

GUESSS AUSTRIA 2021

**Entrepreneurial Intentions and activities
of students – entrepreneurship
education in challenging times**

Global University Entrepreneurial Spirit Students Survey 2021

National Report Austria

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Table of Contents

1 Introduction.....	1
2 The Research Project GUESSS.....	2
2.1 Respondents.....	2
2.1.1 Age.....	3
2.1.2 Gender.....	4
2.1.3 Nationality.....	4
2.1.4 Level of studies.....	5
2.1.5 Fields of study.....	6
2.1.6 Participation in Entrepreneurship Education by fields of study.....	7
2.1.7 Assessment of the impact of the university on the development of students' competencies.....	8
2.1.8 Founding intentions by participation in Entrepreneurship Education.....	12
2.1.9 Entrepreneurial competences and skills by participation in Entrepreneurship Education.....	13
3 Career choice intentions.....	14
3.1 Career choice intentions directly after and 5 years after graduation.....	14
3.2 Career choice intentions by field of study.....	18
3.3 Career choice intentions by gender.....	20
4 Students and Entrepreneurship.....	21
4.1 Founding intentions.....	21
4.2 Self-efficacy and perceived behavioural control.....	22
4.3 Reaction of the environment.....	23
4.4 Entrepreneurial competences and skills.....	24
5 Nascent founders.....	25
5.1 Characteristics of the nascent founders.....	25
5.2 Foundation partners.....	25
5.3 Industry sectors.....	27
5.4 Steps taken to found the business.....	28
5.5 COVID.....	28
6 Active founders.....	30
6.1 Characteristics of active founders.....	30
6.2 Industry sectors.....	31
6.3 Performance ratings.....	32
6.4 COVID.....	32
7 Summary of findings.....	33

Main results.....	33
8 Conclusions and Implications.....	35
9 Annex.....	38
10 References.....	45
10.1 GUESSSS National Reports Austria.....	46
10.2 Other publications based on Austrian GUESSSS Data.....	47

List of Figures

Figure 1: Age profile of the sample.....	6
Figure 2: Gender profile o	
Figure 1: Age profile of the sample.....	3
Figure 2: Gender profile of the sample.....	4
Figure 3: Nationality profile of the sample.....	4
Figure 4: Level of studies.....	5
Figure 5: Field of studies.....	6
Figure 6: Participation in Entrepreneurship Education by field of studies.....	7
Figure 7: Assessment of the university environment to foster entrepreneurship.....	8
Figure 8: Students assessment of the university offerings concerning the development of their competences: The university courses and offerings I attended.....	9
Figure 9: Assessment of the university environment to foster entrepreneurship by participation in Entrepreneurship Education.....	10
Figure 10: Students' assessment of the university offerings concerning the development of their competences by participation in Entrepreneurship Education:.....	11
The university courses and offerings I attended.....	11
Figure 11: Founding intentions by participation in Entrepreneurship Education.....	12
Figure 12: Self-Assessment of entrepreneurial competences by participation in Entrepreneurship Education.....	13
Figure 13: Career choice intentions: directly after studies and 5 years after graduation.....	15
Figure 14: Career intentions right after and 5 years after studies.....	16
Figure 15: Career choice intentions right after graduation by fields of study.....	18
Figure 16: Career choice intentions five years after graduation by fields of study.....	19
Figure 17: Career choice intentions five years after graduation by gender.....	20
Figure 18: Founding intentions.....	21
Figure 19: Students self-efficacy and locus of control.....	22
Figure 20: Reaction of the environment toward an entrepreneurial career.....	23

Figure 21: Reaction of the environment toward an entrepreneurial career by participation in entrepreneurship education.....	23
Figure 22: Entrepreneurial competences.....	24
Figure 23: Number of Co-Founders.....	25
Figure 24: Number of Co-Founders by gender.....	26
Figure 25: Context for team member recruitment.....	26
Figure 26: Industry sectors of nascent founders.....	27
Figure 27: Steps taken to found a business (multiple responses).....	28
Figure 28: Industry sectors of active founders.....	31
Figure 29: Performance ratings compared to competitors.....	32
Figure 30: Career choice intentions: directly after studies and 5 years after graduation: Only participants in EE.....	38
Figure 31: Career choice intentions: directly after studies and 5 years after graduation: Only non-participants in EE.....	39
Figure 32: Reaction of the environment toward an entrepreneurial career by Participation in EE.....	40
Figure 33: Number of nascent and active founders by university (frequencies).....	42
Figure 34: Founding intentions directly after studies and 5 years after graduation by university (percent).....	43
f the sample.....	6
Figure 3: Nationality profile of the sample.....	7
Figure 4: Level of studies.....	8
Figure 5: Field of studies.....	9
Figure 6: Participation in Entrepreneurship Education by field of studies.....	10
Figure 7: Assessment of the university environment to foster entrepreneurship.....	11
Figure 8: Students assessment of the university offerings concerning the development of their competences: The university courses and offerings I attended.....	12
Figure 9: Assessment of the university environment to foster entrepreneurship by participation in Entrepreneurship Education.....	13
Figure 10: Students' assessment of the university offerings concerning the development of their competences by participation in Entrepreneurship Education:.....	14
The university courses and offerings I attended.....	14
Figure 11: Founding intentions by participation in Entrepreneurship Education.....	16
Figure 12: Self-Assessment of entrepreneurial competences by participation in Entrepreneurship Education.....	18
Figure 13: Career choice intentions: directly after studies and 5 years after graduation.....	21
Figure 14: Career intentions right after and 5 years after studies.....	22
Figure 15: Career choice intentions right after graduation by fields of study.....	24
Figure 16: Career choice intentions five years after graduation by fields of study.....	25

Figure 17: Career choice intentions five years after graduation by gender.....	26
Figure 18: Founding intentions.....	27
Figure 19: Students self-efficacy and locus of control.....	28
Figure 20: Reaction of the environment toward an entrepreneurial career.....	29
Figure 21: Reaction of the environment toward an entrepreneurial career by participation in EE	29
Figure 22: Entrepreneurial competences.....	31
Figure 23: Number of Co-Founders.....	39
Figure 24: Number of Co-Founders by gender.....	39
Figure 25: Context for team member recruitment.....	39
Figure 26: Industry sectors of nascent founders.....	41
Figure 27: Steps taken to found a business (multiple responses).....	42
Figure 28: Industry sectors of active founders.....	45
Figure 29: Performance ratings compared to competitors.....	46
Figure 30: Career choice intentions: directly after studies and 5 years after graduation: Only participants in EE.....	52
Figure 31: Career choice intentions: directly after studies and 5 years after graduation: Only non-participants in EE.....	53
Figure 32: Reaction of the environment toward an entrepreneurial career by Participation in EE	54

List of Tables

Table 1: Career choice intentions: Expected changes in 5 years.....	17
Table 2: Career choice intentions: Expected changes in 5 years – EE Participants only.....	40
Table 3: Career choice intentions: Expected changes in 5 years – EE Non-Participants only. .	41
Table 4: Participation of universities in the sample.....	41

1 Introduction

As founding an enterprise as well as business succession are of increasingly high importance for the economy, entrepreneurship is considered as a key competence (European Council 2018). According to the start-up statistics of the Austrian Chamber of Commerce nearly 39,000 people started a new enterprise in Austria in 2020 (WKO 2021).

The promotion of entrepreneurship is critical in stimulating economic growth and job creation as well as innovation, especially in times of crisis like the current pandemia (see f.i. Ratten 2021, Stephan et al. 2021). Previous waves of GUESSS as well as other studies consistently have shown that students as well as graduates of universities are increasingly interested in the career option of selfemployment, especially in founding their own enterprise, but also as successors in (family) firms (see f.i. Laspita et al. 2012, Koreen et al. 2019). Students which express no interest in entrepreneurship at all are a distinct minority. A considerable percentage of students already acquires practical entrepreneurial experience through internships or part- or full-time work in a start-up, in their family firm or even as business owners whilst still pursuing their studies.

Previous waves of the survey have shown that a remarkable percentage of students in Austria envisions to establish their own business within five years after graduating. The career option self-employment is gaining importance when practical work experience and industry-specific know-how are increasingly acquired. Therefore, entrepreneurship education has to focus not only students, but also alumni and staff.

Higher education institutions play an important role because they can spread the spirit of enterprise through fostering a positive attitude of their students and staff towards entrepreneurship. They can offer courses and practical field studies to develop entrepreneurial competencies and they can actively support (potential) academic start-ups in various ways.

The development of university-wide concepts for entrepreneurship education is urgently needed to create entrepreneurial universities (see f.i. Gibb 2005, Kailer 2010, Volkmann & Audretsch 2017). As an initiative of the European Commission (DG Education and Culture) and the OECD LEED Forum a self-assessment tool for entrepreneurial HEI has been developed. During the last years this tool as well as case studies and train-the-trainer seminars to support organizational change in HEI have been intensively used in the EU member countries (see www.heinnovate.eu). Case studies of successful entrepreneurial HEI have been developed in a project of the European Commission, „Supporting the entrepreneurial potential of higher education“ (see www.sephe.eu). Within the EC-project „EntreComp“ an Entrepreneurship Competence Framework has been developed (Bacigalupo et al. 2016).

International theme-specific networks (e.g. ESU - European University Network on Entrepreneurship) and working groups of scientific networks (e.g. G-Forum) have also a distinct focus on the development of entrepreneurial universities.

2 The Research Project GUESSSS

The Global University Entrepreneurial Spirit Students' Survey (GUESSSS) project is an international collaboration to grasp entrepreneurial intentions and activities among students in different countries (see www.guesssurvey.org). The present study is based on previous waves of this survey. The International Survey on Collegiate Entrepreneurship (ISCE) 2006 is the antecessor of the GUESSSS surveys. GUESSSS is based on cooperation between national representatives. Each representative is responsible for contacting universities and sponsors, for data collection and interpretation as well as for the analysis and report for his country. Since 2016, the GUESSSS project is jointly organized by the University of St. Gallen (Switzerland, KMU-HSG/CFB-HSG) and the University of Bern (Switzerland, IMU).

In 2021 a total of 58 countries took part in the anonymous web-based survey and the total final response included 267.000 questionnaires. This is a marked increase compared with the previous wave (GUESSSS 2018: 54 countries, 209.000 questionnaires) (Sieger et al. 2021).

The country study for Austria is organized by the Department for Corporate Leadership and Entrepreneurship of the University of Graz. Many thanks to the Austrian business magazine „Die Macher“ which sponsored vouchers raffled among the participants to increase the response rate.

2.1 Respondents

A critical success factor of a web-based questionnaire is the general accessibility of students via email as well as the willingness of the universities to inform as many students as possible of the survey. The rectors, the vice rectors of academic affairs of universities and the managing directors and program directors of the universities of applied science have been contacted by email and/or by telephone and have been asked to encourage the students via round mail to complete the questionnaire. In most cases an e-mail with a short introduction of the project and a link to the online survey was sent to students. Nevertheless in most cases no information is available how many of their students actually have been informed and whether the information was given directly via mail or through a newsletter. Therefore no exact response rates can be calculated.

As in the previous waves of the survey marked differences in the sample size of participating countries as well as in the return rates of the participating universities can be observed. A selective distribution of questionnaires, f.i. with focus on universities with entrepreneurship chairs and entrepreneurship education courses and extra-curricular measures will probably distort the results. This has to be kept in mind when trying to make any comparisons between countries, between universities, or between results of different waves of this survey.

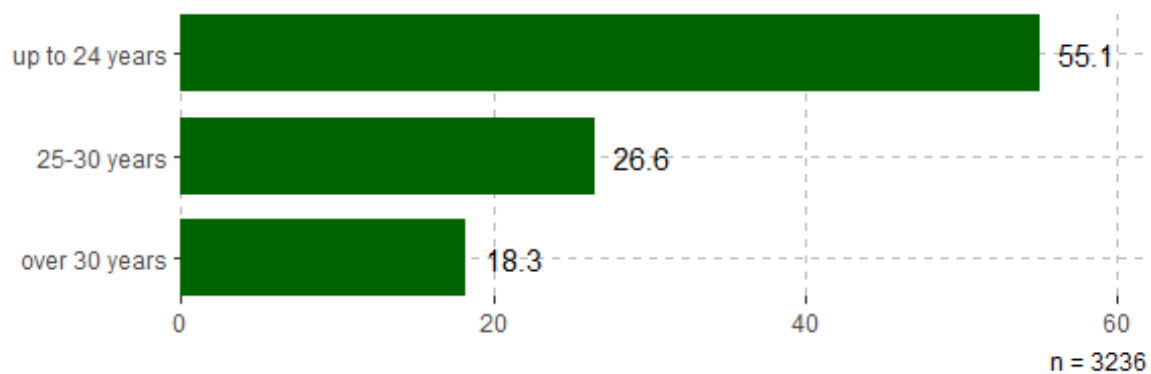
The Global University Entrepreneurial Spirit Students' Survey (GUESSS 2021) includes 58 countries worldwide. In total 267.000 students participated in this online-survey focusing on entrepreneurial intention and start-up activities.

In Austria, 3.236 students from 43 Austrian universities and universities of applied science filled in the complete online-questionnaire. 20 out of these 43 informed their students actively about this survey. Only fully completed questionnaires have been taken into account.

2.1.1 Age

The average age of students participating in GUESSS Austria 2021 is 25.9 years. The age profile (figure 1) shows, that most of the Austrian respondents (55%) can be found in the age category "up to 24 years". 27% are between 25 and 30 years old, and the remaining respondents (18%) are older than 30 years. In this wave, more older students participated than in 2018 (mean in 2016: 26.3 years, in 2018: 24.7 years).

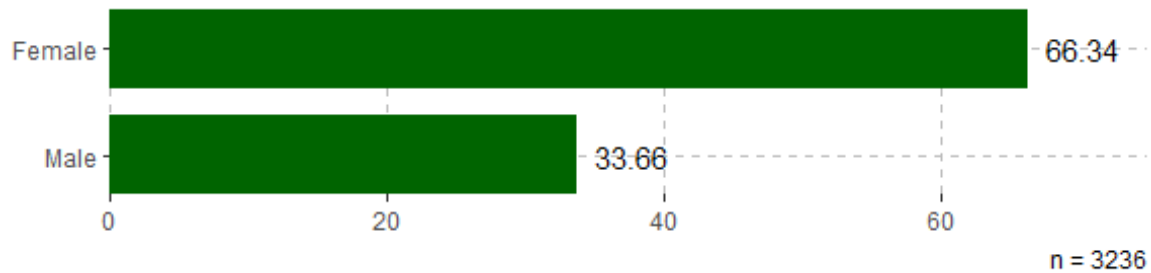
Figure 1: Age profile of the sample



2.1.2 Gender

Like in the previous surveys, more female (66%) than male (34%) students participated in the survey. In the sub-sample of students which already have participated in Entrepreneurship Education (n = 773), 62% of respondents are female and 37% male. The higher percentage of women must be taken into account in country comparisons as the female entrepreneurial intention, generally speaking, is lower.

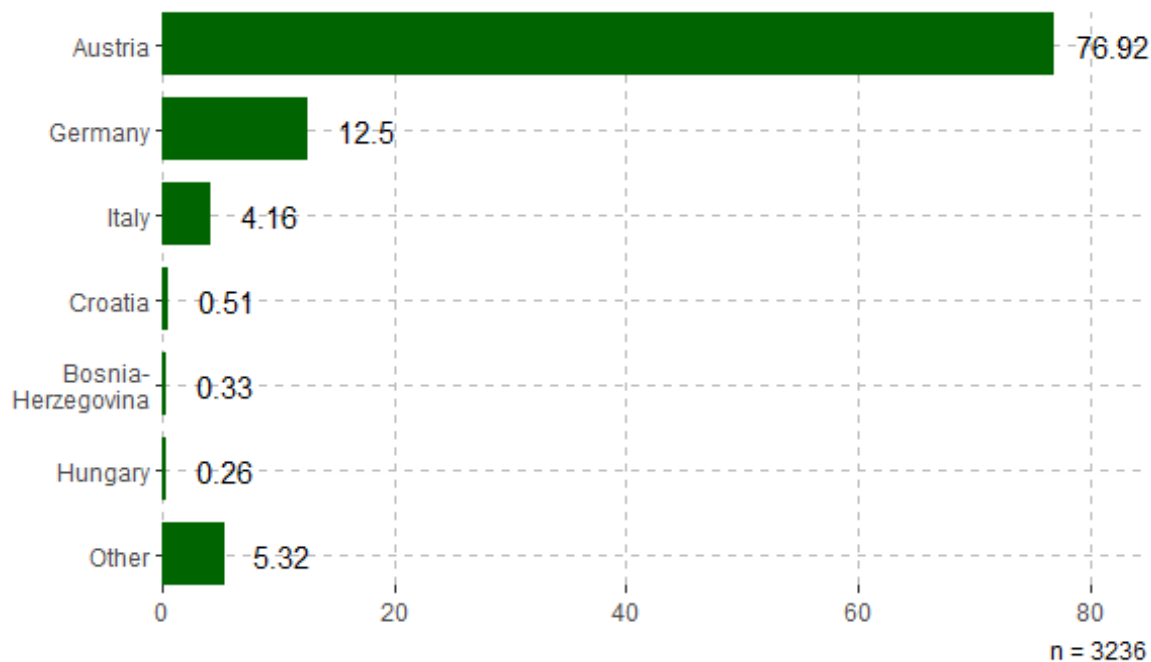
Figure 2: Gender profile of the sample



2.1.3 Nationality

By far most of the respondents (77%) were Austrian citizens, followed by Germans (13%) and Italians (4%).

