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**AALBORG UNIVERSITY**  
DENMARK

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

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

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April 2019



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DENMARK

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## Resumé (Danish summary)

### Baggrund

Det er et mål i Aalborg universitets strategi, at øge iværksætteraktivitet og iværksætterlyst blandt Aalborg universitets medarbejdere og studerende. For at imødekomme dette mål er der iværksat en handlingsplan for iværksætterindsatsen (indsats 9.2). 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, har alle nye førsteårsstuderende modtaget et spørgeskema. Med denne undersøgelse 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 spørgeskema igen efter henholdsvis 3 og 5 år. Efter planen skal spørgeskemaet også sendes til alle nye førsteårsstuderende i de kommende år, således det bliver en del af en tilbagevendende kortlægning af iværksætterlysten for AAU-studerende og AAU's impact på de studerendes iværksætterlyst og arbejdsværdier. Både formål og metode er nærmere beskrevet i Kommissorium for dokumentation af effekt af indsats 9.2., Understøttelse af vidensamarbejde, og tilhørende bilag.

### Resultater

940 ud af 4316 førsteårsstuderende har svaret på spørgeskemaet, hvilket giver en svarprocent på 21,8 pct. Tabel 1 viser, hvorledes svarprocenterne fordeler sig på de respektive fakulteter.

#### Svarprocent fordelt på fakultet

	Population*		Respondenter		Svarprocent
Det samfundsvidenskabelige fakultet	1293	30.0%	204	21.7%	15.8%
Det humanistiske fakultet	765	17.7%	165	17.6%	21.6%
Det sundhedsvidenskabelige fakultet	403	9.3%	96	10.2%	23.8%
Det tekniske fakultet for it og design	1107	25.6%	129	13.7%	11.7%
Det teknisk-naturvidenskabelige fakultet	748	17.3%	284	30.2%	38.0%
Ved ikke			47	5.0%	-
Manglende besvarelse			15	1.6%	
I alt	4316	100.0%	940	100.0%	21.8%

\*Populationen svarer til antal førsteårsstuderende optaget på den koordinerede tilmelding (KOT)

Som det fremgår af ovenstående tabel, er svarprocenten højere blandt studerende på det teknisk-naturvidenskabelige fakultet. Kvindelige studerende er også overrepræsenteret i denne undersøgelse. De udgør 53,9 pct. af respondenterne, selvom de blot udgør 45,7 pct. af førsteårsstuderende på AAU. Vi tager højde for denne skæve fordeling ved at vægte besvarelserne i forhold til både fakultet og køn.

#### 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 et karrierevalg, om de allerede har iværksættererfaring, og om de har taget aktive skridt henimod at starte egen virksomhed.

De studerendes iværksætterlyst varierer betydeligt på tværs af fakulteterne, køn og international baggrund. Vi finder den mest positive opfattelse af iværksætteri som karrierevalg på Det tekniske fakultet for IT og design samt Det teknisk-naturvidenskabelige fakultet. Sammen med Det samfundsvidenskabelige fakultet rangerer disse to fakulteter endvidere højt på andel af førsteårsstuderende, der har taget aktive skridt henimod at starte egen virksomhed. Førsteårsstuderende på det sundhedsvidenskabelige fakultet har derimod den mindste iværksætterlyst målt ved de samme indikatorer. Eksempelvis svarer 26,6 pct. "Nej, slet ikke" til spørgsmålet om, hvorvidt de finder det et attraktivt karrierevalg at drive egen virksomhed. I overensstemmelse hermed har blot 13 pct. taget aktive skridt mod at starte egen virksomhed. Til sammenligning hedder de samme andele på Det tekniske fakultet for IT og design henholdsvis 10,1 og 29,9 pct. Det er også på Det sundhedsvidenskabelige fakultet, at færrest studerende har iværksættererfaring fra tidligere eller nuværende virksomheder.

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 har taget aktive skridt henimod at starte egen virksomhed, og de har i mindre grad iværksættererfaring, når de begynder på deres uddannelse.

Spørgeskemaet afdækker også de studerendes **selvvurderede iværksætter-kompetencer**. Her har de kvindelige studerende igen en mindre positiv vurdering af egne evner sammenlignet med mændene. Eksempelvis svarer blot 21,9 pct. af kvinderne (mod 31,3 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 førsteårsstuderende på Det samfundsvidenskabelige fakultet har den højeste selvvurdering af egne evner og færdigheder til at etablere og drive en virksomhed.

Vi har spurgt de studerende, om de har gennemført deres adgangsgivende eksamen til AAU i Danmark. Dette giver os en indikation af, om den pågældende studerende har en dansk eller udenlandsk baggrund. Studerende med (antaget) udenlandsk baggrund har generelt en større iværksætterlyst end danske studerende. Det ser vi eksempelvis ved, at de vurderer egne iværksætter-kompetencer højere, flere har taget aktive skridt mod at starte egen virksomhed og mange kommer med iværksættererfaring.

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 om deres arbejdsværdier eventuelt påvirkes og ændres som følge af iværksætterindsatsen.

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, høj indkomst, mulighed for at udvikle egne evner og færdigheder samt arbejdet er et godt springbræt for karrieren. Det er ikke overraskende, at de studerende, der vægter selvstændighed højt, også finder iværksætteri mere attraktivt. Omvendt er der ikke videns for, at iværksættere har en højere indkomst. Tværtimod indikerer tidligere studier, at iværksættere er villige til at acceptere lavere indkomst mod større selvstændighed. Det er heller ikke entydigt, hvorledes det øvrige arbejdsmarked værdisætter iværksættererfaring og deraf, hvilke implikationer iværksætteri har for efterfølgende karrieremuligheder.

## Introduction

This report is based on the first survey examining the Aalborg University (AAU) students' background and considerations regarding entrepreneurship and career choice<sup>1</sup>. The purpose of this survey (and subsequent surveys) is to facilitate the development and, in particular, the evaluation of the entrepreneurship initiative at AAU.

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 first survey provides empirical data on students' attitudes towards entrepreneurship and their previous entrepreneurship experience at the time of their enrolment at AAU. This first 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 first survey. Appendix A presents the questionnaire with simple response frequencies.

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, a less positive attitude towards entrepreneurship as a career choice, and 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*).
- Students with an international background generally have a more positive perception of whether they have the skills and abilities needed to establish and manage their own business than students with a Danish background. Moreover, a larger share of (presumed) foreign students have taken active steps towards establishing a business.
- Students from the Faculty of Medicine are generally less oriented towards entrepreneurship than are students from other faculties.
- Students with parent entrepreneurs are generally more oriented towards entrepreneurship than their peers.
- When raking 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 a high income,
  - o the opportunity to develop their skills and abilities, and
  - o the work being a good stepping stone for the further career*more* than do 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

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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' (in this report referred to as 'the entrepreneurship initiative at AAU').

- the possibility of carrying out the work satisfactorily with the resources available,
  - convenient working hours, and
  - a good social working environment
- less than do students who do not find entrepreneurship an attractive career choice.

## Data collection

The survey was sent to all 4,316 first-year students at Aalborg University in October 2018. Study-IT at Aalborg University's Study Service Office provided the email addresses of the full population after approval by the Head of Study Service.<sup>2</sup>

The questionnaire was distributed to the students via SurveyXact on 1<sup>st</sup> October 2018, and reminders were sent on 8<sup>th</sup> October 2018 and 15<sup>th</sup> October 2018 to those who had not yet responded. The data collection was completed on 22<sup>nd</sup> October 2018. Of the 940 students who completed the questionnaire, 60 were partial completions. The overall response rate was 21.8%.

Prior to 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 show 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 have by far the lowest response rate.

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

	Population		Respondents		Response rate
<b>The Faculty of Social Sciences</b>	1293	30.0%	204	21.7%	15.8%
<b>The Faculty of Humanities</b>	765	17.7%	165	17.6%	21.6%
<b>The Faculty of Medicine</b>	403	9.3%	96	10.2%	23.8%
<b>The Technical Faculty of IT and Design</b>	1107	25.6%	129	13.7%	11.7%
<b>The Faculty of Engineering and Science</b>	748	17.3%	284	30.2%	38.0%
<b>Do not know</b>			47	5.0%	-
<b>Missing</b>			15	1.6%	
<b>Total</b>	4316	100.0%	940	100.0%	21.8%

Table 2 presents the gender distribution by faculty for the respondents (excluding the 15 missing and 27 'Do not know' responses from Table 1) compared to the composition of the population. Table 2 reveals a majority (54.4%) of female students among the respondents. This overrepresentation of female respondents does not reflect the true gender distribution, where 54.3% are male and 45.7% female.

<sup>2</sup> The questionnaire was distributed to 4,407 email addresses because the email addresses of non-active students were included in the email addresses provided by Study-IT. It is assumed that no non-active students have answered the questionnaire.

