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## Survey on student background and considerations regarding entrepreneurship and career choice 2019

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# Survey on student background and considerations regarding entrepreneurship and career choice 2019

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DENMARK

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## Resumé (Danish summary)

### Baggrund

Det er et mål i Aalborg Universitets strategi, *Viden for verden*, at øge iværksætteraktivitet og iværksætterlyst blandt Aalborg Universitets medarbejdere og studerende. For at imødekomme dette mål er der iværksat en handlingsplan for iværksætterindsatsen. Der er imidlertid begrænset viden om den faktiske iværksætteraktivitet og iværksætterlyst på AAU, især hos de studerende, som ofte udfolder deres iværksætteraktiviteter uden for universitets formelle rammer.

Som et led i at undersøge, understøtte og dokumentere effekten af iværksætterindsatsen blev der for første gang i 2018, og senest i 2019, rundsendt et spørgeskema til alle nye førsteårsstuderende. Med disse undersøgelser ønsker vi at undersøge om (og hvordan), de studerendes iværksætterlyst og arbejdsværdier udvikler sig i løbet af deres studietid, og hvordan iværksætterlysten eventuelt påvirkes af iværksætterindsatsen. De studerende vil derfor modtage et tilsvarende spørgeskema igen efter henholdsvis 3 og 5 år. Efter planen bliver spørgeskemaet også sendt til alle nye førsteårsstuderende i de kommende år, således det bliver en del af en tilbagevendende kortlægning af iværksætterlysten blandt AAU-studerende og AAU's impact på de studerendes iværksætterlyst og arbejdsværdier.

Den forhåndenværende rapport, der rapporterer resultater fra den seneste spørgeskemaundersøgelse fra 2019, er en opdatering af den første version, som indeholder data fra 2018 undersøgelsen. Den forhåndenværende udgave indeholder i tillæg til 2018-rapporten sammenligninger med den tidligere spørgeskemaundersøgelse, i fremhæver de tilfælde, hvor interessante forskelle eller begyndende mønstre identificeres.

Rapportens og spørgeskemaundersøgelsens formål og metode er nærmere beskrevet i Kommissorium for dokumentation af effekt af indsats 9.1., Understøttelse af vidensarbejde, og tilhørende bilag.

## Resultater

894 ud af 4031 førsteårsstuderende har svaret på spørgeskemaet, hvilket giver en svarprocent på 22,2 pct. Ved distribuering af spørgeskemaet manglede 318 e-mailadresser, hvorfor spørgeskemaet kun er blevet distribueret til 3713 ud af de 4031 førsteårsstuderende. Den reelle svarprocent (på distribuerede spørgeskemaer) er derfor 24,1 pct. Tabel 1 viser, hvorledes svarprocenterne fordeler sig på de respektive fakulteter.

### Svarprocent fordelt på fakultet, 2019

	Population*		Respondenter		Svarprocent
<b>Det Samfundsvidenskabelige Fakultet</b>	1155	28,7%	186	20,8%	16,1%
<b>Det Humanistiske Fakultet</b>	779	19,3%	162	18,1%	20,8%
<b>Det Sundhedsvidenskabelige Fakultet</b>	412	10,2%	105	11,7%	25,5%
<b>Det Tekniske Fakultet for IT og Design</b>	1037	25,7%	156	17,4%	15,0%
<b>Det Ingeniør- og Naturvidenskabelige Fakultet</b>	648	16,1%	253	28,3%	39,0%
<b>Ved ikke</b>			17	1,9%	
<b>Manglende besvarelse</b>			15	1,7%	
<b>I alt</b>	4031	100,0%	894	100,0%	22,2%
<b>Distribueret til</b>	3713		894		24,1%

\*Populationen svarer til antal førsteårsstuderende optaget på den koordinerede tilmelding (KOT). Spørgeskemaet er distribueret til 3713 førsteårsstuderende, for hvem e-mailadresser var tilgængelig for forskerne på tidspunktet for undersøgelsen. Det antages, at der ingen systematik er i, hvordan de manglende 318 e-mailadresser fordeler sig på fakulteter og køn.

Som det fremgår af ovenstående tabel, er svarprocenten betydeligt højere end gennemsnittet blandt studerende på det Ingeniør- og Naturvidenskabelige Fakultet, og lavest blandt studerende fra det Samfundsvidenskabelige Fakultet og det Tekniske Fakultet for IT og Design. Kvindelige studerende er også overrepræsenteret i denne undersøgelse. De udgør 52,8 pct. af respondenterne, selvom de blot udgør 48,6 pct. af førsteårsstuderende på AAU. Vi tager højde for disse skæve fordelinger ved at vægte besvarelserne i forhold til både fakultet og køn. Vægtningen er foretaget ud fra den samlede population af 4031 førsteårsstuderende.

### Lysten til at starte egen virksomhed og blive iværksætter

Vi belyser de studerendes **iværksætterlyst** ud fra flere spørgsmål. Vi spørger eksempelvis, om de mener, at iværksætteri er et attraktivt karrierevalg, om de allerede har iværksættererfaring, og om de har taget aktive skridt henimod at starte egen virksomhed.

I modsætning til den første undersøgelse fra 2018, så finder vi *ikke*, at studerendes iværksætterlyst varierer betydeligt på tværs af fakulteterne. I forhold til de tre ovennævnte spørgsmål vedrørende de studerendes opfattelse af iværksætteri som karrierevalg, deres faktiske erhvervs erfaring som iværksætter, og i hvilket omfang de har taget aktive skridt henimod at starte egen virksomhed, finder vi således ingen statistisk signifikante forskelle på tværs af fakulteterne.

Til gengæld finder vi, i overensstemmelse med undersøgelsen fra 2018, at de studerendes iværksætterlyst varierer til betydeligt på tværs af køn. Vi ved, at mænd er overrepræsenteret i iværksætterstatistikkerne. Det er derfor ikke uventet, at vi finder, at iværksætterlysten er mindre blandt kvindelige studerende. De kvindelige studerende har i gennemsnit en mindre positiv opfattelse af iværksætteri som karrierevalg. Derudover har færre kvindelige førsteårsstuderende taget aktive skridt henimod at starte egen virksomhed, og de har i mindre grad iværksættererfaring, når de begynder på deres uddannelse. Således svarer kun 3,8 pct. af kvinderne mod 10,2 pct. af mændene, at de tidligere har drevet eller fortsat driver egen virksomhed.

Spørgeskemaet afdækker også de studerendes **selvvurderede iværksætter-kompetencer**. Her finder vi igen en mindre positiv vurdering af egne evner blandt kvindelige studerende sammenlignet med mændene. Eksempelvis svarer blot 16 pct. af kvinderne (mod 32,6 pct. af mændene), at de i høj grad eller nogen grad har de evner og færdigheder, der skal til for at etablere og drive egen virksomhed. Når vi kigger på tværs af fakulteterne finder vi, at studerende fra det Sundhedsvidenskabelige Fakultet og det Humanistiske Fakultet har mindre positive vurderinger af egne evner til at starte og drive egen virksomhed sammenlignet med de resterende fakulteter.

Spørgeskemaets anden del omhandler de **arbejdsværdier/arbejds karakteristika**, den studerende finder særligt vigtige i forbindelse med valg af beskæftigelse. Det er interessant at afdække de studerendes arbejdsværdier, da tidligere forskning har vist, at der er væsentlig forskel på de arbejdsværdier, der vægtes højest hos henholdsvis lønmodtagere og iværksættere. En afdækning af studerendes arbejdsværdier vil derfor vise, om de i udgangspunktet har iværksætterrelaterede arbejds karakteristika, samt – i forbindelse med en gentagelse af spørgsmålene 3 og 5 år efter studiestart - om deres arbejdsværdier eventuelt påvirkes og ændres i løbet af studiertiden, og som følge af AAUs iværksætterindsats.

De studerende, der mener, at "det er et attraktivt karrierevalg at starte og drive egen virksomhed", svarer oftere, at følgende arbejds karakteristika er vigtige for dem: mulighed for at arbejde selvstændigt, mulighed for at udvikle egne evner og færdigheder samt arbejdet er et godt springbræt for karrieren. Omvendt rangerer følgende arbejdsværdier lavere blandt denne gruppe af studerende: Et godt socialt arbejdsmiljø, fordelagtige arbejdstider og at arbejdet kan udføres tilfredsstillende med de ressourcer, der er til rådighed. Det er ikke overraskende, at de studerende, der vægter selvstændighed højt, også finder iværksætteri mere attraktivt, ligesom det også var forventet, at de ligger mindre vægt på arbejdstid. Begge sæt af rangeringer er i overensstemmelse med 2018-undersøgelsen.

## Introduction

This report is an updated version of the first report on “Survey on student background and considerations regarding entrepreneurship and career choice”, which presented the results from a survey among first year students carried out in October 2018. The present report is based on the second round of the survey from 2019, examining the Aalborg University (AAU) students’ background and considerations regarding entrepreneurship and career choice<sup>1</sup>. In addition, this updated version includes references to the first survey of 2018 where it highlights relevant differences and/or patterns between these first two surveys.

The purpose of these reoccurring annual surveys is to facilitate the development and, in particular, the evaluation of the entrepreneurship initiative at AAU<sup>2</sup>. The entrepreneurship initiative is a series of initiatives that aim to support and strengthen entrepreneurship at AAU. In the present project, we focus on entrepreneurship among the students (and graduates). Among other things, this second survey provides empirical data on students’ attitudes towards entrepreneurship and their previous entrepreneurship experience at the time of their enrolment at AAU. Together with the first survey of 2018, this survey can thus serve as a baseline for future assessments and evaluations of the effects of the entrepreneurship initiative and AAU training in general by observing potential changes in attitudes towards entrepreneurship and entrepreneurial behaviour during enrolment at AAU.

In the following, we present the results of the 2019 survey. Appendix A presents the questionnaire.

Below is a summary of some selected results.