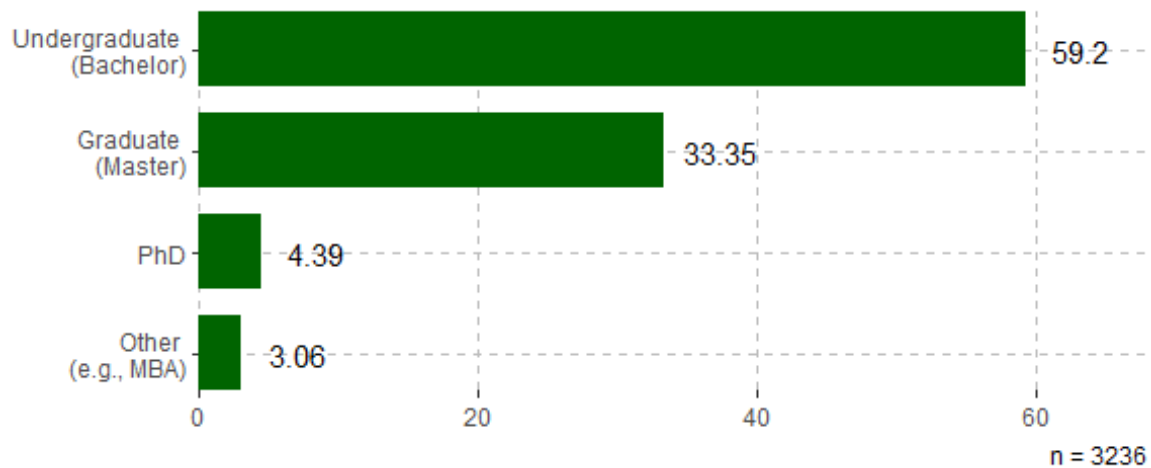
Figure 3: Nationality profile of the sample



2.1.4 Level of studies

As illustrated in figure 4 the participants in GUESSS Austria 2021 study at different levels. More than half of the students participating are enrolled in a bachelor program (59%), followed by students studying at the master level (33%). Fewer respondents are enrolled in a PhD (4%) or MBA (3%) program.

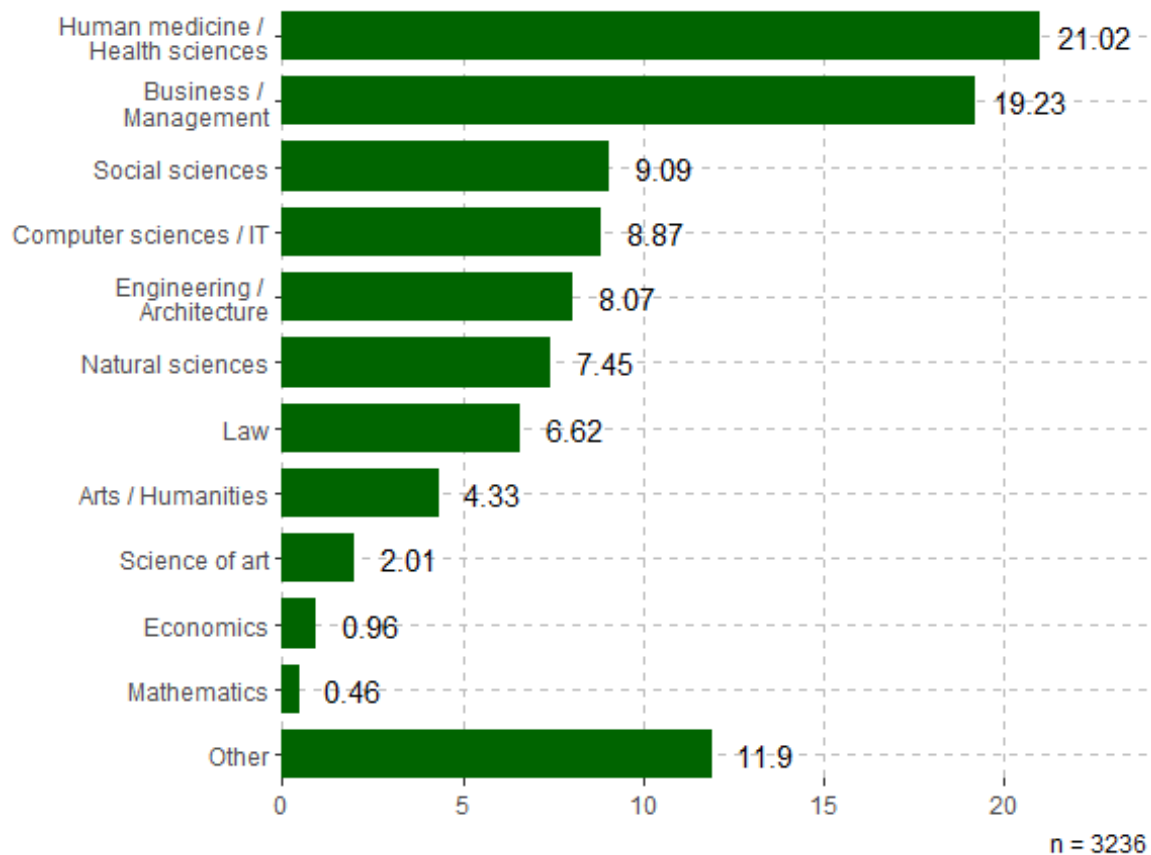
Figure 4: Level of studies



2.1.5 Fields of study

Figure 5 illustrates the distribution of the aggregated fields of study. 21% are studying in the field of Human Medicine/Health Sciences. 19% are studying Economics or Business sciences, followed by Social Sciences (9%) and Computer Sciences/IT (9%), Engineering & Architecture (8%), Natural Sciences (7%) and Law (7%).

Figure 5: Field of studies

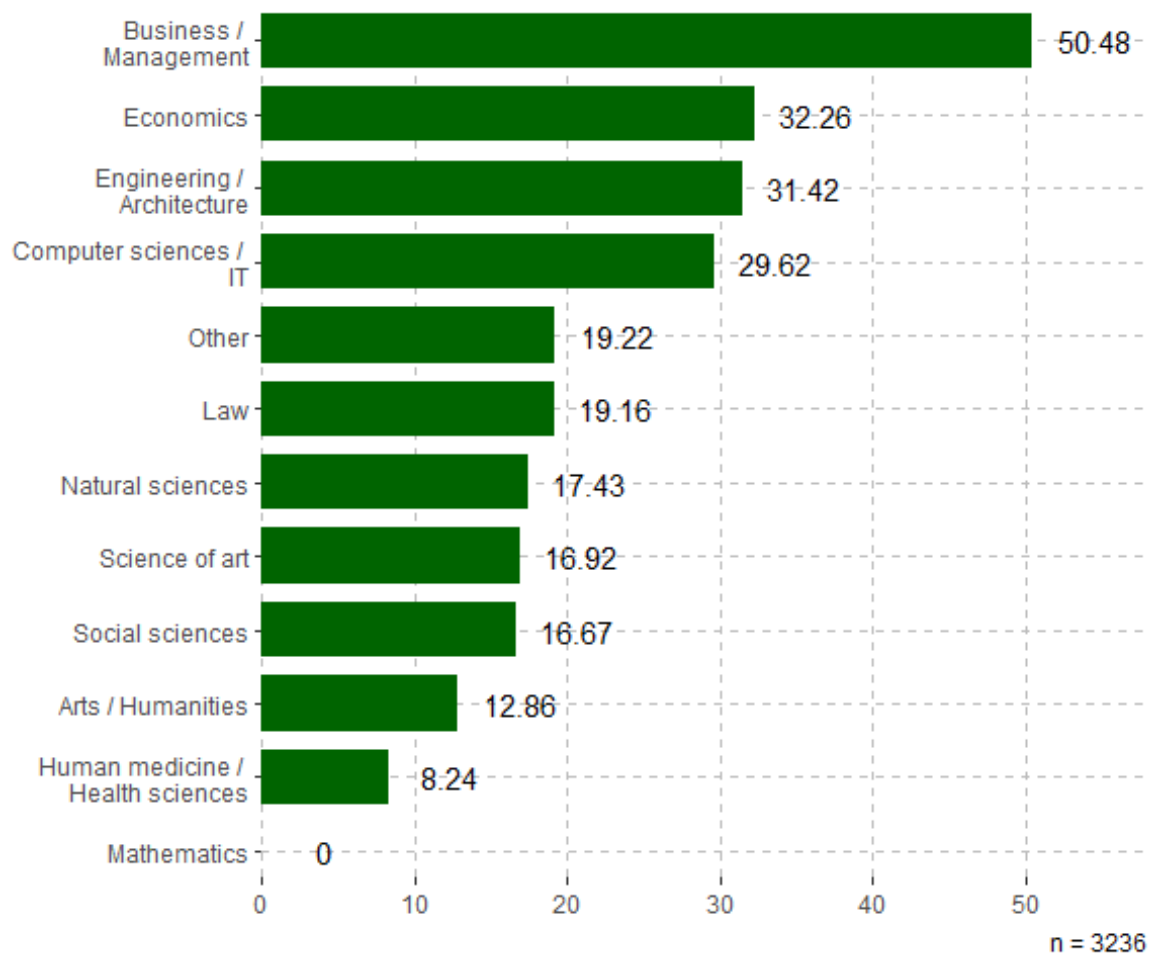


2.1.6 Participation in Entrepreneurship Education by fields of study

Figure 6 illustrates the proportion of students participating in Entrepreneurship Education by aggregated fields of study. There are clear differences in the participation rate in Entrepreneurship Education with a range of 50% (Business/Management) to 0% (Mathematics). This is partly due to the fact that chairs for entrepreneurship mainly have been established in the fields of Business/Management/Economics and Social Science. The result is that the extent of entrepreneurship courses or events offered is quite different between HEI and faculties.

The interpretation of the results of the study should keep in mind the fact that in this wave 680 students from Humane Medicine/Health Science participated in this study, which is the highest proportion in the sample (21%). On the other hand, only 8% of Humane Medicine/Health Science students participated in Entrepreneurship Education.

Figure 6: Participation in Entrepreneurship Education by field of studies

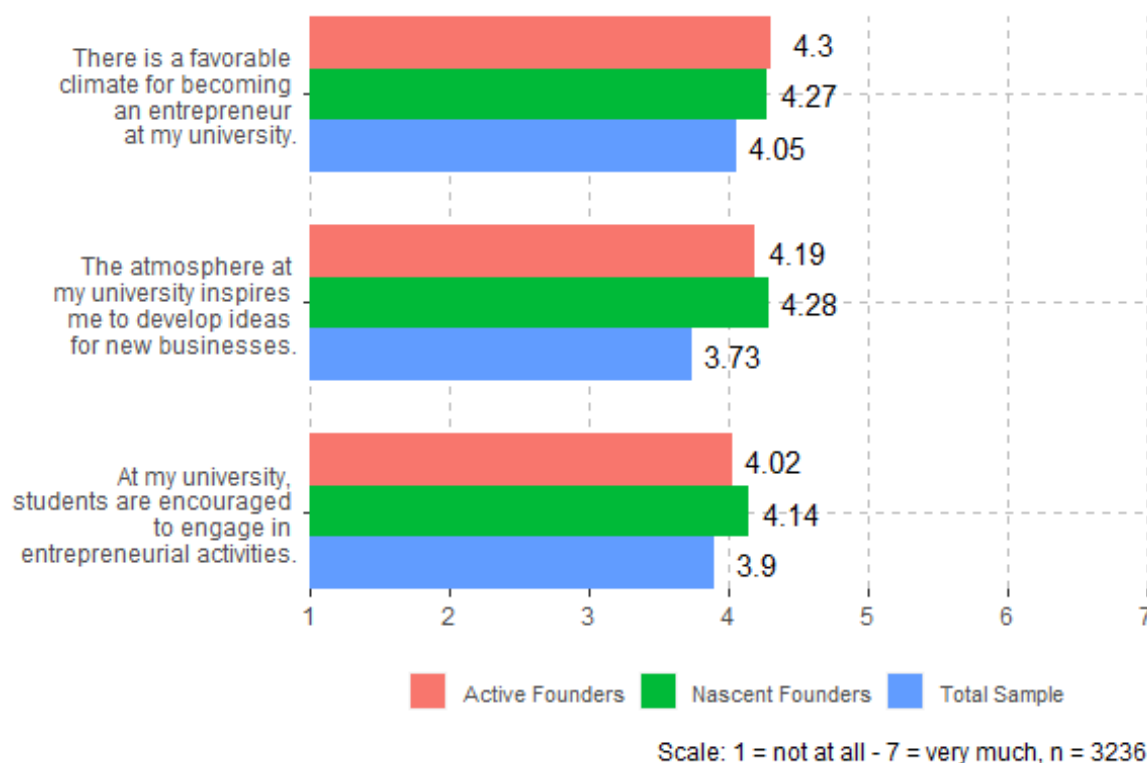


2.1.7 Assessment of the impact of the university on the development of students' competencies

The study analyses the students' perception of the university environment concerning the encouragement of entrepreneurial intentions and activities. Respondents were asked to assess their level of agreement with statements on a seven-point Likert scale ranging from "not at all" [1] to "very much" [7].

The differences in perception appear only minor, but are statistically significant¹. The perceptions of active and nascent founders are significantly higher than those of the rest of the sample. So, active and nascent founders perceive the university environment as much more encouraging to entrepreneurship than other students (figure 7).

Figure 7: Assessment of the university environment to foster entrepreneurship



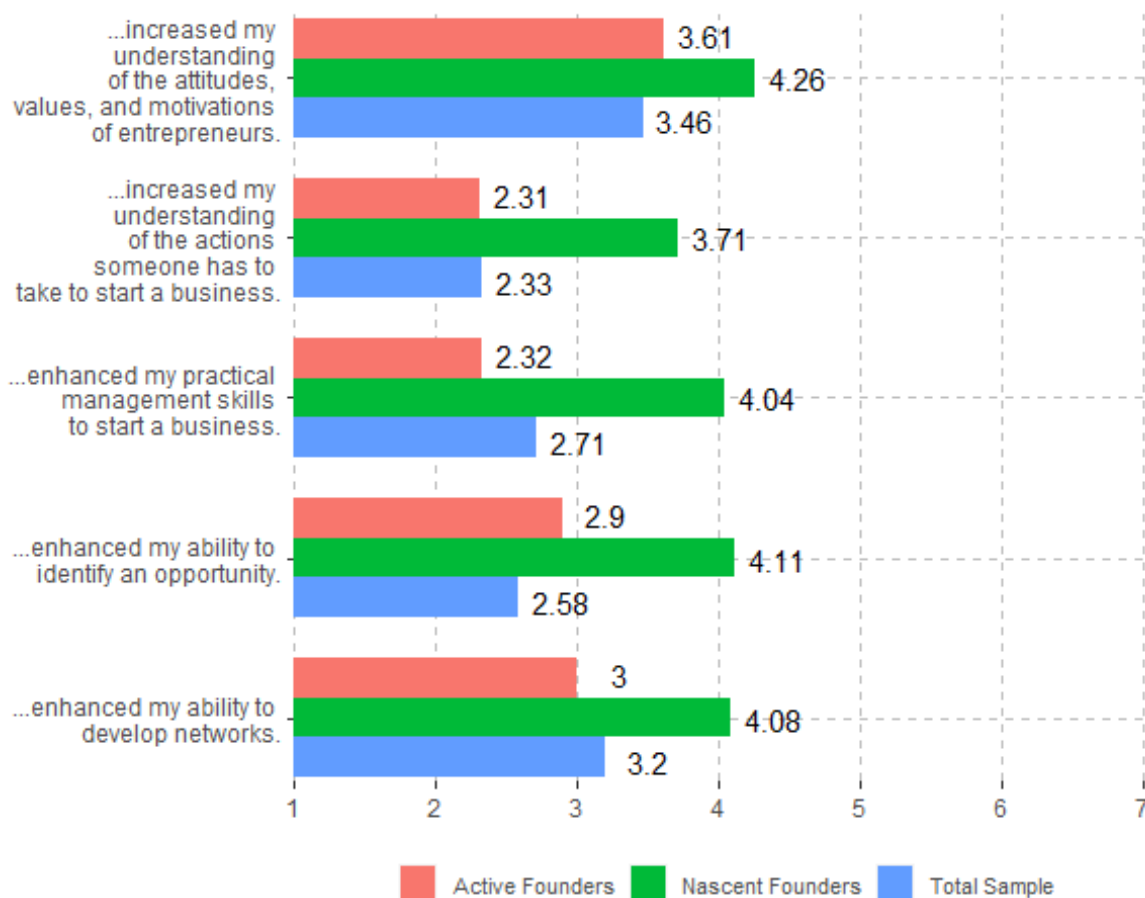
Educational programs and courses at the university level aim at fostering the development of entrepreneurial motivations, intentions and skills. The study focuses on the self-assessment of students' entrepreneurial competency development related to all university courses and offerings in which they have participated (not only entrepreneurship courses!) (figure 8). Active founders – and even more pronounced nascent founders – rate the impact of university

¹ Here, as well as in the following sections, group differences in means were tested via ANOVA and Tukey HSD Test at a confidence level of 95%.

offerings on the development of their entrepreneurial competencies higher than the total sample.

