WHAT MAKES ENTREPRENEURS OF THE FUTURE ENTREPRENEURIAL?
COMPARISON OF FINNISH AND HUNGARIAN ENTREPRENEURSHIP-RELATED MASTER'S DEGREE PROGRAMMES SKILL CONTENTS

PhD Dissertation

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DECLARATION

Hereby I certify that the Ph.D. thesis entitled *"What Makes Entrepreneurs of the Future Entrepreneurial? Comparison Of Finnish and Hungarian Entrepreneurship-Related Master's Degree Programs Skill Contents"* is solely my own work. It contains no material that has been previously written or /and published by any other academic degree or diploma. Any previously published materials that have been used in this thesis are for bibliographical reference.

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Eszter Knúlné Pál

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ACKNOWLEDGEMENT

Some say writing a dissertation is one of the loneliest things in the world. To be honest, sometimes I did feel that way, but I would like to emphasize that whenever I asked for help, I received it. Whenever I felt lost, I always received guidance, and whenever I had a question, I always received an answer, whether it was professional or emotional.

At the end of 2024, I took a yoga course where I learned the practice of gratitude, that means saying things for which you are grateful for 1 minute. I have prepared my acknowledgement in this spirit.

I'm grateful to be surrounded by such a supportive community and such good people in my work and my personal life.

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1. INTRODUCTION

A central question in entrepreneurship research is: What makes an entrepreneur successful? Does family background, learned or innate skills, or education play a role in achieving this goal? Of course, there is no clear answer to this question, as can be seen from the example of entrepreneurs widely considered to be *"successful"*. Bill Gates had entrepreneurial parents in his family, who were a great example to him. He started to develop his programming skills when he was 8 years old. Although he began his undergraduate studies at Harvard University, he never finished them and never graduated. Despite this, he founded one of the world's most valuable companies, Microsoft. Looking at his case, family background and early skill development are the keys to success. However, if we look at Elon Musk's career, he has no entrepreneurial family background and came to the US as an immigrant. He has two degrees, one in philosophy and one in economics. In his case, his family background could not have been a pull factor, and his studies were unrelated to entrepreneurship. Nevertheless, he is behind several successful businesses (e.g., SpaceX, Tesla). In the Hungarian context, Sándor Demján, businessman and economist, was the wealthiest man in Hungary in 2008. He spent his childhood in a children's home and had to spare a lot. Graduated at 22 with a degree in commerce and hospitality. Throughout his career, he steadily progressed and held higher and higher positions, eventually establishing several businesses of his own (e.g., WestEnd City Center, TriGránit Development Ltd.). Looking at his case, we can see that his family background did not dominate either; he achieved great success on his own.

Imreh-Tóth et al. (2012) cited Howard Stevenson, a professor at Harvard University, as saying that no one can be taught how to become Bill Gates, but the tools needed to become an entrepreneur can be taught to anyone. Kassai (2020) highlighted some possible factors behind success, such as the general political or economic environment, the financial and social capital of entrepreneurs, or individual knowledge and skills. Dunai and Illés (2022) emphasised that businesses are constantly being created and dissolved and that who will be successful is determined by a combination of a correct assessment of market opportunities, business management, and value creation processes adapted to the environment.

As can be seen from the above, there is no single *"recipe"* that will undoubtedly lead to a successful business. The question is, however, whether it is worth addressing this issue. I think it is worth writing a recipe book, as there is more than one way to make a good

broth. It is up to the chefs to find the recipe closest to their guests' tastes. This is also true for businesses. It is a matter of finding out which entrepreneurial skills are most needed in a particular field and focusing on developing them to achieve the desired result.

Another critical question in the entrepreneurship literature is whether entrepreneurial skills can be taught. According to Schumpeter (1934), these skills can only be innate; they cannot be effectively developed in a school environment. However, Drucker (1985) argued that entrepreneurial skills can be acquired through education. Bell (2015) stood between these two views and claimed that some elements of entrepreneurship can certainly be taught and learned. According to Imreh-Tóth et al. (2012), entrepreneurship is both a *"science"* and an *"art"*, the former referring to the skills needed to run a business and thus teachable, while the latter refers to the creative aspects of entrepreneurship that cannot be learned through education. Bates (2024) argued that skills are not binary, by which he meant that a skill has not only a state of being or not being, but that different levels (novice, intermediate, expert, and master) are distinguished. These skills require continuous practice to maintain their level.

Higher education institutions (henceforth: HEIs) take the view that entrepreneurial skills can be taught (at least some certainly can). Although it is difficult to pinpoint precisely when entrepreneurship education started in higher education, there were already courses in curricula in the mid-20th century that aimed to develop skills related to entrepreneurship. The first degree programme in entrepreneurship was established at Harvard University in

Figure 1: Number of entrepreneurship programmes (worldwide) (source of data: Vesper, 1993, own compilation)

1947, called *"Management of New Enterprise"*. Subsequently, several universities have established entrepreneurship, business creation, and development courses, which have grown rapidly each year due to various economic and political influences. Figure 1 illustrates the growth from the mid to late 1900s. By 2013, more than 2000 institutions had launched entrepreneurship programmes worldwide (Kauffman, n.d.).

Relying (at least in part) on skills development, the legitimacy of entrepreneurship training is not in doubt. The number of businesses globally is growing rapidly year after year, so the education market needs to keep pace with the growing demand. In 2022, there were more than 32 million active businesses in the EU, providing jobs for more than 160 million people (Eurostat, 2022). Figure 2 shows the evolution of the number of enterprises in the EU between 2014 and 2024 (www.statista.com, 2024).
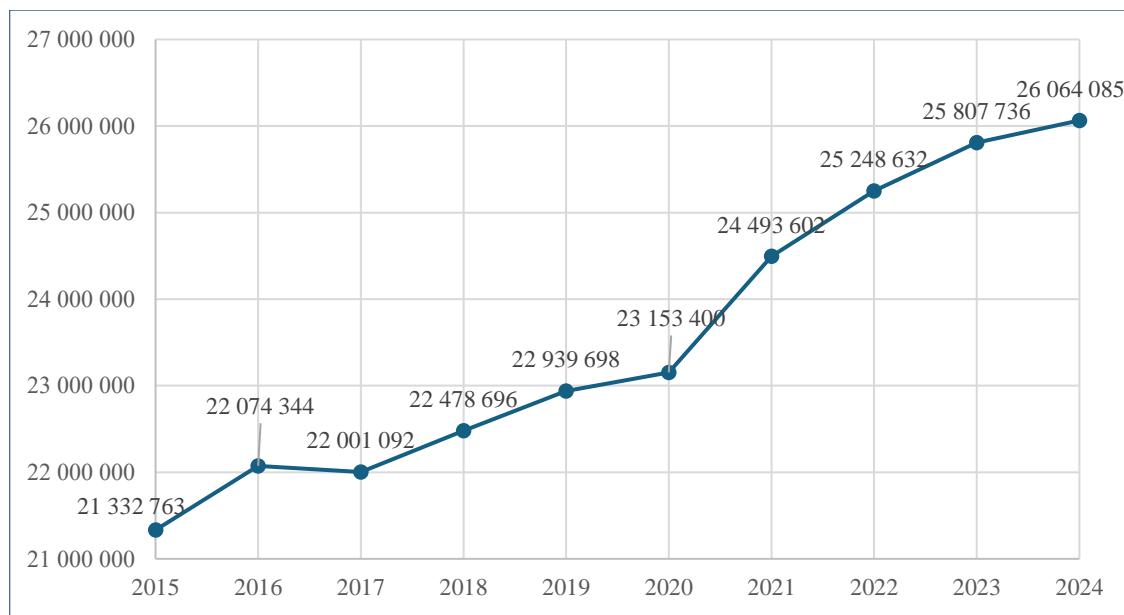
Figure 2: Number of businesses in Europe 2015-2024 (source: www.statista.com, 2024, own compilation)

Businesses have faced many challenges in each period, among which Wilson (2013) highlighted technological, globalisation, and demographic changes as having the potential to change the structure of employment and previous patterns of skill expectations.

In addition to the significant growth in the number of businesses and the global phenomena mentioned above, there are several factors that justify the need for HEIs to monitor and follow the trends in the business world and the labour market. Moreover, the expectations of these sectors towards higher education have changed significantly in a number of areas in recent years. Fűzi et al. (2022), in their paper, examined changes in the field of socialisation and digitalisation in the Central and Eastern European region using a horizon scanning method. One of the most important actors in the higher education sector is the group of employers who expect universities to educate well-prepared, informed students with adequate intellectual and social skills. Given that one of the main focuses of students is on developing and building their future careers, their

needs are significantly influenced by the employers' expectations (Fűzi et al., 2022). This is why it will be essential to continuously monitor and integrate necessary skills into the programmes of HEIs in the future. Lauris et al. (2024) also pointed out that the rapidly changing world is forcing both companies and universities to constantly change in order to stay up to date. Novotny et al. (2023) highlighted that most of today's university students belong to Generation Z, one-third of whom plan to become managers of a self-founded company.

The main goal of my dissertation is to map the emergence of entrepreneurial and future skills in both literature and practice. To this end, I have identified sub-goals and research questions (the sub-goals and research questions are listed in Table 1). First, I seek to answer the question of what the teachable entrepreneurial and future skills are. To answer this question, I used a systematic and an integrative literature review. My second question is: Which skills identified in the literature are present in the online communication of top HEIs? The related method is corpus analysis. The corpus consists of the online available English language programme descriptions of the top 100 HEIs. Finally, the third question is about the skills that appear in the curricula of two master's programmes in entrepreneurship. For this purpose, my chosen method is a case study: I examined the programmes of a Finnish and a Hungarian institution regarding skill content. Table 1 presents the summary of my goals, the research questions, and the related methods for each.

Table 1: Sub-goals, research questions, and methods of the dissertation (source: own compilation)

Sub-goals	Research questions	Methods
To compile lists of entrepreneurial and future skills from the literature	**RQ1:** What are the entrepreneurial and future skills according to the literature? **RQ1.1**: What are the teachable entrepreneurial and future skills? **RQ1.2:** Which skills are also included in the list of entrepreneurial and future skills?	Systematic and Integrative literature review
To map the representation of entrepreneurial and future skills in the online programme descriptions of the top 100 HEIs	**RQ2**: Which entrepreneurial and future skills are included in the online available English-language programme descriptions of the top 100 Higher Education Institutions?	Corpus-based content analysis (Presence of the list of entrepreneurial and future skills compiled from the literature in the corpus)
To examine which entrepreneurial and future skills are developed in the entrepreneurship master's programmes	**RQ3:** Which entrepreneurial and future skills are reflected in the curricula of the two chosen master's programmes? **RQ3.1:** What similarities and differences can be found in the skills content of the two countries' master's programmes? **RQ3.2:** How do they ensure compliance with EU and other government regulations?	Case study (study of a master's programme in entrepreneurship at a Finnish university in the top 100 and comparison with a similar programme at a Hungarian university)

My dissertation aims not to create a perfect, all-encompassing list of entrepreneurial and future skills but to collect as many teachable skills as possible. As a result of this research, I will be able to fill in each section of Figure 3 below and thus get a complex picture of the representation of entrepreneurial and future skills involved in education.
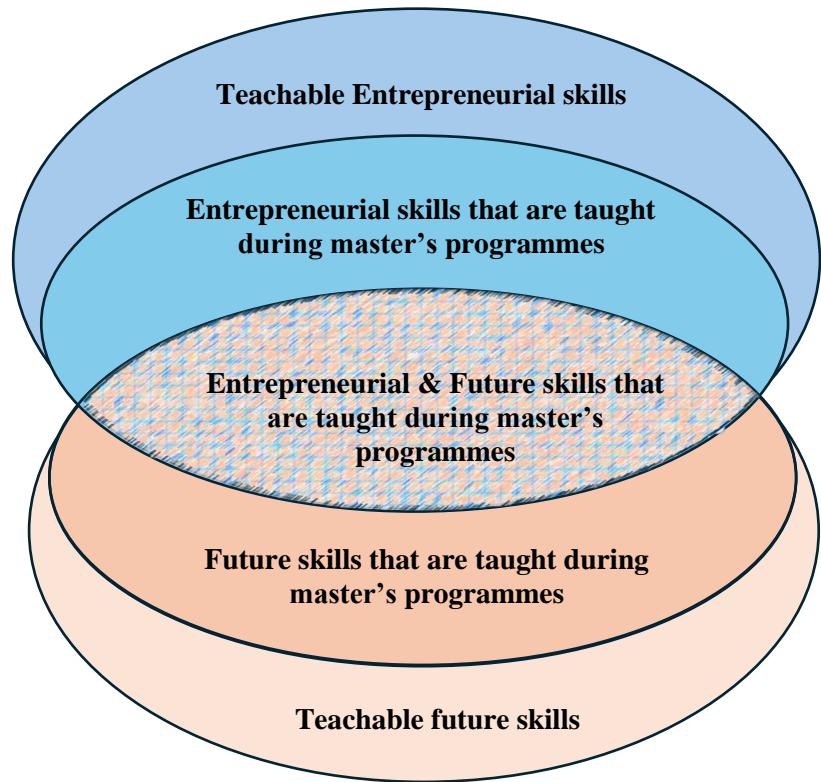
Figure 3: Connection between the research themes (own compilation)

In addition to the scientific aim of the dissertation, I also have a developmental aim. While writing the dissertation, I would like to develop my research and academic writing skills, gain experience in various research methodologies, and expand my knowledge of the master's degree in business development.

At the beginning of my dissertation, it is important to clarify my research philosophy on which the research is based. The four paradigms described in the Burrell and Morgan (1979) matrix show the perspectives from which our social and organisational world can be viewed (Figure 4). Taking the Burrell and Morgan (1979) matrix into account, my approach is close to the objectivist philosophy perspective, as I focus on the representation of skills in various surfaces and documents, rather than judging them subjectively based on individual impressions. Looking at the other axis, one option is maintaining order, and the other is committing to radical change. The dissertation is not intended to transform the systems that are currently in place, but merely to examine the way things are presently working. For this reason, the perspective of maintaining order is the one that fits the research. At the intersection of the two axes is the functionalist paradigm. In the functionalist paradigm, the researcher formulates rational explanations and suggestions for improvement in relation to the current system. As a result, the

researcher can provide rational and operationally sound answers to real problems in real organisations. In my dissertation, this is the philosophy I have in mind.
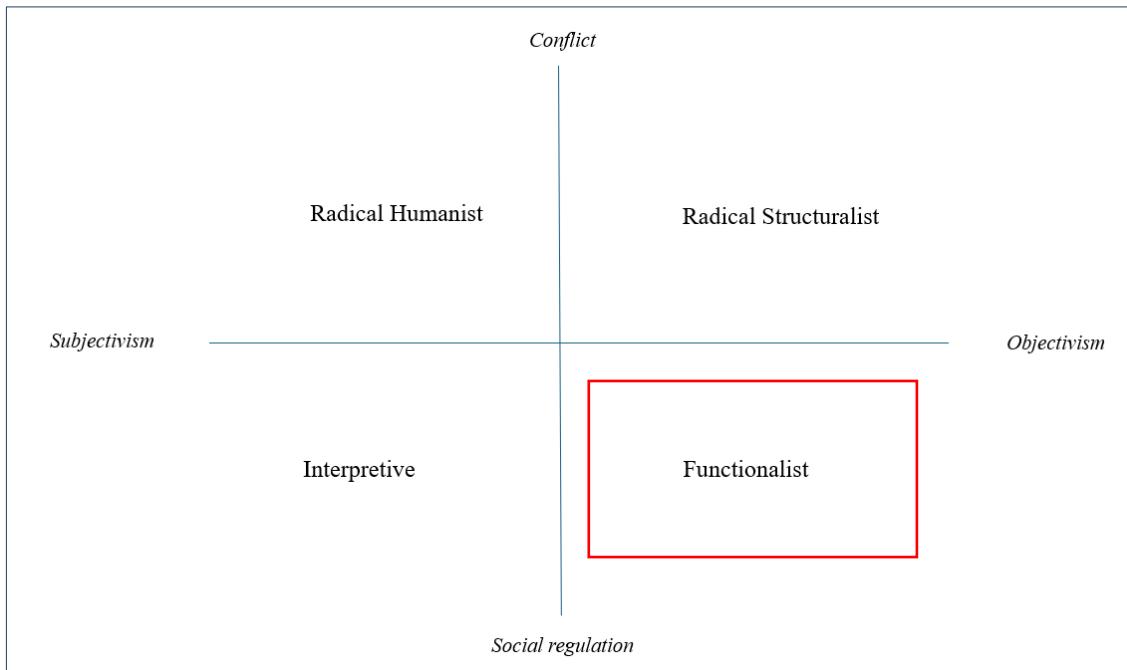
Figure 4: Burrell and Morgan matrix (1979) – (source: own compilation based on Saunders et al., 2016)

Saunders et al. (2016) describe five paradigms in which research can be interpreted: positivism, critical realism, interpretivism, post-modernism, and pragmatism. Of these, the positivism paradigm is the one that best characterises the philosophy of my research for my dissertation. The main characteristics of positivism include the researcher's presence as an external, independent actor in the research. In the process, the focus is on measurable and observable phenomena. The researcher is not personally involved in the subject and is not guided by his or her impressions.

Although Saunders et al. (2016) do not mention the mixed methodology as one of the most commonly used methodologies for the functionalist paradigm, I will use it in the following, as it is the paradigm most strongly justified by the dissertation and the research objectives.

The structure of the dissertation is shown in Figure 5.

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│  Definitions and │      │   • Entrepreneurs           │      │     frameworks              │
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│   Frameworks     │      │   • Entrepreneurship        │      │     system                  │
│                  │      │     education               │      │   • Hungary's education     │
│                  │      │   • Future skills           │      │     system                  │
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Figure 5: Structure of the dissertation (source: own compilation)

„If researchers do no conduct theoretically rigorous research, the content of entrepreneurship courses will suffer"[1]

2. DEFINITIONS AND THEORETICAL FRAMEWORKS

This chapter explores how different studies interpret the definitions of entrepreneurship, entrepreneurial skills, and future skills. Additionally, it presents the role of entrepreneurship education and the relevant policies and frameworks. It also introduces the specifics of the Finnish and Hungarian education systems in general and in connection with the university programmes. Thanks to this chapter, the definitions I use in the dissertation will be clear.

2.1. Definitions

This chapter answers the *what*, *who,* and *how* questions related to the concept of enterprise. For the *what* question, the focus is on the conceptual definitions of entrepreneurship as an activity. The related question is: "*What does entrepreneurship mean?*". In connection with that, I will present a chronological overview of the concepts of entrepreneurship (from 1934 to the present day). For the *who* question, I will look at the definition of entrepreneur as a person to better understand the attributes a student should have as a result of entrepreneurship education. The related question is: "*Who are the entrepreneurs?*". Finally, the *how* question focuses on the conceptual definitions of entrepreneurial skills and future skills. This aims to provide a unified understanding of skills in the research. In this case, I intend to answer the question: "*How can entrepreneurs realise entrepreneurship*?" by reviewing the definitions.

Entrepreneurship

It is essential to look closely at the concept of entrepreneurship, as it is at the heart of the research and encompasses the activities that entrepreneurs carry out in their daily lives. Borsy and Dőry (2015) noted that the definition is not straightforward due to the phenomenon's complexity, and even renowned researchers have difficulty defining it. Definitions clarify entrepreneurs' expectations of their work, the context in which they operate, and the challenges and difficulties they face in their work. As there is no consensus on the definition of entrepreneurship (Adekiya & Ibrahim, 2016), in the following section, I review the definitions chronologically and observe the changes over

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[1] Fiet, 2000, p.4.

the period under study (1934-2024) in order to gain a better understanding. Then I present the content of 26 definitions, and at the end of this subsection, I describe the concept I use throughout my dissertation.

One of the first definitions was created by Schumpeter (1934), who emphasised the new venture and wealth-creation aspects of entrepreneurship. Later, in 1961, McClelland referred to entrepreneurship as a dynamic process created and managed by a person. He also highlighted the exploitation of economic innovation and value creation in the market. In 2008, the elements of risk and uncertainty appeared in the definition by Dollinger (2008, p.28.): *"the creation of an innovative economic organisations (or network of organisations) for the purpose of gain or growth under conditions of risk and uncertainty."*. In 2004, Parker also mentioned the risk in his interpretation, but he referred to it as risk-taking behaviour in order to carry out for future benefit. In my chronological review, this was the first definition I could identify the first reference for a trait of an entrepreneur in a definition.

Kuratko (2005) referred to entrepreneurship as a process in which an individual exploits an opportunity and as a result the individual creates value. A year later, OECD created its own definition, which also determined entrepreneurship as a process and emphasised the role of entrepreneurs (create enterprises, provide new products and/or services, add value to existing products or services) (OECD, 2006). Acs and Audretsch (2010, p. 3.) stated that *„entrepreneurship is a global practice and global phenomenon"*. This is the first definition that introduces entrepreneurship in a global context (first in the current research). Based on the definition of Uddin and Bose (2012), entrepreneurship is the practice of starting new organisation whose goal is to generate innovation in response to business potential. In 2014, Feldman determined the pivotal role of entrepreneurship in enhancing productivity, competitiveness, and economic progress, especially in knowledge-driven economies. Mortan et al. (2014) added that entrepreneurship does not only occur in knowledge-driven economies - as it is a multi-dimensional concept - it occurs in several different contexts and all types of organisations. Based on their opinion, the focus of entrepreneurship is on people, their choices, and actions in managing a business. The definition of Moberg et al. (2014, p. 14) states that entrepreneurship is:*" When you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural, or social"*.

In 2017, Čapienė and Ragauskaitė also highlighted the role of entrepreneurs in economic growth, and they also urged the development of entrepreneurial competencies. In connection with the competencies, the European Union issued the EntreComp in 2016, which contains the most critical entrepreneurial skills (see details in 2.2 sub-chapter). This document defines entrepreneurship as *"the capacity to turn ideas into action, ideas that generate value for someone other than oneself"* (Bacigalupo et al., 2016, p. 7). This is very similar to the definitions of Moberg et al. (2014), and the reason behind it is that Moberg has worked on the EntreComp project as an expert, so their definition could impact the project. Jayeoba (2015) determined three dimensions of the entrepreneurship. Based on the first dimension, entrepreneurship is a process where individuals create something new. By the second dimension, entrepreneurship is the behaviour of entrepreneurs who have certain abilities. According to the third dimension, entrepreneurship is an outcome, where, for example, new products, new services, or new methods appear. Welsh, Memili and Kaciak, 2016 defined entrepreneurship as the ability to turn ideas into new ventures and become a key economic growth driver. Sitaridis and Kitsios (2017) also kept the focus on entrepreneurship's positive role in modern economies, as it serves as a powerful catalyst for growth, innovation, and job creation.

In 2019 Hessels and Naudé attempted to create a synthesis definition, which is *"entrepreneurship is the resource, process and state of being, through which individuals with ability and agency utilize positive opportunities in the market for generating individual and/or social value"* (Hessels & Naudé, 2019, p. 397). Fisher et al. (2020) agreed with the value creation and also raised attention to the characteristics of new idea generation for companies and society. Gieure et al. (2020) also highlighted the social development and economic growth elements, while Yildirim et al. (2019) added that entrepreneurship's contribution to the increase of the country's level of welfare. Lüdeke-Freund (2019) concluded that the scope of entrepreneurship has expanded in the past few years and involves societal and environmental dimensions. This phenomenon is observable in my chronological review as well. This way seemed to continue in 2022, as the definition of Sendra-Pons et al. (2022) stated that entrepreneurship is the engine of economic and social development. A shift can be observed in 2023 as the emphasis in the definitions is not on the effects or the process but on the skills. For example, Cekule et al. (2023, p. 616) defined entrepreneurship as *„an important skill that students can learn from universities, which can help them create their own businesses and contribute to the*

economy". The value creation and the contribution to the economy remain part of the definition, however, the focus is on skill development. Ligonenko et al. (2023) added that entrepreneurship is a way of thinking and behaviour, not just skills and knowledge. Finally, the Global Entrepreneurship Monitor stated that *„entrepreneurship is the act of starting or running a new business"* (GEM, 2023, p. 16).

A chronological overview of the concept of entrepreneurship shows that initially the emphasis was mainly on process, value creation, and innovation. Later (in 2004), skills were added to the concept, and finally, entrepreneurship itself was defined as a skill (from 2023). While there has been a change in the content of the definitions over the years, there are elements that are found almost everywhere, thus defining the basic meaning of entrepreneurship. It is these stable elements that I am interested in, as these are the terms that form the core of the concept of entrepreneurship.

As a result, I've developed my own definition using the most mentioned elements. During the development, I aimed to involve as many aspects and elements from the previously introduced interpretations as possible and combine all the essential aspects of the elder definitions and the newer ones. In my dissertation, I interpret the word *"entrepreneurship"* as the following: Entrepreneurship is an innovative process where individuals (entrepreneurs) can create social values and generate economic growth by making use of their new ideas, skills, and abilities to exploit their market and business opportunities and so develop their enterprises.

Entrepreneurs

In this sub-chapter, I am searching for the answer to the question of who entrepreneurs are and what the main characteristics of their definitions are. The literature mentions several different approaches to interpreting entrepreneurs. In the following, I introduce possible ways to define entrepreneurs.

On the one hand, some definitions describe entrepreneurs through their attributes, behaviours, and skills. For example, Boldureanu et al. (2020) created their version in this way: "*The entrepreneur being defined as an individual undertaking risks, making plans, supervising and monitoring, organising and controlling the business, as well as maximizing business opportunities, taking the initiatives, organising the socio-economic mechanisms and accepting the risk of failure, being a leader and an innovator"* (Boldureanu et al., 2020, p.3). Borsy and Dőry (2015) also interpreted entrepreneurs as

individuals and highlighted their risk-taking behaviour and uncertainty management to create new ventures and realise income and growth via exploiting opportunities and resource mobilisation Bublitz et al. (2015) continued describing the entrepreneurs via their attributes, however, they did not provide a list of skills in their interpretation. Bublitz et al. (2015) stated that entrepreneurs are multiskilled, and they have to master each skill at as high-level as possible and so become jack-of-all-trades to run an entrepreneurial venture successfully. In connection with that, Luca and Robu (2016) highlighted the autonomy of entrepreneurs (they are *"their own masters"*); however, achieving the required outcomes goes together with great responsibility (Luca & Robu, 2016, p.1).

On the other hand, there are definitions that focus on the activities, effects, and actions achieved or performed by the entrepreneurs. For example, based on the interpretation of Schumpeter (1934), an entrepreneur is someone who innovates in several different areas (e.g., firm organisation, product/service development, raw material management, modes of production, networks, new market segments). Similarly to Schumpeter (1934), Shankar (2012) introduced entrepreneurs as persons (business owners) whose aim is to generate value through their economic activity by identifying new products, processes, or markets. Additionally, Adekiya and Ibrahim (2016) at the end of their review, created a similar definition to the previous ones: "*entrepreneurs are enterprising individuals who engage in an economic behaviour with the intention of creating and adding value to meet human needs*" (Adekiya & Ibrahim, 2016, p. 118).

Finally, Dvorsky et al. (2018) defined future entrepreneurs as people who can help develop their countries with their creativity and activity. In spite of the fact that they interpreted future entrepreneurs, their approach is very important: they highlighted both the entrepreneur's attributes and their effects on the economy in their definition.

Based on the results of the entrepreneurs' definitions review, I developed my own definition as follows: Entrepreneurs are individual innovators who use their skills, take risks, and seek opportunities during their activities to create new businesses and organise processes in order to develop products, thereby creating values and contributing to economic growth. I use my own interpretation during the dissertation.

Entrepreneurial skills

As seen in the above-presented sub-chapters, entrepreneurs' skills, abilities and behaviours are usually mentioned in the definition of entrepreneurship and entrepreneurs.

However, the definition of entrepreneurial skills is barely discussed in the literature I have read. In spite of the lack of definitions, some discussions could help characterise entrepreneurial skills. In the current sub-chapter, I attempt to answer *how entrepreneurs realise entrepreneurship* with the help of the below-presented definitions of entrepreneurial skills and the related discussions.

According to Suparno and Santono (2018), *"entrepreneurial skills give a person the ability to develop a new company and promote social development"* (cited by Castro, & Zermeño, 2020, p. 3). Both mentioned activities in the definition (new company development and social development) are usually mentioned in the entrepreneurship's definitions as well. Chew et al. (2016) stated that entrepreneurial skills are essential to take risks and increase competitiveness. Risk-taking and competitiveness are also essentials of the previously introduces definitions. Mohamad (2023) applied a different, a bit more general approach to define entrepreneurial skills, as he involved two complex elements to his interpretation: *"Entrepreneurial skills refer to activities or practices know-how and know-who, which is required by entrepreneur to run the business successfully."* (Mohamad, 2023, p. 3). He interpreted know-how as knowledge (e.g., financial, marketing, human resource management), and know-who as networking skill. Bejinaru (2018) applied an even more generic determination, as she introduced entrepreneurial skills as part of the generic skills. Generic skills mean the core skills and key competencies which can promote personal and professional development based on learning. Entrepreneurial skills can foster thinking critically in real business contexts, making successful decisions, complex problem-solving, new idea generation, and openness to learn from successes and failures (Bejinaru, 2018).

Based on the above-introduced definitions and discussions, I composed my own version, which introduces the attributes of entrepreneurial skills at three levels:

- Entrepreneurial skills are the skills which
    o are necessary to develop a network (know-who) and learn new practices at the level of entrepreneurs;
    o are essential for successful business, human, and financial management, and organisational development at the level of enterprises (know-how);
    o can contribute to the increase of employability at the level of the economy.

In the following, I interpret entrepreneurial skills as per my own definition.

As can be seen, entrepreneurship, entrepreneurs, and entrepreneurial skills cannot be interpreted without each other. Their definitions are frequently referenced, which confirms that it is important to gain deep insights into them to understand their real meaning.

Entrepreneurship education

After clarifying what entrepreneurship is, who the entrepreneurs are, and what entrepreneurial skills mean, I define entrepreneurship education and how it can serve the previously presented activities, goals, and effects.

The definitions of entrepreneurship education can be categorized into two groups based on the viewpoint from which they observe the phenomenon. In the first group, the definitions apply mostly the approach of individuals (e.g., students, people, etc.). In the second group, the definitions apply a helicopter view and define entrepreneurship education in general from a higher level (e.g., economic aspects).

The definition of Wilson (2008) belongs to the first group as she emphasised the individuals' development during entrepreneurship education: *"Entrepreneurship education can be defined as the development of attitudes, behaviours, and capabilities that can be useful during an individual's career as an entrepreneur"* (cited by Di Paola et al., 2023, p. 2.). Keat et al. (2011) also applied a similar approach, as they interpreted entrepreneurship education as a collection of lectures, which are designed to equip students with essential competencies, abilities, and knowledge in order to be able to develop themselves for a career as an entrepreneur. Kadir et al. (2012) highlighted the development of entrepreneurial people to equip them with knowledge and skills to start and sustain enterprises. Similarly to Kadir et al. (2012), Knaut et al. (2024) also highlighted the development of students with competencies and the interpretation of entrepreneurship as the following: *"entrepreneurship education as pedagogical programmes that prioritise the development of an entrepreneurial mindset among students"*. Based on the interpretation of Imreh-Tóth et al. (2012), entrepreneurship education is an activity that supports establishing and running businesses. This activity has two parts: one part supports the development of classic entrepreneurial skills, the other part focuses on business knowledge transfer, which is necessary to start and run their own businesses.

The second category of entrepreneurial education definitions applies the helicopter view. Di Paola et al. (2023) introduced entrepreneurship education as a process that provides knowledge, skills, values and attitudes necessary to start, manage, or grow a business. The definition of Kourilsky (1995) also belongs to the second group as she defined the three signature areas of education as the following: *"opportunity recognition, the marshalling of resources in the presence of risk, and building a business venture."* (Kourilsky, 1995, p.12.). Rodriguez and Lieber (2020) emphasised the role of experiential learning during entrepreneurship education in order to develop noncognitive skills and promote career readiness. Knaut et al. (2024b) defined entrepreneurship education as pedagogical programmes which aim to foster entrepreneurial skills and attitudes.

Considering the most frequently mentioned elements of the definitions, I composed my own definition: Entrepreneurship education fosters entrepreneurial careers by equipping students with business knowledge and developing the skills and attitudes they need to initiate and sustain their enterprises.

Considering the approach of my definition, it belongs to the first group, as it introduces entrepreneurship education from individual's (in this case student's) viewpoint.

Future skills

Considering the dissertation topic, it is also important to clarify the definition of future skills to ensure that the terminology is clear throughout the research. Many studies have researched future skills, but few have defined the word itself. In the following, I will present some possible ways of defining future skills.

Kotsiou et al. (2022) defined future skills as knowledge, attitudes, values and competencies that aim to prepare learners for the future. Their definition seems to be general, however, they provide an additional explanation by which preparation is not important only in case of jobs that have yet to be created or crises, but it is essential to pay attention to the threat of uncertainty, issues of well-being, identity, and citizenship as well to be ready for the future. Similarly to Kotsiou et al. (2022), Pedró (2024) also observed the definition from learners' viewpoint and claimed that *"Future Skills refers to the skills that would best equip learners to address the life and work challenges that are likely to be faced by them in the near future, based on our current assumptions"* (Pedró, 2024, p.95). Ehlers and Eigbrecht (2024) also focused on students and the effects

they can achieve with the help of future skills: they can make an impact on societal transformation and so realise sustainable futures.

Gupta (2023) started his definition from a competencies' point of view and applied a general approach as well as the previous authors: *„Future skills refer to the set of competencies, abilities, and knowledge that are predicted to be in high demand in the future job market"* (Gupta, 2023, p.1). Ehlers and Eigbrecht (2024) also defined future skills as competencies, but they highlighted different aspects of it: *„Future Skills can be defined as competencies that enable individuals to solve complex problems in a self-organised manner in highly demanding contexts"* (Ehlers & Eigbrecht, 2024, p. 26). Their way of interpretation is a bit more specific, as they determined complex problem-solving as a goal of future skills. Ehlers (2020) provided a more detailed definition of future skills in his previous study: *"Future Skills are competencies that allow individuals to solve complex problems in contexts characterized through a high degree of emergence in a self-organised way and enable them to act (successfully). They are based on cognitive, motivational, volitional, and social resources, are value-based, and can be acquired in a learning process"* (Ehlers, 2020, p. 53).

The definition of Kiel University is much more complex than the previous ones and involves several different aspects. *„Future skills are interdisciplinary and subject-specific knowledge elements, skills and values that can be acquired and allow individuals in the working, private and social life of the 21st century to meet both individual needs and social challenges in a self-determined and scientifically reflective manner under complex, uncertain and highly emergent conditions in a responsible manner*" (www.zfs.uni-kiel.de, n.d.).

Finally, Kirchherr et al. (2018) created their definition for their study, in which they investigated five years: *„Future skills are defined as skills that will become more important for professional work and/or participation in society in the next five years — across all industries and branches"* (Kirchherr et al., 2018, p. 5). Their definition is short but complex and raises attention to the interdisciplinarity of the term. Furthermore, they noted that they excluded industry or subject-specific skills and observed future skills in all industries and branches.

During the dissertation, I interpret future skills as Ehlers and Eigbrecht (2024) did, with the criteria of Kirchherr et al. (2018), by which I exclude the industry or subject-specific skills.

2.2. Entrepreneurship Education-related Frameworks, Plans and Strategies in the EU

As can be seen from the above-presented definitions, entrepreneurship has a major role in economic development. Furthermore, in the past few years, they have become a key driver of employment and economic growth (Acs et al., 2005). The latest statistic from the European Union also emphasises the importance of the topic as the number of enterprises is growing year by year. Figure 6. presents the changes in the numbers from 2021 to 2023.
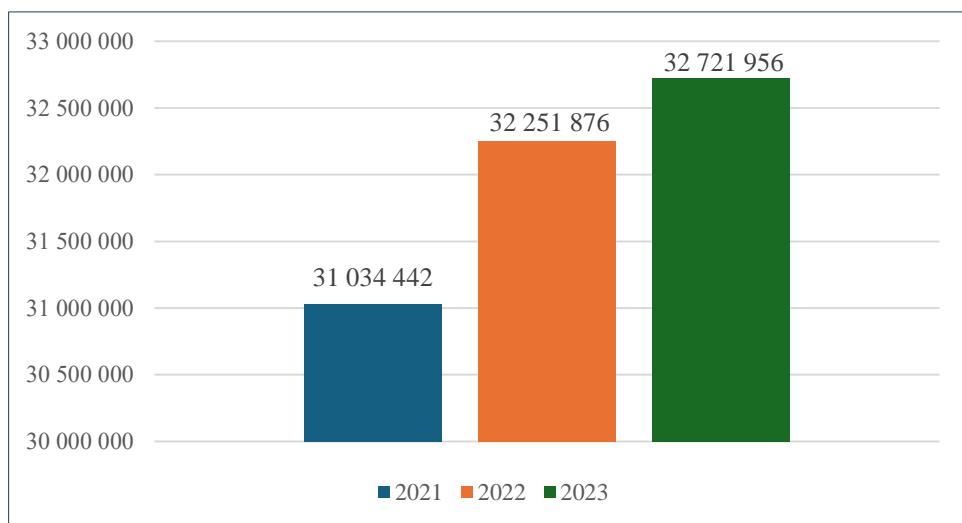
Figure 6: Number of enterprises in the EU 2021-2023 (own compilation based on Eurostat, 2024)

Within just two years, more than 1,5 million new enterprises have been launched in the European Union. Additionally, entrepreneurs have provided jobs for more than 160 million people all over Europe, and their net turnover was more than 38.289 billion euros in 2023 (Eurostat, 2024). These are the main reasons why governments and educational institutions worldwide –so the European Union - increase the focus on promoting entrepreneurship at all levels of education, especially at Higher Learning Institutions (Gieure et al., 2019; Vivekananth et al., 2023) and the development of entrepreneurial skills (Rodriguez & Lieber, 2020). The European Union has issued several publications which aim to boost the content of entrepreneurship-related programmes. In the following section, I introduce the most important entrepreneurship education-related documents from the European Union.

The Council of the European Union published the **Council conclusions on entrepreneurship in education and training** in 2015, in which the Council summarised

the results of their discussion related to the role of entrepreneurship education. They concluded that it must be a priority as it can foster sustainable, smart, and inclusive growth within the European Union. Additionally, they highlighted further advantages of supporting entrepreneurship education: it can positively impact employability, self-employment, and active citizenship. Entrepreneurship education can equip learners with skills and competencies, and provide support for starting new ventures. To achieve as high impact as possible, entrepreneurial skills and competencies should be integrated into the curricula of all levels of education and training. In their publication, they referred to the **European Commission's Entrepreneurship 2020 Action Plan,** which was issued in Brussels in 2013. The action plan contains the strategy of the EU for promoting entrepreneurship, and the goal is to reignite the entrepreneurial spirit in Europe through entrepreneurial education (Betáková et al., 2020). The European Commission has determined three focus areas for immediate interventions. The first one is the development of entrepreneurial education and training. This area aims to support growth and business creation. The second area is removing existing barriers to entrepreneurs and supporting them during the business lifecycle. The third area is promoting entrepreneurship culture in Europe and raising a new entrepreneurial generation (European Commission, 2013).

Three years later, in 2016, the **Entrepreneurship Competence Framework** (henceforth: EntreComp) was issued by The European Commission (Bacigalupo et al., 2016). The main goals of EntreComp are to explain what an entrepreneurial mindset means and to create a more entrepreneurial Europe. The framework introduces the necessary knowledge, skills, and attitudes needed to be entrepreneurial and create value (financial, cultural, or social) for others. EntreComp defines 15 entrepreneurship competencies, divided into three areas: *Ideas and opportunities, Resources*, and *Into action*. The *Ideas and opportunities* group contains spotting opportunities; creativity; vision; valuing ideas; ethical and sustainable thinking. The elements of the *Resources* group are self-awareness and self-efficacy; motivation and perseverance; mobilising resources; financial and economic literacy; mobilising others. The *Into action* group contains taking the initiative; planning and management; coping with uncertainty, ambiguity and risk; working with others; learning through experience. EntreComp considers entrepreneurial competencies as a key part of lifelong learning. EntreComp is used across several sectors in policy and practice as well to support for example innovation and learning through entrepreneurial

thinking and action. Furthermore, the framework provides guidelines on how to integrate entrepreneurial skills into different levels of education. EntreComp can be implemented in the educational sector, for example, to tailor entrepreneurial learning outcomes, to create new teaching and learning activities, and to design assessments of entrepreneurial learning. Additionally, EntreComp is useful for young people who are not participating in formal education, as it can be applied during designing activities that provide practical experiences, help them to understand how entrepreneurial they are, and recognise their own entrepreneurial competencies. (Bacigalupo et al., 2016)

The Council of the European Union stated that entrepreneurship belongs to the key competencies for lifelong learning in the **Council recommendations on key competencies for lifelong learning** on 22 May 2018. The recommendations' goal is to foster competence development, for example, to make use of education and culture as drivers for jobs and active citizenship.

The European Youth Goals and EU Youth Strategy 2019-2027 was issued in 2018 by the European Union, and contains plans related to the development of young European people. Its goal is to equip youth with knowledge and skills to seize opportunities and, relate to European values. It promotes youth work as it provides safe environments for gaining self-confidence and learning outside of the formal education system. Additionally, it can equip students with professional and entrepreneurial skills like teamwork, leadership, intercultural competencies, project management, problem-solving and critical thinking.

The Digital Education Action Plan (2021-2027) also contains suggestions related to entrepreneurship education. The motto of the plan is *"resetting education and training for the digital age"*. The plan aims to support the adaptation of the current education system in the EU to the digital age. The plan was issued in 2020 in the middle of the pandemic by the European Commission, in order to raise attention to the challenges and opportunities of Covid-19. There are two priorities of the plan: Fostering the development of a high-performing digital education ecosystem (Priority 1) and enhancing digital skills and competencies for the digital transformation (Priority 2). There are six actions within Priority 1, and there are seven actions within Priority 2. Action 13 titled *Women's participation in STEM* introduces the fact that women are least interested in participating in the digital sector, including higher education and entrepreneurship. The objective of this action is to encourage women to enhance their digital and entrepreneurial

competencies. In order to achieve the goal, for example, they plan to make trainings in digital and sustainable entrepreneurship for girls at the secondary educational level online, make events where women can practice their skills and become more confident, and set up new higher education trainings. (European Union, 2020)

As can be seen, several documents aim to foster the development of entrepreneurship education (and so the performance of enterprises and economic growth) within the European Union. Most of them contain suggestions for practical implications, however, the current situation and the special attributes of the HEIs cannot be ignored as obstacles can occur during the implementation (e.g., adding new elements to an existing curriculum, rigid educational legislation within the country, etc.). In the following sub-chapter, I introduce the main attributes of entrepreneurship teaching.

2.3. Entrepreneurship Education

As seen in the previous sub-chapter, several official documents by the European Union emphasise the role of entrepreneurship education. The European Commission Action Plan 2020 highlighted that investing in entrepreneurship education is vital to achieve the proposed culture change objectives. Next to the positive effect on culture, entrepreneurship education can promote an entrepreneurial mindset too (Kuratko, 2005) and can also foster students to start their businesses (Imreh-Tóth et al., 2012). During this sub-chapter, I introduce types, goals and roles of entrepreneurship education.

Bublitz et al (2015) suggested that entrepreneurs are limited by their weakest skill, so they have to invest first in the skill with the lowest level in order to successfully run a business (Bublitz et al., 2015) The European Commission (2013) stated that promoting entrepreneurship must begin as early as possible. As a result of early education, the limitations caused by weak skills can be decreased. Education supports the development of creativity and innovation, opportunity recognition, and new venture establishments (Brakaj & Šafránková, 2024). Entrepreneurial programmes contain a wide range of courses (e.g., formal courses, workshops) and can shape participants' entrepreneurial attitudes and aspirations (Fayolle et al., 2006). Peterman and Kennedy (2003) added that entrepreneurship education can encourage students to start businesses or improve the performance of an existing one.