## Summary of results

### We find the following:

- Women are less oriented towards entrepreneurship compared to men: Female students have less entrepreneurial experience prior to their enrolment at AAU and a less positive attitude towards entrepreneurship as a career choice. In addition, women report a less positive assessment of their skills and abilities to establish and manage a business (*entrepreneurial self-efficacy*), and relatively few female students have taken active steps towards establishing a business (*nascent entrepreneurship*). These differences are consistent with the 2018-survey.
- Students with parent entrepreneurs are generally more oriented towards entrepreneurship than their peers.
- When ranking important factors for choosing a career after graduation, students who find establishing and managing their own business an attractive career choice emphasise
  - o the opportunity to work independently,
  - o the opportunity to develop their skills and abilities, and
  - o the work being a good stepping stone for the further career*more* than students who do not find entrepreneurship an attractive career choice. Students who find establishing and managing their own business an attractive career choice also emphasise
  - o the possibility of carrying out the work satisfactorily with the resources available,
  - o convenient working hours, and
  - o a good social working environment

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<sup>1</sup> This corresponds to sub-project 1.1 in the ‘Kommissorium for dokumentation af effekt af indsats 9.1’.

<sup>2</sup> Initiative 9.2 in the action on Knowledge Collaboration, <https://www.strategi.aau.dk/Vidensamarbejde/>.

less than students who do not find entrepreneurship an attractive career choice. Both set of rankings are consistent with the 2018-survey.

## Data collection

The survey was carried out among 3,713 first-year students at Aalborg University in October 2019. Aalborg University's Study Service Office provided the email addresses of 3,713 students (of a population of 4,031 first-year students) after approval by the Head of Study Service.<sup>3</sup>

The questionnaire was distributed to the students via SurveyXact on 1<sup>st</sup> October 2019, and reminders were sent on 7<sup>th</sup> October 2019 and 15<sup>th</sup> October 2019 to those who had not yet responded. The data collection was completed on 23<sup>rd</sup> October 2019. Of the 894 students who completed the questionnaire, 56 were partial completions. The overall response rates were 24.1% and 22.2% for the distributed questionnaires and the full population, respectively.

The questionnaire is identical to the one distributed in 2018. Prior to the 2018 distribution, the questionnaire was tested on employees of the Department of Business and Management, including international PhD students.

Respondents could choose to respond to a Danish or an English language version of the questionnaire.

## Respondents

Table 1 presents the population and response rates by faculty, which shows considerable variation among the faculties. Table 1 reveals a considerable overrepresentation of students from the Faculty of Engineering and Science among the respondents (both in absolute and relative terms), while students from the Technical Faculty of IT and Design and students from the Faculty of Social Sciences have the lowest response rates.

Table 1. Overview of respondents (all first-year students)

	Population		Respondents		Response rate
<b>The Faculty of Social Sciences</b>	1155	28.7%	186	20.8%	16.1%
<b>The Faculty of Humanities</b>	779	19.3%	162	18.1%	20.8%
<b>The Faculty of Medicine</b>	412	10.2%	105	11.7%	25.5%
<b>The Technical Faculty of IT and Design</b>	1037	25.7%	156	17.4%	15.0%
<b>The Faculty of Engineering and Science</b>	648	16.1%	253	28.3%	39.0%
<b>Do not know</b>			17	1.9%	
<b>Missing</b>			15	1.7%	
<b>Total</b>	4031	100.0%	894	100.0%	22.2%
<b>Distributed</b>	3713		894		24,1%

<sup>3</sup> The questionnaire was distributed to 3,713 email addresses provided by AAU's Study Service. This corresponds to 92.1% of the full population of 4,031 first-year students. We cannot test for, but assume, no systematic differences between the 3,713 students who received the questionnaire and the 318 students who did not. Hence, when weighing the results of the questionnaire by faculty and gender, we rely on the distribution of the full population of 4,031 first-year students. Furthermore, we assume that no non-active students have answered the questionnaire.



As shown in Table 1, the questionnaire was only distributed to 3,713 students out of 4,031. When weighing the respondents, we assume that missing e-mails are equally distributed among the faculties.

Table 2 presents the gender distribution by faculty for the respondents (excluding the 15 missing and 17 'Do not know' responses from Table 1) compared to the composition of the population. Table 2 reveals a small majority (52.8%) of female students among the respondents. This overrepresentation of female respondents does not reflect the true gender distribution of the population, where 51.4% are male and 48.6% female.

*Table 2. Gender distribution by faculty, population and respondents*

	Female		Male		Do not want to answer	Total	
	Population	Respondents	Population	Respondents	Respondents	Population	Respondents
<b>The Faculty of Social Sciences</b>	644	107	511	78	1	1155	186
	55.8%	57.5%	44.2%	41.9%	0.5%	100%	
<b>The Faculty of Humanities</b>	564	132	215	27	3	779	162
	72.4%	81.5%	27.6%	16.7%	1.9%	100.0%	
<b>The Faculty of Medicine</b>	270	79	142	26	0	412	105
	65.5%	75.2%	34.5%	24.8%	0.0%	100.0%	
<b>The Technical Faculty of IT and Design</b>	301	50	736	105	1	1037	156
	29.0%	32.1%	71.0%	67.3%	0.6%	100.0%	
<b>The Faculty of Engineering and Science</b>	179	87	469	161	5	648	253
	27.6%	34.4%	72.4%	63.6%	2.0%	100.0%	
<b>Total</b>	1958	455	2073	397	10	4031	862
	48.6%	52.8%	51.4%	46.1%	1.2%	100.0%	

Table 3 shows respondents' age by faculty. To ensure respondents' anonymity, we do not report the minimum and maximum ages. The standard deviations of Table 3 reveal a significant difference in respondents' age distribution across the five faculties. The Faculty of Medicine has both the youngest (on average) and the most homogenous respondents in terms of age. At the Faculty of Humanities, respondents are typically older and we see more age variation.

Table 3. Age by faculty

	Mean	Std. Deviation	N
The Faculty of Social Sciences	21.6	2.8	185
The Faculty of Humanities	22.2	4.7	162
The Faculty of Medicine	21.2	2.2	105
The Technical Faculty of IT and Design	22.1	3.5	156
The Faculty of Engineering and Science	21.9	3.4	251
Don't know	22.8	5.1	17
No answer	19.5	0.6	4
<b>Total</b>	<b>21.9</b>	<b>3.5</b>	<b>880</b>

The place of completion of the qualifying exam to AAU provides an indicator of respondents' country of origin (i.e., Danish or international students). Of the respondents, 82% reported to have completed their qualifying exam in Denmark and are thus assumed to be Danish. In 2018 78.9% of the respondents reported to have completed their qualifying exam in Denmark. This development was expected as a number of international programmes have been closed or put on hold in 2019.

Figures 1a and 1b show the distribution of respondents with a Danish qualifying exam by faculty and gender, respectively. For all faculties but the Faculty of Engineering and Science, fewer respondents in 2019, compared to 2018, report to have completed their qualifying exam outside Denmark. Figure 1a shows that the Faculty of Engineering and Science has the lowest share of respondents who completed the qualifying exam in Denmark. In the 2018 survey, this was the Technical Faculty of IT and Design. In both 2018 and 2019, we find the highest share of (presumed) Danish students in the Faculty of Medicine. For this faculty, the shares are almost identical in 2018 and 2019 – the difference between the two years being 0.1 percentage point.

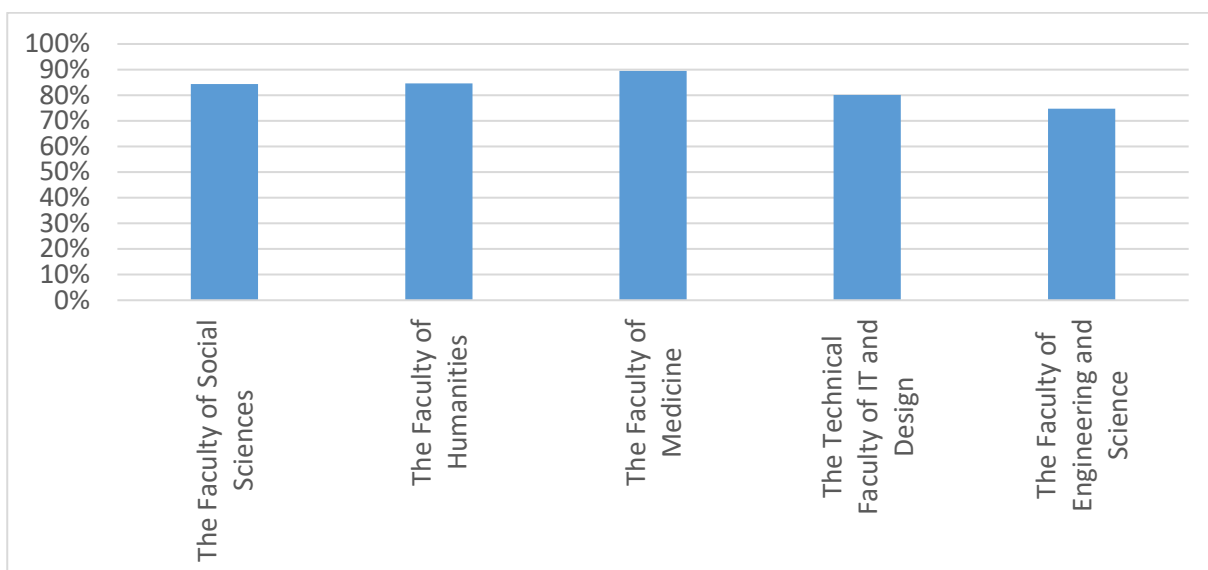


Figure 1a. Share of respondents with a Danish qualifying exam to AAU by faculty (N = 894).

Figure 1b indicates that the majority of students with an international background in our survey are male.