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>	679	140	614	62	2	1293	204
	52.5%	68.6%	47.5%	30.4%	1.0%	100%	
<b>The Faculty of Humanities</b>	526	124	239	41	0	765	165
	68.8%	75.2%	31.2%	24.8%	0.0%	100.0%	
<b>The Faculty of Medicine</b>	221	64	182	31	1	403	96
	54.8%	66.7%	45.2%	32.3%	1.0%	100.0%	
<b>The Technical Faculty of IT and Design</b>	324	34	783	93	2	1107	129
	29.3%	26.4%	70.7%	72.1%	1.6%	100.0%	
<b>The Faculty of Engineering and Science</b>	221	116	527	166	2	748	284
	29.5%	40.8%	70.5%	58.5%	0.7%	100.0%	
<b>Total</b>	1971	478	2345	393	7	4316	878
	45.7%	54.4%	54.3%	44.8%	0.8%	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. In 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	22.7	4.9	204
The Faculty of Humanities	22.9	6.5	163
The Faculty of Medicine	21.4	2.6	96
The Technical Faculty of IT and Design	21.8	3.5	128
The Faculty of Engineering and Science	22.1	4.5	283
Don't know	23.3	5.4	46
Total	22.3	4.8	920

The location that a student completed the qualifying exam for AAU indicates the respondent's country of origin (i.e. Danish or international students). Of the respondents, 78.9% reported to have completed their qualifying exam in Denmark and are thus considered to be Danish. Figures 1a and 1b show the distribution by faculty and gender, respectively. Figure 1a shows that the Technical Faculty of IT and Design has the lowest share of respondents who completed the qualifying exam in Denmark. We find the highest share of (presumed) Danish students in the Faculty of Medicine.

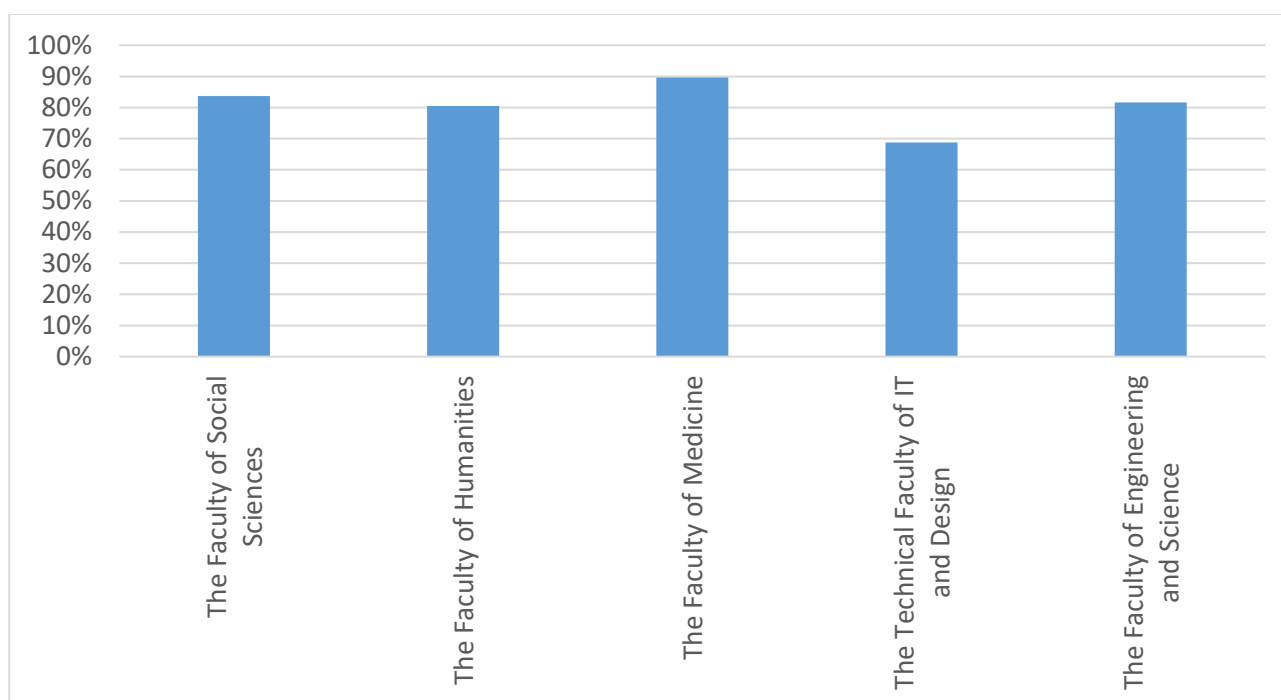


Figure 1a. Share of respondents that completed a Danish qualifying exam for AAU by faculty (N = 920).

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

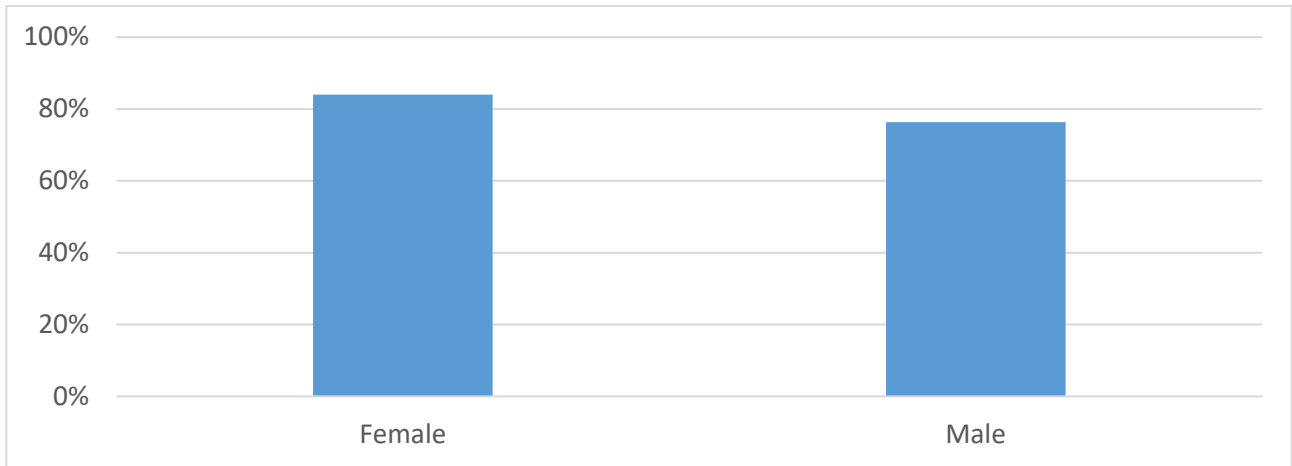


Figure 1b. Share of respondents who completed a Danish qualifying exam for AAU by gender (N = 920).

Figure 2 shows the share of respondents (by faculty) who had work experience prior to enrolling 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 highest for respondents from the Faculty of Social Sciences and lowest for respondents from the Technical Faculty of IT and Design.

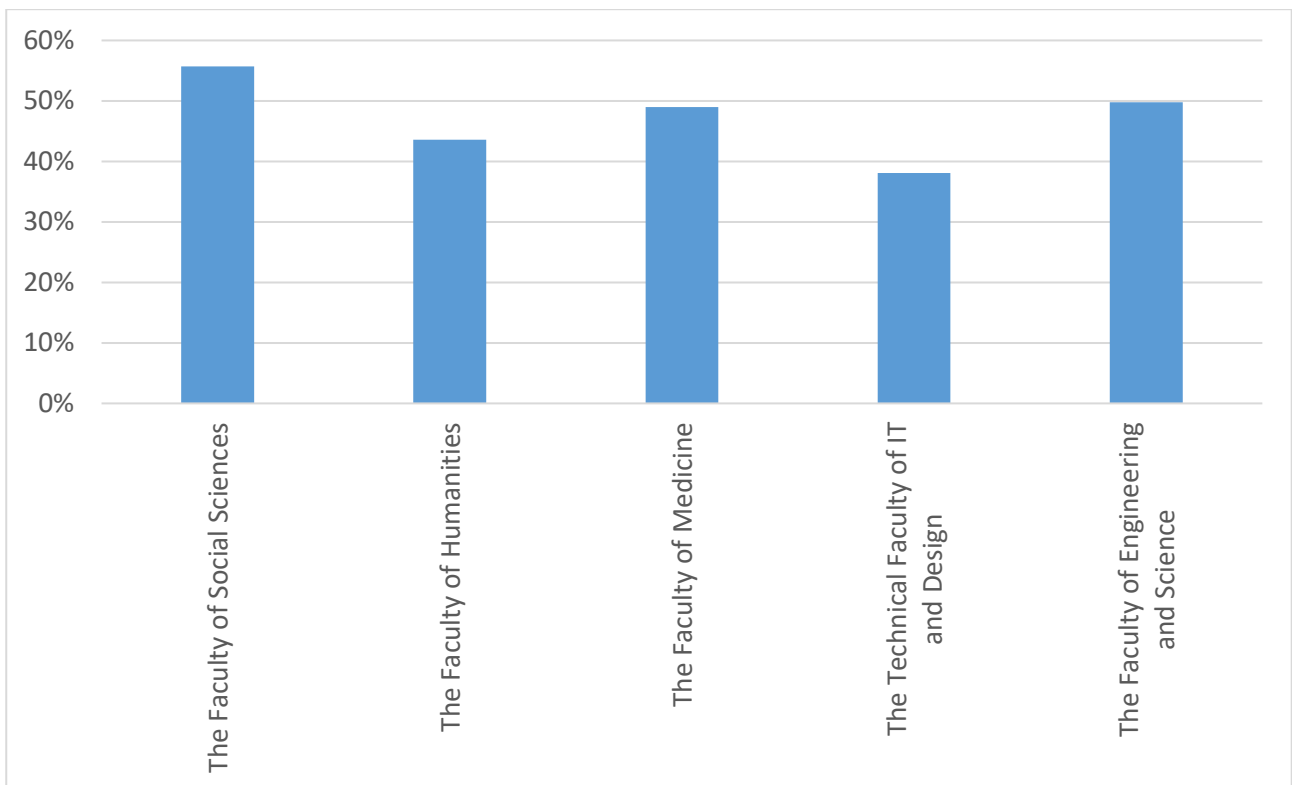


Figure 2. Share of respondents with work experience prior to enrolling at AAU (a full-time job – as an employee – for at least six consecutive months before current enrolment at AAU) by faculty (N = 916).

