

The Career Path and Employment Prospects of PhD Graduates of the ENG, TECH and SUND faculties, Aalborg University

Report

**Aalborg University
TECH, ENG, SUND**

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1. INTRODUCTION

As one of Europe's leading universities in the fields of Medicine, Technology and Engineering, Aalborg University (AAU) constantly focuses on ensuring the high quality and relevance of its study programmes. Needless to say, this also applies to the PhD programme at three of AAU's five faculties, from which approximately 750 PhD students have graduated in the last five years.

AAU has commissioned an analysis of the career path of PhD graduates of the Faculty of Medicine (SUND), the Faculty of Engineering and Science (ENG) and the Faculty of IT and Design (TECH). The aim of the analysis is ultimately to improve the PhD programme, thereby facilitating the graduates' transition to the labour market. The analysis investigates the following questions:

- Where are PhD graduates employed? What is the common career path of PhD graduates from each faculty?
- How was the transition to the labour market?
- What skill-sets do PhD graduates primarily use in their daily work? And to what extent have they obtained these skill-sets as part of their PhD studies? What skill-sets are in demand by the private and public sector?
- To what extent do PhD students collaborate with international research institutions and businesses?
- What kind of relationship do Aalborg University alumni have with the university today and what are their wishes for the future?

To answer these questions, the analysis comprises a survey of PhD graduates and qualitative interviews with employers representing enterprises from both the public sector and the private sector where PhD graduates of the ENG, TECH and SUND faculties are employed. In all, 20 enterprises were interviewed. The interview topics included how graduates transitioned to the labour market and which skill-sets they possess.

The PhD survey is an online questionnaire that was sent to PhD graduates of the ENG, TECH and SUND faculties at AAU who graduated during the period 2012 to 2016. The survey is designed to be comparable to similar surveys of graduates of other Danish universities.

Complete responses were received from 318 graduates, comprising 40 % of the total population of 786 graduates. When examining the background characteristics, the representation of the obtained data is highly satisfactory (see Table 1 below). Danish graduates are slightly over-represented at the expense of graduates of other nationalities. An elaboration of the applied methods can be found in Chapter 8.

Table 1. Summary of population and obtainment. Graduation year, faculty and nationality.

<i>Background characteristics</i>	<i>Population</i>	<i>Obtainment</i>	<i>Response rate (%)</i>
PhD graduation year			
2012	131	50	38
2013	141	33	23
2014	157	66	42
2015	166	79	48
2016	191	90	47
Faculty			
Engineering and Science (ENG)	357	138	39
IT and Design (TECH)	298	120	40
Medicine (SUND)	131	60	46
Nationality			
Danish	391	163	42
Other	395	155	39
<i>Total</i>	<i>786</i>	<i>318</i>	<i>40</i>

Source: Epinion for AAU, PhD Graduate Survey, 2017

1.1 READING GUIDE

Chapter 2 summarises the main results of the quantitative survey of graduates and the qualitative interviews of employing enterprises. **Chapter 3** describes the employment of PhD graduates, covering aspects such as type of business/workplace, work functions, job typologies and the specific factors that graduates associate with a good job. **Chapter 4** looks at the graduates' transition to the labour market – their job considerations while studying, job seeking, the first job, and the employing enterprises' view of the transition. **Chapter 5** addresses questions about the skill-sets acquired by graduates during their studies and the relevance of these skill-sets, including the view of the enterprises. **Chapter 6** discusses the international dimension of the programmes, such as research visits abroad and international networks. **Chapter 7** investigates PhD graduates' alumni activities and wishes. Finally, an account of the qualitative and quantitative methods is provided in **Chapter 8**. The questionnaire survey and the interview guide for qualitative interviews are attached as **Appendices 1 and 2**.

The report presents the main results of the quantitative survey in the form of figures, while some additional results are mentioned in the text only. The figures show the results as percentages, i.e. shares of the graduates or respective subgroups of graduates. In some cases, the figures may add up to more than 100% due to the respondents' option of giving more than one reply to a question. Generally, all percentages are rounded off to be displayed without decimals. This means that the rounded off percentages in the figures and text may not necessarily add up to 100 percent.

1.2 THE PHD STUDY PROGRAMME IN DENMARK

In Denmark, only universities (and a few very specific artistic institutions) can confer the doctoral degree. We have a legal framework for doctoral study programmes (the Ministerial Order on the PhD Programme) which all universities must follow.

The PhD study programme corresponds to three years of full-time studies and includes:

- Completing an independent, scientific project
- A PhD study programme (courses equivalent to 30 ECTS credits)
- Teaching and dissemination of knowledge
- An external research stay

The PhD degree is awarded in recognition of the recipient having completed a PhD programme, as well as having satisfactorily defended a thesis. The PhD graduate has a documented capacity to carry out a scientific project involving independent application of the relevant scientific methodology, thereby displaying a research effort at a level corresponding to international standards of PhD degrees within the specific field.

2. SUMMARY OF THE MAIN RESULTS

This chapter summarises the main results of the analysis.

Employment after a PhD programme at AAU

Out of the graduates who responded to the questionnaire, **96% are currently employed and only 3% are unemployed**. A third of the employed graduates are working in the private sector and more than 40 % are employed at a university or similar research institution. In addition, there is a considerable predominance of graduates employed in large companies and organisations with more than 1,000 employees, and at workplaces abroad and in the North Jutland Region.

The first job at AAU or other research institutions often becomes the initial stepping stone for graduates who later end up in jobs in the private or public sector. This is perhaps because the number of tenured positions quickly becomes relatively scarce if a graduate decides to pursue a long-term academic career.

Most graduates are occupied with research assignments – both at the university and in public-sector and private-sector enterprises. Graduates employed outside the university are generally asked to perform a wider variety of tasks related to data analysis, project management and product development or innovation.

The analysis shows that almost half of the graduates who participated in the survey think that it is challenging to find relevant positions in North Jutland. More specifically, 45% experience that there are only a few or no positions in the region, while 20% have insufficient knowledge of the availability of relevant positions. Several of the international graduates also find themselves ill-prepared to enter the Danish labour market.

In general, when asked to specify their ideal job, most graduates value exciting **academic challenges**, but also a pleasant social environment and self-determination in planning and deciding work tasks. Thus, all three factors are highly important if employers want to appeal to AAU PhD graduates.

Transition to the labour market

The great majority make **a smooth transition from a PhD programme to the labour market, and most graduates quickly find new employment**. In fact, 75% had already found jobs before they completed their PhD programme. Just over half of the graduates found their first job at a university. However, a still smaller share of the most recent class years of PhD graduates found employment at AAU, instead ending up at other universities or the private sector.

In addition, the **interviewed enterprises find the PhD graduates' transition from study programme to labour market to be reasonably smooth** as well. A smooth transition is especially enhanced when the graduate is able to tone down the in-depth working method in return for a more commercialised approach.

Most graduates find their first job through their academic or personal networks while there are also many who are hired after submitting an application – whether invited or unsolicited. In particular, many believe that the specialised skill-sets they have acquired played an important part in

getting their first job. A more detailed analysis shows that nearly half of the graduates got their first job without actually submitting an application.

Most non-AAU employees have no connection to AAU at present, but most would actually like to establish some sort of academic affiliation. **Several enterprises describe well-functioning relationships with AAU.** Nevertheless, a small group of enterprises explain that they would like a closer relationship with AAU to enhance the collaboration and improve PhD graduates' transition to the labour market. Hence, a **higher external profile** might benefit AAU's connection to the labour market.

The match between required and acquired skill-sets

Most graduates feel well prepared for the labour market. More than half believe that their PhD programme has largely prepared them for their present job, and an additional third believe that this is true to some extent.

The vast majority of graduates also make use of the specialised knowledge they have acquired during their PhD programme, and only 16% respond that there is a weak or no connection between their specialised knowledge and the tasks they execute in their current job.

Based on interviews with enterprises, the types of jobs that PhD graduates possess are categorised into four categories. This shows that **PhD graduates of the ENG, TECH and SUND faculties are primarily employed in the job categories "field specialist" and "research specialist"**. Hence, it is either their expertise and knowledge within the field or their expert research skills in the field that are in demand by the enterprises. In both cases, **the subject of their PhD is key to their employment.** While SUND PhD graduates work as research specialists only, most ENG and TECH PhD graduates work as field specialists. This result indicates that enterprises choose AAU PhD graduates due to their specialised skills rather than general skill-sets.

The PhD programme prepares graduates for future work in universities and research institutions to a greater degree than in other public-sector or private-sector enterprises. **Graduates who believe that their studies have prepared them for their present jobs are mostly employed by universities.** Furthermore, graduates employed outside universities are significantly more prone than university employees to believe that they have acquired skill-sets that are not particularly relevant to their current job performance so far. Hence, **their skill-sets are over-matched.**

Turning to the enterprises and to the skill-sets in demand by them, the following are mentioned in the interviews: **specialist knowledge; research and methodological skill-sets; social skills; and an ability to reflect and take a structured approach to their work.** Altogether, the enterprises find that PhD graduates largely have the skill-sets in demand by the enterprises, although **some enterprises would prefer keener focus to be given to work experience and project management during the PhD programme.**

From perspective of the PhD graduates themselves, more than half believe that they have better skill-sets than their colleagues who have both an MSc degree and three years' work experience, pointing to PhD graduates' superior research skills, analytical methods and ability to disseminate

research findings. Two-thirds state that current work tasks can only be executed by employees with a PhD.

By contrast, **the interviewed enterprises give higher priority to work experience and some even prefer MSc graduates who have three years of work experience over PhD graduates.** This is typically enterprises that employ field specialists; in order for a newly graduated PhD to be prioritised over an experienced MSc graduate, the PhD graduate must be an expert in the field, in the theoretical basis, and/or in the methods or materials used by the enterprise.

Supply and demand

The enterprises' perception of the supply of PhD within their field depends on the geographical location of the enterprises. Naturally, **it is easier for enterprises in major urban areas to attract a sufficient number of PhD graduates, whereas enterprises located in rural areas, particularly in peripheral areas of Denmark, expressed that the supply is very limited.** The view of supply also depends on the industry, as some of the more specialised enterprises demanding highly specialised skill-sets often experience a greater mismatch between supply and demand.

By contrast, the **short interviews with PhD graduates show that many of them had a hard time finding a relevant job after graduation.** This was especially true of foreign PhD graduates.

Collaboration with the Danish business community

In connection with their PhD projects, 55% of graduates have collaborated with the Danish business community. However, the degree of collaboration varies considerably between the different fields of study and is significantly more prevalent among ENG graduates. Directly related, 21% of the group of graduates have completed business visit(s) to Danish companies while 23% visited companies abroad as a part of their PhD programme.

Research visits abroad

Half of the graduates have studied or conducted research at a different university during their PhD programme. Graduates who have been abroad believe that this has contributed to both their academic and personal development. Two-thirds of the graduates state that they have built up an international network during their PhD programme.

AAU is broadly considered an internationally-oriented university in terms of its research environment, and most graduates say they have been in contact with an international network and people of a different cultural background than their own during their PhD programme.

Alumni contact

Most graduates (60 %) state they have no present connection to the university, while 40% still have some kind of connection. A small group of graduates maintain a connection to AAU through teaching, while most contact is upheld through research collaboration. Out of the graduates with no current association with AAU, 57% reply that they would like to have an association with AAU going forward and this should be professional rather than social.

3. THE LABOUR MARKET FOR GRADUATES

This chapter describes the characteristics of the graduates’ first job after obtaining their degree and their current job in terms of sector, country, region, workplace size and work functions. The chapter also describes the qualities graduates associate with a good job.

3.1 WHERE ARE GRADUATES EMPLOYED?

Many graduates work at universities or other research institutions

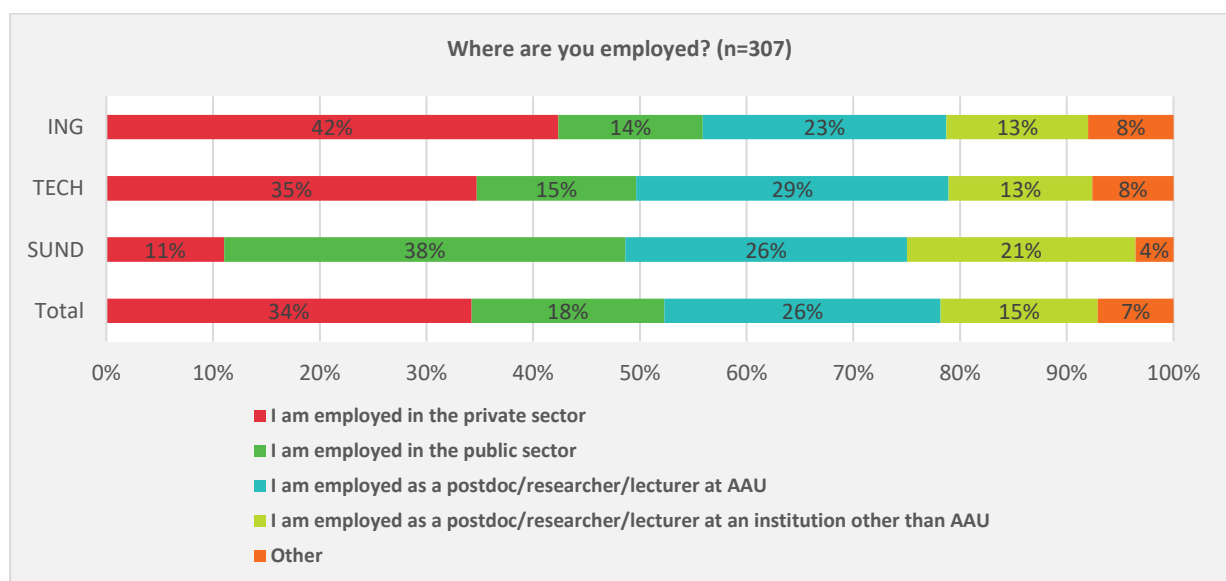
The unemployment rate among PhD graduates from the three faculties at AAU is low. The results of the survey show that 96% of the graduates are currently employed, while 3% are currently unemployed. 1% of the graduates are permanently out of the workforce.

As shown in Figure 1, 34% of the employed PhD graduates are currently employed in the private sector, while 18% are employed in the public sector. 41% are employed in research jobs as a postdoc, researcher or lecturer at a university or institution. Most of the PhDs with jobs at a university are employed by AAU (26%), others are employed at other universities or institutions in Denmark (7%) or abroad (9%).

The SUND faculty differs from this. Compared to ENG and TECH, fewer graduates are employed in the private sector, and a large part are employed in the public sector. Many are also employed at research institutions other than AAU. Given the structure of the Danish healthcare system, the trend for SUND should hardly come as a surprise.

About half of the PhDs with foreign citizenship work in Denmark and the other half abroad. This is more common among TECH graduates compared with ENG and SUND graduates, however. The number of PhD graduates working outside Denmark varies in relation to year of graduation. 36% of the graduates working in other countries are employed as postdocs, etc.

Figure 1: Where are you employed (sector, institution)?



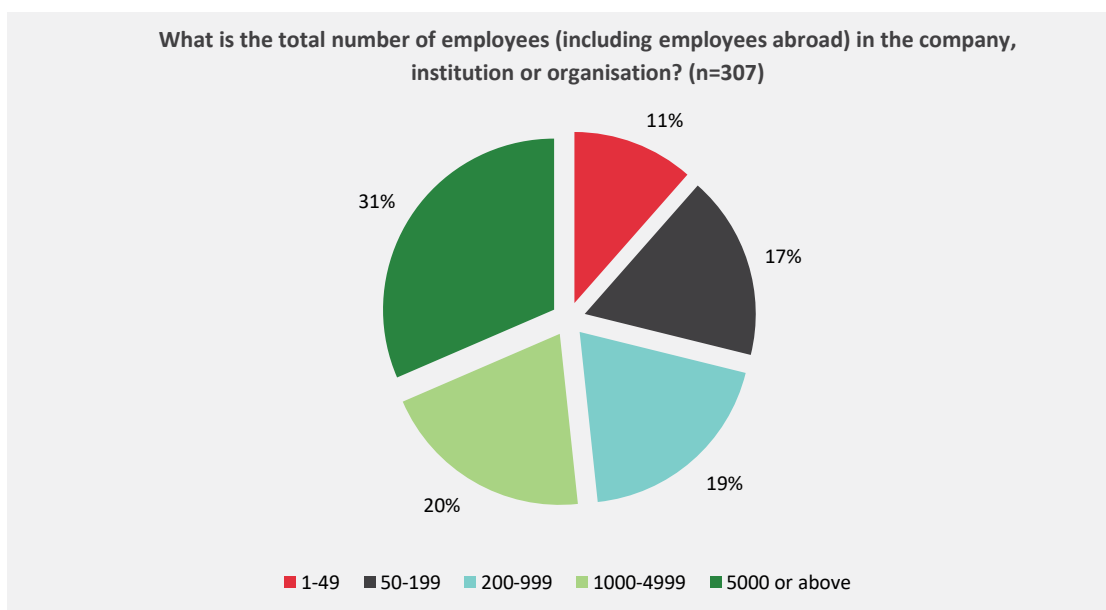
The survey also reveals that 58% of graduates are employed in permanent jobs while over one-third (39%) are employed in time-limited positions. Time-limited employment is slightly more widespread among graduates of the SUND and TECH faculties.

Graduates primarily work in large organisations or institutions

A large part of the graduates (44%) work at enterprises, institutions or organisations with more than 1,000 employees (see Figure 3). Respectively 19% and 28% of the graduates are employed in large (200–999 employees) or small and medium-sized (1–199 employees) enterprises, institutions or organisations.

One possible explanation behind this pattern is that it is mainly multinational enterprises, universities and research institutions that employ PhD graduates from AAU. This is hardly surprising, because it is mainly the universities and multinational corporations that seek the kind of specialised knowledge possessed by PhD graduates. Hence, while most private-sector employees work for small and medium-sized enterprises, this is not the case for PhD graduates of the ENG, TECH and SUND faculties at AAU.

Figure 2: What is the total number of employees (including employees abroad) in the company, institution or organisation?