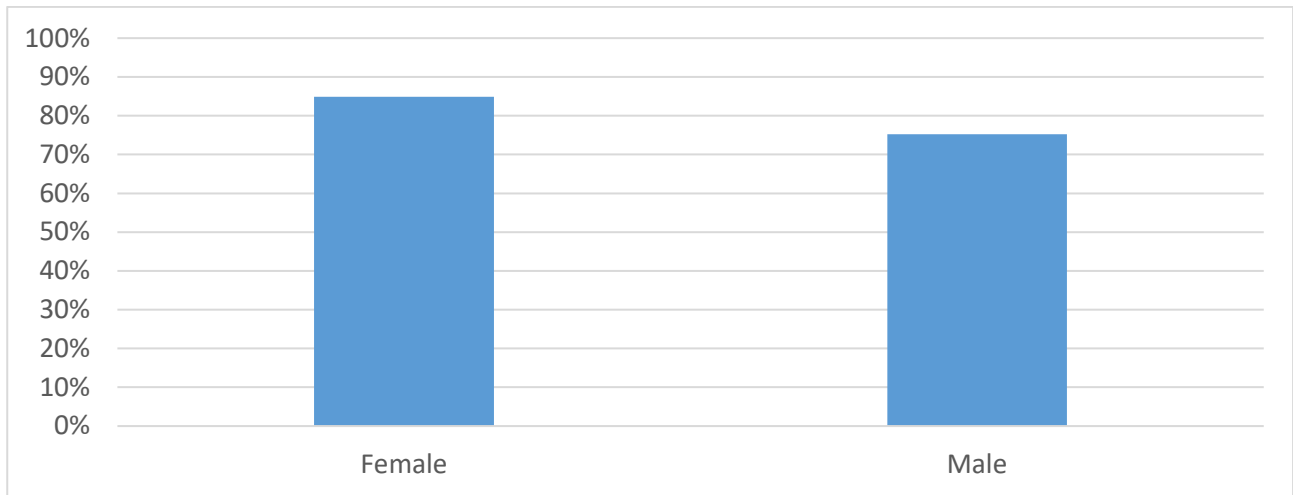


Figure 1b. Share of respondents with a Danish of qualifying exam to AAU by gender (N = 894).

Figure 2 shows the share of respondents (by faculty) with work experience prior to enrolment at AAU. Work experience does *not* include part-time jobs. We find that around half of the respondents had a full-time job for at least six consecutive months before their enrolment at AAU. This share is lowest for respondents from the Faculty of Engineering and Science, and highest for respondents from the Faculty of Social Sciences (55.4%) and the Faculty of Humanities (54.3%). In 2018, only 43.6% of the respondents from the Faculty of Humanities reported such work experience prior to enrolment.

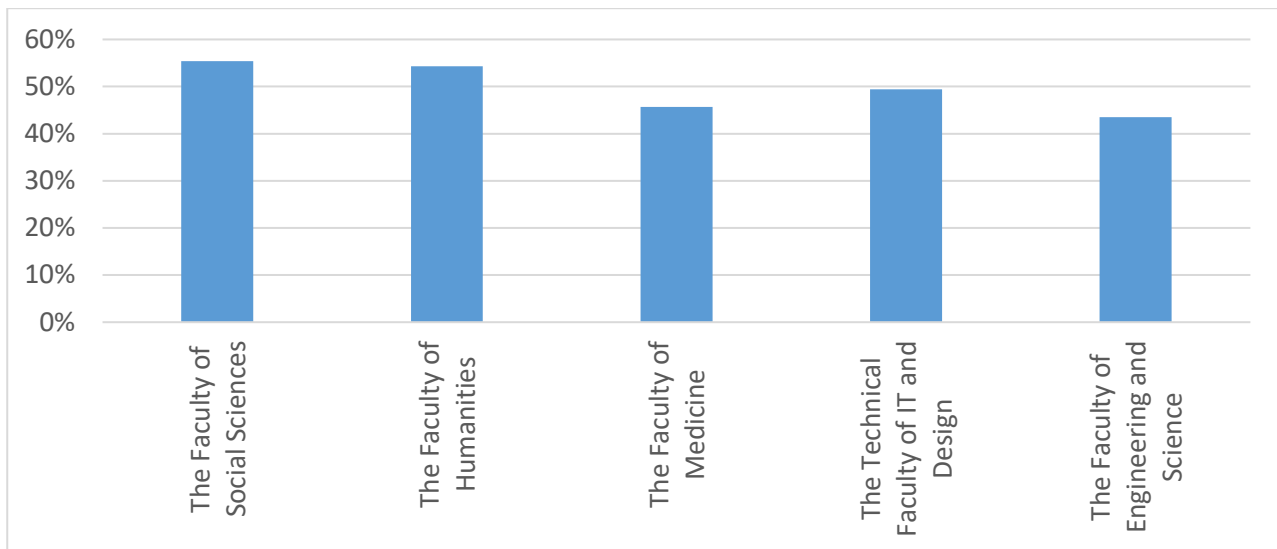


Figure 2. Share of respondents with work experience prior to enrolling at AAU (a full-time job – as an employee – for at least six consecutive months before current enrolment at AAU) by faculty (N = 894). Differences are significant at the 1% level.

## Student background and considerations regarding entrepreneurship and career choice

Entrepreneurship experience prior to enrolment will likely affect not only the respondent's attitude towards entrepreneurship but also the respondent's entrepreneurial self-efficacy. On the one hand, the literature finds that although, on average, entrepreneurs earn less than they could as an employee (Hamilton, 2000) and experience higher levels of work-family conflict (Parasuraman & Simmers, 2001), they express greater work satisfaction than do wage-earners (Hundley, 2001). This greater work satisfaction by entrepreneurs is explained by a more attractive work environment with greater independence and flexibility that comes with being your own boss. Hence, a previous taste of entrepreneurship could encourage a future start-up through generating a positive attitude towards entrepreneurship. On the other hand, the growing literature on entrepreneurial learning opens for both positive and negative effects of previous start-up experience on the likelihood of a restart (Nielsen & Sarasvathy, 2016). Previous failure experience, for instance, could serve as a signal of one's innate entrepreneurial skills and abilities (i.e. passive learning) and discourage restart through lower entrepreneurial self-efficacy. Add to this the stigma of failure, which could have both socio-psychological consequences for the individual and affect the likelihood of attracting resources for future ventures (e.g. capital and employees). Alternatively, the failure experience could augment one's entrepreneurial skills and abilities due to learning by doing and failure (i.e. active learning) – or lead to over-confidence regarding learning, which encourages entrepreneurial self-efficacy and a restart. The results presented below shed light on some of these issues.

### Method: weighted data

Start-up statistics show that men are more inclined than women to found a new business. This difference, which is also apparent in our data (see Figure 3c), might be reflected in the attitude towards entrepreneurship as a career choice and entrepreneurial self-efficacy (i.e. evaluation of own skills and abilities related to entrepreneurship). Differences in start-up preferences according to field of study might also exist. For these reasons, and because Tables 1 and 2 show evidence of a gender and faculty bias among the respondents, the following tables and figures weight the data according to gender and faculty of enrolment. A conservative approach to weighting is chosen, where the responses are not weighted to the total population but only to reflect the gender and faculty composition of the population, without inflating the number of responses. This weighting is done to avoid any possible exaggerations of the statistical significances of differences.<sup>4</sup> Appendix A reports the unweighted response frequencies for the total population.

### Results

Figure 3a shows entrepreneurship experience by faculty. For the total population, 7.0% report prior or current entrepreneurial experience. While Figure 3a indicates some variation across faculties, these differences are not statistically significant.

Figures 3b and 3c show entrepreneurship experience based on the location of the qualifying exam and gender, respectively. Figure 3b indicates that whereas similar shares of students with Danish and

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<sup>4</sup> Owing to missing information on gender and faculty of enrolment for some respondents, the maximum number of weighted observations is 858.

international backgrounds have prior entrepreneurship experience, a larger share of students with an international background are currently managing their own business. However, because of the low numbers, these differences are not statistically significant. Similarly, Figure 3c shows that a larger share of male (10.2%) than female students (3.8%) has previously managed or is currently managing their own business. This significant difference is comparable to the 2018 survey.

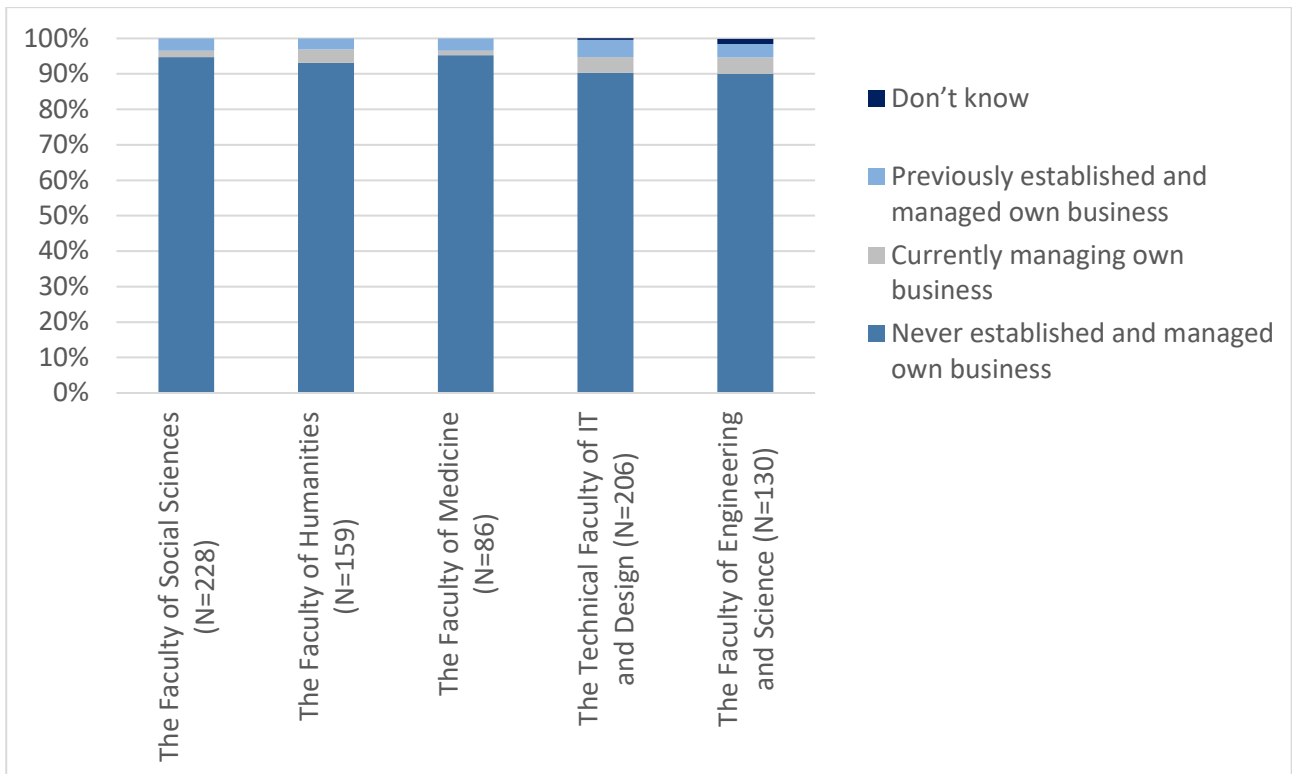


Figure 3a. Entrepreneurship experience (established and managed your own business – either alone or with others) by faculty. N = 809, weighted data. Differences are not statistically significant.