Brakaj and Šafránková (2024) defined three types of entrepreneurship education: education *about*, *for*, and *in* enterprise. Thomas (2022) added a fourth category, which is

education *through* entrepreneurship. Education *about* enterprise means a general understanding of the concept of entrepreneurship. Education *for* enterprise aims to create an entrepreneur by providing students with the knowledge and skills that are necessary to start up a new business. Education *in* entrepreneurship fosters the development of intrapreneurs, who can make an existing firm more innovative due to the gained knowledge. Finally, education *through* entrepreneurship means a practical way of teaching (experiential process) as they use new venture creation to develop the necessary skills and competencies of students. (Brakaj & Šafránková, 2024; Thomas, 2022)

Independently from the type of entrepreneurship education, the overall goal of it is to equip students with the knowledge and skills which they need to exploit opportunities in their current environment (Hynes & Richardson, 2007). Further objective of entrepreneurship education is to equip students with the required skills and mindset and to transfer the necessary knowledge, so they can engage in entrepreneurial activities and contribute to the sustainable development of the economy (Elmuti et al., 2012).

Dunai and Illés (2022) introduced an entrepreneurship education-related teaching model, which has three elements: (1) teaching entrepreneurial knowledge, (2) developing entrepreneurial attitudes with practice-oriented training and interactive communication, (3) developing entrepreneurial skills, for example, with interactive planning tasks and case studies.

Within the broad palette of entrepreneurship education, universities play a crucial role in several aspects, but one of the most important is to prepare students for the future (Cekule et al., 2023). HEIs provide a skilled labour force that can satisfy the changing demand of the labour market in the current knowledge-based economy (Enders, 2010). Additionally, entrepreneurship education in universities has a key role in strengthening the entrepreneurship ecosystem and so contributes to economic growth, innovation, and job creation (Vivekananth et al., 2023; Katz, 2003; Kuratko, 2005; Pittaway & Cope, 2007). Finally, higher-level entrepreneurial education can positively influence the entrepreneurial intention of students and give them the knowledge and skills that are necessary to start a business (Ahmed et al. 2020; Draksler & Sirec, 2021; Imreh-Tóth et al., 2012)

Developing future entrepreneurs at HEIs can be challenging from several aspects. The research results of Cekule et al. (2023) showed that young entrepreneurs have several doubts about starting their own business (e.g., lack of finance, lack of creative ideas,

insecurity, competition). In order to provide quality entrepreneurship education, universities should transform themselves into institutions that can stimulate and support young entrepreneurs (Brakaj & Šafránková, 2024). Furthermore, thanks to the changes towards digitalized services, new skills and competencies are required by young people. In order to provide quality education, teachers must continuously develop themselves and gain up-to-date knowledge regarding digitalisation and automation (Ranta et al., 2022).

To sum up, there are several roles, goals, and effects of educational institutions that are highlighted in the literature related to entrepreneurship teaching. In the following, I introduce two countries' – Finland's and Hungary's – entrepreneurship education-related attributes, which can provide insight into the practical implications of the above-presented plans and frameworks within the European Union, and the theories identified in the literature.

2.4. Finland's Education System and Its Relationship with Entrepreneurship

According to the report of Global Entrepreneurship Monitor (henceforth GEM) from 2022, Finland is in the first position among 50 countries in entrepreneurship education (Björk et al., 2022). Based on the answers of Finnish respondents, the rating of entrepreneurship education in Finland is 6 (out of 10). There are only 4 other countries with rating above 5 (which means the sufficient level): the Netherlands, the United Arab Emirates, Norway, and Qatar (www.oulu.fi, n.d.).

The report of Omnia Education Partnership[2] (henceforth OEP) states that entrepreneurship is blended into all education in Finland (www.OEP.fi, 2022) as the national core curriculum contains entrepreneurial elements that are relevant for the nine-year basic education and the higher education policy as well (European Commission, 01.04.2025). The curriculum also follows the entrepreneurship education-related guidelines set by the European Parliament and the Commission (European Commission, 01.04.2025). The Finnish education system fosters creativity, empathy, curiosity, and imagination among several other entrepreneurial skills (www.OEP.fi, 2022), and involves innovative teaching methods (Ranta et al., 2022). In the following, I introduce the Finnish

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[2] Omnia Education Partnership (OEP): *„Based on Finnish education and training excellence, OEP offers sustainable training solutions for future careers and develops professional competence development ecosystems."* (oep.fi, n.d.-1). OEP's courses and teaching methods are in line with the requirements of Finnish National Agency for Education.

education system and identify what makes Finnish education the best in the area of entrepreneurship.

Early childhood education and care takes place between the ages of 0 and 5, which is followed by compulsory pre-primary education at the age of 6. The elements of entrepreneurship education can already be identified here as they consider play as a tool for entrepreneurial learning. Between the ages of 7-16, students participate in basic education in comprehensive schools, and the topics of participatory citizenship and entrepreneurship are integrated to develop the entrepreneurial mindset of students. After that, secondary education follows (between the ages of 16 and 19) which provides two ways for students: vocational qualification in vocational school or general upper secondary school (matriculation examination). The students can develop their entrepreneurial skills with the help of active citizenship. The education is compulsory for children between the ages of 6 and 18. After that, students have the opportunity to continue their studies in tertiary education. There are universities and universities of applied sciences in Finland, where students can get their bachelor's and master's degrees in 3+2 years. (Ministry of Education and Culture Finland & Finnish National Agency for Education, 2022). Universities are engaged in education and research, and they can award doctorates, while universities of applied sciences are engaged in applied research and development. After tertiary education, students can apply to Doctoral degree and licentiate degree programmes. (Finnish National Agency for Education, n.d.). Finally, it is possible to participate in non-formal education (liberal adult education and basic education in the arts) as well (Ministry of Education and Culture Finland & Finnish National Agency for Education, 2022).

In Finland, the national core curriculum for primary and lower secondary (basic) education contains the courses and competencies that must be applied during teaching (Finnish National Agency for Education, n.d.). The curriculum aims to fulfil today's society's requirements and integrates the knowledge and skills which are needed in the future (European Commission, 01.04.2025). The core curriculum involves 20 courses (e.g., mathematics, foreign languages, music, home economics, etc.) and also introduces competencies that must be developed during each course. These competencies are the following: Thinking and learning to learn, Cultural competencies, Interaction and self-expression, Taking care of oneself and managing daily life, Multi-literacy, ICT competence, Working life competence and entrepreneurship, Participation, involvement,

and building a sustainable future (Finnish National Agency for Education, n.d.). During the education of children and young adults, the emphasis is on critical thinking, intelligent problem-solving, creative questioning, learning from exploring, and learning from failure (www.OEP.fi, 2022).

The Ministry of Education and Culture published the Entrepreneurship Education Guidelines in 2017, which provides a range of self-check questions for institutions regarding how to realise high-quality entrepreneurship education. The first area is related to the strategic level and leadership, which contains questions in connection with planning and resource allocation, staff competence, cooperation across fields, and corporate and work-life collaboration. The second area is about the training for education and teaching staff. The third area involves training that supports entrepreneurship, and finally, the fourth area is about the learning environments. Following these questions, all levels of entrepreneurship education can be assessed, and it helps to identify missing elements or weaknesses in the entrepreneurship-related part of the education (The Ministry of Education and Culture, 2017). The guideline aims to increase the level of competitiveness by improving conditions for business and entrepreneurship (European Commission, 01.04.2025).

Finland has 13 universities and 22 universities of applied sciences from which there are two universities of applied sciences and four universities that have entrepreneurship-related master's degree programmes. Three are from the field of culture, arts and humanities, and three from the business field (www.studyinfinland.fi, n.d.). Table 2 introduces the programmes.

Table 2: Entrepreneurship-related master's degree programmes at Finnish Universities and Universities of applied sciences (source: www.studyinfinland.fi, n.d., own compilation)

Name of university	Name of the MSc programme	Field
Aalto University	Sustainable Entrepreneurship	Business
LUT University	International Business and Entrepreneurship	Business
Novia University of Applied Sciences	Master of Culture and Arts, Entrepreneurship in the Arts, Creative Music Production	Arts and Humanities
Oulu University of Applied Sciences (Oamk)	Education Entrepreneurship	Culture and Arts
Uniarts Helsinki	Arts Management, Society and Creative Entrepreneurship	Culture and Arts
University of Jyväskylä	International Business and Entrepreneurship	Business

These 6 institutions are waiting (or waited) for applications for their English language entrepreneurship-related master's degree programme beginning in September 2025.

As can be seen, entrepreneurship is a crucial part of the Finnish education system. However, based on the report of GEM (Björk et al., 2022), only 42,75% of Finnish respondents believe they have the necessary knowledge and skills to start their own business. There are only 7 countries, where the respondents provided a lower rate in case of this question. It indicates a contradiction, because all level of education aims to enhance the entrepreneurial mindset, but Finnish people are not confident in their knowledge and skills enough to start their own business.

2.5. Hungary's Education System and Its Relationship with Entrepreneurship

Based on the report of GEM (2023), the level of Entrepreneurship education in Hungary is 2.2 on a 10 scale. It means the 15th position from 19 countries. Radácsi et al. (2022) confirm Hungary's weak performance in this field from two aspects: the evaluation of Hungarian people is lower than other nations', and education is the cross-section of the entrepreneurial ecosystem. These barriers block the development of the ecosystem. Additionally, only 38,29% of the Hungarian respondents state that they have the ability and knowledge to start a business. Israel was the only country where the respondents provided lower value than Hungary (GEM, 2023). In the following, I introduce Hungary's education system, and I also attempt to identify entrepreneurship-related elements of it.

Early childhood education begins at age 3 and finishes at age 6. Then children can start their basic education at the age of 6. Students who learn in 8-grade single structure school finish their basic education at age 14. It is followed by secondary education between the ages of 14 and 18. There are several types of secondary education: upper secondary general schools, upper secondary vocational schools, technicum, skill development vocational schools, vocational schools, and basic art schools. Next to this, students have the opportunity to finish their basic education sooner and start their secondary education earlier. This option's name is upper secondary levels, and they are available between grades 5-12 (8-grade secondary school) and grades 7-12 (6-grade secondary school). After that, students can continue their studies in post-secondary education or in higher education. There are three types of HEIs in Hungary: universities, universities of applied sciences, and colleges[3]. Students can gain bachelor's degrees and master's degrees, and

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[3] Colleges are non-university HEIs, but qualify as HEIs (European Commission, 18.07.2024)

they can continue their studies in doctoral programmes. The mandatory school age is between 6 and 16 years in Hungary. (European Commission, 18.07.2024)

The National Core Curriculum's aim is to provide brief instruction for the basic and secondary education system from the viewpoints of content, skill development, and teaching methods. There are two grades where entrepreneurship-related teaching material can be identified. The first one is in grade 8, within the Citizenship course. During the course, labour market skills, innovation skills, and entrepreneurship competencies are developed. It aims to support the process of children becoming adults, and it also develops skills that are required for everyday life. At grade 12, students have the Citizenship course again, but this time the content is more detailed. During the classes, there are two lectures where students can learn about entrepreneurship and enterprises and develop their entrepreneurial mindset. Students can gain knowledge about how enterprises work, what forms of enterprises exist, and the definition of entrepreneurship. Students also have to introduce their entrepreneurship idea and the related business plan. (Educational Authority, 2023)

In Hungary, there are 24 universities, 11 universities of applied sciences, and 23 colleges. In the case of higher education programmes, the Ministry of Innovation and Technology's *65/2021. (XII. 29.) order on the list of qualifications in higher education and the establishment of new programmes* determines the programmes which a HEI can start. The order contains the list of bachelor's and master's degrees and further higher education qualifications by field of study. In the order, there are two entrepreneurship-related master's degree programmes: business development and business economics.

Business Development MSc is available in 13 institutions in 2025: Corvinus University of Budapest, Budapest University of Economics and Business, University of Debrecen, Óbuda University, University of Szeged, Budapest Metropolitan University, Eötvös Loránd University, Kodolányi János University, Hungarian University of Agriculture and Life Sciences, University of Miskolc, University of Sopron, University of Tokaj, and University of Pécs. The business economics MSc is available only in two universities: the University of Debrecen and the University of Miskolc.

There are further programmes that aim to foster university students' entrepreneurial mindset organised by HEIs. The first example is the SZE Duo by the University of Győr. The programme was launched first in 2009, and nowadays it is still available. During SZE Duo, students and teachers can develop their own prototypes together, and the institution

financially supports their projects (www.fiek.sze.hu, n.d.). The goal of the programme is to foster innovativeness, teamwork and inventive skills of students. Borsi and Dőry (2015) confirm in their research that students' presentation, communication, logic and negotiation skills have been spectacularly developed thanks to the programme. The second example is the Hungarian Startup University Programme (henceforth HSUP), which was launched in 2020 with the participation of 21 universities and approximately 2100 students. The programme aims to develop students' innovation and entrepreneurial skills via an online teaching platform where students can learn from interactive, personalized, and playful teaching materials at their own pace (www.NKFIH.hu, 2023). Novotny et al. (2023) performed several interviews with HSUP participants, and they concluded that students felt motivated during the programme thanks to the teamwork, and they also evaluated positively the support of their mentors. They formulated some criticisms related to the online-only form of the programme and the lack of time. (Novotny et al., 2023). The third example is the Team Academy specialisation of BUEB, which is available for students who learn in the Business Administration and Management bachelor's programme. During the programme, the methodology of learning-by-doing is applied so the students can realise their entrepreneurial plans and ideas. The programme was launched first in 2012, and since then more than 120 students have successfully finished about 50 projects with the help of approximately 300 external partners (Farkas & Gubik, 2020).

Next to the traditional degree programmes, there are other options to obtain entrepreneurial-related qualifications as an adult. There are private educators, like the Minner Academy. They provide several kinds of opportunities to develop entrepreneurship knowledge and competencies (e.g., workshops, videos, blogs). More than 5000 videos are available on their website, and they have educated more than 14000 students since they started the academy in 2022 (www.minner.hu, n.d.). Additionally, there are universities that also provide entrepreneurship programmes via executive education. For example, Corvinus University of Budapest provides a 2-day programme titled *From employee to entrepreneur*. There are no requirements related to preliminary studies, so anyone can join, regardless of age, experience, and knowledge. During the programme, participants can develop their business communication skills and entrepreneurial competencies with the help of experts from the field of entrepreneurship. The programme aims to prepare participants to become entrepreneurs (www.uni-

corvinus.hu, n.d.). There is a programme that focuses especially on young entrepreneurs' development: Junior Achievement Hungary. The programme supports young people (6-24 years) in achieving their entrepreneurial plans and ideas by providing mentors and professional help. As a result of the programme, students become competent, independent and responsible entrepreneurs (www.ejam.hu, n.d.)

Based on the report of the Ministry of National Economy (2023), Hungarian higher education is responsible for providing a highly educated workforce, that has competitive knowledge, entrepreneurship-related knowledge, and entrepreneurial competencies. However, due to the poor quality of entrepreneurship-related skill development during basic and secondary education (Björk et al., 2022), beyond one point, developing higher education programmes becomes unnecessary thanks to the lack of basic knowledge and skills (Radácsi et al., 2022). Next to this, students usually behave passively during their studies, which also negatively influences the development of an entrepreneurial mindset. Higher education programmes will be successful only if institutions can attract motivated students (Farkas & Gubik, 2020).

In Chapter 2 I introduced the most important definitions related to the dissertation's topic: entrepreneurship, entrepreneur, entrepreneurial skills, and entrepreneurship education. In the case of each definition, I also select the one I will use during the dissertation. After that, I introduced the most essential concepts of entrepreneurship education. I also presented the Finnish and Hungarian education systems from early childhood care to higher education programmes, focusing mainly on entrepreneurship-related elements. To sum up the two countries' education systems, while Finland's education system includes entrepreneurship knowledge and skill development at each level of education, Hungarian students have to sacrifice their free time to participate in entrepreneurship-related programmes (for example in the previously mentioned Sze Duo, HSUP, Team Academy) and so develop their entrepreneurial mindset.

3. RESEARCH METHODOLOGY

In this chapter, I describe the research methodology in detail. In doing so, I introduce the research topic and research questions and present an overview of the methodological approach of the dissertation using the research onion (Saunders et al., 2016). Then I describe in detail each of the methods used, and finally, I illustrate the interrelationship between the different parts of the research.

3.1. Research Topics and Questions

The dissertation examines three topics: (1) the relationship between future skills and entrepreneurial skills, (2) the appearance of these skills in the online communication of HEIs, and (3) in the curricula of higher education master's programmes. The topic's relevance is underpinned by the ideas presented in the introduction that the requirements for HEIs are changing rapidly and that institutions need to consider the expectations of different actors if they want to remain competitive in the market. Additionally, the number and the role of enterprises are constantly growing in the European economy, so HEIs should also consider this trend. Therefore, they must continuously monitor and integrate the skills they will need in the future. I have chosen entrepreneurial skills as a comparison with future skills because, as we have seen in the literature, entrepreneurs also have to adapt constantly to the expectations of their customers/clients, which requires them to develop their skills. To investigate this issue, I have formulated the following research question and sub-questions:

RQ1: What are the entrepreneurial and future skills according to the literature?

RQ1.1: What are the teachable entrepreneurial and future skills?

RQ1.2: Which skills are also included in the list of entrepreneurial and future skills?

I intend to answer the first question and the sub-questions through systematic and integrative literature review methods.

The second theme is the representation of entrepreneurial and future skills in HEIs' online communication. This analysis will reveal the extent to which these skills appear in the descriptions of university programmes.

The research questions and sub-questions related to the second and third themes are the following:

RQ2: Which entrepreneurial and future skills are included in the online available English-language programme descriptions of the top 100 Higher Education Institutions?

RQ3: Which entrepreneurial and future skills are reflected in the curricula of the two chosen master's programmes?

> **RQ3.1:** What similarities and differences can be found in the skills content of the two countries' master's programmes?
>
> **RQ3.2:** How do they ensure compliance with EU and other government regulations?

I applied two different approaches to the analysis of this topic. The first is a corpus-based content analysis, in which I examined the entrepreneurial and future skills content of the texts of programme descriptions on the websites of the top 100 HEIs offering courses in business and management. The second is the case study method. I examined the online texts and materials of a Finnish and a Hungarian university master's programme in entrepreneurship in terms of entrepreneurial and future skills content.

The reason for the structure of the research was, on the one hand, to see what knowledge had been accumulated so far on this topic and, on the other hand, to look at practical examples of how the list of entrepreneurial and future skills is used in a wide range of HEIs and in-depth at two institutions. The entrepreneurial and futures skills lists, which I created based on the results of the systematic and integrative literature review, helped to identify which skills are part of online communication (through the corpus analysis) and curricula (through the case studies) of the involved universities.

3.2. Methodological Approach

In the following, I describe in detail the methodological approach of the research. Saunders et al. (2016) defined the research onion as *"the diagram we use to depict the issues underlying the choice of data collection techniques and analysis procedures"* (p. 122). I built on the research onion to justify and present the methodological choices made at the beginning of the research and thus demonstrate the methodological adequacy of the research. Figure 7 below shows the details of the research onion. In the following, I present each layer from the outside.
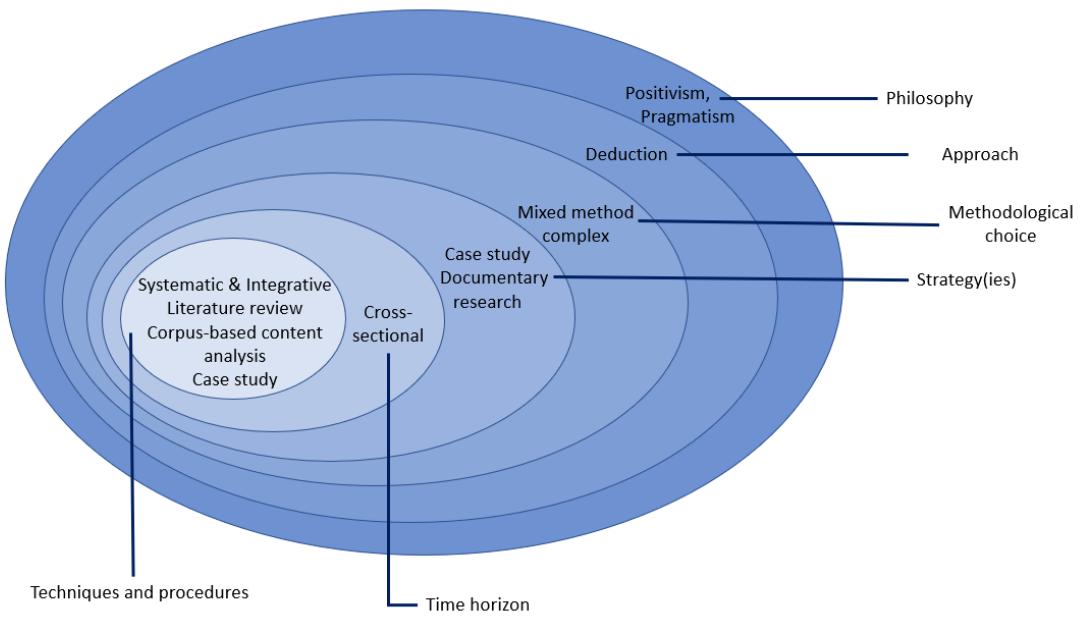
Figure 7: Research onion of the dissertation (own compilation based on Saunders et al., 2016, p. 124)

The **philosophy** of the research is mainly positivism, as the goal of the research is to introduce the phenomena as they are. The main attributes of positivist research are external, independent, and investigating observable and measurable facts (e.g., whether entrepreneurial and future skills appear in online texts/materials or not). It is typically deductive and highly structured. Next to positivism, pragmatism can also fit the research because of the application of mixed methodology. Mixed methodology is typically used during pragmatist research. In the case of pragmatism, the emphasis is on practical solutions and outcomes. This approach is required during testing how the entrepreneurial and future skills appear in the practice. As mentioned in the Introduction chapter, based on the Burrel and Morgan matrix the research prefers the Regulation perspective and not the Radical one. The Regulation perspective advocates the status quo, sees the satisfaction of needs, and sees the actual. Considering the other aspects of the matrix, the research is Objectivist, as during the research, I mostly collect information which is observable by anyone in the same way (e.g., texts on websites). As a result, the research applies the Functionalist paradigm. With the help of the application of the Functionalist paradigm, I give rational explanations of how things work in practice, and I formulate suggestions within the current structure. Rationality is an important aspect of the research. (Figure 4 shows the Burrel and Morgan matrix in the Introduction chapter). (Saunders et al., 2016)

During the research, I apply the deductive **approach**, as I aim to investigate the appearance of skills identified in the literature during the corpus-based content analysis and the case studies. My goal is to discover how the theory of entrepreneurial and future skills appears in the practice (in the programme descriptions and curricula). (Saunders et al., 2016)

The **methodological choice** of the research is mixed method complex (Figure 8). The analysis is sequential multi-phase, as the first step is qualitative (systematic literature review), the second is quantitative (corpus-based content analysis), and the third one is qualitative again (case study). (Saunders et al., 2016)
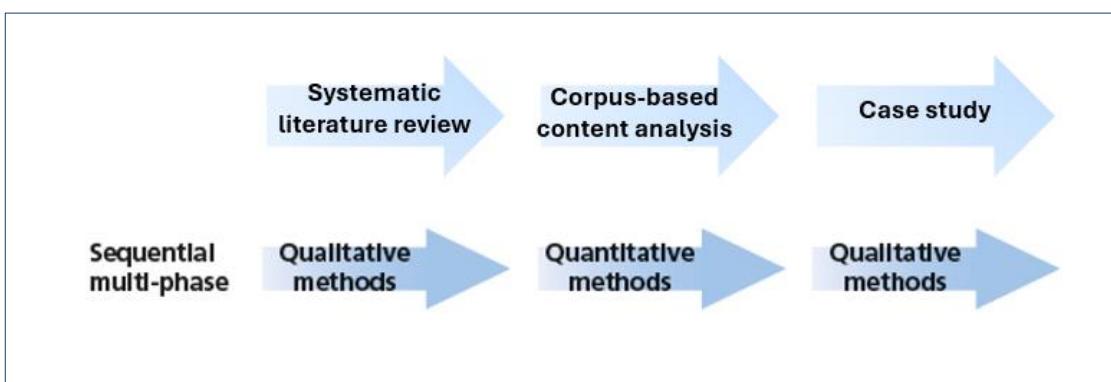
Figure 8: Methodological choice: mixed method complex - sequential multi-phase (based on Saunders et al., 2006, p. 170)

The next layer introduces the **strategies**. On the one hand, the strategy is documentary research, which means the analysis of a textual document. In the case of the corpus-based content analysis, the textual document is based on the content of the top 100 universities' official websites. The focus is on analysing the content of it. The details of the corpus analysis are available in the 3.4 sub-chapter. On the other hand, the strategy is a case study, where two universities' entrepreneurial-related master's degree programmes are the focus. The 3.5 sub-chapter contains the details of the case study. (Saunders et al., 2016)

The **time horizon** is cross-sectional, as the corpus shows a snapshot of the top 100 universities' websites, which were collected on a given period. During the case study I also collected information about the website at a certain time, no follow-up is planned. (Saunders et al., 2016)

Data collection and analysis happened in three ways: literature review (systematic and integrative), corpus-based content analysis, and case study.

To compose the list of entrepreneurial and future skills, I used a systematic and integrative literature review, which aims to identify as many skills as possible from the investigated areas. In the corpus analysis, I investigated the appearance of entrepreneurial and future skills in online communication based on the online programme descriptions of the top 100 universities. This method allows me to investigate the emergence of skills from a quantitative perspective. Through the case studies, I could gain a deeper insight into the usage of specific skills in the curricula of the chosen programmes. Further details of the three applied methods are presented in sub-chapters 3.3, 3.4, and 3.5.

Table 3 summarises the research questions, expected results, the steps of the research, and the applied methods.

Table 3: Summary of the dissertation's methodology (source: own compilation)

Phase and topic	Research questions and sub-questions	Expected results	Steps of research	Applied research methods
I.	**RQ1:** What are the entrepreneurial and future skills according to the literature? **RQ1.1:** What are the teachable entrepreneurial and future skills? **RQ1.2:** Which skills are also included in the list of entrepreneurial and future skills?	1. Lists of entrepreneurial and future skills 2. Lists of teachable entrepreneurial and future skills 3. Lists of common entrepreneurial and future skills	1. Systematic review of literature on entrepreneurship 2. Integrative review of literature on future skills 3. Making lists based on the entrepreneurial and future skills mentioned 4. Indicate the skills mentioned as teachable in the lists 5. Compare lists and identify overlaps	Systematic literature review Integrative literature review
II.	**RQ2:** Which entrepreneurial and future skills are included in the online available English-language programme descriptions of the top 100 Higher Education Institutions?	1. Collecting the most frequently mentioned entrepreneurial and future skills by the top 100 institutions from the corpus 2. Clustering top 100 universities according to skill usage patterns	1. Description of the corpus collection steps 2. General introduction to the corpus 3. Quantitative corpus analysis (cluster analysis)	Corpus-based content analysis
III.	**RQ3**: Which entrepreneurial and future skills are reflected in the curricula of the two chosen master's programmes? **RQ3.1:** What similarities and differences can be found in the skills content of the two countries' master's programmes? **RQ3.2**: How do they ensure compliance with EU and other government regulations?	1. Collect skills from online materials and curricula 2. Comparison of skills in online materials and curricula with the list of skills composed based on the systematic and integrative literature review 3. Identification of skills in governmental and EU expectations in online materials and curricula	1. Presentation of the legal and regulatory environment 2. Introduction to the selected institutions 3. Description of selected master's programmes 4. Analysis of relevant materials and documents in terms of entrepreneurial and future skills content 5. Comparison of identified entrepreneurial and future skills for the two countries 6. Comparison of identified entrepreneurial and future skills with the expectations of EU and other government regulations	Case study

3.3. Literature Review – I. Phase

Performing a thorough literature review is essential at the beginning of research as it has a complex function: it introduces the current knowledge on the given field and helps to identify gaps and future research areas (Cronin et al., 2008). Hart (1998) defined a literature review as the following: *"A literature review is objective, thorough summary and critical analysis of the relevant available research and non-research literature on the topic being studied"* (Hart, 1998, cited by Cronin et al., 2008 p. 38). A good literature review involves many sources, contains a clear search and selection strategy, uses accurate terminology, and avoids jargon, and next to these, it is well-written, and the references in it are accurate (Cronin et al., 2008).

Based on Cronin et al. (2008), there are four types of literature reviews: Traditional or Narrative Literature Review, Systematic Literature Review, Meta-analysis, and Meta-synthesis. Snyder (2019) introduced two more types: Integrative and Semi-systematic Literature Reviews. In the following, I define the systematic and integrative literature reviews, as these were applied during the I. phase of the current research.

3.3.1. Systematic Literature Review of Entrepreneurial Skills-related Literature

I applied the systematic literature review method to answer part of the first research question. First, I briefly present the theoretical background and justification for choosing this method, followed by the details of the chosen model. Finally, I illustrate the details of collecting data on entrepreneurial and future skills and justify the deviations from the selected model at each point.

A systematic review is defined by Higgins et al. (2019) as *"A review that uses explicit, systematic methods to collate and synthesise findings of studies that address a clearly formulated question"* (Higgins et al., 2019, cited by Page et al., 2021, p. 2).

By definition, a systematic literature review answers a clearly formulated question through a synthesis of the literature. In the present study, this question is RQ1 (in Table 3). According to Page et al. (2021), the practical utility of a systematic review is to map current knowledge in a particular research area, to set the framework for future research by answering questions that would not be possible in a single study, and to build on the review to generate and test theories about why and how a phenomenon works in practice. This type of review has rigorous requirements in terms of research strategy and choice of

literature, but as a result, it can effectively synthesise existing knowledge and provide information for practical application (Synder, 2019).

For the systematic literature review, I used the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) model, which was first published in 2009 to enable authors to present the results of their systematic reviews and the reasoning behind them in a transparent way (Page et al., 2021).

The PRISMA model provides a broad picture of the knowledge generated by previous research. The model provides a basis for researchers to show which aspects have been included and which have been excluded from the collection and also formulates the criteria according to which the literature can be synthesised. The model provides many steps and aspects to ensure transparency in a systematic literature review. A short summary of the PRISMA guidelines is provided in Appendix 1.

To summarise, the PRISMA model can be used to create a detailed guide on how we arrived at the result. The guide should be constructed in such a way that anyone can arrive at the same result.

As can be seen above during the PRISMA model's introduction, it is important to clarify the technical background of the literature collection process. Therefore, performing a search in databases requires thorough planning and careful implementation of specific conditions.

First, I decided to use Scopus and EBSCO databases as platforms for literature collection. These databases have clear and detailed filtering systems, contain a wide range of literature, and I already had some experience related to them.

The literature collection happened in two phases: first in the fall of 2020, and second in the winter of 2024. During the first phase, I investigated the literature published between 2015 and 2020. The search and documentation process required 3 months (from October 2020 to December 2020). The second phase of the literature collection began in November 2024 and the documentation process ended in February 2025. During this, I collected the literature published between 2021 and 2024. Only I participated in the collection and analysis of literature, so there was no risk of fault related to different interpretations of data.

Due to the popularity of the topic of entrepreneurial skills, I found numerous papers. However, this literature must be filtered; otherwise, it would require plenty of time to

read and evaluate the content of all articles. Figure 9 introduces the main steps and the applied filters during the process of collecting entrepreneurial-related articles.
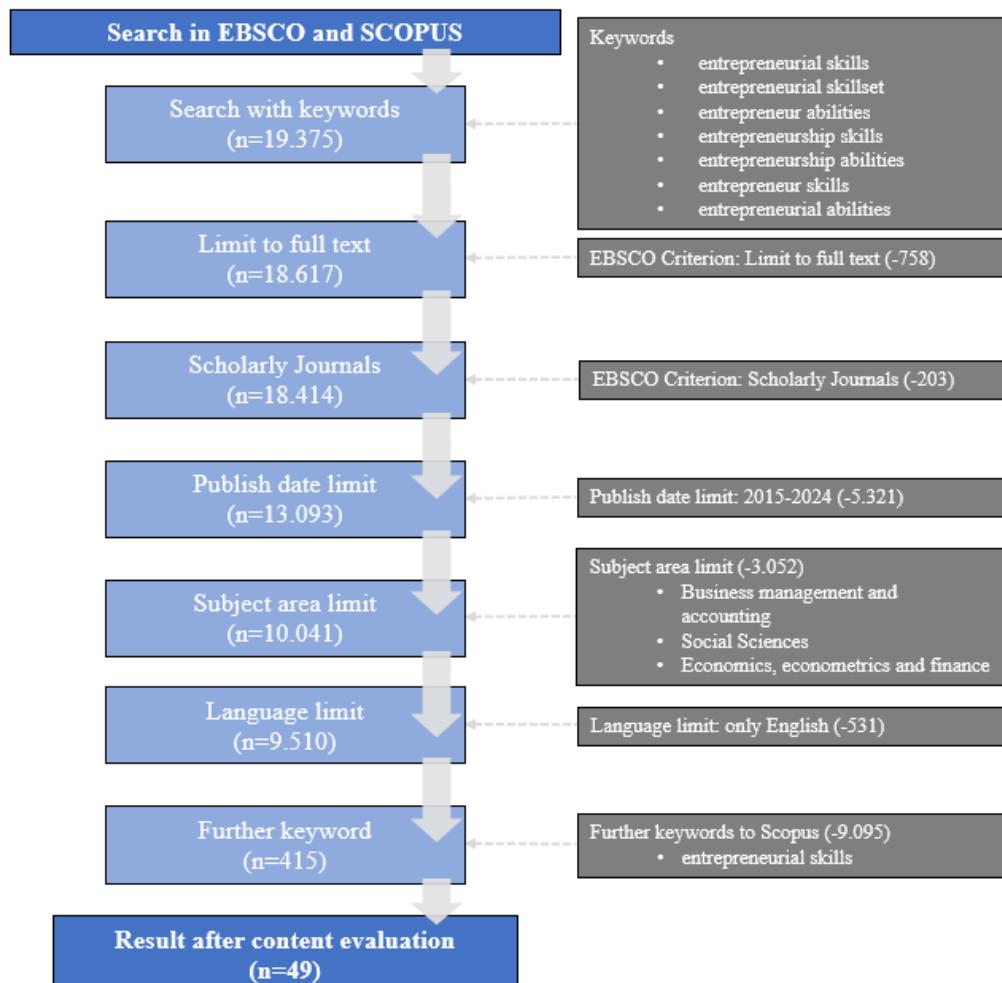
Figure 9: Summary of entrepreneurial skills-related articles searching process (source: own compilation)

The same keywords were used in the case of both Scopus and EBSCO database searches: *"entrepreneurial skills", "entrepreneurial skillset", "entrepreneur abilities", "entrepreneurship skills", "entrepreneurship abilities", "entrepreneur skills",* and *"entrepreneurial abilities".* These words were searched in the abstracts, article titles, and keywords, and the number of results was 19.375 after applying these filters. In the case of the EBSCO database, results were limited only to full-text availability, and the outcome of this filtering resulted in 758 fewer papers. Additionally, only the scholarly (peer-reviewed) articles were involved in the research, after adding this filter 18.414 results remained. Publish date limitation had to be taken into consideration as well, as this topic is very popular, and there were many articles published in this field during the past few years. I decided to consider papers from the past 10 years, so I focused on the ones that

were issued between 2015 and 2024. As a result of this decision, 5.321 articles were removed from the search. Further limitations had to be added to the Scopus search because of the large number of papers (there were still more than 13.000 papers in the results list). Subject area limitation was required, and the focus was on the articles from business management and accounting, social sciences, economics, econometrics, and finance subject areas, as a result, the number of papers was reduced to 10.041. I also applied language limitation, and so only the papers written in English were considered. During the search, I excluded papers written in Hungarian, as the original language of my dissertation is English, and I aim to ensure the transparency and repeatability of the search for all readers. As a result of this criteria, 531 articles became irrelevant. An additional keyword (*"Entrepreneurial Skills"*) had to be involved, and applied to the results, as the number of papers was still huge. This filtering resulted in only those articles, whose keywords contained the word "*entrepreneurial skills*". This keyword was chosen from a list, which was automatically created by Scopus, and applying it seemed to result in a manageable number of papers (415). It is important to note that the literature search was not limited to one kind of research methodology; qualitative, quantitative, and mixed methodologies were all included in the search. The reason behind it is that entrepreneurial skills can be collected and investigated effectively with any kind of methods.

After that, the relevance of an article was decided by its abstract. Articles, which focus was too specific (e.g., Vidal-Taboada et al., 2024 - Female and Migrant Entrepreneurship in SOS Children's Villages in the Lambayeque Region, Peru) or the entrepreneurial skill appeared only as a side-topic (e.g., Burgess et al., 2024 - Australian author, student and publishing perspectives on marketing knowledge), or entrepreneurship was not introduced from a skills point of view (e.g., Smile et al., 2015, Business coaching and the development of agric-businesses in Africa) were excluded from the search. Those articles which focus on the connection between entrepreneurial skills and higher education (e.g., Kucel et al., 2016 - Entrepreneurial Skills and Education-Job Matching of Higher Education Graduates), or focus on entrepreneurial skill development (e.g., Boldureanu et al., 2020, Entrepreneurship Education through Successful Entrepreneurial Models in Higher Education Institutions), or introduces the effects of different factors on entrepreneurial intention (e.g., Rosique-Blasco, 2017 - The effects of personal abilities and self-efficacy on entrepreneurial intentions) were included the more profound analysis.

After downloading the chosen documents (65), further selection was performed by the content of each paper. Some articles were discarded as their contents were not as strongly connected to the topic as expected based on their title and abstract (e.g., Tsolakidis et al., 2020 - The Impact of Imitation Strategies, Managerial and Entrepreneurial Skills on Startups' Entrepreneurial Innovation).

Finally, the number of relevant articles is 49: 33 articles are from Scopus, and 16 papers are from the EBSCO database. These literature's contents and attributes are involved in the systematic literature review.

During the literature review, I applied tables and figures to present the main attributes of the articles. Additionally, I organised the content around 4 topics (entrepreneurs' effect on the world, entrepreneurs' skills and their effects, other relevant areas where entrepreneurial skills can be used, and entrepreneurial skills in education). Finally, based on the gained knowledge, I synthesised entrepreneurial skills. The analysis can be found in Chapter 4.

3.3.2. Integrative Literature Review of Future Skills-related Literature

The integrative literature review is usually used when a more creative data collection is required to answer specific research questions (Snyder, 2019). Based on the definition of Torraco (2005, p. 356) *„the integrative literature review is a form of research that reviews, critiques, and synthesizes representative literature on a topic in an integrated way such that new frameworks and perspectives on the topic are generated"*. The goal of this type of literature review is to combine perspectives of several papers and not to cover all related articles ever published (Snyder, 2019).

The steps of the integrative literature review are less rigid than the systematic literature review. However, there are still some requirements which are needed to be fulfilled during the process. The researcher has to introduce first the details of the literature collection process (e.g., databases, keywords, filters, etc.), and the period from which the articles are considered. Both recently published and older literature should be involved in the research in case of an integrative review, as citations of newer articles (collected from a database) can lead to the older but relevant articles (which were not included in the database search for some reasons). Next to the literature collection, the way of analysis and synthesis should be also clearly introduced, as the researcher has to ensure the repeatability and transparency of the literature collection and analysis. (Torraco, 2005)

The goal of the integrative literature review is to organise the content of relevant articles according to new criteria, such as the skill groups mentioned, teachable future skills, and teaching methods.

In the case of future skills literature review, I performed the search in the Scopus database. Figure 10 summarises the main steps of the collection process.
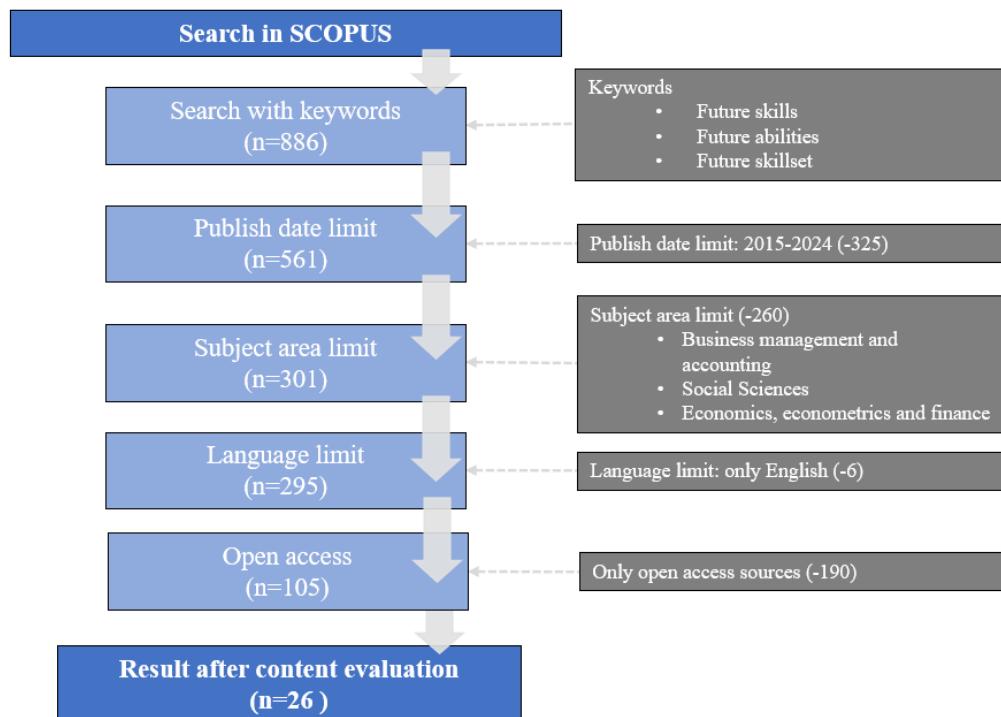
Figure 10: Future skills article collection process (source: own compilation)

The search contained *"future skills", "future abilities"* and *"future skillset"* keywords. The words *"skills", "abilities"*, and *"skillset"* had to appear together with the word *"future"*. This search resulted in 886 articles. I applied further limitations in connection with the publication date: I investigated articles published between 2015 and 2024. This filter resulted in 326 fewer articles, however, the number was still high (561). I apply subject limitations to the fields of business, management and accounting, social sciences, economics, econometrics and finance. There were still more than 300 results, so I added language limitations (I investigated only English language literature), and I also filtered out the non-open access sources. Finally, I received 105 articles, whose contents were individually judged based on the abstracts. I excluded the articles whose focus was too narrow (e.g., Irwandani et al., 2024 - Readiness of Indonesian pre-service science teachers for society 5.0). Finally, I decided to use 26 pieces of literature as a basis for the literature review. While reading the materials, I identified further relevant papers based on the list of references. As a result, not only academic articles were involved. The list of future

skills can change quickly, and academic articles sometimes cannot follow these changes immediately. There are several other organisations (e.g., Pearson, OECD) who are also interested in this topic – their viewpoints are also considered to be able to cover the topic of future skills as widely as possible. Finally, I included 41 articles in the integrative literature review of future skills.

3.4. Corpus-based Content Analysis – II. Phase

During my research assistant work at the Future of Higher Education Research Centre, I participated in a project in which we created a corpus. The sources were the official websites of the top 100 business and management-related universities' websites by the ranking of Times Higher Education in 2019 (henceforth THE) (THE, 2019). We have collected information about the institution's online communication.

During the corpus-based content analysis, the focus is on entrepreneurial skills appearing in the corpus. I analysed the relative frequency of these phrases, which requires a quantitative methodological approach.

The goal of the corpus-based content analysis is to discover the appearance of entrepreneurial and future skills-related keywords in the programme descriptions of the investigated universities. This method helps to discover the frequencies of keywords and to create clusters based on the ways the universities use entrepreneurial and future skills in their programme descriptions. The same method was applied in the research of Géring (2017), in which she investigated CSR-related online communication of Hungarian small- and medium-sized enterprises. Additionally, Moreno and Capriotti (2009) also analysed the content of web pages with the same methodology.

In the following, I briefly introduce the background of corpus building.

The institutions were chosen by the list of THE rankings, in 2019. This list contains more than 1250 universities from all around the world and it is updated once a year (THE, 2019).

The scope of the research was the top 100 business and management-related universities in 2019. The main reason for not involving all business and management-related universities from the list is the labour-intensive data collection process. Since the amount of data collected from 100 websites is still huge, it enables a sufficiently granular analysis, so we decided not to involve more institutions in the research.

