrepreneurship clubs and societies in entrepreneurial learning | - Entrepreneurship clubs are extra curriculum activities of EE and are enhancing entrepreneurial activities.  
- Entrepreneurship clubs have a positive impact on the motivation of students. |
| Hytti, U., Stenholm, P., Heinonen, J., & Seikkula-Leino | 2010 | Perceived learning outcomes in entrepreneurship education: The impact of student motivation and team behaviour | - EE has no or in some cases a negative impact on students that are intrinsically motivated to study entrepreneurship.  
- Extrinsically motivated students are stratified with the outcome of EE. |
| Kailer, N., & Hora, W. | 2017 | Entrepreneurial Intentions and Activities of Students at Austrian Universities: Global University Entrepreneurial Spirit Students’ Survey 2016 | - Austrian nascent and active founders are starting a new venture because of different motives.  
- The primary stated reasons are that starting a business allows them to create value. |
<p>| Kailer, N., Wimmer-Wurm, B., Knapp, M., &amp; Blanka, C. | 2014 | Entrepreneurial Intentions and Activities of Students at Austrian Universities: Global University | - The primary stated motive to start a business among Austria nascent and active founders is to advance their development of career. |</p>
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<th>Authors</th>
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<th>Title</th>
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<tr>
<td>Yu Cheng, M., Sei Chan, W., &amp; Mahmood, A.</td>
<td>2009</td>
<td>Entrepreneurial Spirit Students’ Survey 2013</td>
<td>EE is not meeting the expectations of students (is leading to dissatisfaction).</td>
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<td>Ulvenblad, P., Berggren, E., &amp; Winborg, J.</td>
<td>2013</td>
<td>The role of entrepreneurship education and start-up experience for handling communication and liability of newness</td>
<td>EE has an impact on innovation. Ventures started from individuals that have experienced EE at a university a more innovative than that business that is initiated by individuals that are lacking this educational background.</td>
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<tr>
<td>Støren, A. L.</td>
<td>2014</td>
<td>Entrepreneurship in higher education: Impacts on graduates’ entrepreneurial intentions, activity, and learning outcome</td>
<td>EE has a positive impact on the innovation process but less on the ability to start a new venture.</td>
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<tr>
<td>Cruz, N. M., Rodriguez Escudero, A. I., Hernangomez Barahona, J., &amp; Saboia Leitao, F.</td>
<td>2009</td>
<td>The effect of entrepreneurship education programmes on satisfaction with innovation behaviour and performance</td>
<td>EE has an impact on the perceived satisfaction of innovation behavior and further on the satisfaction with performance.</td>
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<tr>
<td>Bell, R.</td>
<td>2015</td>
<td>Developing the next generation of entrepreneurs: Giving students the opportunity to gain experience and thrive</td>
<td>EE has a positive impact on degree of innovation within a business process. EE act as a catalyst for knowledge creation and innovation.</td>
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<tr>
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<td>European Commission. (2012)</td>
<td>2012</td>
<td>Effects and impact of entrepreneurship programmes in higher education</td>
<td>The entrepreneurship alumni group have significantly more opportunities to come up with new innovative ideas as an employee than the control group with no EE background. Male alumni have more opportunities to show creativity in a paid employment than female alumni.</td>
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<tr>
<td>Lourenço, F., &amp; Jayawarna, D.</td>
<td>2011</td>
<td>Enterprise education: the effect of creativity on training outcomes</td>
<td>EE has an impact on post-training creativity. Individuals that have a high degree of post-training creativity have a higher post-training outcome. A framework is presented that provides an overview of entrepreneurship learning at universities, including factors that have an impact on the success of EE.</td>
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<tr>
<td>Ghina, A., Simatupang, T. M., &amp; Gustomo, A.</td>
<td>2014</td>
<td>A Systematic Framework for Entrepreneurship Education within a University Context</td>
<td>A framework is presented that provides an overview of entrepreneurship learning at universities, including factors that have an impact on the success of EE.</td>
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<td>Dutta, D. K., Li, J., &amp; Merenda, M.</td>
<td>2011</td>
<td>Fostering entrepreneurship: impact of specialization and diversity in education</td>
<td>EE has a significant positive impact on the probability of future venture creation.</td>
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<td>Author(s)</td>
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<td></td>
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<td>- A significant positive relationship between Start-Ups and attitudes towards EE is existing.</td>
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<tr>
<td>Henry, C., Hill, F. M., &amp; Leitch, C. M.</td>
<td>2004</td>
<td>The Effectiveness of Training for New Business Creation: A Longitudinal Study</td>
<td>- Two years after completing an EE training program the percentage of self-employed grew from 0 percent to 8.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>- Training programs have a positive impact on venture creation.</td>
</tr>
<tr>
<td>Vincett, P. S., &amp; Farlow, S.</td>
<td>2008</td>
<td>“Start-a-Business”: an experiment in education through entrepreneurship</td>
<td>- Through unconventional entrepreneurial training programs, many ventures have been started.</td>
</tr>
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<td></td>
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<td>- 50 percent of the 51 participants started a business.</td>
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<td></td>
<td>- Hours of counseling is not related to the number venture creations.</td>
</tr>
<tr>
<td>Kailer, N., Wimmer-Wurm, B., Knapp, M., &amp; Blanka, C.</td>
<td>2014</td>
<td>Entrepreneurial Intentions and Activities of Students at Austrian Universities: Global University Entrepreneurial Spirit Students’ Survey 2013</td>
<td>- 5.3 percent of Austrian respondents are nascent entrepreneurs.</td>
</tr>
<tr>
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<td></td>
<td>- 4.5 percent of Austrian respondents have started a new venture.</td>
</tr>
<tr>
<td>Kailer, N., &amp; Hora, W.</td>
<td>2017</td>
<td>Entrepreneurial Intentions and Activities of Students at</td>
<td>- 8.1 percent of Austrian respondents are nascent entrepreneurs.</td>
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<td>Author(s)</td>
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<td>Findings</td>
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<tr>
<td>Dominguinhos, P. M. C., &amp; Carvalho, L. M. C.</td>
<td>2009</td>
<td>Promoting business creation through real-world experience</td>
<td>- 5.8 percent of Austrian respondents have started a new venture.</td>
</tr>
</tbody>
</table>
| Støren, A. L.                                 | 2014 | Entrepreneurship in higher education: Impacts on graduates’ entrepreneurial intentions, activity and learning outcome | - Case Study about the entrepreneurship program “Comecar” is examined, with the overall aim to assist participant to launch a new Start-Up.  
- The program has a success rate of 41 percent (hence out of 22 students, nine created a new venture).  
- No positive relation between EE and venture creation has been identified.  
- EE is not contributing to generate an entrepreneurial mindset among masters’ graduates. |