Differences are significant at the 5% 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>3</sup> Appendix A reports the unweighted response frequencies for the total population.

### Results

Figure 3a shows entrepreneurship experience by faculty. For the total population, 8.2% report prior or current entrepreneurial experience. This number is highest for respondents from the Technical Faculty of IT and Design (11.1%) and lowest for respondents from the Faculty of Medicine (2.6%).

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>3</sup> Owing to missing information on gender and faculty of enrolment for some respondents, the maximum number of weighted observations is 871.

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 than female students has previously managed or is currently managing their own business.

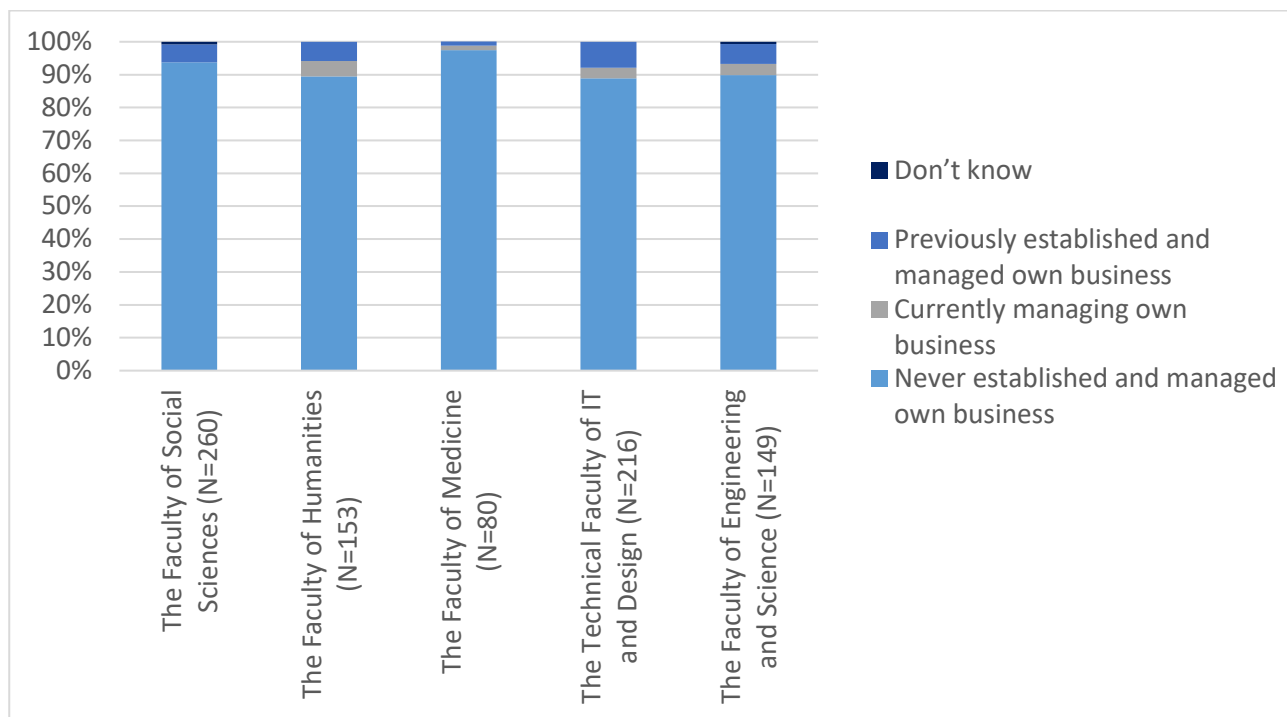


Figure 3a. Entrepreneurship experience (established and managed your own business – either alone or with others) by faculty. N = 858, weighted data. Differences are significant at the 10% level.

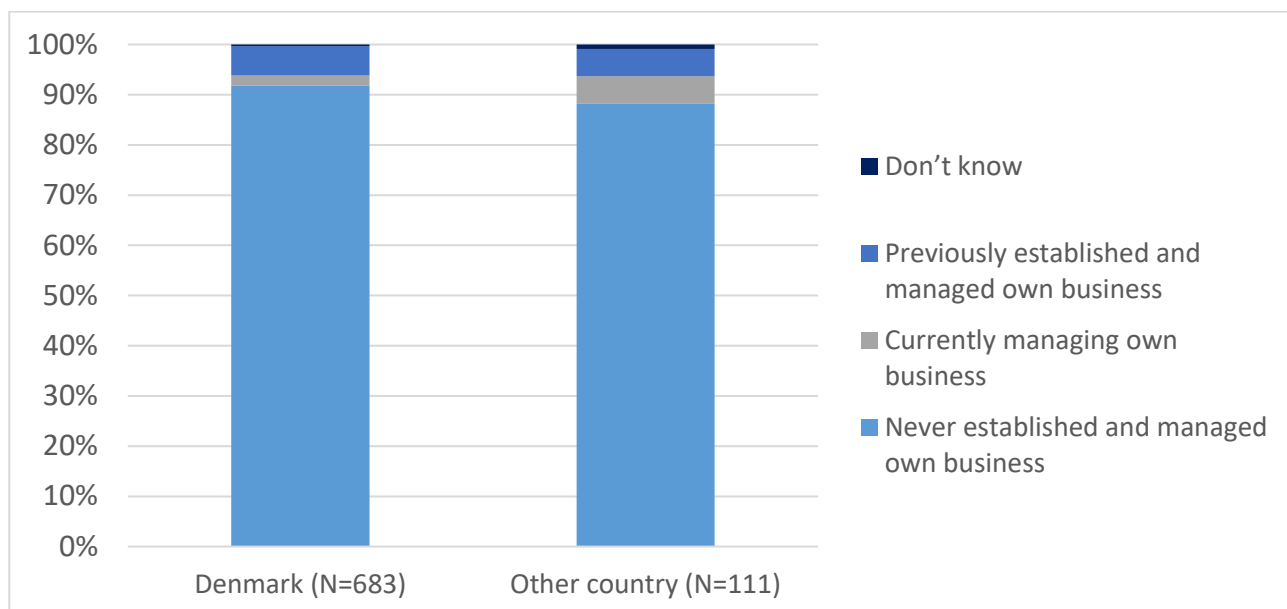


Figure 3b. Entrepreneurship experience (established and managed your own business – either alone or with others) by location of completing the qualifying exam for AAU. N = 794, weighted data. Differences are not statistically significant.

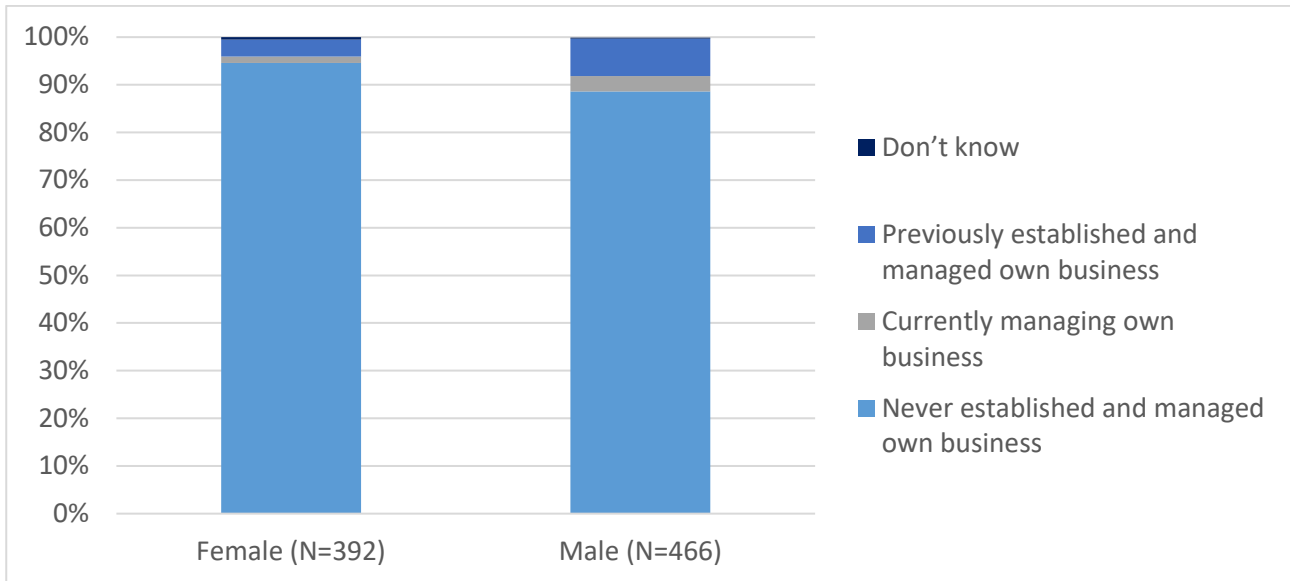


Figure 3c. Entrepreneurship experience (established and managed your own business – either alone or with others) by gender. N = 858, weighted data. Differences are significant at the 1% level.