Participants and Period

The project started in the middle of 2019 as a project of the Future of Higher Education Research Centre. The participants were Zsuzsanna Géring, Márton Rakovics, and me[4]. First of all, the rules guiding data collection were created, and then came the pilot data collection phase, where each member of the project collected the content of the same websites to cross-validate our understanding of the rules are the same. Some changes were required, but after discussion and implementation, the live data collection process was started in June 2019 and ended in August 2019.

Ruleset of Data Collection

The collection process had very detailed and complex rules, as the structure of websites was sometimes completely different, and it was not straightforward which parts of a website should be included, and which ones should not. Finally, a complex data-collecting ruleset was created, which helped to collect the same kind of information from different websites.

The corpus based on the programme descriptions contains texts like programme descriptions, outcomes, and PhD programme themes. During the collection process, undergraduate, graduate, doctoral and executive programmes-related texts were in scope. We did not consider the contents of downloadable files, and texts about student life and alumni.

A large corpus, 1.176.305 words long, was created by collecting texts based on the above-mentioned rules.

Texts collected from the universities' websites are stored together in a document and in a separate file as well. These formats can help in performing assessments, as they make possible common and separated analysis of texts as well.

Process of the Analysis

Using R programming language was the tool for this analysis. This framework's mission is *"to create free and open-source software for data science, scientific research, and technical communication"* (www.solutions.posit.co, n.d.). Posit (previously RStudio) contains many functions, which make possible huge data analyses with a wide palette of statistical tools. Márton Rakovics helped me to perform the analysis of the texts.

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[4] My name has changed from Eszter Szendrei-Pál to Eszter Knúlné Pál on 01 March 2024.

After importing texts, the standard language processing steps could be taken, including tokenisation and lemmatisation. During these steps, we can decide what parts of the texts to include or exclude for the analysis step. Depending on how many filtering criteria are chosen in the tokenisation method, the corpus can be better suited for qualitative or quantitative methods.

If numbers, punctuation, symbols, separators, URLs are removed, and hyphens are deleted, then only word tokens remain. These can be used for the types of quantitative analyses that are based on the bag-of-words model. This means investigating only the words independently from their environment.

If the corpus is kept in its original form (same as it was copied from the website aside from the formatting details), this would be better suited for qualitative assessment, as the sentences remain intact, and the appearance of keywords can be seen in their original environment.

Figure 11 shows the main decision point in connection with the corpus and its preparation for the analysis.
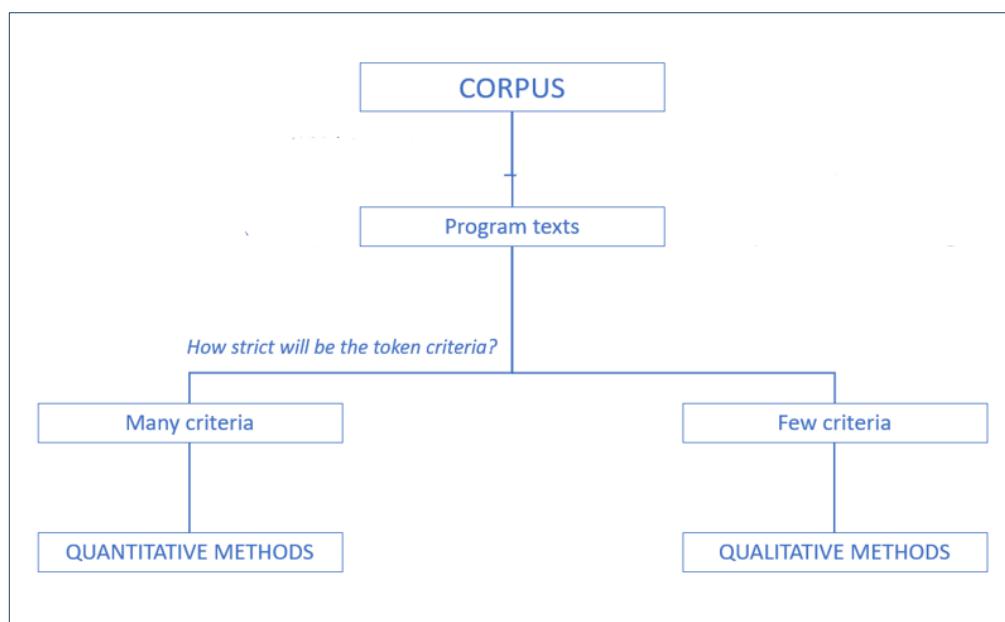
Figure 11: Main decision points during the corpus analysis (source: own compilation)

The quantitative methodological approach helps to investigate the occurrences of expressions in connection with the entrepreneurial and future skills. During corpus analysis, the entrepreneurial and future skills involved in the literature are investigated. Collected skills as keywords will be searched in the corpus, and it can be assessed how

many times or in what proportion the terms appear, for example most popular words of the corpus.

It is also possible to get the environment of keywords with a function, whose name is keywords in context (*kwic()*).

During the research, it was important to clarify and identify explanatory variables external to the texts. The ranking of a university and its geographical attribute are considered during the research. As THE list contains this information, it is possible to examine the effect of these variables.

Additionally, a ranking of the most popular words before and/or after the investigated keywords can also be made. During this process, expressions that are most commonly found together with the investigated keywords can be discovered and analysed, so the co-occurrences can be identified and analysed. Further filtering should be required here, as usually *"a", "an", "and"*, and other words like these can be in the first place in the case of this experiment. These words don't have any role from the research's point of view and do not provide relevant information, so these should be filtered from the text.

Next to this, I can also investigate if the skills are able to categorize the universities into clusters. The basis of the clusters is the skill usage habit of each institution. During the analysis the content of the entrepreneurial and future skills lists, which were created based on the systematic literature review can be investigated in the corpus.

First, it is important to clarify the source of data which were used during the analyses. In the case of the entrepreneurial skills, the synthesised skill list was used (see Appendix 2a & 2b). Regarding future skills, the Bakhshi et al. (2017) synthesised list was used (Figure 24). Future skills can be observed from several aspects (as seen in the future skills literature review in Chapter 5). Because of this, only one currently existing list was applied for the corpus-based content analysis. However, the list of skills was ready to use for analysis, it was easier to apply the grouped skills in both cases (Appendix 2a and 2b in the case of entrepreneurial skills and Figure 24 in the case of the future skill) for t-SNE clustering. This grouping logic helps to answer the questions of to what extent the different future skills groups appear on the top 100 business and management-related universities' programme descriptions and what is the relation between the group's appearance in the corpus. Based on these categories it becomes possible to detect the differences between the frequency of the skills groups' appearance. Additionally, as can be seen in the entrepreneurial and future skills lists (Appendix 2a & 2b and Figure 24),

there are compound expressions of skills, containing two or more words (e.g., system analysis, operation, and control). These skills required special handling as investigating the words on their own (for example looking for system and analysis separately in the corpus) could have produced misleading results. To avoid this potential bias, during the analysis we only took into consideration the appearance of the compound skill expressions in their full form.

After the categorization of skills, the method of t-distributed Stochastic Neighbourhood Embedding (henceforth: t-SNE) method was used (Wattenberg et al., 2016). This means the seven future skills categories and the eight entrepreneurial skills categories were mapped to a two-dimensional plane. It could lead to better clustering results and help us to visualize the clusters.

In Chapter 7, the results of the above-introduced analyses are presented regarding entrepreneurial skills and future skills.

3.5. Case Studies – III. Phase

I applied the methodology of case study as a research strategy to answer the third research question and the related sub-questions. The aim of this sub-chapter is to present the theoretical background of the case study methodology and then to describe the characteristics of the cases I have chosen.

3.5.1. Theory of Case Studies

There are several ways to define what the case study is. Based on Patyán and Szoboszlai (2016, p. 55) *„a case study is a writing that starts from the case, the individual, and becomes an opportunity for a better understanding of phenomena, processes and operations.".* Yin (2014) defined the following: *„A case study is an in-depth inquiry into a topic or phenomenon within its real-life setting" (Yin, 2014, cited by Saunders, p. 184).* Punch (1998) added that during a case study, the researcher investigates one case (or a few cases) in detail, using any kind of methods which seem appropriate.

The focus of the case study could be persons, groups, organisations, processes, events, and several other things (Saunders et al., 2016). The variety of possible cases is endless (Silverman, 2005), so it is important to define what is in the scope of the case study. To understand the dynamics of the topic, the researcher has to focus on the interaction between the selected case and its context (Saunders et al., 2016). Understanding the context is essential to perform case study research appropriately (Yin, 2014). An in-depth

inquiry is required to discover what is happening and the reasons behind the events. With the help of it, the researcher can understand the effects of the situation. The in-depth inquiry can draw on qualitative, quantitative or mixed methods approaches to understand the whole case completely (Saunders et al., 2016). The basic element of the case study is complexity. This means that the case must be presented objectively and in detail (Patyán & Szoboszlai, 2016).

Punch (1998) highlighted the three analytic features of case study research: (1) *boundaries of the case*: must indicate the limits at an early stage of the research; (2) *unit of analysis*: it is necessary to define to clarify the research strategy; (3) *wholeness and integrity of the case*: to preserve its focus can be only on the limited research problem.

As the last analytic feature indicates, there are some limits, and critics against applying case study methodology, for example, the small sample size. To investigate the speciality of a phenomenon, in-depth inquiry is required, and so only one or just a few cases are involved. Because of this, the results are hardly generalisable, and there are debates about the reliability and theoretical contributions to knowledge because of the special focus and small sample size. It also raises the question of representativeness (Silverman, 2005). This methodology aims to discover the involvement of entrepreneurial and future skills in a real context, which can serve as a good example for other HEIs, and so the case study results generalisation is not a priority.

In spite of the above-mentioned critics, case studies are usually applied by positivist researchers (just like me) with a deductive approach (just like the current research). (Saunders et al., 2016)

There are four case study strategies based on Yin (2014), distinguished along two dimensions. The first dimension is the number of cases investigated: there are single cases and multiple cases. The single case is usually applied when there is an extreme or unique case: it provides an opportunity to discover a rare situation. With the help of multiple cases, it is possible to observe a phenomenon in more than one case. Selecting the cases is very important as the analysis has to provide similar results.

The second dimension is the holistic case and embedded case, which refers to the unit of analysis. The holistic case involves only one unit of analysis, and so the cases are introduced as whole units in their context. The embedded case involves more than one units of analysis, which means during the case, the researcher applies separate analytical

units, for example, different groups of staff or functions within a case study organisation (Saunders et al., 2016)

Figure 12 introduces the two dimensions of the case study strategies.
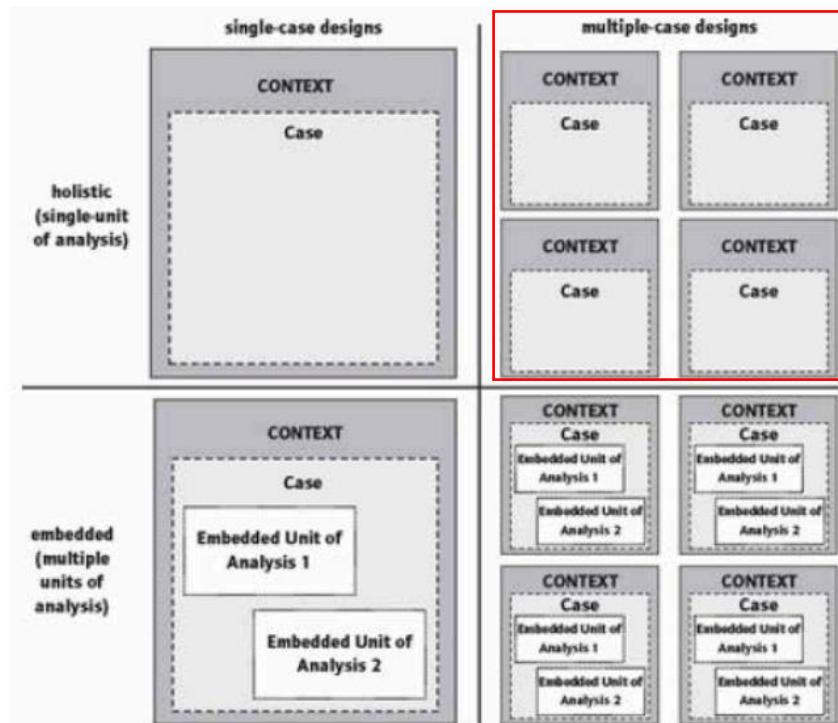
Figure 12: Case study strategies (Yin,2014, p. 50)

Stake (2000) created another kind of categorisation of the case study types, differentiating intrinsic, instrumental, and collective case studies. When preparing an intrinsic case, there is no attempt to generalise or build theories, a single case involved. The goal of this instrumental case study is to provide insight and to issue or to revise a generalisation. The case is introduced in detail; however, the focus is on something else. In the case of a collective case study, there are a number of cases involved in investigating a general phenomenon. (Cited by Silverman, 2005, p. 127)

There are two options for selecting the case. First is purposive sampling, which allows the researcher to select the one which contains some specific attributes in which the researcher is interested. The second way is theoretical sampling, which is very similar to the purposive way, however, the difference is that in the case of the purposive sampling, the purpose is not theoretically defined (Silverman, 2005). It helps to understand the case better thanks to the researcher's theoretical position, and the built certain characteristics which help to test the theories on the case (Mason, 1996).

Zolnai (2016, p. 48) introduced the steps of creating a case study:

(1) Create a research concept.

(2) Select the case(s).

(3) Preparation of the case(s).

(4) Data collection, data management, processing the data, and analysing the data.

(5) Prepare the case(s).

As it can be seen, there are several attributes that could determine a case study. In the following sub-chapter, I present how the above-mentioned aspects were used to select and analyse the special cases.

3.5.2. Main Attributes of the Selected Cases

Based on the above-introduced aspects of the case study research, I present the main attributes of the cases involved in the dissertation in Table 4.

Table 4: Main attributes of the cases (source: own compilation)

Aspects	Attributes of the selected cases
Sample size	Two
Sampling technique	Purposive
Unit of analysis	Master's degree programmes
Focus	One Finnish and one Hungarian University's entrepreneurial-related master's degree programme's descriptions
Details	The selected universities' entrepreneurial and future skills usage habits on their online platforms for the selected programmes: - Aalto University: Sustainable Entrepreneurship MSc - BUEB: Business Development MSc
Boundaries	- Entrepreneurial and future skill content of the selected master's degree programme's publicly available online descriptions and related sources (e.g., downloadable documents, videos) – mostly rely on document analysis - One interview with each programme leader
Case study strategy (by Yin, 2014)	Holistic – Multiple case designs
Type of case study (by Stake, 2000)	Instrumental
Applied methods	Document analysis, interview
Philosophy	Positivism/Pragmatism
Approach	Deductive

The sample size is two as two universities and their master programmes were involved in the research: Aalto University from Finland, and BUEB from Hungary. The sampling was purposive: on the one hand, I am interested in the similarities and differences between the two countries' skills usage habits. On the other hand, selecting a programme from BUEB was convenient because I know the organisation and the programme's legal context in which BUEB operates thanks to the previous research experience I obtained

while writing my master's thesis[5]. Within the two institutions, I selected two master's degree programmes, which is the unit of analysis. The focus is on the descriptions of the entrepreneurial-related master's degree programme and other sources (e.g., downloadable documents, videos, etc.) on publicly available online platforms. The aim is to discover the entrepreneurial and future skill content of the investigated sources. Accessibility of the data could cause problems when writing a case study, as stated by Silverman (2005). As I am working with publicly available online data, accessibility isn't a problem, however, it limits the research as the whole skill content of the selected programmes cannot be discovered in this way. It makes one of the boundaries, as the research relies mainly on document analysis. I performed one interview with each programme leader (a total of 2 interviews), which is insufficient to discover the whole programme completely. This is why the focus is on the publicly available sources' skill content, and not the whole programmes' skill content.

There is another risk that comes up because of focusing mostly on the online communication of the institutions. According to Patyán és Szoboszlai (2016), there is a chance that online communication tries to fulfil some legal or internal policy requirements, so the real skill content and the main points of the programme cannot be judged properly. This means there is a high chance the universities write the descriptions through a filter that cannot be identified as an external inspector. Conducting semi-structured interviews with the programme leaders tries to resolve this limitation, however, it is important to consider it during the interpretation of the results.

The case study strategy is holistic and has multiple case designs as I am involving one Hungarian university in the Hungarian context, and one Finnish university in the Finnish context. The type of cases is instrumental. I am introducing the context in which the institutions the programmes are operating, and the details of the programmes, however, I am interested in how entrepreneurial and future skills are appearing in online communications. On the one hand, the applied method during the case studies is the document analysis. In the case of the website texts, the downloadable documents, legal documents, blogs, social media, and blog posts, I applied this method. On the other hand, I conducted interviews in order to discover the background of the online communications

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[5] My master's degree thesis topic was the assessment of Hungarian universities' master's degree programmes, but in that case, the advisors and their skills were in focus (Szendrei-Pál, 2020).

(e.g., the filters they applied) and to gain deeper insights into the skills involved in the programmes.

The steps of the case study (based on Zolnai, 2016) are completed as follows:

(1) Create a research concept:

A literature review was conducted to identify the entrepreneurial and future skills that I would like to investigate in the case study.

(2) Select the cases

For the Finnish case, Aalto University was chosen as it is included in the top 100 universities. I chose the BUEB because of my personal connection.

(3) Preparation of the cases

I have read the relevant legal and regulatory documents (EU and country-specific) and familiarised myself with the content of the education systems of both countries. I explored the official websites of the chosen institutions, video channels, and other non-official websites (e.g, news releases on the chosen courses on non-institutional platforms).

(4) Data collection, data management, processing the data, and analysing the data.

I carried out a qualitative analysis of the texts of the websites and videos related to the chosen programmes and the content of the downloadable materials. I have identified entrepreneurial and future skills in the document and then I extracted them. After a complete analysis of the online interfaces, I prepared interview questionnaires for the programme leaders to clarify with them the questions raised during the analysis.

(5) Prepare the cases

In Chapter 8, I present the results of case study analyses and summarise the lessons learned from the research.

Because of the uniqueness of the selected cases, some changes to the methodology were needed to get as deep insight as possible into the content of the selected programmes. In the following I present these differences in the cases of Aalto and BUEB.

Aalto University

The second case is the Sustainable Entrepreneurship MSc of Aalto University. Aalto University is on the list of top 100 business and management-related universities in 2019 by the THE, so its website texts are involved in the corpus-based content analysis. Involving one of Aalto's programmes will help to understand the results of the clustering. Next to this, Finnish entrepreneurship education is world-famous (e.g., Björk et al., 2022),

so investigating the attributes of the programme could be a great basis to identify possible development opportunities for the Hungarian programme.

In the following, I summarise shortly the process of data collection and analysis. As a first step, I briefly observed the website of Aalto University, and I collected all programme-related information. On the website, there is a YouTube link, which leads to the webinar about the programme. The webinar is very informative, and it completes the previously investigated texts on the website. Based on the webinar became possible to identify the leader of the MSc programme and the person, who designed and settled the programme at Aalto. I performed a semi-structured interview with Tamara Galkina, who is an associate professor at Aalto University, Department of Management Studies, and she is the leader of the Sustainable Entrepreneurship MSc programme.

The interview had three main blocks. The first contains questions related to the programme design. In this block the focus was on the *"history"* of the programme: whose idea was it, who participated in the development process, whose viewpoints were considered (e.g., authorities, employers), and what was the process of setting up this programme. The second block aims to discover the skills and knowledge content. In this part of the interview, the students' selection process (how do they measure the knowledge, skills, and personality traits and what are the main decision points to approve a candidate's admission or not) was in the limelight. The last block contained questions in connection with the details of the programme description. The goal of this part was to clarify the questions which were not obvious based on the investigated materials (e.g., which skills are involved in the curriculum). The detailed interview questions can be found in Appendix 3.

BUEB

BUEB's Business Development MSc was selected because of my personal connection, as I study and work here. Thanks to this, I know the organisation well, and it helps me to discover every relevant source for the case. Hopefully, with the help of the results, useful suggestions can be formed for the Business Development MSc programme.

First, I investigated the legal context of the Hungarian higher education system. That is the order of the Ministry of Culture and Innovation about the official training and outcome requirements. Next to these, I also presented the evaluation of the Hungarian Accreditation Committee related to BUEB. Secondly, I introduced the university in general (e.g., profile, number of applicants, etc.). Thirdly, the most important information

about the master's programme follows (e.g., programme descriptions, curriculum, etc.). After that, I introduced the semi-structured interview results, which I have performed with Prof. Dr. Balázs Heidrich, who settled the programme at BUEB in 2015. Finally, the analysis of the programme closes this part, where the skills and teaching methods will be introduced in detail.

The interview had seven blocks: Warm-up questions (e.g., history of the programme, changes in the number of applicants), Questions related to the programme content (e.g., curriculum updates). Questions related to students (e.g., opinions. admission), Questions related to the programme's skill content (e.g., fulfilling legal requirements), Future plans (e.g., start the programme in English), Course-related questions (e.g., clarify which course covers which skill development), and finally the Questions related to the website (e.g., updates on programme descriptions). The interview questions are available in Appendix 4.

Table 5 summarises the investigated sources in the case of Aalto's and BUEB's entrepreneurial-related master's degree programme.

Table 5: Sources of the cases (source: own compilation)

Aalto University Sustainable Entrepreneurship MSc	BUEB Business Development MSc
• Aalto's official website (programme description) • Youtube video (webinar about the programme) • Interview with the programme leader • Entrepreneurial skill content requirements (by the EU) • Publication about the programme (case study about the programme design) • TEK Graduate Survey 2022 • Aalto Ventures Programme website	• BUEB's official website (programme and the related courses descriptions) • Youtube video (about student experience) • Interview with the programme founder • Learning and Outcome Requirements (by the Ministry of Culture and Innovation) • Hungarian Accreditation Committee's website and report • Act CCIV of 2011 on National Higher Education • Entrepreneurial skill content requirements (by the EU) • Felvi.hu website (number of applicants)

The results of the case studies are available in Chapter 8.

3.6. Summary of the Methodology

The results of the three different methods are interconnected: sometimes they build on each other, and sometimes they complete each other. Figure 13 below summarises the main relationships between the methods used.
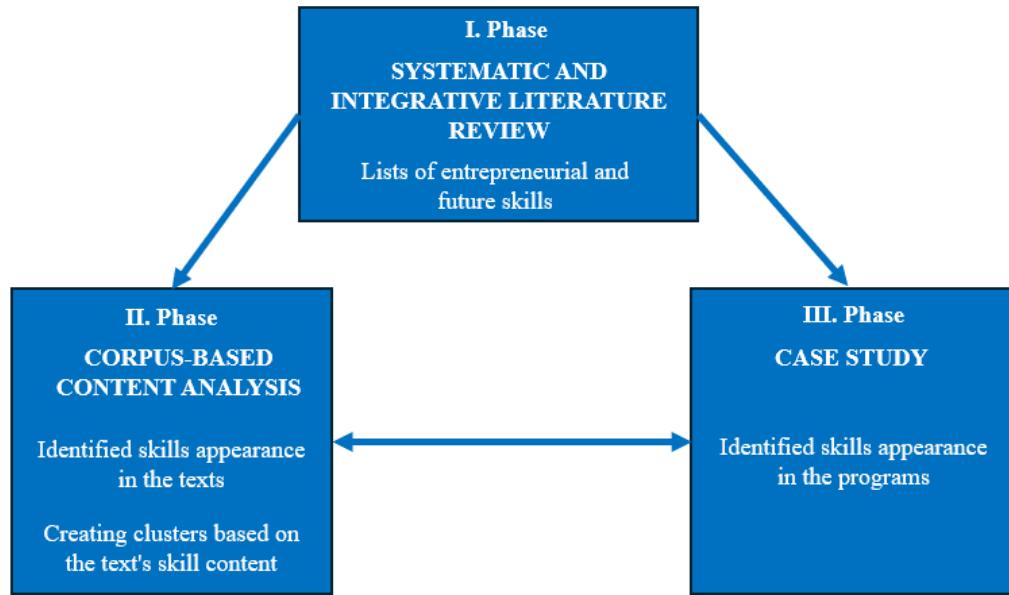
Figure 13: Connections between the applied methods (source: own compilation)

The skill lists, based on a systematic and integrative literature review, serve as the starting point for both the corpus analysis and the case study. I will compare the results of the corpus analysis and the case study, focusing particularly on regional specificities and the skills mentioned. Due to the different approaches, I can analyse the emergence of elements of entrepreneurial and future skills lists in different depths in several sources. Table 6 summarises the main differences between the corpus analysis and the case study focus.

Table 6: Differences between the focus of corpus-based content analysis and the case study (source: own compilation)

	What is involved in the research?	
Types of texts	**Corpus-based content analysis**	**Case study**
Programmes' descriptions from the website	Yes	Yes
Programme types	Undergraduate, Graduate, Master's, PhD, Executive Education, Dual degrees	Master's
Downloadable documents	No	Yes
Texts from external websites	No	Yes
Blog texts	No	Yes
Videos	No	Yes
Curriculum	No	Yes
Methodological approach	**Quantitative**	**Qualitative**
Sample size	**100**	**2**

The two methods complement each other well due to the two different approaches and provide an opportunity to examine the emergence of skills.

4. SYSTEMATIC LITERATURE REVIEW OF ENTREPRENEURIAL SKILLS

„It cannot be denied that entrepreneurship is a dream of many people. An entrepreneurial dream can exist for a person regardless of their current business success, opportunities, desires or hopes of becoming an entrepreneur"[6]

In this chapter, first, I introduce statistics in connection with the 49 articles, which are the focus of the systematic literature review (please see the methodology in sub-chapter 3.3.1), and present the discourses identified in the analysed articles organised around 4 main topics: entrepreneurs' effect on the world, entrepreneurial skills and their effects, other relevant areas where entrepreneurial skills can be useful, and entrepreneurial skills in education. The discourse sub-chapters (4.1-4.4) and the skills synthesis (4.5) are partially based on one of my previous articles (Szendrei-Pál, 2023) in which I analysed the impact of entrepreneurial skills on economic and social development. Finally, I summarise the chapter and create a synthesis of entrepreneurial skills based on the literature.

As a result of Scopus and EBSCO database searches in connection with the entrepreneurial skills, I collected a total of 49 papers from the period of 2015 and 2024 (see the process on Figure 9). 33% of the papers are from EBSCO, and 67% of them are from Scopus. Figure 14 below presents the proportion of the papers within the given timeframe.
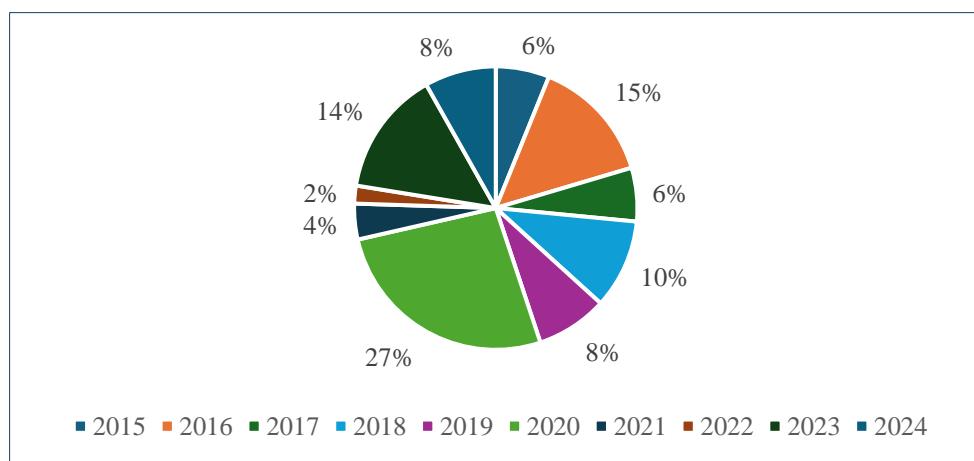
Figure 14: The proportion of entrepreneurial skills-related papers between 2015 and 2024 (source: own compilation)

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[6] Li et al., 2022; cited by Cekule et al., 2023

A total of 49 articles were collected from the period of January 2015 and December 2024. The average number of articles collected per year is 4,9. Most of the articles are from 2020 (13 papers), and the least is from 2022 (1 paper).

Figure 15 below introduces the distribution of the papers by their length.
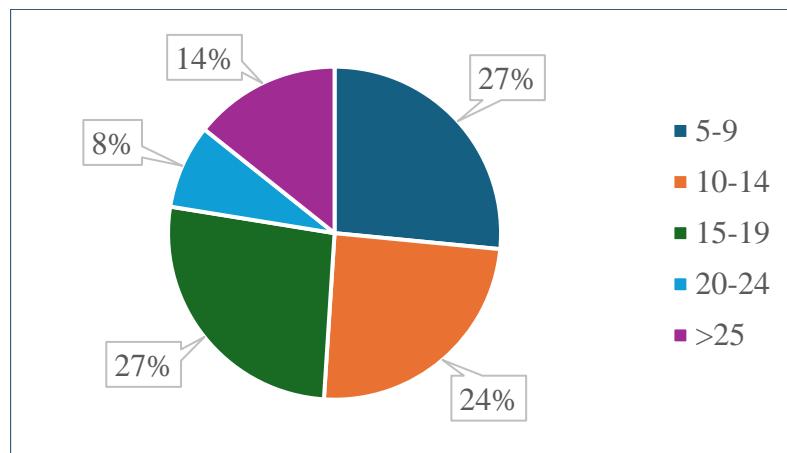
Figure 15: Entrepreneurial skills-related papers by number of pages (source: own compilation)

The total number of pages is 788, and the average length of a paper is 16,1 pages. The shortest article has 5 pages, and the longest one has 36 pages.

From the viewpoint of methodological approaches, 63% of the papers applied quantitative, 29% applied qualitative, and 8% applied mixed methodological approach

Regarding the skill content of the investigated literature, I identified 89 entrepreneurial skills from which the most mentioned is the Risk management as it appeared in 55% of the papers. The second most mentioned skill is the Creativity which appeared in 25 papers (51% of the papers). They are followed by Innovation and Provide a practice-based response to problems skills (each mentioned in 22 articles). Opportunity managements skill appeared in 21 papers and 15 articles referred to the Effective verbal and nonverbal communication skill. Table 7 below introduces the most popular skills in the investigated articles.

Table 7: Most mentioned entrepreneurial skill in the papers between 2015 and 2024 (source: own compilation)

Top entrepreneurial skills (overall)	How many papers mentioned?	Papers %
Risk management	27	55%
Creativity	25	51%
Innovation	22	45%
Provide a practice-based response to problems	22	45%
Opportunity management	21	43%
Effective verbal and nonverbal communication	18	37%

In the following, I attempt to compare the skill content of the papers from the period of 2015-2019 (22 papers) with the content of papers published between 2020-2024 (27 papers). Table 8 shows the top skills in both periods and the number and percent of how many papers mentioned them.

Table 8: Most mentioned entrepreneurial skills in the literature between 2015-2019 and 2020-2024 (own compilation)

Top skills (2015-2019)	Mentions	%	Top skills (2020-2024)	Mentions	%
Risk management	9	41%	Risk management	18	67%
Opportunity management	8	36%	Creativity	17	63%
Creativity	8	36%	Provide a practice-based response to problems	16	59%
Innovation	8	36%	Innovation	14	52%
Effective verbal and nonverbal communication	6	27%	Opportunity management	13	48%
Interpersonal skill	6	27%	Effective verbal and nonverbal communication	12	44%

In general, more papers referred to entrepreneurial skills in the second period than in the first one. In the case of the 2015-2019 period, the most popular skill was mentioned in 9 articles, however, this number has doubled in case of the 2020-2024 period. Regarding the most mentioned skill, there is no difference between the two periods as the Risk management is in first place in both cases. There is a difference between the two periods related to the second place: while opportunity management, creativity, and innovation has shared the second place in 2015-2019, Creativity expropriated the second place in the period 2020-2024. Innovation skill was the second most popular skill in 2015-2019 (8 papers mentioned them), but in 2020-2024 it takes only the fourth place (in spite of the fact that more papers have referred to it than in the previous period). Regarding the third place in 2015-2019, 6 articles mentioned the Effective verbal and non-verbal communication and Interpersonal skill, meanwhile in 2020-2024. In 2020-2024, a new skill appeared and claims the third place on the podium: the Provide a practice-based response to problems skill (59% of the investigated papers have mentioned it).

The systematic analysis of the literature on entrepreneurial skills over the last 10 years showed that the studies in this area tend to use quantitative methodologies as almost two-thirds of the research applied this approach. Regarding the most frequently mentioned skills, there is no significant difference can be observed between the papers published in the first 5 years (2015-2019) and in the second 5 years (2020-2024). However, in the second period (2020-2024) there was a general increase in the presence of skills in texts. This may be due to several reasons, for example, a different focus of the studies, a broader review of the list of entrepreneurial skills in the research, or the effects of Covid.

In order to gain deep insight into the topic of entrepreneurial skills, it is essential to discover the main discourses in the literature. In the following, I summarise the content of the entrepreneurial skills-related articles which were collected during the systematic literature review process.

As Čapienė and Ragauskaitė (2017) and Boldureanu et al. (2020) stated, enterprises are the main components of a successful economy because they are able to make a positive impact on economic growth. The only question is how they can do that. Several papers explained this phenomenon with the presence of entrepreneurial skills. For example, Obschonka (2016) claimed that entrepreneurial skills are so important in the economy that they could be called skills of the 21st century. Bejinaru (2018) also confirmed it, however, she categorized these skills into a different group, which is the so-called *"generic skills"*.

The analysed papers went deeper to investigate the details of the effects which entrepreneurs can make on the world during their activity. Obschonka (2016) observed in his research that entrepreneurs can make an impact on local, regional, and global levels of society (next to the same levels of economy). Additionally, Krenyácz and Rana (2022) stated that leaders of enterprises can positively influence performance and so foster sustainable organisational change. In addition to the positive facts, the sober truth is most of entrepreneurs' commitments are not conscious (Čapienė & Ragauskaitė, 2017). Most of them consider their enterprise as a chance to gain wealth and realise self-employment goals (Bauman & Lucy, 2021) and the positive impact on the world is just a side effect. The main goal of the following sub-chapters is to investigate the effects of entrepreneurs on the world whether they are doing it consciously or unconsciously.

The main messages and implications of the papers analysed can be organised into 4 main topics. The following subchapters introduce these topics and highlights the most

important thoughts of the selected research papers. First, I introduce the areas, which entrepreneurs are able to affect with the help of their activities. This section answers what and how they can influence. Second, I collect and introduce the skills and their effects that are behind the positive impacts on the areas highlighted in the previous part. Third, I show different areas, where entrepreneurial skills can also be useful but not strongly connected to enterprises. Finally, the dissertation shows the discourses about teaching of entrepreneurial skills. This part answers how the current education system can support the achievement of mentioned positive impacts by the applied teaching techniques.

4.1. Entrepreneurs' Effects on the World

On the one hand, several papers (e.g., Fleaca, 2017; Kucel et al., 2016) highlighted the positive effects of entrepreneurs on different segments of the world. However, the connection between the effects and skills is barely highlighted in the discourses (e.g., De Ruysscher et al., 2016). Luckily, this gap can be closed with the entrepreneurial process theory introduced by Yildrim (2019). This theory says that there are external and internal parts of the process. External involves personal experiences and qualifications, while internal contains personal attributes (e.g., creativity, stress tolerance, etc.). Based on this concept, entrepreneurs could not make an impact on their environment without their skills. As a result, all entrepreneurial skills can be considered as *"world shaping tool"* independently from the connection was highlighted in the literature or not. During this section, I use this approach, and I present the identified effects based on that.

Entrepreneurs have the power to develop communities through their skills. Based on the opinion of Obschonka (2016) and Brakaj and Šafránková (2024), entrepreneurs have a key role in developing economic and social life of the members of society at each level (local, regional, and global). This phenomenon manifests in creating new jobs (thanks to their innovative way of thinking), innovations, and developing the economy (Kucel et al., 2016). De Ruysscher et al. (2016) agreed with Obschonka (2016) and also highlighted the connection between entrepreneurial skills and society value creation, however, De Ruysscher et al. (2016) added a different approach to the appearance of entrepreneurial skills effects. They investigated it at individual (micro), organisational (mezzo), and societal (macro) levels. The tag of *"innovative catalyst"* appeared in their research, and it means entrepreneurs are able to make better the quality of life of individuals (physical and mental wellness) and families (e.g., community involvement). They could also have a serious role in society building at the mezzo level (e.g., building a system, where people

can support each other). Finally, entrepreneurial skills can make an impact on socio-economic position, healthcare, environmental and subjective well-being at the macro level (De Ruysscher et al., 2016). Terzaroli (2019) investigated the entrepreneurial programme of the University of Florence, and he found a goal in the training and output requirements, which says entrepreneurs should be able to answer the current needs of society. Moreover, he highlighted the goal of this programme is to teach the participants to analyse society's problems from different viewpoints and be able to give innovative solutions to these problems (Terzaroli, 2019).

On the other hand, several studies (e.g., Obschonka, 2016; Castro & Zermeño, 2020, Vivekananth et al., 2023) highlighted the high-level commitment of entrepreneurs to economic growth and economic value creation. Čapienė and Ragauskaitė, (2017), Gieure et al. (2019), and also Boldureanu et al. (2020) confirmed that entrepreneurs have a key role in value creation processes. However, a clear connection between entrepreneurial skills and these effects is not indicated (again) in the papers. Gieure et al. (2019) stated that universities contribute to the development of the economy by emphasising the relevance of entrepreneurial programmes. Yildirim et al. (2019) also did not highlight the relationships between skills and effects directly, but they approved that entrepreneurs have a role in maintaining the level of social welfare in developed countries, and they contribute to the increase of it in developing countries.

As mentioned above, based on the study of Čapienė and Ragauskaitė (2017), entrepreneurs' contribution to the mentioned effects is not conscious in most of the cases. Independently of it, it is evident they can make positive impacts on several segments of the world through their skills.

4.2. Entrepreneurial Skills and Their Effects

As it can be seen, entrepreneurs require some skills to be able to realise the mentioned changes. During reading the literature, a few skills were introduced together with their effects on the environment. This sub-chapter presents these skills-effects duos and the entrepreneurial skills' value creation effect.

By the research of Fleaca (2017), entrepreneurs are more open to social issues than non-entrepreneurs thanks to three skills. First skill is complex problem-solving. The importance of this skill is emphasized in several papers (e.g., Bejinaru, 2018; Hermann & Bossle, 2020). Second, is taking initiative, which is also highlighted by Castro and

Zermeno (2020) and Boldureanu et al. (2020). The third skill, that makes entrepreneurs more open to social issues, is critical thinking. The opinion of Bejinaru (2018) is this skill has a key role when a new and unique situation happens, and it requires innovative solutions. Additionally, the research of Reyad et al. (2019) stated that this skill is a must-have for students who intend to start their own businesses. It is important to note, it is a complex skill, and it contains more sub-skills which effects appear at the same time when someone thinks critically. For example, thinking outside the box, system thinking (De Ruysscher et al., 2017), system analysis, and system assessing (Prüfer & Prüfer, 2019). These are just some examples of the ingredients, which together mean the skill of critical thinking. To sum up Fleaca's (2017) thoughts, the complex problem-solving, taking initiative, and critical thinking skills together help the entrepreneurs to be able to notice the currently existing or newly appeared problems of society.

The goal orientation, proactivity, and risk-taking attitude together can make an impact on shaping society and create new jobs (Obschonka, 2016). The role of goal orientation is not really emphasized in the literature. Next to Obschonka (2016), it is only mentioned in the research of Jayeoba (2015) and Čapienė and Ragauskaitė (2017). Proactivity is a more popular skill. On the one hand, it is important to have during crisis management. On the other hand, it is essential to be a successful entrepreneur (Luca & Robu, 2016). Proactivity is also an important skill during forecasting changes. It could result in fast adaptation to a new situation, and so it could be an advantage to the entrepreneur (Vega-Gómez et al., 2020). Next to these, Obschonka (2016) pointed out a possible connection between the rule-breaking behaviour in childhood and being proactive in adulthood. This approach could result in several positive outputs, for example, creating new jobs. Risk-taking skill is also regularly mentioned in the literature (e.g., Castro & Zermeño, 2020; Postigo et al., 2020), moreover, Jayeboa (2015) called it a characteristic of entrepreneurs. Reyad et al. (2019) confirmed the importance of this skill in case of setting up new businesses. Finally, Boldurenau et al. (2020) stated, that this skill is also part of the successful entrepreneur profile. It can be seen that the mentioned goal orientation, proactivity, and risk-taking attitudes can make an impact on the environment of entrepreneurs and can foster the creation of new jobs.

Furthermore, entrepreneurs can use their skills to innovate and so positively influence the world (Obschonka, 2016; Bauman & Lucy, 2021). As Bauman and Lucy (2021) stated, innovation could be the result of pressure. Entrepreneurs must adapt to the changes in

their environment (e.g., political) in order to remain successful. It results in an obligatory innovation process related to their products and services and handles the changes this way. Additionally, Obschonka (2016), Terzaroli (2019), and Postigo et al. (2020) mentioned innovation and entrepreneurs on the same page, and they highlighted the importance of this skill. Based on the opinion of Reyad et al. (2019), this skill is essential to set up new businesses. This skill is also mentioned by Boldurenau et al. (2020) in connection with the successful entrepreneurial role model. Finally, innovation has a key role in recovery after crises as entrepreneurs must react to challenges in an innovative way (Castro & Zermeño, 2020). To sum up, innovativeness and adaptability are factors, which can help entrepreneurs to shape the world.

The research of Bejinaru (2018) highlighted that entrepreneurial skills are part of the so-called generic skills. These are the skills that help entrepreneurs in critical thinking in real business situations, successful decision-making, complex problem-solving, creating innovative ideas, originality, openness, and willingness to learn from mistakes and success. In the study, they presented the connection between achieving these results and having some skills. These are the critical thinking skill, originality, active learning, judgement and decision-making. All mentioned skills are also part of the entrepreneurial skills palette. Table 9 summarises the introduced effects-skills combinations.

Table 9: Entrepreneurial skills and their effects (source: own compilation)

Skills	Effects	Resources
Complex problem-solving	Sensing currently existing / newly appeared social problems	Fleaca (2017); Bejinaru (2018); Hermann & Bossle (2020)
Taking initiative		Fleaca (2017); Castro és Zermeño (2020); Boldureanu et al. (2020)
Critical thinking		Fleaca (2017); Bejinaru (2018); Reyad et al. (2019)
Goal orientation	Creating new jobs	Obschonka (2016); Jayeoba, (2015); Čapienė & Ragauskaitė, (2017)
Proactivity		Obschonka (2016); Boldureanu et al., (2020); Luca & Robu (2016); Vega-Gómez et al., (2020)
Risk-taking attitude		Obschonka (2016); Castro & Zermeño, 2020; Postigo et al., 2020; Jayeoba, 2015
Adaptability	Innovation	Obschonka, (2016); Bauman & Lucy, (2021)
Innovative thinking		Obschonka (2016), Terzaroli (2019); Postigo et al. (2020); Reyad et al. (2019); Boldureanu et al., (2020); Castro & Zermeño (2020)

Table 9 summarises how entrepreneurs can shape the world through their skills and what other functions these skills have. However, having these skills is usually not enough to realise changes in practice, further factors are also required to achieve that. There is no

perfect instruction on how entrepreneurs should act to realise skills' value creation process, but De Ruysscher et al. (2017) mentioned the conceptual model of Social Entrepreneurship, which can be a possible answer to this problem. Based on their research, first, it is necessary to have some inputs like opportunities, resources, and social approach. If these are combined with entrepreneurial skills (e.g., critical thinking, networking, capacity building), the output can be achieved which is – in this case – shaping the world. Although the model of De Ruyssher et al. (2017) focused on social enterprises, it could also be interpreted in the case of other kinds of enterprises because the skills are not limited only to one kind of business. All mentioned skills could be as important in the case of different types of enterprises as in the case of social enterprises.

4.3. Other Relevant Areas

As it can be seen in the previous part, entrepreneurs are able to make an impact on different segments of the world during their daily activities. These skills seem to have great power and maybe applying them in practice could be useful not only for entrepreneurs. In the literature some authors (e.g., Prüfer & Prüfer, 2019; Bejinaru, 2018) highlighted different segments of life, where entrepreneurial skills can also be important. In this part, I introduce these skills, and the areas where non-entrepreneurs can use them. Obschonka (2016) stateed that entrepreneurial thinking is relevant and required at each level of society in order to achieve the previously mentioned positive effects (e.g., job creation, innovation). He mentioned the fields of education, public administration, business and, social life as examples of further options to use entrepreneurial skills. Unfortunately, the author did not mention more details about the connection between these areas and applying entrepreneurial skills, however, it would be interesting to see some examples.