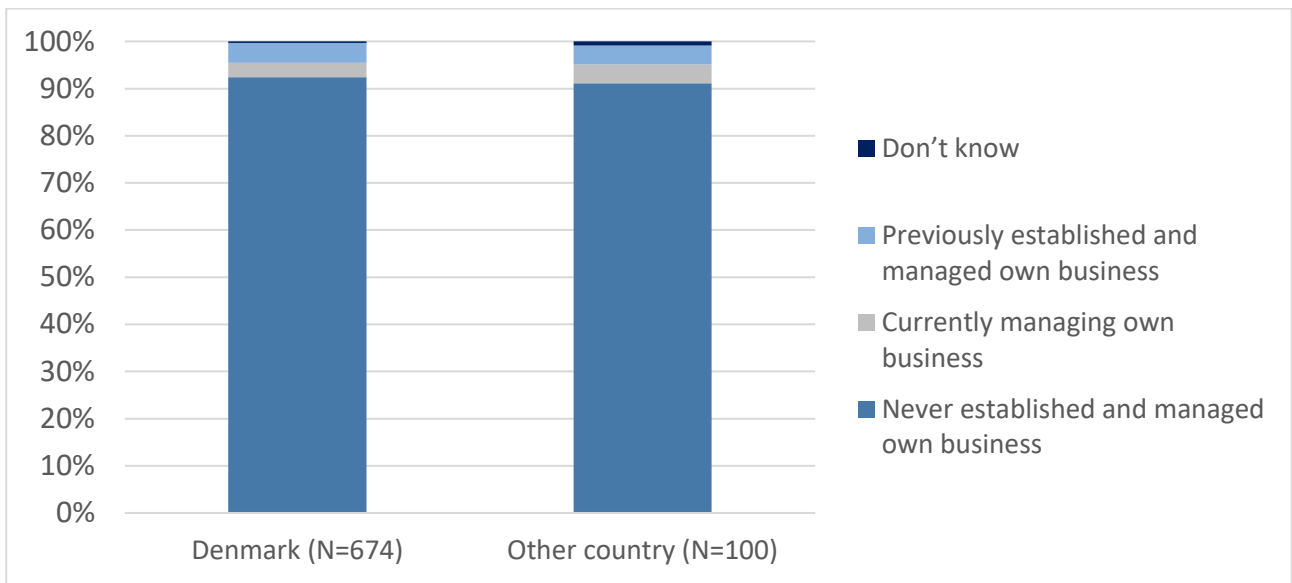


Figure 3b. Entrepreneurship experience (established and managed your own business – either alone or with others) by location of completing the qualifying exam for AAU. N = 774, weighted data. Differences are not statistically significant.

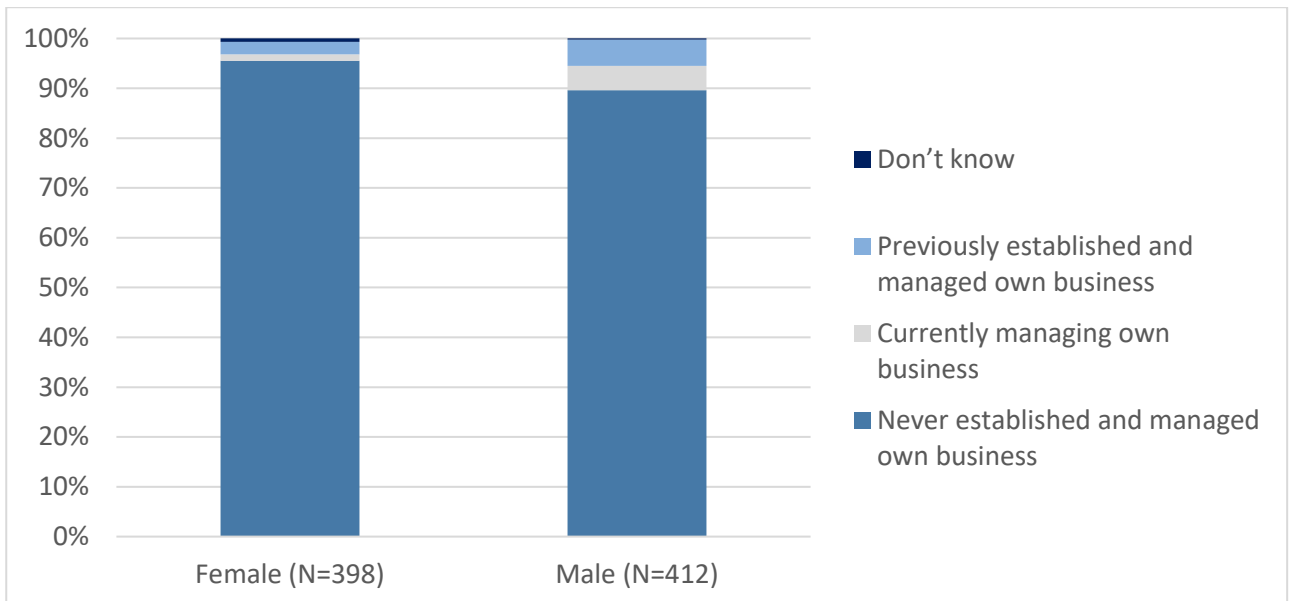


Figure 3c. Entrepreneurship experience (established and managed your own business – either alone or with others) by gender. N = 858, weighted data. Differences are significant at the 1% level.

Figure 4 shows whether the students have parents with entrepreneurial experience by faculty. This information is relevant because several studies have found that the likelihood of entering entrepreneurship significantly increases if one or both parents are or have been entrepreneurs (Sørensen, 2007; Dahl et al. 2009). A recent study (Lindquist & Van Praag, 2015) discussed and investigated whether this likelihood is due mainly to pre-birth or post-birth factors, such as genes (e.g. intelligence, extroversion and pleasure from risk-

taking), an inheritance of entrepreneurial work-values during childhood (e.g. a preference for independence) or even the family business, or a greater availability of resources needed for founding and running a business (e.g. knowledge, networks, capital or labour) through their parents. 40.7% of the respondents to the survey herein replied that one or both parents have entrepreneurial experience. Figure 4 shows that these shares range from 33% in the Faculty of Medicine to 45.7% in both the Technical Faculty of IT and design. The differences between faculties are not statistically significant.

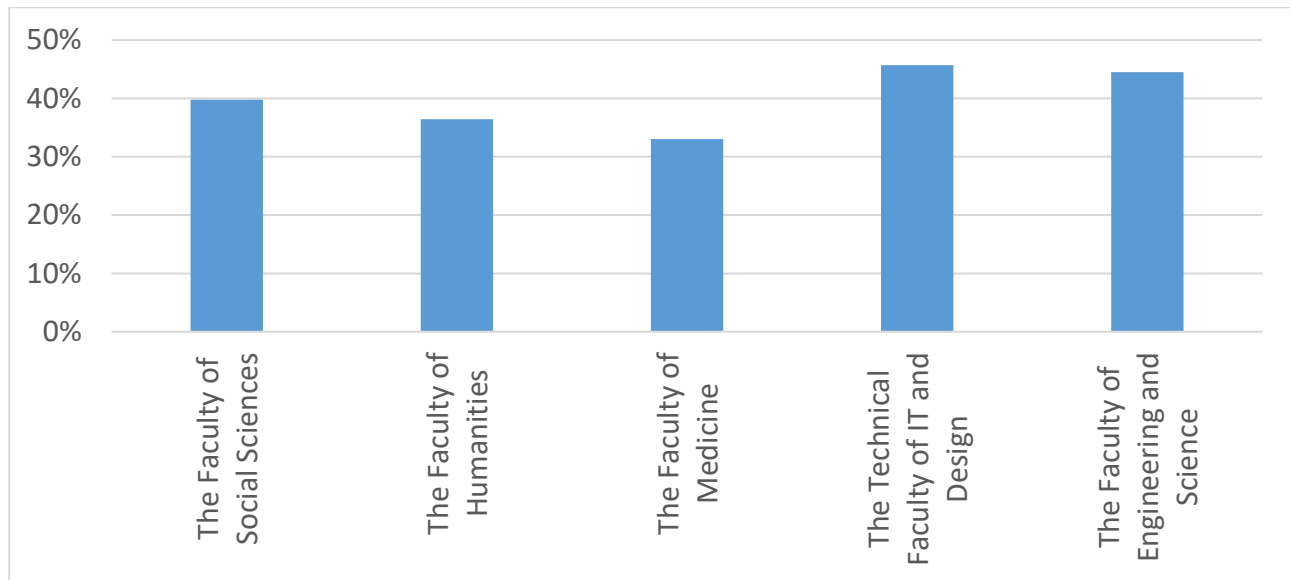


Figure 4. Share of respondents who have at least one parent with entrepreneurship experience.  $N = 852$ , weighted data. Differences are not statistically significant.

In Figure 4, parents' entrepreneurial experience is measured based on whether either of the parents have ever established or managed their own business. When looking only at the parents' connection to the labour market over the last 10 years, 20.4% of the respondents answer that 'self-employed' is the best description of their mother and/or father's main connection to the labour market. To check whether a bias exists in the survey, where students with entrepreneurial parents are more inclined to answer the questionnaire, we compared the 20.4% with information based on register data. In 2013, 22% of all enrolled students at AAU had entrepreneurial parents based on their entrepreneurial status identified from register data held by Statistics Denmark. There are thus now indications of a strong bias in the survey. However, it should be noted that the figures are not fully comparable because the register data method: (1) looks at all enrolled students at AAU in 2013 and not only new students in 2019, (2) only identifies one main founder behind every new firm in the 10-year period before 2013, and (3) only adds existing self-employed individuals behind personally owned firms (but not limited liability firms) in the 10-year period before 2013.