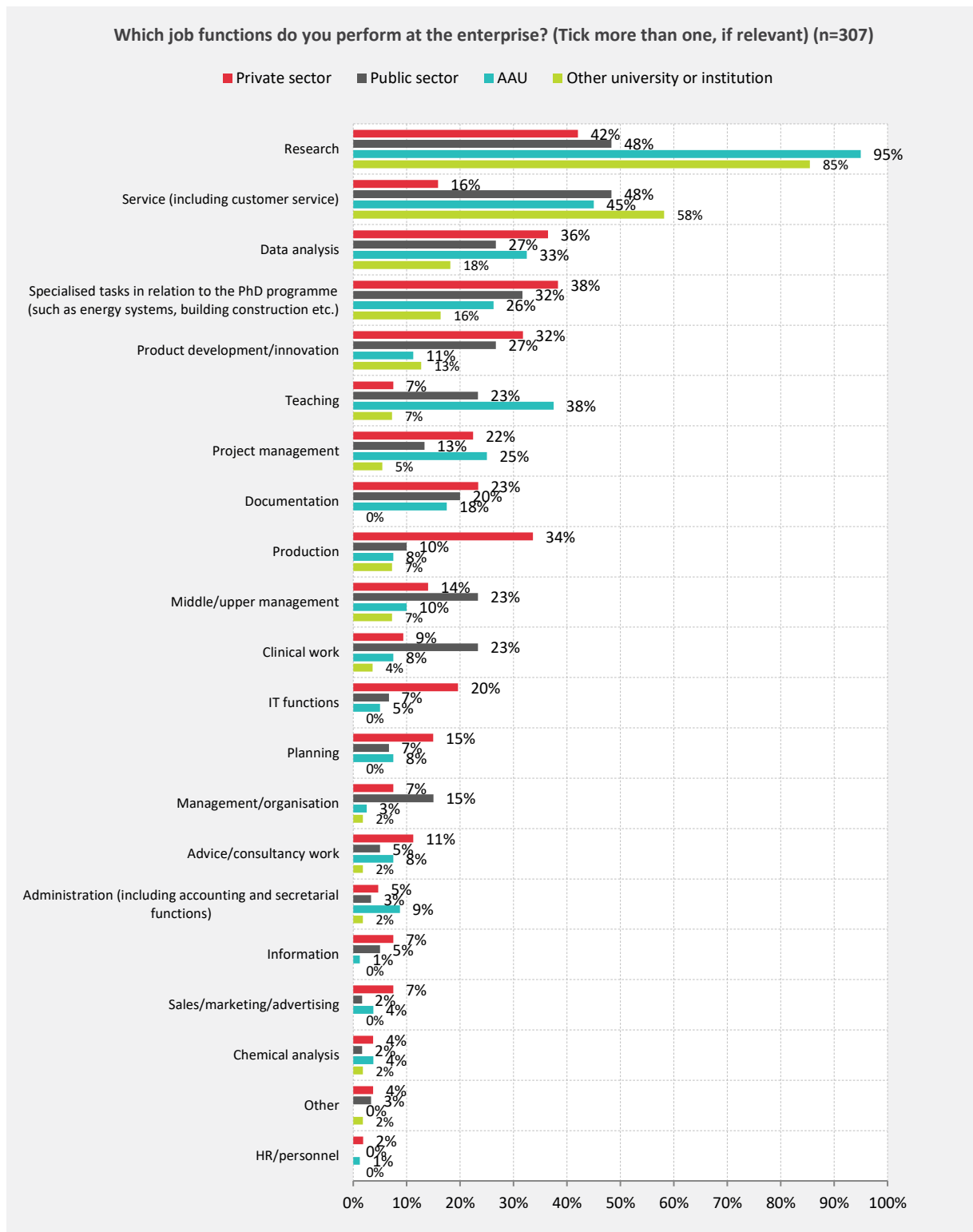
Most graduates have research positions

In the survey, PhD graduates were also asked which functions they perform at the enterprise. As shown in Figure 3, the graduates work in a variety of functions.

A common factor for a large proportion of the graduates working at AAU or other university is that they conduct research. Similarly, a large proportion are involved in teaching, project management, service and data analysis (29%) or specialised tasks related to their PhD programme. Graduates employed in the private sector mainly undertake functions including research (42%), specialised tasks related to their PhD programme (38%), data analysis (36%), production (34%), product development (32%) and project management (24%). The functions of graduates employed in the

public sector mainly involve research (48%), service (48%), specialised tasks related to their PhD programme (32%), data analysis (27%), product development (27%), teaching (23%) and documentation (20%).

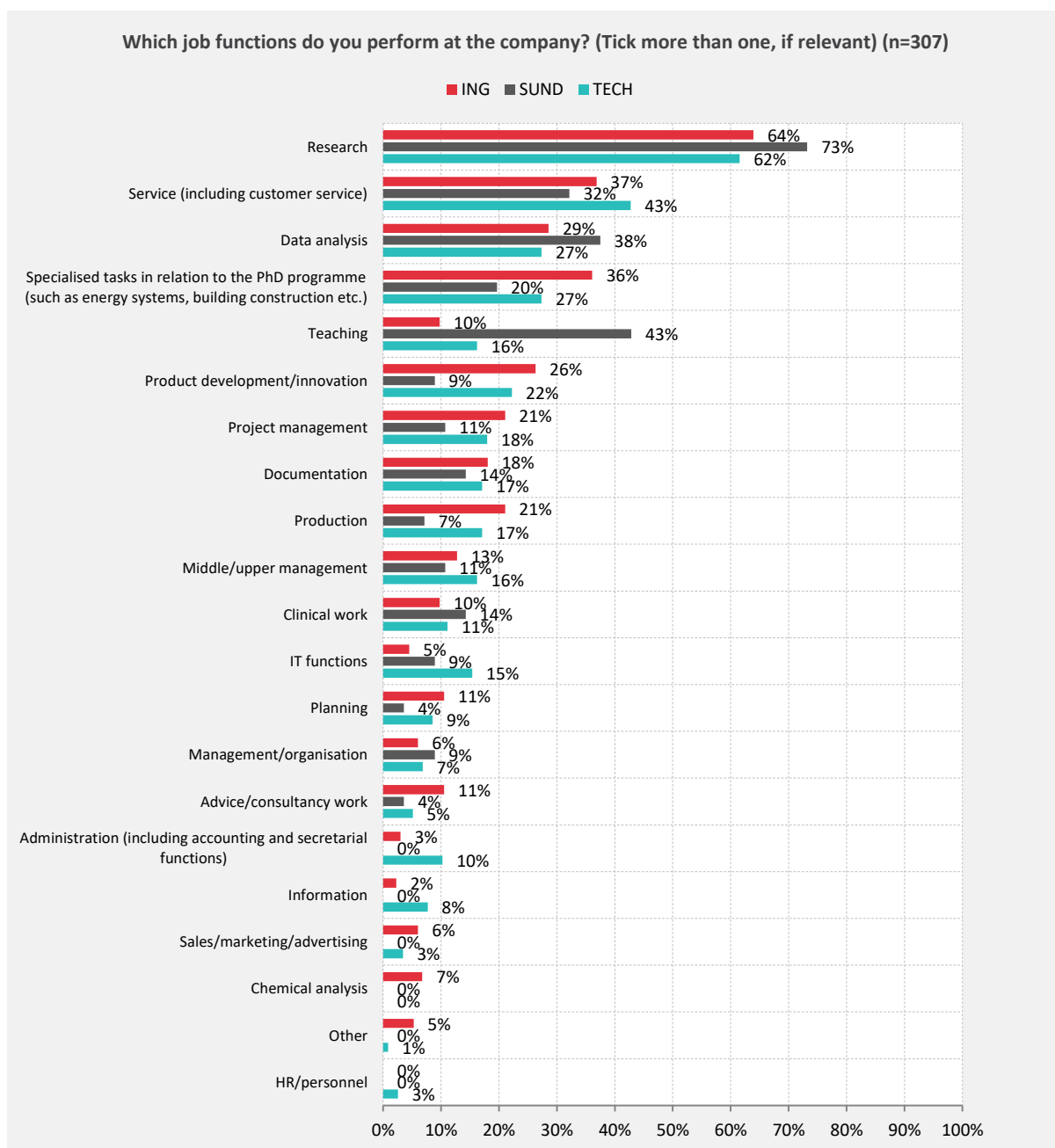
Figure 3: Which job functions do you perform at the enterprise?



Note: Percentages add up to more than 100%, since respondents were allowed to give more than one answer.

There are some differences relating to job function among graduates of the ENG, SUND and TECH faculties. Regardless of faculty, most graduates perform research functions. ENG graduates perform a wide variety of functions, mainly service (37%), specialised tasks (36%) and data analysis (29%), but also production development, project management and production. SUND graduates also perform a wide variety of functions, mainly teaching (43%) data analysis (38%) and service (32%), but also clinical work and management/organisation. TECH graduates mainly perform functions including service (43%) data analysis (27%) and specialised tasks (27%), but also product development, middle/upper management, IT functions, administration and project management.

Figure 4: Which job functions do you perform at the company?



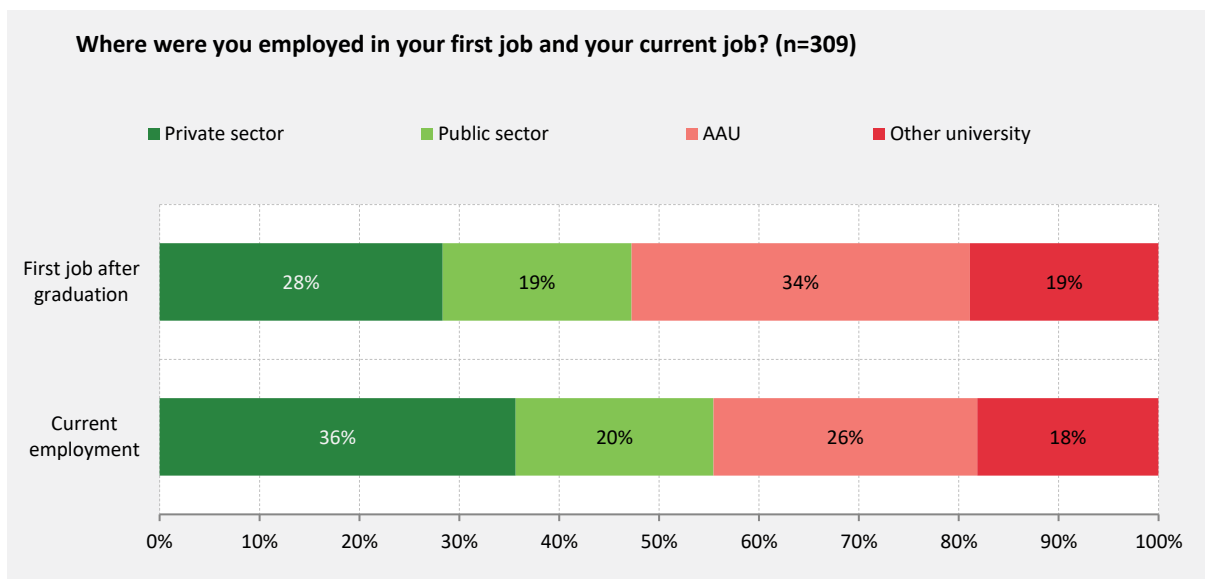
Note: Percentages add up to more than 100%, since respondents were allowed to give more than one answer.

3.2 CAREER PATH

The first job is often a research position at AAU or other university

As shown in Figure 5, nearly half of the PhD graduates (53%) began their career at a university, either as a postdoctoral fellow, researcher or assistant professor at AAU or other university, while 47% began their career in the private or public sector. Currently 44% are employed at AAU or other university while 56% are employed in the private or public sector. Employment in the private sector rises from 28% right after graduation to 36% currently, while employment at AAU drops from 34% to 26%. Especially TECH and ENG graduates are employed as researchers at AAU, while SUND graduates are more frequently employed at other universities.

Figure 5: Where were you employed in your first job? / Where are you employed in your current job?



Note: For further details about sector and type of occupation, please refer to the table report.

Out of those employed in the private sector in their first job after graduation, 36% have changed job. Five out of ten switched to a different private-sector enterprise. Three out of ten returned to AAU and two out of ten either changed to an institution, university or other public-sector enterprise.

Out of those employed in the public sector in their first job after graduation, 43% have changed job. Six out of ten switched to a different public-sector job, two out of ten returning to AAU and two out of ten either changed to the private sector or another institution or university.

Out of those employed at AAU in their first job after graduation, 65% have changed job, eight out of ten have switched to another position at AAU, one out of ten either changed to the public or private sector and one out of ten to another institution or university.

Out of those employed in an institution or university other than AAU in their first job after graduation, 41% have changed job and four out of ten changed to another position in the same

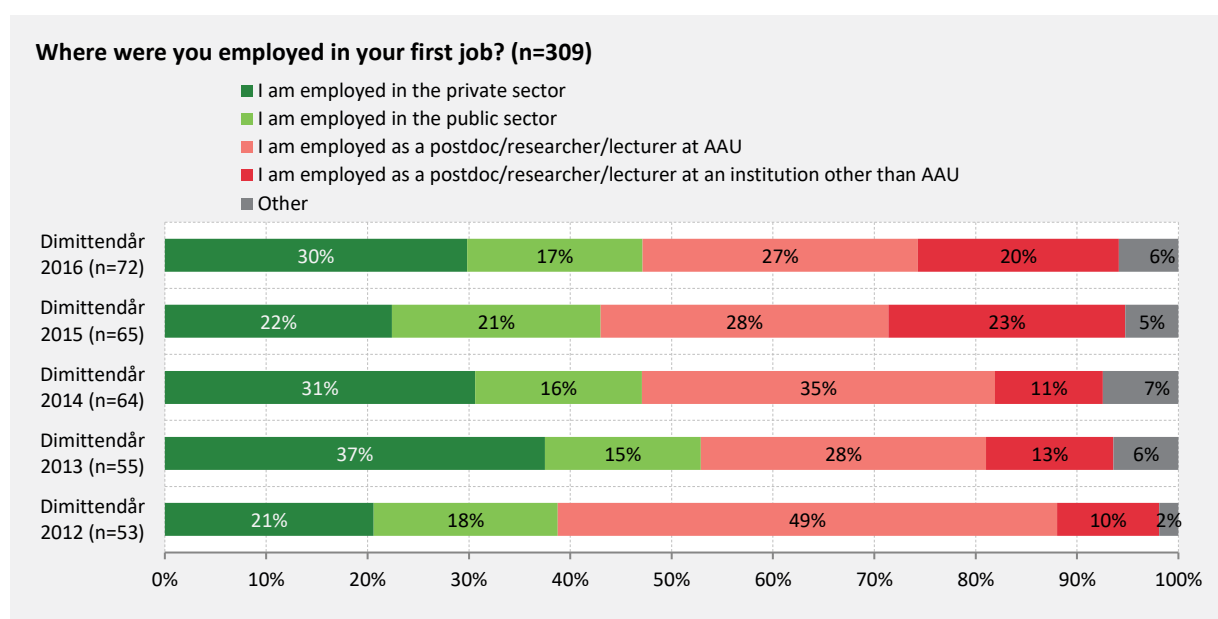
or another institution or university, four out of ten changed back to AAU and two out of ten changed to another enterprise in the public sector or to a private-sector enterprise.

Fewer graduates get their first job at AAU

As increasing numbers of students get a PhD degree, it can be assumed that this means that more graduates must find their first jobs outside AAU, assuming a relatively stable number of permanent positions. Thus, the survey suggests that still fewer newly graduated PhD students will get positions at AAU.

Since 2012, the percentage of PhD graduates who get their first job at AAU has decreased. During a five-year period (2012–2016), the employment rate decreased from 49% to 27% for newly graduated PhD students. While the employment rate in the public sector has been relatively stable for graduates in this period, the changes have been more pronounced in relation to employment in the private sector and employment at universities other than AAU during the relevant period. Private sector employment has increased from 21% to 30% and from 10% to 20% at universities other than AAU.

Figure 6: Where were you employed in your first job?



The characteristics of graduates employed at AAU in their first job are similar to graduates employed elsewhere. However, 66% have Danish citizenship opposed to 45% for graduates employed elsewhere.

The first job is typically at medium-sized or large enterprises

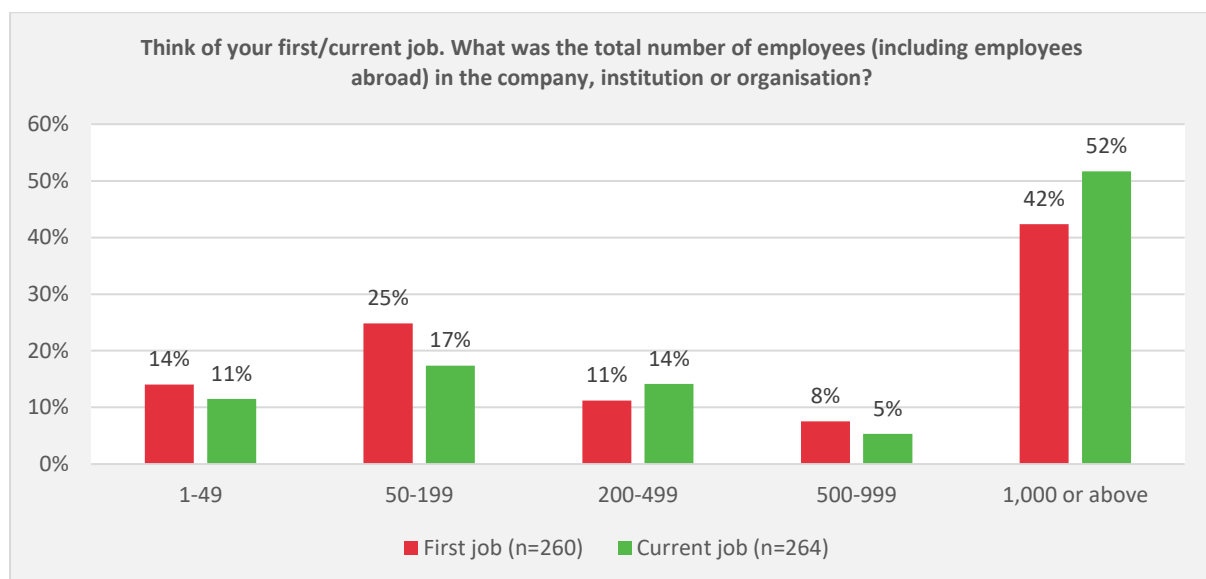
As mentioned, many graduates have changed from working at a university to the private sector. Likewise, PhD graduates are willing to be relatively flexible in terms of size when it comes to choosing an enterprise or institution. On the other hand, their willingness to be geographically mobile is not very great.