In contrast to that, Prüfer and Prüfer (2018) shared more details of their idea. They argued that several entrepreneurial skills can be useful in managerial positions. In their research, they investigated job descriptions, and the results showed there was always at least one entrepreneurial skill displayed in the texts. Some skills appeared more regularly than others, for example, communication, collaboration, computational thinking, planning, organising, self-starter, problem-solving, and active learning.

Remaining in the world of work, Postigo et al. (2020) introduced some entrepreneurial attributes that should be considered during some situations. The so-called BEPE-16 ("*Battery for Evaluation of Entreprising Personality*") contains, for example, self-

efficacy, innovation, achievement motivation, stress tolerance, autonomy, internal locus of control, optimism, and risk-taking. These are especially important in the case of organisations that support entrepreneurial projects and would like to investigate the applicants (who are the entrepreneurs) attributes as well to be able to assess the efficiency of a project. BEPE-16 could also be useful for assessing applicants for a position that is connected to internal business innovation. If a company decides to do the selection process based on skills, it could save time and money during the application process. Furthermore, entrepreneurial skill development could be a topic of training organised by companies.

To sum up, there are other areas next to entrepreneurship, where entrepreneurial skills can be useful, however these areas are not emphasized in the papers analysed.

4.4. Entrepreneurial Skills in Education

The teachability of entrepreneurial skills is still debated nowadays. Some of the authors suggested that entrepreneurs were born with their skills (e.g., Schumpeter, 1934), while others believed skills can be mastered through education (e.g., Drucker, 1985). During reading the papers, only the research of Ghouse et al. (2024) presented no significant correlation between entrepreneurial education and entrepreneurial intention. Reyad et al. (2019) agreed with the second statement as they state skills are not determined by the personality traits which we were born with. Peschl et al. (2021) also agreed with them, and argued that there are other factors, which could contribute to entrepreneurial success and activity. They also mentioned an example related to creating business plans: no one is born with the skill to write one. This and other similar skills can be mastered via education in their opinion. Čapienė and Ragauskaitė (2017) cited Rae (2014), who also agreed about the teachability of entrepreneurial skills, however, some conditions were determined to make it work. Entrepreneurship must be taught in specific economic situations and circumstances, only then will the process be successful. The theory of Stefan (2018) is somewhere halfway between the two approaches about the teachability of entrepreneurial skills. Based on his theory, being an entrepreneur is coded in everyone's DNS, however, it requires a catalyst to start working. These catalysts could be emotions, moods, information, or a kind of combination of these. To sum up how complicated the question of entrepreneurial skills teaching is, I use the concept of Haase and Lautenschlager (2010) which they used to express the complexity of the problem: they called it a *"teachability dilemma"*.

The articles mentioned teachable entrepreneurial skills and related teaching techniques several times. In the following, I collect the teachable entrepreneurial skills and present teaching techniques that could effectively work during entrepreneurial programmes.

Čapienė and Ragauskaitė (2017) cited Driessen and Zwart (2010), and suggested that there are four parts of entrepreneurial education: knowledge, skills, motivation, and aptitude. By contrast, Betáková et al. (2020) claimed there are only two parts. The first part is about the teaching of entrepreneurial personality traits (e.g., attitude, self-control, locus of control, achievement orientation, proactivity, risk-taking, self-confidence). The second part is the development of entrepreneurial intent. Peschl et al. (2021) added more items to the list of teachable entrepreneurial skills related to entrepreneurial thinking. These skills are problem-solving, uncertainty tolerance, learning through failure, empathy, creativity with limited resources, responding to critical feedback, and teamwork approach. Reyad et al. (2019) investigated the opinion of accountant students in connection with the most important skills, which are essential to have to be able to start their own business after finishing their studies. Students mentioned risk-taking, critical thinking, problem-solving, and innovation skills. Next to the innovation skills, Cekule et al. (2023) also drew the attention that the development of students' creativity is also possible. Rodriguez and Lieber (2020) also involved students in their research. They focused on the skill development of students who participate in an entrepreneurial programme. At the end of the programme, they discovered significant development of entrepreneurial thinking, communication and collaboration skills, opportunity recognizing skill, critical thinking skill, and problem-solving skill. Next to the above-introduced teachable skills, there is a chance to involve new elements in entrepreneurial programmes at the university level thanks to its wide knowledge and skills requirements. Hermann and Bossle (2020) suggested the involvement of sustainability approach, while Fleaca (2017) raised attention to the improvement of digital skills during entrepreneurial programmes. Finally, Mohamad (2023) raised attention to the importance of networking skill and marked it as a core competence of an entrepreneur. Based on their opinion, networking skill can be learned.

Related to the introduced skills, there were several teaching techniques mentioned that could foster students' entrepreneurial skill development at universities. By Bazkiaei et al. (2020) universities have a crucial role in creating an entrepreneurial mindset as they are able to organise trainings and workshops, which can contribute to the development of

entrepreneurial thinking. Thomas (2022) agreed with the positive effect of the workshop, furthermore, he added that organising conferences can enhance participants' network, as it can bring together participants, successful entrepreneurs, potential investors, and alumni. University studies (e.g. participating in entrepreneurship-related courses, seminars) could positively influence students' entrepreneurial intentions, as they can practice entrepreneurship (Vivekananth et al., 2023). Additionally, it could have a positive impact on business creation as the research of Hunady et al. (2018) showed the connection between the number of completed entrepreneurship-related courses and setting up own business. The more courses students participated in, the higher the number of newly established businesses were (Hunady et al., 2018). If they applied specific teaching techniques to these courses, the success could be more apparent. In connection with that, Shulman (2005) highlighted the concept of *signature pedagogy*, which has elements like flipped classroom, learning through failure, and access to open educational resources (cited by Peschl et al., 2021). Pérez-Macías et al. (2023) confirmed, that students whose teacher involves debates, cooperative case studies, flipped classroom, problem-based learning, and brainstorming are able to develop certain skills like communication, creativity and problem-solving. Di Paola et al. (2023) also agreed with the positive effect of applying problem-based learning and the development of students' creativity. Additionally, Boldureanu et al. (2020) suggested that introducing some successful entrepreneurial models could positively influence students' entrepreneurial attitudes and intent. However, they noted that the curriculum should be designed differently in the case of economics and non-economics programmes because investigating positive stories could influence them differently. Next to these methods, Tecau (2016) and Mohamad (2023) pointed out the role of studying abroad during university studies as it could foster students' entrepreneurial skills, as they became more self-confident and open to establishing their own businesses thanks to the foreign experience. Finally, Kaplancali and Yücelen (2016) highlighted the option to apply e-learning programmes to develop entrepreneurial skills. It could be applied not only by universities but other educational institutions as well. Participants can play games based on real-life situations so they can develop their skills.

Dias et al. (2024) also confirmed the positive effect of gamification during developing entrepreneurial skills and highlights that this way providers can revolutionize how institutions teach entrepreneurial competencies. Casau et al. (2023) shared this approach, and add, that games and simulations can enhance students' entrepreneurial skills and attitudes (especially their analytical skills and business knowledge). Beyond the above-mentioned teaching techniques, universities can provide further support for their students to start their own businesses. Vivekananth et al. (2023) mentioned some examples, just as giving funds for students to be able to realise their ideas and plans, using the university's reputation to advertise their students' projects, or (in some cases) being their students' lead customers.

Figure 16. summarises the introduced teachable entrepreneurial skills and teaching methods.

Teachable entrepreneurial skills	Applied teaching methods for entrepreneurial skill development
Entrepreneurial attitude, self-control, locus of control, Performance orientation, self-confidence (Betáková et al., 2020)	
Uncertainty tolerance, learning through problems, empathy, creativity with limited resources, responding to critical feedback (Peschl et al., 2021)	**Vocational trainings, workshops, conferences, events** (Bazkiaei et al., 2020, Cekule et al., 2023, Thomas, 2023, Vivekananth et al., 2023)
Risk-taking (Betáková et al., 2020; Reyad et al., 2019, Rosique-Blasco, 2017)	**Learning through failure, access to open educational resources** (Peschl et al., 2021)
Critical thinking (Reyad et al., 2019; Rodriguez & Lieber, 2020, Pérez-Macías et al., 2023)	**Flipped classroom** (Peschl et al., 2021, Pérez-Macías et al.,
(Real-world complex) Problem-solving (Peschl et al., 2021; Reyad et al.,2019; Rodriguez & Lieber, 2020, Pérez-Macías et al., 2023)	**(International) internship** (Tecau, 2016, Thomas, 2023, Mohamad, 2023)
Innovation (Reyad et al., 2019, Cekule et al., 2023)	**Successful entrepreneurial role models** (Boldureanu et al., 2020)
Teamwork/Collaboration (Peschl et al., 2021; Rodriguez & Lieber, 2020, Pérez-Macías et al., 2023)	
Entrepreneurial thinking, opportunity recognizing skill (Rodriguez & Lieber, 2020)	**E-learning programmes** (Kaplancali & Yücelen, 2016)
Communication skills (Rodriguez & Lieber, 2020, Pérez-Macías et al., 2023)	**Gamification, games, simulations** (Dias et al., 2024, Casau et al., 2023)
Creativity (Cekule et al., 2023, Pérez-Macías et al., 2023, Rosique-Blasco, 2017, Paola et al., 2023)	
Analytical skills (Casau et al., 2023)	**Debates, case studies, brainstorming** (Pérez-Macías et al., 2023)
Negotiation skills (Pérez-Macías et al., 2023)	
Proactivity (Rosique-Blasco, 2017, Betáková et al., 2020)	**Problem-based learning** (Pérez-Macías et al., 2023, Paola et al., 2023)
Networking (Mohamad, 2023)	

Opportunities provided by universities

Figure 16: Entrepreneurial skills and teaching methods (source: own compilation)

The results of the literature review showed that entrepreneurial intent can be positively influenced by universities to a certain point via the application of the presented teaching methods. However, there are several other factors that could affect its evolvement and development. For instance, Georgescu and Herman (2020) concluded, that students with entrepreneurial family backgrounds have larger entrepreneurial intent than students, who have no entrepreneurial relatives. They also find a connection between quality education and entrepreneurial intent. This was also confirmed by Adekiya and Ibrahim (2016), who stated education and development have a key role in setting up a business.

There are several ways to develop entrepreneurial skills, however, the wide palette of options could be frustrating as integrating all of it into a programme requires thorough planning and despite the huge amount of energy uncovered areas may remain.

4.5. Synthesis of Entrepreneurial Skills

I identified three examples of how to create a synthesised skill list of entrepreneurial skills based on the collected literature. The first was introduced in the paper of González-López et al. (2020), and it contained 6 categories in which entrepreneurial skills can be grouped in: opportunity competencies, organising competencies, relationship competencies, strategic competencies, conceptual competencies, and commitment competencies. The second synthesis can be found in the article of Gieure et al. (2020), and it indicated 3 sub-categories of entrepreneurial skills: (1) technical skills (e.g., written communication, organisation), (2) business management skills (e.g., planning, marketing), (3) personal entrepreneurial skills (e.g., risk-taking and persistence). The third option is the way they did in the EntreComp: they defined 15 entrepreneurship competencies and divided them into 3 groups: *ideas and opportunities*, *resources*, and *into action* (Bacigalupo et al., 2016).

In spite of the good examples of entrepreneurial skill synthesis, I utilized my own logic. The reason behind my decision is the complex systematic literature review I have performed, as it showed the most up-to-date status of the entrepreneurial skill list, which may require new interpretation thanks to the new combination of skills.

There were more than 200 different entrepreneurial skills mentioned in the papers, however, it is important to highlight that these were not always different skills, sometimes the same skill has a different name in some papers. This means, there is only a difference in the given name of the skill (e.g. innovativeness, innovation, orientation toward

innovation) but their meaning is similar. In order to avoid redundancies and a too-detailed skill list I merged similar skills which sometimes caused a hard dilemma. For example, there were *"resource organisation", "mobilising resources"*, and *"gathering resources"* mentioned in different papers. These skills can be connected to resources, but all of them have different meanings. To reduce the number of skills I merged them into one skill namely *"resources management"*. Finally, I was able to create the synthetised list of entrepreneurial skills which contains all individual skills (89) identified in the literature.

Based on my categorization, entrepreneurial skills have eight sub-categories: Management skills, thinking skills, learning skills, problem-solving skills, communication skills, social skills, technical skills, and innovation skills. Figure 17 shows all skill groups.
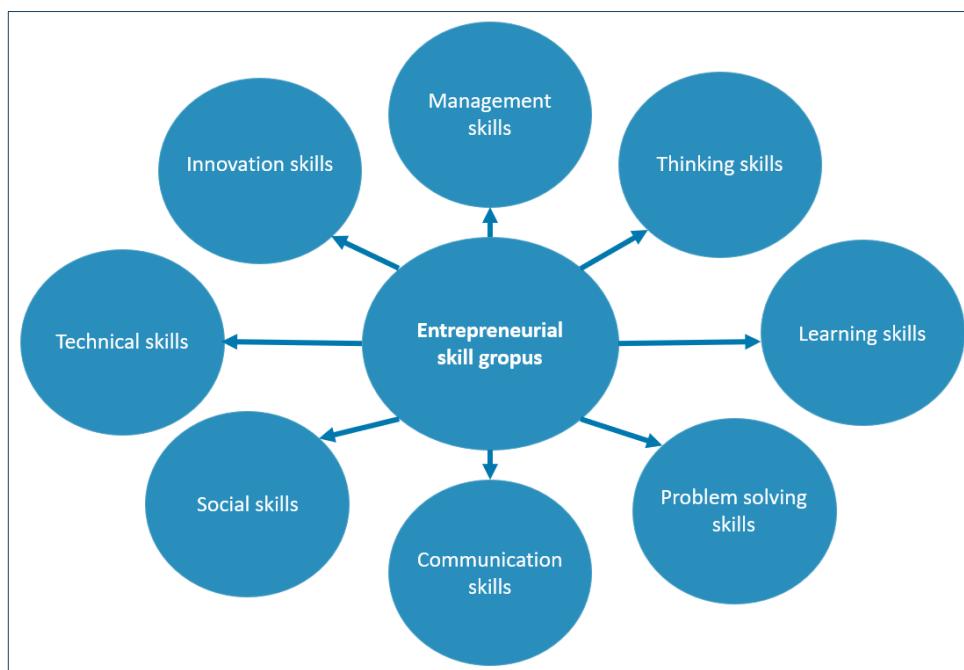
Figure 17: Synthesised entrepreneurial skill groups (source: own compilation)

The management skills category contains all skills, that are essential to control the enterprise's processes (e.g., planning, risk management, decision-making, etc.). Thinking skills are the skills, that help to see things from different points of view, for example, a decision can be made more carefully as many approaches were investigated during the process (e.g., creative thinking, critical thinking). Learning skills provide entrepreneurs the tools for achieving lifelong learning goals, so they can learn from their mistakes and pick up required knowledge of a new area if necessary. Problem-solving skills help to find an effective solution in a very short time. Communication skills are necessary to communicate ideas or opinions and negotiate with others. Social skills mean the network

all around the entrepreneur, and the collaboration with others. Technical skills help entrepreneurs use digital tools during their work and understand their operation. Innovation skills are required to come up with creative and innovative ideas and realise them. Figure 18 shows the distribution of skills among sub-categories.
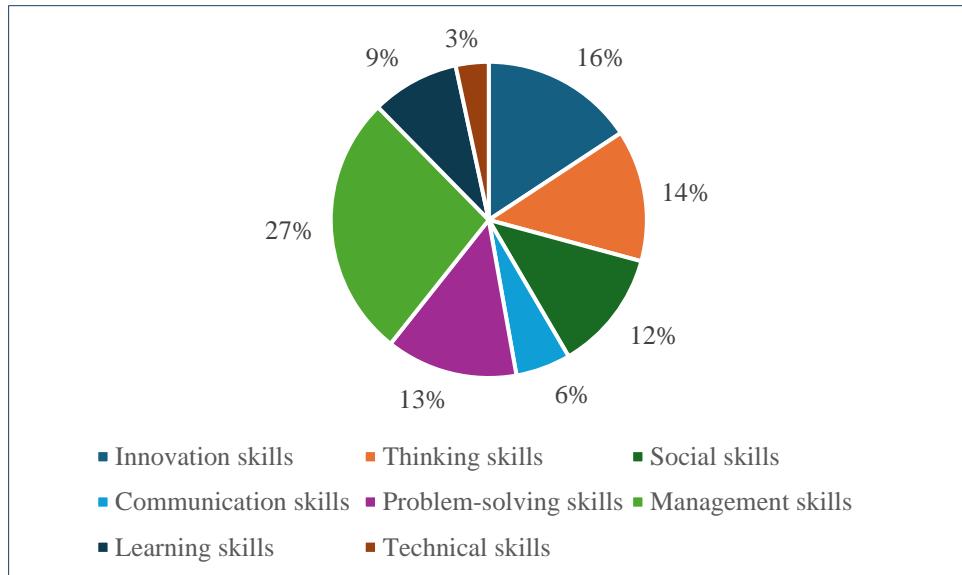
Figure 18: Entrepreneurial skills distribution between the determined categories (source: own compilation)

As it can be seen, management skills are dominating, which is not surprising, as entrepreneurs have to manage their own business, so they must have numerous management-related skills. The second most popular group is the innovation skill group, which is also essential to remain competitive in the market. Technical skills are the least mentioned in the papers (3%), however, several studies (e.g., Fleaca, 2017; Terzaroli, 2019; Mohamad, 2023; Ranta et al., 2022) highlighted their importance in general. The detailed list of entrepreneurial skills can be found in Appendix 2a and 2b.

With the help of the created skill groups, the skill content of the 49 articles can be investigated deeper. Figure 19 presents the differences between the entrepreneurial skills categories' proportions within the investigated periods.
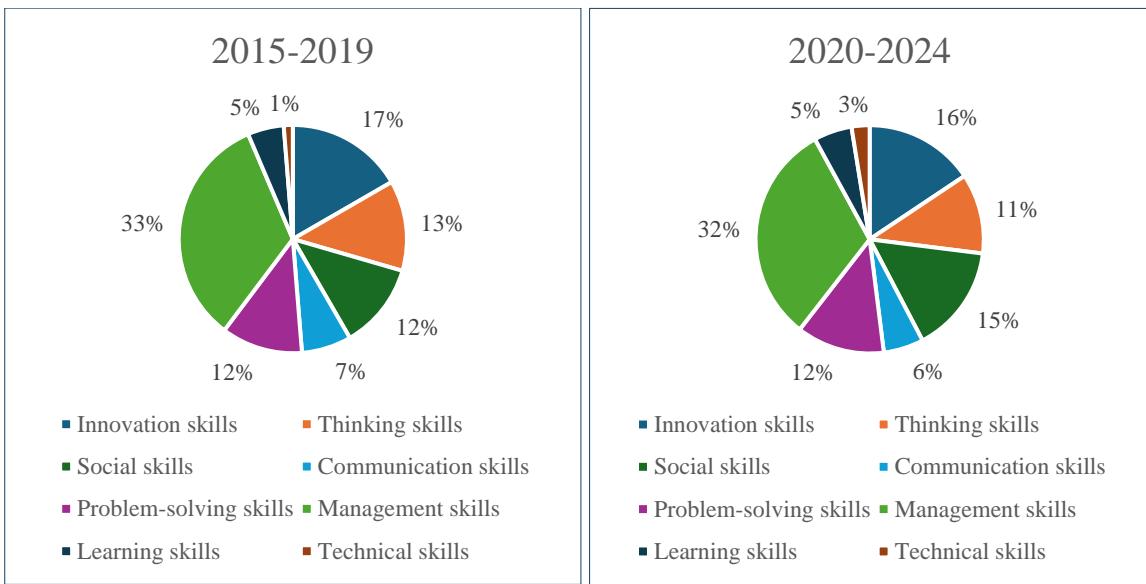
Figure 19: Entrepreneurial skills categories' proportion in the literature, 2015-2019 vs. 2020-2024 (source: own compilation)

As can be seen, there are no relevant differences between the two periods, only small changes are observable. There are two categories where increasement can be observed in the number of mentions: social (from 12% to 15%) and technical (from 1% to 3%).

Figure 20 presents the changes in the proportion of how many of the papers have mentioned the elements of a skills group. It means that what percentage of the papers referred to at least one skill from a skill group.
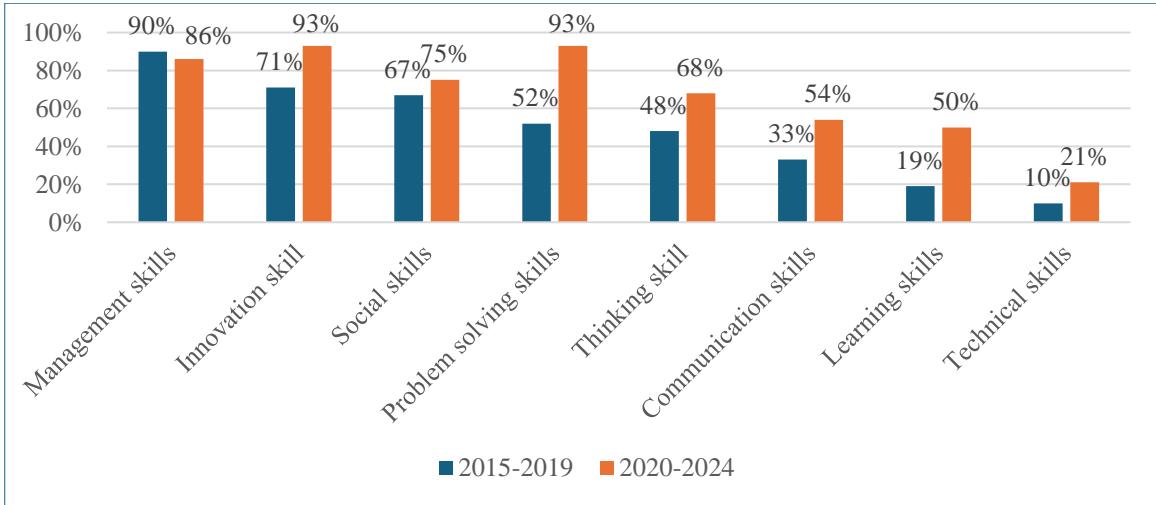
Figure 20: What percentage of the papers mentioned at least one element of a skill group (source: own compilation)

In general, the number of skill references has increased from 2015-2019 to 2020-2024, but there is one category where this number has decreased: the management skills. In the case of it, 90% of the papers have mentioned management-related skills in 2015-2019,

however, in the case of the other period, only 86% of the articles mentioned at least one skill that belongs to the management skills category. While almost all papers (90%) mentioned at least one management skill in 2015-2019, in 2020-2024 most mentions relate to the problem-solving skills (93%) and innovation skills (93%) groups. These two skills groups' mentions increased the most: in the case of problem-solving skills there is 41% growth in the articles which contain these types of skills, and in case of innovation skills there is 22% increasement in the number of papers which mentioned at least one innovation-related skills.

The tables in Appendix 5a and 5b introduce the papers by authors, the applied methodological approach, and the skill content of each article by skill groups.

In this chapter, I presented the most mentioned skills in the investigated papers. After that, I showed that the discourses about entrepreneurial skills could be organised into four large topics. The first is the social and economic effect of entrepreneurial skills: the connecting research results confirms that they could have several positive effects on the world at micro, mezzo, and macro levels as well. The second topic is about the other relevant areas, where entrepreneurial skills can also be crucial. The third topic is related to entrepreneurial education. It introduces teachable entrepreneurial skills, and highlighted teaching methods, which can be applied during entrepreneurial education. Finally, I closed this part with further statistics about the papers based on the synthesised skills list.

5. INTEGRATIVE LITERATURE REVIEW OF FUTURE SKILLS

The topic of future skills is more diverse than entrepreneurial skills due to several possible viewpoints from which the future can be observed, for example, the discourses could depend on which segment of the economy the focus is on or what is the type of job (intellectual or physical). As a result, during the future skills literature review, these approaches are not separated from each other, and they are introduced as the authors interpret the future.

Future skills – just like entrepreneurial skills – are crucial in several segments of economics. As Ananiadou and Claro (2009) stated in their OECD report, the workforce must have up-to-date and relevant skills to satisfy employers' requirements. Knowing and developing future skills is not only crucial for individuals, as beyond personal success and increasing their employability, a well-prepared workforce can contribute to the success of companies, the future economy, and society (Ehlers, 2020; Kotsiou et al., 2022; Zahidi et al., 2020; Brasse et al., 2023b).

University students and HEIs should pay attention to the employers' demands, as the students must prepare themselves in line with the expectations of employers during their studies, and HEIs must support their students to develop their skills which are relevant both in the current and future labour market (Ahonen & Kinnunen, 2015; Zartner et al., 2018). Regularly reviewing and updating the currently used curricula and rethinking the applied teaching methods is crucial. However, it is not an easy task, as the occupation-specific skills could become obsolete over time due to the changing expectations of the labour market (Bowman, 1993).

This chapter first introduces the challenges of future skills determination, and after that focuses on the actors of future skills in HEIs. Later the future skills development at universities, teachable future skills, and related teaching methods are presented. Finally, this chapter ends with a synthesis of future skills, in which I introduce several approaches as well as mine.

5.1. Challenges of Future Skills Determination

Sakamoto (2019) claimed in her research, that the future labour market will be fluid, uncertain, and unforeseeable. It will demand individuals who are resilient and able to adapt to new situations. Additionally, future changes could not only affect the nature of the professions we have now but could also create new professions in the future. It is very

difficult to foresee and ascertain the nature and function of these future professions from the vantage point that our day and age provides (Szendrei-Pál et al., 2021). During reading the literature, some of them (e.g., Bakhshi et al., 2017; García-Pérez et al., 2021) pointed out some factors, which could influence the future labour market and so the list of future skills. As Bates (2024) stated, prediction is always risky, however, the big trends in the future can already appear in the present. In the following, I introduce the factors and trends that can make an impact on the list of future skills and then I summarise it with a figure.

The academic and policy-oriented literature identifies several drivers influencing the future jobs' skills requirements. García-Pérez et al. (2021) and Davies et al. (2011) pointed to globalization and digitalization as the most important drivers. On the one hand, related to globalization Bakhshi et al. (2017) and Pearson (2014) stated, that future skills can be influenced by the so-called megatrends such as globalization, demographic, environmental, and technological changes. Next to these, the effect of demographic changes is usually highlighted in papers (e.g., Ehlers, 2020; Bates, 2024; Pedró, 2024). Bakhshi et al. (2017) stated, that next to the mentioned megatrends, political uncertainty, environmental sustainability, urbanisation and increasing inequality could also be reasons for changing requirements in the labour market. (Szendrei-Pál et al., 2021). They can make a significant impact on future jobs as the jobs must keep pace up with the fast changes in the world. Finally, Bowman (1993), Pearson (2014), Bakshi et al. (2017), Ehlers (2020), García-Pérez et al. (2021), and Brasse et al. (2023b) confirmed the significant role of technological developments on future skills, as the labour market continuously change its jobs requirements when a new technology appears. In connection with that, Kétyi et al. (2024) highlighted the growing role of artificial intelligence (AI), such as ChatGPT, and the complex challenges it presents globally, particularly in higher education. While students view ChatGPT as a tool that can enhance their learning, educators see it as a potential threat to academic integrity.

The challenge of determining the list of future skills is even more relevant if we consider how *"wildcard"* (low probability high impact) events can dramatically change the course of social, economic, and technological patterns of our lives (Saritas & Smith, 2011). Covid-19, for example, can be understood as one of these *"wildcard"* events that have and will have dramatic effects on labour market conditions. So, the above-mentioned question about future skills is also related to the problem of how to prepare for an

unknown future (Szendrei-Pál et al., 2021). Figure 21 summarises the most important influencing factors of future skills mentioned in the literature.
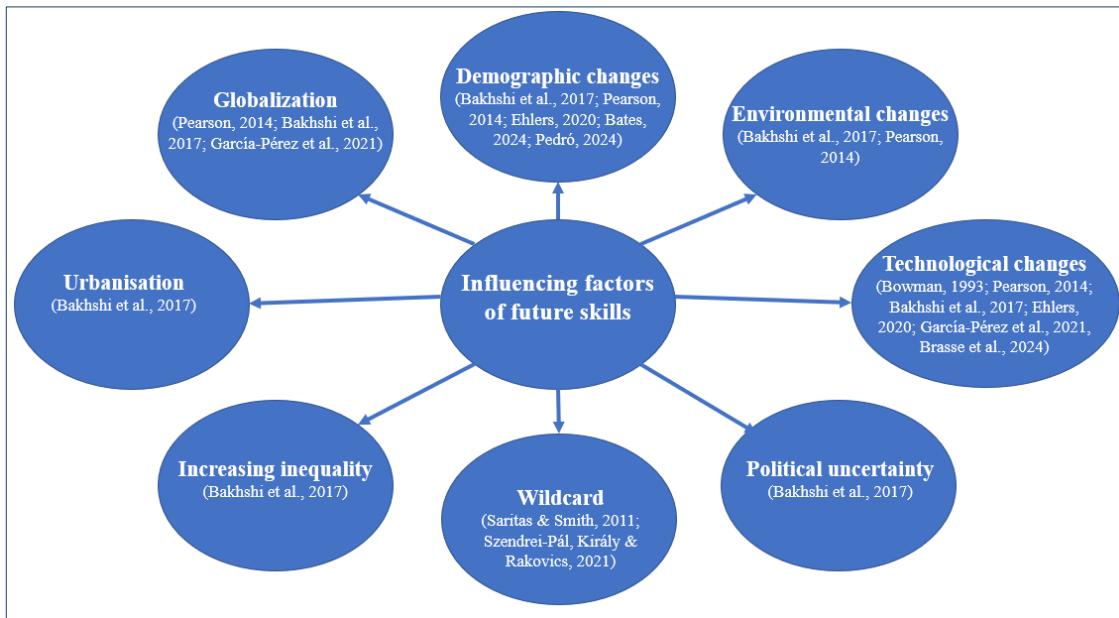
Figure 21: Influencing factors of future skills based on the literature (source: own compilation)

It is important to note these factors are relevant in all segments of the world and not limited to regional or national contexts. Determining future skills requires a broad perspective, across countries and educational contexts (Ehlers & Eigbrecht, 2024). Brasse et al. (2023b) introduced four methods that can be applied to determine the list of future skills: (1) literature review (e.g., Kotsiou et al., 2022; García-Pérez et al., 2021), (2) expert assessments, (3) data-driven approaches, and (4) combination of the previously mentioned methods. Regardless of the method, the impact of the factors mentioned above is certainly reflected at some stage in future skills research.

5.2. Actors of Future Skills in HEI

In order to overcome the challenges caused by the previously mentioned factors, society-wide effort is required to be able to adapt proactively and deal with the significant skill shift (Brasse et al., 2023b). Anticipating and continuously monitoring the above-presented influencing factors of future skills are extremely important for several actors at global, national, and organisational levels. These actors can include for example corporations, governments, and international policymaking and shaping organisations (Szendrei-Pál et al., 2021). Figure 22 introduces those four actors who are mentioned in the literature as actors of future skills in HEIs.
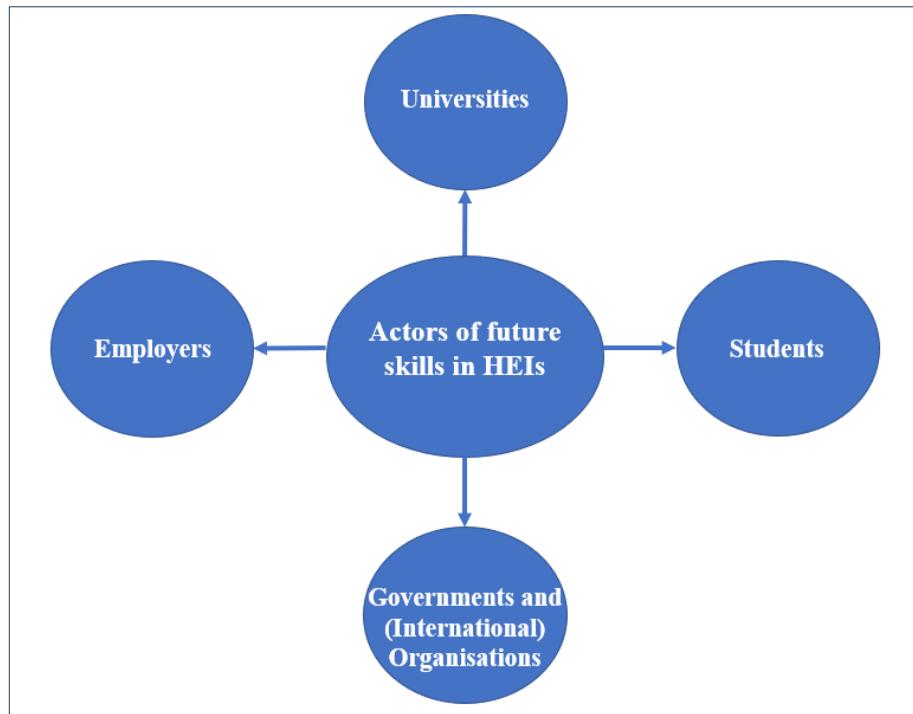
Figure 22: Actors of future skills in HEIs (source: own compilation)

As it can be seen, there are four actors: the universities, students, governments/ international organisations, and employers. The actors have expectations toward HEIs, and these expectations can influence how HEIs perform their daily activities and their plans. Due to this, expectations have a crucial role in future studies, as they are a determining element of future orientation (Novaky, 1994). In the following, I introduce the roles and expectations of the four identified actors related to the topic of future skills in HEIs.

Universities

The articles analysed mentioned universities in various ways and pointed out the strong connection between their missions and roles, and the topic of future skills. All discourses agreed that universities are crucial in future skills development, however, they face several challenges during this activity, for example the uncertain future. HEIs have to find a way to prepare their students for an unknown future, which leads to one of the universities' main missions: to equip students with skills, which will fit the future work requirements (Szendrei-Pál et al., 2021). Becker et al. (2017) pointed out another mission of the universities. They stated that the key goal of the current education system is to provide deeper active learning experiences and skills-based trainings. To be able to fulfil their missions, universities need to design innovative programmes, which are suitable for future skills development. Next to developing innovative programmes, they also must pay

attention to their educational mission. It must stay true to its original principles during innovative programmes. So, these programmes must prepare students for the current job market while they remain loyal to their basic educational mission at the same time (Zartner et al., 2018).

Regarding the role of universities in future skills development, there were some instructions included in the papers about what roles should HEIs have. First of all, HEIs are responsible for equipping students with the skills of the future. Van de Werfhorst (2014) stated educational systems' key function is to prepare students for the world of work (next to the knowledge, skills, and personal development, and the promotion of citizenship (Lavrijsen & Nicaise, 2017). The report Global Competence of OECD (2018) also agreed that future citizens must understand the issues of today's interconnected world (Garcia-Esteban & Jahnke, 2020). To do that, HEIs must continuously monitor and adapt to the requirements of labour market and develop the most important future skills in schools (Ahonen & Kinnunen, 2015; Zartner et al., 2018). HEIs can make a positive impact on students' long-term work success if they involve real-world problem-solving and collaborative technology in their programmes and so they develop the so-called 21st-century skills (Levy & Sidhu 2013). However, preparing students for the future is not the only role of HEIs. They have to consider which skills are important in the current labour market, and design activities in order to equip students with skills which are relevant in the present also (Long & Meglich 2013; Becker et al., 2017; Garcia-Esteban & Jahnke, 2020). Based on the opinion of Becker et al. (2017) the mission of the universities is to provide deeper active learning experiences and skills-based training to students in order to develop their future skills. Finally, being future-oriented is strongly related to universities' social roles (Szendrei-Pál et al., 2021)

To summarise the role of universities in developing future skills, they have to prepare their students to achieve the desired future (Hakio & Mattelmäki, 2019). However, universities must continuously monitor the changing expectations of employers and authorities at the same time regarding future skills requirements. The rapid developments in the field of higher education are primarily driven by government and employers, as they demand an employable, professional, and competitive workforce (Bates, 2024).

Expectations of universities are under-discussed in the literature, but Fűzi et al. (2022) investigated the discourses related to the changes in socialization and digitalization in the field of higher education. Thanks to the applied horizon scanning method, the actors and

their expectations can be discovered. Before Covid-19, universities' demands rarely appeared in the discourses, however, after the Covid-19 it changed. Among other things, their focus shifted toward handling ethical issues, collaborating with other actors, ensuring data safety, and infrastructure development. These expectations can form the plans of future HEIs, as they determine the elements of future orientation (Novaky, 1994).

Students

Students are the least mentioned in the literature, and their opinion is not emphasised in connection with the future skills development in HEIs. The reason could be that they are just passive participants in the process as they don't have the power to influence and determine future skills. They *"just"* have to listen, learn and adapt to the requirements of other actors. Despite their passive role, they must face the expectations of different actors related to their performance. Students have to satisfy both universities' and employers' requirements at the same time, even if the expectations are sometimes contradictory. Students have to finish their university studies first, so their focus should be mostly on the university's requirements. After graduation, when they start their careers, the success of universities in fulfilling employers' skills demands can be observed. Moore (2016) highlighted, that real-world problem-solving skills of students were only developed after they finished their university studies. Real-world problem-solving is not the only skill that development is underemphasized in the curriculum based on students' opinions. Ella and Azmi (2023) stated that they are not satisfied with the soft skills they acquired during their university studies, as they experienced a mismatch between their skills and the requirements of the labour market. Based on their opinion. HEIs do not pay adequate attention to skill development.

Only a few studies are available that focus on the students' opinions about future skills. For example, based on the research of Ahonen and Kinnunen (2015), students claimed that meta-skills like self-regulation, collaboration, reasoning, and problem-solving will be essential in the future. They mentioned collaboration and social skills as well. The researchers raised attention to a possible future direction, that says the skills which will be important in the future depend on the gender. When girls' and boys' opinions were asked about the most important skills in the future, girls marked social skills more than other skills, while boys mentioned more technological skills (Ahonen & Kinnunen, 2015). The research of Laurisz et al. (2024) compared the opinions of Hungarian and Polish students on future skills. The researchers were curious about students' opinions on which

skills will be important in the future, and they also investigated what student anticipate companies will expect from them during their future career. Both Hungarian and Polish students think that the most critical soft skills expected by employers will be communication, teamwork, and problem-solving skills. Students from both countries believe that future employers will expect them to have problem-solving skills, creativity, professional skills, IT skills, and self-awareness. While students from Poland felt more prepared thanks to the structured learning environment and comprehensive educational programmes, students from Hungary were not completely satisfied with the education system as it often lacks systematic approaches to skill development.

The research of Fűzi et al. (2022) also investigated the students' expectations towards HEIs. Before the Covid-19 students focused more on the expectations of employers, as they had a future employees' perspective. It means they would like to get a fast and cheap education that focuses on personal improvement. However, after the Covid-19, this approach almost completely disappeared, and their focus shifted from external actors' expectations to self-development. They emphasized topics like online social skill development, mental health support, online solutions for community building, and getting back to campus life. In their case, these are the expectations which can determine the elements of HEI's future orientation.

Employers

Employers' viewpoint was not emphasized in the papers, however, they have the greatest power to influence the list of skills that will be important in the future. As it was mentioned earlier, the future labour market is uncertain, and so their demands because it depends on how they react to the previously introduced influencing factors (Figure 21). Maybe that is the reason why their approach is not really highlighted in the papers.

Independently from that, there are studies, which aim to determine employers' future skills requirements (e.g., OECD, 2017; European CEDEFOP, 2019; Bakshsi et al., 2017). All reports investigated the future skills from different aspects, but they all agreed that the so-called 21st-century skills will be relevant in the future (Garcia-Esteban & Jahnke, 2020). Pearson (2014) and Bakhshi et al. (2017) indicated that the currently taught basic skills are not enough and instead, universities must focus on the development of non-cognitive skills. Next to them, Zartner et al. (2018) also marked some skills, which will be important to future employers. In their research, they stated that employers will demand critical thinking, strong writing, adaptability, cultural competency, and

intercultural communication from their future workforce. Additionally, Moore (2016) mentioned that *Gallup* worked together with *Microsoft Partners in Learning* and the *Pearson Foundation* to create a 21st-century skills index. It contains collaboration, knowledge construction, skilled communication, global awareness, self-regulation, real-world problem-solving, and technology used in learning.

Bakhshi et al. (2017) introduced in detail a joint research project of Pearson, Nesta, and the University of Oxford titled *"The future of skills, employment in 2030"*. During this project, the researchers applied a mixed-method approach to determine the future skills involving expert human judgement and machine learning to map complex dependencies between job features. Firstly, they conducted a trend analysis to identify and review the main drivers of changes in the labour market. Secondly, they organised and documented foresight workshops with experts discussing the possible futures of their respective occupations. In this fashion, with the help of these workshops, they covered and discussed the futures of 30 occupations. Thirdly, researchers also relied on machine learning techniques to generate predictions for these occupations. Based on their results, they could compare the pieces of information gathered from experts with those stemming from machine learning. As a result of this complex investigation, researchers have created a list containing 3 groups with several elements: in the skills group there are 34 items[7], the abilities group contains 51 items, and there are also 34 items in the knowledge category.

As can be seen employers have a key role in the future skills determination process, however, it is hard to predict their future expectations. Their skills demand will be the result of a process of how they react to the changes in the world (see the influencing factors in the previously presented Figure 21). The combination of how each factor changes will make an impact on the employers, and the labour market must react to that. Eventually, these reactions will form the jobs and the skill requirements.

Before the Covid-19 employers' expectations towards HEIs were emphasized in several articles. They required employability-centred skill development and knowledge transfer, and they appeared as a competitor of universities as they provided corporate education and on-the-job trainings. Their expectations towards HEIs almost completely disappeared

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[7] Because of the complex approach of the future skills-related literatures, I will synthetise the 34 items in the skill group in the 5.4 sub-chapter and utilize it during the corpus-based content analysis and the case studies

from the discourses, and no clear arguments have been found after the Covid-19. (Fűzi et al., 2022)

Governments and International Organisations

The viewpoints and expectations of governments and organisations towards HEIs and future skills development are rarely mentioned in the literature. In spite of that, they have a crucial role in the world of work, as for example, governments must react to the major changes in the labour market and accordingly integrate educational programmes to satisfy the demand of employers and so enable the success of companies (Rios et al., 2020; Zahidi et al., 2020)

In 2015, UNESCO created the AGENDA 2030 programme, containing the Sustainable Development Goals (SDGs). The so-called SDG 4 is relevant for all universities, and it indicates that each university has to fulfil its sustainability and quality-related requirements and provide quality education. These requirements include providing skillsets and knowledge to students in order to promote sustainable development and sustainable lifestyles. (UNESCO et al., 2015)

Sakamoto (2019) mentioned the OECD, which also has skills-related expectations towards HEIs. They have two programmes that aim to measure students' competencies. These are the Programme for International Student Assessment (PISA) and the Programme for International Assessment of Adult Competencies (PIACC). The reports from 2018 highlighted some important skills, like emotional and non-cognitive skills, curiosity, and persistence. These skills are beyond the traditional soft skills, like communication, teamwork, and problem-solving skills. The reports indicated that personal attributes become more and more important in the future from the viewpoints of organisations.

Based on the report of the World Economic Forum (2022), the most important skills for workers will be human-related skills, as these are impossible to replicate in a machine. They highlighted that critical thinking and problem-solving skills are the most important skills which will be essential for professionals in 2025, but next to them, active learning, creativity, originality, and initiative, analytical thinking, leadership and social influence, technology use and control, technology design and programming, resilience, stress tolerance, flexibility, reasoning, and the ability to shape ideas and concepts skill will also be crucial. (Pedró, 2024)

5.3. Future Skills in Education

Based on the previously introduced roles and expectations, future skills can be and should be involved in the universities' curricula in order to satisfy the actors' different requirements. Universities have to pay attention to the actors' opinions' about universities' performance related to students' preparedness for real-world situations as it is crucial to remain competitive in the market (Moore, 2016). In the following, I present the content of the literature from this viewpoint, and I also collect the mentioned future skills and the related teaching methods.