Overall it appears that the universities courses and offerings have a visibly more positive effect on nascent founders. Nascent founders rate the effect on their skills higher than active founders and the rest of the sample. However this difference only reaches statistically significant levels for three of the five aspects in the questionnaire: increasing the understanding of the actions to start a business (3.7 in comparison to 2.3 in the total sample), enhancing practical management skills (4.0 in comparison to 2.7 in the total sample) and enhancing the ability to identify an opportunity (4.1 in comparison to 2.6 in the total sample).

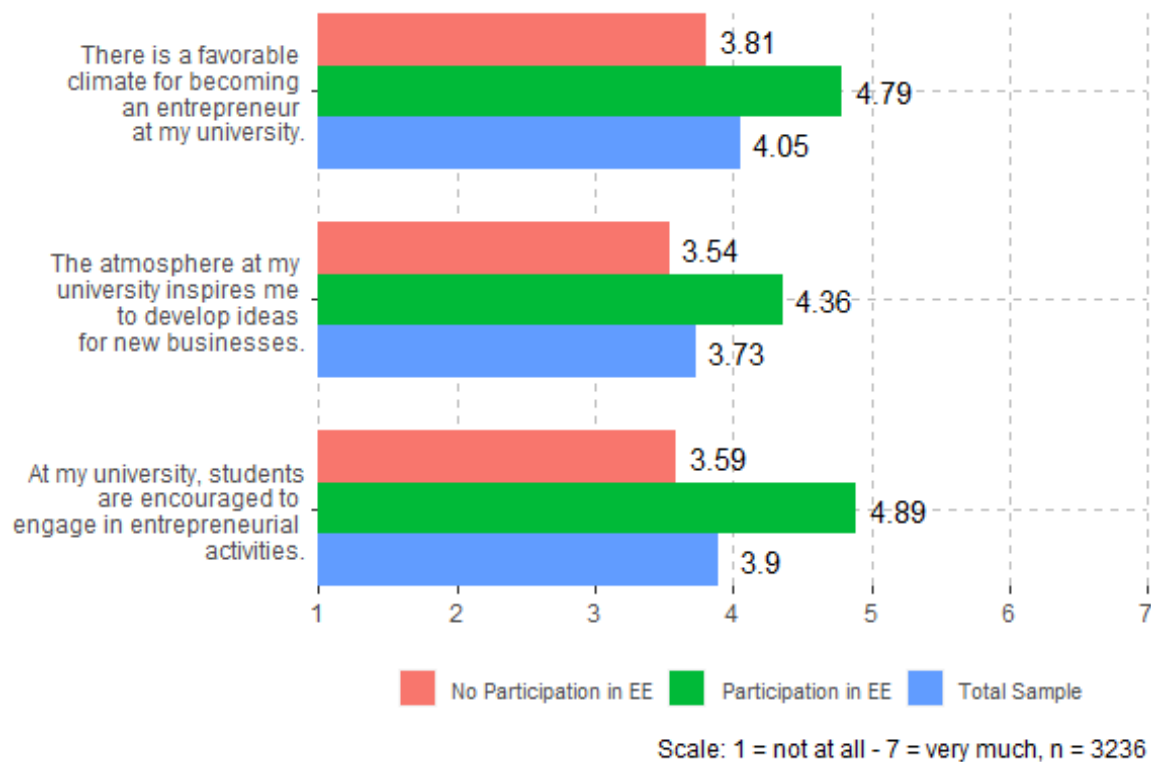
Figure 8: Students assessment of the university offerings concerning the development of their competences: The university courses and offerings I attended...



Scale: 1 = not at all - 7 = very much, n = 3236

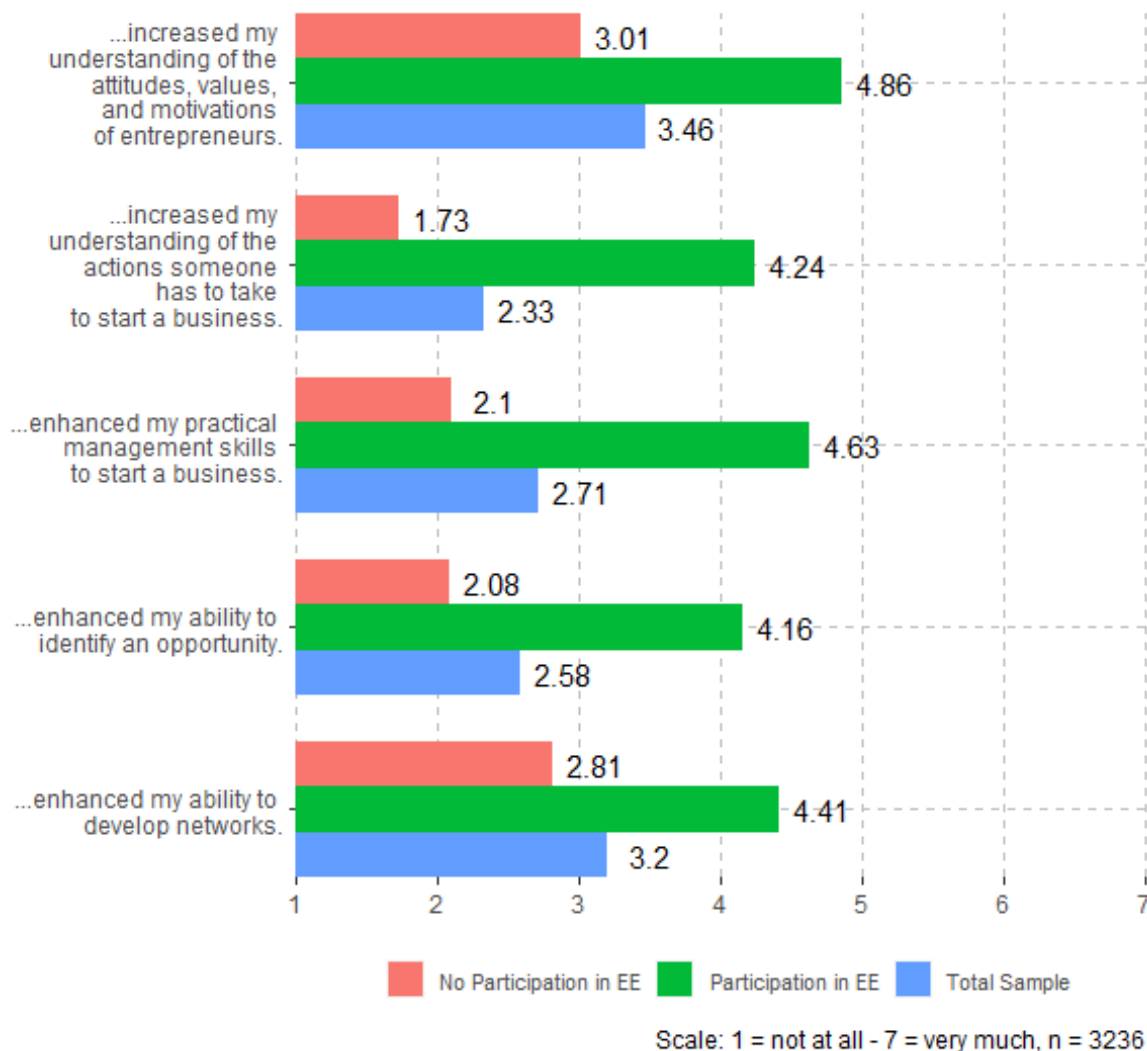
Furthermore, figure 9 shows that students participating in Entrepreneurship Education assess the impact of the university environment on their competencies throughout significantly more positive than non-participants. This difference in means reaches significant levels for all three aspects.

Figure 9: Assessment of the university environment to foster entrepreneurship by participation in Entrepreneurship Education



Participants in entrepreneurship education also report a higher effect of their university courses and offerings on their competences in the survey (figure 10). The differences in means between participants and non-participants in entrepreneurship education reaches a significant level of improvement for all five aspects in the questionnaire.

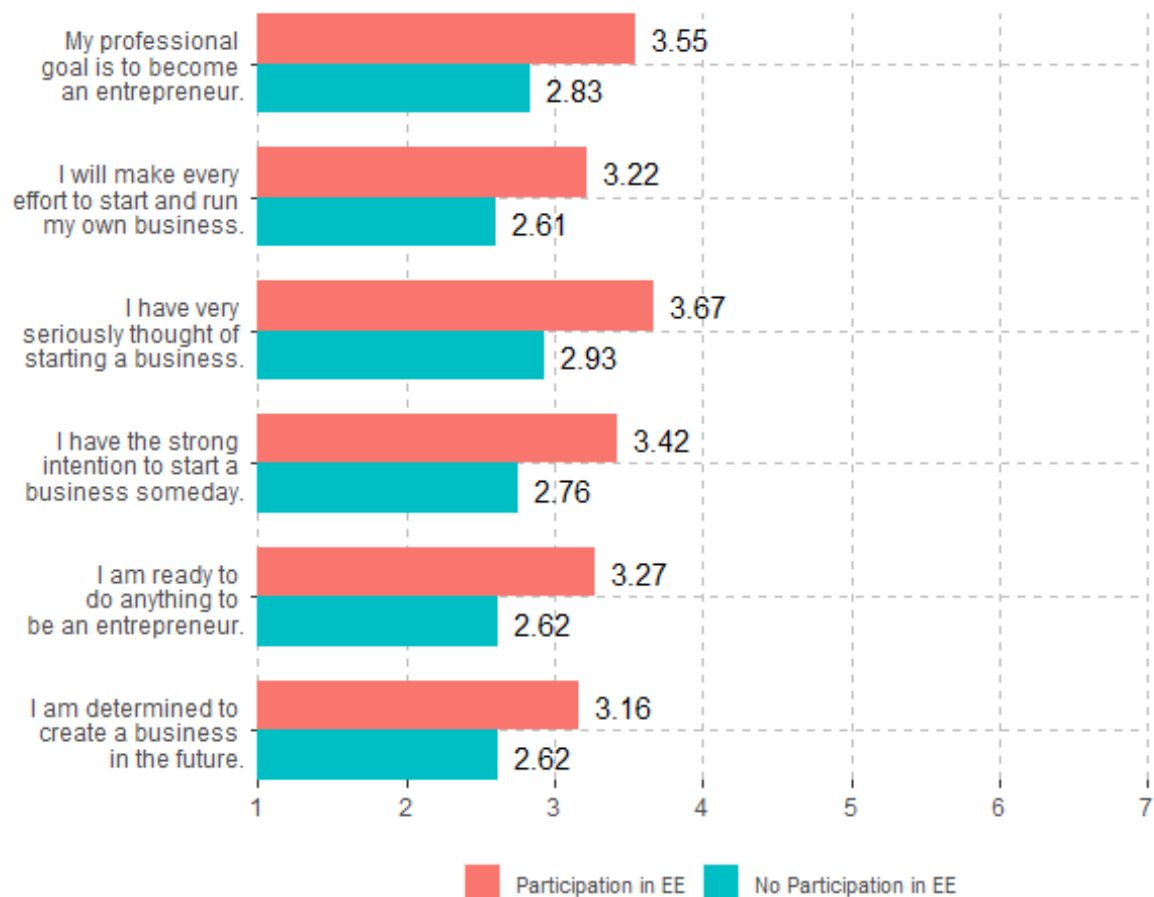
Figure 10: Students' assessment of the university offerings concerning the development of their competences by participation in Entrepreneurship Education: The university courses and offerings I attended...



2.1.8 Founding intentions by participation in Entrepreneurship Education

Figure 11 shows that the founding intentions of students who participate in Entrepreneurship Education measures are higher than those of non-participants. The difference in means between the groups reaches statistical significance for all six aspects.

Figure 11: Founding intentions by participation in Entrepreneurship Education

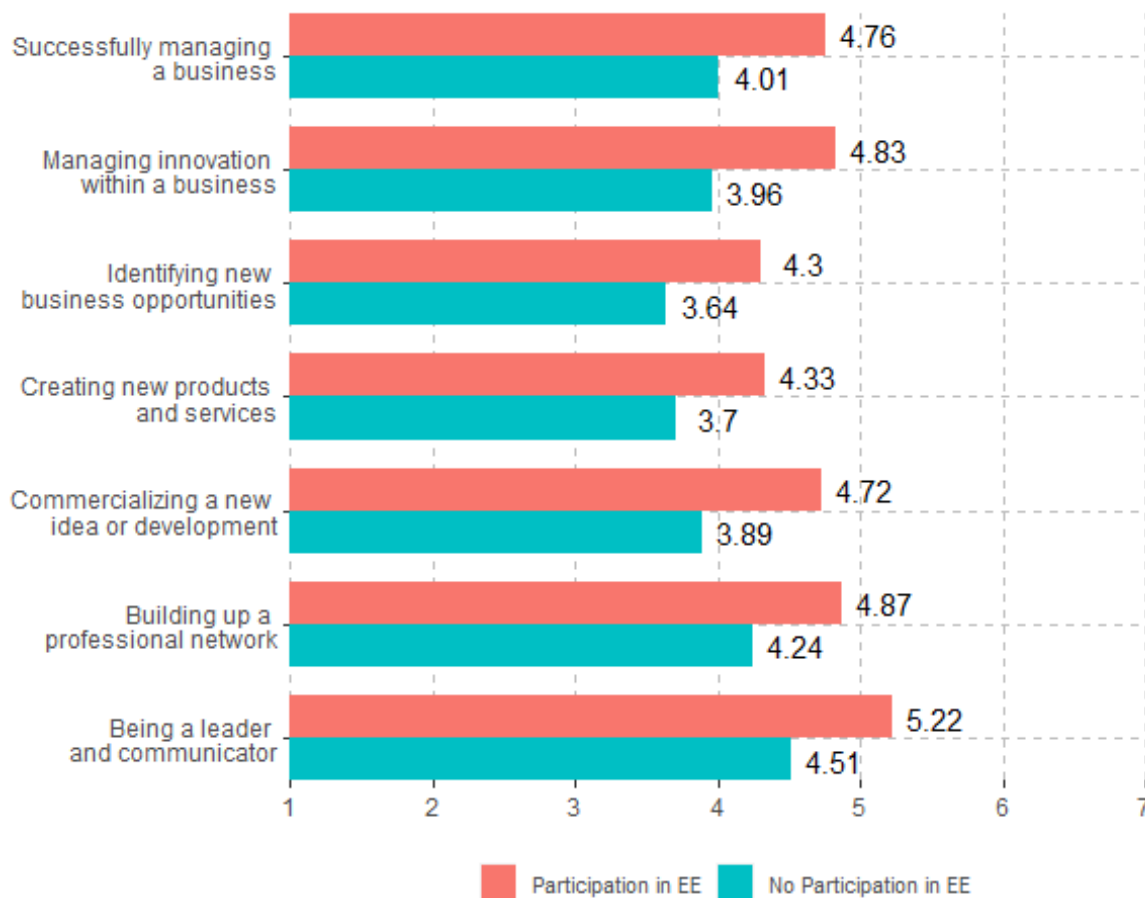


Scale: 1 = strongly disagree - 7 = strongly agree, n = 3236

2.1.9 Entrepreneurial competences and skills by participation in Entrepreneurship Education

Entrepreneurial competences and skills play an important role in the successful creation and further development of new ventures. Comparing participants and non-participants of Entrepreneurship Education, we can see (figure 12) that participants in Entrepreneurship Education measure their competencies consistently by far higher than non-participating students (f. i. the competence to successfully manage a business: 4.8 in comparison to 4.0 on a 7-point Likert scale). The difference in means between the groups reaches statistical significance for all seven aspects.