Out of all graduates, 22% found their first job in the North Jutland Region, and nearly as many (26%) are currently working in the North Jutland Region. Currently, 37% of the graduates work abroad while 40% had their first job abroad. Thus, their geographical mobility is relatively limited.

The results regarding PhD graduates' flexibility in terms of the size of the enterprise features employment in both the private and public sectors including other institutions like universities. The largest part (42%) of the PhD graduates were employed at a large enterprise or institution with more than 1,000 employees. As the graduates change jobs, more get employed with large enterprises or institutions. Employment in an enterprise or institution with more than 1,000 employees applies to most graduates in their current job position. Thus, it can be observed that more graduates find jobs at large enterprises or institutions later in their career.

This observation corresponds with the capacity of the enterprises. As the enterprises get bigger, they typically obtain more resources and thereby better opportunities to employ a highly specialised workforce, as represented by PhD graduates. They possess specialised knowledge which are particularly in demand by large enterprises while smaller enterprises rarely have the capacity to exploit this. It should be mentioned that part of the explanation of this breakdown is attributable to the fact that many graduates still find jobs at universities which might fall into the category of 1,000 or more.

Figure 7: Total number of employees (including employees abroad) at the company, institution or organisation



The first job function was primarily research

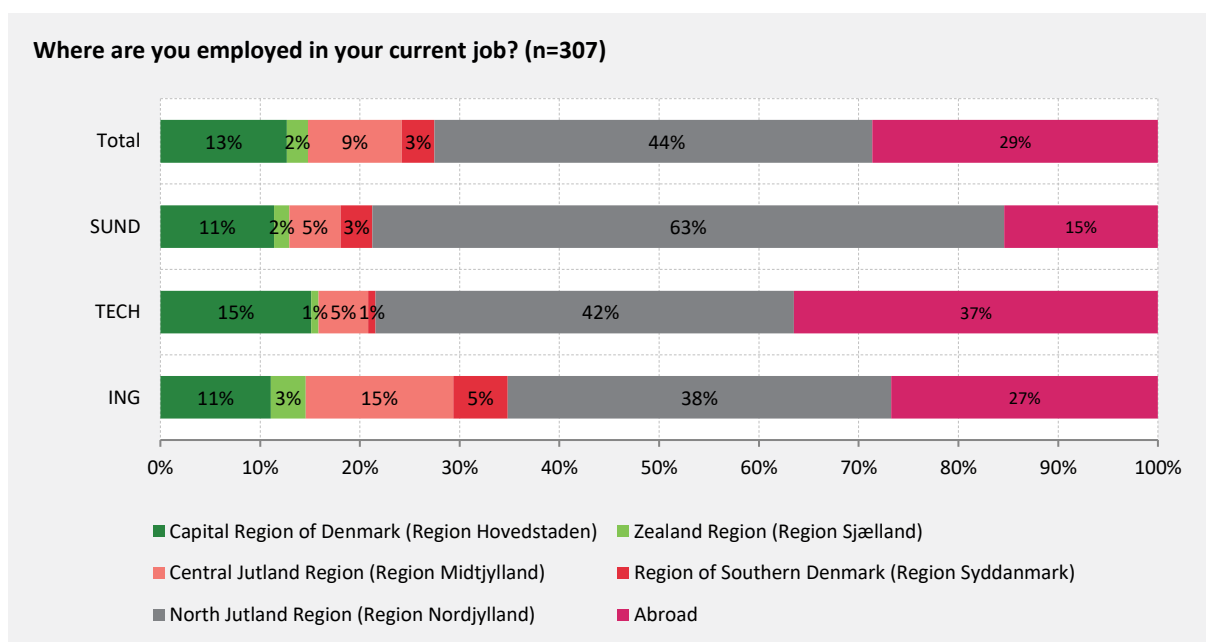
In relation to PhD graduates' job functions, there are no substantial observable changes in the primary work functions performed at the first job and the current job. The primary functions of the graduates are research, teaching and specialised tasks in relation to their PhD programmes, as these three functions are of greatest importance to graduates in both their first job and their current job. Research functions are relatively stable as they apply to 64% of graduates in their first job and 66% in their current job. Small changes are seen in relation to teaching functions which decrease from 46% in their first job to 39% and specialized tasks which increase from 22% in their first job to 29%.

3.3 Where geographically are PhD graduates employed?

Graduates find work primarily in the North Jutland Region

As shown in Figure 8, 39% of PhD graduates are currently employed outside Denmark, and 61% are employed in Denmark. Graduates employed in Denmark are predominantly employed in the Northern Jutland Region (24%). 17% are employed in the Capital Region of Denmark and 3% are employed in Region Zealand. 13% are employed in the Central Denmark Region, and 4% in the Region of Southern Denmark. When comparing the faculties, it appears that SUND has the highest percentage of graduates employed in the North Jutland Region, while TECH has the highest percentage of graduates employed abroad.

Figure 8: Where are you employed in your current job?



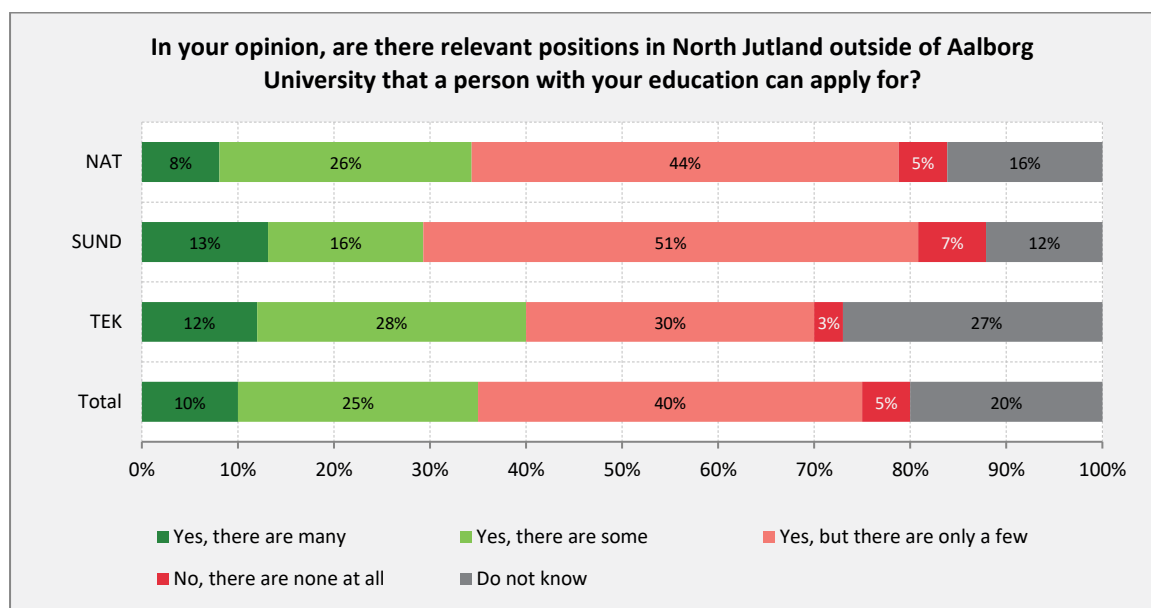
There are few relevant positions in the North Jutland Region

Graduates were asked about their opinion of the number of relevant positions in the North Jutland Region outside of Aalborg University for someone with their educational background. Slightly more than one-third of the graduates (35%) find that there are *many* or *some* relevant positions located in the North Jutland Region, while 40% think that there are only a few relevant positions. 5% of the graduates believe that there are no relevant positions at all. In addition, about one-fifth of the respondents do not have sufficient knowledge of relevant positions to properly assess this question. The results might therefore indicate that a large group of the graduates either find the availability of attractive jobs in North Jutland as limited or they are generally not well-informed about the various available job opportunities.

When comparing the three faculties, Figure 9 shows that graduates of the SUND faculty find that there are more relevant positions than graduates of TECH and ENG.

Graduates who at some point after their PhD choose to live outside North Jutland are asked the following question; “What was important to you in your choice of workplace outside North Jutland?”. Four main reasons to live outside North Jutland were provided among the responses. One-quarter of the replies stress that the decision to live outside North Jutland was based on family reasons or because the respondent has a much stronger personal association with the new place of residence in question. Almost half of the replies point to the fact that the respondent moved because of attractive job opportunities outside North Jutland. A small group stressed the desire to live outside Aalborg because they aim to live in a city larger than Aalborg. Some of the graduates have never lived in Aalborg during the PhD programme as they were studying at the AAU Copenhagen Campus and therefore found little reason to move to North Jutland.

Figure 9: Relevant positions in North Jutland outside of Aalborg University



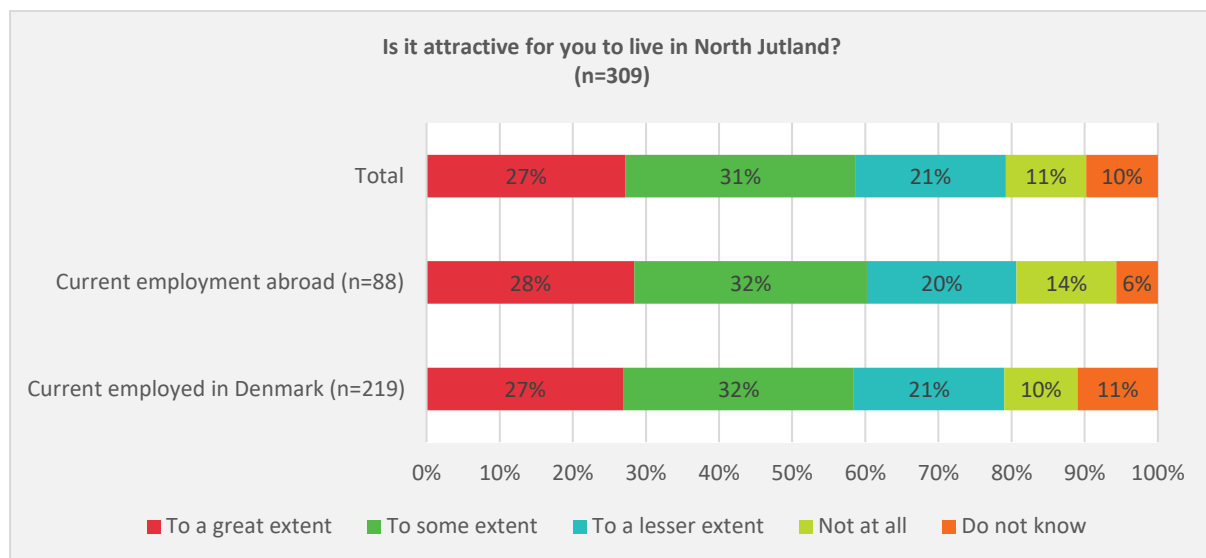
Most graduates find it attractive to live in North Jutland

The survey also covers the graduates’ opinions of Northern Jutland and of how attractive it is to them as a place to live and work, or why this is not an attractive option.

Over half of the graduates (58%) consider it attractive to live in North Jutland to a great or some extent. Graduates who have studied at an AAU campus in cities other than Aalborg are generally less likely to find Aalborg attractive. At the time when the graduates finish their PhD, most might have families, and their mobility is therefore low. There is little variation across the faculties in terms of how attractive it is to graduates to live in North Jutland.

Both Danish and non-Danish graduates find it attractive to live in North Jutland; also, there is no difference between graduates leaving or staying in Denmark after graduation.

Figure 10: Is it attractive for you to live in North Jutland?



3.3.1 Employment abroad

Some PhD graduates leave Denmark while others stay

Around half of the non-Danish graduates leave Denmark after graduation to find a job elsewhere. Only a few of the graduates (4) that left Denmark returned, some (13) found a job outside Denmark and left later.

The characteristics of graduates leaving Denmark are similar to graduates who stay. There is no pattern related to year of graduation. 57% of foreign ENG graduates, 50% of foreign SUND graduates and 43% of foreign TECH graduates leave Denmark after graduation. There is no citizenship-related pattern.

Graduates who live outside Denmark after completing their PhD were asked in the survey: “What was important to you in your choice of workplace outside Denmark?” Their main reasons for settling abroad have to do with the PhD graduate’s ties to family members in other countries, or the fact that they want to return to their home country. One-third of the replies also indicate that there are better job opportunities abroad, or that the graduates left Denmark as it was not possible to find a relevant position in Denmark. Some mention that the PhD programme at AAU did not sufficiently prepare international graduates to find a job in Denmark. A few find the lack of language skills to be a barrier.

A few enterprises in the interviews also mention a lack of Danish language skills as an obstacle to hiring non-Danish PhD graduates, especially if the job involves being in contact with clients or patients. There is also the issue of the cultural problems that may arise if a PhD graduate has a very different cultural background and is not familiar with Danish cultural and social norms. The following quote illustrates this point:

“If the PhD graduate has a technical education, then he or she may work in the corner of the University without any broader relationship to the Danish society. But if the job includes external relations and collaboration, then the cultural differences could be a challenge”.

Nevertheless, it is important to stress that, by contrast, almost one-third of the interviewed enterprises state that they employ non-Danish labour to a great extent and that they have positive experiences of foreign employees. This does not necessarily mean only AAU but also employees educated at universities abroad. Companies who employ graduates from ENG stand out in this regard, as they employ foreigners to a greater extent than the other two faculties. According to the interviewed ENG employers, the main explanation for this is an insufficient supply of qualified candidates with the skill-sets required in Denmark.

3.4 WHAT DO GRADUATES ASSOCIATE WITH A GOOD JOB?

Graduates value academic challenges, good colleagues and work/life balance

In addition to examining graduates' tasks and functions, the graduates were also asked which qualities they perceive as important in a good job. Figure 8 shows how the graduates value a list of 20 different qualities in a good job.

Three main qualities were found to be the most important. Each quality is very important to over half of the graduates. First, the professional environment seems to be very important to most graduates. 70% of the graduates find academic challenges to be of great importance and 51% find having highly professional colleagues to be of great importance. Academic challenges are the highest rated quality among those listed and evaluated.

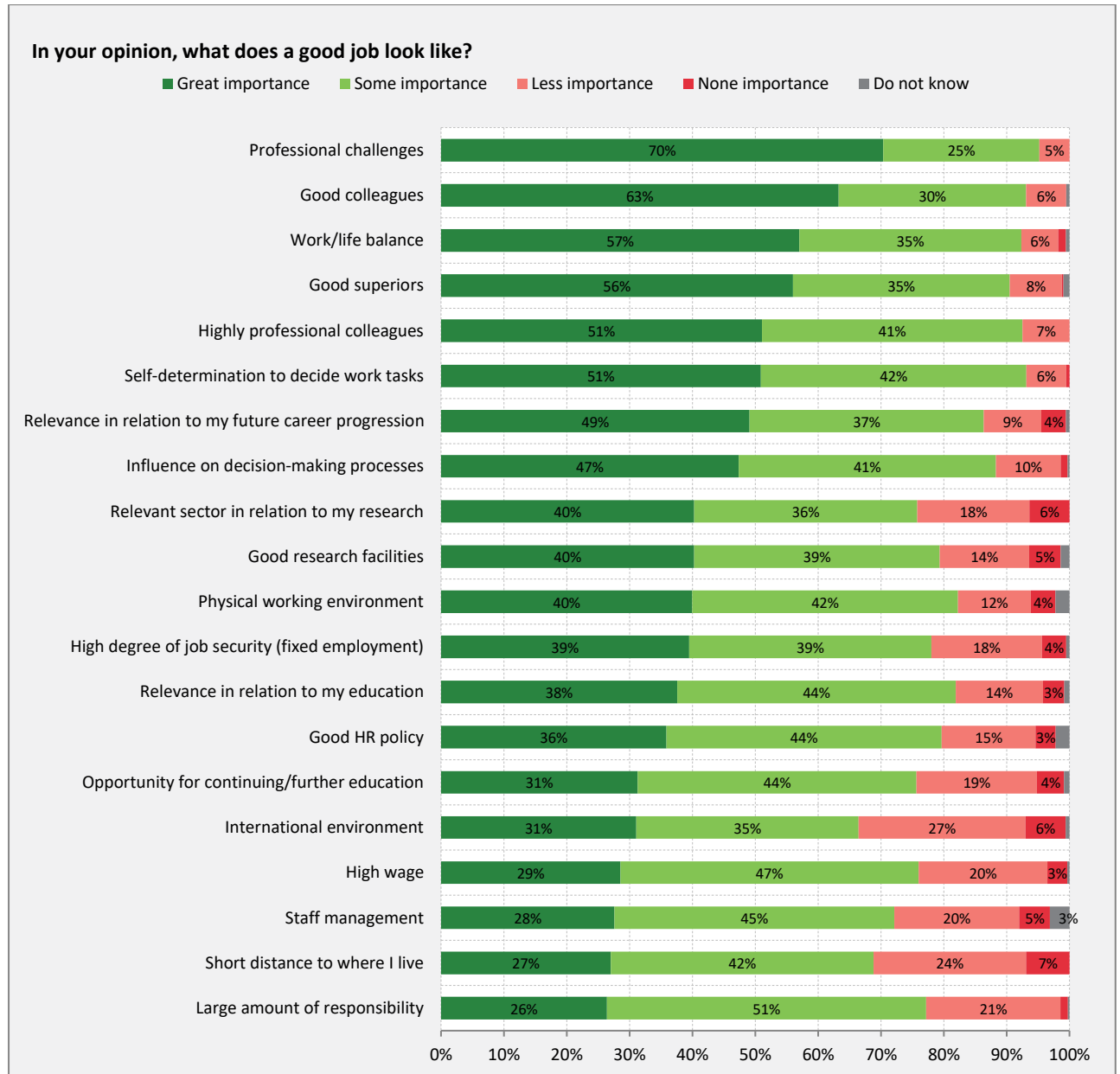
Secondly, good colleagues seem to be almost as important as good supervisors, as 63% and 56% respectively find it of great importance to have good colleagues and to have good supervisors. Thirdly, having personal influence on one's tasks and schedule is also very important to most graduates. 57% and 51% respectively think that his/her work/life balance and personal influence on tasks are of great importance or some importance. In a nutshell, academic challenges, a pleasant social environment and having personal influence on planning and deciding tasks are the main *need-to-have* factors that must be met when graduates are contemplating their *ideal* job.