Weng (2015) highlighted that it is hard to predict the list of future skills, however, the currently existing lists could be the basis of benchmarks to investigate to what extent HEIs fulfil the requirements of the actors. Sakamoto (2019) and Garcia-Esteban and Jahnke (2020) agreed. They claimed that universities must adapt to the changing needs of the labour market, and to the new opportunities and challenges. Additionally, they also have to refresh their skill development policies, as it does not contain up-to-date teaching methods. Independently from these deficiencies, some future skills are currently part of the curricula and universities apply different teaching methods to provide proper skills development for students. Bates (2024) raised the attention to another challenge related to skills development: it is relatively context-specific, which means skills have to be embedded within a knowledge domain. He also mentioned an example related to problem-solving skills and points out that there is a difference between the meaning of it in the field of medicine and business.

Regardless of the challenge emphasised by Bates (2024), there are some authors who highlight teachable future skills and teaching methods. For example, Zartner et al. (2018) claimed that international studies can foster students' interdisciplinary approach to global issues, and encourage them to work/study abroad, furthermore, it develops their intercultural communication, critical thinking, language, and writing skills. Garcia-Esteban and Jahnke (2020) also highlighted the mobility programmes as a possibility for competencies (knowledge, skills, attitudes) development. Additionally, it also improves students' personal development and their employability in the European labour market and focuses on the learners' personal skills and global competence. Universities can develop educational policies that promote international mobility in order to provide the development of the above-mentioned future skills. In the research of Laurisz et al. (2024) students highlighted their preferences for future skill development: experiential learning

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methods like internships and practical projects, mentorship programmes and collaborative projects, which develop their innovative thinking skills. Furthermore, Bates (2024) highlighted skills (collaborative learning skills and problem-solving skills) and teaching methods (practical projects, practice-based learning, providing immediate feedback to students, written assignments, and focused discussions) that foster the development of future skills independently from the context. Pedró (2024) highlighted that applying the flipped classroom technique can also successfully develop students' future skills. The Conference Board of Canada (2014) provided a skill list, that contains teachable future skills: communication skills, the ability to learn independently, ethics and responsibility, teamwork and flexibility, thinking skills, digital skills, and knowledge management.

Most universities give students a chance to work in addition to their studies. This can also be assumed as a future skills development technique, which name is applied learning experience (Rossmann, 2019). The main point of this technique is students can connect their studies with real-life situations through experience and reflection (e.g., service learning, internship) (Kuh, 2008). With the help of the working experience, critical thinking, integrative learning, appreciation of diverse perspectives, collaboration skills, and communication skills of students can be developed. Rossmann (2019) also highlighted that students can improve some of their transferrable skills through jobs which are not directly connected with their studies.

Some of the articles (e.g., Garcia-Esteban & Jahnke, 2020; Sakamoto, 2019) noted that universities need to update their teaching practices in order to integrate and develop as many future skills as possible. Garcia-Esteban and Jahnke (2020) highlighted examples of this curriculum development, and they suggested involving the development of perceptive and interpersonal abilities, and the so-called STEM skills, which are science, technology, engineering, and mathematics. Additionally, they also mentioned the importance of educating future citizens based on the report of OECD (2018). As a result of educating future citizens, students will be able to understand and act on issues of today's interconnected world. In the research of Laurisz et al. (2024), students had the chance to share their thoughts on future skills. They claimed that critical thinking, communication skills, and innovative thinking should be integrated into universities' curricula. They provided their preferences related to teaching methods, which can effectively enhance the development of their skill: internship, practical projects, mentorship programmes, and collaborative learning experiences.

Moore (2016) brought attention to the positive effect of collaborative learning experiences on future skills development. For example, community development is one of the skills, which can be improved with this method. Students should be able to learn collaboratively whether they are at the same place at the same time and whether they aren't. Furthermore, Moore (2016) also mentioned the possible negative side-effect of a popular group work teaching method, as she claimed, that group work can be burdensome for students and provide more barriers than benefits. The reason behind this could be the lack of students' communication training and organisational practices beyond class time.

ChatGPT has been available to the public since 2022, and its presence raised several questions within the field of HEIs. HEIs have to evaluate the tool's potential for productive and fair use in the teaching and learning process (Kétyi et al., 2024). The advantages of involving ChatGPT in education is the flexible learning, easy access, personalized learning, and it is an *"all in one tool"* which can summarise texts, translate dialogues and analyse data. However, the tool has disadvantages such as not developing critical thinking skills and not covering the whole teaching process (lack of skill development, critical thinking, system thinking, and future orientation). Based on the conclusions of Kétyi et al. (2024), ChatGPT can be used only in case of some tasks as a digital assistant due to the limitations of its usage.

Figure 23 summarises the introduced teachable future skills and the identified future skills teaching methods.

Teachable future skills

Collaborative learning skills
(Bates, 2024)

Interdisciplinary approach to global issues, Language skills, Encouragement to work/study abroad, Develop intercultural communication, Writing skills
(Zartner et al., 2018)

Critical thinking
(Zartner et al., 2018; Rossman, 2019; Laurisz et al., 2024)

Integrative learning, appreciation of diverse perspectives
(Rossman, 2019)

Communication skills
(Rossman, 2019; Bates, 2024; Laurisz et al., 2024, The Conference Board of Canada, 2014)

Collaboration skills
(Moore, 2016; Rossman, 2019)

Innovative thinking
(Laurisz et al., 2024)

Ability to learn independently, Ethics and responsibility, Teamwork and flexibility, Thinking skills, Digital skills, Knowledge management
(The Conference Board of Canada, 2014)

Employability, global competences, STEM, understand and act on issues of universal significance in today's interconnected world, perceptive and interpersonal abilities
(Garcia-Esteban & Jahnke, 2020)

Develop community
(Moore, 2016)

(Real-world) problem-solving skills
(Moore, 2016; Bates, 2024)

Applied teaching methods for future skill development

Study at international level
(Zartner et al., 2018)

ChatGPT (with limitations!)
(Kétyi, Géring & Dén-Nagy, 2024)

International mobility
(Garcia-Esteban & Jahnke, 2020)

Internship
(Laurisz et al., 2024)

Practical projects
(Bates, 2024; Laurisz et al., 2024)

Practice based learning, Provide immediate feedback, Written assignments, Focused discussions
(Bates, 2024)

Applied learning experience
(Rossmann, 2019)

Putting students to real-world situations
(Moore, 2016)

Mentorship programs
(Laurisz et al., 2024)

Collaborative learning experience
(Moore, 2016; Laurisz et al., 2024)

Flipped classroom
(Pedró, 2024)

Active learning experience, skill-based trainings
(Becker, 2017)

Opportunities provided by universities

Figure 23: Teachable future skills and teaching methods (source: own compilation)

As can be seen from Figure 23, future skill development is mainly based on practice-oriented methods (e.g., international mobility, working next to studies, etc.). Due to the unclear requirements towards universities related to future skills, it is almost impossible

to find an optimal way to teach them to students. It looks like universities try to develop these skills in an indirect way, which means they ask for the assistance of professionals from the practice (e.g., mentorship) rather than applying new teaching methods. It seems like HEIs integrate future skills development into university curricula, however, they do not solve this task alone as they are open to collaborating with employers and international partner institutions.

5.4. Synthesis of Future Skills

Based on the future skills-related literature, there is no consensus on the elements of future skills. Several future skills lists exist thanks to the different methods and approaches that the researcher applied to identify the most relevant skills for the future workforce (e.g., Ehlers, 2020; Kotsiou et al., 2022; Brasse et al., 2023b). In the following, I introduce some examples related to possible future skill lists and their synthesis, and after that I present the one, which I apply during the current research.

Ehlers and Kellermann (2019) created their own list and synthesis based on the results of the international Delphi Survey on future skills. The survey was conducted between 2018 and 2019, and it was part of the Next Skill Project. Based on the survey's results, they identified 16 skills which they grouped into three categories: The first one contains the *subject and individual development-related skills* (e.g., agility, self-management), the second one involves *object-related skills* (e.g., creativity, digital literacy), and the third one contains the social world/organisation-related skills (e.g., communication skills, sense-making).

Ehlers (2020) has developed the previous skill list based on further research results (e.g., interviews and surveys with experts from companies, HR, business experts, and students) as part of the Next Skill project, which was conducted between 2017 and 2020. Finally, he identified 17 skills which he grouped into 3 categories: Subject development-related competencies (e.g., ethical competence, digital competence), object-related competencies (e.g., innovative competence, design thinking competence), and organisation-related competencies (e.g., future and design competence). The differences between the skill list of Ehlers and Kellermann (2019) and Ehlers (2020) point out how much the list could change if the researchers consider more approaches.

Kotsiou et al. (2022) applied the method of systematic literature review to investigate the content of 99 future skills-related frameworks which were published after 2010. They

identified 341 skills, and they grouped them into 9 meta-categories: higher-order thinking skills (e.g., decision-making, problem-solving), dialogue skills (e.g., collaboration, empathy), digital and STEM literacy (e.g., computational thinking, online safety), values (e.g., citizenship, sustainability), self-management (e.g., resilience, confidence), lifelong learning (e.g., active learning, learning to learn), enterprise skills (e.g., creativity, curiosity), leadership (e.g., responsibility, management), and flexibility (e.g., adaptability, agility).

Brasse et al. (2023b) analysed more than 1 million job advertisements from the manufacturing field between 2018 and 2020, and as a result, they identified 33 future skills. They interpreted four categories: generic skills (e.g., leadership, problem-solving), digital skills (e.g., programming, digital collaboration), technological skills (e.g. cybersecurity, AI), and industrial skills (industry-specific skills, e.g., industrial engineering).

Regardless of the different methods and approaches applied by the researchers, similarities can be identified between the presented skill lists, for example, technological/digital and communication skills appeared in the case of all lists. Management skills are also presented in each list, however, different aspects of it were emphasized (e.g., self-management, time management, data management, resource management, etc. Learning skills are also popular elements as they appear almost in the case of all investigated future skills lists.

Appendix 6a, 6b, and 6c contain the details of the above-introduced future skills lists.

I decided to apply the list of Bakshi et al. (2017) during the current research as they made a difference between skills, abilities and personality traits in their study, so I had the chance to focus only on future skills. As the future skill list is not synthesized by the researchers, Gábor Király, Márton Rakovics and I have created our own synthesis during one of our previous projects (Szendrei-Pál et al., 2021). As can be seen in Figure 24, we categorized the 34 future skills of Bakhshi et al. (2017) into 7 groups.

Figure 24: Future skills categories (source: Szendrei-Pál et al., 2021, p. 9)

To sum up Chapter 5, the future skills-related discourses cannot be as easily categorized and analysed as the entrepreneurial skills. It was due to the unknown and uncertain future, as it can be interpreted in several different ways. As a result, diverging topics emerged in the literature, however, it could be organised into 3 categories: (1) challenges and influencing factors, which make the future skills determination process difficult; (2) the actors of future skills in HEIs; (3) future skill development. Finally, I presented four ways of synthetising the future skills list and then introduced our own categorisation.

6. COMPARING THE LIST OF ENTREPRENEURIAL AND FUTURE SKILLS, AND THE RELATED TEACHING METHODS

In the following chapter, I present the comparison of entrepreneurial and future skills lists. As I mentioned before, it is not an easy task because of the diverging approaches of the two types of skills. During this chapter, the synthesised skills lists (Appendix 2a & 2b about the entrepreneurial skills, and Figure 24 about the future skills) and the teachable entrepreneurial and future skills figures (Figure 16 and Figure 23) serve as the basis of the comparison.

The list of synthesized entrepreneurial skills contains eight skill groups, and the synthesised list of future skills contains seven groups in which there are five similar categories: Management, Learning, Problem-solving, Social, and Technological skills groups. It seems like skills in these categories will be important in the future but also important for present entrepreneurs.

There are skills within these categories that appeared in both entrepreneurial and future skills-related literature. In the management skills group, these are time management and judgement and decision-making skills. These are exact matches, but next to these, there are skills that have different names but have similar contents. On the one hand, it is the resource organisation in the case of entrepreneurial skills. The financial, material and personnel resources management skills within the future skills have very similar meaning to resource organisation. On the other hand, leadership skill could match with coordination and instruction skills from the future skill group. In the learning skills group, active listening skill is listed in both cases. In the case of the entrepreneurial skills group *"learning to learn"* can be considered similar to the skill *"learning strategies"* in the future skills group. Regarding the problem-solving group, three skills are matching: complex problem-solving, critical thinking, and troubleshooting. The social skills group involves negotiation in the case of both entrepreneurial and future skills. Next to it, there are three other skills whose names are different, but the meaning behind it can be considered the same. In the case of entrepreneurial skills *"persuasiveness"* is highlighted, but in the case of future skills it is called *"persuasion"*. The *"effective verbal communication"* within the entrepreneurial skills has the same meaning as the skill *"speaking"* in the future skills. Finally, *"effective nonverbal communication"* can be matched to *"writing"* skill from the list of future skills. However, the technological skills group appeared in the case of both

entrepreneurial and future skills none of the skills could be matched to each other. Table 10 shows similar entrepreneurial and future skills.

Table 10: Similarities between entrepreneurial and future skills (source: own compilation based on the literature review)

Skill group	Entrepreneurial skills	Future skills
Management	Time management	Time management
	Judgement & decision-making	Judgement & decision-making
	Resource organisation	Management of Financial resources Management of material resources Management of personnel resources
	Leadership	Coordination Instructing
Learning	Active learning	Active learning
	Learning to learn	Learning strategies
Problem-solving	Complex problem-solving	Complex problem-solving
	Critical thinking	Critical thinking
	Troubleshooting	Troubleshooting
Social	Negotiation	Negotiation
	Persuasiveness	Persuasion
	Effective verbal communication	Speaking
	Effective nonverbal communication	Writing

To sum up, many of the future skills are listed as entrepreneurial skills as well. Regarding the statistics, 41,5% of Pearson's future skills appeared on the list of entrepreneurial skills created by the literature review results. In the following, I introduce the teaching methods and teachable skills, which are mentioned related to both entrepreneurial and future skills. Related to teachable skills, the literature marked the following skills as teachable in both cases: Critical thinking, Effective verbal communication/speaking, Effective nonverbal communication/writing, Collaboration/Teamwork skills, Complex problem-solving, Real-world problem-solving, and Innovation/Innovative thinking.

In connection with the teaching methods, there are three that can foster the development of both types of skills. Table 11 introduces teaching methods for entrepreneurial and future skills which were mentioned in the literature.

Table 11: Entrepreneurial and future skills teaching techniques (source: own compilation)

Entrepreneurial skills teaching techniques	Future skills teaching techniques
International internship	International studies
	International mobility
Successful entrepreneurial role models	Applied learning experience
Signature pedagogies	Active learning experience
	Skill-based trainings
Flipped Classroom	
Debates	Discussions
Simulations	Putting students to real-world situations

First, international elements like international internship, study and mobility appeared in the case of entrepreneurial and future skills teaching techniques as well. It means international experience is important to develop skills from both categories. Second, introducing successful entrepreneurial role models to students could have the same approach as the applied learning methods in the future skill group. Both methods are practice-oriented and show real-world examples and situations to students. In connection with that, simulations – which are also based on real-world examples - are mentioned regarding entrepreneurial skills development. It has the same approach, like putting students in real-world situations in case of future skills development. Finally, the signature pedagogies (flipped classroom, learning through failure, access to open educational resources) have similar approaches like active learning experiences and skill-based trainings. These methods aim to train students with active involvement in problem-solving and apply the learning-by-doing approach.

This chapter introduced the collected entrepreneurial and future skills-related literature and then compared it to each other. First, the literature collection processes were briefly introduced and then the content was analysed and categorized into emerging topics. As it can be seen, entrepreneurial skills were easier to interpret than future skills thanks to the diverging topics in the case of future skills. However, the content of the involved studies created a logical structure for the literature review in both cases.

I can conclude that several similarities can be identified between the topics of entrepreneurial and future skills. For example, Hermann and Bossle (2020) raised the attention to the importance of sustainability approach involvement in entrepreneurial-related programmes. In connection with that, actors like UNESCO (2015) have

sustainability related expectations (AGENDA 2030 programme), which indicates that each university has to fulfil its sustainability and quality-related requirements and so provide quality education. Next to this, Fleaca (2017) raised attention to the improvement of digital skills during entrepreneurial programme. As digitalization is one of the driving global trends in the area of future skills (García-Pérez et al., 2021; Davies et al., 2011), HEIs have to involve digital skills into their programmes, to fulfil the actor's requirements. Digital skill also appeared in the future skill list of Ehlers and Kellermann (2019), Kotsiou et al. (2022), Brasse et al. (2023b) and our own skill lists which also confirms its relevance in the current and future HEI programmes. Furthermore, the World Economic Forum (2022), raised attention to the importance of human-related skills, as these are impossible to replicate in a machine. They highlight, for example, critical thinking and problem-solving skills. HEIs can support the development of them during entrepreneurship programmes, as Cekule et al. (2023) marked creativity as teachable, and Rodriguez and Lieber (2020) highlighted the teachability of critical thinking, and problem-solving skills.

7. RESULTS OF CORPUS-BASED CONTENT ANALYSIS

The goal of this part is to discover the top 100 business and management related universities' communication about entrepreneurial skills and future skills. In the following the results will be introduced in detail, first related to entrepreneurial skills, and secondly related to future skills. Finally, the method of Structural Topic Modelling (henceforth: STM) were utilized based on Roberts et al. (2013). It could help to identify the main topics discussed in the texts and also make possible to discover entrepreneurial and future skills related topics considering the FREX (Frequency and Exclusivity) scores and word probabilities (Bischof & Airoldi, 2012). All analyses were performed on the *"Programme"* corpus in order to discover the skills involved in the programmes.

Before introducing the results of entrepreneurial and future skills related statistics, the dissertation provides some general information about the corpus.

As it was mentioned in the Research Methodology chapter (Chapter 3), the sample contains 100 business and management related universities from the list of THE. These universities' ranks were between 1-100 in the year of 2019. Figure 25 shows the regional distribution of the institutions.
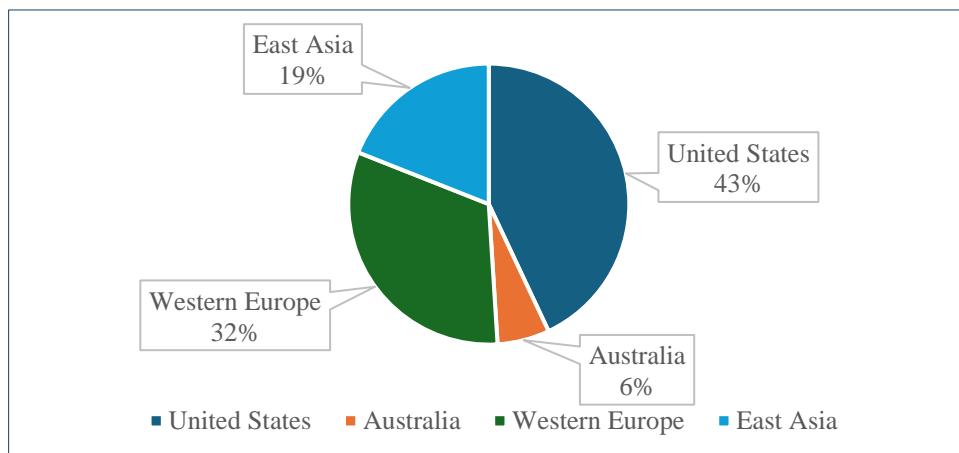
Figure 25: Regional distribution of the institutions (own compilation)

Most of the universities (43%) are from the United States. It is followed by the institutions from Western Europe (32%) and from East Asia (19%). Finally, Australia provides 6% of the universities to the list of THE in 2019.

Appendix 7a-7e contain the detailed list of institutions which were involved in the analysis.

In the following the dissertation continues with descriptive and other kind of statistical analysis first related to entrepreneurial skills, and second related to future skills.

7.1. Process of Analysis

First, it is important to clarify the source of data which were used during the analyses. In case of the entrepreneurial skills, the synthesised skill list was used (see in Appendix 2a & 2b). Regarding the future skills the synthesised list of Bakhshi et al. (2017) were used (Figure 24). Future skills can be observed from several different aspects (as it can be seen in the future skills literature review part in Chapter 5). Because of it, only one currently existing list were applied for the corpus-based content analysis. However, the list of skills was ready to use for analysis, it was easier to apply the grouped skills in both cases (Appendix 2a & 2b in case of entrepreneurial skills, and Figure 24 in case of the future skill and) for t-SNE clustering. This grouping logic helps to answer the questions to what extent did the different future skills groups appear on the top 100 business and management-related universities' programme descriptions and what is the relation between the groups' appearance in the corpus. Based on these categories it becomes possible to detect the differences between the frequency of the skills groups' appearance.

It was important to handle the skills which contains two or more words. In these cases, only those appearances were considered, when all given words followed each other in the pre-defined sequence. Otherwise, the results could be misleading.

After the categorization of skills, the method of t-distributed Stochastic Neighbourhood Embedding (henceforth: t-SNE) method were used (Wattenberg, et al., 2016). It means the 7 future skills categories and the 8 entrepreneurial skills categories were mapped to a two-dimensional plane. It could lead to better clustering results and help us to visualize the clusters.

In the following, the results of the above introduced analyses will be presented related to the entrepreneurial skills and then the future skills. First, the dissertation will present the skills involvement into the texts in general (via descriptive statistic), then the identified clusters (via t-SNE clustering) considering the ranking and regional aspects of the institutions.

7.2. Entrepreneurial Skills Clustering

In the following the dissertation will introduce the results of the entrepreneurial skills related corpus-based content analysis.

Based on the results of clustering the top 100 universities by entrepreneurial skills, two groups appeared. One smaller group with 14 institutions, and one larger group with 86 institutions. Figure 26 shows the two clusters and the universities in them.
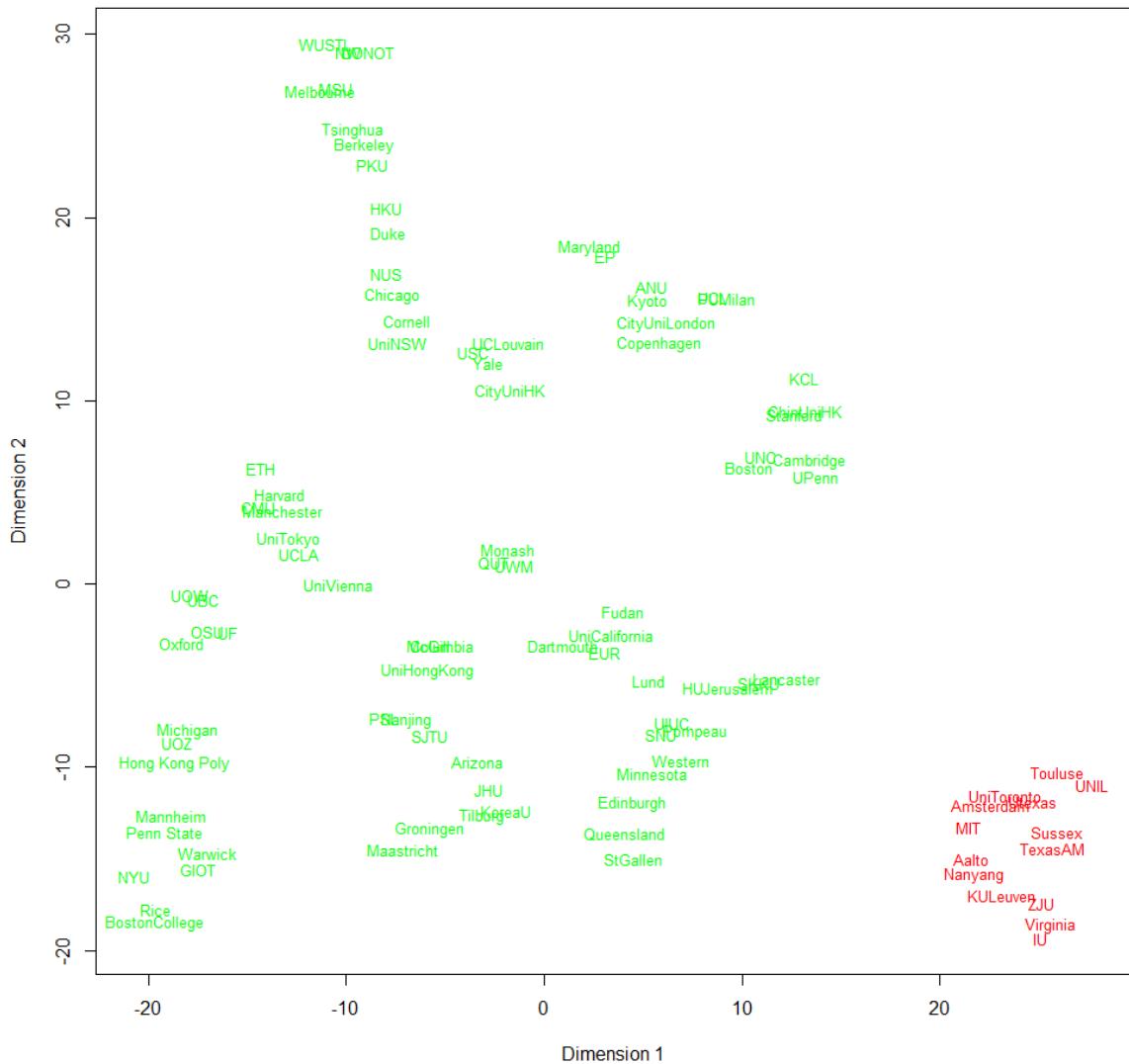
Figure 26: Results of t-SNE clustering related to entrepreneurial skills (compiled by Márton Rakovics)

The first group (marked with red on the figure) contains skills from the innovation skill group in the largest proportion (57,4%), so they are the Innovator universities (henceforth: Innovators). The second group (marked with green on the figure) contained managerial related entrepreneurial skills the most (46,8%), they are the Manager universities (henceforth: Managers). Figure 27 introduce the skills' proportions in case of both clusters.
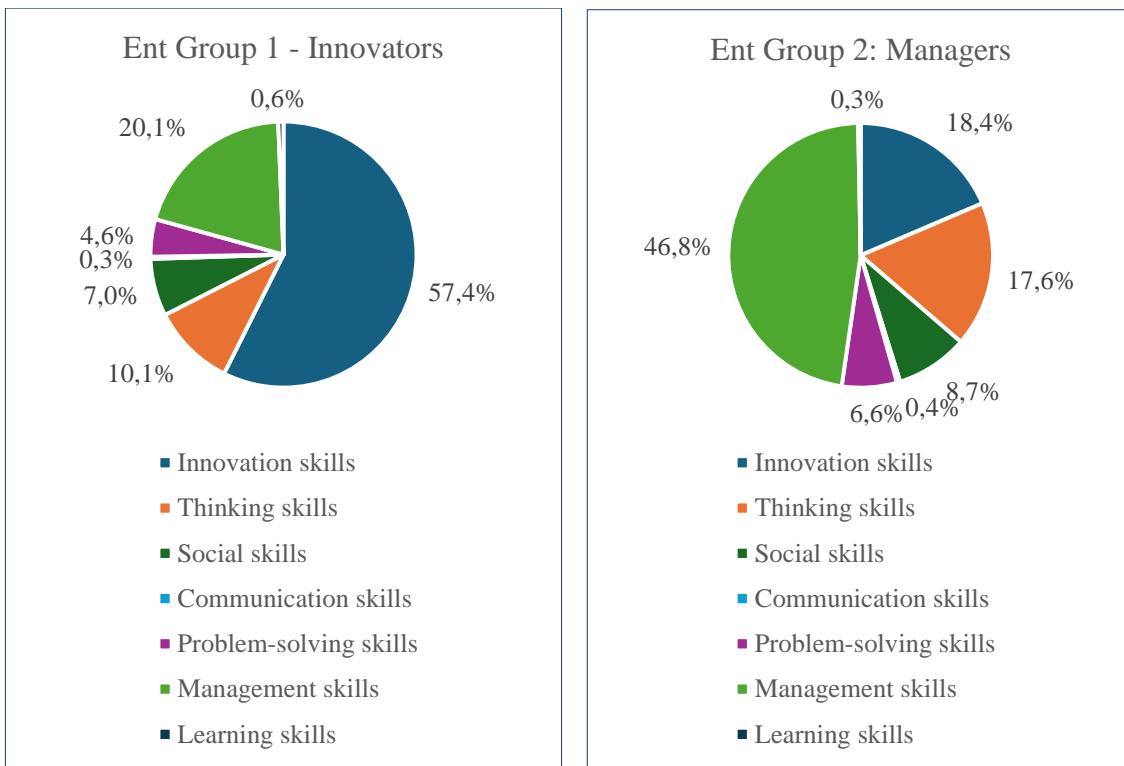
Figure 27: Skills' proportions in case of the two entrepreneurial clusters (source: own compilation)

Based on the ranking, there is not such a difference between the two groups. In case of the Innovators, the average rank is 58, and in the case of the Managers it Is 50,1. Managers have a bit of advantage as the average ranking is 7,9 higher than in case of the Innovators. It seems like mentioning innovation or managerial related entrepreneurial skills on the websites are not really depending on the ranking of a university. Figure 28 shows the average ranking in the clusters.
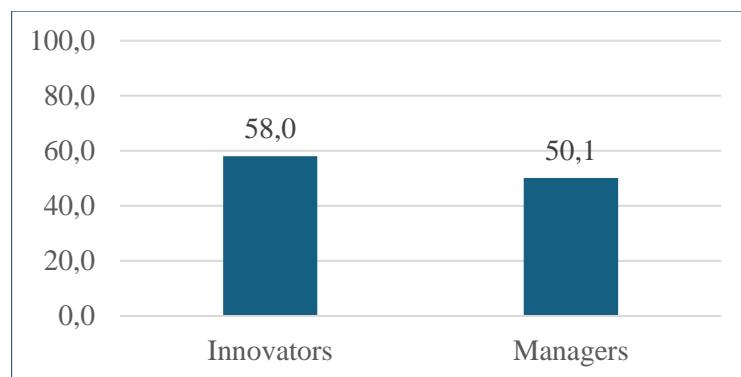
Figure 28: Average ranking in the Entrepreneurial skills clusters (source: own compilation)

Regarding the geography, Figure 29 introduces the two groups' distribution by continents. As it can be seen, 42,9% of the Innovators are from North America, other 42,9% are from Western Europe, and the remaining 14,3% are from East Asia. There are no universities

from Australia in this group. 44,2% of the Manager universities are North Americans, 30,2% are Western Europeans, 18,6% are East Asians and the remaining 7% are Australians.
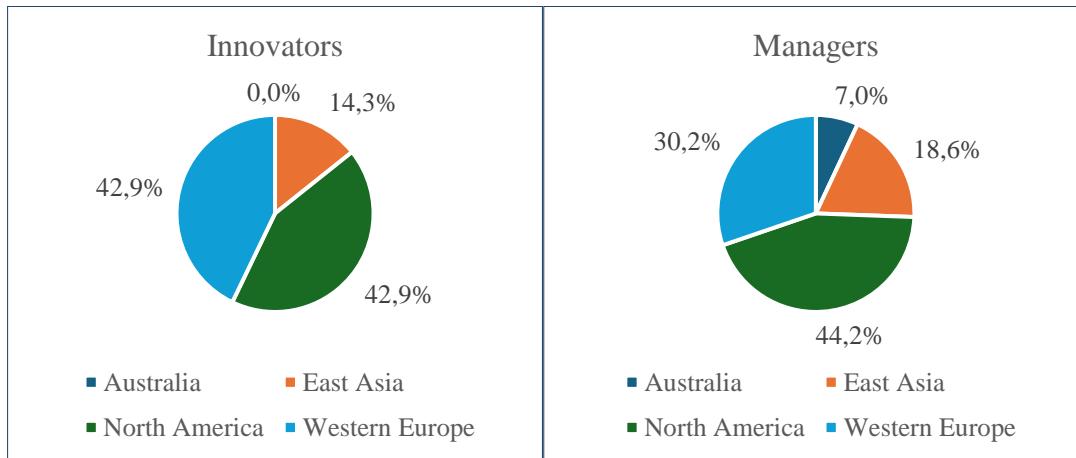
Figure 29: The two clusters' distribution by continents (own compilation)

The proportions of Universities from North America are almost similar (42,9% and 44,2%). The situation is the same in case of East Asia as the proportions are 14,3% and 18,6%. There is a difference (12,7%) between the proportion of Western European universities. The appearances of them were higher in case of the Innovators group. Finally, the Australian universities appeared only in case of the Managers. Based on the diagrams it seems like Australian institutions are preferring managerial related entrepreneurial skills more than innovation related skills.

7.3. Future Skills Clustering

In the following the dissertation introduces the results of the future skills related corpus-based content analysis.

The results presented in this part were published earlier in a conference proceeding. The content of this sub-chapter was created based on the article of Szendrei-Pál, et al. (2021).

In the following the process of clustering the top 100 business and management-related universities will be introduced in detail. The involved institutions were clustered by the proportion of skills relative to one another in the corpus. As it was mentioned earlier, with the help of t-SNE the original seven skills group were reduced to two before hierarchical clustering. The analysis identified four clusters, which have different skill distributions compared to the general proportions. These can be characterized by a skill group each for

which the differences are most salient. Figure 30 shows the results of the clustering. In the following I introduce the details of each category.
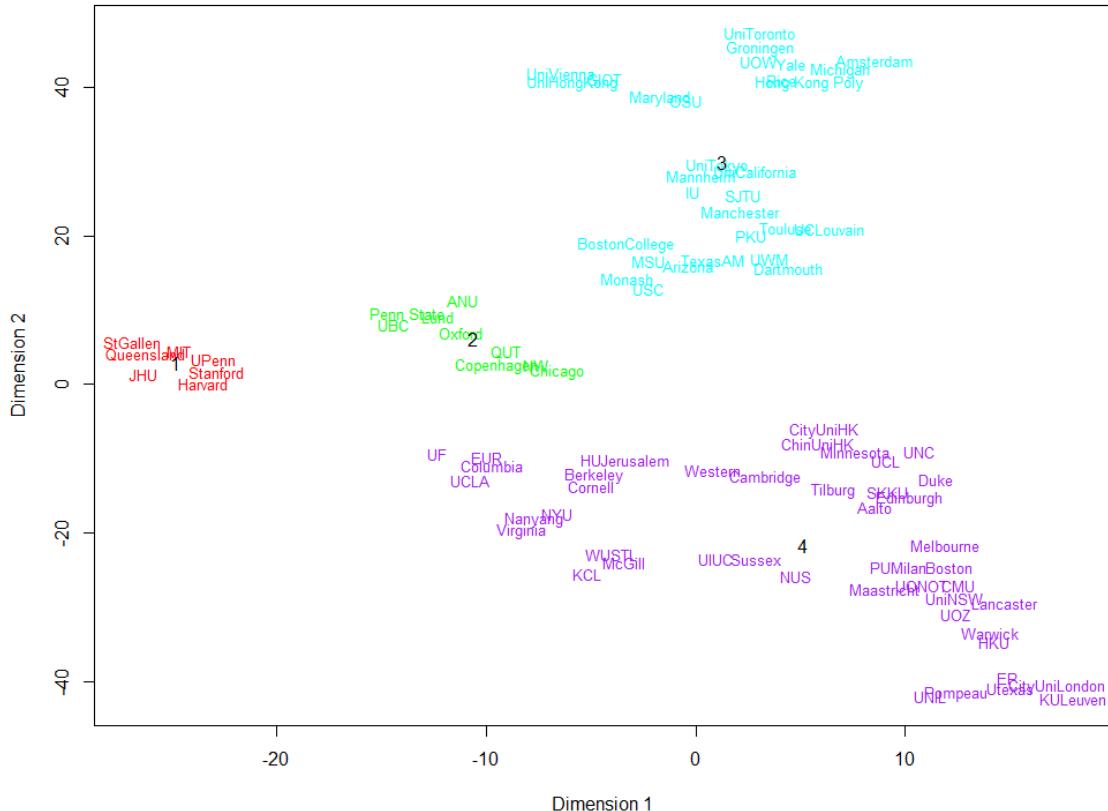
Figure 30: Results of t-SNE clustering related to future skills (source: Szendrei-Pál, et al., 2021, p.11)

As it can be seen, each colour marks a group of institutions. The first cluster's (marked with red) name can be the Social group, because these universities' programme descriptions refer to social skills the most. The second cluster (marked with green) contains the Solvers. These institutions' texts contain twice ratio of problem-solving skills references than the average. The members of the third cluster (marked with blue) were emphasized management skills the most, so their name can be the Managers. Finally, the Tech universities can be seen is the fourth cluster (marked with purple). Their programme descriptions contained technology related skills in the highest proportion relative to others. Figure 31 shows the proportions of the four skills (the other three skills are omitted) for each cluster separately.

Figure 31: The proportion of skills within each cluster (source: Szendrei-Pál et al.*, 2021, p.12)*

As it can be seen on the figure of the Social cluster, these institutions have the highest proportion of social skills, however, they also have the lowest percentage of problems solving skills. The Solver cluster has the highest percentage of problem-solving skills relative to other groups but also has the second highest proportion of social skills as well. The Manager cluster is determined by the high percentage of management skills. The institutions in this group did not substantially mention other skills in their programmes' descriptions on their websites. The Tech group shows almost equal emphasis on management and technological skills, but the technological skills' proportion is a bit higher relative to others.

The THE rankings of schools can be connected to the skill distributions as well. Figure 32 shows the average of university ranking in each cluster.
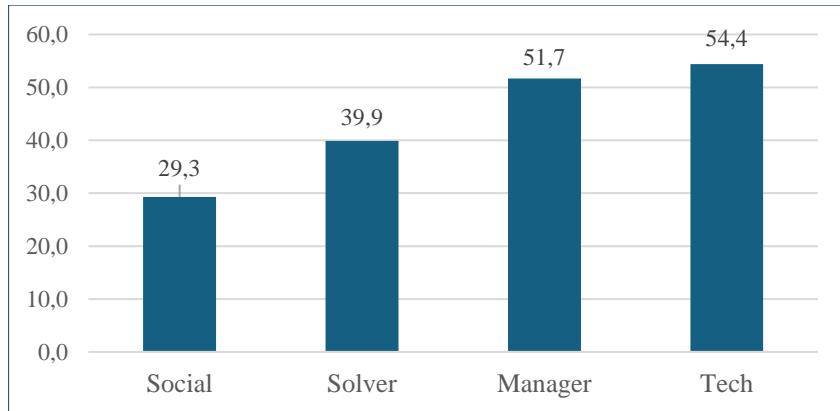
Figure 32: Average THE rank in the clusters (source: Szendrei-Pál et al., 2021, p.13)

To interpret the figure, it is necessary to clarify that the lower the average the better the ranking of the institutions in the cluster.

The universities which are in the Social or Solver groups have a significantly better average rank than institutions of the other two groups. As it can be seen based on the figure, higher proportion of social or problem-solving skills involvement in the texts is related to better rankings.

In the following, the regional aspect of the four clusters will be introduced. Figure 33 shows that 4 regions were identified: Australia, East Asia, North America, and Western Europe.
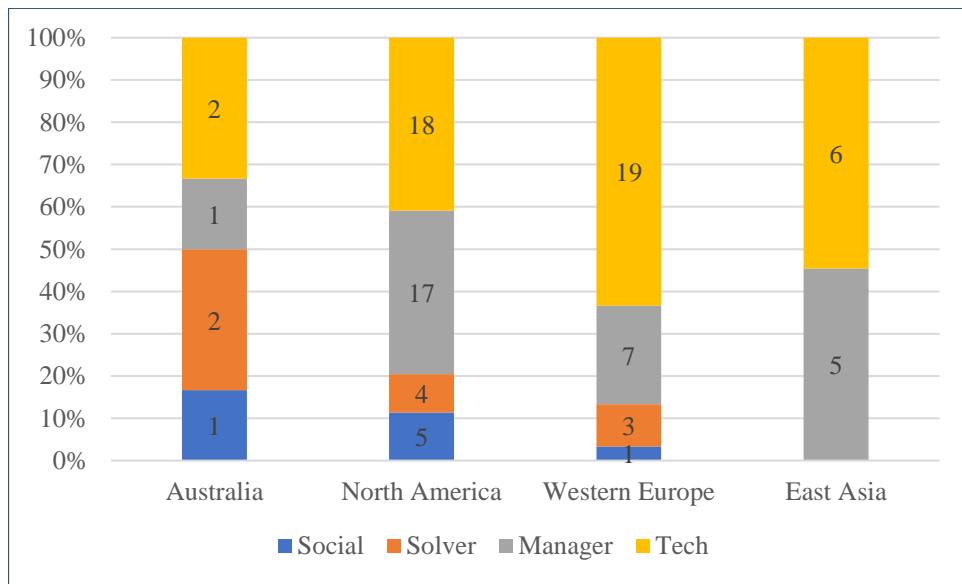
Figure 33: Regional differences (source: Szendrei-Pál et al., 2021, p.13)

In consideration of the proportion of skills groups relative to each another, Australia seems to the most balanced region. All investigated four clusters appeared here, and furthermore, the appearances are almost the same in case of each skills group. The figure shows that in Australia Solver and Tech universities appeared the most, but both Social

and Manager clusters emerged in a relatively great proportion. All 4 clusters appeared as well in the text of universities from North America, however the emphasis of the groups are not as balanced as in case of Australia. The technological skills are dominant in the region, and the social skills are more emphasized than the problem-solving skills. The texts of universities from Western Europe contain many technological skills and it presents even greater differences between the ratio of clusters to one another. In the case of the remaining two skills groups in the region the problem-solving skills are more emphasized than the social skills. Last but not least, in East Asia only technological and managements skills appeared in the texts, and there is no other kind of skills mentioned in the programme descriptions.

7.4. Comparing the Results of Clustering

In case of the future skills 4 groups appeared as a result of the clustering: Social, Solvers, Managers and Technological universities. There were two groups identified in case of entrepreneurial skills: Innovators and Managers. Table 12 shows the distribution of the institutions between the categories regarding the entrepreneurial and future skills' dimensions.

Table 12: The distribution of the institutions between the clusters regarding the entrepreneurial and future skills' dimensions (source: own compilation)

	Ent skill 1 - Innovators	Ent skill 2 - Managers
Fut skill 1 - Social	1%	7%
Fut skill 2 - Solvers	-	10%
Fut skill 3 - Managers	5%	27%
Fut skill 4 - Technological	8%	42%

As it can be seen, the most popular category is the section of Technological future skills group and the Managers entrepreneurial skills group. 42% of the institutions take place here. It means on the one hand these institutions belonged to Technological skills group based on the results of futures skills clustering. On the other hand, these universities were dedicated to the Managers entrepreneurial skills group based on the entrepreneurial skills content of their programme descriptions. The second most popular category (28%) is the combination of Managers-Managers category. These institutions highlighted the most management-related skills from both aspects. The remaining institutions' 1-10% belong to the remaining dimensions. There were not any universities in the Solvers-Innovators cutting. The detailed list of universities in each segment are available in Appendix 8a and 8b.

Figure 34 shows the proportion of future skills groups in case of Innovators and Managers entrepreneurial clusters.
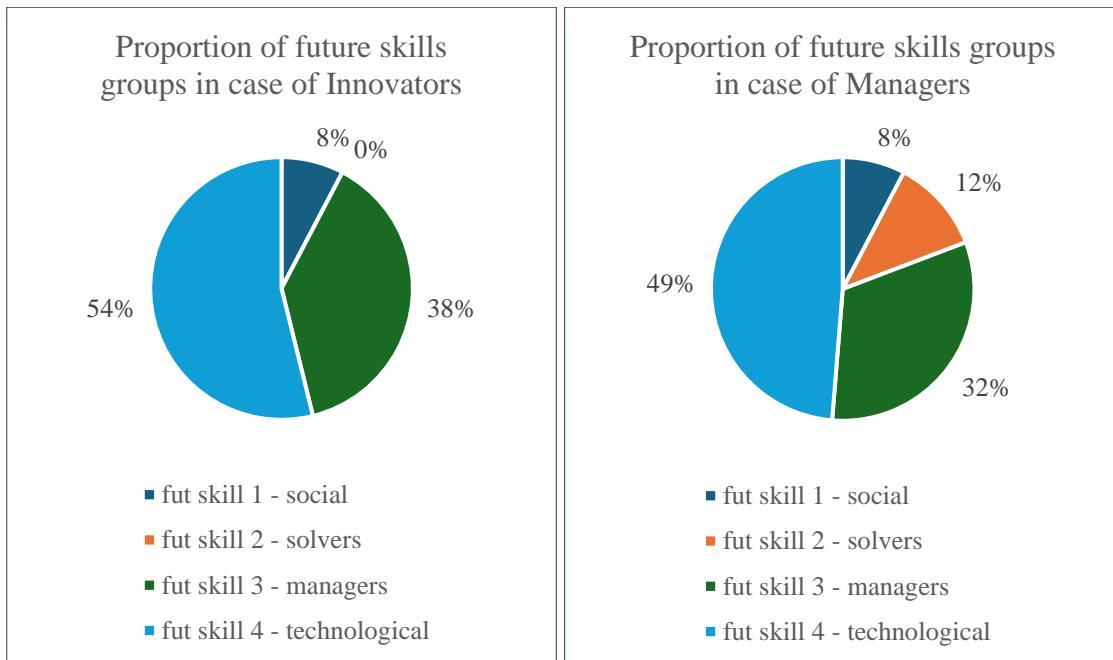
Figure 34: Proportion of future skills groups (source: own compilation)

As Figure 34 shows, the proportions of three categories are very similar. First one is the Technological future skills cluster which is the highest in both cases. It is 54% in case of the Innovators, and it is 5% less in Managers group. The second one is the managers future skill group 38% in case of the Innovators and 32% in case of the Managers. The third one is the social skills which appeared 8-8% in both categories. Solver future skills group appeared only in case of Managers entrepreneurial skills group (12%).