Figure 12: Self-Assessment of entrepreneurial competences by participation in Entrepreneurship Education



Scale: 1 = very low competence - 7 = very high competence, n = 3236

3 Career choice intentions

3.1 Career choice intentions directly after and 5 years after graduation

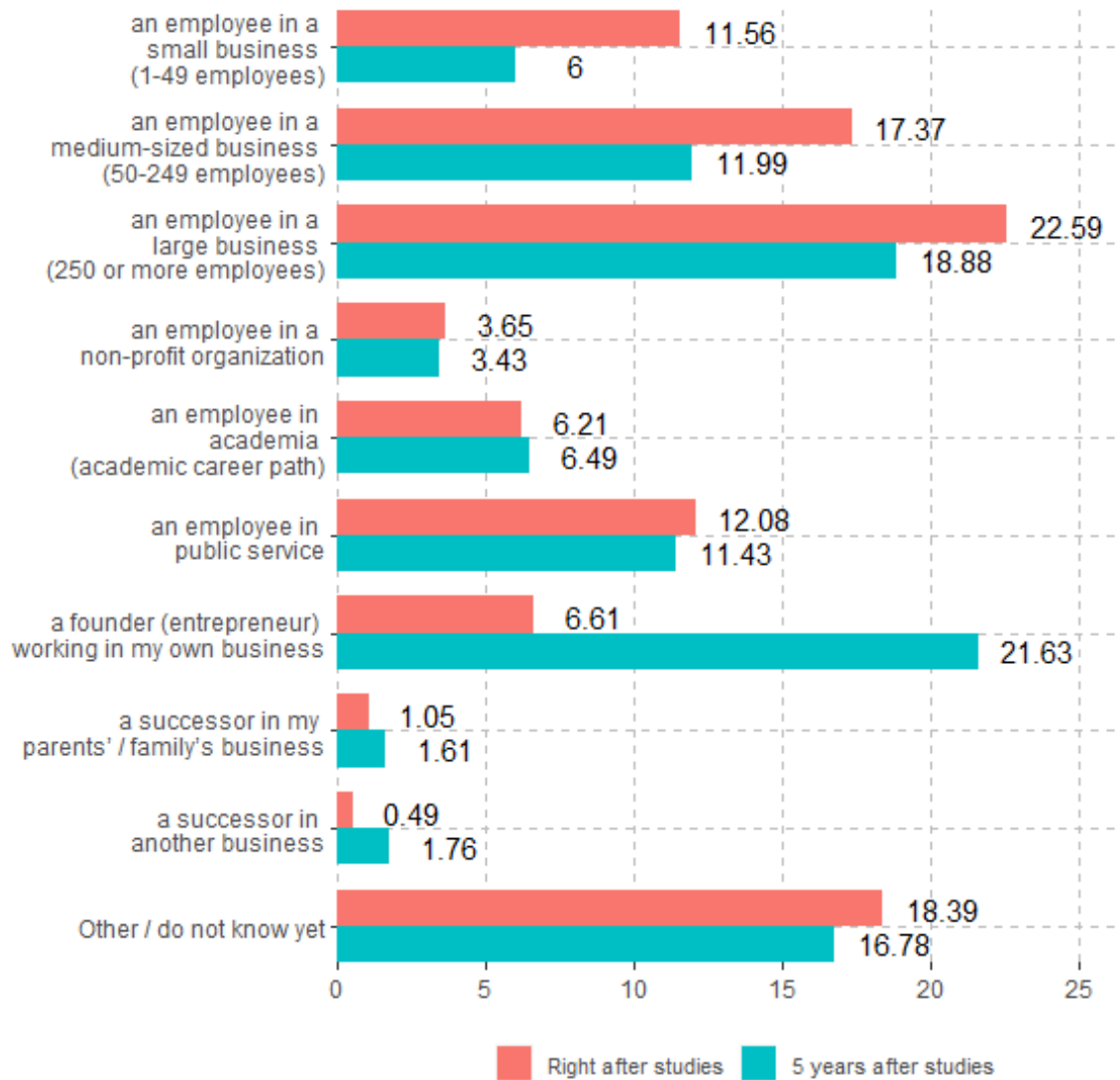
The expressed intention to aspire either self-employment or employment directly after studies respectively five years after graduation can serve as a first indicator for the strength of an individual entrepreneurial attitude. Alumni studies show that the career goals expressed in student surveys are to a considerable extent put into practice.

Generally seen (figure 13) it can be stated that directly after graduation 53% intend to start their career as an employee in a firm (29% in an SME, 24% in a large firm). Another 12% of the respondents prefer an employment in the public service. An academic career path is preferred by 6%. The non-profit sector is the most likely career option for 4%. 6.6% want to found their own business. About 1.5% aim to take over an already existing company (0.5% successor in parents' / family's firm and 1% successor in a firm currently not controlled by the family).

However, five years after graduation, with more professional experience, know-how and know whom, the picture looks different:

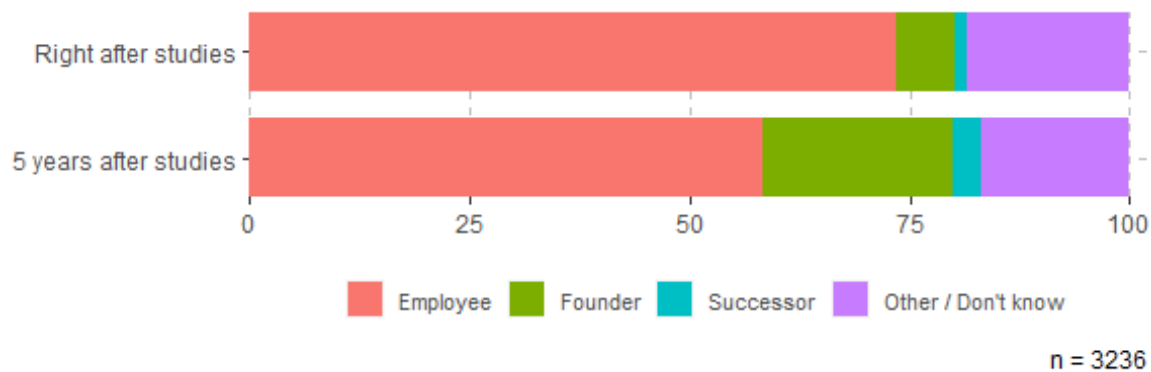
- 22% of the respondents intend to found their own company 5 years after studies and 3% of the students are interested in taking over an existing company (1.6% as a successor in the family business, 1.8% as a successor in a business currently not controlled by their family) as a career option. So in total approx. 25% of the students see themselves as entrepreneurs after having acquired professional experience. This is a remarkable increase compared with 8%, which intend to be entrepreneur right after graduation.
- The percentage of students who seek employment either in the private or public sector drops to approx. 58% (19% in a large firm, 18% in a SME, 11% in the public sector, 7% in academia and 3% in a non-profit organization).
- Compared to the last two rounds of GUESSSS it can be stated that, although direct comparisons between the waves of the study should be taken cautiously, the founding intentions continuously have increased from 18% (GUESSSS 2013) to 24% (figure 12).

Figure 13: Career choice intentions: directly after studies and 5 years after graduation



n = 3236

Figure 14: Career intentions right after and 5 years after studies



However, do students' career preferences remain stable or not? Table 1 reveals that 69% of the students who want to be self-employed right after finishing their studies also intend to remain entrepreneurs 5 years later on. The same applies to students who aim to start as a business successor (f.i. in their family business). They see themselves still as entrepreneurs, either as business successors or as founders of their own enterprise. Employees in SME tend to remain in this company size, but there is a remarkable shift as one third intends to be self-employed or business successor 5 years later. Students who would like to start their career in larger enterprises also tend to stay in this company size but 30% see themselves as self-employed or business successors later on. Students planning to be employed in NPOs, public service or in academia mostly see themselves also in this position 5 years later on.

The overall picture given in Table 2 shows that the decision for a career as an entrepreneur may be taken directly after the end of studies, but also later on. Especially students which begin their work experience as employees in start-ups, other SME or larger enterprises often, consider a later shift into self-employment as a worthwhile option after having gained practical experience.

Table 1: Career choice intentions: Expected changes in 5 years

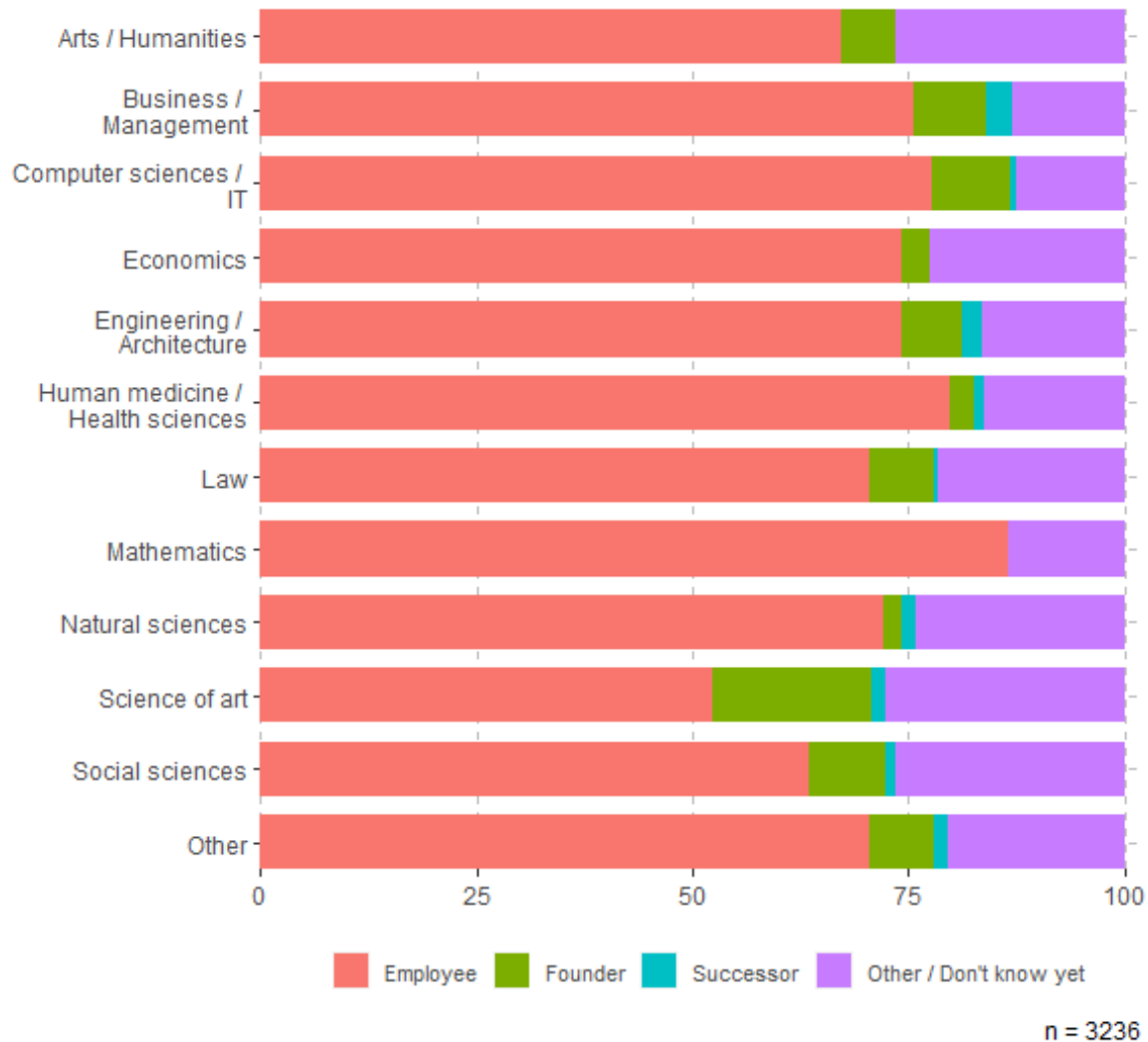
Right after studies	5 years later					
	Employee (SME)	Employee (Large)	Employee (Other)	Self-employed	Successor	Other / do not know yet
Employee (SME) (n=936)	43,7 %	11,0 %	6,5 %	23,1 %	5,2 %	10,5 %
Employee (Large) (n=731)	5,9 %	58,5 %	6,4 %	19,2 %	2,1 %	7,9 %
Employee (NPO, public, acad.) (n=710)	3,4 %	5,4 %	71,7 %	10,7 %	0,1 %	8,7 %
Self-employed (n=214)	3,3 %	0,5 %	2,3 %	88,8 %	2,3 %	2,8 %
Successor (n=50)	4,0 %	0,0 %	6,0 %	22,0 %	64,0 %	4,0 %
Other / do not know yet (n=595)	16,3 %	6,9 %	11,1 %	11,3 %	1,2 %	53,3 %

Furthermore, students participating in entrepreneurship education show a marked higher propensity to become entrepreneurs in the short as well as in the long run (participants: 8% -> 27%; non-participants: 6% -> 20%) (see in detail the Figures 29 and 30 in the annex). Additionally students participating in Entrepreneurship Education intent to become self employed five years after graduation more often than non participants, even if their initial plans lie elsewhere (see in detail the Tables 3 and 4 in the annex). This way entrepreneurship education might have a long term effect on students to support them in their career later on.

3.2 Career choice intentions by field of study

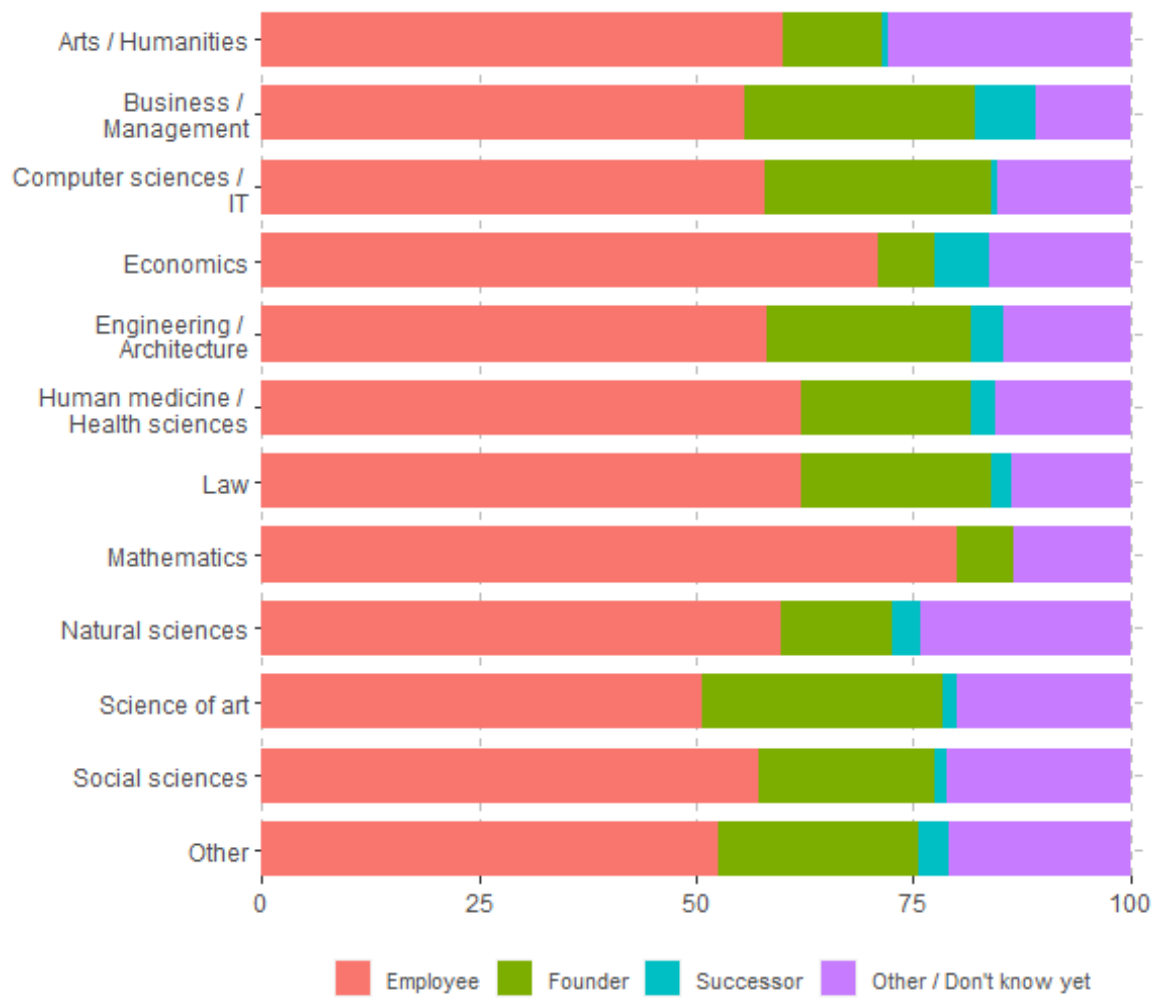
Figure 15 illustrates the career choice intentions directly after studies broken down by the field of study. Of course, the career choice intentions not only are influenced by perceived business opportunities, but also by the labour market situation for the respective field of study. Entrepreneurship may be opportunity-based as well as necessity-based.