Figure 5a shows the respondents' ranking of work values by faculty. Work values categorise different aspects of work to which a given individual can attribute a high or low value, e.g. when deciding on occupational choice. These values are often divided into two main categories – intrinsic and extrinsic values – where the former values relate to the specific work tasks that need to be performed. The intrinsic work values included in the survey are 'the opportunity to develop own skills and abilities', 'visible results of the work', 'the opportunity to work independently', 'varying work tasks', 'exciting work tasks' and 'the work can be carried

out satisfactory with the resources available'<sup>5</sup>. The extrinsic work values in the survey relate to the following four dimensions, as suggested by Kalleberg (1977): finance ('a high income'), convenience ('convenient working hours'), career ('the work is a good stepping stone for my further career') and co-workers ('a good social working environment'). Work values have been used to explain work satisfaction by comparing an individual's work values with the actual work characteristics facing that individual (divided into the same categories). It is important to notice that entrepreneurs – like wage earners – can be motivated by both intrinsic (e.g. exciting work tasks) and/or extrinsic (e.g. high income work) characteristics. An interesting question is whether students within different faculties, with different pre-enrolment background or other characteristics are motivated by different work characteristics, which might affect not only the future decisions of founding a venture but also the performance of such a venture.

In Figure 5a, we see many similarities across the faculties. For example, students of all faculties ranked the same three factors as the most important. These factors are exciting work tasks, the opportunity to develop own skills and abilities, and a good social working environment; the former two are intrinsic values, while the latter is extrinsic. The same three factors were also ranked the highest in the 2018-survey.

It is notable that a good social working environment is considered particularly important, since AAU students spend a significant amount of time on problem-based project work in groups, which requires skills related to problem identification and analysis, cooperation, division of labour and potential conflict management. The ability to utilise the resources available in the project group is crucial for a successful outcome. Based on the entrepreneurship literature, the ability to utilise the social network is important for a successful start-up due to capital constraints and the need to obtain resources (Aldrich & Zimmer, 1986; Greve & Salaff, 2003). Therefore, we assume that social skills are important in both PBL project work and entrepreneurship.

Differences in work values across faculties include the ranking of 'the work is a good stepping stone for my further career', 'high income' and 'varying work tasks' as important factors. The work being as good stepping stone for the further career is relatively less important for students in the Faculty of Humanities. 'High income' is relatively less important for students in the Faculty of Humanities and Faculty of Medicine. Varying work tasks is relatively more important for students from the Faculty of Medicine where 51.7% include this factor as one of the four most important.

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<sup>5</sup> The latter work value can also be interpreted as an extrinsic work value. In general, there are different interpretations of what constitutes intrinsic and extrinsic work values, but we follow the categorisation by Kalleberg (1977).



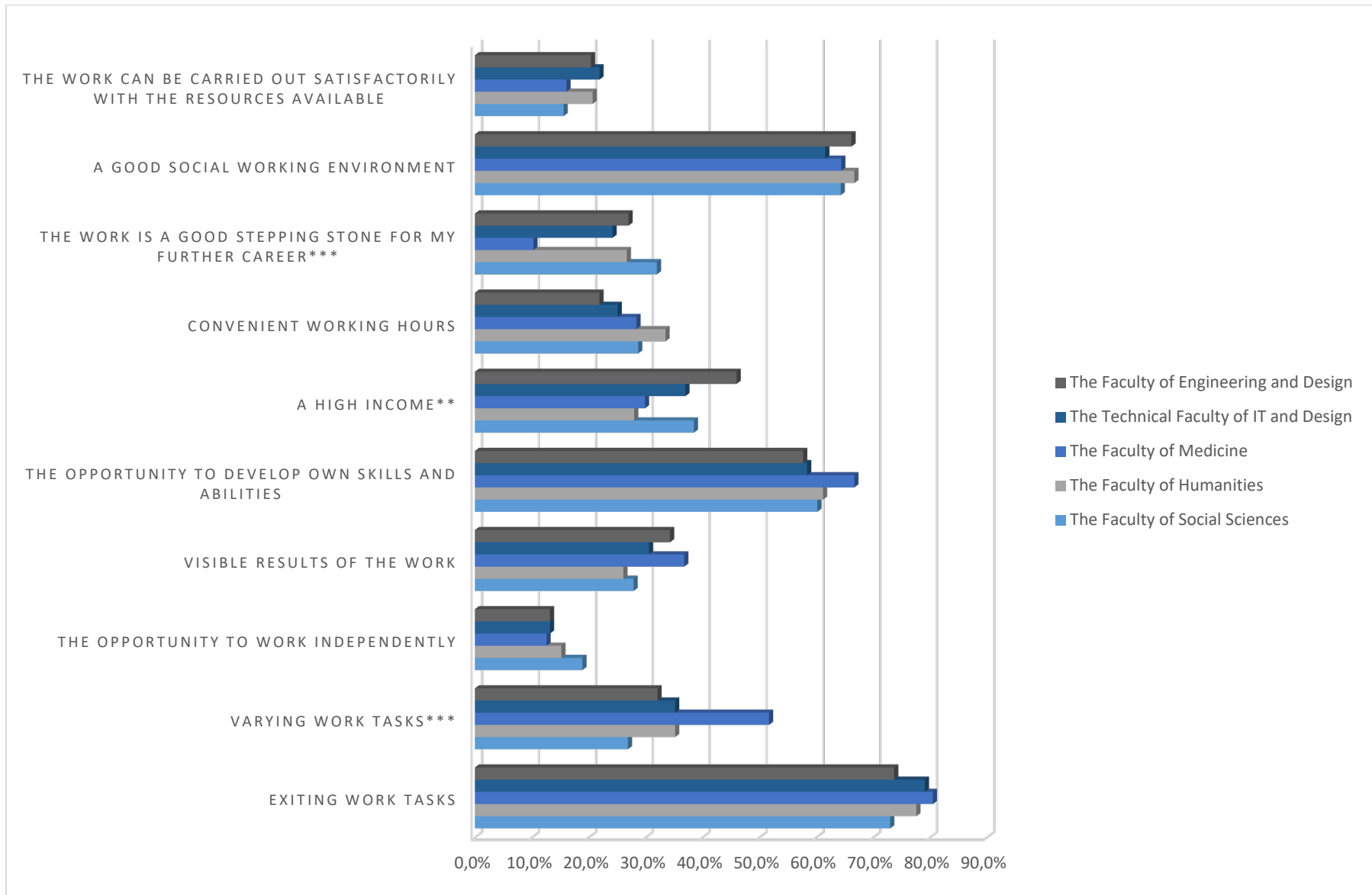


Figure 5a. Ranking of important factors when choosing a career after graduation (each respondent selected the four most important) by faculty. N = 852, weighted data. \*\*\*differences are significant at the 1% level and \*\*5% level.

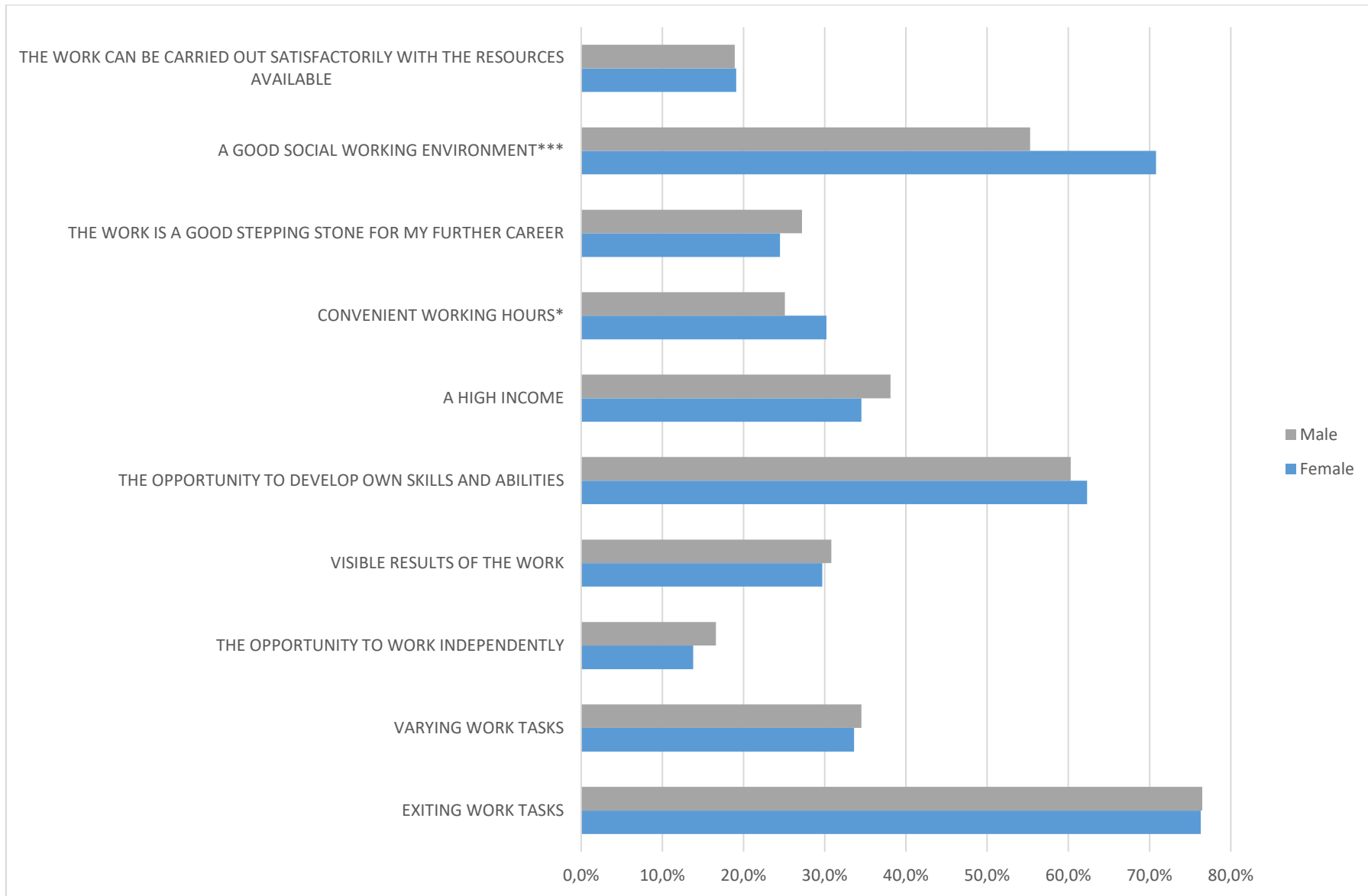


Figure 5b. Ranking of important factors when choosing a career after graduation (each respondent selected the four most important) by gender. N varies between 852 and 853, weighted data. \*\*\*differences are significant at the 1% level and \*10% level.