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. Figure 4 shows that 47.1% of the respondents to the survey herein replied that one or both parents have entrepreneurial experience. These shares range from 44.7% in the Faculty of Social Sciences to 50.0% in both the Faculty of Engineering and Science and the Faculty of Medicine. We suspect that latter might be due to a relatively high share of students in the Faculty of Medicine with parents who are General Practitioners and thereby manage their own medical practice. The differences between faculties are not statistically significant.

Parents' entrepreneurial experience is measured above based on whether either of the parents have ever established or managed their own business (a combination of questions 6, 7 and 8 in the questionnaire shown in Appendix A). When looking at the last 10 years, 25% 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 25% 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. This figure is slightly lower than the 25% in this study, which may be because the register data method (1) looks at all enrolled students at AAU in 2013 and not only new students in 2018, (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.

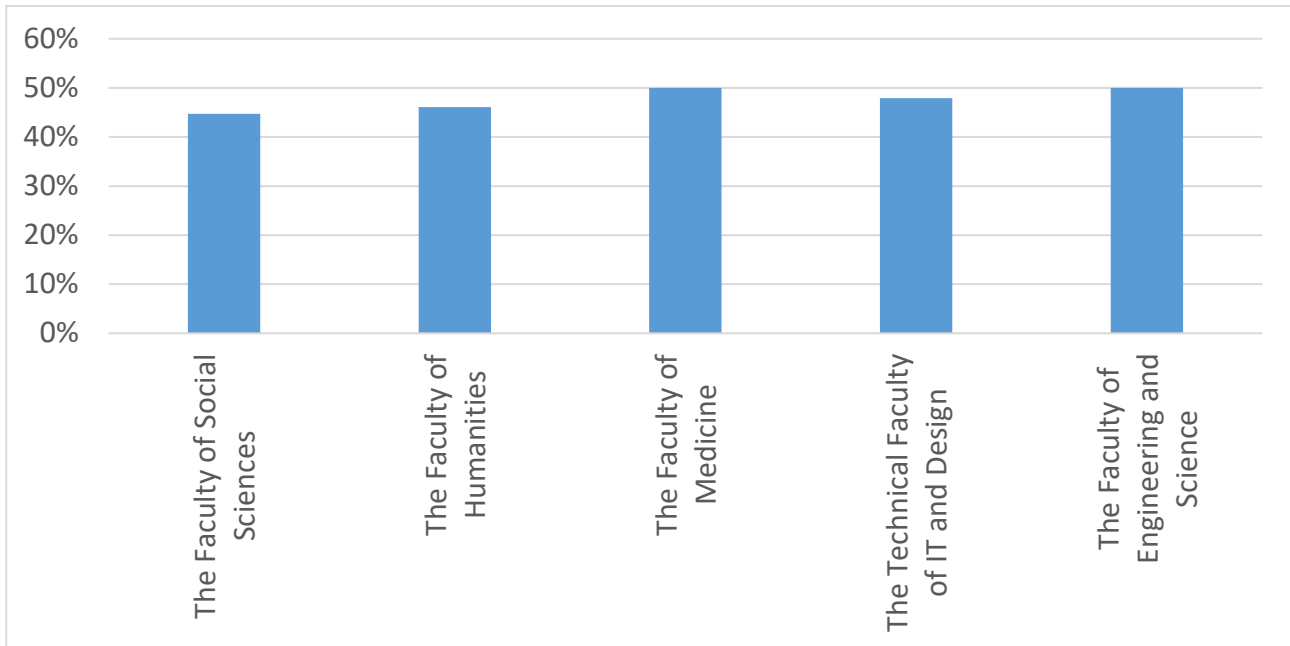


Figure 4. Share of respondents who have at least one parent with entrepreneurship experience.  $N = 850$ , weighted data. Differences are not statistically significant.

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>4</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.

<sup>4</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).

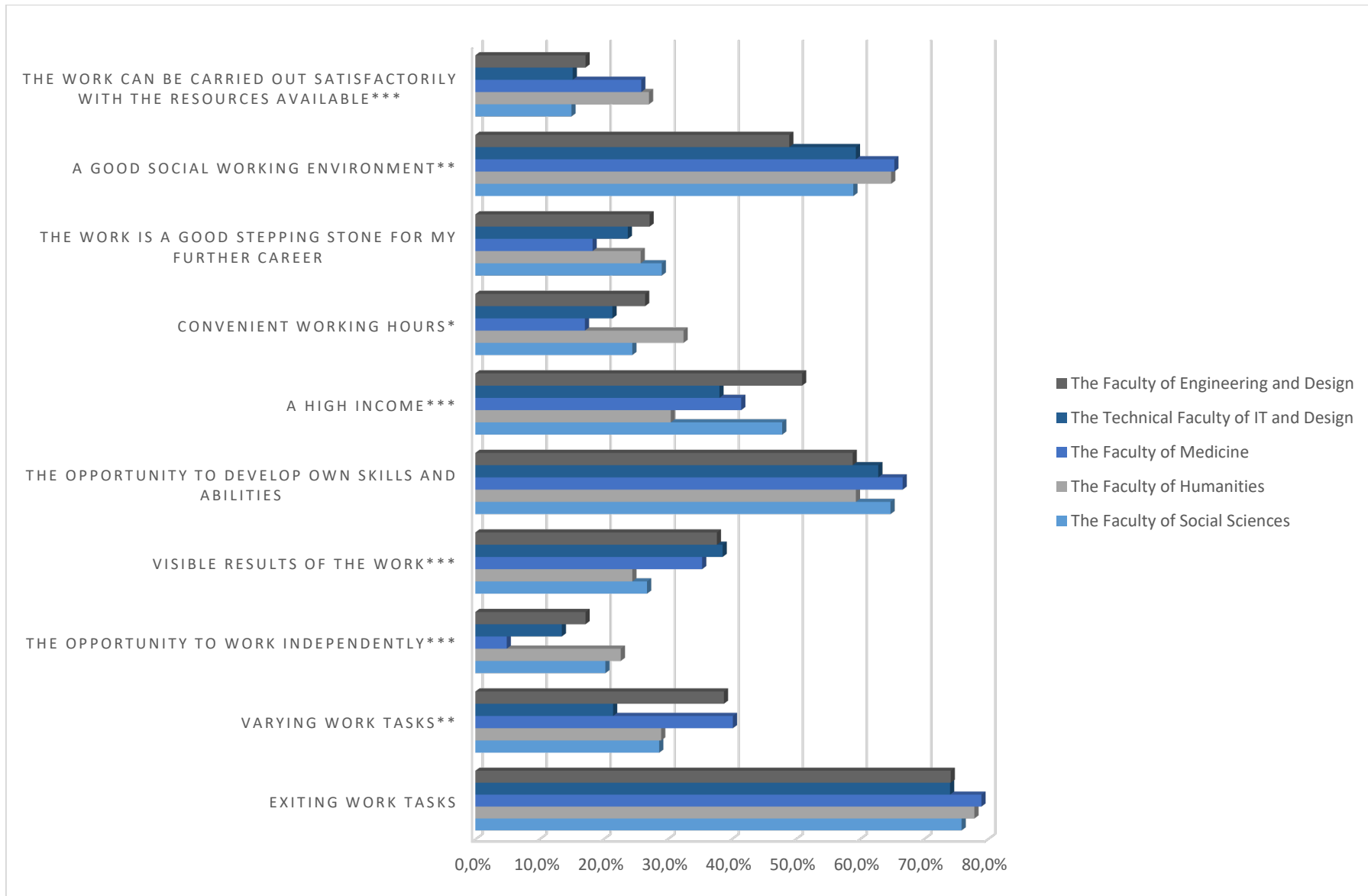


Figure 5a. Ranking of important factors when choosing a career after graduation (each respondent selected the four most important) by faculty. N = 871, weighted data. \*\*\*differences are significant at the 1% level, \*\*5% level and \*10% level.