Around 40–50% of the graduates find the relevance of the job in relation to his/her education, the relevance of the sector in relation to PhD graduate's research and good research facilities to be very important. Some of the less important qualities which fewer than 30% find important in relation to a good job are having a lot of responsibility, a short distance to work and staff-management responsibility.

One reason for the above findings may be that most graduates have a job at the time they respond to the survey and therefore value the social environment more than the job's relevance in relation to education and good research facilities – or that they take those issues for granted. From the short interviews with graduates, an opposite pattern was identified, namely that it could be hard to find a job related to the PhD. Some of those who did not have a job related to their PhD thesis singled this

out as a drawback of their current job. Especially, they would like the opportunity to innovate and develop more. In contrast, another finding is that some graduates with families and small children prioritise work-life balance over having work tasks in their field of PhD specialisation. In general, most of those with a job closely related to their PhD field of study seemed very satisfied with their job and described it as a dream job.

Figure 11. Qualities of a good job



4. TRANSITION TO THE LABOUR MARKET

This chapter examines graduates’ transition to the labour market. It examines how they get their first job and looks at which factors were the most decisive in getting their first job. Graduates’ considerations before, during, and after graduation are also analysed. Finally, the chapter describes the views of the enterprises relating to graduates’ transition to the labour market.

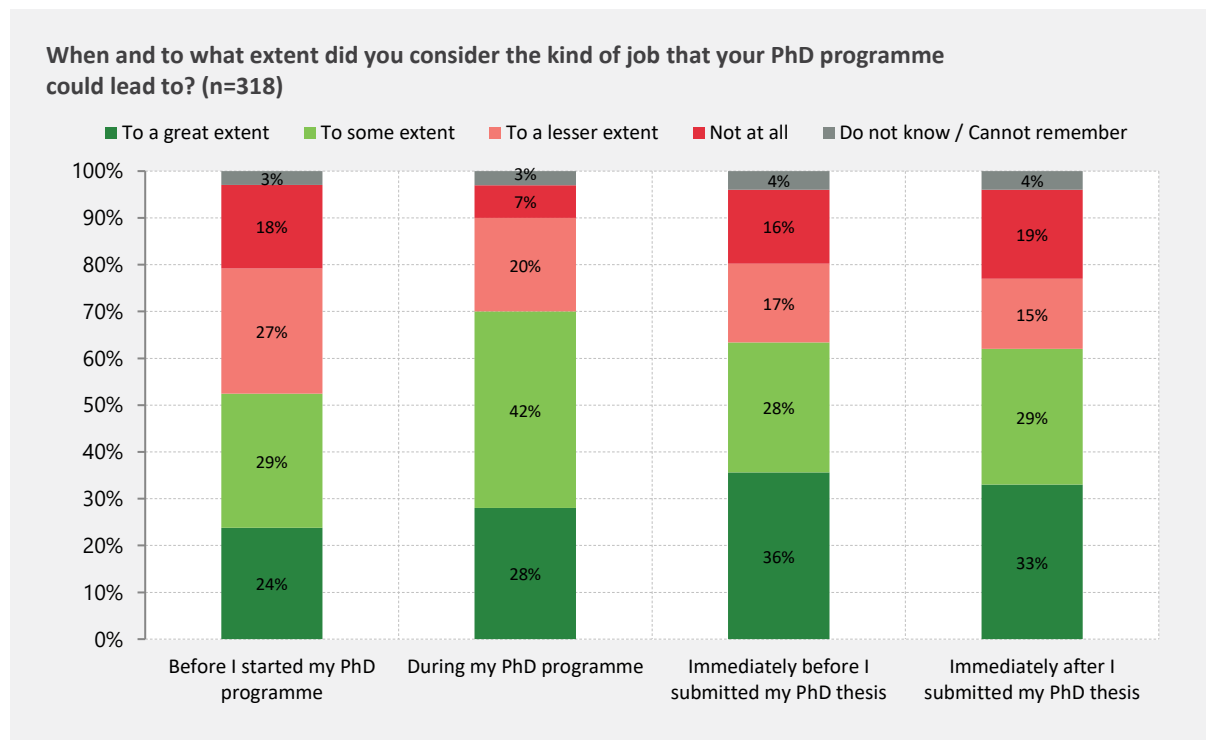
4.1 JOB CONSIDERATIONS DURING THE PHD PROGRAMME

Job considerations have no major impact on the PhD

Most graduates consider how they can use their PhD in their career either to some or a great extent. The number of students who seriously consider where their PhD will lead them increases slightly as they approach the end of the programme. Before they begin their PhD, 24% seriously consider which job the PhD programme will lead to. During the programme, this applies to 28%. Immediately before submitting the thesis 36% consider it to a high degree, while this number actually drops slightly to 33% after submitting their thesis. Even near the end of the PhD programme, serious job considerations apply to only one-third of the graduates, indicating that these considerations are not primary motivating factors to PhD graduates.

That said, it is noteworthy to point out that the time during their PhD studies stands out as the period when graduates have given greatest consideration to job opportunities to either some or a great extent.

Figure 12: To what degree did you consider which job or jobs your PhD education would lead to at the following times?



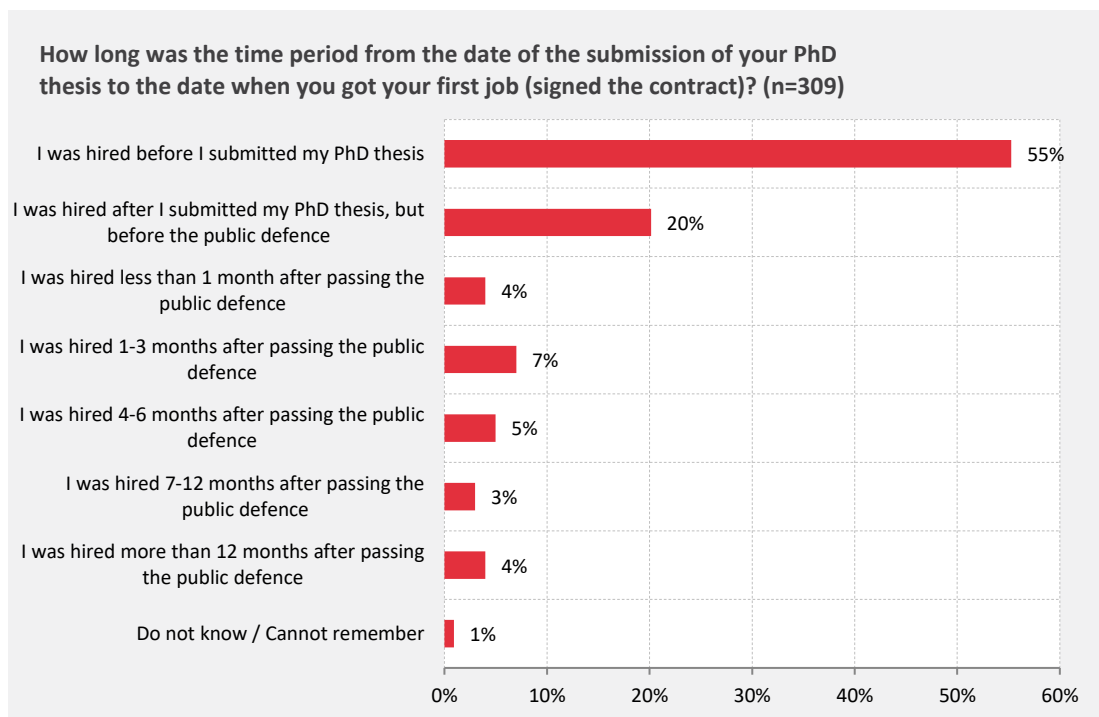
Furthermore, the results indicate that considerations about future jobs do not have a big impact on graduates’ choice of courses or the general content of their PhD. 60% of graduates reply that considerations about future jobs had little or no influence on their choice of courses. 17% reply that considerations about future jobs had a big influence. The same tendency applies in terms of whether job considerations influenced how students organised their PhD. 51% of graduates say that these considerations had little or no influence on the general content of their PhD, while 20% state that their job considerations influenced such decisions to a great extent.

4.2 JOB SEEKING AND EMPLOYMENT

There is a high demand for the graduates and few are unemployed

In general, the graduates’ transition to the labour market was relatively smooth. 75% of the graduates were hired before they defended their PhD thesis, while only 3% waited more than one year before signing their first employment contract. These results confirm a high demand for the graduates.

Figure 13: How much time elapsed between the time you submitted your thesis until you were hired for your first job (i.e. signed an employment contract)?



Part of the explanation of the short time that elapses between graduation and the signing of a contract is probably the facts that graduates generally apply for jobs early and their strong academic network, as we will show later.

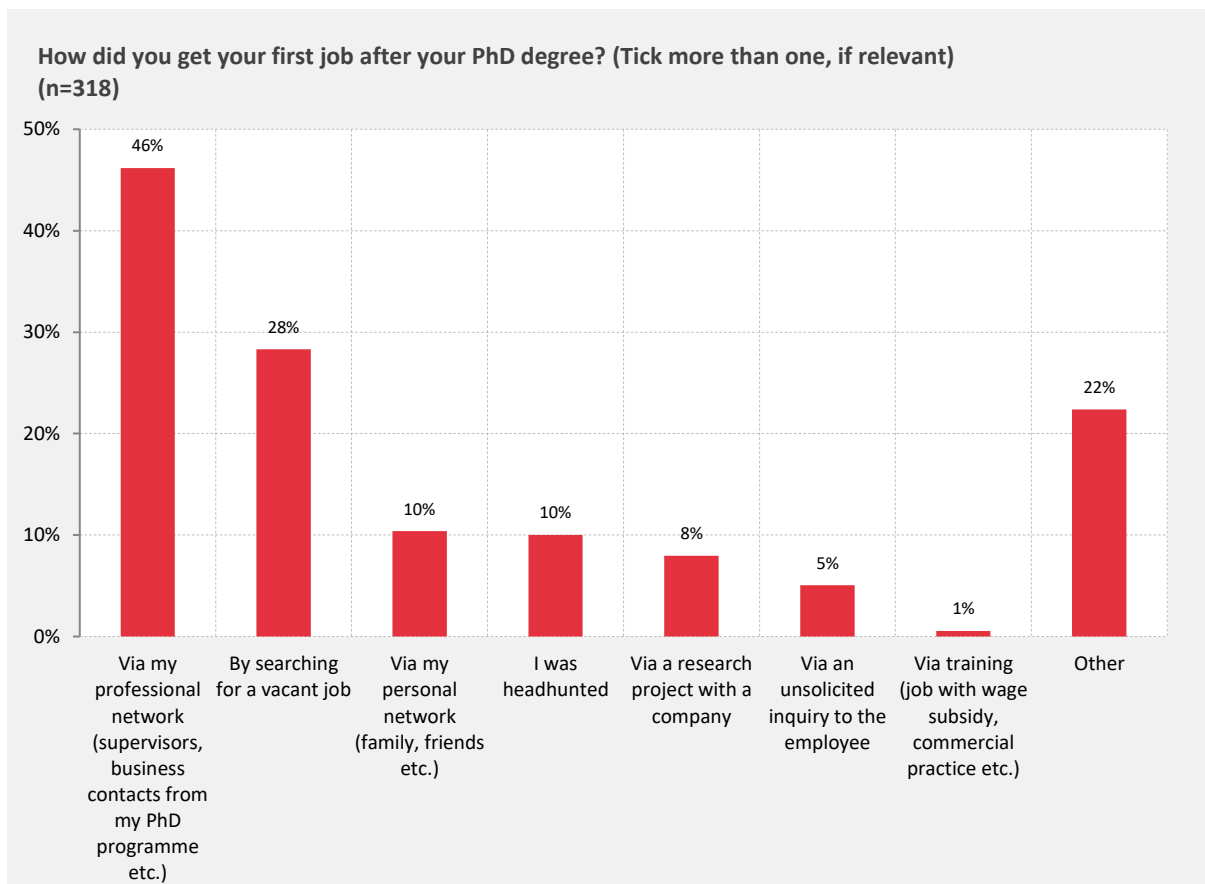
When gauging the variations across the three faculties, TECH graduates are employed fast as 84% of the graduates get their first job before defending their thesis. This applies to 77% of SUND graduates and 68% of ENG graduates. Hence, TECH graduates generally experience the smoothest transition to the labour market in terms of how quickly they find their first job.

Networks lead to the first job

The survey investigated how graduates find their first job. Most graduates find their first job through their networks, either academic (46%) or personal (10%). However, a relatively large number of graduates got their first job after submitting an application in response to a traditional job advertisement (28%). A smaller group were headhunted for their first job (10%).

This tendency emphasises the importance of graduates’ networks in relation to employment. A large part of this must be seen in relation to graduates’ PhD process, as the PhD programme is often characterised by collaboration with various enterprises and other relevant contacts during the years of study. Project-related ties and general collaboration between private and public enterprises and the university create opportunities for PhD students to form both personal, academic and professional networks before transitioning to the labour market.

Figure 14: How did you get your first job?



Note: Percentages add up to more than 100%, since respondents were allowed to give more than one answer.

Comparing the three faculties, the survey indicates that networks – both professional and personal – are particularly important to graduates of the ENG and TECH faculties, as 69% and 64% respectively of these graduates find employment through such channels. Networks are slightly less important to graduates of the SUND faculty (52%).

Closely related to the importance of network, the analysis shows that nearly half of the graduates (49%) got their first job without submitting an actual application. 33% of the graduates were employed after applying for 1 to 5 different positions. The fact that nearly half of the graduates do not actually apply for their first job underlines the importance of network and shows that personal and especially professional ties are much more important than traditional applications in terms of employing graduates. The networks make it optional for graduates to formally apply for jobs as the graduates often have relations to enterprises or institutions which end up shaping the graduates' job opportunities.

4.3 EMPLOYERS FIND RELATIVELY FEW CHALLENGES WITH THE TRANSITION TO THE LABOUR MARKET

In general, the interviewed enterprises find that the PhD graduates' transition from study programme to labour market is reasonably smooth. Although most experience minor challenges, these challenges are no different from the challenges associated with other newly-qualified employees.

Personality determines how graduates adapt to the labour market

Several enterprises express that a transition period for graduates is a matter of course. Entering the labour market is always challenging as the conditions of working at a job clearly differ from the study environment. However, as mentioned, this does not differ considerably among PhD and MSc graduates. Essentially, more enterprises emphasise personality as the key to a smooth transition to the labour market. The importance of personal qualifications is elaborated with a statement of an interviewed enterprise:

"I had no doubt that the man was extremely intelligent and a fantastic employee but it all comes down to personality. As an employer, we have to decide whether the graduate's personality fits in with our corporate culture."

Thus, it is argued that personal skill-sets determine how enterprises will be able to exploit the scientific expertise that the graduates have acquired during their PhD programme.

Graduates are required to commercialise their way of working

Even though adapting to the labour market is generally deemed a matter of course for every new graduate, it should be mentioned that several interviewed enterprises argue that PhD graduates actually do have to deal with slightly different challenges than MSc graduates. PhD programmes require students to conduct in-depth research – much more of what is required of MSc graduates – which creates differences in how graduates approach the labour market.

In particular, the conditions under which a student works on a PhD project are considerably different from the conditions of working on a job. Research as a part of the PhD programme has a longer time frame and plenty of opportunity to go into detail, while the facts of life are different in a public-sector or private-sector enterprise employing PhD graduates. Here, PhD graduates must learn to meet tight deadlines and accept that creating value in the short term takes priority over in-depth

work that creates value in the long term. Consequently, in some circumstances or at some workplaces, PhD graduates must acknowledge that the desired professional level is lower than their own, thereby requiring them to ease up on their professional pride in order to carry out the assignment as ordered. One enterprise cites the following example:

“What matters is that they are able to deliver without spending too much time looking at every tiny detail when only 90% of the project is completed.”

However, these kinds of problems are only mentioned by a few interviewed enterprises.

Thus, the graduates’ ability to tone down their in-depth working methods is an important part of a smooth transition to the labour market, as most enterprises require a more commercialised approach. Several of the interviewed enterprises also explain that they try to align expectations with the PhD graduates in the job interviews, so that they employ the candidates who want to work where there is greater focus on application than research.

The commercialisation requirement seems more evident among smaller enterprises as they typically offer less specialised positions. Larger enterprises on the other hand, offer more specialised positions where more in-depth research tasks are being executed, which allows graduates to continue a work approach more similar to their research tasks during their PhD programme. In relation to this, the transition is deemed smoother for PhD graduates if their assignments primarily involve research and development, which means especially positions as research specialists and generalists (see section 5.5.1). In these instances, the time frame is longer and thereby more similar to the situation the graduates are already familiar with from their PhD programme. One enterprise says:

“Our world is not very different from a university environment. There may be a little more contact, but the way of working professionally on projects is not very different.”