Figure 15: Career choice intentions right after graduation by fields of study



Five years after graduation self-employment becomes more important for all fields of study, compared to career paths in established companies (figure 16). In most fields of study one out of four up to one third of the responding students perceive themselves as self-employed mostly as founders, but also as business successors. Students in the fields of business and management, IT and computer sciences, engineering, but also science of art have the highest percentages of self-employment intent.

Figure 16: Career choice intentions five years after graduation by fields of study



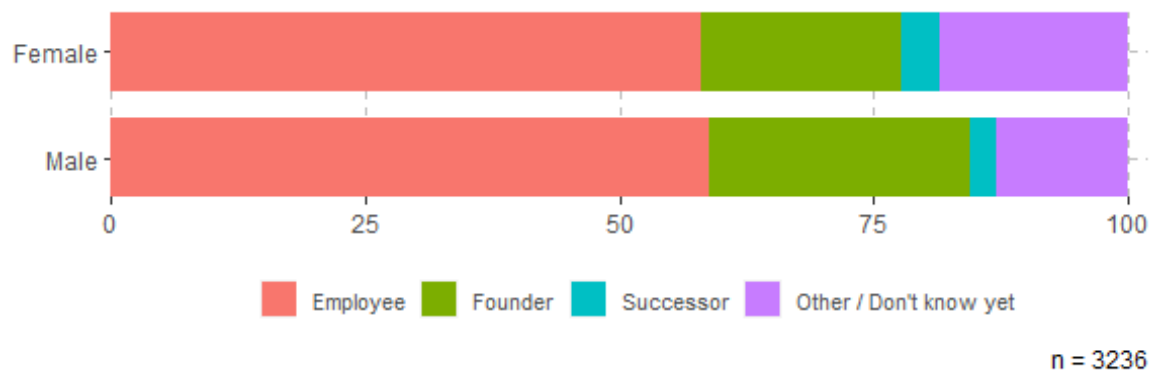
n = 3236

3.3 Career choice intentions by gender

Directly after graduation 12% of the male graduates, but only 6% of the female graduates intend to start an entrepreneurial activity (as either a founder or successor).

In a five-year perspective 35% of the male and 25% of the female respondents plan to pursue an entrepreneurial career. It can be stated that a gender gap still exists, but it begins to close after some years of practical experience (figure 17).

Figure 17: Career choice intentions five years after graduation by gender



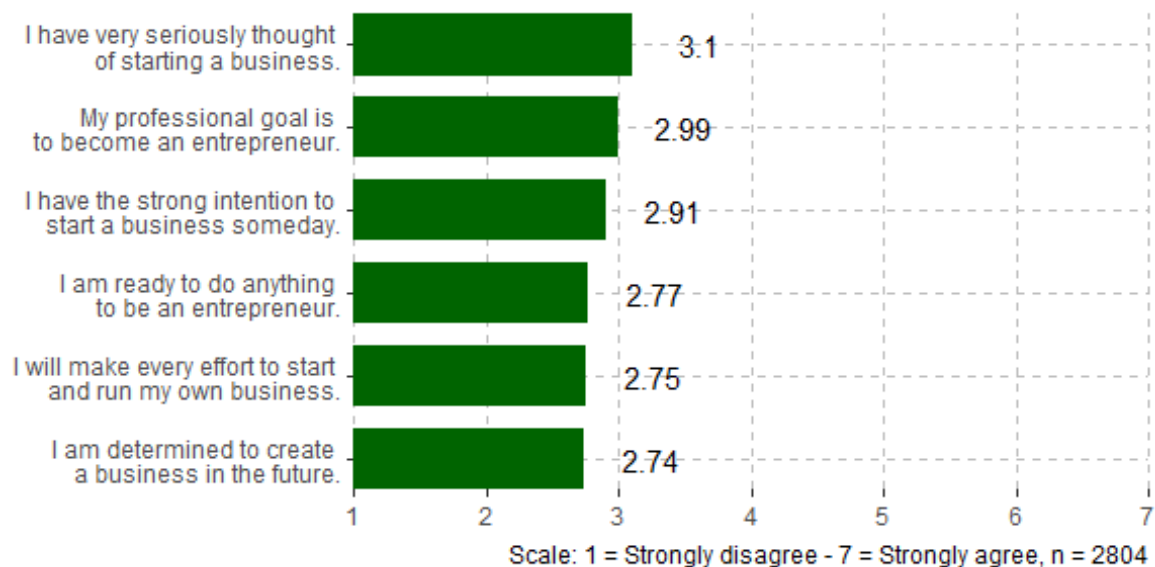
4 Students and Entrepreneurship

This section addresses the entrepreneurial intentions and attitudes of students (n = 3.236), but excluding active founders (n = 197) and nascent founders (n = 307), which will be discussed in detail in chapters 5 and 6.

4.1 Founding intentions

The intention to pursue an entrepreneurial career depends upon demographic, social and personality factors as well as on the personal attitude towards entrepreneurship. Figure 18 shows the items of the founding intention construct (based on students which are neither active nor nascent entrepreneurs).

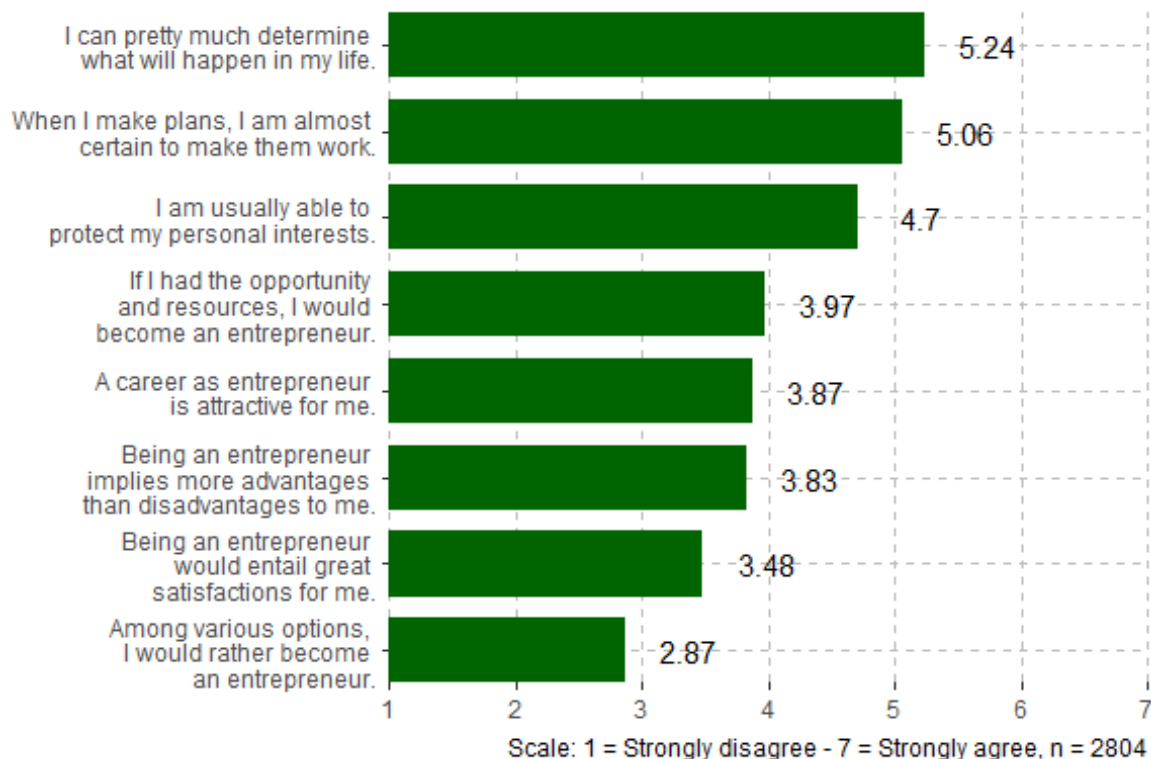
Figure 18: Founding intentions



4.2 Self-efficacy and perceived behavioural control

Figure 19 plots the average scores for the students. The items focus more on the internality associated with an entrepreneurial career. The items “When I make plans, I am almost certain to make them work”, “I can pretty much determine what will happen in my life” and “I am usually able to protect my personal interests” picture the self-assessment of one’s own internality with regard to work and life in general. The rest of the items focus more on the internality associated with an entrepreneurial career.

Figure 19: Students self-efficacy and locus of control

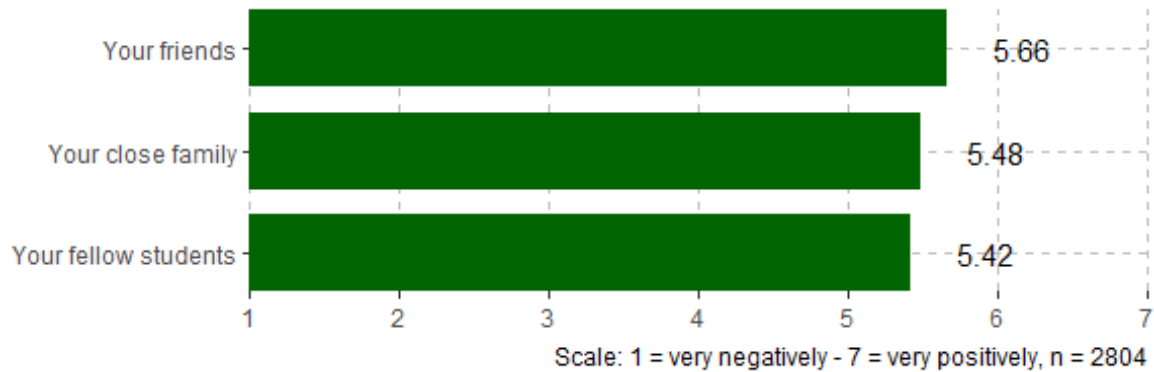


Self-efficacy and perceived behavioral control are two constructs that measure the students’ perception to influence their external environment and to be in control of their own destiny. A high score on these items suggests that the students are oriented more internally than externally. This in turn affects their reaction to obstacles and difficult life situations.

4.3 Reaction of the environment

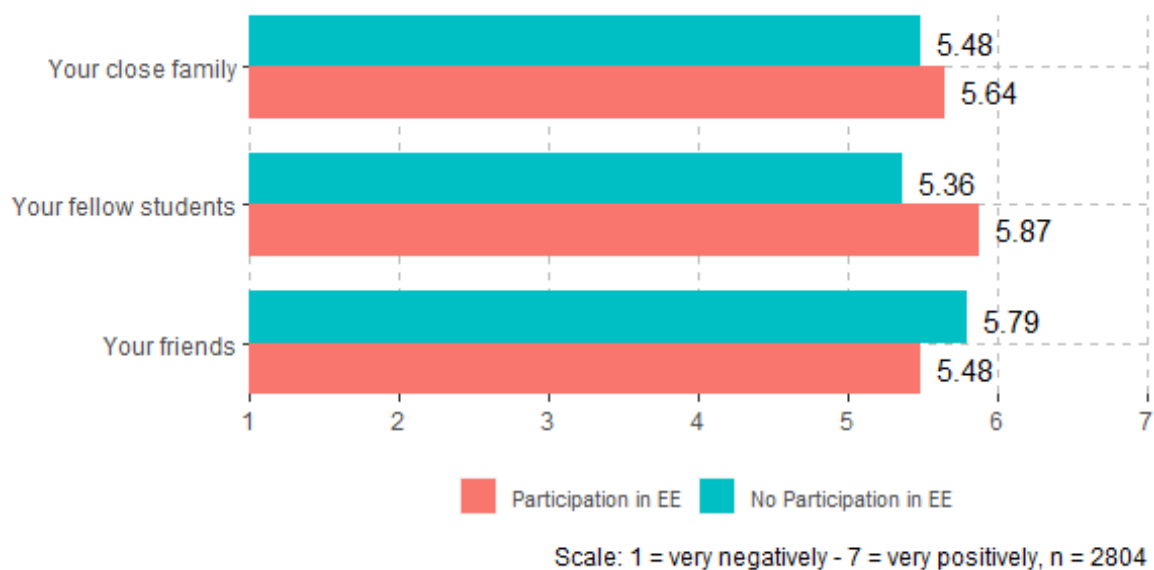
The external environment can influence the decision to pursue a career as an entrepreneur. Thus, the following questions exhibit the perceived reaction of friends, students and family when the decision is made to found a company. Overall, the presumed reactions of the respective environment seem to be very positive (figure 20).

Figure 20: Reaction of the environment toward an entrepreneurial career



Students who participate in entrepreneurship education presume that the reaction of their family and fellow students (f.i. from the entrepreneurship program) are more positive in comparison with non-participants. The reaction of their friends is reported worse than by non-participants. Although the differences in means appear narrow, all three reach statistical significance levels.

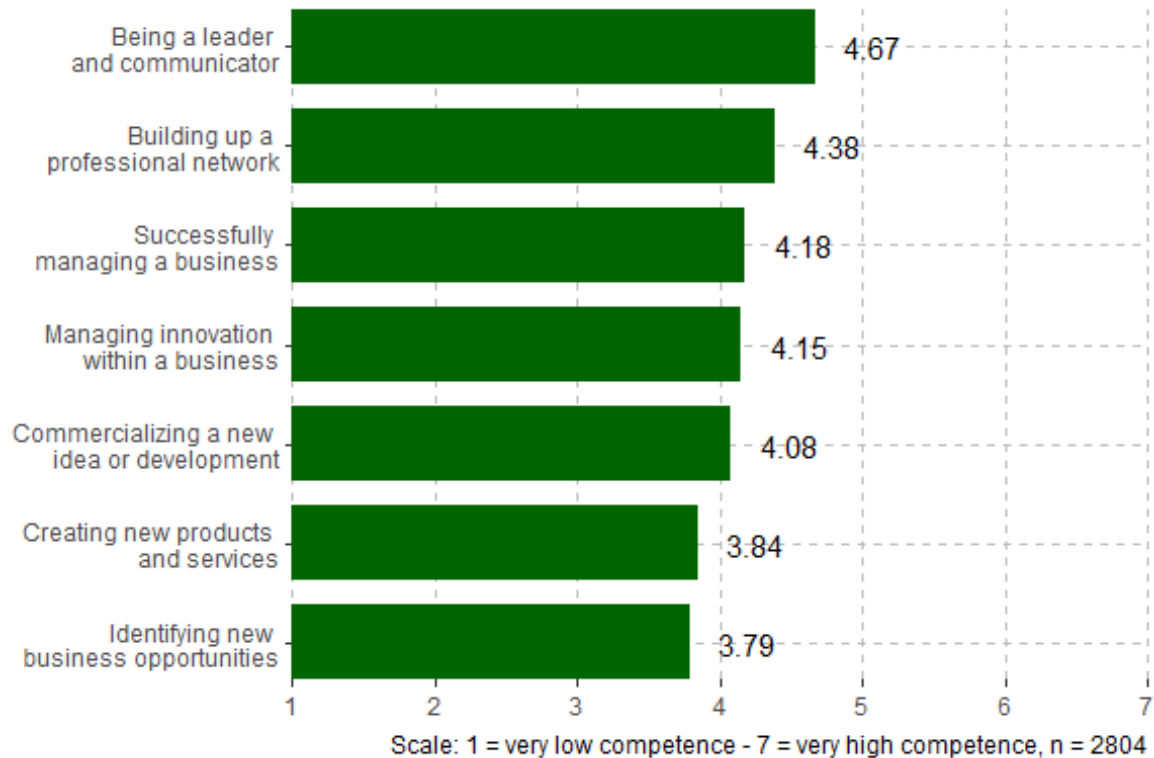
Figure 21: Reaction of the environment toward an entrepreneurial career by participation in entrepreneurship education



4.4 Entrepreneurial competences and skills

Competences and skills play an important role in the successful creation of new ventures. To identify new business opportunities, to communicate effectively with costumers and to build up a professional network are essential competences and skills in the context of start-ups. This self-assessment is based on students excluding active and nascent entrepreneurs (figure 22).