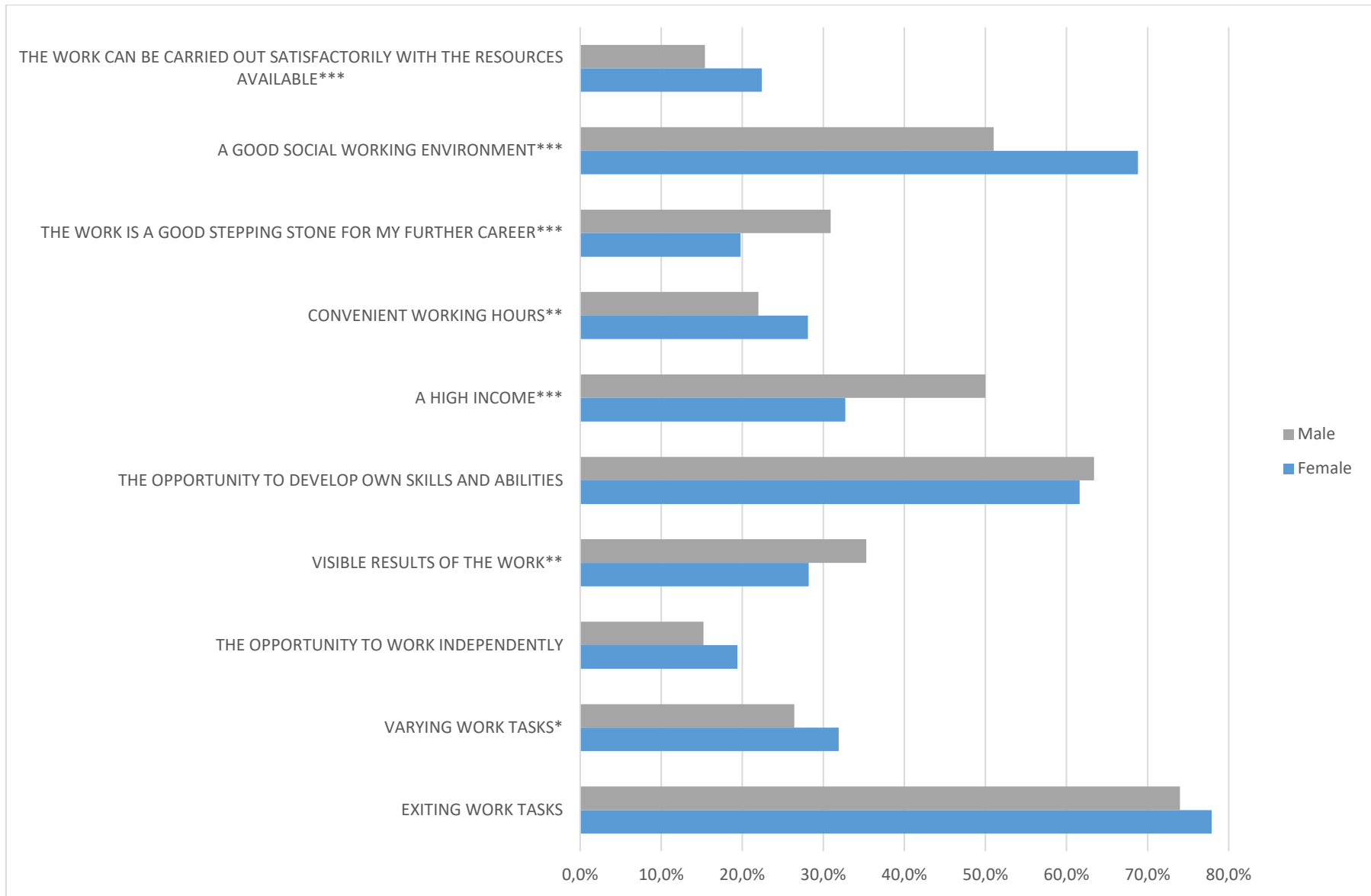


Figure 5b. Ranking of important factors when choosing a career after graduation (each respondent selected the four most important) by gender. N = 871, weighted data. \*\*\*differences are significant at the 1% level, \*\* 5% level and \*10% level.



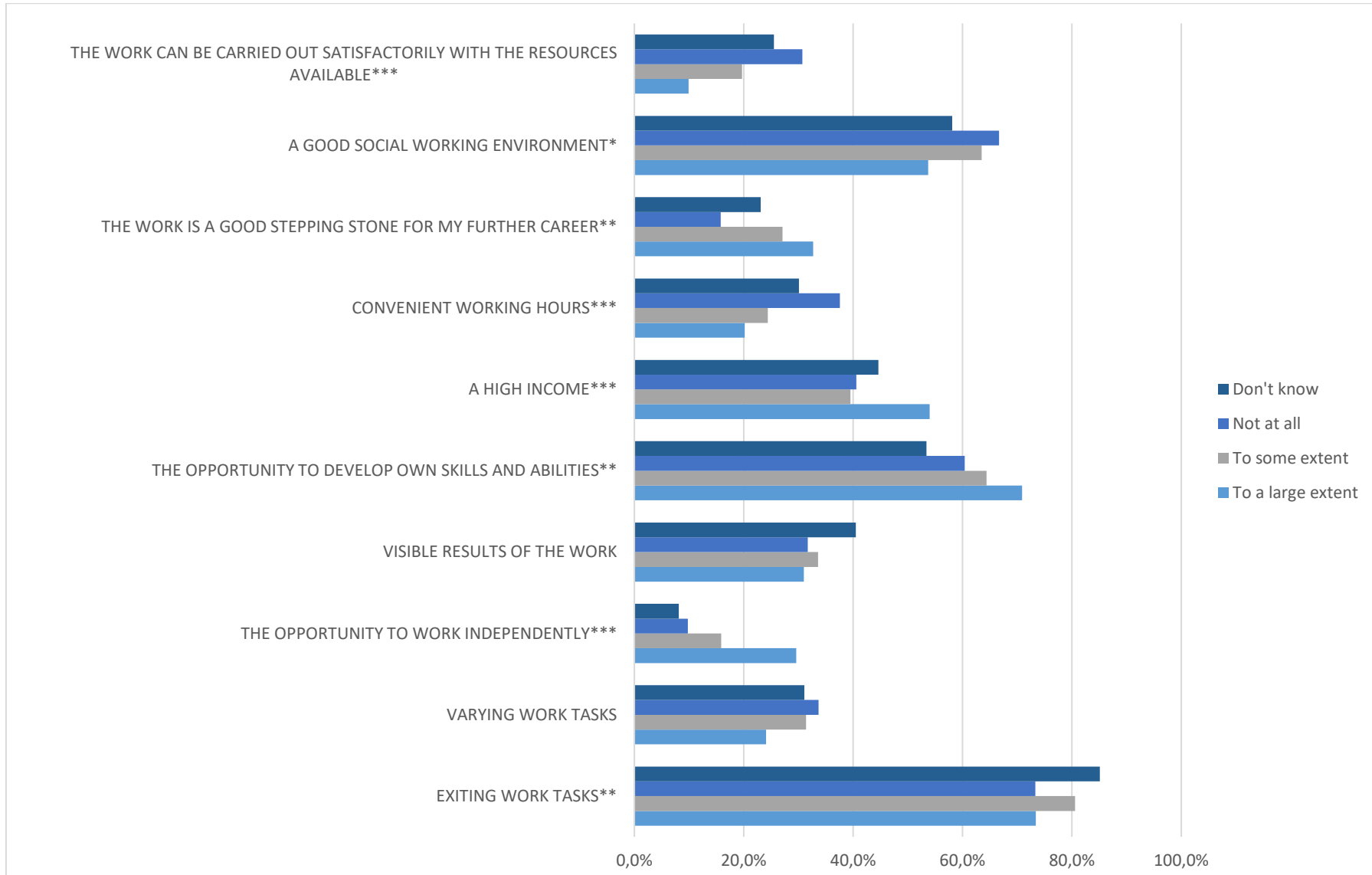


Figure 5c. Ranking of important factors when choosing a career after graduation (each respondent has selected the four most important) by perception of whether it is attractive career choice to establish and manage your own business. N varies between 835 and 838, weighted data. \*\*\*differences are significant at the 1% level, \*\*5% level and \*10% level.

We see many similarities across the faculties. For example, students of all but one faculty (the Faculty of Engineering and Design) 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;<sup>5</sup> the former two are intrinsic values, while the latter is extrinsic. Notably, 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 'high income' as an important factor. This factor was relatively less important for students in the Faculty of Humanities. Respondents from this faculty also ranked 'visible results of work' relatively low.

Figure 5b shows respondents' ranking of work values by gender. While, overall, the male and female respondents put a similar weight on intrinsic and extrinsic work values, we find some differences within these two categories. For example, female respondents ranked a good social environment relatively high, while male respondents emphasised a high income more than did female respondents.

Figure 5c shows respondents' ranking of work values by their perception of whether entrepreneurship is an attractive career choice (see also Tables 4a, 4b, and 4c). Those who 'to a large extent' perceive entrepreneurship as an attractive career choice rank 'the opportunity to work independently', 'high income', 'the opportunity to develop own skills and abilities', and 'the work is a good stepping stone for my future career' relatively high. While the high ranking of the former work value – independence – is as expected, the high ranking of the latter three work values – income, skill accumulation and career – is interesting for two reasons. First, as previously mentioned, entrepreneurs earn, on average, less than wage earners (Hamilton, 2000) and experience higher work-family conflict (Parasuraman & Simmers, 2001). The literature finds that entrepreneurs are willing to make this trade-off because entrepreneurship offers greater independence (Hundley, 2001). Second, the value of entrepreneurship experience for the future career is less clear in the literature 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, which is dependent on the performance as an entrepreneur and the specific industry according to Luzzi and Sasson (2016). In addition, we also grouped respondents by 'parents with entrepreneurship experience' and 'place of completion of qualifying exam' (i.e. our proxy for Danish or international student), respectively. We found little variation in the ranking of work values within these groups. The results are available upon request.

Table 4a shows the respondents' perceptions of whether entrepreneurship is an attractive career choice by faculty. The Faculty of Medicine stands out as 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. This less positive attitude towards entrepreneurship might relate to these respondents' relatively low entrepreneurship experience (see Figure 3a) and thus low entrepreneurial self-efficacy. According to the theory of planned behaviour within the psychology literature, three factors are

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<sup>5</sup> However, in the Faculty of Engineering and Design, these three factors are among the four most important factors, but a high income ranks third.