5. ACQUIRED SKILLS AND EXPERTISE

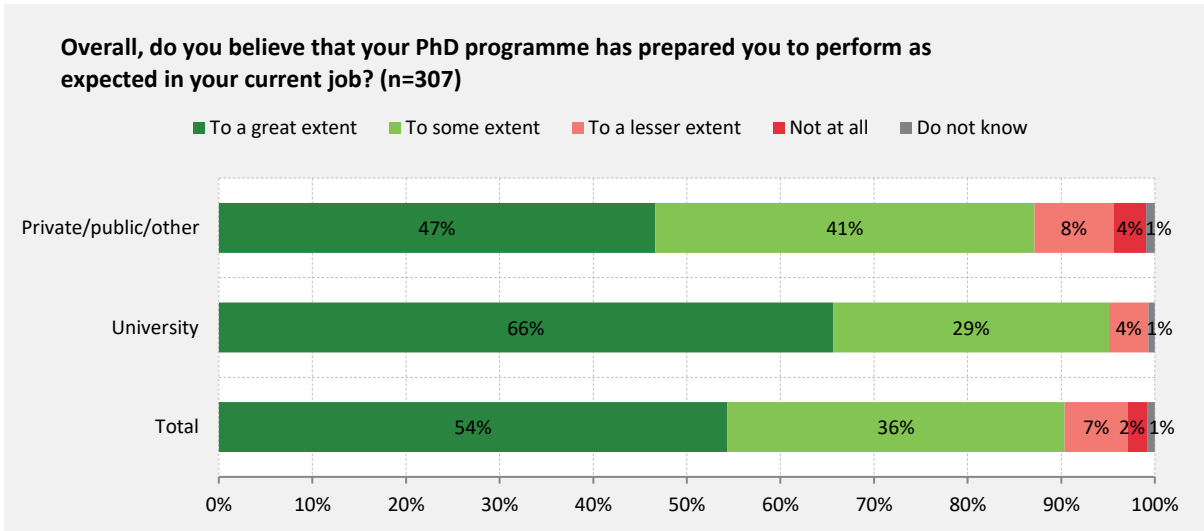
This chapter examines how graduates view the relevance of the skill-sets they have acquired during their PhD programme, and not least match their acquired skill-sets to the skill-sets deemed relevant by graduates for their future career. Finally, it describes the skill-sets in demand by the interviewed enterprises and their assessment of how skill-sets match up.

5.1 RELEVANCE OF ACQUIRED SKILLS

Graduates believe that their studies have prepared them to perform in their current job

54% of the graduates believe that their PhD programme has prepared them to a great extent for their present job, and a further 36% believe this is the case to some extent. Relatively few (2%) feel that their PhD programme has not prepared them at all for their present job. Thus, the general picture is that the programme prepares the vast majority of graduates for their current work functions. As can be seen from Figure 15, this applies to a significantly larger percentage of graduates working at the university than to other graduates. This is a natural result, as the tasks at the university are more similar to how graduates worked during their PhD studies, whereas working on a job will more often require graduates to obtain new skill-sets as the tasks they work on here are much different from studying at the university. This notion is confirmed broadly when talking with the enterprises. The graduates’ answers show no significant connection to their faculty.

Figure 15: Overall, do you believe that your PhD programme has prepared you to perform as expected in your current job?



Elaborating on the skill-sets of PhD graduates, we examine the extent to which graduates apply their specialised knowledge from their PhD research field to their current job. 51% experience a great extent of correlation between their gained specialised knowledge and the tasks they perform at their current job. An additional 31% find this correlation to be present to some extent.

This segment of PhD graduates elaborates on this connection by pointing out that they use the same methods, research and technical skills which they acquired during their PhD studies. Others mention that they work in the same field of research. On the other hand, 16% of the graduates stated that they use their specialised knowledge to only a lesser extent or not at all in their current job and thus experience only insignificant expertise overlap.

Here, too, there is no significant variation in this pattern among PhD graduates of the TECH, ENG and SUND faculties.

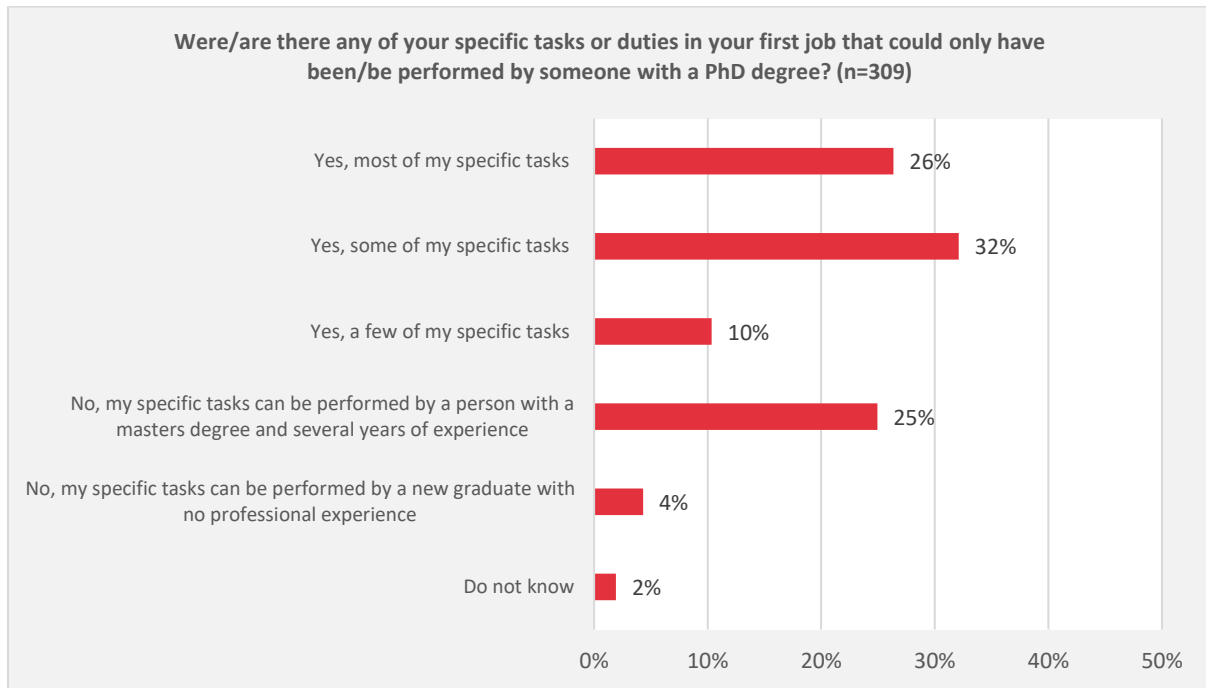
Graduates believe that the PhD programme gave them skill-sets that colleagues with an MSc degree followed by three years of work experience have not acquired

In their first job after graduating from the PhD programme, 59% of the graduates worked alongside colleagues with an MSc and three years of work experience. This means that these colleagues had obtained comparable seniority after completing their MSc.

We have examined how PhD graduates perceive their own skill-sets in relation to these colleagues. More than half (60%) believe that they have better skill-sets than their colleagues with an MSc and three years' work experience. For instance, the PhD graduates draw attention to their academic skill-sets relating to research, analytical methods and the ability to disseminate research findings. By contrast, 23% of the PhD graduates do not believe that they are more proficient than graduates with an MSc followed by several years of work experience. The remaining 20% felt that they did not have sufficient knowledge of the subject to respond. It is worth emphasising here that this refers to the graduates' perception of their levels of proficiency and that it is not possible to verify whether the graduates also think that they had better skill-sets than their MSc colleagues before the PhD graduates started the PhD programme.

In terms of PhD graduates' specialised knowledge and skill-sets, we also looked at how graduates perceive the duties and tasks of their first job. This examination shows that most PhD graduates work on tasks related to their level of specialisation. 26% state that most of their specific tasks can only be performed by PhD graduates. 32% state that this is true of only some of their tasks while a smaller group (10%) state that only a few of their specific tasks can only be performed by PhD graduates. Thus, 68% of PhD graduates perceive that they apply their acquired skill-sets from their PhD studies to a greater or lesser extent. By contrast, 29% of the graduates state that all of their specific tasks can generally be executed by MSc graduates though most of these tasks require several years of on-the-job experience. Further examination of this issue shows no significant difference between graduates of the ENG, TECH and SUND faculties.

Figure 16: Were/are there any of your specific tasks or duties in your first job that could only have been/be performed by someone with a PhD degree?

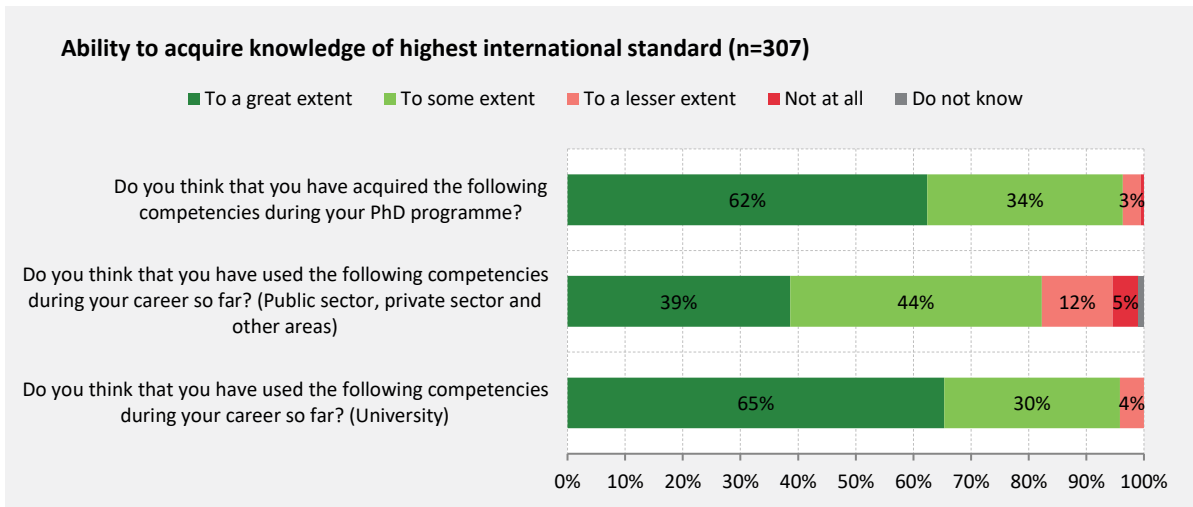


5.2 RESEARCH SKILL-SETS

Ability to acquire knowledge of highest international standard

Almost all graduates (96 %) believe that their PhD studies have given them the skill-sets to acquire knowledge in their field of research of highest international standard to a great or some extent. Graduates of the TECH, ENG and SUND faculties manifest no significant differences in this respect. Graduates working at a university perceive these skill-sets to be the most relevant in their day-to-day work. Thus, 78% state that these skill-sets are highly relevant. At private-sector workplaces and public-sector workplaces other than universities, this is also one of the skill-sets of greatest relevance, though not quite to the same extent, as 44% of these graduates state that these skill-sets have been highly relevant to their careers so far. There is no significant variation in the application of these skill-sets among graduates of the TECH, ENG and SUND faculties.

Figure 17: Ability to acquire knowledge of highest international standard in your field of research

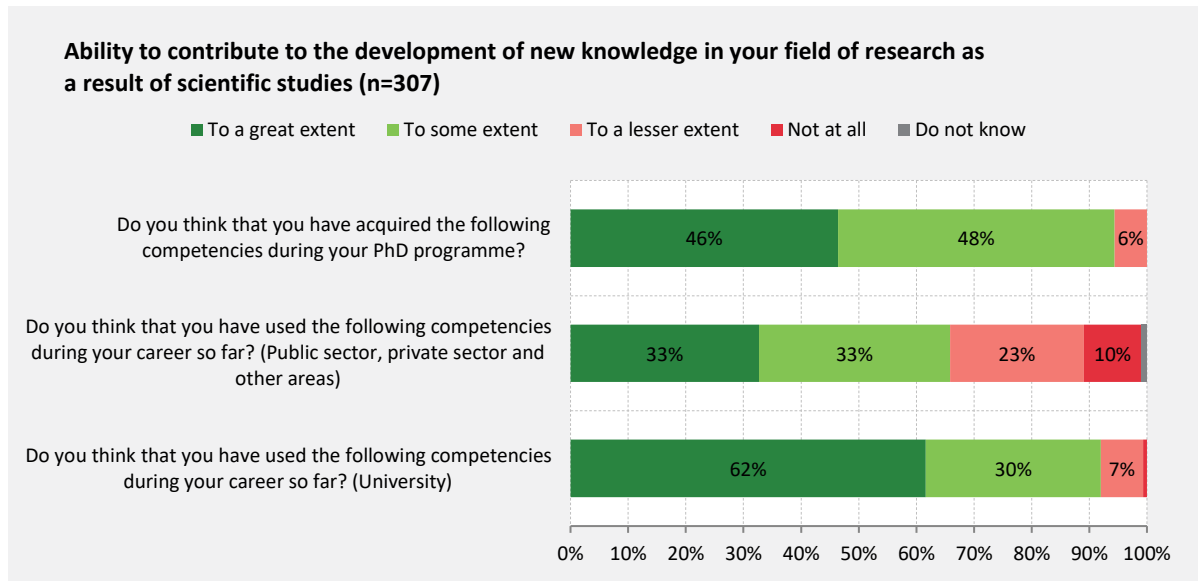


Ability to contribute to the development of new knowledge based on scientific studies

94% of the respondents state that they have acquired the skill-sets necessary to contribute to the development of new knowledge in their field of research to a great or some degree as a result of scientific studies during their PhD programme. There is no significant variation of this perception among graduates of the three faculties.

The ability to contribute to the development of new knowledge as a result of scientific studies is deemed highly relevant by 62% of the graduates working at a university and by 33% of graduates at other workplaces in the private or public sector. These skill-sets are therefore deemed substantially more relevant to graduates working at a university. An examination of these skill-sets’ relevance among graduates of the three faculties reveals that graduates of the SUND faculty applied these skill-sets to a significantly greater extent than graduates of the ENG faculty.

Figure 18: Ability to contribute to the development of new knowledge in your field of research as result of scientific studies



Proficiency in applying scientific methodology

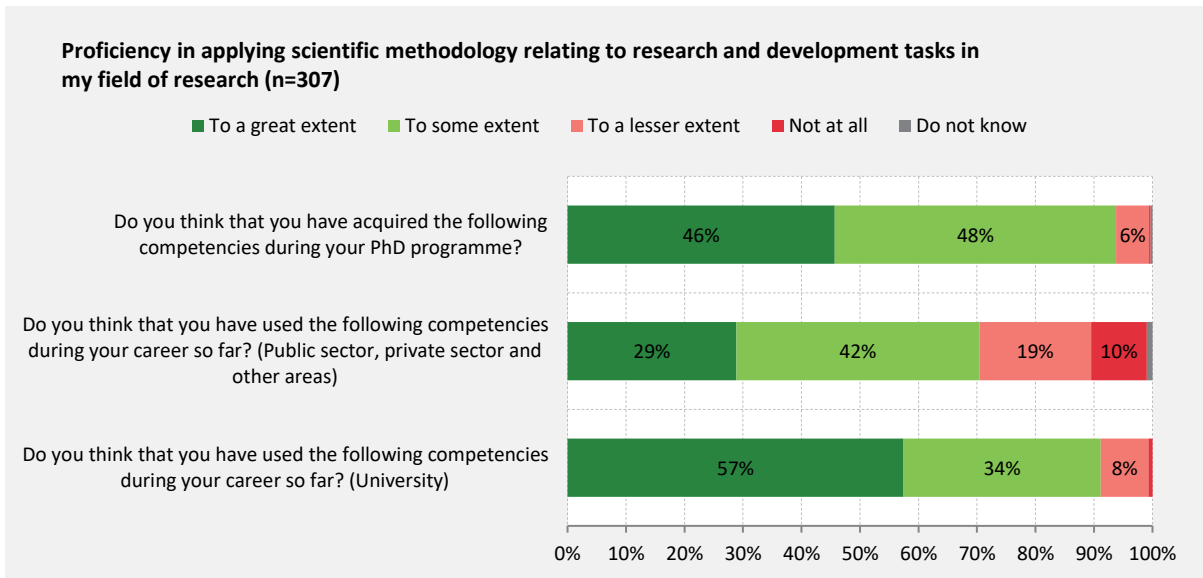
46% of the graduates believe that during their PhD studies they acquired a high degree of proficiency in applying scientific methodology relating to research and development tasks in their field of research, while this is true to only some degree of 48% of the graduates. There is no significant variation among graduates of the three faculties in this perception.

Proficiency in applying scientific methodology is highly relevant to graduates working at a university (46%) while 48% of graduates working at the university has used this proficiency to some extent.

This proficiency is also relevant to the careers of graduates who have found work in other workplaces in either the private or public sector. 29% of the graduates working in these sectors have applied this proficiency to a great extent, while 42% have applied it to some extent. Thus, the proficiency in applying scientific methodology relating to research and development tasks is generally more relevant to graduates working at a university which also generally corresponds to the tasks and duties at universities, as these are more research-related than tasks at other workplaces.

There is no significant variation among graduates of the three faculties in terms of this perception.

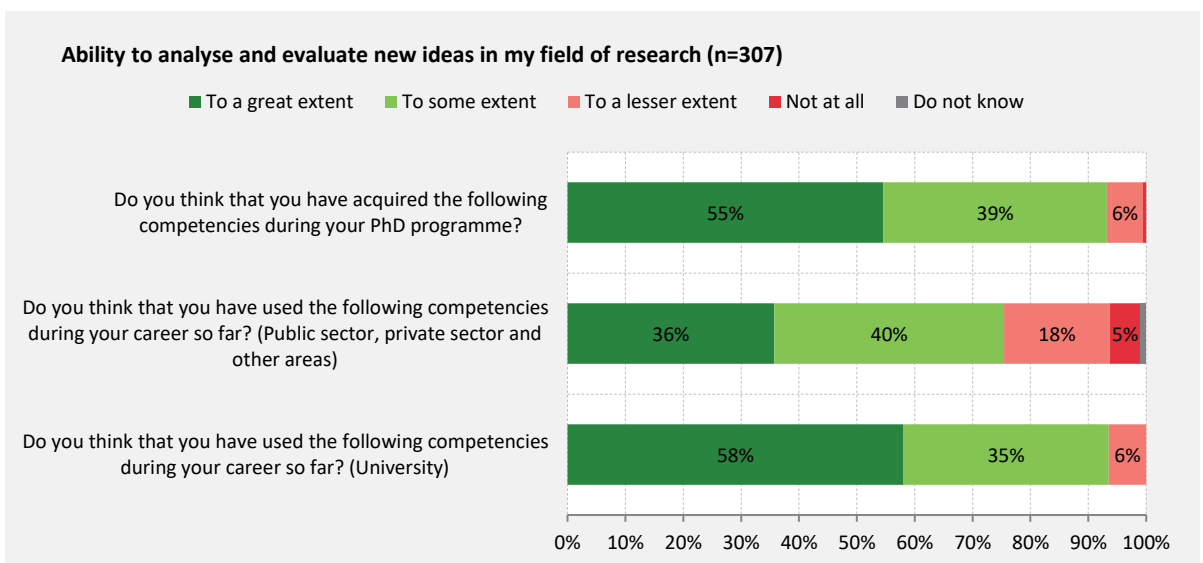
Figure 19: Proficiency in applying scientific methodology relating to research and development tasks in my field of research



Ability to analyse and evaluate new ideas

94% of the graduates respond that they acquired the ability to analyse and evaluate new ideas to a great or some degree during their PhD studies. The ability to analyse and evaluate new ideas to a great extent applies to 58% while applying it to some extent is true of 35% of the graduates employed. On the other hand, 36% and 40% of the graduates employed in other sectors have used this competency. As with the previously discussed skill-sets, applying this ability seems more relevant to graduates working at a university. There is no significant difference among graduates of the TECH, ENG and SUND faculties regarding how they perceive of their acquisition or application of this ability.