Figure 22: Entrepreneurial competences



5 Nascent founders

9.4 % of the respondents in this years sample (307 students) are nascent founders, meaning that they are currently trying to start their own business or to become self-employed.

5.1 Characteristics of the nascent founders

The average age of the nascent founders is 28 years. 48% of them are women. About 29% of the nascent founders are studying business sciences, followed by Computer sciences, Engineering and Social Sciences at 10% each. About 9% are studying human medicine or health sciences and more than 6% are studying law.

41% of these nascent founders intend to found their own business or be a successor right after studies. 70% intend to found their own business or be a successor five years later.

A considerable part of them can be considered as serial entrepreneur, as about 23% of students planning to found an enterprise are also already active entrepreneurs

5.2 Foundation partners

Approx. half of the nascent founders intend to start their business as a solo entrepreneur (figure 23). The others mostly intend to cooperate with one co-founder (31%).

Figure 23: Number of Co-Founders

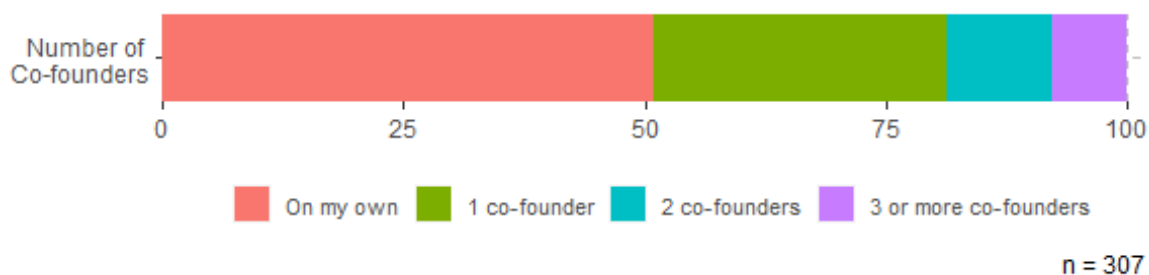


Figure 24 shows that 58% of the nascent female entrepreneurs intend to start their business alone, compared to 43% of their male counterparts.

Figure 24: Number of Co-Founders by gender

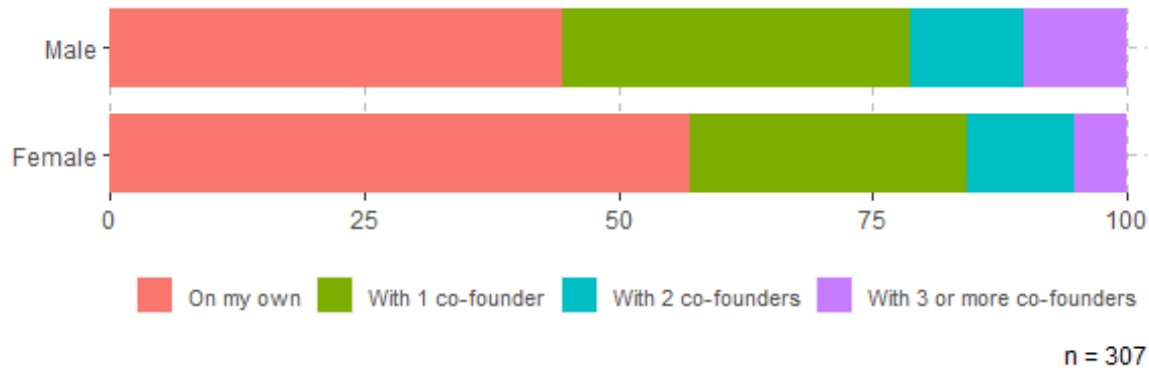
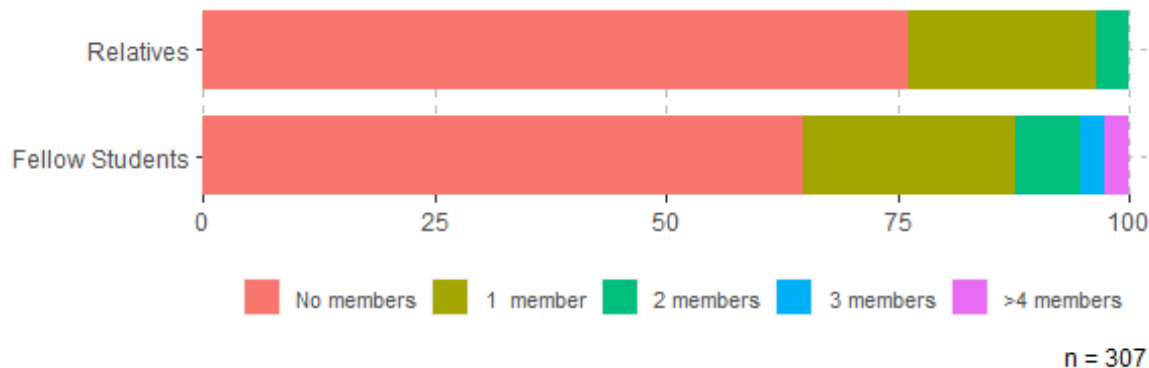


Figure 25 shows that the university context is most important to meet potential start-up partners. One out of three nascent entrepreneurs intend to start their firm together with one – or even more – fellow students. In comparison less than 25% intend to found together with their relatives.

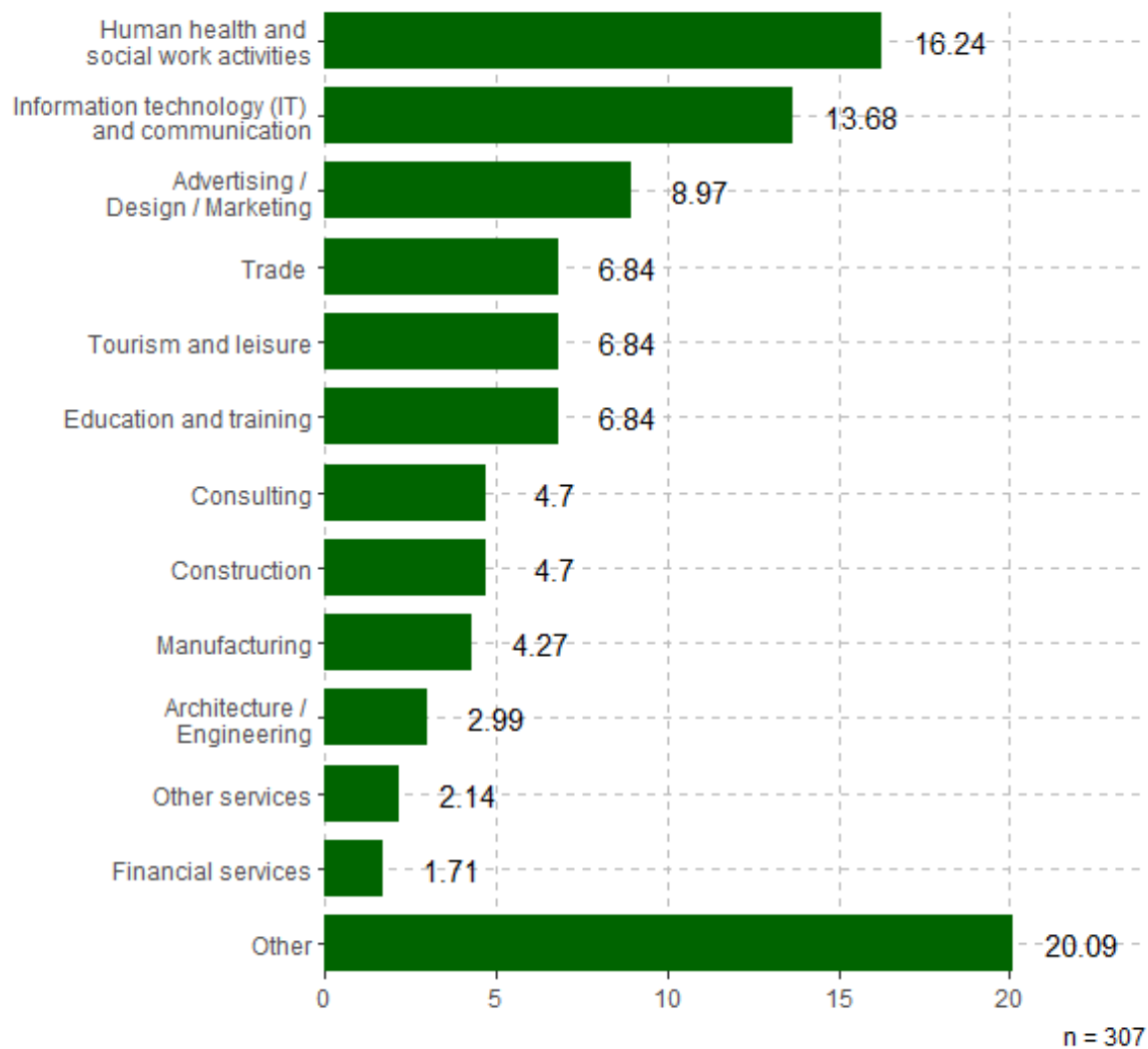
Figure 25: Context for team member recruitment



5.3 Industry sectors

The preferred industry sectors of the nascent founders among students for their start-up are Human Health and Social Work activities (16%), Information and Communication Technology (14%), Advertising/Design/Marketing (9%), Education and Training (7%), Wholesale/Retail Trade (7%) and Tourism (7%), followed by Consulting (HR, law, management, tax)(5%), Manufacturing (4%) and Financial Services (2%). (figure 26) This mostly reflects the overall composition of the survey's sample as it has been described earlier in chapter 2.1.6.

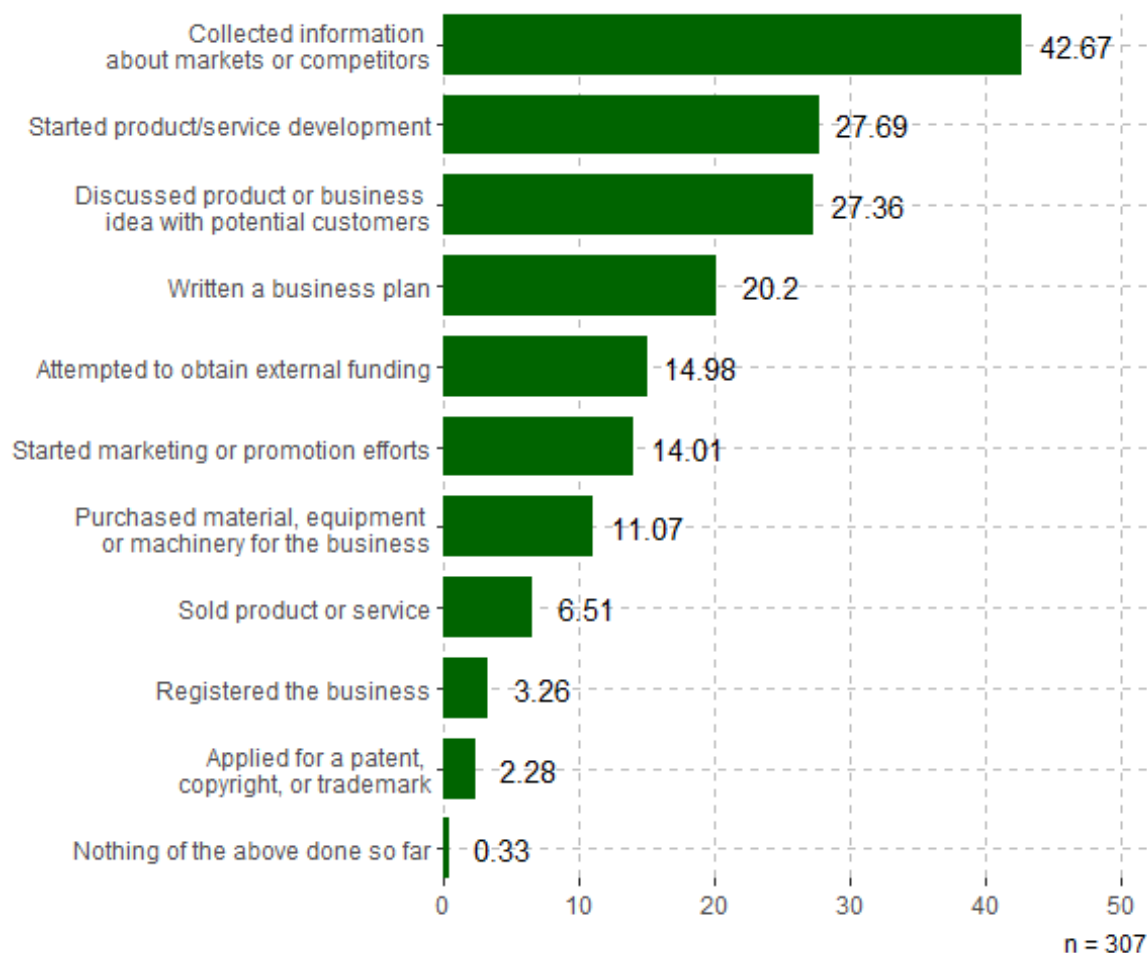
Figure 26: Industry sectors of nascent founders



5.4 Steps taken to found the business

All nascent entrepreneurs already have undertaken concrete activities concerning starting up an own enterprise, although with a broad range concerning the intensity of their activities. Mostly (43%) they have collected information about markets or competitors. 28% started the product/service development, Also 27% discussed their business idea with potential customers. 20% already have written a business plan. 15% have attempted to obtain external funding. 14% state that they already have started marketing or promotion efforts, 11% purchased material and equipment. 7% even already sold their product or service.(figure 26). Compared to the last wave of the survey in 2018 it can be noted that a higher proportion of the sample has taken multiple steps in the founding process and fewer students report not having done any of the listed steps to found a business.

Figure 27: Steps taken to found a business (multiple responses)



5.5 COVID

In the context of the COVID-19 pandemic all nascent founders were asked whether their plans to create their business were largely inspired because of the implications of the pandemic. Only 8.6% of the nascent sample agreed with this statement.

6 Active founders

6.1% of the Austrian respondents (197 students) are active founders, i.e. they are already running their own business or are already self-employed.

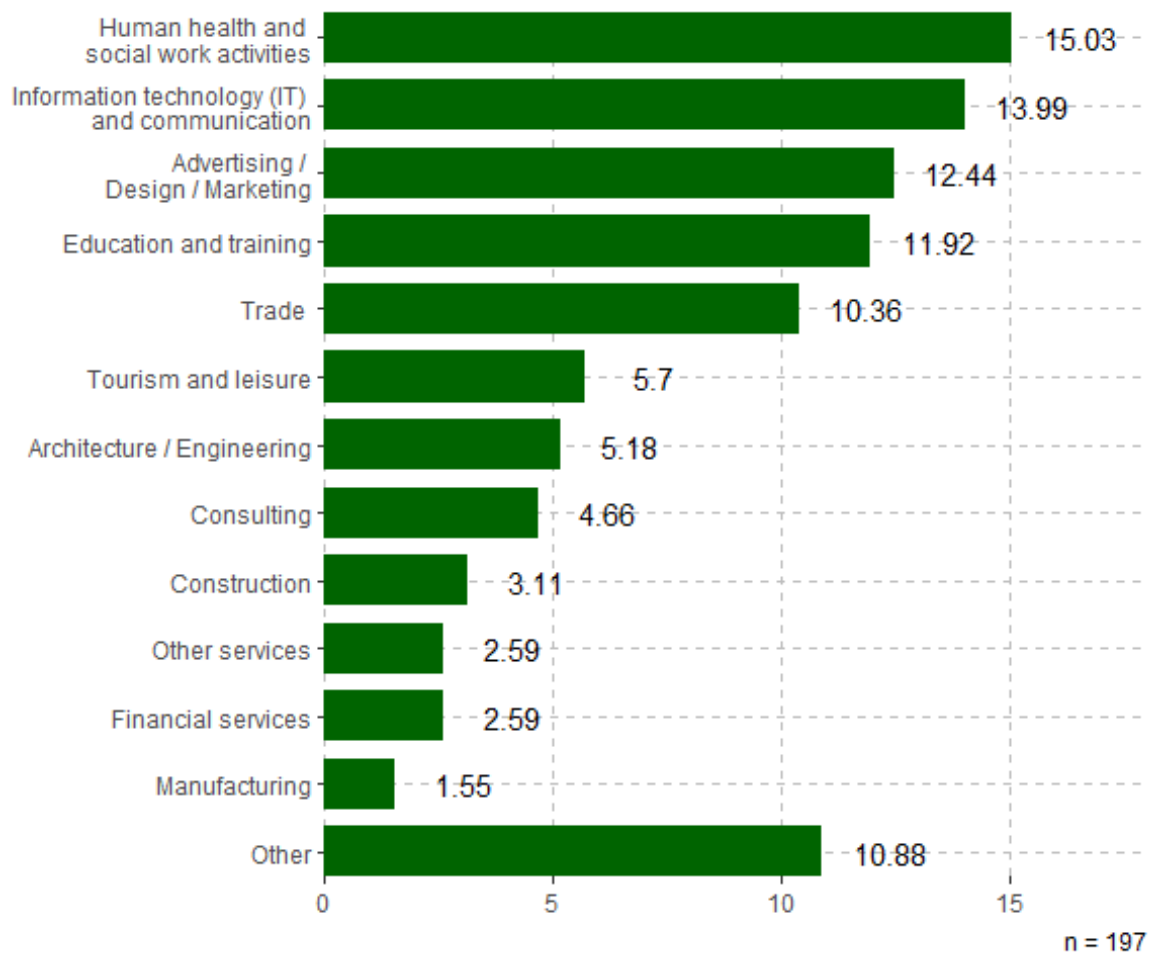
6.1 Characteristics of active founders

The average age of the active founders sample is 31.5 years. 44% of the active founders are female, 56% male. 27% of the active founder sample are studying in the fields of business or management, followed by 12.2% in social sciences (e.g., psychology, politics, educational science), 11.7% in human health and social work activities as well as 11.7% in the 'other' category. 11.2% are studying in computer sciences and IT, 7.1% in law and 6.6% in engineering. About 9.1% of the active founder sample started their business in 2021 and an additional 19.8% in 2020.