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 entrepreneurial 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. We find the most positive perception of entrepreneurship as a career choice among students at the Faculty of Engineering and Science and the Technical Faculty of IT and Design.

*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 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>	70	134	31	18	253
	27.7%	53.0%	12.3%	7.1%	100.0%
<b>The Faculty of Humanities</b>	27	90	14	19	150
	18.0%	60.0%	9.3%	12.7%	100.0%
<b>The Faculty of Medicine</b>	5	42	21	11	79
	6.3%	53.2%	26.6%	13.9%	100.0%
<b>The Technical Faculty of IT and Design</b>	60	108	21	18	207
	29.0%	52.2%	10.1%	8.7%	100.0%
<b>The Faculty of Engineering and Science</b>	41	84	14	8	147
	27.9%	57.1%	9.5%	5.4%	100.0%
<b>Total</b>	203	458	101	74	836
	24.3%	54.8%	12.1%	8.9%	100.0%

Tables 4b and 4c present the perception of entrepreneurship as an attractive career choice based on parent entrepreneurship and own entrepreneurship experience, respectively. As expected, we find a more positive perception among those respondents whose parents have entrepreneurship experience, which could be due to the previously mentioned inheritance of work values, access to important resources or genetic factors. We also find that those who have entrepreneurship experience are more positive about future entrepreneurship, which indicates that learning by doing or failure does not discourage future entrepreneurship through fear of failure. Finally, Table 4d shows that males are more positive about future entrepreneurship, which 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. However, these differences indicate that international students (i.e. those who completed the qualifying exam in a different country than Denmark) have more positive attitudes towards entrepreneurship. 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 5% level.

	To a large extent	To some extent	Not at all	Don't know	Total
Parents do not have entrepreneurship experience	81	249	61	51	442
	18.3%	56.3%	13.8%	11.5%	100.0%
Parents do have entrepreneurship experience	121	210	40	23	394
	30.7%	53.3%	10.2%	5.8%	100.0%
Total	202	459	101	74	836
	24.2%	54.9%	12.1%	8.9%	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 significant at the 5% level.

	To a large extent	To some extent	Not at all	Don't know	Total
Currently managing own business	8	12	0	1	21
	38.1%	57.1%	0%	4.8%	100.0%
Previously established and managed own business	19	27	1	3	50
	38.0%	54.0%	2.0%	6.0%	100.0%
Never established and managed own business	174	420	100	71	765
	22.7%	54.9%	13.1%	9.3%	100.0%
Total	201	459	101	75	836
	24.0%	54.9%	12.1%	9.0%	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 1% level.

	To a large extent	To some extent	Not at all	Don't know	Total
Female	75	212	62	36	385
	19.5%	55.1%	16.1%	9.4%	100.0%
Male	128	246	40	38	452
	28.3%	54.4%	8.8%	8.4%	100.0%
Total	203	458	102	74	837
	24.3%	54.7%	12.2%	8.8%	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. We find an overweight of students from the Technical Faculty of IT and Design and the Faculty of Social Sciences, where 29.9% and 29.3%, 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 that relatively few respondents from the Faculty of Medicine and the Faculty of Humanities (13% and 13.6%, respectively) have taken active steps towards establishing their own business. This result is unsurprising given the figures presented in Table 4a, which show that students from these faculties perceive entrepreneurship as a less attractive career choice.

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 (29.5% and 18.7%, respectively); however, we find no relation between parent entrepreneurs and active steps towards establishing a business. We find that 30% of students who completed their qualifying exam outside of Denmark have taken active steps towards establishing a business compared to only 22% of the supposedly Danish students. Detailed results are available upon request. Finally, 28.8% 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 11.9% who have taken such steps amongst those who do not find entrepreneurship an attractive career choice.

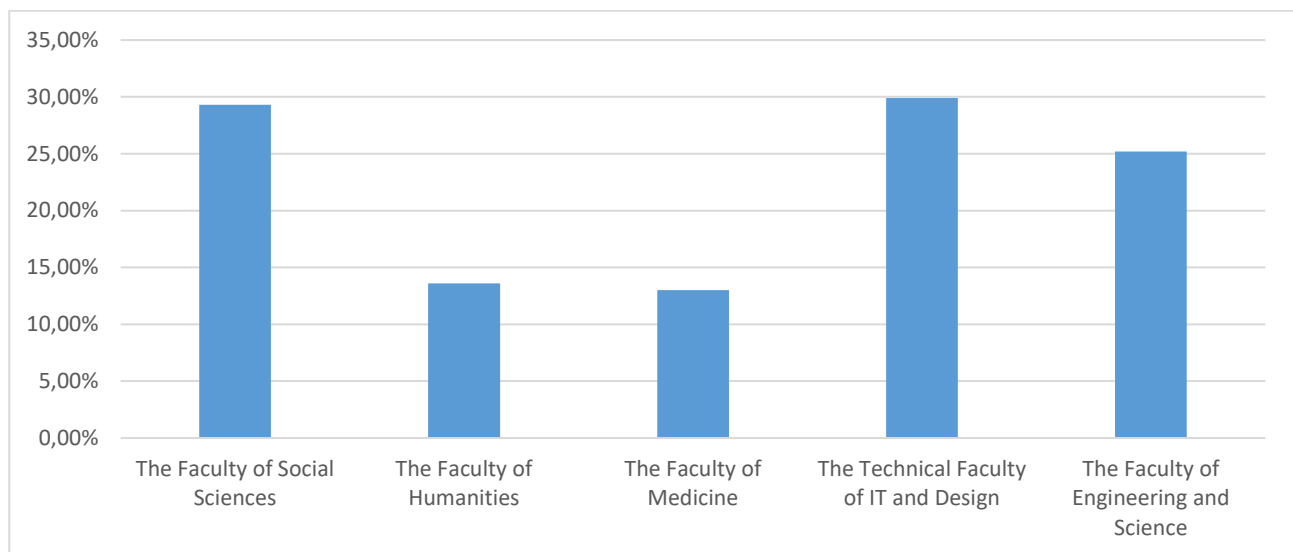


Figure 6. Share of respondents who have taken at least one step<sup>#</sup> towards establishing a business *by faculty*. *N* = 763, weighted data. Differences are significant at the 1% level.

<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 asked students *without* entrepreneurial experience to assess their skills and abilities for establishing and managing a business. Table 5a reports the results by faculty. We find that students from the Faculty of Social

<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.

Sciences indicate the highest entrepreneurial self-efficacy, with 34% 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. However, students from the Faculty of Medicine responded with the highest share of ‘not at all’ to this question, thus reflecting a lower orientation towards entrepreneurship for this group, which is supported by the results presented in Table 4a and 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>	4	76	138	17	235
	1.7%	32.3%	58.7%	7.2%	100.0%
<b>The Faculty of Humanities</b>	5	25	82	20	132
	3.8%	18.9%	62.1%	15.2%	100.0%
<b>The Faculty of Medicine</b>	0	10	61	7	78
	0.0%	12.8%	78.2%	9.0%	100.0%
<b>The Technical Faculty of IT and Design</b>	3	44	120	14	181
	1.7%	24.3%	66.3%	7.7%	100.0%
<b>The Faculty of Engineering and Science</b>	4	31	79	17	131
	3.1%	23.7%	60.3%	13.0%	100.0%
<b>Total</b>	16	186	480	75	757
	2.1%	24.6%	63.4%	9.9%	100.0%

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, 31.3% males and only 21.9% females replied that they ‘to a large’ or ‘some extent’ have the skills and abilities needed to establish and manage their own business. This result might help to explain the difference reported above that significantly more male students claim to have taken active steps towards establishing a business.

Finally, Table 5d indicates that, on average, international students assess their skills and abilities for entrepreneurship as higher than do the presumed Danish students. Thus, we find that 36.7% 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 25.3% of Danish students. This result aligns with the above findings, which showed that a greater share of international students have taken active steps towards establishing a business. The 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.

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
Parents do not have entrepreneurship experience	5	92	268	45	410
	1.2%	22.4%	65.4%	11.0%	100.0%
Parents have entrepreneurship experience	11	94	212	30	347
	3.2%	27.1%	61.1%	8.6%	100.0%
Total	16	186	480	75	757
	2.1%	24.6%	63.4%	9.9%	100.0%

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
Female	7	71	245	34	357
	2.0%	19.9%	68.6%	9.5%	100.0%
Male	9	116	234	41	400
	2.3%	29.0%	58.5%	10.3%	100.0%
Total	16	187	479	75	757
	2.1%	24.7%	63.3%	9.9%	100.0%

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 significant at the 5% level.