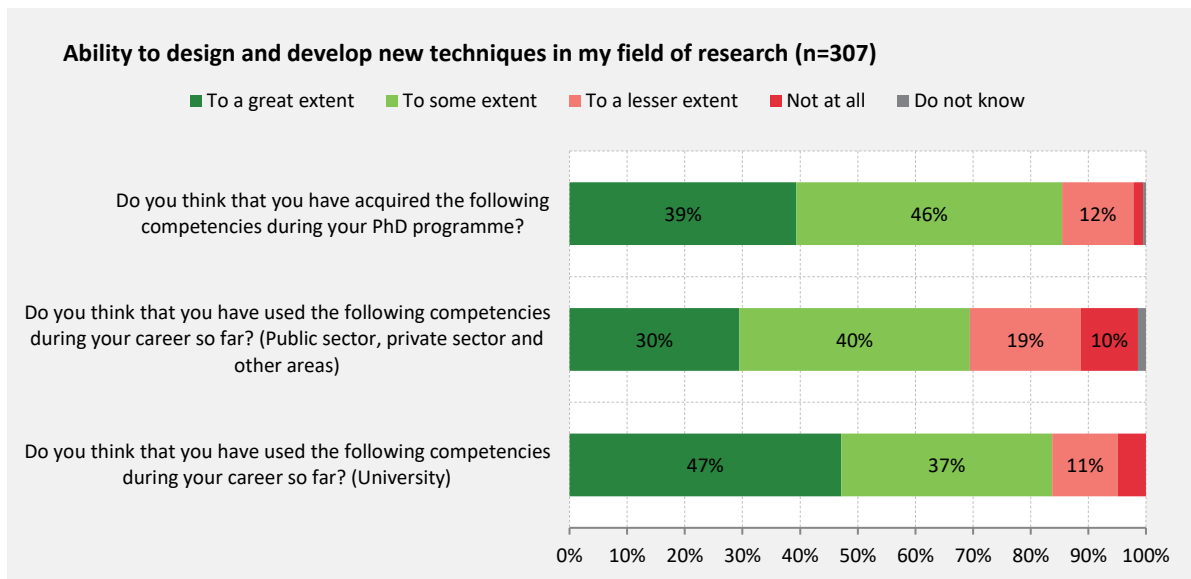
Figure 20: Ability to analyse and evaluate new ideas in one’s field of research



Ability to design and develop new techniques

85% of the respondents believe that they have acquired the ability to design and develop new techniques in their field of research to a great or some degree during their PhD studies. Thus, this ability is the least prevalent among the graduates through their PhD programme. 70% of the graduates employed at workplaces other than at a university in the private or public sector respond that they have used their ability to design and develop new techniques to some or a great extent in their careers so far. This applies to a higher percentage (84%) of the graduates working at a university. There are no substantial observable differences among graduates of the TECH, ENG and SUND faculties in terms of how they perceive their acquisition or application of this ability.

Figure 21: Ability to design and develop new techniques in one’s field of research

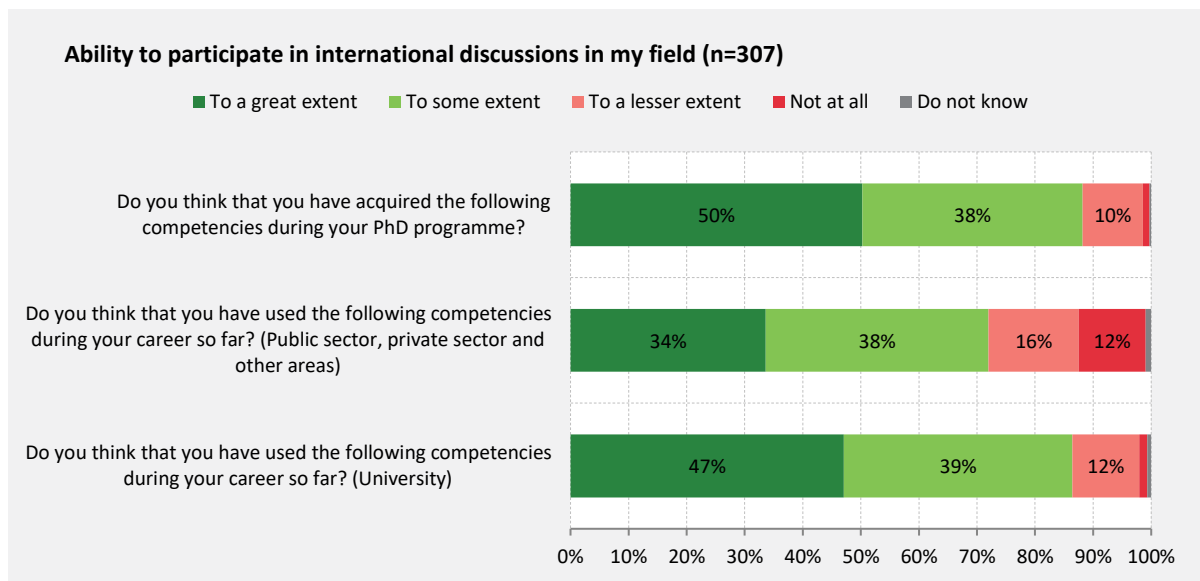


5.3 PERSONAL SKILL-SETS ASSOCIATED WITH DISSEMINATING KNOWLEDGE AND PROJECT MANAGEMENT

Ability to participate in international discussions

88% of the graduates believe that they have acquired the ability to participate in the international discussions in their field of research to a great or some degree during their PhD studies. The ability is deemed more relevant among graduates employed at a university (47% respond “to a great degree”) than for those employed in workplaces outside a university (34% respond “to a great degree”). There is no significant observable difference among graduates of the TECH, ENG and SUND faculties in terms of their perception of acquisition or application of this ability.

Figure 22: Ability to participate in international discussions in one’s field

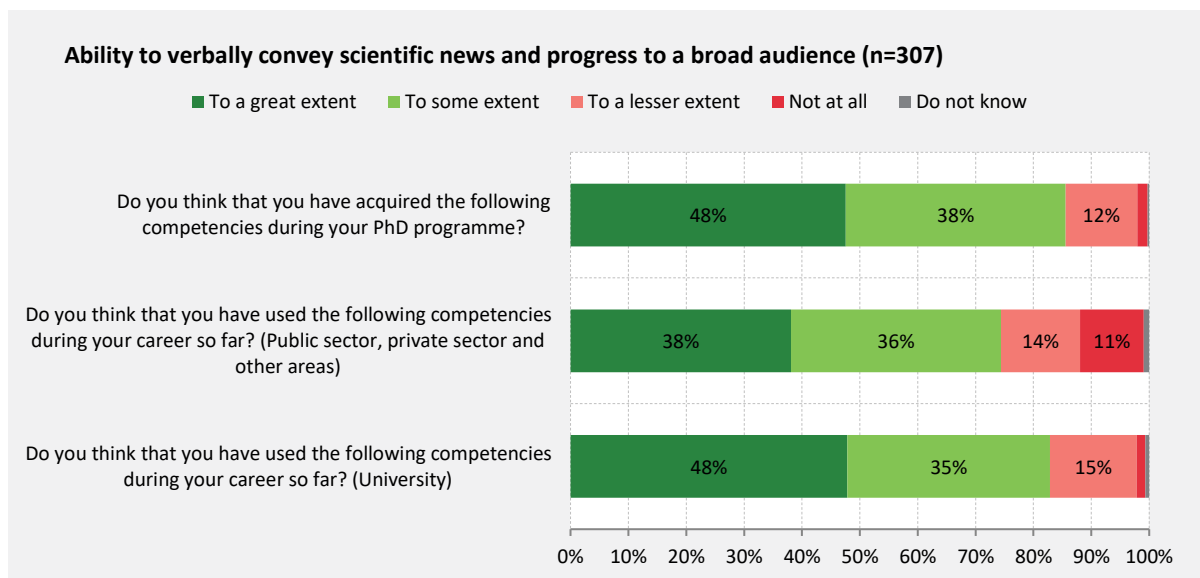


Ability to verbally convey scientific news and progress

Oral presentation is relevant to graduates, regardless of where they work. 86% of the respondents state that they have acquired oral presentation skills to a great or some degree during their PhD studies. This ability has been used by slightly more graduates employed at a university. 48% of the graduates employed at a university state that the ability must be used to a great extent while this is true of only 38% of the graduates employed outside a university.

There are no substantial observable differences among graduates of the TECH, ENG and SUND faculties in terms of their perception of the acquisition or application of this ability.

Figure 23: Ability to verbally convey scientific news and progress to a broad audience



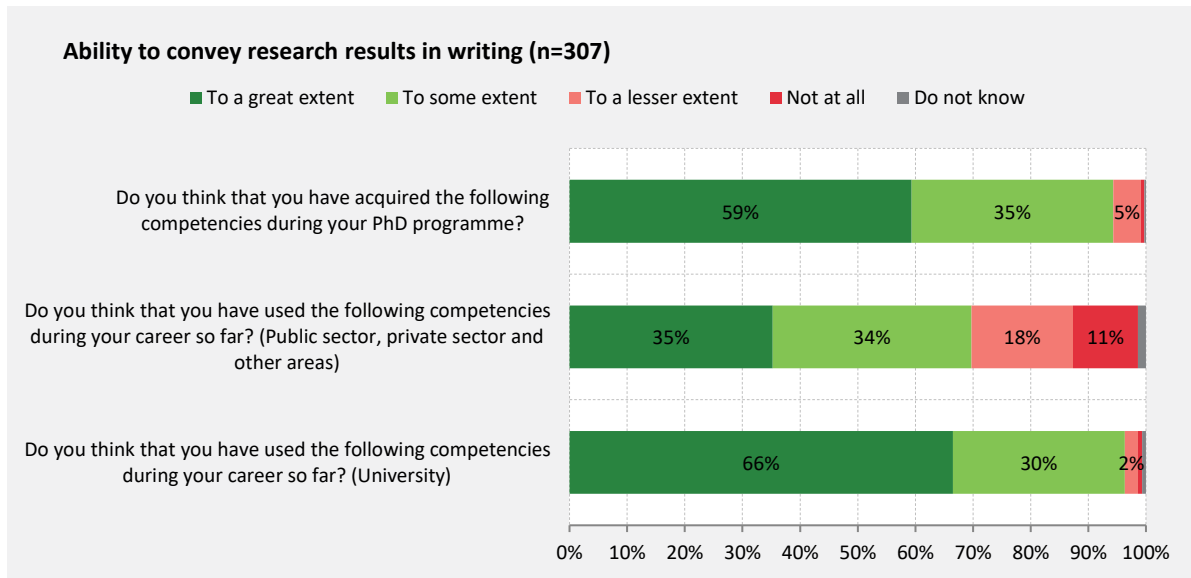
Ability to convey research results in writing

The ability to convey research results in writing is a skill that 94% of the graduates believe they have acquired to a great or some extent during their PhD studies. This skill is deemed the most relevant

among those employed at a university. 66% of university employees state that they have used this skill to a great extent during their career so far. The ability to disseminate knowledge in writing is more relevant to graduates working at a university as considerably fewer graduates (35%) employed at a workplace other than a university use this skill.

There is no significant difference among PhD graduates of the TECH, ENG and SUND faculties in terms of their perception of how they use this skill.

Figure 24: Ability to convey research results in writing

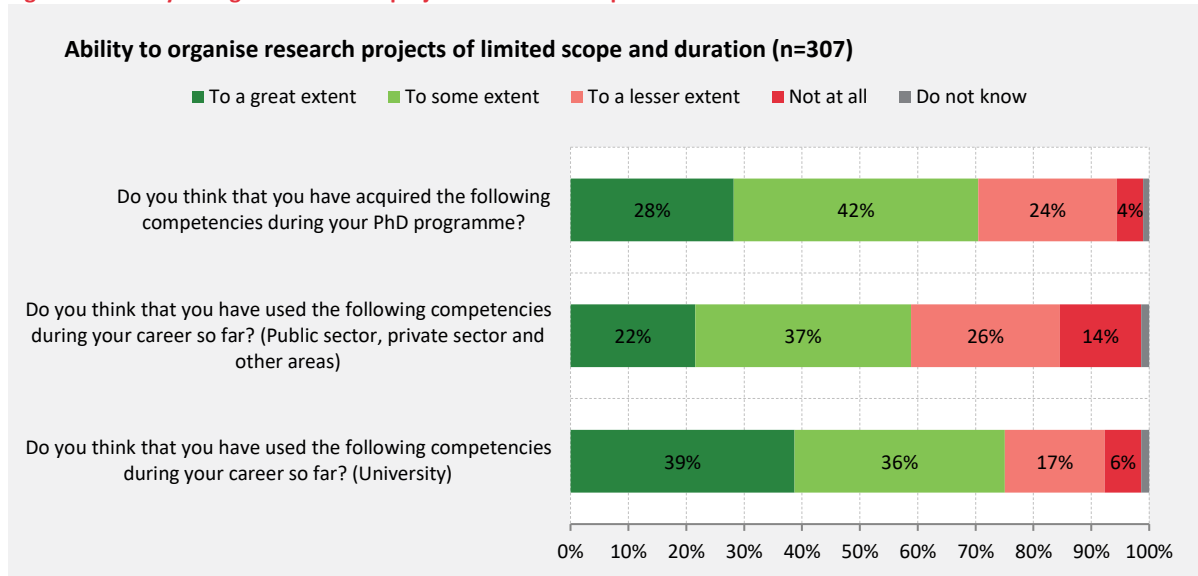


Ability to organise research projects

Compared with the formerly examined skill-sets, fewer graduates believe they have acquired the ability to organise research projects of limited scope during their PhD studies. 28% agree that they have acquired this skill to a great extent, and a further 42% believe that it applies to some degree (totalling 70%). There is no significant observable difference among graduates of the three faculties in terms of their perception of the acquisition of this ability.

The ability to organise research projects of limited scope is deemed most relevant to graduates employed at a university, as 39% state that they have used this skill to a great extent. Graduates employed outside a university have used this skill to a lesser extent, as only 22% state that they have used the skill to a great extent during their career so far. Finally, graduates of the SUND faculty (42%) have used this skill to a significantly greater extent during their career compared to graduates of the ENG faculty (22%).

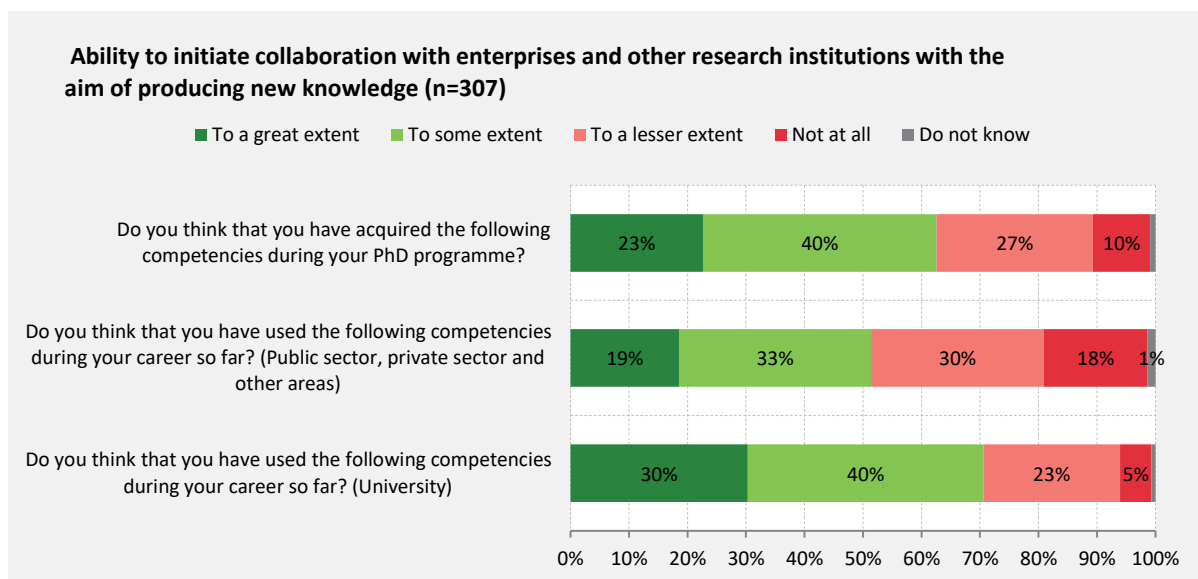
Figure 25: Ability to organise research projects of limited scope and duration



Ability to initiate collaboration with enterprises and other research institutions

63% of the graduates feel that they have acquired the ability to initiate collaboration with other enterprises or research institutions to a great or some extent with the aim of producing new knowledge. Thus, the lowest percentage of graduates believe that they have acquired this skill. As with all the previously examined skill-sets, this skill is deemed more relevant to graduates working at a university. 30% of the graduates working at a university and 19% of graduates working outside a university have used this skill to a great extent during their career. There are no differences among graduates of the three faculties in terms of how they perceive their acquisition or application of this ability.