### (2) Venture Effectiveness

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<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Title</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Elmuti, D., Khoury, G., & Omran, O.            | 2012 | Does Entrepreneurship Education have a Role in Developing Entrepreneurial Skills and Ventures’ Effectiveness? | - A significant positive relationship between EE and the effectiveness of an organization is existing.  
- EE has a positive impact on any entrepreneurship venture. |
### (3) Networking

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Title</th>
<th>Year</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Gordon, I., &amp; Jack, S.</td>
<td>2010</td>
<td>HEI engagement with SMEs: developing social capital</td>
<td></td>
<td>EE is creating networks among students that are built on trust. Nascent entrepreneurs show the intention to select peers with the same educational background as their Start-Up partners.</td>
</tr>
<tr>
<td>Kailer, N., Wimmer-Wurm, B., Knapp, M., &amp; Blanka, C.</td>
<td>2014</td>
<td>Entrepreneurial Intentions and Activities of Students at Austrian Universities: Global University Entrepreneurial Spirit Students’ Survey 2013</td>
<td></td>
<td>38 percent of the Austria respondents (3315 students) intent to start a new venture with a fellow student.</td>
</tr>
<tr>
<td>Kailer, N., &amp; Hora, W.</td>
<td>2017</td>
<td>Entrepreneurial Intentions and Activities of Students at Austrian Universities.: Global University Entrepreneurial Spirit Students’ Survey 2016</td>
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### Economic Growth