	To a large extent	To some extent	Not at all	Don't know	Total
Denmark	13	141	398	57	609
	2.1%	23.2%	65.4%	9.4%	100.0%
Other country	1	32	50	7	90
	1.1%	35.6%	55.6%	7.8%	100.0%
Don't know	2	14	31	11	58
	3.4%	24.1%	53.4%	19.0%	100.0%
Total	16	187	479	75	757
	2.1%	24.7%	63.3%	9.9%	100.0%

Table 6 includes only those students who report that they have entrepreneurial experience. As we expected, the vast majority of this group (79.9%) reported 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).*

	<b>Frequency</b>	<b>Percent</b>
<b>To a large extent</b>	9	12.3%
<b>To some extent</b>	47	67.6%
<b>Not at all</b>	6	8.7%
<b>Don’t know</b>	8	11.4%
<b>Total</b>	69	100.0%

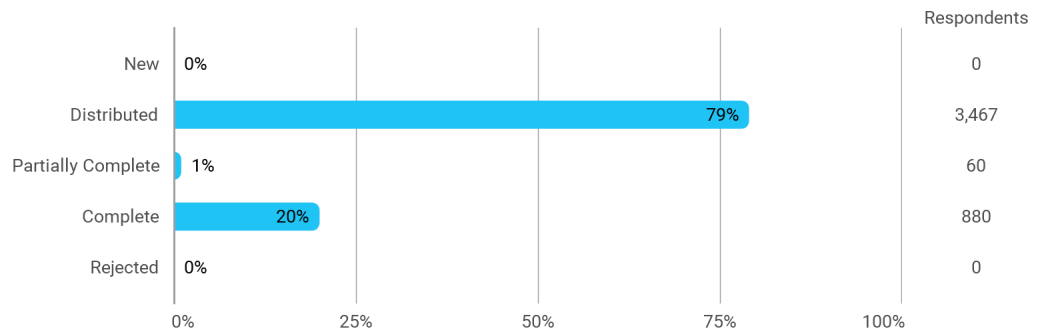


## References

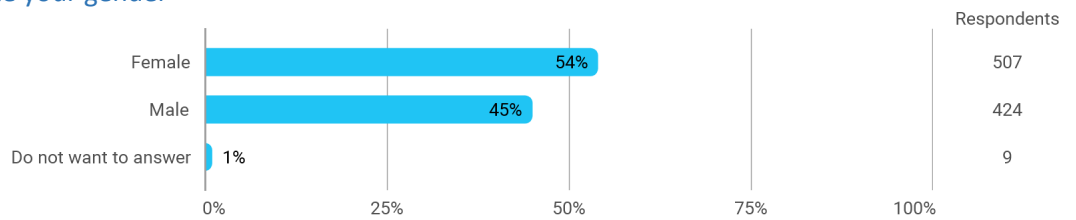
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# Appendix A: Questionnaire with simple response frequencies

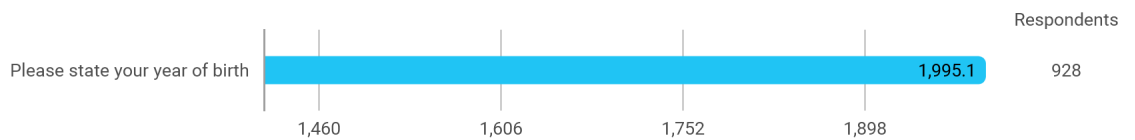
## Overall Status



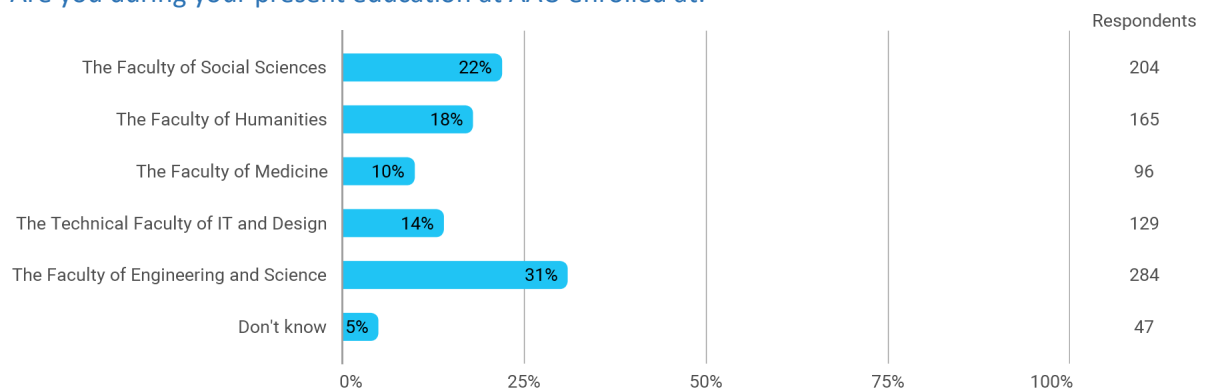
### 1. Please state your gender



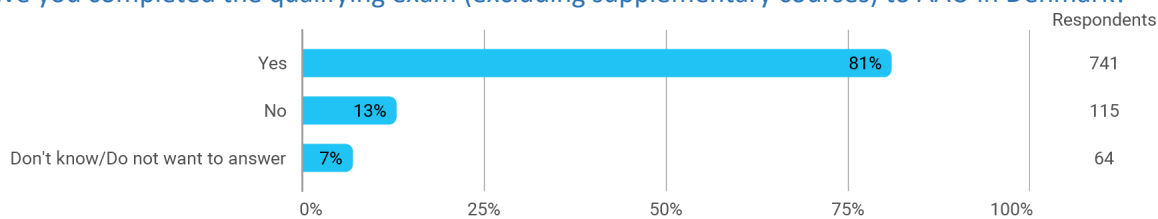
### Please state your year of birth



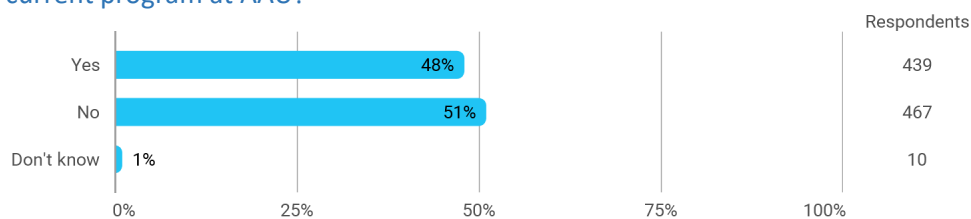
### 2. Are you during your present education at AAU enrolled at:



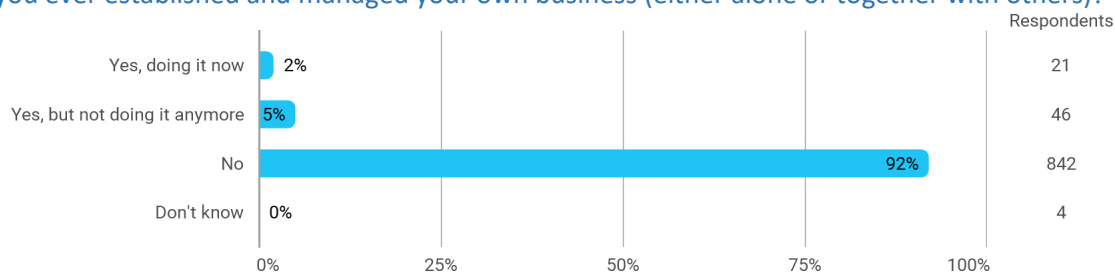
3. Have you completed the qualifying exam (excluding supplementary courses) to AAU in Denmark?



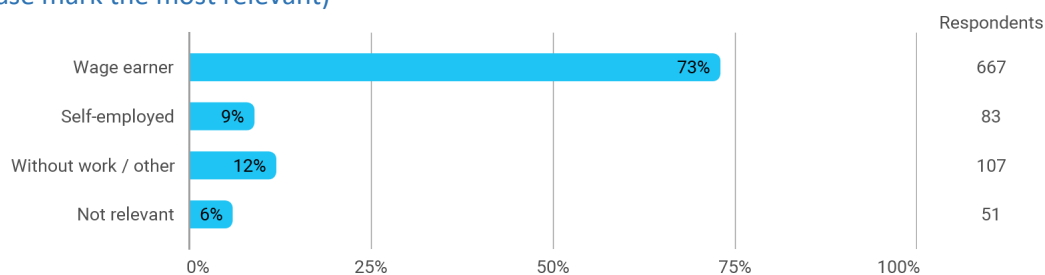
4. Have you ever had a full-time job (as an employee) for at least 6 consecutive months before enrolment in your current program at AAU?



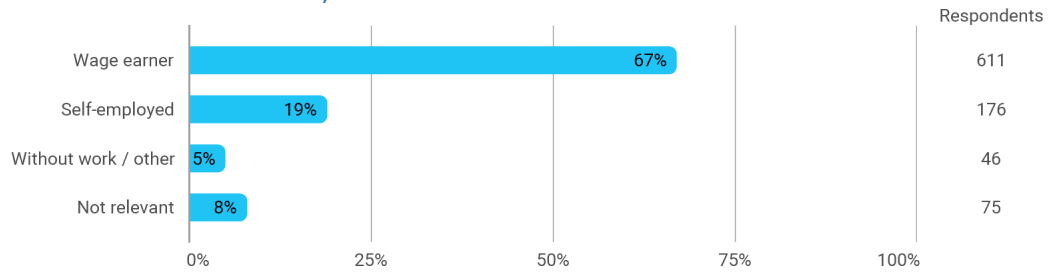
5. Have you ever established and managed your own business (either alone or together with others)?