6.2 Industry sectors

The industry sectors which have been selected most often by active student-founders to start their business are Human Health & Social Work Activities (15%), Information Technology and Communication (14%), Education & Training (12%), Advertising/Design/Marketing (12%), and Trade (wholesale/retail) (10%). This distribution of industry sectors of active student founders (figure 27) is quite the same as in the case of nascent founders. This again reflects the overall composition of the survey's sample as it has been described earlier in chapter 2.1.6.

Figure 28: Industry sectors of active founders

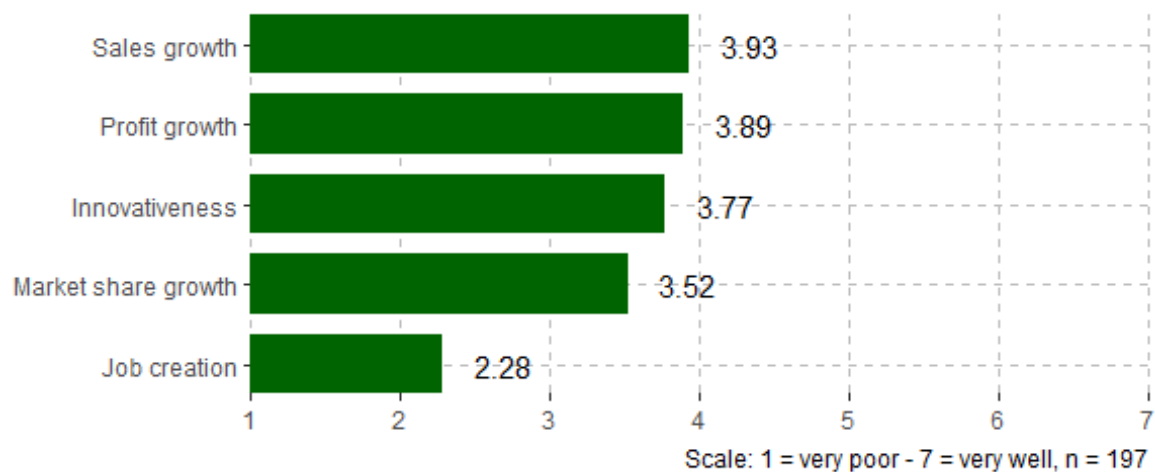


6.3 Performance ratings

The active founders were asked to rate the company's' performance compared to their competitors since its establishment. The highest level of agreement (mean score) can be found for "sales growth", "sales growth" and "profit growth". The indicators "innovativeness" and "market share growth" are rated slightly lower. "Job creation" is rated notably lower, which is plausible in the light of the youth of these companies (figure 28).

The participants rate their companies' performance on average very closely to their competitors in terms of sales growth (3.93), profit growth (3.89), innovativeness (3.77) and market share growth (3.52), but much lower in terms of job creation (2.28).

Figure 29: Performance ratings compared to competitors



6.4 COVID

In the context of the COVID-19 pandemic all active founders were asked whether they have created their business largely because of the implications of the pandemic. Only 5.7% of the active sample agreed with this statement.

7 Summary of findings

The Global University Entrepreneurial Spirit Students' Survey (GUESS 2021) is an international online-survey focusing on the entrepreneurial potential and start-up activities of students at universities. The 2021 wave of GUESS is based on responses from 267.000 students from 58 countries worldwide. The Austrian country study was conducted by the Department of Corporate Leadership and Entrepreneurship at the University of Graz.

3236 students from 43 Austrian universities and universities of applied science filled in the complete online-questionnaire. The average age is 25.9 years. More than the half of the respondents are enrolled in a bachelor program, two third are female, most of them studied in the field of Human Medicine/Health Sciences (21%). 19% are studying Economics or Business sciences, followed by Social Sciences (9%) and Computer Sciences/IT (9%).

Main results

- Directly after graduation 53% of students intend to work as employee in a firm (in an SME 30%, in a large enterprise 23%). 12% strive for employment in the public service, 6% in academia & research, 4% in a non-profit organization. 7% intend to begin as entrepreneurs.
- In a 5 year perspective after graduation, however there is a marked shift towards entrepreneurship as career option: 25% of the students want to be self-employed (22% with their own start-up, 3% as business successor).
- Participants in Entrepreneurship Education show a marked higher propensity to become entrepreneurs (8% directly after graduation, five years after graduation 27%). They also rate the entrepreneurial climate at their university significantly more positive than non-participants (4.3 vs. 4.0 on a 7-point Likert scale). Participants also rate their competencies higher than non-participants (f.i. practical skills to start-up: 4.6 vs. 2.1 on a 7-point Likert scale).
- 307 students (9.4% of the sample) are currently trying to start their own business ("nascent founders"). They plan to start their own business mostly in the following industries: Human health and social activities (16%), Information technology and communication (14%), advertising/design/marketing (9%) and trade (wholesale/retail) (7%).
- Generally seen the universities activities and courses have a visibly more positive effect on students which are nascent founders.
- 43% of nascent entrepreneurs already collected information about markets or competitors, 28% started with product/service development, 27% discussed their product or business idea with potential customers, 20% have written a business plan.
- 51% of nascent entrepreneurs intent to found their company on their own. 31% intent to found their company with one co-founder.

- The university context plays a notably role for nascent founders: 33% stated that they intend to found with one or more fellow students. 19% intend to found with relatives.
- 197 students (6% of the sample) responding to this study are already self-employed (active entrepreneurs) The start-ups have been founded mainly in the sectors human health/social work activities (15%), information technology and communication (14%), advertising/design/marketing (12%), education and training (12%) and trade (wholesale/retail) (10%).
- COVID appears to have played only a minor role in the founding intentions of our student sample. Only 9% of the nascent founders and 6% of the active founders agreed, that they are planning to create or have created their business largely because of the implications of the pandemic.

8 Conclusions and Implications

Generally speaking GUESS 2021 shows a marked entrepreneurial intent as well as start-up and business succession activities of students at Austrian universities and universities of applied science.

In addition, there are students which are already active entrepreneurs as founders or business successors or which are trying to start-up whilst they are still studying. The results also show that persons which plan to found an enterprise are mostly inclined to stay self-employed also later on. Students which intend to start their professional career in a big company partly intend to pursue their career there further on, partly they expect themselves to be self-employed in the long run.

These results point at different avenues to further develop measures for the promotion of entrepreneurial spirit and support of start-ups:

To foster entrepreneurial intentions and to increase the alertness concerning an career-option as entrepreneur or intrapreneur, as a first step it is important to arouse a general interest in entrepreneurship.

In this context a self-reinforcing positive effect should not be underestimated: Active and nascent founders assess the university environment with regard to entrepreneurship and the effect of entrepreneurship education as significantly more positive than other students. Students who have participated in entrepreneurship education rate their entrepreneurial skills significantly higher and show a significantly higher propensity to start a business.

Peculiarities as well as motivating and inhibiting factors of a life as entrepreneur should be addressed to enable potentially interested students to make a more informed career choice. Practice-oriented lectures including entrepreneurs as role models should be offered throughout the study programs, beginning at the entry-phase of all studies. More intensive advanced courses and support and coaching programs with specialization in entrepreneurship should be optional. The same applies for courses which are focusing on starting-up in a special industry.

Especially entrepreneurship education for students in non-business studies is important to create an entrepreneurial mindset and culture at universities (f.i. the TIMEGATE program at University of Graz). Additionally universities can also help to kickstart ideas, if they create a sandpit for early stage entrepreneurs where they can prove and improve their ideas. An example of inter-university cooperation is f.i. the Gründungsgarage in Styria. WU Vienna also runs several programs to support founding activities like the skills academy or the entrepreneurship avenue.

Within the AplusB Scale-up program, Austria Wirtschaftsservice (AWS) supports AplusB Centers in Lower Austria (accent), the Tyrol (Startup Tirol CAST), Upper Austria (tech2b), Vienna (INiTS) and Styria (SPG-Science Park Graz) to promote academic start-ups.

Given the fact that entrepreneurship requires action, students acquire skills and competences relevant for a career as entrepreneur (or also as intrapreneur in big enterprises or employee in startups) mostly through “learning by doing”. Without doubt their entrepreneurial potential can be increased through practice-oriented entrepreneurship education at universities including extracurricular activities and intensive cooperation with the support infrastructure of the region. There are a lot of cases of best practices within universities (f.i. Volkmann & Audretsch 2017) how this important practice-orientation can be achieved, f.i. by including start-up experts as well as experienced entrepreneurs as lecturers and professors of practice in residence in the program. Alumni can act as role models and testimonials and as entrepreneurs-in-residence.

Course programs should be combined with extra-curricular activities. F.i., the opportunity to test the status of one’s entrepreneurial competencies in a business plan competition should be helpful in gaining first entrepreneurial experiences (at national level f.i. through “i2b”, but also at international level, f.i. the European Business Masters Cup Challenge). As cooperating with other (entrepreneurially oriented) students has a pronounced impact on students’ entrepreneurial intention, it should be systematically enhanced, f.i. through networking events, project-oriented courses with student groups working with real start-ups or an internship in a start-up.

A stronger cooperation between different faculties (e.g. technical, business, medicine, arts) is a prerequisite to foster entrepreneurship education at the (inter)university level, f.i. the Gründungsgarage in Graz, but also at international level, f.i. the Transatlantic Entrepreneurship Academy (Rybnicek et al. 2015, 2017). Thus, founder teams with a balanced competence portfolio and an interdisciplinary approach can be developed and supported.

In their program development universities should consider that at least two different groups of nascent entrepreneurs among their students which should be addressed:

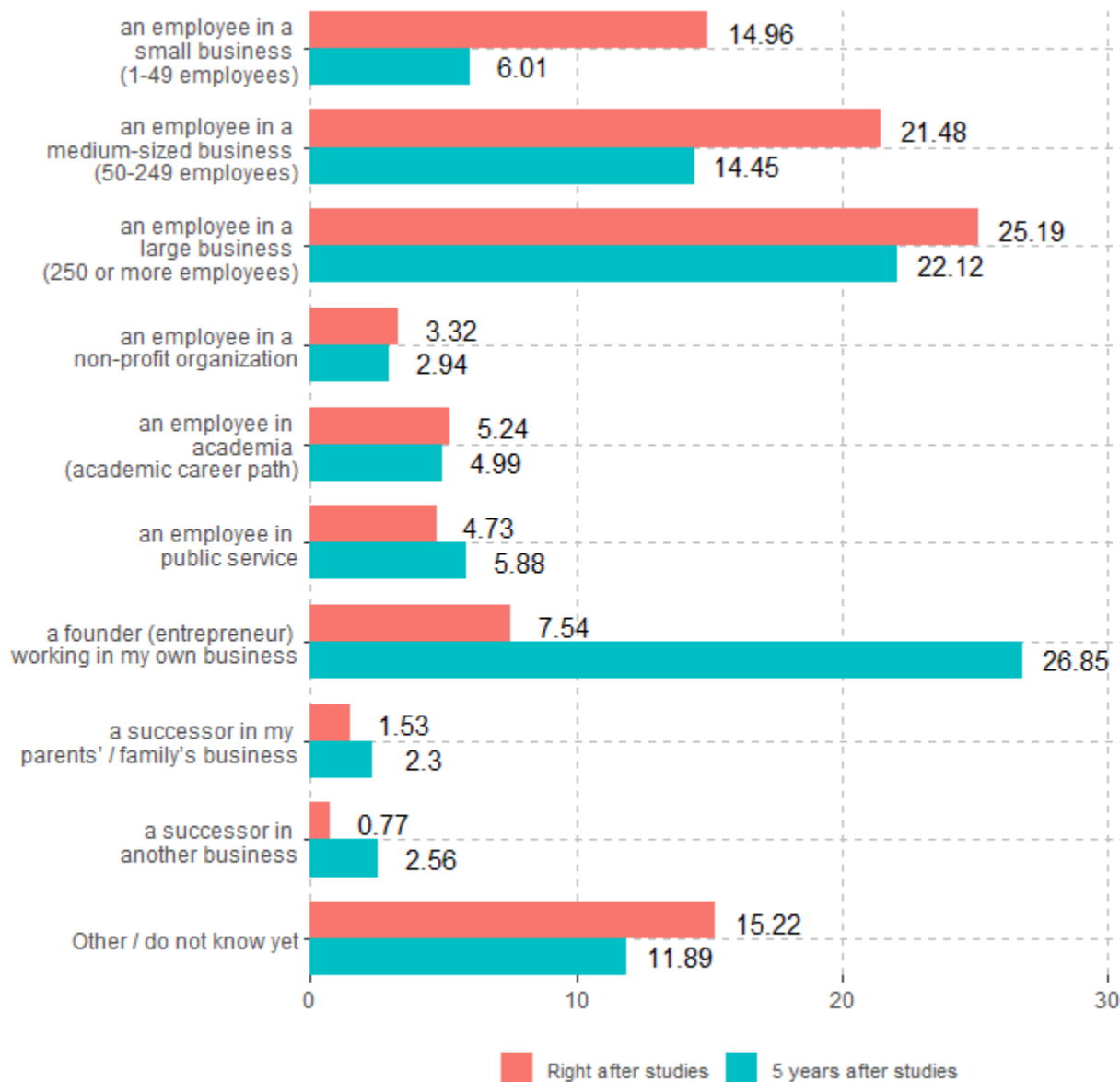
A first group of students is eager to found their enterprise, often in teams, often even before the end of their studies because they do not want to miss an entrepreneurial opportunity they have recently perceived. This often is the case in technically oriented studies when f.i. a prototype has been developed or when interested students meet promising contact partners at networking events. A specialized support infrastructure (e.g. low-threshold services like start-up centers on the campus, access to (free) co-working-spaces and maker spaces, access to laboratories, financial support by a university-owned venture capital funds, special pre-incubators focusing on students, regional high-tech-incubators like in the AplusB program) can actively support the potential founders according to their respective needs.

A second, larger group consists of students which intend to start-up after having completed their studies and after having acquired practical knowledge and industry-specific know-how. For this group, substantial start-up support is available from other institutions as well. Therefore, universities could concentrate their support on alumni networks to foster the contact between alumni and specific departments to intensify knowledge transfer as well as to cooperate with their alumni in the course program as lecturers, testimonials, entrepreneurs in residence or professors of practice. Inter-university networks and course programs could enhance the positive effect.

Increasingly student and academic entrepreneurs also begin to switch between pursuing an entrepreneurial career and being employed f.i. in a bigger company. Cooperations between start-ups and bigger enterprises foster this trend (Kailer, Hora 2017; Hora et al. 2018). Entrepreneurship programs therefore should also focus on themes like cooperation between enterprises and intrapreneurship.