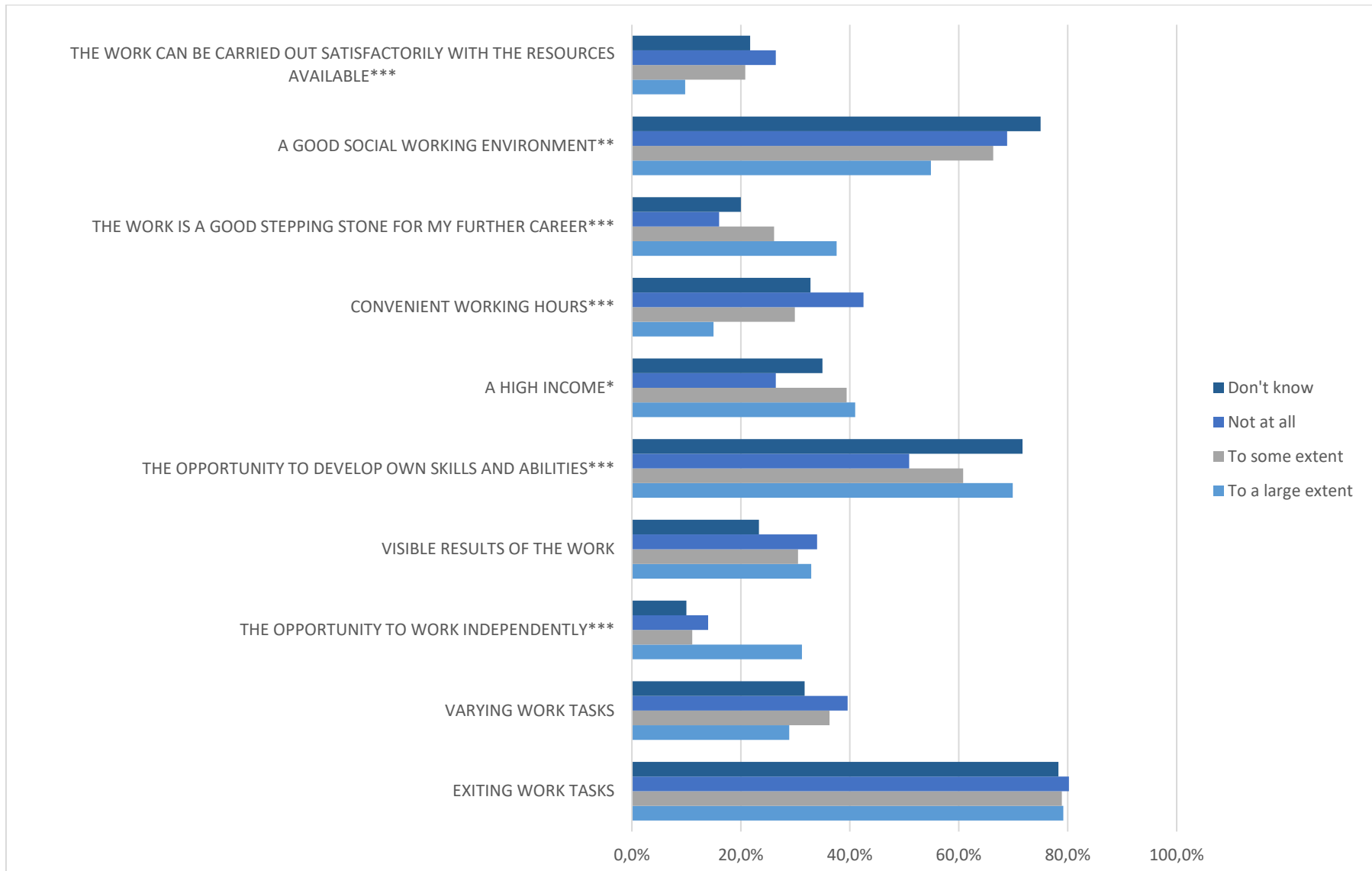


Figure 5c. Ranking of important factors when choosing a career after graduation (each respondent has selected the four most important) by perception of whether it is attractive career choice to establish and manage your own business. N varies between 818 and 819, weighted data. \*\*\*differences are significant at the 1% level, \*\*5% level and \*10% level.

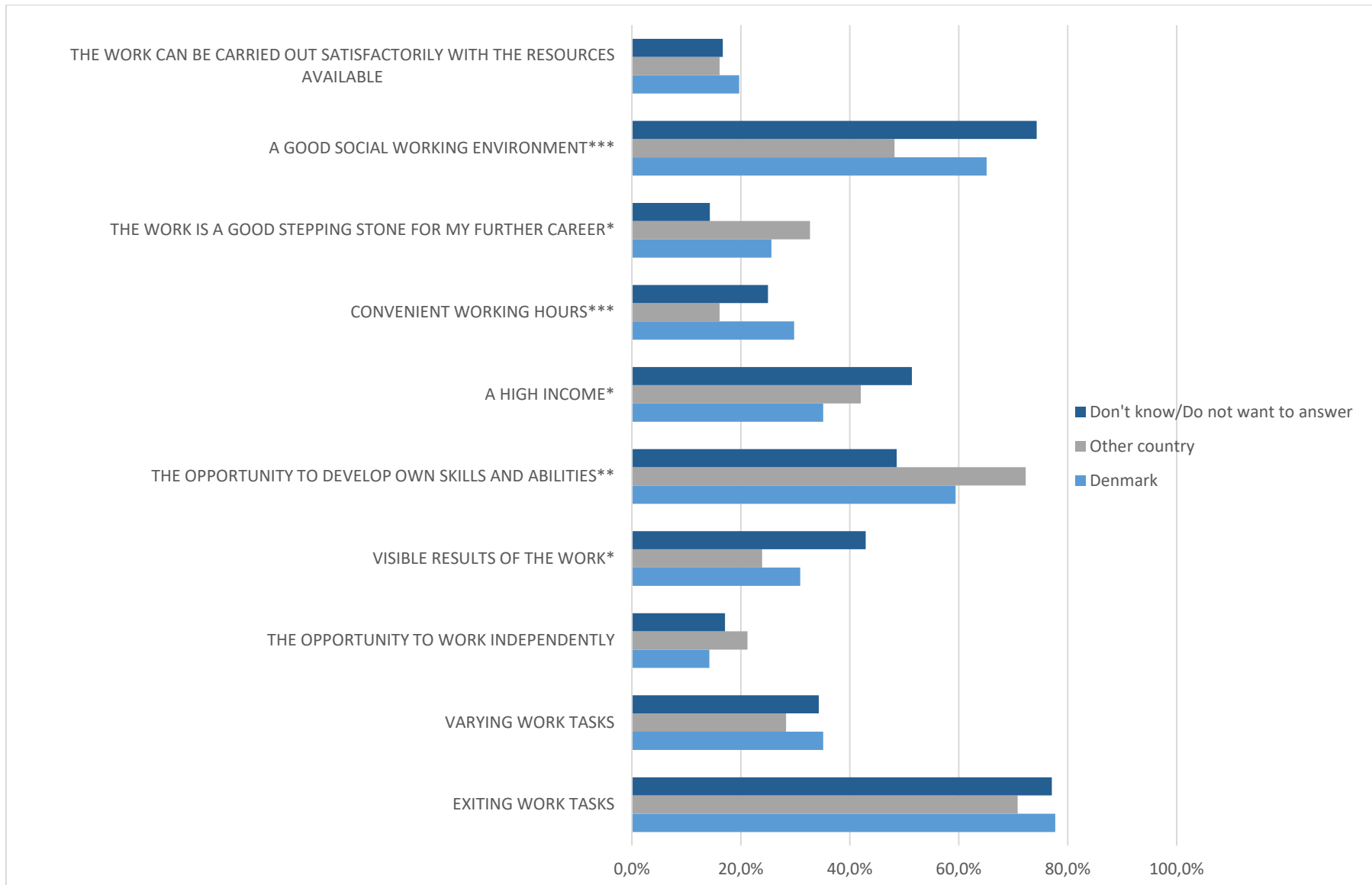


Figure 5d. Ranking of important factors when choosing a career after graduation (each respondent has selected the four most important) by country of qualifying exam. N varies between 818 and 819, weighted data. \*\*\*differences are significant at the 1% level, \*\*5% level and \*10% level.

Figure 5b shows respondents' ranking of work values by gender. Overall, the male and female respondents put a similar weight on intrinsic and extrinsic work values, and the differences are few. Female respondents rank 'a good social working environment' relatively high compared to male respondents, and they also rank 'convenient working hours' slightly higher than male respondents.