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

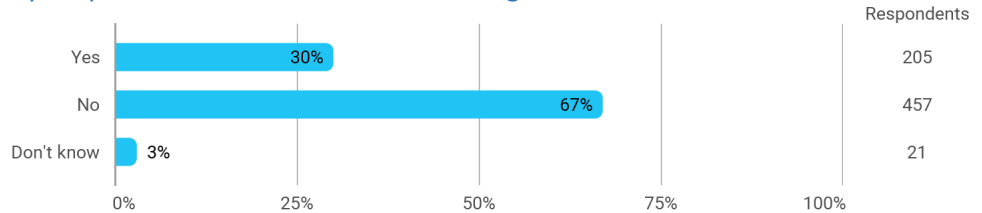


7. In the last 10 years, which of the following best describe your father's connection to the labour market (Please mark the most relevant)

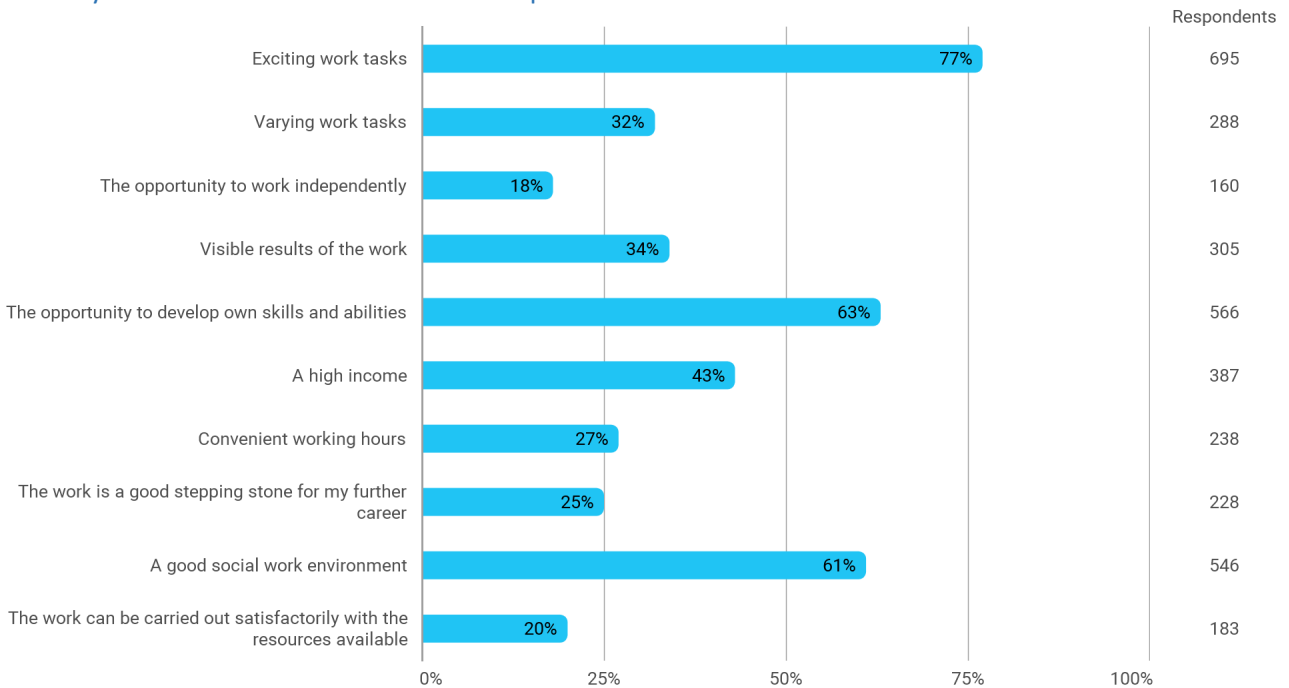


[Filter: Question 8 is only asked if respondents replied to questions 6 and 7 that neither their mother's nor their father's primary connection to the labour market in the last 10 years was 'self-employed'.]

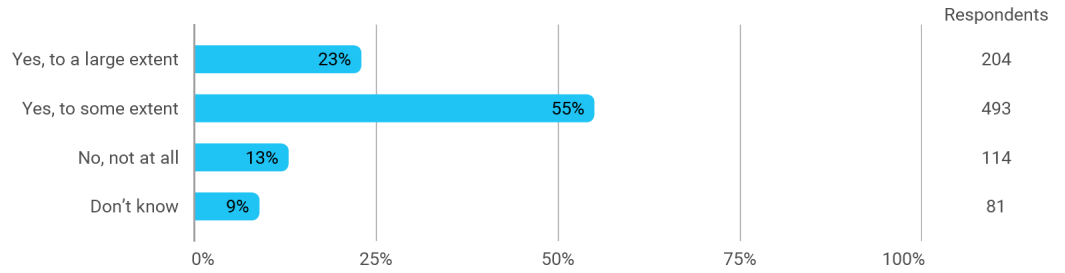
8. Have at least one of your parents ever established and managed their own business?



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



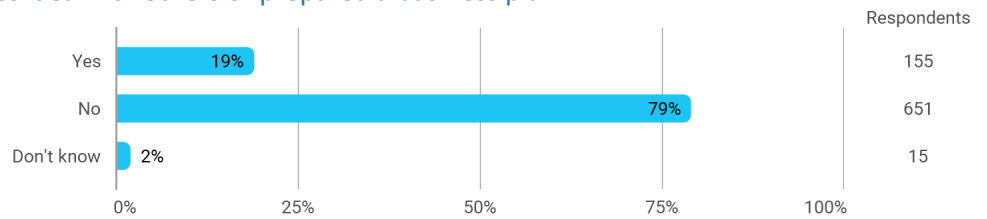
10. Do you find it an attractive career choice to establish and manage your own business?



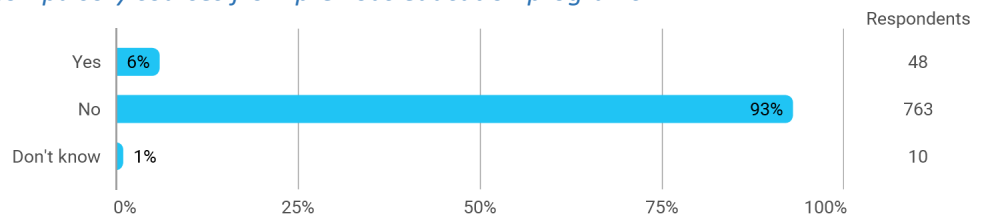
[Filter: Question 11 (a-d) is only asked if respondents answer 'No' or 'Don't know' to question 5.]

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

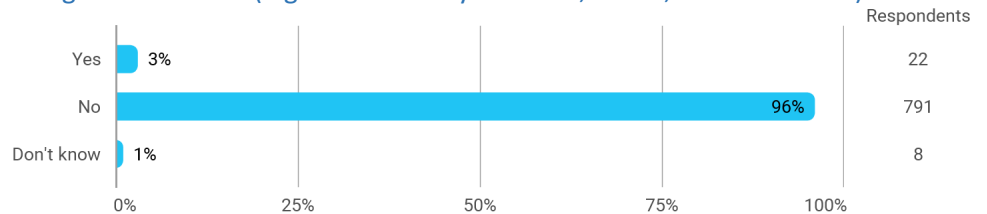
a. Discussed a business idea with others or prepared a business plan



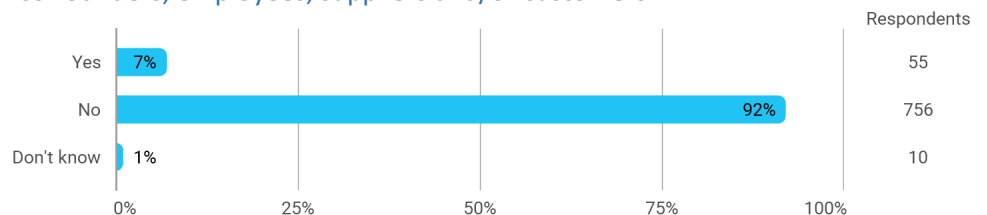
b. Participated in entrepreneurship counselling or an entrepreneurship incubator  
*Entrepreneurial counselling includes counselling supplied by public and private institutions and firms, but does not include compulsory courses from previous education programs*



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

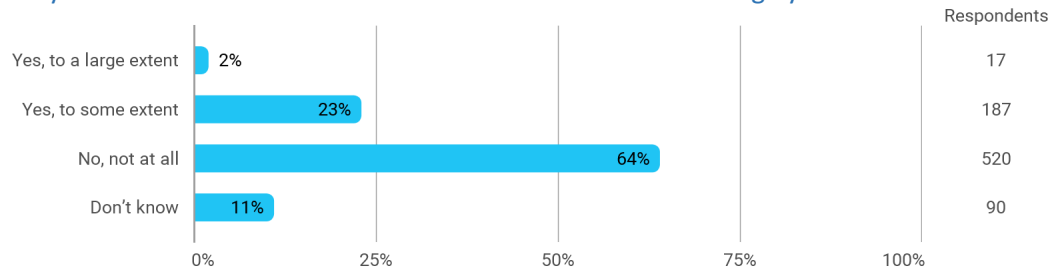


d. Contacted potential co-founders, employees, suppliers and/or customers



[Filter: Question 12 is only asked if respondents answer 'No' or 'Don't know' to question 5.]

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



[Filter: Question 13 is only asked if respondents answer 'Yes, doing it now' or 'Yes, but not doing it anymore' to question 5.]

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