Figure 26: Ability to initiate collaboration with enterprises and other research institutions



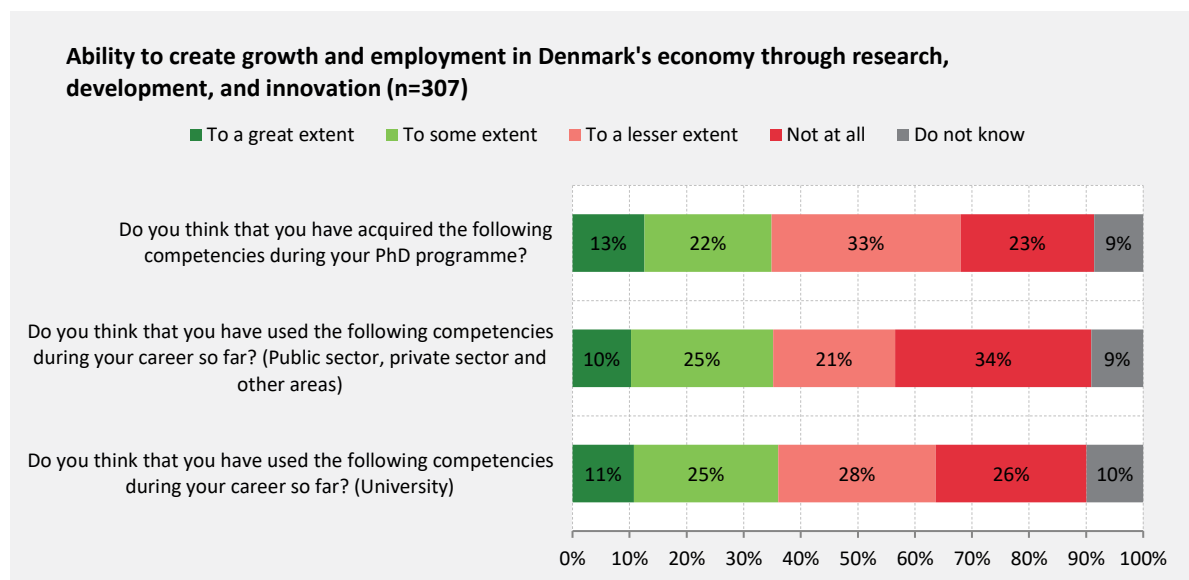
Ability to create growth and employment in Denmark’s private sector through research, development, and innovation

Of all the skill-sets whose relevance the graduates have been asked to evaluate, the ability to create growth and employment through research, development, and innovation is the one which the fewest deem to have acquired, and similarly, the fewest believe that it has been relevant to them in their careers so far. A significantly higher percentage of graduates of the ENG faculty (18%) deem that they acquired this ability to a great extent during their PhD studies compared with graduates of the SUND faculty (3%). Moreover, a significantly higher percentage of graduates (40%) of the SUND faculty perceive that they have not acquired this ability at all compared to graduates from both the ENG (19%) and TECH faculties (21%).

35% of the graduates believe that they have acquired the ability to create growth and employment to a great or some extent. A largely corresponding number of graduates believe that this ability has been relevant to their career. 36% of the graduates employed at the university and 35% employed outside the university have used the ability to a great or some extent during their career.

The career-related relevance of this ability among graduates of the three faculties correlates to some degree with the observed acquisition of this ability. A significantly higher percentage of SUND graduates perceive that they did not acquire the ability to create growth and employment in Denmark’s private sector, which explains why significantly fewer of these graduates have not used it at all during their career compared to graduates of the other two faculties.

Figure 27: Ability to create growth and employment in Denmark’s private sector through research, development, and innovation



Development of patented technologies, software, etc.

The survey also examines whether graduates have developed technologies, software that have been patented during their PhD studies. 10% of all graduates have developed patented technologies relating to their PhD programmes at some point. This trend is more prevalent among TECH graduates (15%) and less prevalent among ENG graduates (6%).

When focusing on graduates' collaborations with private and public enterprises in relation to his/her PhD programme, 55% state that they have collaborated with external enterprises. Conversely, this trend is more prevalent among ENG (69%) and TECH graduates (56%), while it is true of SUND graduates to a much lesser extent (17%).

5.4 THE GAP BETWEEN ACQUIRED SKILLS AND SKILLS GRADUATES PERCEIVE AS RELEVANT TO THEIR CAREER

As the survey shows in the previous section, the vast majority of graduates have a positive assessment of the programme in terms of the skill-sets they have acquired and the professional relevance of these skill-sets. Thus, for most of the targeted skill-sets, there is a correlation between the number who believe that they acquired a skill-set to a great or some extent, and the number who believe that the ability is relevant to the labour market. At the same time, there is often a correspondence at individual level, so that the graduates who reply that a skill-set is relevant also reply that they have acquired the skill-set.

When focusing on the match between the skill-sets which the graduates deem relevant to their careers and the skill-sets they have in fact acquired, there are some variations among the perceptions of graduates employed at a university, employed outside a university and generally across graduates of the different faculties.

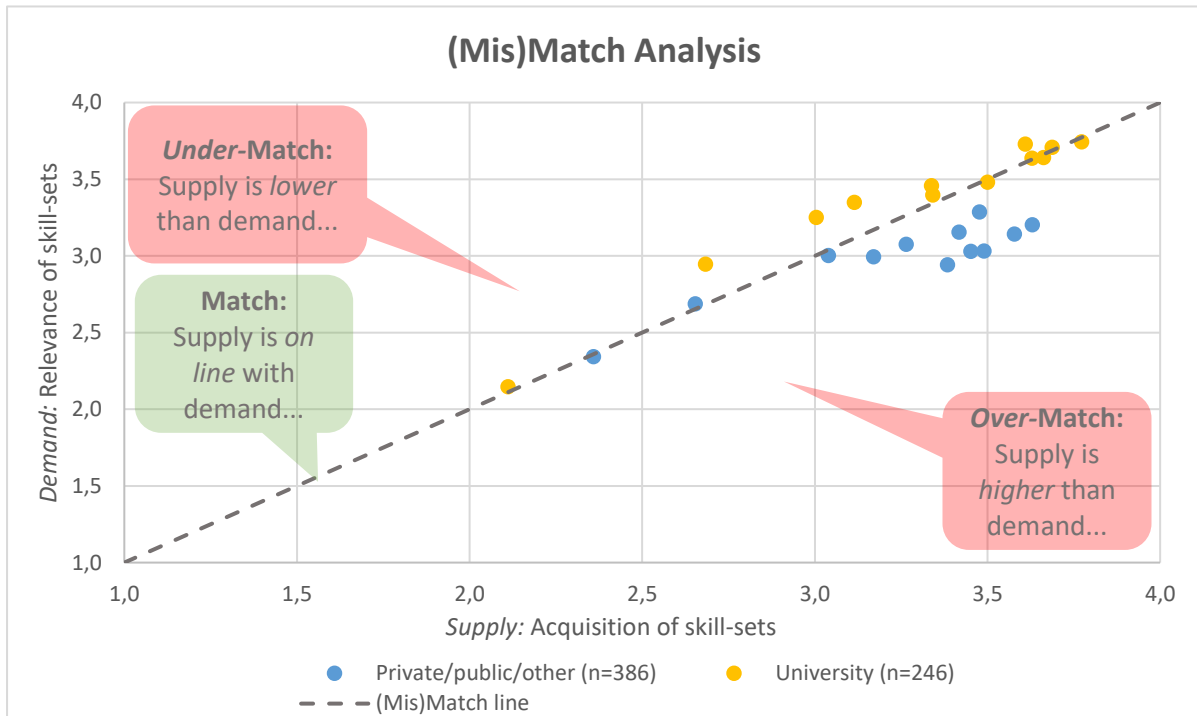
Figures 28 to 31 illustrate the match of skill-sets, where the y-axis (vertical) shows the degree to which the graduates deem the skill-set to have been relevant to their career so far (demand), and the x-axis (horizontal) shows the degree to which they have acquired the skill-set (supply).

The green dots indicate the replies of university employees while the red dots indicate the replies of from employees at other workplaces in the private or public sector.

A dot above the broken line indicates that the graduates deem that a skill-set is more relevant or more in demand compared to whether they have actually acquired it (a so-called under-match). A dot below the broken line indicates that the graduates deem a skill-set less relevant or less in demand compared to whether they have actually acquired it (a so-called over-match). A dot on the broken line or close to the broken line indicates a match between the supply and demand of a given skill-set.

The figure below shows an overview of the match between the supply and demand of skill-sets. The two following figures focus on scientific and supportive skill-sets respectively.

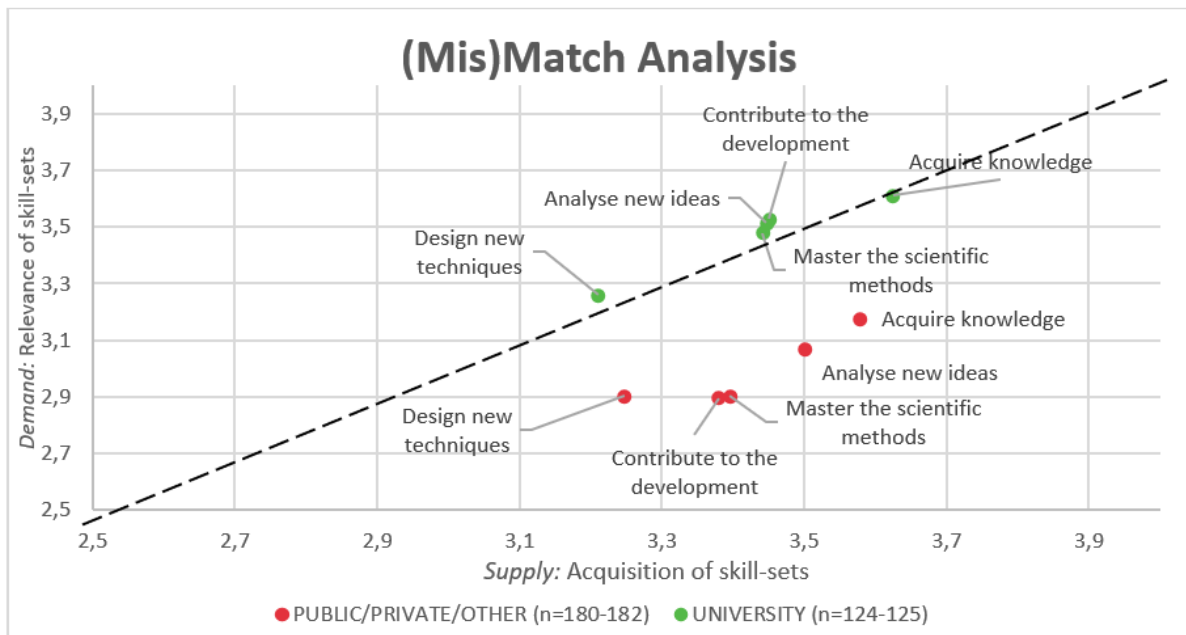
Figure 28: (Mis)Match Analysis – an overview



Note: The graph’s y-axis indicates the extent to which graduates believe that the skill-set was relevant to their careers so far, and the x-axis indicates whether they have acquired the skill-set during their PhD studies. If the y-axis value is 4, it corresponds to all graduates answering ‘to a high degree’, while the value of 1 corresponds to all graduates answering ‘not at all’.

Figure 29 compares the scientific skill-sets of graduates employed at a university (green) and of graduates employed at other workplaces in the private or public sector (red). The ability to acquire knowledge is perceived by graduates employed at a university as well as other workplaces in the private or public sector as the most highly acquired scientific skill-set and the most relevant skill-set. Conversely, the ability to design new techniques is perceived by graduates as the least acquired skill-set throughout the PhD programme and the least relevant skill-set on the labour market, out of all the skill-sets studied.

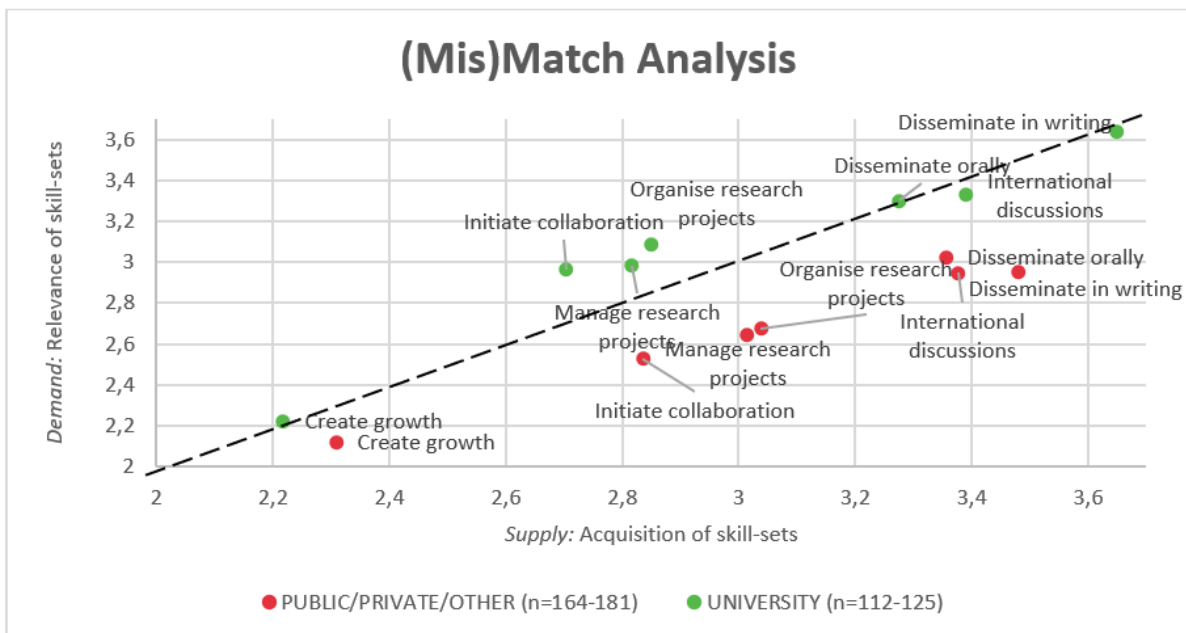
Figure 29: (Mis)Match Analysis – Scientific Skill-sets



Not surprisingly perhaps, graduates employed outside a university consider the supply of all skill-sets to be greater than the actual demand for the skill-sets outside the university. Conversely, graduates working at a university consider the demand for and the supply of the skill-sets to be more equal, with only a slight *under-match* of some skills.

If we instead look at the supporting skill-sets (Figure 30), the ability to disseminate in writing is perceived as the most acquired supporting skill-set and the most relevant skill-set by graduates working at a university and graduates at other workplaces in the private or public sector.

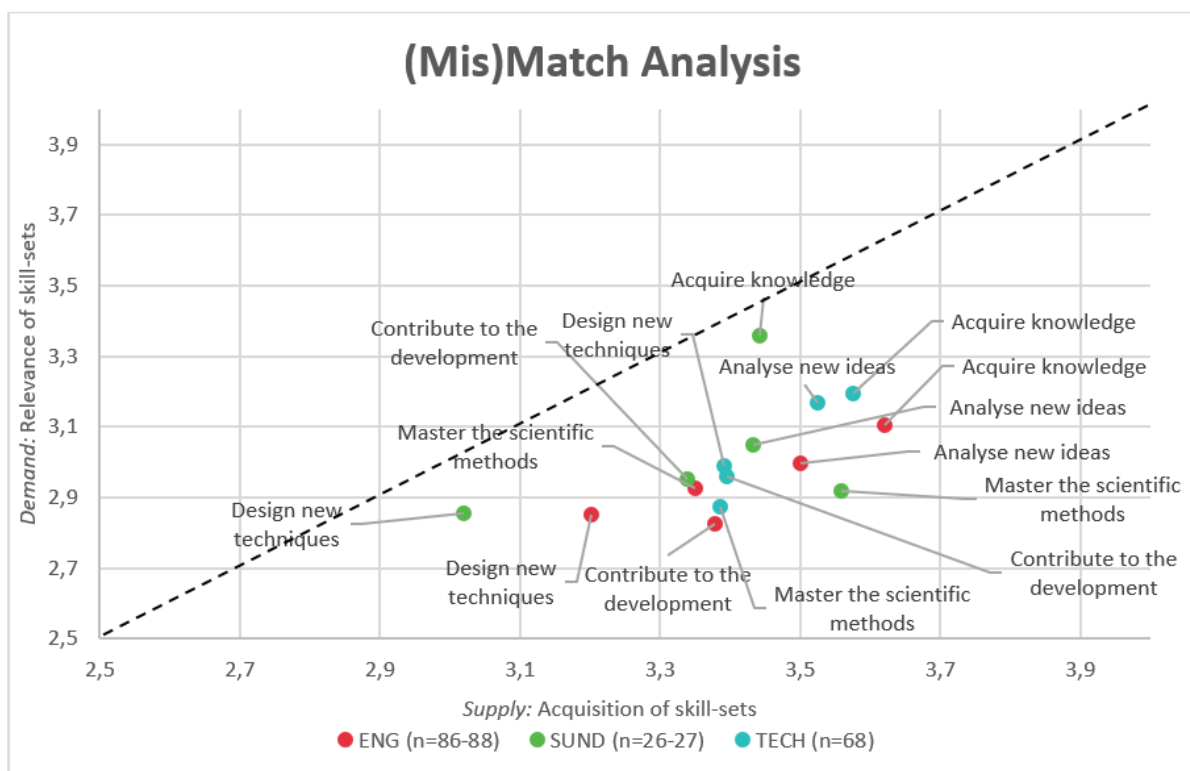
Figure 30: (Mis)Match Analysis – Supporting Skill-sets



Conversely, the ability to create growth and employment in Denmark's economy through research, development and innovation is perceived by graduates as the least acquired skill-set during the programme and the least relevant skill-set on the labour market, out of all the skill-sets studied. Here, too, graduates working outside a university consider the supply of all skill-sets to be higher than the actual demand for skill-sets outside the university. Conversely, graduates working at a university consider the demand for and the supply of skill-sets to be more equal, with only a slight *under-match* of some skills.