Figure 5c shows respondents' ranking of work values by their perception of whether entrepreneurship is an attractive career choice (see also Tables 4a-4d). Those who 'to a large extent' perceive entrepreneurship as an attractive career choice rank 'the opportunity to work independently', 'the opportunity to develop own skills and abilities', and 'the work is a good stepping stone for my future career' relatively high. The high ranking of the former work value – independence – was expected. However, the high ranking of the latter two work values – skill accumulation and career – is interesting, because the value of entrepreneurship experience for the future career (outside of entrepreneurship) is less clear in the literature. This is partly due to ambiguous results regarding learning by doing and failure (Nielsen & Sarasvathy, 2016). Moreover, it is unclear whether entrepreneurship experience is valued on the labour market and, thus, whether entrepreneurship experience results in a wage premium (e.g., Luzzi & Sasson, 2016; Manso, 2016) or a wage penalty (e.g., Mahiou et al., 2019). Those who perceive entrepreneurship as an attractive career choice rank 'the work can be carried out satisfactorily with the resources available' and 'a good social working environment' as relatively less important compared to students who do not find entrepreneurship an attractive career choice.

Figure 5d shows respondents ranking of work values by 'country of completion of qualifying exam'. The presumed Danish students rank 'a good social working environment' and 'convenient working hours', and also 'visible results of the work', higher than the presumed foreign students. Similar to the group of students who perceive entrepreneurship as an attractive career choice, students who have completed their qualifying exam outside Denmark rank 'the opportunity to develop own skills and abilities' and 'the work is a good stepping stone for my future career' higher than Danish students.

In addition, we also grouped respondents by 'parents with entrepreneurship experience'. We found little variation in the ranking of work values within this group. The results are available upon request.

Table 4a shows the respondents' perceptions of whether entrepreneurship is an attractive career choice by faculty. While differences across faculties are not statistically significant, the Faculty of Humanities is the faculty with the fewest students replying 'to a large extent'. This faculty also has the greatest share of respondents replying that entrepreneurship is 'not at all' an attractive career choice. We find the most positive perception of entrepreneurship as a career choice among students at the Technical Faculty of IT and Design. However, we stress that differences across faculties in shares that reply 'to a large'/'some extent' versus 'not at all' are not statistically significant.

According to the theory of planned behaviour within the psychology literature, three factors are prerequisites for a given planned behaviour: attitude, subjective norms and perceived behavioural control (including self-efficacy and controllability) (Rauch & Hulsink, 2015). Applying this to entrepreneurial behaviour, individuals will act entrepreneurially if they (1) see the behaviour as positive, (2) believe that society or important others see the behaviour as positive and (3) believe they can successfully perform the tasks needed to act entrepreneurially (self-efficacy) and consider it the main determinant of entrepreneurial success (controllability). Both entrepreneurship experience and entrepreneurship education can affect these three factors.

While differences across faculties (Table 4a) are not statistically significant, Table 4b shows that respondents with parent entrepreneurs perceive entrepreneurship as a relative more attractive career choice. These

differences are highly significant. This result was expected, and it could be due to the previously mentioned inheritance of work values, access to important resources or genetic factors.

*Table 4a. Perception of whether establishing and managing your own business is an attractive career choice by faculty (weighted data). Differences across faculties in shares that reply 'to a large'/'some extent' versus 'not at all' are not statistically significant.*

	To a large extent	To some extent	Not at all	Don't know	Total
The Faculty of Social Sciences	47	131	32	34	244
	19.3%	53.7%	13.1%	13.9%	100.0%
The Faculty of Humanities	22	102	26	14	164
	13.4%	62.2%	15.9%	8.5%	100.0%
The Faculty of Medicine	13	54	10	10	87
	14.9%	62.1%	11.5%	11.4%	100.0%
The Technical Faculty of IT and Design	63	117	21	18	219
	28.8%	53.4%	9.6%	8.3%	100.0%
The Faculty of Engineering and Science	27	75	17	18	137
	19.7%	54.7%	12.4%	13.2%	100.0%
Total	172	479	106	94	851
	20.2%	56.3%	12.5%	11.1%	100.0%

Table 4c reports the perception of entrepreneurship as an attractive career choice by own entrepreneurship experience. Table 4c indicates that those who have entrepreneurship experience are more positive about future entrepreneurship. Differences across own entrepreneurship experience in shares that reply 'to a large'/'some extent' versus 'not at all' are, however, not statistically significant. Nevertheless, this result suggests that learning by doing or failure does not discourage future entrepreneurship through fear of failure. Finally, Table 4d shows that male students are more positive about future entrepreneurship, which also aligns with our expectations.

We also grouped the perception of entrepreneurship by location of completing the qualifying exam for AAU but found only small and statistically insignificant differences between Danish and international students. The results are available upon request.

Table 4b. Perception of whether establishing and managing your own business is an attractive career choice by parents' experience with entrepreneurship (weighted data). Differences across parents' entrepreneurship experience in shares that reply 'to a large'/'some extent' versus 'not at all' are significant at the 1% level.

	To a large extent	To some extent	Not at all	Don't know	Total
Parents do not have entrepreneurship experience	71	287	79	68	505
	14.1%	56.8%	15.6%	13.4%	100.0%
Parents do have entrepreneurship experience	102	193	27	25	347
	29.4%	55.6%	7.8%	7.2%	100.0%
Total	173	480	106	93	852
	20.3%	56.3%	12.4%	10.9%	100.0%

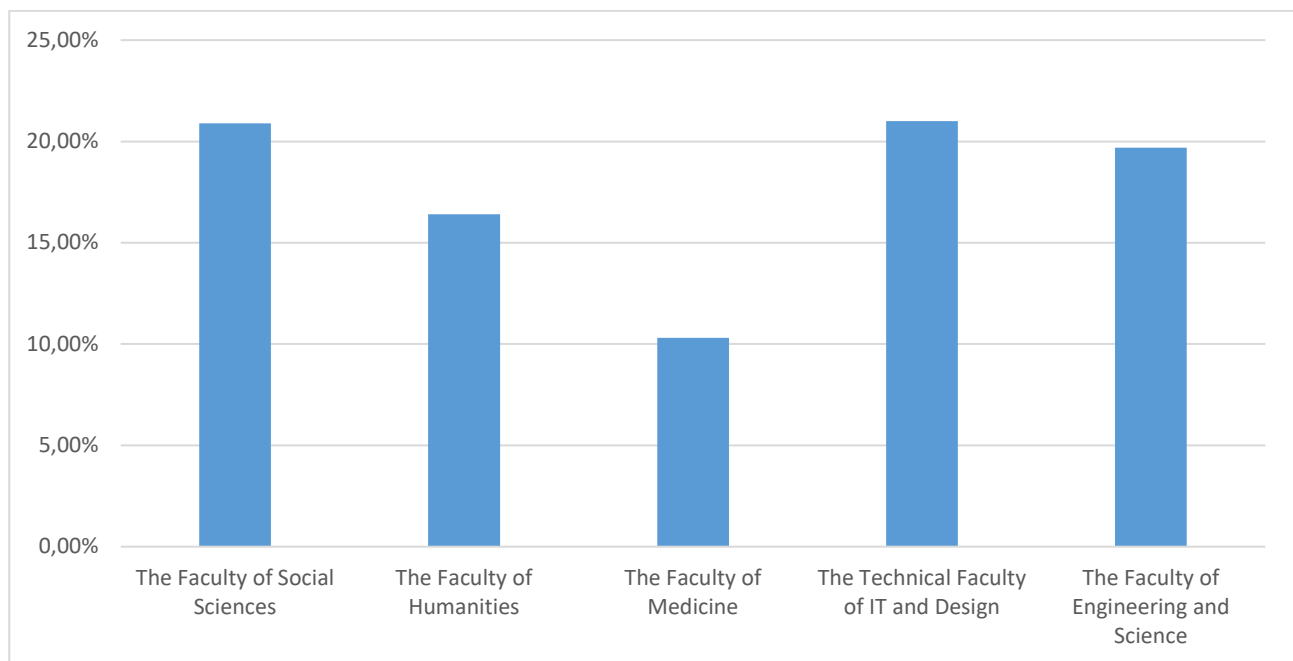
Table 4c. Perception of whether establishing and managing your own business is an attractive career choice by experience with entrepreneurship (weighted data). Differences across own entrepreneurship experience in shares that reply 'to a large'/'some extent' versus 'not at all' are not statistically significant.

	To a large extent	To some extent	Not at all	Don't know	Total
Currently managing own business	11	11	3	0	25
	44.0%	44.0%	12.0%	0%	100.0%
Previously established and managed own business	14	16	3	1	34
	41.2%	47.1%	8.8%	2.9%	100.0%
Never established and managed own business	148	450	100	79	777
	19.0%	57.9%	12.9%	7.6%	100.0%
Total	173	477	106	80	836
	20.7%	57.1%	12.7%	9.6%	100.0%

Table 4d. Perception of whether it is attractive career choice to establish and manage your own business by gender (weighted data). Differences across gender in shares that reply 'to a large'/'some extent' versus 'not at all' are significant at the 5% level.

	To a large extent	To some extent	Not at all	Don't know	Total
Female	67	234	63	49	413
	16.2%	56.7%	15.3%	11.9%	100.0%
Male	105	245	43	44	437
	24.0%	56.1%	9.8%	10.0%	100.0%
Total	172	479	106	93	850
	20.2%	56.4%	12.5%	11.0%	100.0%

Figure 6 shows (by faculty) the share of respondents who have taken active steps towards establishing their own business, which is labelled as nascent entrepreneurship in the literature.<sup>6</sup> This is important to investigate further since the road from entrepreneurial attitude and intention to a realised successful start-up goes through active steps. Similar to the previous survey, we find an overweight of students from the Technical Faculty of IT and Design and the Faculty of Social Sciences, where 21% and 20.9%, respectively, have taken active steps towards establishing their own business. For the majority, such ‘active steps’ include discussing a business idea with others or preparing a business plan. At the other end of the scale, we find (similar to last year’s survey) that relatively few respondents from the Faculty of Medicine (10.3%) have taken active steps towards establishing their own business. However, in opposition to last year’s survey, these differences are not significantly different.



*Figure 6. Share of respondents who have taken at least one step<sup>#</sup> towards establishing a business by faculty. N = 763, weighted data. Differences are not statistically significant.*

<sup>#</sup> Steps include (i) discussing a business idea with others or preparing a business plan; (ii) participating in entrepreneurship counselling or an entrepreneurship incubator; (iii) attempting to obtain funding for a business (e.g. from a family member, friend, bank or similar); and/or (iv) contacting potential co-founders, employees, suppliers and/or customers.