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<th>Author(s)</th>
<th>Year</th>
<th>Title</th>
<th>Year</th>
<th>Description</th>
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<tbody>
<tr>
<td>Chatterji, M.</td>
<td>1998</td>
<td>Tertiary Education and Economic Growth</td>
<td></td>
<td>Tertiary EE has a positive impact on ‘catching-up’ countries and less impact on world leader countries. Tertiary EE has a positive impact on human capital as a growth driver and displaces secondary EE regarding economic growth.</td>
</tr>
<tr>
<td>Lange, J., Marram, E., Jawahar, A. S., Yong, W., &amp; Bygrave, W.</td>
<td>2014</td>
<td>Does and entrepreneurship education have lasting value?</td>
<td></td>
<td>Positive impact of EE on economic growth in terms of contribution to the economy, creation of jobs and investments.</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Year</td>
<td>Title</td>
<td>Findings</td>
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<tr>
<td>Galloway, L., &amp; Brown, W.</td>
<td>2002</td>
<td>Entrepreneurship education at university: a driver in the creation of high growth firms?</td>
<td>Positive effect of EE on economic growth in terms of industry growth (industry sectors). High number of graduates in the business service sector and an increase in the engineering sector.</td>
<td></td>
</tr>
<tr>
<td>Kailer, N., &amp; Hora, W.</td>
<td>2017</td>
<td>Entrepreneurial Intentions and Activities of Students at Austrian Universities: Global University Entrepreneurial Spirit Students' Survey 2016</td>
<td>Positive impact of EE on economic growth in terms of industry growth (industry sectors). Less differences in active and nascent founders according to the impact on industry sectors. IT sector is the leader of nascent and active students founders.</td>
<td></td>
</tr>
<tr>
<td>European Commission.</td>
<td>2012</td>
<td>Effects and impact of entrepreneurship programmes in higher education</td>
<td>Positive impact on economic growth in terms of industry growth (industry sectors). Entrepreneurship alumni are mainly active in the service sector. Positive influence of EE on the annual turnover growth.</td>
<td></td>
</tr>
<tr>
<td>Career and Employment</td>
<td>Year</td>
<td>Title</td>
<td>Authors</td>
<td>Findings</td>
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<td>(1) Career</td>
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</tbody>
</table>
| Rae, D., & Ruth Woodier-Harris, N.                                                    | 2013 | How does enterprise and entrepreneurship education influence postgraduate students’ career intentions in the New Era economy? |                                                                           | ▪ EE strengthen the connection between the personal development and the rise of the career learning of students.  
▪ EE of graduates impacts positively the career options which they pursue, supports the career development of graduates further and enhances the career learning.                                                                                                                                                                                                 |
| Packham, G., Jones, P., Miller, C., Pickernell, D., & Thomas, B.                       | 2010 | Attitudes towards entrepreneurship education: a comparative analysis |                                                                           | ▪ EE and educational experience of entrepreneurship has a higher positive impact of an entrepreneurial career on men than on women.  
▪ Concerning perceived impact, female students gain more entrepreneurial knowledge through EE courses than male students.  
▪ Participation in EE programs (e.g, SPEED program) leads to a positive effect on student’s career decision, due to business creation or learning experiences during studies.  
▪ EE at universities or HEIs has a positive influence on career.                                                                                                                                                                                                                                                                      |
| Woodier-Harris, N. R.                                                                 | 2010 | Evaluating the impact of SPEED on students’ career choices: a pilot study |                                                                           | ▪ EE has a positive impact on self-efficacy and on an entrepreneurial career.  
▪ Connection between entrepreneurial self-efficacy and entrepreneurial behavior implies a positive impact of EE on the career path of graduates.                                                                                                                                                                                                                     |
<p>| Wilson, F., Kickul, J., Marlino, D., Barbosa, S. D., &amp; Griffiths, M. D.                | 2009 | An analysis of the role of gender and self-efficacy in developing female entrepreneurial interest and behavior |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                   |</p>
<table>
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<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Title</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Rae, D., & Woodier-Harris, N.                                             | 2012 | International entrepreneurship education: Postgraduate business student experiences of entrepreneurship education | - EE plays a significant role for identifying career options and goals.  
- EE has a positive impact on career outcome and career decisions.       |
| Matlay, H.                                                               | 2008 | The impact of entrepreneurship education on entrepreneurial outcomes | - EE has a positive impact on entrepreneurial career outcomes.           
- Successful entrepreneurial outcome is assigned to EE at HEI.          |
| Kailer, N., Wimmer-Wurm, B., Knapp, M., & Blanka, C.                     | 2014 | Entrepreneurial Intentions and Activities of Students at Austrian Universities: Global University Entrepreneurial Spirit Students’ Survey 2013 | - Positive career development due to the number of active founders and number of jobs which are created.  
- EE impacts the entrepreneurial career outcome of students positively. |