Table 13 introduces the average ranking in each dimension. The best one is the Social-Innovators category, where the average is 1. It is important to note, there is only one university in this category, however that is the 1st university on the list of THE (the Massachusetts Institute of Technology). The second category where the average rank is the highest is the combination of Social-Managers clusters. The average here is 34. The third group is the Solvers – Managers, where the average ranking is 39,9. The lowest ranking was in the case of Managers-Innovators cluster combination, it is 59,8.

Table 13: Average ranking of institutions in each dimension (source: own compilation)

	Ent skill 1 -innovators	Ent skill 2 - managers
fut skill 1 - social	1	34
fut skill 2 - solvers	-	39,9
fut skill 3 - managers	59,8	50
fut skill 4 - technological	52,4	52,3

There are some differences between the regions regarding the most popular combination of entrepreneurial and future skills clusters. The tables in the following will introduce how many percent of the universities are from the investigated region in case of each dimension.

In Western Europe the most popular combination is the Technological future skills group and the Innovators entrepreneurial skills group (57%). The second one is the Technological – Managers segment with 39%. Table 14 shows the proportion of Western European universities within each cluster.

Table 14: Proportion of Western European universities within the clusters (source: own compilation)

Western Europe	Ent skill 1 - innovators	Ent skill 2 - managers
fut skill 1 - social	0%	17%
fut skill 2 - solvers	-	33%
fut skill 3 - managers	40%	20%
fut skill 4 - technological	57%	39%

Next region is North America, where the highest proportion was 100% in case of Social and Innovators groups' cutting. It is important to not also, there were only one university here (the Massachusetts Institute of Technology). The second largest proportion was the combination of Social and Management clusters with 67%. The most dominating aspect in case of North America was the Social. Other percentages are available below in Table 15.

Table 15: Proportion of North American universities within the clusters (source: own compilation)

North America	Ent skill 1 - innovators	Ent skill 2 - managers
fut skill 1 - social	100%	67%
fut skill 2 - solvers	-	44%
fut skill 3 - managers	60%	60%
fut skill 4 - technological	29%	37%

In the Australian region the highest proportion is 22% in case of the Solvers-Managers group. There were not any Australian universities which would belong to the Innovators entrepreneurial skill group, so this aspect is not relevant. The most popular future skill cluster is the Solvers. Table 16 shows the proportion of Australian universities.

Table 16: Proportion of Australian universities within the clusters (source: own compilation)

Australia	Ent skill 1 - innovators	Ent skill 2 - managers
fut skill 1 - social	0%	17%
fut skill 2 - solvers	-	22%
fut skill 3 - managers	0%	0%
fut skill 4 - technological	0%	8%

The East Asian region belongs to the combination of Managers – Managers clusters. 20% of the universities are from this region in this segment. East Asian universities can be considered as management dominant institutions based on their programme descriptions from both entrepreneurial and future skills aspects. Table 17 shows the proportion of universities within each dimension.

Table 17: Proportion of East Asian universities within the clusters (source: own compilation)

East Asia	Ent skill 1 -innovators	Ent skill 2 - managers
fut skill 1 - social	0%	0%
fut skill 2 - solvers	-	0%
fut skill 3 - managers	0%	20%
fut skill 4 - technological	14%	13%

Finally, only one university was from the Middle East, and it belonged to the combination of Technological – Manager clusters.

Summary of the regional distribution in case of each segment can be seen in Appendix 9.

The most popular skill combinations in the programme descriptions among the top 100 universities was the Technological future skill cluster and the Managers entrepreneurial skill cluster, as 38 institutions belong here (e.g., Stanford, Oxford, Yale, University of Vienna) (Appendix 8a & 8b). Regarding the geographical distribution of the universities within this segment, Western European (39%) and North American (37%) HEIs are dominating.

There were no universities that would apply the combination of problem-solving future skills and the innovation entrepreneurial skills in their programme description. Additionally, more universities used management-related entrepreneurial skills than innovation skills in their texts. It indicates that teaching managerial skills during the programmes is still dominant in most top 100 HEIs. However, the first university on the 2019 THE list (MIT) is the only institution which applies the combination of innovation entrepreneurial skills and social future skills groups in its programme descriptions. The

second (Stanford) and third (Oxford) HEIs on the 2019 THE list also belong to categories, which were not popular among other institutions. It seems like there is a possible connection between the ranking and the applied combination of entrepreneurial and future skills in the HEIs' programme descriptions.

In the following the dissertation presents the case studies of two HEIs, from which one (Aalto University) is on the list of top 100 business and management-related universities.

8. CASE STUDIES

In this part of the dissertation, I introduce two case studies: Aalto University's Sustainable Entrepreneurship MSc programme and BUEB's Business Development MSc programme. At the end of the chapter, I compare the two cases based on their main attributes (e.g., skill content of the programmes, legal environment, etc.).

8.1. Case Study 1.: Aalto University – Sustainable Entrepreneurship MSc

First, I introduce the Aalto University: I summarise the institutions' history, values, and international ranking. After that I present the details of the programme design and the main attributes of the programme. Then, I analyse the skill content and applied teaching methods which I could identify in the online available materials. Finally, I also compare the results of the corpus analysis with the case study's results. During the case study, I introduce the interview results, which I performed with Tamara Galkina, the leader and one of the founders of programme.

The Context of Aalto University

The Aalto University is in Finland, Espoo, Otaniemi, and it was established in 2010, as the result of the merge of the Helsinki School of Economics, Helsinki University of Technology, and the University of Art and Design Helsinki. Aalto has 6 schools: Science, Engineering, Electrical Engineering, Chemical engineering, Business, and Art, Design and Architecture. The purpose of the university is to shape a sustainable future. Aalto's mission is *"We spark the game changers of tomorrow"*. The values are responsibility, courage, and collaboration. They also highlight in their introduction that *"We shape a sustainable future – Aalto University is where science and art meet technology and business"*. (www.aalto.fi, n.d-1)

Aalto was in the 62nd place on the top 100 business and management-related HEIs in the THE list in 2019. Figure 35 shows the change in Aalto's ranking from 2019 to 2024. However, the actual ranking of Aalto is lower than it was in 2019, it still belongs to the top universities in the business and management field. (www.timeshighereducation.com, n.d.)
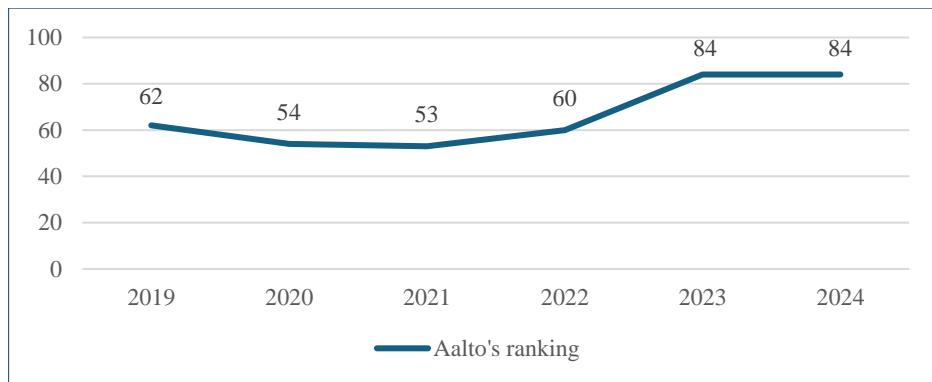
Figure 35: Aalto's ranking (2019-2024) (source: own compilation based on www.timeshighereducation.com, n.d.)

Aalto has a strong entrepreneurial mindset, furthermore, it is involved in their culture based on the next statement on their website: *"Aalto fosters a thriving entrepreneurial culture"* ([www.aalto.fi](), n.d.-2). Additionally, entrepreneurship is also part of the strategy of Aalto Business School, and as a result, this approach is part of almost every programme (e.g., even finance programmes have entrepreneurial-related courses, like entrepreneurial finance to be align with the university strategy) (Galkina, personal communication January 31, 2024). The website also highlights some entrepreneurial capabilities, like courage, curiosity, value creation, taking ownership, having intrinsic motivation, owning up mistakes, and tenaciously getting back up again. Their goal is to advance these capabilities by supporting student-driven activities and initiatives. They consider opportunity seeking, sustainable social and economic value creation, and pursue the opportunities under uncertainty. They emphasize that having an entrepreneurial mindset is useful for everyone, not only for people who want to become an entrepreneur ([www.aalto.fi](), n.d.-2).

The Aalto Ventures Programme (henceforth: AVP) supports students to become entrepreneurs, and the programme is available for each student of Aalto. With the help of AVP, the university fosters students to be entrepreneurs, and they raise students' attention that being an entrepreneur is more than just becoming a founder ([www.avp.aalto.fi](), n.d.). Entrepreneurs also have to find solutions to problems where others see only problems, and they have to take responsibility and ownership of their actions. Bymann (2020) stated, *"We consider entrepreneurship to be a way of thinking and doing, not just an occupation"*. The goal of the AVP is to equip students with tools to be able to build, learn and act like an entrepreneur and in connection with that, they highlighted this way of thinking and doing can be taught and learned at Aalto (Bymann, 2020).

The Development and Characteristics of the Programme

As the programme was established in 2024, I introduce the design process because the challenges they faced during this period can be a useful lecture for each university who are planning to set up a new MSc programme in this field. First, I present the motivation behind the programme, then I introduce the steps of the design and establishment. After that, I collect the involved stakeholders and their expectations, and then I present the specification of intended learning outcomes. Finally, the process of how they selected the courses for the programme will be proposed as well.

At the beginning of the interview, Galkina shared the motivation behind starting the new MSc programme. She mentioned three main reasons, but there were many more. The first one was the external demand. They observed what kind of skills and expertise industries, companies, and society in general are looking for. To respond to that need, this programme provides a solution to sustainability challenges and the growing demand of different professionals who can tackle these challenges. As a result, the students who finish this programme will be able to lead and motivate the transition of existing business processes and follow the changes in public policies, which change towards sustainability. They can monetize sustainability toward new venture creation. The second motivation was an internal one, which was the general enthusiasm between different units of Aalto. Galkina shared that they are always encouraged by the management of Aalto to work together with other units, however, these contributions rarely happened until now. Luckily, this programme was created with the collaboration of several units (e.g., the entrepreneurship unit at the Department of Management and the AVP). The third motivation was the growing demand for graduates to have sustainability and entrepreneurship-related experience. Kuikka (2023) announced a survey in her conference paper, which was created with university students. The results showed that students' perception of entrepreneurship is 46% positive and 46% neutral. Additionally, 32% of the students stated that sustainability-related problems can motivate them to become an entrepreneur. These results also encourage them to set up a new programme related to sustainability.

Galkina also mentioned the selling points of the programme. The first one was that they wanted to be distinctive by offering it. In connection with that, she shared some challenges they had to face during the programme creation. There are committees at Aalto that are responsible for the quality of education. They have strict requirements, and the

new programme had to pass through them. In order to do that, the creators had to be convinced that their programme is unique and required by the market and other stakeholders, and they provide a holistic perspective towards sustainable entrepreneurship. Showing the uniqueness of the programme was hard, as a similar MSc, the so-called Creative Sustainability, already existed at Aalto, but they overcame this obstacle as well. The second selling point was the above-mentioned collaboration between different units of Aalto. It resulted in an internal unit design which strengthened the value of the new programme.

Galkina also shared that future issues can be solved through creative enterprises, however, this statement can show a romanticized image of entrepreneurship. Always money comes first, as a successful business needs to be profitable. The Sustainable Entrepreneurship MSc aims to show that sustainability and profit can go hand in hand. Sometimes, solving sustainability-related issues requires sacrifices, and figuring out wicked problems needs a creative approach. The companies' approach in this situation is to become profitable first and then create more sustainable value.

Galkina summarised the process of how they created the programme. It happened in a very emergent way. She and some of her colleagues participated in pedagogical training at the end of 2022. The topic was curriculum development. They had to work in groups, and Galkina and two other professors started to work on and idea of an MSc programme in which sustainability and entrepreneurship are connected. Thanks to their motivation, they discovered the joint interest to realise the idea of the new MSc programme and they started to work on the idea during the training. Within a few weeks after the curriculum development training, they organised the initial meeting where they continued the work. Later, they had more meetings where they discussed the details of the programme and planned further steps of the creation process. They organised workshops, where they invited employees from different units and students as well. The goal of this step was to discover how they understand sustainable entrepreneurship. After that, the bureaucratic part followed: Aalto has several committees (e.g., learning, students), and the idea of the programme had to pass through them. These committees asked them to reduce the credit value of the master thesis (from 30 to 20), and the students were worried about the students' well-being (e.g. big load of courses). They had to handle these problems, but after that, they were free to start the programme. In Finland, they do not have to report

the teaching offerings to the Ministry of Education, only the president of Aalto University has to accept the programme.

Kuikka (2023) introduced a figure to show the exact steps and details of the programme creation process (Figure 36).
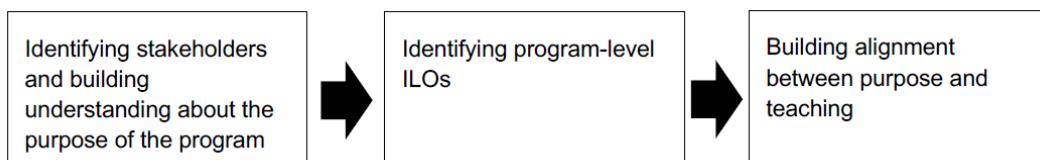
Figure 36: Steps of curriculum development (Kuikka, 2023, p.7)

As a first step, they identified the stakeholders and aimed to define the purpose of the programme. To be able to create a high-quality curriculum, it was critical to identify stakeholders' viewpoints and understand the programme's purpose. The regular interactions with stakeholders fostered the continuous development of intended learning outcomes. As a result, they were able to build alignment between purpose and teaching. (Kuikka, 2023)

In the following, the dissertation will introduce the above-mentioned steps of the programme creation in detail.

Kuikka (2023) introduced five stakeholder groups whose approaches were investigated during the design process. They are the faculty members, potential students, alumni from related fields, industry professionals, and decision-making bodies within the university. Galkina shared that UNESCO and other external organizations and employers were not involved in the development process directly.

The faculty members were from the Science and Business Schools. During the meetings, they set up the plan of actions, roles and responsibilities, intended learning outcomes, and the preliminary programme structure (Kuikka, 2023). The teachers from the faculties introduced the courses which they were currently working on and also shared their interests in developing new courses which could possibly match the new MSc programme. Several workshops were performed with teachers to determine development goals, potential collaborations, and the first drafts of intended learning outcomes. The potential students' group was involved via a survey which was created by the AVP. 13.066 students were asked to fill out the survey in November 2022, and they received 824 responses. The survey contained questions related to entrepreneurial mindset, starting own business, own entrepreneurial skills and capabilities, and whether they saw solving

sustainability-related problems as a motivator to becoming an entrepreneur. The approach of the alumni was investigated through a third-party graduate survey, which was provided by TEK (2022). The survey contained information related to the expertise on students' entrepreneurial capacities, and also employment data which can be used to analyse employers' aspects as well. The survey has 1.785 answers of which 53% were filled by Aalto University graduates. The answers could be used during the curriculum design process. The approach of industry professionals was involved via 7 locally influential entrepreneurs (Kuikka, 2023). They shared their experiences in connection with the knowledge and skills they had found crucial in their careers, and they could make suggestions regarding the content of sustainable entrepreneurship MSc. These aspects were used during the determination of Intended Learning Outcomes. Finally, the decision-making bodies within the university were asked to support them in fulfilling the requirements of regulations and accreditation (Kuikka, 2023).

After investigating all the above-mentioned stakeholders' approaches, they were able to determine the intended learning outcomes. As a result of the programme, students will be able to understand the guiding principles of entrepreneurship, the different aspects of social, environmental and economic sustainability challenges, and how these areas are influencing and connecting to each other. Next to these, they can apply scientific knowledge to identify entrepreneurial opportunities, which includes the aspect of sustainability. Their entrepreneurial mindset will be developed as well, so they will be able to address sustainability challenges in several managerial situations. Finally, developing soft and hard business skills will lead to create sustainable new ventures (Kuikka, 2023). Galkina said that students who will finish this programme do not have to be founders, they can apply the gained knowledge and skills as a corporate entrepreneur or as an impact investor as well. Appendix 10 introduces the details of the learning outcomes.

The final step was to build alignment between the purpose of the programme and the teaching. Kuikka (2023) introduced the first step: The programme creators had several discussions and workshops with the members of the two participating faculties (Science and Business). Thanks to these, they could identify existing courses that are related to entrepreneurship and sustainability. As a result, they could select some currently existing courses that can be applied to the new curriculum as well, and there were courses, that had to be specifically developed for the programme (Galkina, personal communication

January 31, 2024). After that, they opened the search and investigated all courses in Aalto University's course database (Kuikka, 2023). They asked the teachers of the fitting programmes, whether there is a chance to open their courses to the students of the new programme or not. As a result, they received a list of courses suitable for the Sustainable Entrepreneurship MSc. They observed the intended learning outcomes and the list of courses and selected the ones most fitting to the programme. They were aware of making a balance between entrepreneurship and business-related courses. The table in Appendix 10 introduces the connections between the selected courses and the intended learning outcomes. After that, they could divide the course list into two parts: core content and electives. The elective courses were also divided into two parts, which provide an option to the students: they can select a track for themselves. Based on the stakeholder discussion, one way is the sustainable startup track, which is for those who want to create an enterprise. The other way is the corporate entrepreneurship track, which is for students who want to work in the entrepreneurship ecosystem but not in a founder role (Kuikka, 2023).

As a result of the above-introduced design process, Aalto University created a curriculum that provides opportunities for students to gain entrepreneurial knowledge, handle real-world challenges, network with professionals, and participate in mentor programmes while they start their own businesses (Kuikka, 2023). Galkina stated that the programme is not showing the glamorous entrepreneurial type of training as the programme offers different career profiles. Aalto Business School and the AVP work closely together to provide the quality of the programme. Aalto Business School provides an in-depth theoretical understanding of what sustainable entrepreneurship is, while AVP is responsible for the practical knowledge about sustainable entrepreneurship (Galkina, personal communication January 31, 2024).

The Sustainable Entrepreneurship MSc was launched first in September 2024. The length of the programme is two years, and the courses are in English. On the website, they summarise the goal of the programme in the next few sentences: *"This programme brings students of diverse backgrounds together to take concrete steps towards understanding and tackling modern sustainability challenges. Graduates from this programme will possess skills enabling entrepreneurship across a wide range of contexts, including corporations, startups and policymaking. Are you up for it?"* (www.aalto.fi, n.d.-3). Next to this, the programme aims to develop the next generation of sustainable leaders, who

can make positive social and environmental impact. They motivate students to become a solution to the world's most pressing problems with the help of the knowledge and skills they learn and gain during the programme (www.aalto.fi, n.d.-3). 58 students applied to the programme in 2024 from which 16 students were accepted (www.aalto.fi, n.d.-4)

Figure 37 introduces the *"temple"* of the programme, as Galkina called it, which introduces the core content. Galkina highlighted, that these are not just courses put together, there are certain connections. There are three pillars: entrepreneurship, sustainability, and hard skill pillar. These pillars help to develop the entrepreneurial mindset of students and also provide an opportunity to master different kinds of soft and hard skills to become experts. Other master programmes start from more basic courses, but here they start with specific ones, like the foundation of entrepreneurship and entrepreneurial finance. These courses are more theoretical, which would be useful for future PhD students. Later, the programme will deepen the practical understanding of sustainable entrepreneurship from other aspects (e.g., SDGs as entrepreneurial opportunities, Entrepreneurship law in practice). For example, the Startup Experience course is about developing a new, own idea. The final step of the programme is the Capstone Business Development Project. It is an extremely practice-based course, where students can work on a real-world problem, which is based on a concrete entrepreneurial situation. Students work in groups with the help of a representative, and they need to resolve a corporate venturing issue. After they figured out their solution, they present it. This project is part of every master's programme at Aalto University. Galkina shared in the interview that students usually receive an employment offer from the company they worked together during the Capstone Project. The master thesis closes the programme, which also provides practice-oriented knowledge to the students.
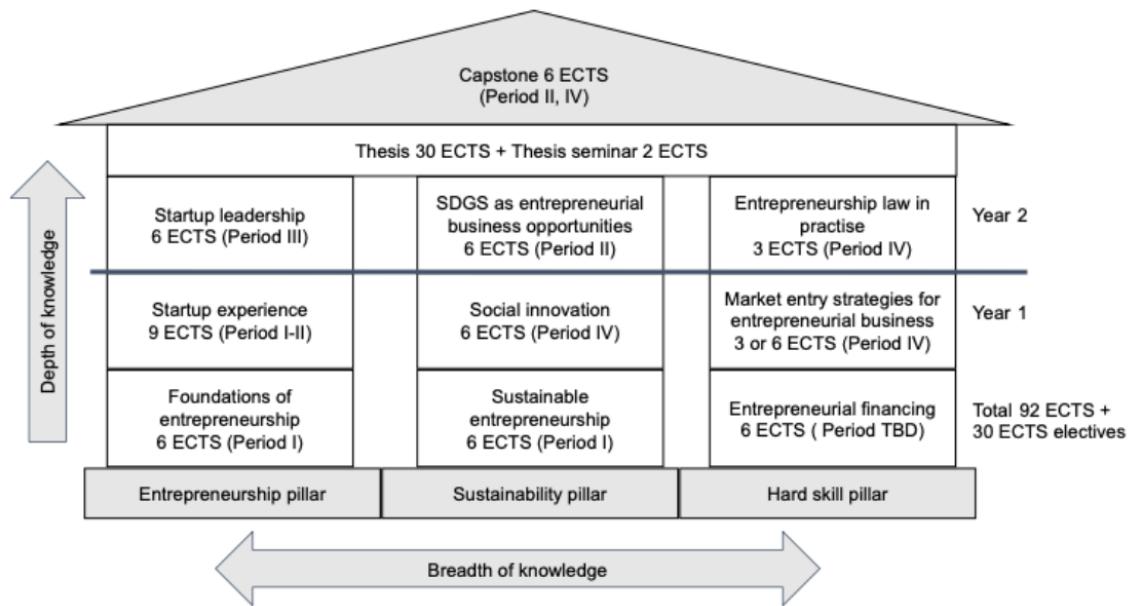
Figure 37: Programme structure of Sustainable Entrepreneurship MSc (source: Webinar about the programme (source: www.youtube.com, 2023)

One of the programme goals is to show students how entrepreneurship can be applied in different settings. Not only founders have to know about sustainable entrepreneurship, but people who work for an existing company (e.g., policymakers who work at the government to be aligned with sustainable development goals during their work) (Galkina, personal communication January 31, 2024). In connection with that, there are two tracks on the programme. The first one is the sustainable startup track on which the future leaders of enterprises can gain the necessary skills and knowledge. This track also fosters startup value creation. The other one is the sustainable corporate entrepreneurship track, which is fit for intrapreneurs, who can bring innovative approaches to an existing company. There are courses like accounting, product development, project management, marketing, HR on this track. The tracks are realised via elective courses. Students can choose which elective courses they would like to take, and the combination of the courses will result in one of the tracks. This free selection is part of the Personal Study Plan, which ensures that students can create their own path. For example, Startup Marketing, Accounting for Sustainability, and Product Sustainability belong to the elective courses (www.aalto.fi, n.d.-3)

The text on the website highlighted that students from different backgrounds are encouraged to select this programme (www.aalto.fi, n.d.-3). In connection with that, Bymann (2020) from the AVP stated in an interview that entrepreneurship is not something only a few people are capable of, anyone can become an entrepreneur and

build something new and innovative. AVP's task is to provide help to everyone to find their tools. As there is no specific profile of the students and there is no specific background requirement toward the students, the students' selection process can be challenging. Galkina shared the selection process of the students in the interview. When students who received their degrees from Aalto University would like to continue their studies at Aalto, they are just accepted, there are no further requirements toward them. The external intake process is different. There are, for example, language criteria and online interviews with the candidates. Regarding the background, everyone is encouraged to apply, it does not matter whether it is sociology or art, specific business knowledge is not required. Galkina said that there is no list of skills and personality traits which has to be checked during the online interviews, the only thing she would like to see is some courage in the students during the interviews, and the motivation to do the programme. The lack of business skills can be an issue, and they are expecting to have problems related to that, however, they decided to take it case by case as they do not have any experience in connection with that. The Individual Study Plan gives room to students to tailor the programme and select the courses which are the best for their knowledge and skills, only the core programme is obligatory for each student.

In the following the programme's skill content will be introduced and the programme's comparison with the results of the literature will happen simultaneously.

Analysis of the Programme from Skill Content and Applied Teaching Methods Aspects

During the literature review, there were conflicting approaches related to the teachability of entrepreneurship. While Schumpeter (1934) stated that entrepreneurial skills cannot be developed at universities, others like Drucker (1985) and Reyad et al. (2019) stated the opposite of it. Aalto University unequivocally stands for the second approach. Even Aalto's strategy highlights the importance of entrepreneurship education at the university. Next to this, AVP also mentions that entrepreneurial thinking and doing can be learned and taught (www.avp.aalto.fi, n.d.).

The stakeholders of a university were introduced earlier in the future skills literature review. During the case study, several actors can be identified in the process of programme development and the curriculum as well. The first one is the employers. However, Galkina mentioned in the interview that they did not involve them directly, 7 industry professionals' (entrepreneurs), who can be considered as an employer, opinions

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were asked in the case of this master's programme. Additionally, the alumni questionnaire also contained employment data, which they can use. Next to this, the Capstone Business Project involves practical examples that are provided by companies, and students have to work together with representatives of these companies. Students' viewpoints were considered as well during the programme creation via a questionnaire that was shared with potential students. During the programme, students have the freedom to tailor their studies via the Personal Study Plan, so the university provides them flexibility, independence, and responsibility via this opportunity. Teachers were involved in the designing process as well, during the discussion with faculties from Science and Business Schools. They could share their innovative ideas related to developing courses for the new MSc programme. The university itself was involved as well, as the committees (e.g., learning, students) had to be aware of the new MSc programme's quality. They were involved directly in the development and evaluation of the programme. Society was not involved directly in the programme, however, teaching sustainable approaches to students can be beneficial to society as well. Next to this, the AVP provides courses that are free to take by everyone within and without the university as well (www.avp.aalto.fi, n.d.). As AVP is part of the MSc, it can be considered as an indirect involvement of them. In connection with the actors, Kuikka (2023) summarised greatly the programmes' relation to the stakeholders of the university: *"A well-designed sustainable entrepreneurship major can benefit students, faculty, business and industry, and society at large by providing the knowledge, skills, and opportunities necessary for socially and environmentally responsible entrepreneurship"* (Kuikka, 2023, p. 8). During the design process, external associations (like UNESCO) were not directly involved, however, the Sustainable Development Goals which were created by them are strongly in the focus. To sum up the stakeholders' involvement, it can be said that all stakeholders' opinions were taken into consideration in the development process directly or indirectly.

In the programme description, they mention lots of skills, which students can gain during the programme. Table 18 introduces these skills, and the related teaching methods as well. Galkina said, there is no official skill list of the programme available, but they developed the skill content in relation to pedagogical principles. They were aware of the job prospects, career profiles and the intended learning outcomes to be articulated in the programme. Table 18 was prepared based on the content of the interview, the programme description on the website, and the YouTube webinar about the programme.

Table 18: Skill content and applied teaching methods of Aalto Sustainable Entrepreneurship MSc (source: own compilation)

Skill type based on the literature	Skills mentioned in the online materials	Referred teaching method in the online materials	Teaching method type based on the literature
Entrepreneurial skills	• Learning through experience • Assessing business opportunities	• Successful entrepreneurial role models • E-learning programmes (Online courses) • Case studies • Guest presentation (foreign & national)	**Entrepreneurial skills-related teaching methods**
Entrepreneurial & Future skills	• Critical thinking • Communication • Collaboration • (Real-world) Complex problem-solving • Leadership • Teamwork • Innovation	• International studies • International internship • Putting students to real-world situations • Active learning experience • Individual projects/task solving	**Entrepreneurial and future skills-related teaching methods**
Future skills	• Interdisciplinary approach to global issues • Encouragement to work/study abroad • Develop intercultural communication • Integrative learning • Appreciation of diverse perspectives • Understand and act on issues of universal significance in today's interconnected world	• Applied learning experience • Collaborative learning experience	**Future skills-related teaching methods**
Not specified skills	• Project management • Sustainable leadership and thinking	• Teamwork & challenge-based learning • Interactive lectures • Peers from professional backgrounds & different cultures	**Not specified teaching methods**

I identified a total of 17 skills, from which two skills are entrepreneurial-related, seven skills are both entrepreneurial and future-related, six skills are future-related, and the remaining two skills are not specified as these skills were mentioned neither in entrepreneurial skills literature nor in future skills literature. Regarding teaching, I could identify 14 different methods in the online available materials, from which four are entrepreneurial skills-related teaching methods, five are both entrepreneurial and future skills-related teaching methods, two are future skills-related teaching methods, and finally, three are not specified teaching methods as they were not mentioned in the investigated literature in connection with entrepreneurial or future skill development.

The university's mission is *"We spark the game changers of tomorrow"* which indicates the future orientation of the institution. The slogan of the investigated MSc programme is *"Shaping a sustainable future"*. The future orientation appears here as well. As it can be seen, the Sustainable Entrepreneurship MSc programme's slogan is aligned with the university's mission. That could be one of the reasons why so many future skills appeared in the programme. The values of Aalto University (responsibility, courage, collaboration) also appeared in the programme. For example, responsibility for the environment, courage to take sustainable business opportunities, and collaboration with others during the Capstone Project. Based on the research of Szendrei-Pál et al. (2021) one of the employers' requirements is sustainability and it is absolutely fulfilled in this programme.

The results of the case study are useful because the process of designing a future-oriented programme can be seen here, and it can serve as an example for others who are planning to do the same. Additionally, the Finnish mentality is unique, and it can be useful for everyone. The way they are providing two specializations (one for future entrepreneurs and one for intrapreneurs) shows they take this approach seriously.

Aalto in the Light of The Corpus-based Content Analyses' Results

Aalto University's online programme descriptions were part of the corpus, as the university belonged to the top 100 business and management-related universities in 2019 (when the corpus building happened). Thanks to the results of the corpus-based content analysis, it is possible to investigate to which clusters Aalto belongs. From the future skills point of view, it belongs to the Tech cluster, which means Aalto mentioned more technological-related future skills than universities in other clusters. From an entrepreneurial skills point of view, Aalto belongs to the Innovator cluster, which means Aalto mentioned more innovation-related entrepreneurial skills in their programme descriptions relative to other universities from the other entrepreneurial skill cluster. Figure 38 shows the geographical distribution of the universities that belong to the same clusters as Aalto.

	Entrepreneurial skills Cluster 1 Innovator
Future skills Cluster 4 Tech	 ■ Australia ■ East Asia ■ Middle East ■ North America ■ Western Europe
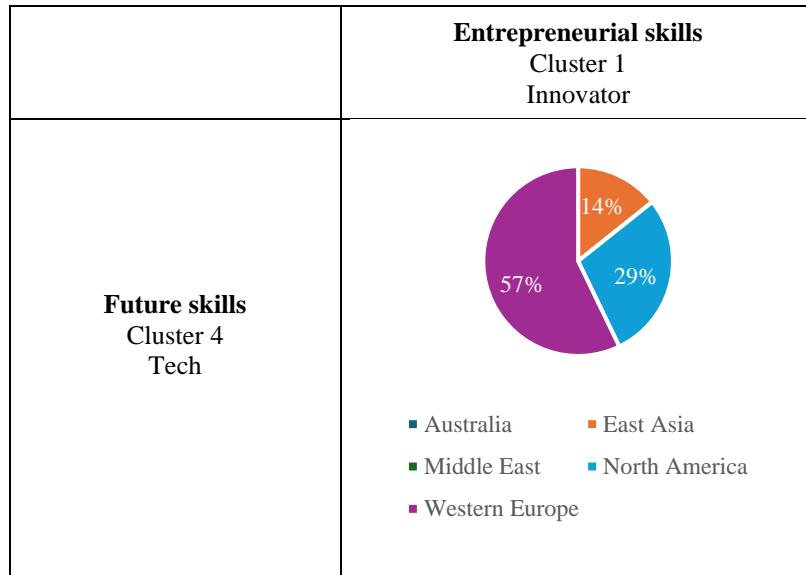
Figure 38: Geographical distribution of universities that belong to the same clusters as Aalto University (source: own compilation)

As can be seen, 57% of universities are Western European, which means the combination of the mentioned skill groups is popular among universities in this area. It is important to note that the ratio of Western European universities is the highest in the case of this combination of the skills clusters. This suggests that the entrepreneurial and future skill content of Aalto's communication is similar to other universities' communication in the region.

As the programme texts were collected in 2019, the results are hard to compare because the description of the new MSc programme appears on the website only in 2023. In spite of that, the technological skill group covers inventing and innovation orientation, which is the essence of the Sustainable Entrepreneurship MSc programme, so the result of the corpus-based content analysis can be considered verified based on the case study.

Galkina's strongly believes an entrepreneurial programme can increase the chances of someone becoming an entrepreneur, and she states, "*The more you hear about entrepreneurship, the more likely you become one*". Aalto can graduate hundreds of students, and if five become entrepreneurs, that would be a great outcome. Students can go to companies, where, for example, they can establish units and transfer their sustainable entrepreneurship-related knowledge to business practices, which would be a great outcome as well.

8.2. Case Study 2.: BUEB – Business Development MSc

First, I introduce the legal context of BUEB, in which they have to operate. After that, I summarise the history and the main attributes of the programme. Then, I present the skill content and applied teaching methods which I could identify in the online available materials, and I also compare the case study's results with the corpus-based content analysis results. During the case study, I introduce the interview results, which I performed with Prof. Dr. Balázs Heidrich, one of the founders of the programme.

Hungarian Legal Context and BUEB

The Act CCIV of 2011 on National Higher Education determines the legal framework for the operation of HEIs. The purpose of this act is to create the necessary conditions for raising the quality of higher education and for the transfer and acquisition of competitive knowledge. According to the 16/A § the Minister (Ministry of Culture and Innovation) publishes the training and outcome requirements as an official publication on the website of the ministry headed by the minister. (Act CCIV of 2011 on National Higher Education). The document about the training and outcome requirements is available on the website of the government of Hungary (The Government of Hungary, n.d.). It summarises the goals and the main attributes, and the expected skills and knowledge in the case of each bachelor's and master's degree programme. The Hungarian Accreditation Committee (henceforth: HAC) is an organisation whose task is to check whether the requirements are fulfilled in the case of each programme. Its mission is *"The HAC is a national expert board for monitoring, safeguarding and evaluating the quality of teaching, scientific research and artistic activities in higher education."* (www.mab.hu, n.d.). The committee performs an external evaluation of the education and education-related research activities in order to be convinced about the quality (www.mab.hu, n.d.). For example, they perform an initial evaluation of education and learning outcome framework requirements of Master programmes, initial accreditation of Master programmes, and accreditation of institutions in five-year cycles (www.mab.hu, n.d.). In the case of BUEB, the latest order and report of the institution's accreditation is from 2024 (www.mab.hu, 2024). The committee was satisfied with the university's activities and the way of its operation, and as a result, the committee accredited BUEB for 5 years (it is the maximum period for which a university can be accredited).

Heidrich (personal communication, 31.03.2025) confirms that starting a new and innovative programme was challenging because of the given skill list in the training and

outcome requirements. Since the beginning of the Business Development programme, the HAC has indicated some reforms in their requirements, so the skills on the list become more generalist, and it is easier to involve them into the programmes. Independently from that, there were some ideas that had to be dissolved in order to avoid the skill overload in the curriculum.

BUEB is located in Hungary, Budapest and it has 3 faculties: the Faculty of Commerce, Hospitality and Tourism, the Faculty of International Management and Business, and the Faculty of Finance and Accountancy. The legal predecessor of BUEB was Budapest Business School, which was established in 2000. In spite of that, the history of the university is longer than 160 years thanks to the legal continuity of other predecessor institutions. BUEB is the biggest business university in Hungary as the number of its students is about 20.000. Based on the website, the reason behind the university's popularity is their programme structure which is experience-based and practice-oriented. The university tailored its programmes to the market needs and considers sustainability, internationalisation and business-friendly approaches during its activities. (www.uni-bge.hu, n.d.-1). In the report of the HAC, they highlighted, that BUEB traditionally has strong relationships with companies (www.mab.hu, 2024).

The values of the university are collaboration, expertise, commitment, development, and trust. The vision of the university is the following: *"Budapest University of Economics and Business is one of the leading - and internationally recognised - business universities in Central Europe"* (www.uni.bge,hu, n.d.-2). The mission of BUEB is the following: *"Our mission is to provide inspiring business education that enables learners to address challenges of the future effectively and responsibly."* (www.uni.bge,hu, n.d.-2). Sustainability is also an important issue in the university: BUEB would like to prepare its students to actively promote a sustainable mindset and so generate positive societal impact (www.uni.bge,hu, n.d.-3).

The Development and Characteristics of the Programme

Heidrich referred to the Business Development MSc programme as a love child. The idea of the programme establishment is from Heidrich and two of his senior colleagues, who referred to themselves as the *„Jedi Council"*. In 2014 each faculty had two master's degree programmes, and the Faculty of Finance and Accountancy was the first since 2008, who came up with the idea of a new programme. They started to develop it in 2014, because they felt the institution strong enough. The HAC has accepted the establishment

of the Business Development master programme at BUEB with the 2014/8/XIII/19. decision in 2014. (www.uni-bge.hu, n.d.-4). Next to this, the Confederation of Hungarian Employers and Industrialists, and the KAVOSZ Zrt. also supported the new programme creation. The first class could start their studies in 2015.

The Team Academy specialization - which was available for the students at the Budapest Business School who studied in Business Administration and Management bachelor's degree programme - inspired the establishment of a new entrepreneurial-related degree programme. The goal of the Team Academy is to support students to start their company, however, during the programme, legal complications occurred, like who is the responsible for the new firm: the student or the university? Next to this, Heidrich experienced the lack of student's self-confidence when the Team Academy programme was launched. The university thought that it was a great opportunity for students, but initially, very few students applied for the programme. For the information session of the programme, a guest speaker from Tampere University was invited to give a presentation in English for the potential students of the Team Academy programme. The English language presentation scared the students, and it led to a very low number of applications. They also noticed that the students preferred to work alone and blend in with the crowd. In contrast, the programme required them to work as a team, which may have been another reason for the low number of applications. Independently from these negative experiences, the Team Academy was a great success both from students' and institutions' viewpoints and became one of the main motivational factors of the new programme establishment.

Heidrich mentioned that he had heard a research result on the radio in 2014, which pointed to a shocking finding: only 3-4% of economics graduates in the Hungarian market plan to start a business after their studies at most. This ratio is alarmingly low and could damage the country's economy. However, this data is not surprising because students are trained to avoid uncertainty and not to make mistakes during secondary school. This is a major contributor to students' unwillingness to start a business. The new master's degree programme aims to bridge this gap and prepare students to become entrepreneurs. During the programme design, they did not conduct any surveys or interviews with students or entrepreneurs, but they have a mission to do good both socially and economically with the new programme.

At the beginning of the programme establishment process, they also had to focus on the problem of how to position the new master's degree in relation to the existing Management and Organisation master's degree programme within the university. Eventually, they decided to distinguish the two programmes according to their focus: while the Management and Organisation programme focuses on large international companies, the Business Development MSc focuses on Hungarian small and medium-sized enterprises and family businesses.

After that they looked around the market to see the currently available Business Development Master's degree programmes in other institutions. It was important that the new programme should be different from the existing programmes in the Hungarian higher education market. The first difference is in the programme's focus: it is not generalist and does not equip students with knowledge about international and multinational large companies. The programme focuses on small and medium-sized enterprises and provides specific knowledge on the Hungarian market. Secondly, the programme does not introduce large hierarchies and systems and does not train specialists (e.g. project managers). They want to support the establishment of their own businesses while focusing on the specialities of family firms. Furthermore, they did not want to focus on intrapreneurship, as entrepreneurs in the Hungarian market very rarely employ consultants in small and medium-sized enterprises. Last but not least, applying a practice-oriented approach during the programme is crucial. To ensure a practice-oriented approach, many of the courses are taught by external lecturers (e.g., Business Legal Environment, Consulting). Applying a practical approach was particularly important for this programme, as it was not intended to provide students with exclusively academic knowledge. The practical nature of the programme is demonstrated by the fact that, until 2018, a total of 31 teachers were involved in the programme, 19 of whom were BUEB employees and 12 company professionals.

Some values of the university can be identified in the programme as well. The first one is collaboration. Several tasks have to be solved in groups, and students must collaborate with each other to fulfil the programme. The second one is expertise. This value appears when professionals hold a lecture or when guest lecturers present their former experiences. The third value which can be identified in the programme is development. Students can develop their skills and knowledge during the programme, and with the help of their freshly acquired skills, they can improve the quality of their own environment.

The Berzsenyi Campus of the university was chosen as the location of education for the Business Development MSc. Regarding the original plan, every organisation and programme at BUEB which have a relationship with entrepreneurship should be located in this building. This is where the BudapestLAB Research Centre was established in 2017. Their primary task was to attract students with entrepreneurial intentions to the university and to support them in their studies (e.g. to bring together undergraduate and master students).

Next to these, the founders of the programme also had to identify which group of students would be targeted by the programme. They did not prefer BUEB graduates, as they wanted to create a diverse community of students with different experiences and knowledge. They also wanted to create heterogeneous groups in terms of age and education and so achieve the aim, which was to create an integrating and open education. In addition, the programme is only available in a part-time format, as the targeted student group are already working in their own business or planning to start their own business, and so they can focus on their studies mostly at the weekends. This programme is intended to be an open programme and therefore, the training and outcome requirements are set at a lower number of credits for applicants (30 instead of 60) to ensure a more diverse student group. As a result, the programme has successfully achieved this goal, as students arrived from several fields, for example, from healthcare, engineering, sports and IT. Next to these, their experiences were also different, as the target groups are entrepreneurs, people who are planning to set up an enterprise, and people who have an entrepreneurial attitude and would like to work in a key position next to an entrepreneur. As a result, there were students who have been working in businesses for many years and there were students who are just planning to start their own businesses. The student groups were also diverse in terms of age, as students in their 20s to their 40s also participated in the programme.

For students with a non-economics background, it was necessary to provide the missing economic knowledge. The first and second semesters are so-called *"catch-up semesters"*, which means that master's students can take bachelor's degree programme's courses in the Faculty of Finance and Accounting, which provide them with the relevant knowledge (e.g. finance, accounting). Nevertheless, there have been cases where Business Development students have not yet completed certain professional courses towards the end of their studies, which they have explained by a lack of basic economic knowledge.