We also grouped respondents by gender, parent entrepreneurs, international background and perception of entrepreneurship as an attractive career choice. Confirming our expectations, we find that more male than female students have taken active steps towards establishing their own business (22.8% and 14.3%, respectively). We also find that students who have parents with entrepreneurship experience are more likely to have taken active steps towards establishing a business compared to students who have parents without entrepreneurship experience (24.2% and 14.9%, respectively). We find no relation between having taken active steps towards establishing a business and whether the students have completed their qualifying exam

<sup>6</sup> This question was posed only to students who are not currently managing their own business or have not previously established and managed their own business.



in or outside of Denmark. Finally, 22.2% of students who find entrepreneurship an attractive career choice have taken active steps towards establishing their own business. This figure is significantly higher than the 8.5% who have taken such steps amongst those who do not find entrepreneurship an attractive career choice.

We asked students *without* entrepreneurial experience to assess their skills and abilities for establishing and managing a business. Table 5a reports the results by faculty. Consistent with last year’s survey, we find that students from the Faculty of Social Sciences indicate the highest entrepreneurial self-efficacy, with 32.5% of the students reporting that they ‘to a large’ or ‘some extent’ have the skills and abilities needed to establish and manage their own business. Also consistent with last year’s survey, we find the lowest entrepreneurial self-efficacy among students from the Faculty of Medicine. Within this group, 79% report that they do ‘not at all’ have the skills and abilities needed to establish and manage their own business, and very few report ‘to a large extent’ (0%) or ‘to some extent’ (12.3%). These results reflect a lower orientation towards entrepreneurship for this group, which is supported by the results presented in Figure 6.

*Table 5a. Perception of having the skills and abilities needed to establish and manage your own business by faculty – respondents with no entrepreneurship experience (weighted data). Differences across faculty in shares that reply ‘to a large’/‘some extent’ versus ‘not at all’ are significant at the 1% level.*

	To a large extent	To some extent	Not at all	Don’t know	Total
<b>The Faculty of Social Sciences</b>	7	67	129	25	228
	3.1%	29.4%	56.6%	11.0%	100%
<b>The Faculty of Humanities</b>	0	23	111	19	153
	0%	15.0%	72.5%	12.5%	100%
<b>The Faculty of Medicine</b>	0	10	64	7	81
	0%	12.3%	79.0%	8.6%	100%
<b>The Technical Faculty of IT and Design</b>	3	51	115	26	195
	1.5%	26.2%	59.0%	13.3%	100%
<b>The Faculty of Engineering and Science</b>	5	23	79	15	122
	4.1%	18.9%	64.8%	12.3%	100%
<b>Total</b>	15	174	498	92	779
	1.9%	22.3%	63.9%	11.9%	100%

Tables 5b, 5c and 5d show the entrepreneurial self-efficacy for students categorised by parent entrepreneurs, gender and location of completing the qualifying exam. Opposite to what we expected, we find relatively small differences between the respondents with and without parent entrepreneurs, the former group having a slightly more positive assessment of their skills and abilities. However, differences are only significant at the 10% significance level. On the contrary, we find considerable differences between male and female respondents’ assessments of their skills and abilities for managing their own business. Of the students, 32.6% males and only 16% females replies that they ‘to a large’ or ‘some extent’ have the skills and abilities needed to establish and manage their own business. This result is consistent with last year’s survey, and it might help to explain the difference reported above that significantly more male students state that they have taken active steps towards establishing a business.

On the basis of last year’s survey, we expected international students to assess their skills and abilities for entrepreneurship as higher than the Danish students. The argument is that international students may previously have experienced a culture more supportive of entrepreneurship abroad, or they may see entrepreneurship as an attractive (opportunity based entrepreneurship) or more realistic way (necessity based entrepreneurship) to make a living in Denmark compared to becoming a wage earner. Partly supporting this, Table 5d shows that 27.8% of the students, who completed their qualifying exam outside of Denmark, reply that they ‘to a large’ or ‘some extent’ have the skills and abilities to establish and manage their own business compared to only 23.6% of Danish students. However, this difference is not statistically significant. Recall from the above description that the Danish and international students’ perception of entrepreneurship do also not differ significantly. We suspect that these similarities among the Danish and presumed international students are related to a lower intake of students on English language educations in 2019. As we mentioned in an earlier section, a number of international programmes have been closed or put on hold in 2019. This change might imply that, compared to 2018, a larger share of students with a qualifying education from outside of Denmark are Scandinavian and probably also Danes who have studied abroad for a while, thus offsetting potential differences in the composition of the groups of ‘international students’ between 2018 and 2019.

*Table 5b. Perception of having the skills and abilities needed to establish and manage your own business by parents’ experience with entrepreneurship – respondents with no entrepreneurship experience (weighted data). Differences across parents’ entrepreneurship experience in shares that reply ‘to a large’/‘some extent’ versus ‘not at all’ are significant at the 10% level.*

	To a large extent	To some extent	Not at all	Don’t know	Total
<b>Parents do not have entrepreneurship experience</b>	1	98	302	68	469
	0.2%	20.9%	64.4%	14.5%	100%
<b>Parents have entrepreneurship experience</b>	13	76	196	25	310
	4.2%	24.5%	63.2%	8.1%	100%
<b>Total</b>	14	174	498	93	779
	1.8%	22.3%	63.9%	12.0%	100%

*Table 5c. Perception of having the skills and abilities needed to establish and manage your own business by gender – respondents with no entrepreneurship experience (weighted data). Differences across gender in shares that reply ‘to a large’/‘some extent’ versus ‘not at all’ are significant at the 1% level.*

	To a large extent	To some extent	Not at all	Don’t know	Total
<b>Female</b>	3	60	295	36	394
	0.8%	15.2%	74.9%	9.2%	100%
<b>Male</b>	11	114	203	56	384
	2.9%	29.7%	52.9%	14.6%	100%
<b>Total</b>	14	174	498	92	778
	1.8%	22.4%	64.0%	11.8%	100%

Table 5d. Perception of having the skills and abilities needed to establish and manage your own business by location of completing the qualifying exam for AAU – respondents with no entrepreneurship experience (weighted data). Differences across location of completing the qualifying exam in shares that reply ‘to a large’/‘some extent’ versus ‘not at all’ are not statistically significant.

	To a large extent	To some extent	Not at all	Don't know	Total
<b>Denmark</b>	11	141	418	73	643
	1.7%	21.9%	65.0%	11.3%	100%
<b>Other country</b>	4	24	58	15	101
	4.0%	23.8%	57.4%	14.8%	100%
<b>Don't know</b>	0	9	22	5	36
	0%	25.0%	61.1%	13.9%	100%
<b>Total</b>	15	174	498	93	780
	1.9%	22.3%	63.8%	11.9%	100%

Table 6 includes only those students who report that they have entrepreneurial experience. As we expected, the vast majority of this group (84.5%) reports that they ‘to a large’ or ‘some extent’ have the skills and abilities to manage their own business. Owing to the low number of respondents with entrepreneurial experience, the distribution of perceptions is not reported according to faculty, parent entrepreneurship, gender or place of qualifying exam.

Table 6. Perception of having the skills and abilities needed to manage your own business – respondents with entrepreneurship experience (weighted data).

	Frequency	Percent
<b>To a large extent</b>	12	20.7%
<b>To some extent</b>	37	63.8%
<b>Not at all</b>	7	12.1%
<b>Don't know</b>	2	3.4%
<b>Total</b>	58	100.0%

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Appendix A: Questionnaire

Please state your gender

- Female
- Male
- Do not want to answer

Please state your year of birth

\_\_\_\_\_

In which faculty are you enrolled at AAU?

- The Faculty of Social Sciences
- The Faculty of Humanities
- The Faculty of Medicine
- The Technical Faculty of IT and Design
- The Faculty of Engineering and Science
- Don't know

Did you complete the qualifying exam (excluding supplementary courses) for AAU in Denmark?

- Yes
- No
- Don't know/Do not want to answer

Have you ever had a full-time job (as an employee) for at least six consecutive months before enrolling in your current programme at AAU?

- Yes
- No
- Don't know

Have you ever established and managed your own business (either alone or with others)?

- Yes, doing it now
- Yes, but not doing it anymore
- No
- Don't know

In the last 10 years, which of the following best describes your mother's connection to the labour market? (Please mark the most relevant.)

- Wage earner
- Self-employed
- Without work / other
- Not relevant

In the last 10 years, which of the following best describes your father's connection to the labour market? (Please mark the most relevant.)

- Wage earner
- Self-employed
- Without work / other
- Not relevant

Have at least one of your parents ever established and managed their own business?

- Yes
- No
- Don't know

When choosing a career after graduation, which of the following factors are most important to you? Please choose the four most important.

- Visible results of the work
- Exciting work tasks
- The opportunity to work independently
- The opportunity to develop own skills and abilities
- Convenient working hours
- A high income
- A good social work environment
- Varying work tasks
- The work is a good stepping stone for my further career
- The work can be carried out satisfactorily with the resources available

Do you find the idea of establishing and managing your own business an attractive career choice?

- Yes, to a large extent
- Yes, to some extent
- No, not at all
- Don't know

Have you, within the past year, actively taken the following steps towards establishing your own business:

Discussed a business idea with others or prepared a business plan?

- Yes
- No
- Don't know

Participated in entrepreneurship counselling or an entrepreneurship incubator?  
*Entrepreneurial counselling includes counselling supplied by public and private institutions and firms but does not include compulsory courses from previous education programmes*

- Yes
- No
- Don't know

Attempted to get funding for a business (e.g. from a family member, friend, bank or similar)?

- Yes
- No
- Don't know

Contacted potential co-founders, employees, suppliers and/or customers?

- Yes
- No
- Don't know

Do you currently have the skills and abilities needed to establish and manage your own business?

- Yes, to a large extent
- Yes, to some extent
- No, not at all
- Don't know

Do you currently have the skills and abilities needed to manage your own business?

- Yes, to a large extent
- Yes, to some extent
- No, not at all
- Don't know

You have now answered all the questions. Once you have clicked "Finish", your answers have been registered. When you have closed the window after clicking "Finish", you will no longer be able to edit your answers.

Thank you for your participation!