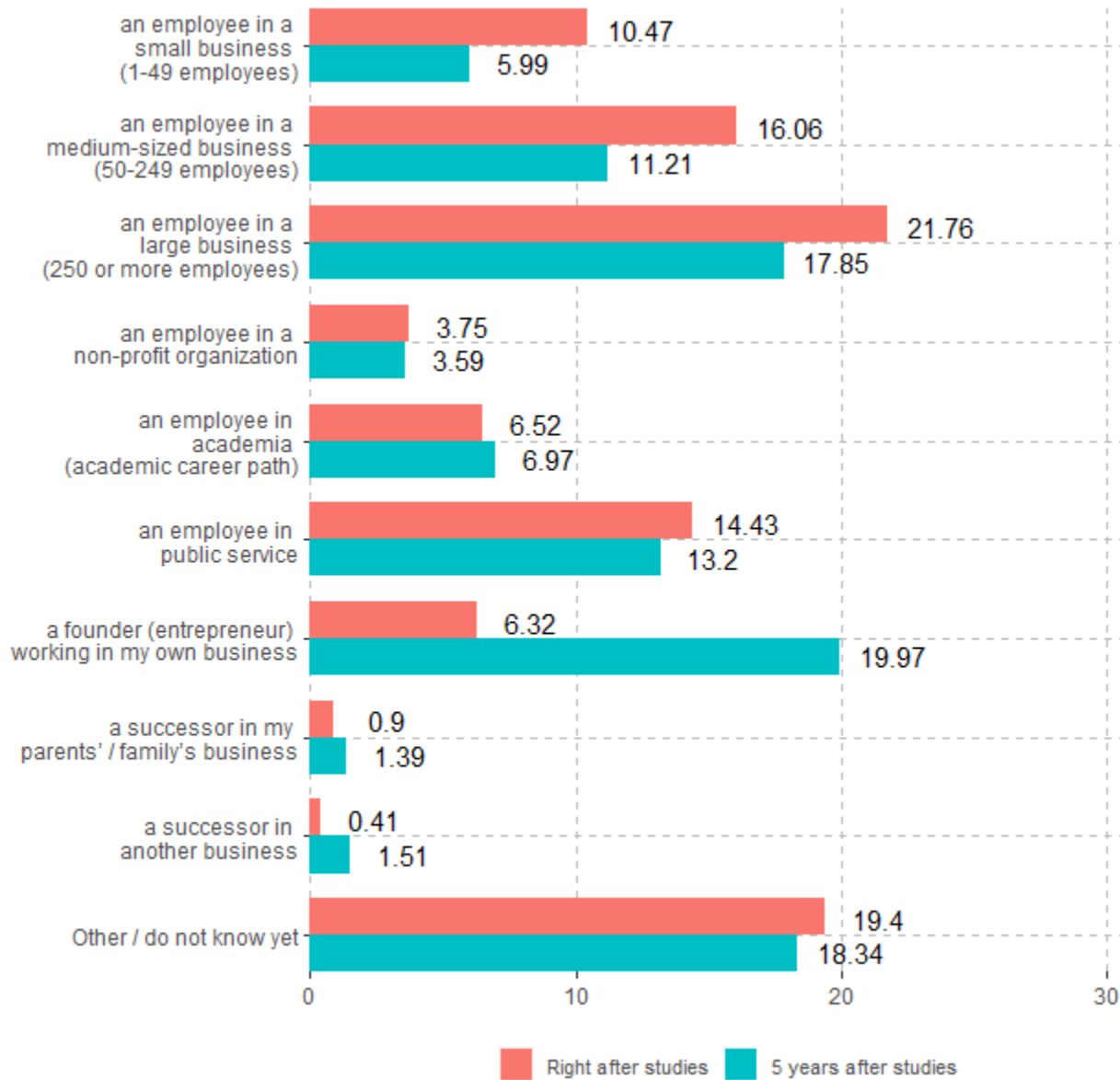
9 Annex

Figure 30: Career choice intentions: directly after studies and 5 years after graduation: Only participants in EE



n = 782

**Figure 31: Career choice intentions: directly after studies and 5 years after graduation:
Only non-participants in EE**



n = 2454

Figure 32: Reaction of the environment toward an entrepreneurial career by Participation in EE

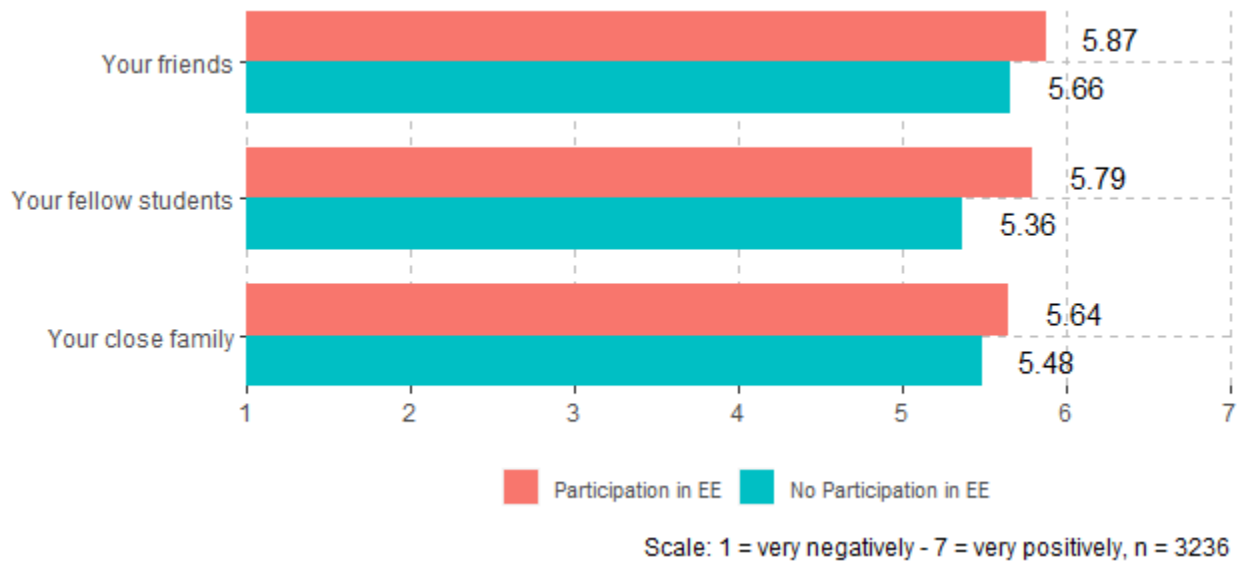


Table 2: Career choice intentions: Expected changes in 5 years – EE Participants only

Right after studies	5 years later					
	Employee (SME)	Employee (Large)	Employee (Other)	Self-employed	Successor	Other / do not know yet
Employee (SME) (n=285)	41,4 %	12,6 %	7,0 %	22,5 %	6,7 %	9,8 %
Employee (Large) (n=197)	5,1 %	55,8 %	5,1 %	28,4 %	2,0 %	3,6 %
Employee (NPO, public, acad.) (n=104)	6,7 %	9,6 %	61,5 %	12,5 %	0,0 %	9,6 %
Self-employed (n=59)	5,1 %	0,0 %	0,0 %	89,8 %	5,1 %	0,0 %
Successor (n=18)	5,6 %	0,0 %	16,7 %	22,2 %	50,0 %	5,6 %
Other / do not know yet (n=119)	17,6 %	14,3 %	9,2 %	16,8 %	2,5 %	39,5 %

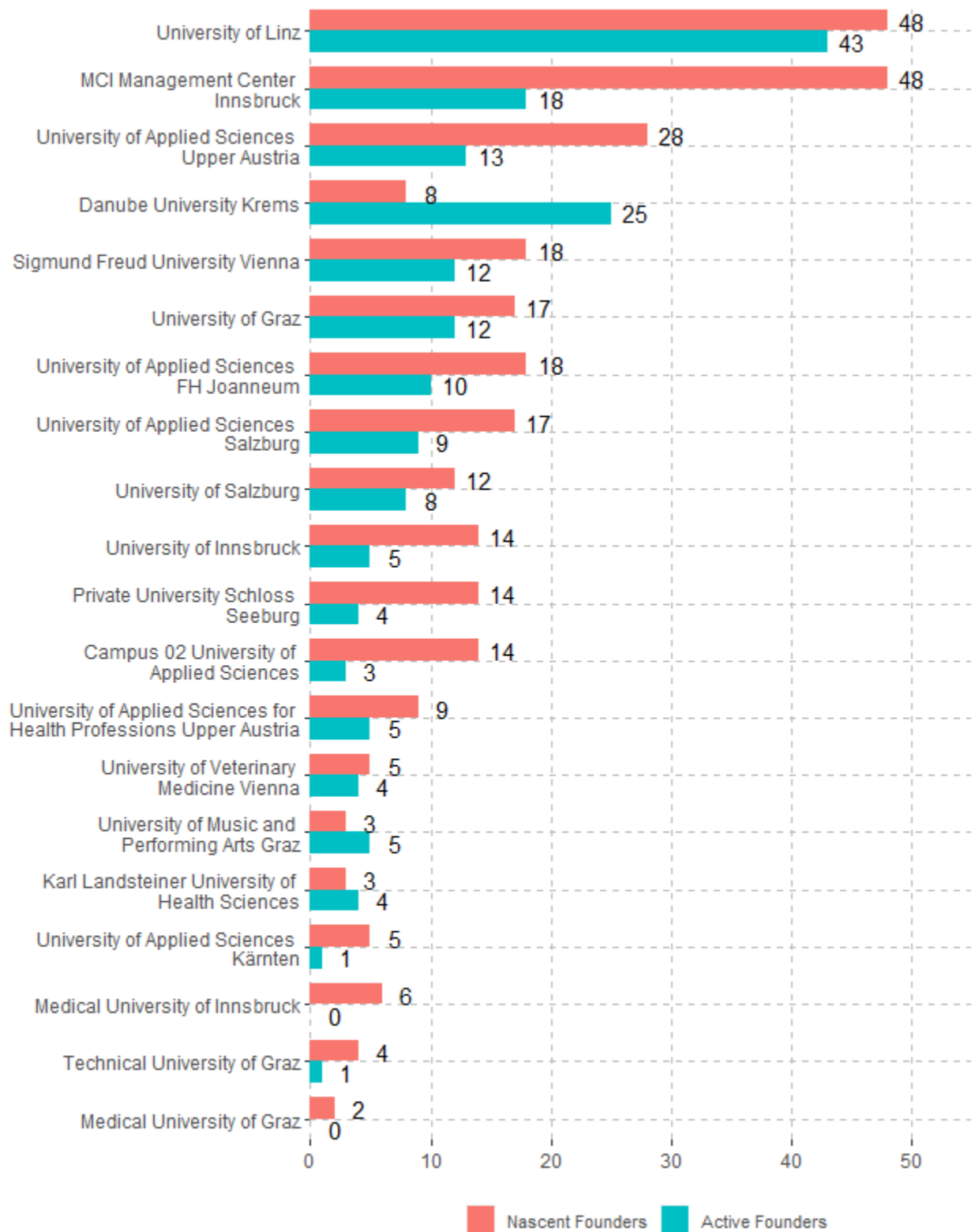
Table 3: Career choice intentions: Expected changes in 5 years – EE Non-Participants only

Right after studies	5 years later					
	Employee (SME)	Employee (Large)	Employee (Other)	Self-employed	Successor	Other / do not know yet
Employee (SME) (n=651)	44,7 %	10,3 %	6,3 %	23,3 %	4,6 %	10,8 %
Employee (Large) (n=534)	6,2 %	59,6 %	6,9 %	15,7 %	2,1 %	9,6 %
Employee (NPO, public, acad.) (n=606)	2,8 %	4,6 %	73,4 %	10,4 %	0,2 %	8,6 %
Self-employed (n=155)	2,6 %	0,6 %	3,2 %	88,4 %	1,3 %	3,9 %
Successor (n=32)	3,1 %	0,0 %	0,0 %	21,9 %	71,9 %	3,1 %
Other / do not know yet (n=476)	16,0 %	5,0 %	11,6 %	9,9 %	0,8 %	56,7 %

Table 4: Participation of universities in the sample

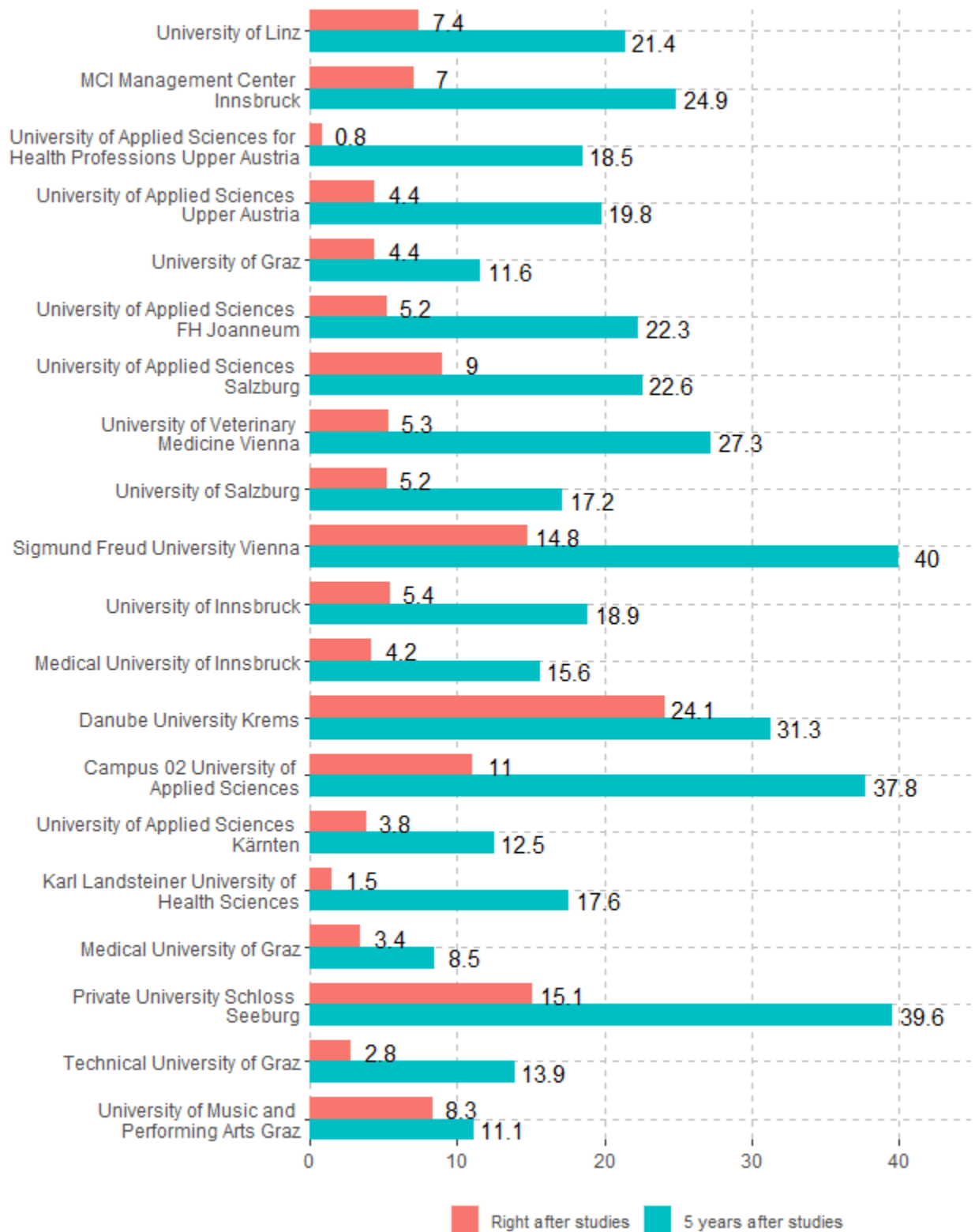
University	Frequency	Percent
University of Linz	431	13,32 %
MCI Management Center Innsbruck	369	11,40 %
University of Applied Sciences for Health Professions Upper Austria	352	10,88 %
University of Applied Sciences Upper Austria	252	7,79 %
University of Graz	225	6,95 %
University of Applied Sciences FH Joanneum	193	5,96 %
University of Applied Sciences Salzburg	155	4,79 %
University of Veterinary Medicine Vienna	150	4,64 %
University of Salzburg	134	4,14 %
Sigmund Freud University Vienna	115	3,55 %
University of Innsbruck	111	3,43 %
Medical University of Innsbruck	96	2,97 %
Danube University Krems	83	2,56 %
Campus 02 University of Applied Sciences	82	2,53 %
University of Applied Sciences Kärnten	80	2,47 %
Karl Landsteiner University of Health Sciences	68	2,10 %
Medical University of Graz	59	1,82 %
Private University Schloss Seeburg	53	1,64 %
Technical University of Graz	36	1,11 %
University of Music and Performing Arts Graz	36	1,11 %
23 other universities with participants	156	4,82 %
Sum	3236	100,00 %

Figure 33: Number of nascent and active founders by university (frequencies)



n = 3236

Figure 34: Founding intentions directly after studies and 5 years after graduation by university (percent)



n = 3236

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