The length of the programme is two years, and the form of the programme is part-time, which means students have to attend classes only two times per week (Fridays and Saturdays). There are no specializations within the programme. The curriculum of the programme can be seen in Appendix 11. (www.uni-bge.hu, n.d.-4)

Applicants must submit their application via a public, centrally managed online platform, Felvi (www.felvi.hu) by mid-February or mid-November each year. The steps of the submission process are as follows: (1) submit the documents of preliminary studies to Felvi; (2) Select BUEB's Business Development MSc programme; (3) Admission interview at BUEB based on rigorous criteria; (4) evaluate the applicant's performance based on BUEB's decision tree; (5) BUEB record the scores of the applicant to Felvi; (6) Applicants receive notification from Felvi about the acceptance or rejection of their submission.

During the application process, there are two possible ways to recognise students' preliminary studies. In the first case, the credits of the students are accepted immediately if the student accomplished Business Administration and Management or International Business Economics Bachelor's degree programmes. In the second case, students have to request the acceptance of their credits if their degree is different from the previously mentioned ones. BUEB checks the content of each course and decides on acceptance, and if a student has a minimum of 30 credits, the application is possible. (www.uni-bge.hu, n.d.-6)

As I mentioned earlier, BUEB paid much attention to the professional background of the applicants. Accordingly, the admission process is based on a detailed set of criteria.

The aim is to filter out students whose plans and attitudes do not fit the Business Development MSc. Heidrich said that in many HEIs, master's programme admissions are just a formality, but that is completely different in the case of BUEB. A decision tree is used to assess the suitability of each applicant during the complex professional interviews. They also had to answer questions such as how they see themselves in 10 years' time and what was the biggest failure of their lives. If their plans included a future in a multinational company, this was a disqualifying factor.

The aim of the interviews is to avoid applicants with low risk-taking attitude getting into the Business Development MSc programme.

The scoring is also rigorous: the applicants receive either a maximum of 30 points or zero points for the interview. This was done in order to decide who fits for the programme profile and who is not. If a student gets zero points, it is not a reflection of their intellectual ability, because they may be very good at other master's programmes, but their attitudes and goals do not fit the profile of the Business Development MSc. However, he stresses that it feels wrong to give zero points to anyone. This method narrows the pool of applicants but emphasises the aim of the programme, which is to create a group of 35-40 students who are committed to the become entrepreneurs.

The following aspects are involved in the interview: English language skills, when did the applicants graduate, did the applicants apply for other master's programmes, did the applicants apply for Business Development MSc in other HEIs, how closely do their future goals match to the programme profile, how closely is their current job related to entrepreneurship.

Table 19 introduces the numbers related to the applications from 2015 to 2024.

Table 19: Admission information about BUEB's Business Development MSc 2015-2023 (source, www.felvi.hu, 2024, own compilation)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Number of applications	203	319	274	272	212	154	236	230	233	230
Number of accepted applications	28	41	37	36	25	26	28	18	30	37
Ratio	14%	13%	14%	13%	12%	17%	12%	8%	13%	16%

As it can be seen, there is no trend in the number of applications in the past 10 years. The minimum is 154 admissions (in 2020), the maximum is 319 admissions (in 2016), and the average number of applications is 236.3 between 2015 and 2024. In connection with the accepted applications, the minimum number of accepted applications is 18 (in 2022), the maximum is 41 (in 2016), and the average accepted number of applications is 30,6 in the past 10 years.

There was no financial expectation from the management of BUEB and therefore no priority to increase the number of students. Nevertheless, the master's programme is profitable, as there are fewer contact hours for part-time programmes. The number of applicants and admissions does not seem to have increased over the years, which may be due to the fact that no full-time programme format is available. In connection with the full-time format, BUEB has to decide whether they want to be market leaders in terms of numbers. Currently, the programme targets students who are working next to their

studies, so starting a full-time programme would change the profile of the Business Development MSc.

The university provides a mentor for students who have already been admitted to the programme, to feel themselves part of a community. The mentor organises various professional and socialisation programmes (e.g. city rallies). However, they were often disappointed because the students did not always behave like adults. For example, they did not come to the events or made excuses to change the deadlines for certain assignments. Nevertheless, the atmosphere in the classes was always good, and the first-year students kept in touch with each other even after the training.

Students' opinions on the course are constantly monitored: in addition to the usual Student Feedback to Teacher Work questionnaire – which is available for each student to evaluate the courses they participated in the semester (www.uni-bge.hu, n.d.-7) - a Google Forms questionnaire was also sent to Business Development MSc students to gain a deeper understanding of their needs. In the meetings at the beginning of the semester, student opinions were taken into account and were used as a basis for modifications related to the programme content or the teachers. As a result of the student feedback and the enthusiastic teaching community, a new curriculum was developed in 2017. In this research, I introduce the details of this curriculum.

There is a video in which a student shares his thoughts about the Business Development MSc programme. He highlighted the diversity of students from age and experience points of views. Some younger students are only planning to start their own business, but there are professionals from other generations who have their own enterprises. Students can share their experiences and ideas and can learn from each other. (www.youtube.com, 2020)

To ensure that the programme remained flexible and practice-oriented, the teachers played a very important role throughout the programme. For this very reason, selecting teachers for the programme was also a complex process. Firstly, their professional competencies and background were taken into account and secondly, they were interviewed to see their motivation. At the beginning of each semester, a kick-off meeting was held with the teachers of the previous semester and the teachers of the new semester. During these meetings, they discussed their experiences with group dynamics and motivation as well as the results of the student satisfaction questionnaires received.

Additionally, changes related to the programme were reviewed and requirements were clarified in terms of both the applied teaching methods, and the theses.

Analysis of the Programme from Skill Content and Applied Teaching Methods Aspects

Based on the programme description on the website, students who accomplish the programme will be able to start their own businesses. The main modules of the programmes are knowledge of economics and social sciences, general professional knowledge, and other areas of professional knowledge. (www.uni-bge.hu, n.d.-5)

After collecting all information about the programme from the websites and orders, I analysed the content of the 28 course descriptions from skills content and teaching methods points of views. The result of the analysis can be seen in Appendix 12a, 12b and 12c, where three tables present the identified skills in the case of all 28 courses.

Table 20 summarises the skills and the applied teaching methods that I could identify in the online available course descriptions. I categorized the skills based on the synthesised entrepreneurial skill list (Appendix 2a & 2b), the synthesised future skill list (Figure 24), and the list of teachable future skills (Figure 23).

Table 20: Skill content of BUEB's Business Development MSc programme based on the publicly available online content of the official website of BUEB (source: own compilation)

Skill type based on the papers	Skills mentioned in the online materials	Referred teaching method in the online materials	Teaching method based on the papers
Entrepreneurial skills	• Business management • Creativity • Foresight • Finding Information • Originality thinking • Planning • Perceiving business opportunities • Proactivity • Networking • Self-confidence • Learning through experience • Uncertainty management • Learn from mistake • Risk management • Strategic skills • Work under stress • Identify problem	• Guest presentation • Case studies • Indoor & Outdoor trainings • Simulations	**Entrepreneurial skills-related teaching methods**
Entrepreneurial & Future skills	• Judgement and Decision-making • Communication • Negotiation • (Real world) Complex problem-solving • Resource management • Critical thinking • Digital competencies • Persuasiveness • Social awareness • Collaboration • Innovation • Teamwork • System thinking • Leadership	• Active learning experience (through simulations) • Individual projects/task solving • Putting students to real-world situations • Applied learning experience • Collaborative learning experience	**Entrepreneurial and future skills-related teaching methods**
Not specified skills	• Professional knowledge • Create strategy • Efficient working • Orientation toward development (own and others as well) • Advising • Internationalisation • Processing information • Process management • Project management • Presentation skills • Responsibility	• Teamwork & challenge-based learning • Frontal teaching (by professionals) • Interactive lectures • Innovation mapping • Involving latest research results	**Not specified teaching methods**

I identified 42 skills in the online available materials related to the Business Development MSc programme, from which 17 skills are entrepreneurial, 14 skills are both entrepreneurial and future, and 11 skills are not specified. The 11 unspecified skills were mentioned neither in entrepreneurship-related literature nor in future-related literature, however, they appeared in the programme content. Regarding the applied teaching methods, I could identify 14 of which 4 methods are entrepreneurial-related, 5 methods are both entrepreneurial- and future-related, and 5 methods are not specified based on the literature review.

I compared the skill content of the programme with the training and outcome requirements of the Ministry of Culture and Innovation (please see the last column of the tables in Appendix 12a, 12b & 12c). I have found almost all skills in the programme, but only in the case of the critical thinking skill, I cannot identify the clear connection between the skill and the programme's content based on the online materials. Heidrich shared that critical thinking skills are developed in the Future Research course. During this course, students can develop their thinking skills and see methods to create plans and models for the future. The ability to think critically is also promoted in the HR management course.

Heidrich highlighted that the interdependence of the courses was conscious. For example, the Creative Technics course equipped students with knowledge and skills related to group work. During the course, they can learn about different group work methodologies and they also receive tools they need for effective collaboration in the following semesters.

There are two other skills which are taught only during elective courses. It means that if a student does not choose a specific course from the elective course list (from the other areas of the professional knowledge module), some skills cannot be gained during the programme, however, developing these skills is obligatory because the training and outcome requirements contain them. The first one is foresight, which is included only in the Future Research course, and the second one is Self-confidence, which is developed only within the Self-Knowledge elective course.

Based on the mission of the university, BUEB would like to prepare its students to handle future challenges effectively and responsibly, and because of this the inclusion of future skills in the programme is essential. In the case of Business Development MSc, I could identify a total of 13 future skills which also appeared on the list of teachable future skills

(Figure 23). When I compared the content of the two lists (Figure 23 and Table 20) I observed that not all teachable future skills from Figure 23 are integrated into the Business Development MSc programme.

From stakeholders' points of views, the strongest actor is the government in the case of BUEB. As can be seen above, the training and outcome requirements determine a framework, which must be fulfilled in all circumstances and students must gain the skills which are mentioned in the order. Next to this, the university highlights the demand of the labour market. During BUEB's programmes, students can gain experience which can be used in the real world. The real-world problem-solving teaching method can support this kind of development. The programme shed light the students several times: their requirements are considered during the programme with regular questionnaires. Based on their suggestions, the content of the programme was usually modified. Next to these actors, society appears indirectly in the programme via the sustainability approaches and via the development of social awareness skill.

Comparing the Results of Corpus-Based Content Analysis and BUEB's Case Study

In order to compare the results of the corpus-based content analysis and the results of the case study, I had to repeat the corpus-based analysis in the case of BUEB that was/is not included in the top 100 universities. First, I considered which texts should be involved if I would rigorously apply the same text collection rules which were introduced in the methodology of corpus-based content analysis (sub-chapter 3.5). In this special case, BUEB's Business Development MSc's master programme's description represents the online communication of all the programmes of the whole university. After that, I separated the skills which I found in the programme descriptions on the website. It contains nine skills of which four skills are entrepreneurial, and five skills are both entrepreneurial and future. Table 21 summarises the skills in the programme description and contains the groups in which the skills belong.

Table 21: Skill content of BUEB Business Development MSc programme description on the universities' official website and the relevant entrepreneurial and future skills groups (source: own compilation)

Mentioned skills in the programme description	Skill type	Entrepreneurial skills group	Future skills group
Business skills	Entrepreneurial	Management skills	-
Innovation	Entrepreneurial	Innovation skills	-
Creativity	Entrepreneurial	Innovation skills	-
Foresight / Future orientation	Entrepreneurial	Management skills	-
System analysis/thinking	Entrepreneurial & Future	Thinking skills	Analytical skills-
Leadership	Entrepreneurial & Future	Management skills	Management skills
Judgement and Decision-making (in changing environments)	Entrepreneurial & Future	Management skills	Management skills
Communication	Entrepreneurial & Future	Communication skills	Social skills
Negotiation skills	Entrepreneurial & Future	Communication skills	Social skills

Appendix 9 presents the geographical distribution of the universities based on which cluster they belong. If I assume, that BUEB Business Development MSc represents the whole university's online communication regarding the programme descriptions, BUEB would belong to the Managers cluster from an entrepreneurial point of view. In the case of future skills cluster, BUEB would belong to two categories (Managers and Socials) because the number of mentioned skills from the social group is equal with the number of mentioned skills from the management group. Table 22 presents the hypothetically relevant clusters for BUEB and the top 100 universities' geographical distributions.

Table 22: Hypothetically relevant entrepreneurial and future skills clusters for BUEB Business Development MSc (source: own compilation)

Clusters based on the corpus-based content analysis	Entrepreneurial skills Cluster 2 Managers
Future skills Cluster 1 Socials	*(pie chart: North America 67%, Western Europe 17%, Australia 16%)* Legend: Australia, East Asia, Middle East, North America, Western Europe
Future skill Cluster 2 Managers	*(pie chart: North America 60%, East Asia 20%, Western Europe 20%)* Legend: Australia, East Asia, Middle East, North America, Western Europe

67% of the universities that belong to the Manager entrepreneurial skills cluster and the Social future skills cluster are from North America, and only 17% of them are from Western Europe. The other dimension, where BUEB could belong, is the Managers entrepreneurial skill cluster and the Managers future skills cluster. In this case, 60% of the universities are from North America. It means BUEB's website texts are similar to those of these mainly North American universities dominated clusters.

In connection with these results, Heidrich said that the programme manager is responsible for the content of the texts on the website. It would be possible to use the descriptions of the programme that appears in the accreditation materials, however, these say little about the real nature of the programme. For this reason, they aim for clear but meaningful communication on BUEB's website. At the beginning of the programme design, János Vecsenyi, Hungarian entrepreneurship expert, suggested that BUEB should look at the website of Babson College (USA), which also has a master's programme in entrepreneurship. They never had direct contact with this institution, only used their website for the benchmark. Overall, Heidrich said that they were only half-aware in connection with the American communication style of the programme.

In the following I present some future opportunities related to the Business Development MSc programme. Regarding the number of students admitted, Heidrich said that the number of applications for master's degree programmes in Hungary is steadily decreasing, and this trend is not expected to stop. The university's priority is to maintain the numbers and improve the quality of the programme in the coming years.

As for the future, Heidrich said that they are not opposed to launching English-language programme, however, the resources within the institution have so far focused on launching bachelor's degree programmes in English. A critical point in the current admissions process is when they switch to English testing the applicant's language skills. This is necessary because there are plans to base part of the curriculum on English books and to invite guest lecturers from abroad to teach. In addition, BUEB has good relations with several HEIs abroad with whom it would be possible for students to work on projects together.

However, the part-time format of the training is a major obstacle. Previously, there have been attempts to turn the programme into a dual degree programme, for which a tender has been won, and the details of the programme have been worked out. They would have liked to establish a cooperation with two or three European universities (e.g. from Bratislava and from Krakow), so that students could study in the institutions on a rotating basis every semester. A dual degree programme could also be considered for the future of the course.

The last update of the programme content was in 2017, when the need for major changes became clear after the launch of the programme in 2015. Around 2020, Erzsébet Czakó took over the leadership of the Business Development course from Balázs Heidrich, and so giving the programme a boost. Her presence and work brought many innovations, as she organised several professional programmes to develop the quality of the content. One of these was the professional meeting held on 26 June 2024, where the leaders, teachers and researchers of the Hungarian Business Development master's degree programmes shared their thoughts on the future of the programme (www.uni-bge.hu, 03.07.2024). The updating of the curriculum is currently in progress, so the course descriptions are temporarily unavailable on the website. In the near future, this development will result in the creation of a training theme in line with current market needs.

8.3. Comparison of the Case Studies

In this part of the dissertation, I compare the content of the two programmes from several aspects (e.g., skill content, applied teaching methods, etc.). Table 23 summarises the main points of the case studies which will guide the process of the comparison. In the following, I introduce these aspects in detail.

Table 23: Comparing the results of the Finnish and Hungarian case studies about the MSc programmes (source: own compilation)

Aalto University	Aspects	BUEB
Sustainable Entrepreneurship	**Name of the MSc programme**	Business Development
2 years	**Length of the programme**	2 Years
Full-time	**Study schedule**	Part-time
English	**Language of the programme**	Hungarian
2	**Number of specializations**	0
Available	**Personalized curriculum**	Not available
10	**Number of obligatory courses**	22
Determined by the programme developers (within Aalto)	**Learning outcomes**	Determined by the government
No	**Audit of the programme quality by external authority?**	Yes (HAC)
different background different countries different cultures	**They wait students with/from…**	different generations different entrepreneurial experiences different age groups
Anyone can join independently of what kind of degree they have	**Student's former studies**	Only some kind of degrees are accepted, others can individually request the acceptance of their credits
Not available	**Detailed courses' descriptions on the website**	Available
4	**Number of referred stakeholders**	5
Technological	**Future skill cluster**	Social/Manager
Innovator	**Entrepreneurial skill cluster**	Manager
17	**Total number of identified skills**	42
3	**Number of identified entrepreneurial skills**	17
6	**Number of identified entrepreneurial & future skills**	14
6	**Number of identified future skills**	0
14	**Number of identified teaching methods**	13

The determination process of the learning outcomes is different in the case of both countries. In Finland, the universities can determine what and how they would like to achieve at the end of the programme. In Hungary, the universities must consider the content of the training and outcome requirements issued by the government. In Hungary the HAC regularly monitors the institutions whether they operate in accordance with the legal system or not. There is no such committee in Finland, which means Finnish

Universities have greater freedom and flexibility during the programme design and programme operation than Hungarian HEIs.

Regarding the students of the programme, there are different requirements toward them in the case of both programmes. Students can apply to the Sustainable Entrepreneurship MSc independently from the type of their bachelor's degree. The programme leader highlighted during the interview that entrepreneurship is not only relevant for students who have finished their studies in the business field. Entrepreneurship is relevant for everyone. They defined the programme content in a way that can be interpreted by each student independently from the field of their earlier studies. In the case of Hungary, the Business Development programme contains several courses, which require former business knowledge. Students who do not have a business background will find it difficult to complete these courses. This is why there are minimum entry criteria. Both programme descriptions highlight some aspects related to the background of students. In the case of the Sustainable Entrepreneurship MSc, they wait for students with different backgrounds (e.g., type of degree, former experience, etc), from different cultures and from different countries. They provide that way students can learn from each other and can develop their intercultural skills as well. At BUEB, they wait for students only from Hungary (as the language of the programme is Hungarian), but they support the application of students who have different backgrounds concerning their entrepreneurial experiences and preliminary studies. Next to these, they highlighted the age of the applicant does not matter, all generations are supported to learn Business Development MSc.

During the analysis of the website, there was much information available about the content of the Sustainable Entrepreneurship MSc programme. The same statement is true in the case of the Business Development MSc programme, however, Aalto provided a detailed description of the programme and its structure, the courses' descriptions were not published on the website. As a result, students can gain a lot of information about what the programme will look like, but they cannot find details about what kind of knowledge and skills they will acquire during each course. BUEB's website contains detailed courses' descriptions, which show the planned structure of the course, and the skill and knowledge content of it.

It is also important to mention the stakeholders' involvement in the programme. During the design of the Sustainable Entrepreneurship MSc, they included the contributions of teachers, students, the labour market, and society. In the case of the Business

Development MSc, the viewpoints of the government, the labour market and society were considered.

During the Finnish case study, 17 skills and 14 teaching methods were identified, and in case of the Hungarian MSc programme, the investigated documents contained 42 skills and 13 teaching methods. At this point, I would like to draw attention to the differences between the programme structures. The Finnish programme is more flexible and contains numerous elective courses, so students can develop more skills, however, the developed skills depend on the students' choices (which and how many courses they choose during their studies). As a result, the online programme description contains fewer skills because it considers only the obligatory courses' skill content. In the case of the Business Development programme, the programme structure and the training and outcome requirements are fixed, so I could identify several skills during the analysis. Appendix 13 introduces which skills appeared only in Aalto's programme description, which ones only in BUEB's texts, and which skills are mentioned in both universities' online materials. Next to this, Appendix 14 presents the teaching methods, which are integrated into the programme descriptions compared to each other.

In connection with the results of corpus-based content analysis, it can be seen that the two universities do not belong to the same clusters neither in the case of entrepreneurial skills nor in case of the future skills. Several aspects can be the reason behind it, for example, the different legal environment and the stakeholders' diverging expectations, and most importantly, that BUEB was *"manually"* added to the clusters based on only one programme description. Further investigation is required to be able to compare the results properly. Despite this, in my opinion, it is important to check the distribution of the skills that appeared in the online programme descriptions. Figure 39. presents the frequency of each entrepreneurial skill group.
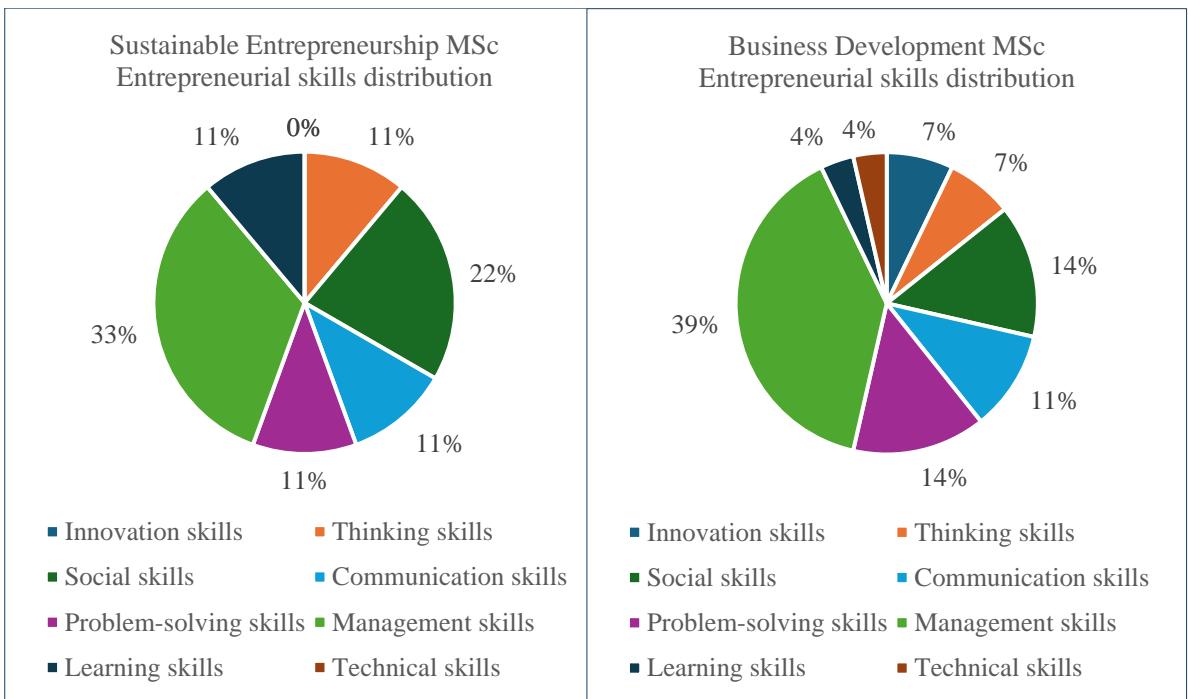
Figure 39: Frequency of synthesised entrepreneurial skills groups in the two master's degree programme descriptions (source: own compilation)

In both cases, the most mentioned skill group is the management: 33% of the skills belong to this category in the case of Aalto's master's degree programme, and 39% of the skills belong here in the case of BUEB's programme. While BUEB mentioned skills from all skill groups, Aalto did not mention any from the innovation and technical skills groups. The distribution of skills is contradictory with the results of corpus-based content analysis, as based on that, Aalto belongs to the Innovator group, however, they did not mention any innovation-related skills in the investigated programme's description. As the texts, which were investigated during the corpus-based content analysis, are from 2019, it is possible that Aalto has changed its online communication and modified the programme descriptions on the websites since then. Another possible explanation could be the brand-new programme, which could apply a different approach relative to other previously existing programmes. One thing is sure: further investigation is needed to clarify the differences between the two results.

Figure 40 presents the frequency of the mentioned future skill groups in the two MSc programmes' texts. In the case of the future skills content investigation, I consider only those skills, which exactly match one of the elements of the synthesised future skill list.
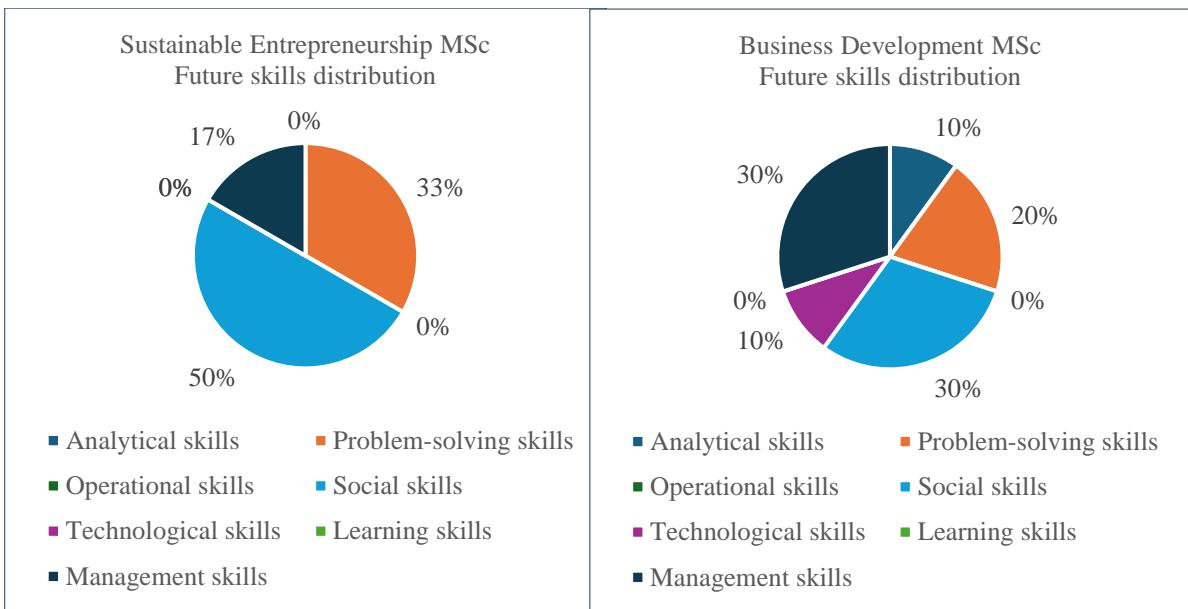
Figure 40: Frequency of synthesised future skills groups in the two master's degree programme descriptions (source: own compilation)

The most dominating skill group in the case of Aalto's MSc programme is the social skill group, as half of the mentioned skills belong to this group. However, regarding the results of corpus-based content analysis, Aalto belongs to the technological future skills cluster, the sustainable entrepreneurship MSc programme description contains zero technology-related skills from the synthesised skill list (all mentioned technological skills appeared only on the list of teachable future skills). Based on the diagram, if Aalto's Sustainable Entrepreneurship MSc were representative of the university's all programmes' descriptions, it would belong to the social future skill cluster, as 50% of the mentioned future skills belong to this category. This result makes the two programmes similar to each other, as the social skill group is also the most mentioned group in the case of BUEB (next to the management skill group, which also takes 30% of the mentioned skills).

To sum up, there are several similarities between the two programmes for example, from skill content and applied teaching methods approaches. I could identify differences between the two programmes from some aspects (e.g., external audit, language of programme, students' background, etc.). The results highlighted that the Finnish Sustainable Entrepreneurship MSc is more flexible than the Hungarian Business Development programme. However, it seems like - based on the online materials analysed - more diverse skills can be developed during the Hungarian programme. Despite the differences, both programmes apply methods and approaches that help them to be competitive and unique in the market.

9. DISCUSSION

In this part of the dissertation, I introduce the key findings of the research and highlight the connections between the results and previous research experiences. I also present how I achieved the goals of the dissertation and give answers to the research questions. I summarise the best practices that I discovered during the case studies. Additionally, I attempt to interpret the results and consider the limitations of the research.

Regarding the research philosophies presented in the Burrell and Morgan matrix (Figure 4), I applied a functionalist research philosophy, which means I focused on real problems in real organisations during the research. My aim was to discover and introduce the status quo, which refers to the regulation perspective. I performed the research objectively, as I collected data that is observable to anyone.

I investigated HEIs' online communication of the programme descriptions and its entrepreneurial and future skill content, and to that I applied mixed methodologies. On the one hand, I used qualitative methodologies (Systematic and integrative literature review, case studies), on the other hand, I applied quantitative methodology (corpus-based content analysis). I followed the principles of pragmatism as I applied mixed method complex methodology and a deductive approach. I also relied on the positivism paradigm's principles, as I observed measurable and observable phenomena (HEIs' online available programme descriptions skill content), and I was not personally involved in the subject. However, I selected BUEB because of the personal connection, but previously I never had any discussions with teachers or other actors of the university related to the Business Development MSc programme, so I could observe it as an external, independent actor. I also presented the phenomena as they are, and I was emotionally detached from the research.

Regarding Table 1 presented in the Introduction chapter, the first aim of the dissertation is to create a list of entrepreneurial and future skills based on the literature. The related research questions are the following:

> RQ1: What are the entrepreneurial and future skills according to the literature?
>> RQ1.1: What are the teachable entrepreneurial and future skills?
>> RQ1.2: Which skills are also included in the list of entrepreneurial and future skills?

In order to answer the questions, I performed a systematic literature review (in the case of entrepreneurial skills) and an integrative literature review (in the case of future skills).

Finally, I have successfully created two synthesised skill lists: one for the entrepreneurial (Appendix 2a & 2b) and one for the future skills (Figure 24). While reading the literature, I have collected the teachable entrepreneurial and future skills too and created two figures which summarise the identified teachable skills (Figure 16 for the entrepreneurial and Figure 23 for the future skills)., At the end of the literature review part, I compared the two synthesised and teachable skill lists, and I identified the similarities between them (Table 10). I concluded that the lists have 15 common elements (e.g., Time management, Active learning, Negotiation) which indicates that entrepreneurs should always be ready for the changes and thus be prepared for the future, too. Based on that, I can reasonably claim that there is a strong connection between the entrepreneurial and future skills. Some of the papers also highlighted the connection between the two themes, for example: (1) Obschonka (2016) says in his research that entrepreneurial skills are so important in the economy that they could be called skills of the 21st century, (2) Fleaca (2017) highlights, that complex problem-solving and critical thinking skills (which are part of the entrepreneurial and future skill lists) help the entrepreneurs to notice currently existing or newly appeared problems of society (3) Bejinaru (2018) claims, that complex problem-solving has a key role when a new situation happens, and (4) Vega-Gómez et al. (2020) states, that entrepreneurial skills are important during forecasting changes, which could result in fast adaptation to a new situation. To sum up, future orientation is essential in the currently existing enterprises, and reverse, entrepreneurial approach will become more important in the future.

The second goal of the dissertation is to identify entrepreneurial and future skills in the top 100 business and management-related universities' online available programme descriptions. The related research question is the following:

> RQ2: Which entrepreneurial and future skills are included in the online available English-language programme descriptions of the top 100 higher education institutions?

The results of corpus-based content analysis showed that the top 100 business and management-related universities regularly mentioned entrepreneurial and future skills in their programme descriptions. Based on their skill usage, they could be put into clusters, and it made possible to analyse the online communication of the top institutions. The universities' distribution between the clusters (by ranking and location) could help to understand the different usage of skills in HEIs online communications about their

programmes. During the analyses I focused on the appearance of skill groups rather than the individual skills occurrences. As a result, I could identify two entrepreneurial skills cluster (Figure 26) and four future skills clusters (Figure 30).

This result indicates that the skills which are the focus of the research are also reflected in the programme descriptions, regardless of the type of programme. The reason behind this could be that these are important for everyone, and as Bejinaru (2018) stated, entrepreneurial skills can be called generic skills. Additionally, the list of Bakhshi et al. (2016) contained non-professional-related future skills, which can explain why several future skills appeared in the programme descriptions. Next to these, Bauman and Lucy (2021) highlighted that entrepreneurs must adapt to the changes, and so must HEIs. That is another possible explanation for why the programme descriptions contain several future skills.

The third goal is to examine which entrepreneurial and future skills are developed during entrepreneurship-related master's degree programmes. The related research question and sub-questions are the following:

> RQ3: Which entrepreneurial and future skills are reflected in the curricula of the two chosen master's programmes?
>> RQ3.1: What similarities and differences can be found in the skills content of the two countries' master's programmes?
>> RQ3.2: How do they ensure compliance with EU and other government regulations?

I investigated the Sustainable Entrepreneurship Master's degree programme of Aalto University and BUEB's Business Development MSc programme. Table 18 and Table 20 present the skill content of the online available materials in both cases. As a result, I could identify 8 similar entrepreneurial and/or future skills (e.g., learning through experience, perceiving business opportunities, leadership, critical thinking, communication, collaboration, teamwork, (real-world) complex problem-solving), which are integrated into the online available descriptions and documents of both universities (Appendix 13 presents the comparison of the two programmes from skill content aspect).

The literature mentions several teachable entrepreneurial and future skills which appeared in the curricula of the investigated programmes. For example, Peschl et al. (2021) highlighted the learning through experience entrepreneurial skill, Bates, (2024) and The

Conference Board of Canada (2014) mentioned problem-solving and teamwork skills as teachable future skills. However, there were teachable entrepreneurial and future skills which were not mentioned in the programme descriptions of the investigated MSc programmes (e.g., creativity with limited resources entrepreneurial skill (Peschl et al., 2021); Develop community future skill (Moore, 2016).

As Moore (2016) stated, universities must pay attention to the actor's conversations about their expectations to remain competitive in the market. Sakamoto (2019) and Garcia-Esteban and Jahnke (2020) added that universities must adapt to the changing needs of the labour market, and the new opportunities and challenges. As can be seen, both institutions considered several actors' (e.g., labour market, organisations, students) viewpoints when they interpreted the content of the programme, and also when they updated it.

Despite the many common points in the programmes, the legal environment and the way in which the programmes are structured are completely different.

There is a fourth goal of the dissertation, which is to fill Figure 3 with content based on the research results. Figure 41 presents the teachable entrepreneurial and future skills and their involvement in the investigated MSc programmes.

Teachable Entrepreneurial skills

Responding to critical feedback

Entrepreneurial attitude

Locus of control

Creativity with limited resources

Performance orientation

Analytical skills

Self-control

Empathy

Entrepreneurial skills which are taught during master's programmes

Foresight

Opportunity management

Uncertainty management Learn from experience Business management

Entrepreneurial thinking Proactivity Networking Risk management

Originality thinking Learn from mistakes Work under stress Finding information

Self-confidence Persuasiveness Identify problem

Strategic skills Leadership Digital competencies Teamwork Planning

Real world complex problem-solving

Innovativeness Innovation Creativity Critical thinking Negotiation

Judgement and decision-making

Collaboration Communication

Resource management Social awareness

System thinking/analysis

Work/study abroad Integrative learning

Understand and act on issues of universal significance in today's interconnected world

Interdisciplinary approach to global issues Intercultural communication

Appreciation of diverse perspectives

Flexibility

STEM Employability

Thinking skills Develop community

Global Language skills Ability to learn independently

Perceptive and interpersonal abilities Collaborative learning

Knowledge management Ethics and responsibility

Future skills which are taught during master's programmes

Teachable future skills

Figure 41: Teachable entrepreneurial and future skills and their involvement into the investigated MSc programmes (source: own compilation)

As can be seen in the literature, the governments started to realise the importance of entrepreneurship. For example, the Finnish government has raised the attention of institutions of higher learning to promote entrepreneurial activity (Drost & McGuire, 2011). In connection with that, the training and outcome requirements document in Hungary contains several skills, which can also contribute to the development of entrepreneurs. As a result, both countries' governments support the realisation of

practice-based and skill development-oriented MSc programmes at universities. Both investigated universities' programmes support students' skill development and prepare them for a life as an entrepreneur.

Compliance with government regulations is easy to observe in the case of BUEB, as in Hungary an order determines the range of skills to be achieved through master's programmes. Based on the data analysis, I identified all the mandatory skills listed in relation with the Business Development Master's programme. The skill expectations set out in the regulation are included in Appendix 12a, 12b and 12c. The last column of the tables shows which skills belong to the training and outcome requirements.

Based on the results of the case studies, both universities are able to prepare future entrepreneurs as both investigated programmes involve a wide range of entrepreneurial and future skills. They apply several teaching methods (e.g., failing forward, successful entrepreneurial role model, learning through failures, etc.), which helps students understand what it means to be an entrepreneur. As a result, students will be prepared for the application of their knowledge in practice, and next to this, they will also be able to adapt to the challenges of the future. Additionally, they can make a positive impact on the economy and society, which were mentioned in the systematic literature review chapter (Table 9).

Based on the results of the cases, I summarise the best practices I identified during the analyses.

The detailed course descriptions of BUEB give students the opportunity to gain a deeper understanding of the programme. This helps them to be better informed about what to expect during the programme and to make more conscious decisions about further studies. As a result, the drop-out rate from the course may be reduced. At the moment, the curricula are being updated at the university, and therefore, the detailed course descriptions are temporarily unavailable.

Thanks to the rigorous admissions process, BUEB can filter out students who do not fit the programme profile. As a result, the university can create a cohesive and motivated student community whose members support each other during their studies. The assessment of entrepreneurial intentions is a key element in the admission process, as due to the similar goals, students can support each other both professionally and personally in the process of becoming entrepreneurs.

At BUEB master courses are often taught by external lecturers and professionals with entrepreneurial background rather than by staff This allows the university to ensure that students receive up-to-date and relevant knowledge. External lecturers do not only appear as guest lecturers but also teach entire courses independently.

Finally, one of the programme's strengths of the programme of BUEB is its precisely defined focus, which enables it to produce students with relevant skills for the Hungarian market. With this focus, the programme fills a gap in the Hungarian higher education market.

Aalto's programme is an English language programme, which enables students to develop their skills and knowledge in an intercultural learning environment. At the same time, it can support the institution's internationalisation-related goals.

The master programme of Aalto is full-time gives students more time to develop their skills and do not have to split their time and attention between work and studies.

Sustainability objectives are strongly reflected in Aalto's programme, which is in line with the content of several international standards. The training of students with this knowledge and skills will contribute to the creation of sustainable enterprises in the country.

Both institutions are open to students from non-economic backgrounds, creating a diverse student community. Thanks to the many different perspectives, they can broaden their horizons and thus prepare more consciously for starting a business. BUEB recognised that it is necessary to ensure the basic economic knowledge to students with non-economic degrees. The university has solved this problem by offering students the opportunity to participate in bachelor's degree courses that help students make up for the economic knowledge they lack.

In addition, both institutions put particular emphasis on providing practice-oriented training. In this way, they also ensure that students acquire practical knowledge and skills during the programme.

Interpreting the Results of the cases

In light of the results of the research, I can provide a possible explanation for the data in the GEM reports (Björk et al., 2022; GEM, 2023). According to the GEM 2021 surveys (Björk et al., 2022), 42.75% of Finnish people feel that they have the knowledge and skills to start a business. The same data for Hungarians in 2024 is 38.29%, which means there

is less than 5% difference between the two countries (GEM, 2023). The Finnish system includes elements of entrepreneurship from pre-primary education, but it may not be effective. This may be because the students are not open to entrepreneurship at all, or it may be that their personality does not suit to become an entrepreneur, or it may be that they are not given the right information at the right age (so they are not matured). In these cases, it does not matter how many entrepreneurial-related skills and knowledge are provided by the Finnish education system if the students do not have entrepreneurial intentions.

In contrast, the Hungarian system seems to be *"just in time"*: students acquire a basic knowledge and skillset in secondary school but leave the development of professional-specific skills to higher education. In this way, students can focus on developing only those skills that will be relevant for their future jobs. The admission requirements for the Business Development MSc programme clearly show the pathway to becoming a graduate entrepreneur in Hungary: first, students need to obtain a bachelor's degree where they can acquire the basic professional knowledge and skills, and then the skills most closely related to entrepreneurship are developed in the master's degree. However, Radácsi et al. (2022) raised the question how many skills can and should be squeezed into these 2 years?

In the case of the two MSc programmes, it can also be seen that the field of education to which the students' previous qualifications are related to is not considered. Entrepreneurship seems to be seen as a universal profession that can be linked to anything, and therefore the field in which the students have obtained their degree is not taken into account (or is only given a low weight) when applying for the MSc programmes.

If universities did not require prior economic knowledge, entrepreneurship education could reach a much wider population. However, there are potential disadvantages of flexibility, for example, the narrowing of the list of skills that can be developed during the programme. As students come from a wide range of backgrounds, there may be wide variations in developing certain skills. This can narrow the options, leading to less time for entrepreneurial skills development over the 2-year programmes and focus on the larger, more general skills.

Additionally, while Finland's education system includes entrepreneurship knowledge and skill development at each level of education, Hungarian students have to sacrifice their free time to participate in entrepreneurship-related programmes (e.g., in the previously

mentioned Sze Duo, HSUP, Junior Achievement Hungary) to develop their entrepreneurial mindset before their MSc studies. This is a possible explanation for why the Hungarian students are demotivated to become entrepreneurs. To foster students' entrepreneurial intentions, the Hungarian education system should involve the development of an entrepreneurial mindset in a practice-oriented way.

In general, the results are significant at the academic level and can be useful for future research. As Gibb (2005) stated, developing entrepreneurship is one of the perspectives for the future of higher education. It means the results of this research field can contribute to the development of future curriculum and programmes related to entrepreneurship.

In the following section, I summarise the dissertation's theoretical contributions.

(1) New Definitions

There are several entrepreneurship-related definitions in the literature, and there is no consensus among them. As a result of my theoretical work, I developed complex and up-to-date, new definitions for entrepreneurship (p.12.), entrepreneurs (p.13.), entrepreneurial skills (p.14.) and entrepreneurship education (p.16.) based on the review of previously existing definitions.

(2) Synthesised Entrepreneurial and Future Skill Lists

I identified several possible ways of skill synthesis; however, the most up-to-date list was from 2020 in case of entrepreneurial skills, and 2023 in case of future skill During the synthesis, I applied a different approach than previous studies (in the case of entrepreneurial skills: Bacigalupo et al., 2016; González-López et al., 2020; Gieure et al., 2020; in the case of future skills: Ehlers & Kellermann, 2019; Ehlers, 2020; Kotsiou et al., 2022; Brasse et al., 2023) which helped me to create skill groups which enabled me to compare entrepreneurial and future skills to each other. The synthesised entrepreneurial skill list can be seen in Appendix 2a and 2b, and the synthesised future skills can be seen in Figure 24.

(3) Teachable Entrepreneurial and Future Skill Lists *(in theory and practice)*

I could not identify any lists in the investigated papers that summarise the teachable entrepreneurial and future skills. As a result, I collected each skill, that was marked as teachable in the literature, and I created the list of teachable entrepreneurial skills (see in Figure 16.), and the list of teachable future skills (see in Figure 23.)

I had the chance to observe the skill content of two university master's degree programmes in detail. Finally, I could create a list showing the skills' appearances in the practice and can be indeed integrated into HEIs curricula (Figure 41).

I could identify several connections between the results of the literature review and the results of the corpus analyses and case studies. Bazkiaei et al. (2020) states that universities have a crucial role in creating an entrepreneurial mindset. As can be seen in the results of the corpus-based content analyses, the top 100 business and management-related universities apply several entrepreneurial skills in their online programme descriptions. It indicates that teaching entrepreneurial skills is not only relevant for entrepreneurs, but for other professions as well (as for example Prüfer & Prüfer, 2019 and Bejinaru, 2018 highlighted in 4.3 Sub-chapter). Both Aalto and BUEB MSc programmes foster the development of an entrepreneurial mindset. Furthermore, as Vivekananth et al. (2023) stated, university studies could positively influence students' entrepreneurial intentions, as they can practice entrepreneurship. Both investigated HEIs curriculum involved several teaching methods which provide opportunities to students to practice entrepreneurship and develop their entrepreneurial skills.

(4) Methodological contributions

The combination of methods could be a methodological contribution, as there was no previous research which would apply the same combination of methodology as I applied during the dissertation. As can be seen, occurrences of skills can be effectively discovered and collected from the literature, and the in-depth analyses of the online available materials skill content can become clearer through combining these methods. This way could be effectively used in other areas as well to identify the connection between the theory and the practice.

The fifth and final goal of the dissertation was to develop my research skills. Writing the dissertation was a great adventure for me, and I learned a lot during the process. I can say that the experiences I gained will help me to become a better researcher in the future.

To sum up the results, the involvement of both entrepreneurial and future skills development in higher education is crucial from all stakeholders' viewpoints. Additionally, several segments of the world (e.g., economy, society, etc.) can be developed through educating entrepreneurs in a practice-oriented way.