| Kailer, N., & Hora, W.                                                   | 2017 | Entrepreneurial Intentions and Activities of Students at Austrian Universities: Global University Entrepreneurial Spirit Students’ Survey 2016 | - Significant positive amount of active student founders.            
- EE leads to motives for further career development.                  
- Positive impact of EE on an entrepreneurial career.                  |
<p>| (2) Employment                                                           |      |                                                                      |                                                                         |
| Ekpoh, U. I., &amp; Edet, A. O.                                              | 2011 | Entrepreneurship Education and Career                                  | - EE creates a positive impact on students and their attitude towards self-employment as a career option. |</p>
<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Title</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Li, Z., & Liu, Y.        | 2011 | Entrepreneurship education and employment performance: An empirical study in Chinese university | Benefits of EE, that students engender self-employment as a career option, are significantly high.  
EE has a highly positive impact on the issue of employment of students.  
Entrepreneurship and EE have a positive impact on employment performance.  
EE has a positive influence on young graduates concerning securing good jobs and employment. |
| European Commission.    | 2012 | Effects and impact of entrepreneurship programmes in higher education                      | Entrepreneurship groups who attended entrepreneurship programs consist of more alumni that are self-employed than others who have not participated in EE programs.  
Better employment status for EE alumni.  
Positive influence of EE on employment. |
| Premand, P., Brodmann, S., Almeida, R., Grun, R., & Barouni, M. | 2016 | Entrepreneurship Education and Entry into Self-Employment Among University Graduates        | A new study track of EE lead to an increase in self-employment towards participants one year after graduation.  
Standard curriculum activities in EE lead to more unemployment than employment and have less impact on the employment of graduates than the new study track program.  
Negative impact of EE on employment. |
<table>
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<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Title</th>
<th>Findings</th>
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</thead>
<tbody>
<tr>
<td>Nasr, K. B., &amp; Boujelbene, Y.</td>
<td>2014</td>
<td>Assessing the impact of entrepreneurship education</td>
<td>Entrepreneurship master programs have a positive effect on the learning and knowledge transfer to professional work and to employment rates.</td>
</tr>
<tr>
<td>Støren, A. L.</td>
<td>2014</td>
<td>Entrepreneurship in higher education: Impacts on graduates’ entrepreneurial intentions, activity and learning outcome</td>
<td>EE at universities or HEI impacts negatively on employment and self-employment. Self-employment rates of entrepreneurship graduates are directly after graduation much higher than half a year after graduation.</td>
</tr>
<tr>
<td>Gilbert, D. H.</td>
<td>2012</td>
<td>From chalk and talk to walking the walk: Facilitating dynamic learning contexts for entrepreneurship students in fast-tracking innovations</td>
<td>Positive impact of the EE IFP program to graduate employability. Strong link among the outcome of the IFP like skills extension and the increase in graduate employability.</td>
</tr>
<tr>
<td>Petridou, E., Sarri, A., &amp; Kyrgidou, L. P.</td>
<td>2009</td>
<td>Entrepreneurship education in higher educational institutions: the gender dimension</td>
<td>EE has a more positive impact on male students than on female students in terms of career creation. EE has a more positive effect on female students than on male students in terms of creating a theoretical basis of entrepreneurial activities. Higher enrollment rates at universities for EE programs of male students than of female students.</td>
</tr>
<tr>
<td>Kailer, N., Wimmer-Wurm, B., Knapp, M., &amp; Blanka, C.</td>
<td>2014</td>
<td>Entrepreneurial Intentions and Activities of Students at Austrian Universities:</td>
<td>Positive influence of EE on gender, because numbers of entrepreneurial actions of graduated men and women increased over the years.</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Year</td>
<td>Title of the Study</td>
<td>Key Findings</td>
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<tr>
<td>Kailer, N., &amp; Hora, W.</td>
<td>2017</td>
<td>Entrepreneurial Intentions and Activities of Students at Austrian Universities: Global University Entrepreneurial Spirit Students' Survey 2016</td>
<td>- Entrepreneurial gap between men and women, but the gap begins to close after years of practical experience.</td>
</tr>
<tr>
<td>Packham, G., Jones, P., Miller, C., Pickernell, D., &amp; Thomas, B.</td>
<td>2010</td>
<td>Attitudes towards entrepreneurship education: a comparative analysis</td>
<td>- Positive effect of EE on gender, because numbers of entrepreneurial actions of graduated men and women increased over the years. - Gap between men and women, but the gap begins to close after years of practical experience.</td>
</tr>
<tr>
<td>Newbold, K. F., &amp; Erwin, T. D.</td>
<td>2014</td>
<td>The education of entrepreneurs: An instrument to measure entrepreneurial development</td>
<td>- EE has a higher positive impact on male than on female students considering career options. - EE has a higher positive impact on female than on male respondents in terms of perceiving entrepreneurial knowledge. - Entrepreneurship is a male-dominated field. - Men are pursuing more entrepreneurship actions and activities than women. - EE has basically a positive impact on male students.</td>
</tr>
<tr>
<td>European Commission.</td>
<td>2012</td>
<td>Effects and impact of entrepreneurship programmes in higher education</td>
<td>- More female students prefer a position as an employee than male alumni. - More male alumni prefer self-employment in contrast to female students. - Age differences of alumni’s employment.</td>
</tr>
</tbody>
</table>
Young people prefer the employment preference of self-employment.
Older people tend to a normal employee.
EE at universities and HEIs has an impact on demographic characteristics like gender or age in the sense of employment performance, career options or other issues.