10. CONCLUSION

In my dissertation I applied a functionalist research philosophy, which helped me to perform the analyses and observe the results objectively. In the following, I offer some possible implications of my research results, introduce the limitations and suggest some further future research opportunities.

First, the results can be useful for HEIs planning to settle a new entrepreneurship-related master's degree programme or HEIs who already have a programme like that. They can consider the content of synthesised and teachable skill lists, which can serve as a checklist, and see whether their curriculum contains the skills. If a HEI would like to update its curriculum with future skills, it can also use the teachable future skill list and decide which skills fit their programme the most and then integrate it into the programme. The two case studies serve as examples and contain several best practices on how to design and update an entrepreneurial-related master's programme. Furthermore, with the help of the entrepreneurial and future skills clusters, HEIs can check which skills' involvement is the most popular in their region. They could increase their competitiveness if they integrate similar skills like top HEIs in their region into their programmes.

Second, this research aims to raise the attention of stakeholders to their roles in higher education, by which they can make an impact on the curriculum content due to their expectations. The direct involvement of stakeholders in the curriculum development and update could be a great opportunity for universities and stakeholders. From the university side, mapping the expectations would require less time and effort, so the changes could be integrated faster into the programmes. From stakeholders' viewpoint, their expectations could be communicated directly to the universities so they can feel the programmes are more up-to-date and relevant.

Third, students who would like to become future entrepreneurs can consider their education-related choices more consciously as they can check the entrepreneurial and future skill content of the programmes with the help of the presented skill lists.

Forth, universities that involve future skills into their programmes have a great responsibility and challenging task, as the future is uncertain, and the required skills are depending on the future changes in the labour market and in the economy. Universities must follow the trends and must indicate fast changes in the curricula to remain competitive in the market and preserve the value of university degrees.

Fifth, I can suggest the methodology of the dissertation for researchers, who are planning to perform similar in-depth analysis like me. Applying these methods in the same order as I did can contribute to the effective examination of skills (or other phenomena) appearances in different documents and materials.

As Gieure et al. (2019) state, universities can contribute to the development of the economy by emphasizing the relevance of entrepreneurial programmes. They can, for example, update the content of their entrepreneurship-related programmes' descriptions on their official websites and highlight the importance of the skill development during the programmes

In the following I present the limitations of the dissertation.

During the literature review, I selected the systematic literature review methodology for entrepreneurial skills, and integrative methodology literature review for future skills. The reason behind my decision to apply an integrative approach in the case of future skill is the broad scope of the topic. Due to the different methodologies used in this research, there could be gaps in the exploration of the relationship between entrepreneurship and future skills.

Only texts from the institution's official website were collected for the corpus analysis. The content of downloadable materials or links to external websites were not involved in the corpus. Furthermore, descriptions of all types and levels of programmes (e.g. bachelor's, master's, doctoral, executive, etc.) are included in the texts. The advantage of this method is that it is possible to discover specialities in terms of geographical location and ranking in relation to the mentions of skills. Building a corpus is time-consuming, but it is possible to analyse the texts relatively quickly. The disadvantage of this method is that the texts do not focus specifically on entrepreneurship programmes, so they show the general representation of skills in online communication. Additionally, the corpus was created in 2019, however, the universities' programme descriptions could have changed a lot since then, so an update is required. The skills were investigated in groups, so the research cannot discover the frequency of individual appearances.

During the case studies, I had the chance to investigate the programmes' contents in detail. I examined other materials such as downloadable documents, external websites, videos, webinars, and blog posts next to the official website. In addition, I observed the curricula and conducted interviews with key persons. Furthermore, the case studies focus

specifically on two entrepreneurship-related MSc programmes. The advantage of this is that I can get a comprehensive picture of the application of skills in online communication for the two chosen university programmes. The disadvantage is that collecting and analysing the materials is very time-consuming, so I only conducted the study on a small sample. For this reason, it is not possible to generalise the result for the whole population, however, the best practices can be useful for HEIs. Additionally, because of the language limitations, I could not observe the content of materials written in Finnish.

All courses' descriptions were available on the website of BUEB, in contrast, Aalto's website did not contain any of these. This could be the reason behind the large difference in the number of skills involved. In the case of Aalto Universities' Sustainable Entrepreneurship MSc programme, it is important to mention that the programme was launched in September 2024, so it is possible that further information and details will be added to the website later. Furthermore, there is no experience related to how the Sustainable Entrepreneurship MSc's curriculum and the teaching methods work in practice. A follow-up is required on the programme once the programme leaders have collected some experiences (e.g., after 2 semesters).

I would like to make some comments about future directions of the research. Related to future skills further literature review is required to create a more detailed list. Due to this, a more complex comparison of entrepreneurial and future skills lists could be made.

Regarding the changes in the mentioned skills in the curricula of the top 100 business and management-related universities it would be possible to investigate it with the help of a new corpus. As a result, new trends can be discovered in the entrepreneurial and future skills usage in HEI's online communication. Additionally, collecting only the texts of entrepreneurship-related programmes would result in a more precise picture of the top universities' entrepreneurial and future skills usage in the online programme descriptions. Moreover, involving equal number of samples from each region or focusing only on the European HEIs' website could also help to discover regional differences and specialities.

The list of teachable entrepreneurial and future skills could also be extended. As can be seen, there are skills that have appeared in the practice (during the case studies) but are not included in the list of teachable skills compiled from the literature (e.g., persuasiveness). Further theoretical and practical research would be needed to create a credible and detailed list of teachable skills.

In the current research, I examined entrepreneurial and future skills' appearance in the context of higher education. During the research, I performed a systematic literature review, an integrative literature review, corpus-based content analyses and two case studies. Hopefully, the results of this research can contribute to the theory related to future skills and entrepreneurial skills, and to the practice as well with practical suggestions to universities.

Finally, I would like to answer the question in the title, *"What makes entrepreneurs of the future entrepreneurial?"*. Based on my research, I can say that HEIs can highly contribute to the success of future entrepreneurs if they involve skills in their curriculum, which are considered both entrepreneurial and future. Continuously monitoring the new trends and being open to HEIs actors' opinions could equip students with up-to-date and relevant practical knowledge and skillset. A well-developed entrepreneurial and future skills will make the entrepreneurs of the future entrepreneurial.

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13. APPENDIX

Appendix 1. Short summary of PRISMA (source: Page et al., 2021)

It is necessary to specify the databases, websites and other sources used in the collection, as well as the date when the search itself was carried out. The collection strategy used in the collection should be illustrated, listing and justifying all filters and other filtering criteria used. The criteria used to decide whether or not to include a study in the systematic review should then be described. Once a list of the literature to be analysed has been drawn up, the circumstances in which the content was analysed should be identified and recorded (e.g. how many researchers were involved in the analysis). This is done in order to draw attention to errors and possible discrepancies arising from individual interpretations of the research. The criteria and methods used to analyse the material should then be defined and any gaps identified in order to obtain a more complex result. The methods to be used to visualise the results should also be decided and the form in which they are to be presented visually. The next step is to document the steps of the literature collection as defined in the previous steps, from the results of the initial screening to the list of literature included in the analysis. Then, for illustrative purposes, it is necessary to cite some literature that meets the criteria of our analysis and some studies that do not and to justify them. This is followed by a citation of all the literature included and a presentation of its characteristics, and finally a summary of statistics to conclude the analysis.

Appendix 2a.: Synthesised list of Entrepreneurial skills (source: own compilation) *(Part 1.)*

	Entrepreneurial skills (89)		
Skill group name	*Skills*	*How many papers mentioned skill from the skill group? (2015-2019)*	*How many papers mentioned skill from the skill group? (2020-2024)*
Innovation skill group (14)	Innovation, Innovation development, Orientation toward innovation, Inventing, Creativity, Innovativeness, Creativity with limited resources, Creative destruction, Novelty, Exploring new ideas, Idea generation, Implementation of ideas, Developing purposeful ideas, Creating new products/services/technologies	76%	89%
Thinking skill group (12)	Critical thinking, Divergent thinking, System thinking, Alignment (logical) thinking, Thinking outside the box, Originality thinking, Creative thinking, Conceptual thinking, Perspective taking, Internal locus of control, Ethical thinking, Sustainable thinking	48%	68%
Social skills (11)	Networking, Teamwork, Extraversion, Social awareness, Collaboration, Working with various individuals, Mobilizing others, Social sensitivity, Orientation to people, Interpersonal skills, Empathy	67%	75%
Communication skills (5)	Persuasion, Effective verbal and nonverbal communication, Negotiation skills, Communicating ideas, Responding to critical feedback	33%	54%
Problem-solving skill group (12)	Provide a practice-based response to problems, Creative problem-solving, Think of multiple solutions, Complex-problem-solving, Analyses and problem-solving at the same time, Analysing a problem, Finding information, Valuing ideas, Identify problem, Coming up with solutions, Troubleshooting, Proactivity	57%	89%

Appendix 2b: *(continued from the previous page):* Synthesised list of Entrepreneurial skills (source: own compilation) *(Part 2.)*

	Entrepreneurial skills (89)		
Skill group name	*Skills*	*How many papers mentioned skill from the skill group? (2015-2019)*	*How many papers mentioned skill from the skill group? (2020-2024)*
Management skills (24)	Leadership, Capacity building, Time management, Results orientation, Resources management, Business management, Perciving business opportunities, Strategic skills, Opportunity management, Executive ability, Organisational skills, Planning, Risk management, Uncertainty management, Judgement and decision-making, Foresight, Action orientation, Creating new jobs for other people, Self-confidence, Self-control, People management, Delegation, Work under stress, Crisis managmenet	90%	86%
Learning skills (8)	Listening, Reflexivity, Learning to learn, Active learning, Learning through experience, Interdisciplinarity, Failing forward, Learn from mistakes	19%	50%
Technical skills (3)	Digital competencies, Computational thinking, Technical skills in general	10%	21%

Appendix 3: Interview questions to Tamara Galkina, the programme leader of Sustainable Entrepreneurship MSc programme, Aalto University

Interview with Tamara Galkina about Sustainable Entrepreneurship MSc programme

- About the programme
  - What was the motivation behind setting up this programme?
  - How did you create the programme (e.g., who participated in the process, which aspects were considered)?
    - Did you consider employers' viewpoints and expectations during the planning phase of the programme? Were they involved in the planning process?
    - Which authorities' viewpoints did you consider during the planning phase of the master programme (e.g., UNESCO)? Were there any collaborations between Aalto and these (or any) authorities?
  - Did you pay attention to the programme's future skill content?
    - If yes, how did you determine the list of future skill or which list did you apply?
  - Are the subjects, which are included in the programme, brand-new, or are these subjects existed earlier at Aalto and this programme is a new combination of them?
  - Is AVP available for the students of this master programme?
  - Could you please tell me more about the support of students' startups during university programmes?
  - What do you think about this statement? "The futures' issues can be solved through creative enterprises".
    - Can you connect the above-mentioned statement to your master programme?
- Skills, knowledge and teaching methods:
  - What is your opinion about the "personality traits issue"*? How do you handle it?
  - What are the personality traits which you consider as basic to the programme?
  - What is the selection process?
    - How do you measure the students' traits and skill?
    - How can you identify students' personality?
  - What are the basic skills (students must have these skills before they start their studies)?
    - how do you measure it during the selection process?
  - You mentioned in the video (and in the description as well) students with non-business backgrounds are encouraged to apply.
    - How can you handle the "missing" business knowledge during the programme (e.g., during teamwork)?
  - What are the applied teaching methods during the programme?
    - How did you select the teaching methods?
    - Were you aware of the connection between the teaching methods and the skills, which the programme develops?
    - Do you provide any trainings to the teachers of the programme related to the teaching methods?

- Details of the course/materials
    - Questions related to the programme's skill content:
        - Are Communication, intercultural communication, and Appreciation of diverse perspectives skills development involved in the programme?
        - Do you apply successful entrepreneurial role models, Applied learning experience, collaborative learning experience, and active learning experience during the programme as teaching method?
    - Is there an authority in Finland which is continuously monitoring the quality of university programmes? Who is this authority? Are the reports available online (in English)?
    - Do you have descriptions about the courses which contains the skills and the teaching methods? Is it possible to share them with me?
    - Which courses are included in the programme (electives and obligatory)? Is there a chance to send me the description of each course (electives and obligatory ones as well)?

*students must have some traits to become successful entrepreneurs. Traits are born with, the development of them almost impossible.

Appendix 4.: Interview questions to the programme founder of BUEB's Business Development

MSc (to Prof. Dr. Balázs Heidrich)

<u>Warm-up questions:</u>
- What was the motivation behind starting the programme?
- Do you remember the "history of the programme"? What was the main steps of the programme design? Who participated in the process? How long does it take to start the programme?
- What are the main differences between BUEB's programme and other universities' Business Development Programmes?
- What are the main reasons for the diverging number of applicants? Let's talk about it based on the table below!

	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Number of applications	203	319	274	272	212	154	236	230	233	230
Number of accepted applications	28	41	37	36	25	26	28	18	30	37
Ratio	14%	13%	14%	13%	12%	17%	12%	8%	13%	16%

<u>Questions related to the programme content</u>
- Was the curriculum of the programme updated since the programme was launched (2015)? *The folders on the website were updated in 2022, however they contain courses' descriptions from 2017.*
    - If yes:
        - When was the last time when the curriculum was updated (or is it regularly updated)?
        - What were the main changes (related to skills, courses, other)?
        - Why was the change necessary?
    - If no:
        - What was the reason for not changing?
        - Are there any plans to update the curriculum (when and what)?
- How does the programme consider the requirements of the labour market?
    - How often and how does BUEB investigates the requirements of the labour market?
- How do the values of the university appear in the programme content (collaboration, expertise, commitment, development, trust)

<u>Questions related to students:</u>
- During the admission how do you observe the skills and attributes of the students? Do you have a check list?
- What is the application process (especially what are the details of the interview with the students)? Is the interview online or in person?
- What is the average ratio of the students who started the programme and the students who finished the programme?
- Does the programme consider students' opinion? How and when (regularity)? If no, why not?

- What would happen if students can apply to the programme independently from the type of their degree (e.g., with engineering or medical degree)?
  - What is your opinion on this concept? Would it work?
  - (How) would it change the programme content?

Questions related to the programme's skill content
- Critical thinking: how can the students develop this skill?
- There are some skills which are developed only during elective courses. These are the
  - Foresight/future orientation → Future research course
  - Openness and self-confidence → Self-knowledge course.
  - Are there other courses where students can develop these skills? These skills are involved in the training and outcome requirements, these are obligatory to be acquired by the students during the programme

Future plans:
- Would it be possible to start the programme in English language?
  - If yes:
    - Are there any plans to do that? If yes, please share!
    - What would be the biggest challenges?
    - Would the curriculum be different?
    - What do you think, would it worth the effort?
  - If no:
    - What are the main obstacles?
    - What do you think, is it possible to solve these problems within 5 years? If no, how much time would be enough?
- Would it be possible to ask current students' opinions about the programme (via questionnaire)?

Questions related to the website:
- Who created the programme description to the website?
- What kind of aspects were considered during the programme description creation process?
- When was the description updated?
- Based on the results of the corpus-based content analysis BUEB's programme description and North American universities programme descriptions are very similar. What do you think about it? *[AACSB accreditation?]*

Appendix 5a: Synthesised entrepreneurial papers (49) and their attributes (source: own compilation) *Part 1.*

Author (Year)	Methodological approach	Number of referred entrepreneurial skills	Referred skills groups							
			Innovation	Thinking	Social	Communication	Problem-solving	Management	Learning	Technical
Jayeoba (2015)	Quantitative	7	1	0	0	0	1	5	0	0
Bublitz et al. (2015)	Quantitative	2	1	0	0	0	1	0	0	0
Thébaud (2015)	Quantitative	10	2	4	1	0	2	1	0	0
Luca & Robu (2016)	Quantitative	2	1	0	0	0	0	1	0	0
Obschonka (2016)	Qualitative	13	5	2	1	2	0	3	0	0
Kucel et al. (2016)	Quantitative	10	2	1	2	0	1	4	0	0
Kaplancali & Yücelen (2016)	Mixed	4	0	0	2	0	1	1	0	0
Tecau (2016)	Qualitative	4	0	0	1	1	0	2	0	0
Adekiya & Ibrahim (2016)	Quantitative	7	3	1	0	0	0	3	0	0
Fleaca (2017)	Qualitative	3	0	1	0	0	0	0	1	1
Čapienė & Ragauskaitė (2017)	Mixed	8	1	1	2	0	0	4	0	0
Rosique-Blasco et al. (2017)	Quantitative	8	2	1	0	0	1	4	0	0
De Ruysscher et al. (2017)	Quantitative	3	1	0	0	0	0	2	0	0
Stefan (2018)	Qualitative	3	0	0	0	0	0	3	0	0
Qiao (2018)	Qualitative	20	2	5	1	3	3	2	4	0
Jia & Yuan (2018)	Qualitative	3	1	0	1	0	0	1	0	0
Bejinaru (2018)	Quantitative	7	0	2	1	1	1	1	1	0
Hunady et al. (2018)	Quantitative	13	1	0	2	0	0	10	0	0
Terzaroli (2019)	Qualitative	12	2	0	1	1	3	2	2	1
Reyad et al. (2019)	Quantitative	7	1	2	1	0	1	2	0	0
Gieure et al. (2019)	Quantitative	6	1	0	1	2	1	1	0	0
Yildirim et al. (2019)	Quantitative	6	0	0	2	1	3	0	0	0
Prüfer & Prüfer (2020)	Quantitative	10	1	1	1	1	2	2	1	1
Postigo et al. (2020)	Quantitative	5	2	1	0	0	1	1	0	0
Rodriguez & Lieber (2020)	Quantitative	8	1	2	3	0	1	1	0	0
Vega-Gómez et al. (2020)	Quantitative	2	1	0	0	0	1	0	0	0
Castro & Zermeño (2020)	Qualitative	12	2	1	1	1	2	4	1	0
Hermann & Bossle (2020)	Quantitative	8	3	1	1	0	1	1	1	0
Bazkiaei et al. (2020)	Quantitative	0	0	0	0	0	0	0	0	0

Appendix 5b *(continued from the previous page):* Synthesised entrepreneurial papers (49) and their attributes (source: own compilation) *Part 2.*

Author (Year)	Methodological approach	Number of referred entrepreneurial skills	Referred skills groups							
			Innovation	Thinking	Social	Communication	Problem-solving	Management	Learning	Technical
Boldureanu et al. (2020)	Mixed	7	2	0	1	0	1	3	0	0
Kurczewska et al. (2020)	Quantitative	25	2	1	5	3	3	10	1	0
Gieurea et al. (2020)	Quantitative	5	1	1	0	0	1	2	0	0
Georgeschu & Herman (2020)	Quantitative	7	2	2	0	0	1	2	0	0
Betáková et al. (2020)	Quantitative	11	1	0	1	1	1	6	0	1
Bauman & Lucy (2021)	Qualitative	23	4	3	4	1	4	4	2	1
Peschl et al. (2021)	Qualitative	6	1	0	2	1	1	0	1	0
González-López et al. (2021)	Quantitative	25	4	1	5	1	5	7	2	0
Ranta (2022)	Quantitative	23	3	4	4	1	2	4	2	3
Vivekananth et al. (2023)	Quantitative	5	1	0	1	0	0	3	0	0
Mohamad (2023)	Qualitative	14	0	2	3	1	2	4	1	1
Perez-Macıas et al. (2023)	Quantitative	18	3	3	2	2	2	4	2	0
Paola et al. (2023)	Qualitative	8	2	1	0	0	1	2	2	0
Thomas (2023)	Quantitative	9	1	0	2	0	1	5	0	0
Casau (2023)	Qualitative	20	3	1	3	1	3	9	0	0
Cekule et al. (2023)	Qualitative	13	1	3	1	1	1	5	1	0
Suhail et al. (2024)	Quantitative	7	1	0	1	0	1	2	0	2
Laydes, et al. (2024)	Quantitative	30	5	6	5	2	2	10	0	0
Brakaj & Šafránková (2024)	Quantitative	20	4	1	3	1	2	8	1	0
Dias et al. (2024)	Mixed	28	3	5	5	2	1	11	1	0

Appendix 6a: Details of the introduced synthesised future skills list (source: own compilation) *Part 1*.

Bakshi et al. (2016)*	
Group name	**Skills**
Analytical skills	Operations analysis
	Quality control analysis
	Systems analysis
	Systems evalutaion
	Technology design
Problem solving skills	Complex problem solving
	Critical thinking
	Troubleshoot
Operational skills	Monitoring
	Operation and control
	Operation monitoring
	Service orientation
Social skills	Active listening
	Negotiation
	Persuasion
	Reading comprehension
	Social perceptiveness
	Speaking
	Writing
Technological skills	Equipment maintenance
	Equipment selection
	Intallation
	Mathematics
	Programming
	Repairing
Learning skills	Active learning
	Learning strategies
Management skills	Coordination
	Instructing
	Judgement and decision making
	Management of financial resources
	Management of material resources
	Management of personnell resources
	Time management

Ehlers & Kellerrmann (2019)	
Group name	**Skills**
Subject and individual development related skills	Autonomy
	Self-initiative
	Self-management
	Need/motivation for achievement
	Personal agility
	Autonomous learning competence
	Self-efficacy
Object-related skills (Instrumental skills)	Agility
	Creativity
	Tolerance for ambiguity
	Digital literacy
	Ability to reflect
Social world/ organization-related skills	Sense-making
	Future mindset
	Cooperation skills
	Communication competence

*skills synthesis is created by Szendrei-Pál, Király & Rakovics, 2021

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Appendix 6b: Details of the introduced synthesised future skills list (source: own compilation) *Part 2*.

Ehlers (2020)	
Group name	**Skills**
Subject development-related competences	Learning literacy
	Self-efficacy
	Self-determination
	Self-competence
	Reflective competence
	Initiative and performance competence
	Decision competence
	Ambiguity competence
	Ethical competence
Object-related competences	Innovative competence
	System competence
	Design thinking competence
	Digital literacy
Organisation-related competences	Sense-making
	Cooperation competence
	Communication competence
	Future and design competence

Kotsiou et al. (2022)	
Group name	**Skills (examples)**
Higher-order thinking skills	Decision making
	Problem solving
	Critical thinking
	System thinking
Dialogue skills	Collaboration
	Communication
	Empathy
	Listening
Digital and STEM literacy	Computational thinking
	Digital literacy
	Digital citizenship
	Online safety
Values	Ethical reasoning
	Citizenship
	Sustainability
	Global awareness
Self-management	Resilience
	Self-awareness
	Emotional intelligence
	Positive attitudes
Lifelong learning	Learning to learn
	Metacognition
	Willingness to learn
	Active learning
Enterprise skills	Creativity
	Initative
	Entrepreneurship
	Curiosity
Leadership	Responsibility
	Goal-oriented
	Courage
	Management
Flexibility	Adaptability
	Multi-tasking
	Agility
	Executive function

Appendix 6c: Details of the introduced synthesised future skills list (source: own compilation) *Part 3*.

Brasse et al. (2024)	
Group name	**Skills**
Technological skills	Cybersecurity Data management Data science and AI Design Intelligent harware and robotics IT-Infrastructure & Cloud Systems Sensors and IoT Software-Based Control of Business Processes Software Development Sustainable & Resource-Friendly Technologies
Digital skills	Agile Methods Basic IT skills Digital & Data Literacy Digital Collaboration & Interactation Programming Skills
Industrial Skills	Alternative Drive Technologies Analytical Chemistry Assisted & Autonomous Driving Biotechnology Development of Medical Devices Electrical Engineering Industrial Engineering Pharmaceutical Development of Products & Processes
Generic Skills	Communication Customer orientation Creativity Flexibility Goal orientation Initiative Leadership Organization skills Problem solving Resilience

Appendix 7a: The list of top 100 business and management-related universities in 2019 based on the list of Times Higher Education. This list is the basis of corpus-based content analysis. (Source: own compilation, based on THE, 2019) *Part 1*.

Short name	Long name	Ranking 2019	Country	Continent
MIT	Massachusetts Institute of Technology	1	United States	North America
Stanford	Stanford University	2	United States	North America
Oxford	University of Oxford	3	United Kingdom	Western Europe
Cambridge	University of Cambridge	4	United Kingdom	Western Europe
Duke	Duke University	5	United States	North America
Berkeley	University of California, Berkeley	6	United States	North America
Harvard	Harvard University	7	United States	North America
UNIL	London School of Economics and Political Science	8	United Kingdom	Western Europe
Yale	Yale University	9	United States	North America
UPenn	University of Pennsylvania	10	United States	North America
Chicago	University of Chicago	11	United States	North America
NW	Northwestern University	12	United States	North America
Columbia	Columbia University	12	United States	North America
UCLA	University of California, Los Angeles	14	United States	North America
Michigan	University of Michigan	15	United States	North America
NYU	New York University	15	United States	North America
NUS	National University of Singapore	17	Singapore	East Asia
Tsinghua	Tsinghua University	18	China	East Asia
UCL	University College London	19	United Kingdom	Western Europe
ETH	Eidgenössische Technische Hochschule Zurich	20	Switzerland	Western Europe
Cornell	Cornell University	21	United States	North America

Appendix 7b : The list of top 100 business and management-related universities in 2019 based on the list of Times Higher Education. This list is the basis of corpus-based content analysis. (Source: own compilation, based on THE, 2019) *Part 2*.

Short name	Long name	Ranking 2019	Country	Continent
HKU	Hong Kong University of Science and Technology	22	Hong Kong	East Asia
PKU	Peking University	23	China	East Asia
CMU	Carnegie Mellon University	24	United States	North America
UBC	University of British Columbia	25	Canada	North America
UniTokyo	The University of Tokyo	26	Japan	East Asia
UniHongKong	University of Hong Kong	27	Hong Kong	East Asia
Tilburg	Tilburg University	28	Netherlands	Western Europe
UniToronto	University of Toronto	28	Canada	North America
UniCalifornia	University of California, San Diego	30	United States	North America
Minnesota	University of Minnesota Twin Cities	31	United States	North America
EUR	Erasmus University Rotterdam	32	Netherlands	Western Europe
Mannheim	University of Mannheim	33	Germany	Western Europe
Warwick	University of Warwick	33	United Kingdom	Western Europe
Copenhagen	Copenhagen Business School	35	Denmark	Western Europe
UWM	University of Wisconsin-Madison	36	United States	North America
Manchester	University of Manchester	37	United Kingdom	Western Europe
Hong Kong Poly	Hong Kong Polytechnic University	38	Hong Kong	East Asia
UOW	University of Washington	38	United States	North America
JHU	Johns Hopkins University	39	United States	North America
Dartmouth	Dartmouth College	41	United States	North America
UOZ	University of Zurich	42	Switzerland	Western Europe
Melbourne	University of Melbourne	43	Australia	Australia
Penn State	Pennsylvania State University	44	United States	North America

Appendix 7c: The list of top 100 business and management-related universities in 2019 based on the list of Times Higher Education. This list is the basis of corpus-based content analysis. (Source: own compilation, based on THE, 2019) *Part 3*.

Short name	Long name	Ranking 2019	Country	Continent
MSU	Michigan State University	45	United States	North America
Utexas	University of Texas at Austin	46	United States	North America
USC	University of Southern California	47	United States	North America
SNU	Seoul National University	48	South Korea	East Asia
Edinburgh	University of Edinburgh	49	United Kingdom	Western Europe
ANU	Australian National University	50	Australia	Australia
GIOT	Georgia Institute of Technology	51	United States	North America
ChinUniHK	Chinese University of Hong Kong	52	Hong Kong	East Asia
Toluse	Federal University of Toulouse Midi-Pyrénées	53	France	Western Europe
ZJU	Zhejiang University	53	China	East Asia
OSU	Ohio State University	55	United States	North America
Boston	Boston University	56	United States	North America
UIUC	University of Illinois at Urbana-Champaign	57	United States	North America
Pompeau	Pompeu Fabra University	57	Spain	Western Europe
Arizona	Arizona State University	59	United States	North America
KULeuven	KU Leuven	60	Belgium	Western Europe
Sussex	University of Sussex	60	United Kingdom	Western Europe
Aalto	Aalto University	62	Finland	Western Europe
BostonCollege	Boston College	63	United States	North America
IU	Indiana University	64	United States	North America
Nanyang	Nanyang Technological University, Singapore	65	Singapore	East Asia
Virginia	University of Virginia	66	United States	North America
Maryland	University of Maryland, College Park	67	United States	North America

Appendix 7d: The list of top 100 business and management-related universities in 2019 based on the list of Times Higher Education. This list is the basis of corpus-based content analysis. (Source: own compilation, based on THE, 2019) *Part 4.*

Short name	Long name	Ranking 2019	Country	Continent
Maastricht	Maastricht University	68	Netherlands	Western Europe
UNC	University of North Carolina at Chapel Hill	69	United States	North America
UniNSW	University of New South Wales	70	Australia	Australia
Kyoto	Kyoto University	71	Japan	East Asia
TexasAM	Texas A&M University	72	United States	North America
Queensland	University of Queensland	73	Australia	Australia
StGallen	University of St Gallen	73	Switzerland	Western Europe
EP	École Polytechnique	75	France	Western Europe
Groningen	University of Groningen	76	Netherlands	Western Europe
WUSTL	Washington University in St Louis	76	United States	North America
CityUniHK	City University of Hong Kong	78	Hong Kong	East Asia
KoreaU	Korea University	79	South Korea	East Asia
Lund	Lund University	80	Sweden	Western Europe
Rice	Rice University	81	United States	North America
Amsterdam	University of Amsterdam	82	Netherlands	Western Europe
UniVienna	University of Vienna	83	Austria	Western Europe
SJTU	Shanghai Jiao Tong University	84	China	East Asia
McGill	McGill University	84	Canada	North America
Western	Western University	84	Canada	North America
UONOT	University of Nottingham	87	United Kingdom	Western Europe
PSL	Paris Sciences et Lettres – PSL Research University Paris	88	France	Western Europe
Fudan	Fudan University	89	China	East Asia
Lancaster	Lancaster University	90	United Kingdom	Western Europe
HUJerusalem	Hebrew University of Jerusalem	91	Israel	Middle East
Nanjing	Nanjing University	92	China	East Asia

Appendix 7e: The list of top 100 business and management-related universities in 2019 based on the list of Times Higher Education. This list is the basis of corpus-based content analysis. (Source: own compilation, based on THE, 2019) *Part 5.*

Short name	Long name	Ranking 2019	Country	Continent
SKKU	Sungkyunkwan University (SKKU)	92	South Korea	East Asia
PUMilan	Polytechnic University of Milan	93	Italy	Western Europe
UF	University of Florida	94	Australia	Australia
UCLouvain	Université Catholique de Louvain	94	Belgium	Western Europe
Monash	Monash University	94	United States	North America
KCL	King's College London	97	United Kingdom	Western Europe
QUT	Queensland University of Technology	99	Australia	Australia
CityUniLondon	City, University of London	100	United Kingdom	Western Europe
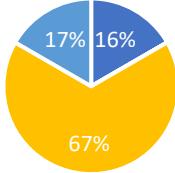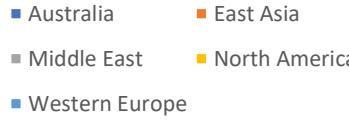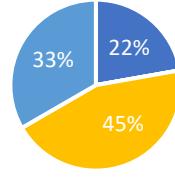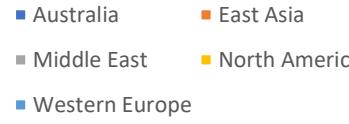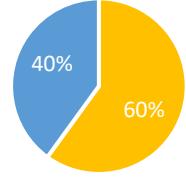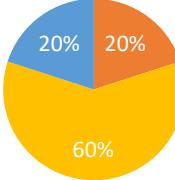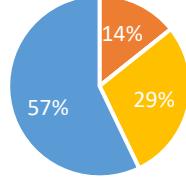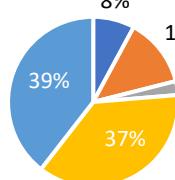
Appendix 8a: Comparing the results of corpus-based content analyses: the table below introduces which university belongs to which entrepreneurial and future cluster (source: own compilation) *Part 1*.

	Ent skill 1 -innovators	Ent skill 2 - managers
fut skill 1 - social	MIT	Stanford
		Harvard
		UPenn
		JHU
		Queensland
		StGallen
fut skill 2 - solvers		Oxford
		Chicago
		NW
		UBC
		Copenhagen
		Penn State
		ANU
		Lund
		QUT
fut skill 3 - managers	UniToronto	Yale
		Michigan
		PKU
		UniTokyo
		UniHongKong
	Touluse	UniCalifornia
		Mannheim
		UWM
		Manchester
		Hong Kong Poly
	IU	UOW
		Dartmouth
		MSU
		USC
		GIOT
	TexasAM	OSU
		Arizona
		BostonCollege
		Maryland
		Groningen
	Amsterdam	Rice
		UniVienna
		SJTU
		UCLouvain
		Monash

Appendix 8b: Comparing the results of corpus-based content analyses: the table below introduces which university belongs to which entrepreneurial and future cluster. *Part 2.*

	Ent skill 1 -innovators	Ent skill 2 - managers
fut skill 4 - technological	Utexas	Cambridge
		Duke
		Berkeley
		Columbia
	KULeuven	UCLA
		NYU
		NUS
		UCL
	Sussex	Cornell
		HKU
		CMU
		Tilburg
		Minnesota
		EUR
	Aalto	Warwick
		UOZ
		Melbourne
		Edinburgh
		ChinUniHK
		Boston
	Nanyang	UIUC
		Pompeau
		Maastricht
		UNC
		UniNSW
		EP
	Virginia	WUSTL
		CityUniHK
		McGill
		Western
		UONOT
		Lancaster
	LSE	HUJerusalem
		SKKU
		PUMilan
		UF
		KCL
		CityUniLondon

Appendix 9.: Geographical distribution within the two dimensions of clusters (source: own compilation)

	Ent skill 1 -innovators	Ent skill 2 - managers
fut skill 1 - socials	100% — North America. Legend: Australia, East Asia, Middle East, North America, Western Europe	16% Australia, 17% Western Europe, 67% North America. Legend: Australia, East Asia, Middle East, North America, Western Europe
fut skill 2 - solvers		22% Australia, 33% Western Europe, 45% North America. Legend: Australia, East Asia, Middle East, North America, Western Europe
fut skill 3 - managers	40% Western Europe, 60% North America. Legend: Australia, East Asia, Middle East, North America, Western Europe	20% East Asia, 20% Western Europe, 60% North America. Legend: Australia, East Asia, Middle East, North America, Western Europe
fut skill 4 - technological	14% East Asia, 29% North America, 57% Western Europe. Legend: Australia, East Asia, Middle East, North America, Western Europe	8% Australia, 13% East Asia, 3% Middle East, 37% North America, 39% Western Europe. Legend: Australia, East Asia, Middle East, North America, Western Europe

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Appendix 10.: Curriculum mapping of core courses with programme level Intended Learning outcomes. (Kuikka, 2023, p. 11)

	Understand the principles of entrepreneurship and the systemic nature of social, environmental, and economic sustainability challenges	Understand how entrepreneurship can impact sustainability challenges and vice versa	Apply-scientific knowledge to critically evaluate the sustainability potential of entrepreneurial opportunities	Cultivate an entrepreneurial mindset to address sustainability challenges in a variety of managerial settings and roles	Develop the essential soft and hard business skills to experiment with and create sustainable new ventures
Foundations of entrepreneurship	x	x		x	x
Startup experience	x			x	x
Startup leadership				x	x
Market entry strategies for entrepreneurial business			x	x	x
Social innovation		x	x	x	
Entrepreneurship law in practice			x		x
Entrepreneurial financing			x		x
SDGs as business opportunities	x	x	x	x	
Sustainable entrepreneurship, markets, and systems change	x	x	x		
Capstone	x	x	x	x	x
Thesis + seminars	x	x	x		

Appendix 11: BUEB Business Development MSc programme's curriculum (www.uni-bge.hu, n.d.-4)

Business Development MSc

Form **Part-time**
Language **Hungarian**
Valid from **2017/18**
ID **MLVFHP**

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BGE

Nem of subject groups and subjects	1st semester			2nd semester			3rd semester			4th semester			Total Credit
	Lectures	Credits	Exam type	Lectures	Credits	Exam type	Lectures	Credits	Exam type	Lectures	Credits	Exam type	Credit
Knowledge of economics and social sciences													*21*
Strategic management and planning	20	6	E										
Innovation process management							10	3	T				
Advanced corporate finance				20	6	E							
Corporate taxation							20	6	E				
General professional knowledge													*78*
Decision Theory and Methodological Knowledge										10	3	T	
Integrated service models				20	6	E							
International Business Development										20	6	E	
HR Management				20	6	E							
Project Management in Practice							20	6	E				
Creative technics and ogranizational innovations	20	6	T										
Financing of SMEs	20	6	E										
Holistic marketing				20	6	E							
Orgnaizational communication							10	3	E				
Managerial Economics	10	3	E										
Value Creation and Value Analysis				20	6	E							
IT solutions							20	6	E				
Advanced Leadership Accounting	20	6	T										
Business Legal Environment	20	6	E										
Hungarian Institutional System for SME										10	3	E	
Other areas of professional knowledge													*6*
Consulting										10	3	E	
Future Research										10	3	E	
Organizational Culture										10	3	E	
Organizational Development and Planning										10	3	E	
Family Business Management										10	3	E	
Responsible management										10	3	E	
EU Institutional Knowledge										10	3	E	
Self-Knowledge										10	3	E	
Others													*15*
Advanced Research Methodology							20	6	T				
Thesis										0	9	T	
		33			30			30			27		**120**

Exam types:
E: Exam at the end of the semester (1 time)
T: Tasks during the semester (2 times)

Appendix 12a: BUEB Business Development MSc programme's skill content by courses (source: own compilation) *Part 1*.

Subject name	Knowledge of economics and social sciences module				General professional knowledge module															Other areas of professional knowledge module									Number of mentions	Training and outcome requirement? Yes (Y) / No (N)
	Strategic management and planning	Innovation process management	Advanced corporate finance	Corporate taxation	Decision Theory and Methodological Knowledge	Integrated service models	International Business Development	HR Management	Project Management in Practice	Creative technics	Financing of SMEs	Holistic marketing	Organizational communication	Managerial Economics	Value Creation and Value Analysis	IT solutions	Advanced Leadership Accounting	Business Legal Environment	Hungarian Institutional System for SME development	Consulting	Future Research	Organizational Culture	Organizational Development and Planning	Family Business Management	Responsible management	EU Institutional Knowledge	Self-Knowledge	Advanced Research Methodolog		
Originality thinking										X																			1	Y
Perceiving business opportunities		X					X	X		X	X		X		X		X		X	X	X	X					X		13	Y
Self confidence																											X		1	Y
Finding Information									X					X					X										3	Y
Foresight																					X								1	N
Networking													X																1	Y
Creativity					X				X						X													X	4	N
Proactivity			X																								X		2	Y
Identify problem	X		X	X					X				X						X								X	X	8	Y
Learning through experience	X		X	X	X				X						X	X											X		8	N
Planning	X		X				X		X				X					X											6	Y
Business management			X	X				X			X	X			X	X	X			X									9	Y
Uncertainty management																					X								1	N
Work under stress																											X		1	N
Learn from mistake																											X		1	N
Risk management									X																				1	N

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Appendix 12b: BUEB Business Development MSc programme's skill content by courses (source: own compilation) *Part 2*.

	Subject name	Strategic management and planning	Innovation process management	Advanced corporate finance	Corporate taxation	Decision Theory and Methodological Knowledge	Integrated service models	International Business Development	HR Management	Project Management in Practice	Creative technics	Financing of SMEs	Holistic marketing	Organizational communication	Managerial Economics	Value Creation and Value Analysis	IT solutions	Advanced Leadership Accounting	Business Legal Environment	Hungarian Institutional System for SME development	Consulting	Future Research	Organizational Culture	Organizational Development and Planning	Family Business Management	Responsible management	EU Institutional Knowledge	Self-Knowledge	Advanced Research Methodolog	Number of mentions	Training and outcome requirement? Yes (Y) / No (N)
			Knowledge of economics and social sciences module			General professional knowledge module															Other areas of professional knowledge module											
Entrepreneurial & future skills	Teamwork		X	X		X	X		X		X				X	X		X		X		X	X			X		X		14	Y
	Judgement and decision making	X				X						X	X		X	X		X					X							8	Y
	Collaboration						X																							1	Y
	Resource management							X			X	X	X					X										X		6	Y
	Persuasiveness															X														1	Y
	Innovation		X								X	X						X								X				5	Y
	Digital competences									X							X													2	Y
	Communication								X				X	X				X										X	X	6	N
	(Real world) Complex problem-solving	X			X	X		X				X	X	X	X			X					X			X				11	Y
	Critical Thinking																													0	Y
	Negotiation skills								X																					1	N
	Social awareness							X							X						X	X				X				5	Y
	Leadership					X			X	X			X		X		X	X					X		X	X				10	Y
	System analysis/thinking			X	X	X	X		X	X	X	X	X	X	X	X	X	X		X	X	X	X					X	X	20	Y

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Appendix 12c: BUEB Business Development MSc programme's skill content by courses (source: own compilation) *Part 3.*

| Name of module | Knowledge of economics and social sciences module | | | | General professional knowledge module | | | | | | | | | | | | | | | Other areas of professional knowledge module | | | | | | | | | Number of mentions | Training and outcome requirement? Yes (Y) / No (N) |
Subject name	Strategic management and planning	Innovation process management	Advanced corporate finance	Corporate taxation	Decision Theory and Methodological Knowledge	Integrated service models	International Business Development	HR Management	Project Management in Practice	Creative technics	Financing of SMEs	Holistic marketing	Organizational communication	Managerial Economics	Value Creation and Value Analysis	IT solutions	Advanced Leadership Accounting	Business Legal Environment	Hungarian Institutional System for SME development	Consulting	Future Research	Organizational Culture	Organizational Development and Planning	Family Business Management	Responsible management	EU Institutional Knowledge	Self-Knowledge	Advanced Research Methodolog		
Professional knowledge	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X		X		X	X	X		X	24	Y
Orientation toward development (own and others as well)		X		X			X	X												X							X		6	Y
Responsibility								X																	X				2	Y
Process management						X						X			X														3	Y
Efficient working								X	X	X		X	X		X	X									X			X	9	Y
Processing information														X				X											2	Y
Project management			X						X			X																	3	N
Create strategy	X	X			X	X			X	X		X															X		8	Y
Strategic skills	X	X			X	X	X	X			X	X					X										X		10	N
Advising																				X									1	Y
Presentation skills	X	X	X	X			X									X				X		X			X				9	N
Internationalization							X																						1	Y
Openess																											X			Y
Constructivity																X														Y

(Row group label at left: *Not specified skills*)

Appendix 13.: Comparison of Aalto's and BUEB's master's degree programmes descriptions' skills content (source: own compilation)

Type of skills	Available only at Aalto	Available at both universities	Available only at BUEB
Entrepreneurial	• Opportunity management	• Learning through experience • Perceiving business opportunities	• Business Management • Learn from mistake • Strategic skills • Work under stress • Identify problem • Creativity • Foresight • Finding Information • Originality thinking • Planning • Proactivity • Networking • Self-confidence • Uncertainty management • Risk management
Entrepreneurial & Future	• N/A	• Leadership • Critical thinking • Communication • Collaboration • Teamwork • (Real world) complex problem-solving	• Judgement and decision making • Negotiation • Resource management • Digital competencies • Persuasiveness • Social awareness • Innovation • System thinking
Future skills	• Interdisciplinary approach to global issues • Encouragement to work/study abroad • Develop intercultural communication • Integrative learning • Appreciation of diverse perspectives • Understand and act on issues of universal significance in today's interconnected world	• N/A	• N/A

Appendix 14: Summary of the applied teaching methods during both MSc programmes.

Type of teaching method	Available only at Aalto	Available at both universities	Available only at BUEB
Entrepreneurial	• Successful entrepreneurial role models • E-learning programmes (Online courses)	• Guest presentation • Case studies • Active learning experience • Individual projects/task solving • Putting student to real world situations	• Indoor & Outdoor trainings • Simulations
Entrepreneurial & future skills	• International studies • International internship	• Collaborative learning experience • Applied learning experience	N/A