<table>
<thead>
<tr>
<th>Daghbashyan, Z., &amp; Hårsman, B.</th>
<th>2014</th>
<th>University choice and entrepreneurship</th>
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</table>

EE of graduates in international ranked universities follow a more entrepreneurial activity.
Entrepreneurial occupation is increasing with age, and it is higher for men than for women.
Difference in the entrepreneurial attitude among graduates with native and foreign background.
EE in business-oriented regions is higher than in other regions.
Several demographic factors are influence by EE.

Regional Development

<table>
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<tr>
<th>Gordon, I., &amp; Jack, S.</th>
<th>2010</th>
<th>HEI engagement with SMEs: developing social capital</th>
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Experiences in the HEI sector are beneficial to SME owners.
Universities and HEIs are connected through third mission activities to the regional development.

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<thead>
<tr>
<th>Petridou, E., Sarri, A., &amp; Kyrgidou, L. P.</th>
<th>2009</th>
<th>Entrepreneurship education in higher educational institutions: the gender dimension</th>
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</table>

Greek female students show lower motivation to participate in EE programs at HEIs than their male counterparts.
Students attitudes about EE programs differ by gender.
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<tr>
<th>Authors</th>
<th>Year</th>
<th>Title</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>Poblete, C., &amp; Amorós, J. E.</td>
<td>2013</td>
<td>University Support in the Development of Regional Entrepreneurial Activity: An Exploratory Study from Chile</td>
<td>Universities in Chile have no impact on the entrepreneurial activity in their country. EE in Chile is not a contribution to the regional development in the form of an increased number of graduated entrepreneurs.</td>
</tr>
<tr>
<td>Isaacs, E., Visser, K., Friedrich, C., &amp; Brijlal, P.</td>
<td>2007</td>
<td>Entrepreneurship Education and Training at the Further Education and Training (FET) Level in South Africa</td>
<td>HEIs in South Africa have not taken up the demand and commercial necessity for EE.</td>
</tr>
</tbody>
</table>

**SME and Family Firm Engagement**

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<tr>
<th>Authors</th>
<th>Year</th>
<th>Title</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>Gordon, I., Hamilton, E., &amp; Jack, S.</td>
<td>2012</td>
<td>A study of a university-led entrepreneurship education programme for small business owner/managers</td>
<td>The LEAD program has a positive impact on the development of SMEs Trough social elements networks among the participants arise.</td>
</tr>
<tr>
<td>Elmuti, D., Khoury, G., &amp; Omran, O.</td>
<td>2012</td>
<td>Does Entrepreneurship Education have a Role in Developing Entrepreneurial Skills and Ventures’ Effectiveness?</td>
<td>A positive relationship between EE and the effectiveness of an organization could be identified. Entrepreneurs perceive EE, training and social competencies as the primary success items for launching and running an SME.</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Year</td>
<td>Main Findings</td>
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<tr>
<td>Cruz, N. M., Rodriguez Escudero, A. I., Hernangomez Barahona, J., &amp; Saboia Leitao, F.</td>
<td>2009</td>
<td>The effect of entrepreneurship education programmes on satisfaction with innovation behaviour and performance</td>
<td></td>
</tr>
<tr>
<td>Alarape, A. A.</td>
<td>2007</td>
<td>Entrepreneurship programs, operational efficiency, and growth of small businesses</td>
<td></td>
</tr>
<tr>
<td>Sandhu, N., Hussain, J., &amp; Matlay, H.</td>
<td>2012</td>
<td>Entrepreneurship education and training needs of family businesses operating in the agricultural sector of India</td>
<td></td>
</tr>
</tbody>
</table>

EE has a positive impact on the happiness with innovation behavior which is directly linked to satisfaction with performance.

Entrepreneurship programs have a positive impact on the development of managerial skills of small business owners and managers.

Developing entrepreneur-managerial skills can boost the performance of small firms.

Owners of family firms in the agriculture sector in India has a lack of EE.

EE in general and financial training in particular, is essential for the survival and growth of family firms.

Tab. 20: Overview of main findings

705 Source: Own graphical presentation
7. References


In Cites Journal Citation Reports. (2016). *Thompson Reuters.*


References