Figure 31 compares the scientific skill-sets of graduates working at a university or at other workplaces in the private or public sector, broken down for each faculty. ENG graduates are shown as red dots, SUND as green dots and TECH as blue dots. Again, the skill-sets are generally overmatch, however SUND graduates tend to be closer to a match with regard to acquire knowledge and design new technologies.

Figure 31: (Mis)Match Analysis – Scientific skill-sets for the different faculties



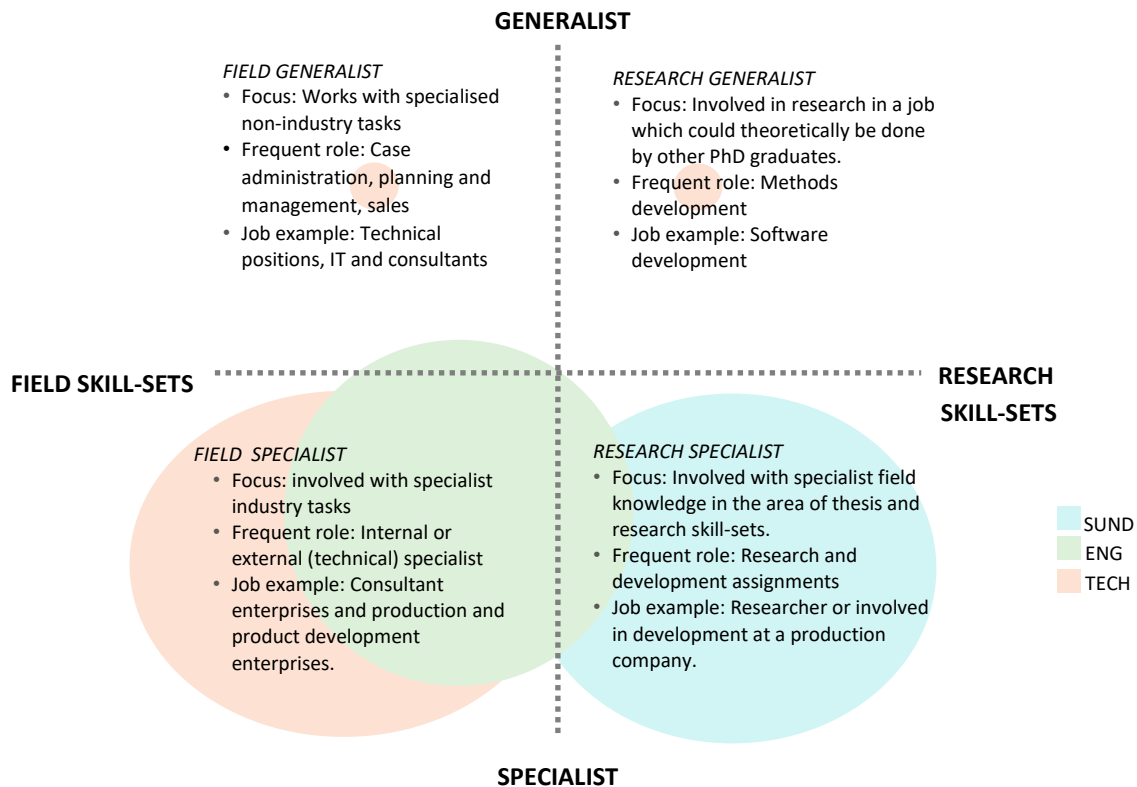
5.5 SKILL-SETS IN DEMAND BY ENTERPRISES

This section investigates the types of skill-sets in demand by public and private enterprises. The analysis is based on qualitative interviews with 20 public and private enterprises. The enterprises vary in size from small local companies with about 10 employees and to multinational corporations with thousands of employees. First, a typology of job categories is made, followed by an analysis of the more specific skill-sets in demand by the enterprises.

5.5.1 PhD job categories

To characterise the different types of skill-sets in demand, the analysis draws on a typology of PhD job categories and skill-sets. The typology is strongly grounded in the empirical field of STEM skill-sets, as it was originally developed as a part of a previous analyses of PhD skill-sets for the Technical University of Denmark (DTU) but has been revised according to the findings of the present analysis. The typology contains four categories representing four main job characteristics based on two types of distinctions: 1) field skill-sets related to the industry in question or research skill-sets, and 2) a generalist role or a specialist role. The typology is illustrated in the figure below. The bubbles in the figure represent the types of jobs held by PhD graduates of the ENG, TECH and SUND faculties respectively at the 20 enterprises interviewed. The size of the bubbles illustrates the number of interviewed enterprises that have employed PhD graduates in the four job categories.

Figure 32. Typology of job categories



Field generalists are involved with specialised non-industry tasks and draw on wide-ranging industrial knowledge. The subject of the graduate’s thesis has no great influence on the position. A field generalist may work in either a public-sector or private-sector enterprise and the areas of work could include case administration, advisory services and supervision. This could, for example, be PhD graduates employed at a public authority doing case administration and planning, involved in operational assignments at manufacturing companies or as teachers in a youth study programme. An enterprise who has hired a field generalist states:

“Companies normally request the specialised skill-sets that a PhD graduate has acquired through his education. But that is not how it works here. He [the PhD graduate] is no different from other graduates. Actually, he doesn’t even work on tasks related to this thesis. And we did not hire him because of his PhD, but because of his IT skill-sets. A PhD degree is not required for this job – just adeptness.”

Among the 20 interviewed enterprises, only two employ PhD graduates as field generalists – one from ENG and one from TECH. One is involved with IT at a consulting firm and the other with administrative and management tasks at a public-sector enterprise.

Field specialists work for specialised enterprises with tasks typically related to the graduate’s thesis. Thus, a field specialist will often serve as an internal or external specialist in his or her field. For example, this could be a specialist in a consulting firm or an employee involved in production and product development. As a field specialist, the PhD graduate is employed because of his/her knowledge and experience of the field due to the PhD and not because of his/her research skill-sets. In other words, the enterprises value the specialized industrial knowledge more than the research skill-sets and usually regard a newly graduated PhD candidate as a comparable peer to employees with an MSc and three years of experience – and some even prefer the employee with the MSc notably because of the longer work experience. An enterprise that has hired a field specialist expresses:

“A PhD degree is not a required, but it does no harm either. We need somebody who is an expert in the field. If you have a PhD, we know you’re good. It is an advantage if you specialise in the field.”

More than half of the 20 interviewed enterprises employ PhD graduates as field specialists. Furthermore, this is the only category where PhD graduates from all four faculties are represented.

Research generalists: A research generalist primarily uses his/her research skills in a job where the subject area may vary, and the research skills are therefore the primary focus. The subject of the graduate’s thesis is of no great importance, since research skills, such as the ability to assimilate, apply and disseminate new knowledge or specific methods, are the most essential factors. For instance, a research generalist is a researcher at a university or in an R&D unit at a private-sector company. An enterprise that has hired a research generalist expresses:

“I am the expert in the field, and the PhD graduate is the methods expert. That’s the great thing about this – his methodological skills are very relevant to our company.”

Only one of the interviewed enterprises employ PhD graduates as research generalists. This is an enterprise with software development, and the PhD graduate, who has no experience of the specific field per se, is employed because of his methodological skills in software development.

Research specialists are involved with research tasks related to his/her area of specialisation. Compared to the research generalist, knowledge of the field is essential, but, compared to a field specialist, the research skill-sets are also particularly important for the graduate’s job. In other words, a PhD degree is a qualification for a job as research specialist. A research specialist is typically involved with research and development in the same field as his/her thesis and will thus make use of both specialist field knowledge and research skill-sets. For example, a research specialist could be a researcher at AAU or work in the R&D department of a manufacturing company. An enterprise who has hired a research specialist expresses:

“Our PhD graduates help improve the research in our field. Their tasks are to develop new treatments, evolve new research and continue working on their own research.”

In addition to two ENG enterprises, all SUND enterprises employ research specialists. The SUND enterprises are public research institutes and one private manufacturing company in the field of medicine and health.

In the qualitative interviews with enterprises, the typology of job functions appears to be of greater importance to the enterprises' evaluation of how the graduates match the demanded skill-sets than the sector or size of the enterprise, for example. Nevertheless, the larger enterprises represented in this analysis tend to prefer either field specialists or research specialists. By comparison, smaller enterprises tend to prefer field specialists or research generalists.

Thesis subject is significant

Summing up, the PhD graduates of the ENG, TECH and SUND faculties are primarily employed in the job categories field specialist and research specialist. Hence, it is either their expertise in and knowledge of the field or their expert research skill-sets in the field that are in demand by the enterprises. In both cases, the subject of their PhD is key to their employment. While all SUND PhD graduates work as research specialists, most ENG and TECH PhD graduates work as field specialists. The results indicate that the enterprises choose AAU's PhD graduates because of their specialised skills rather than their general skill-sets.

PhD graduates and enterprises have different views of the match between the supply of and demand for PhD graduates.

As most enterprises seek either field specialists or research specialists, they consider a PhD degree a positive factor. Asked about how they experience the supply of PhD graduates, they reply that this depends on the geographical location of the enterprises. Naturally, it is easier for enterprises in large cities to attract a sufficient number of PhD graduates, whereas enterprises located in less densely populated areas, particularly in peripheral areas of Denmark, stated that the supply is very limited. One enterprise sums up the experience as follows:

“We must search quite extensively to find PhDs – they don't grow on trees.”

The view of supply also depends on the industry, as some of the more specialised enterprises demanding very specialised skill-sets often experience a greater mismatch between supply and demand. That said, the analysis shows that enterprises that experienced an insufficient supply, represent ENG, TECH and SUND.

By contrast with the enterprises' view, the short interviews with PhD graduates show that many of them had a hard time finding a relevant job after graduation. This was particularly true of PhD graduates of non-Danish nationality. The PhD graduates experience prejudices about the applicability of their PhD education, their ability to adapt to the labour market and their required salary rates. This mismatch between the PhDs and the enterprises' experience of the labour market and need for PhDs, may be due to the fact that the interviewed enterprises are slightly positively biased. The enterprises were selected to be interviewed because they have employed one or more

PhD graduates in the past, whereas we have not interviewed enterprises that have *not employed* PhD graduates. Hence, the interviewed enterprises are probably more positive about PhD graduates compared to enterprises that the PhDs generally encounter during their job application process.

5.5.2 Enterprises' views of PhD graduates' skill-sets

As shown above, the enterprises prefer field specialist and research specialist skill-sets. This section describes the skill-sets in demand by the enterprises in more detail.

In the interviews, enterprises were asked what they are generally looking for when they hire new employees. It is noteworthy that the analysis shows no distinct differences between the three faculties or types of job when it comes to general skill-sets. It is important to stress that this is a qualitative view of the skill-sets based on only a few enterprises, some of which have only limited experience of AAU's PhD graduates. Therefore, the analysis does not in any way represent the views of all enterprises. However, the data patterns may show tendencies that indicate the kind of skill-sets that are in demand in the field. In the following, the skill-sets in greatest demand will first be elaborated on, followed by an analysis of the skill-sets that PhD graduates lack.

5.5.2.1 PhD graduates' skill-sets

In general, enterprises find that PhD graduates have strong specialist knowledge and research skill-sets combined with an inner drive and interest in the field. In accordance with the findings above, all but one enterprise value **specialist knowledge**. This is a broad category and refers to both in-depth theoretical knowledge, the ability to design and develop new techniques, methods, knowledge and products, etc., in a specific area, the ability to solve complex tasks and research-related problems, and take an interest in and have an appetite for research knowledge. According to the enterprises, PhD graduates possess specialist skill-sets to a great extent. In fact, this is the main difference between PhD graduates and MSc graduates. An enterprise describes the specialist skill-sets as follows:

"PhD graduates have an enormously high academic level. That's why we hire them. On the surface, our system is very simple. But it is very complicated to make our system work as we want it to. I will never be able to and I'll never understand how it works, even if I try to from now to eternity. PhD graduates can make the system work. This is evidence of their high academic level."

Being highly specialised, the PhD graduates also tend to be keenly interested in scientific research in the field and hence may be the person who brings in new knowledge to the enterprise. One enterprise tells how their PhD graduate is always looking for more international knowledge and always reads scientific journals and then recapitulates the main points for his colleagues, which is highly appreciated.

Another skill-set where PhD graduates stand out compared to MSc graduates is **research and methodological skill-sets**. This is closely connected to the former but is explicitly highlighted by six of the interviewed enterprises – enterprises that primarily employ research specialists and field specialists, particularly SUND enterprises for whom strong research skills are indispensable.

The following three skill-sets demanded by enterprises are more personal in nature than academic or field-specific. **Personality** refers to the social skills of the employee, i.e. cooperative, easy to talk with and reliable. According to the interviewed enterprises, there is no difference between PhD and MSc graduates in this regard. An enterprise describes the importance of social skills:

“Who they are as people is important. Some primarily have the knowledge of their area of specialisation. They can hardly work with anything else. Others can see themselves in the context of which they are a part. Those are the skill-sets I'm looking for if I'm going to hire a PhD candidate. In other words their academic skills are less important.”

In fact, it is a common prejudice, particularly among employers who do not have a PhD themselves, that PhD graduates are more introverted, nerdy and poor communicators. Some of the employers from the interviewed enterprises even seem a bit surprised when the PhD graduates they have hired actually turn to be quite normal. Others express that they only employ PhD graduates whom they know personally to make sure that the social skill-sets of the PhD graduate are intact. This indicates that the branding and communication of PhD graduates' social skills may be areas of focus going forward.

By contrast, R&D-oriented enterprises employing several PhD graduates state that PhD graduates usually have good communication skills and that they know how to explain theoretically complicated issues to colleagues.

Reflective and structured work refers to the ability to process, collect and, not least, structure enormous amounts of information, as well as the ability to quickly familiarise oneself with a set of problems or a field of knowledge. According to the interviewed enterprises, PhD graduates possess these skill-sets to a far greater extent than MSc graduates. An enterprise states:

“By nature, PhD graduates spend a lot of time reflecting on the solution. They don't just go straight to it. They are more used to reflecting on the issues that arise.”

By the same token, interviewed enterprises also emphasise that PhD graduates work more independently, have a certain drive and tend to be more inclined to work longer hours compared to MSc graduates. An enterprise describes this drive as follows:

“I pay attention to the inner drive. They need to want it. Being a member of research staff is not a regular salaried job. Far from everyone has what it takes, and if they don't, I'd rather not have them.”

Compared to PhD graduates from other universities, the main comparative advantage that characterises AAU's PhD graduates is that their research is grounded to a far greater extent in the industries, and in the practical work and needs of the enterprises. This is explicitly highlighted by 15 out of 20 interviewed enterprises. According to them, AAU is more practice-oriented than other Danish universities which are reputed to be more research-oriented. Due to the level of practical insight and external cooperation, research at AAU is deemed more relevant to Danish enterprises, and this has a positive impact on the PhD graduate:

“Graduates of AAU have the latest knowledge and are familiar with the latest trends. AAU has great cooperation with major Danish companies, so they are in the loop – they know what is important and relevant to enterprises.”

Or as expressed by another company:

“The aim of AAU is not to just write another scientific article but actually to create usable results.”

A few interviewed enterprises also point out that an AAU PhD graduate (as well as MSc graduates) are better at cooperating than graduates of other universities due to the larger amount of group work during the programme, while almost half of the interviewed enterprises did not see any important differences between AAU PhD graduates and graduates of other universities.

5.5.2.2 Skill-sets that PhD graduates lack

Companies ask that more work experience, project management and networking skills be included in PhD programmes

Turning to the skill-sets in demand by enterprises but which PhD graduates possess to only a lesser extent, one skill-set stands out, namely **practical experience**. While PhD programmes provide graduates with specialised, highly sought knowledge, practical experience is integrated into the programmes with less frequency. Consequently, some PhD graduates do not have any practical work experience. Many enterprises regard this as a substantial lack of skill-sets – even to the extent that some enterprises prefer MSc graduates with three years of work experience over PhD graduates with no work experience. According to these enterprises, work experience enhances the ability to adapt to the enterprises, as experienced employees are already used to commercialised procedures. They know that they need to work faster, that their work is part of a larger integrated chain of tasks and, not least, that they are familiar with the industry.

Specifically, some enterprises have experienced that PhD graduates face challenges in relation to **customer contacts and project management** due to their lack of practical experience. This is a relationship that most newly qualified PhD graduates are not familiar with, as most research programmes do not include these kinds of communication skills. As expressed by one enterprise:

“The university environment is not commercial but theoretical. In a business you have to meet with clients which requires that you can communicate in an understandable manner.”

Hence, the enterprise suggests that client contact, sales and project management be given higher priority in PhD programmes. Others suggest that a greater amount of practical work experience should generally be incorporated into the PhD programmes to prepare PhD graduates for working outside the university. According to the enterprises, combining theoretical knowledge with practical knowledge will ease the transition to the labour market:

“Somehow, students will need to be a bigger part of the labour market during their PhD programme. In this way, they will create professional networks. They will need to be able to move beyond the walls of the university and experience what it is like to be a part of the real labour market. They should not just visit businesses; they should stay for half a year during their education.”

Compared to graduates of other universities, two interviewed enterprises argue that AAU graduates lack business-leadership capabilities to a greater extent. According to one enterprise, general project

management is part of the PhD programme at other Danish universities, whereas PhD graduates from AAU are only taught to manage their own PhD project.

However, other enterprises warn about this as they are afraid that it will dilute the PhD programmes, as the aim of a PhD is to learn how to do research not project management or gain specific practical work experience.

Finally, a few enterprises also express the view that PhD graduates from some other universities have a **stronger network** and are more experienced in working together with other scientific networks. However, as most of the enterprises interviewed do not value academic skill-sets as highly as practical experience, they do not agree that this is a disadvantage.

6. INTERNATIONALISATION – IN DENMARK AND ABROAD

This section of the report examines the graduates’ experience of the international dimension of the PhD programme at AAU. The focus is on the graduates’ international experience during their studies and on whether they generally regard AAU as an internationally-oriented university. Finally, the employers’ assessment of the importance of research trips abroad will be described.

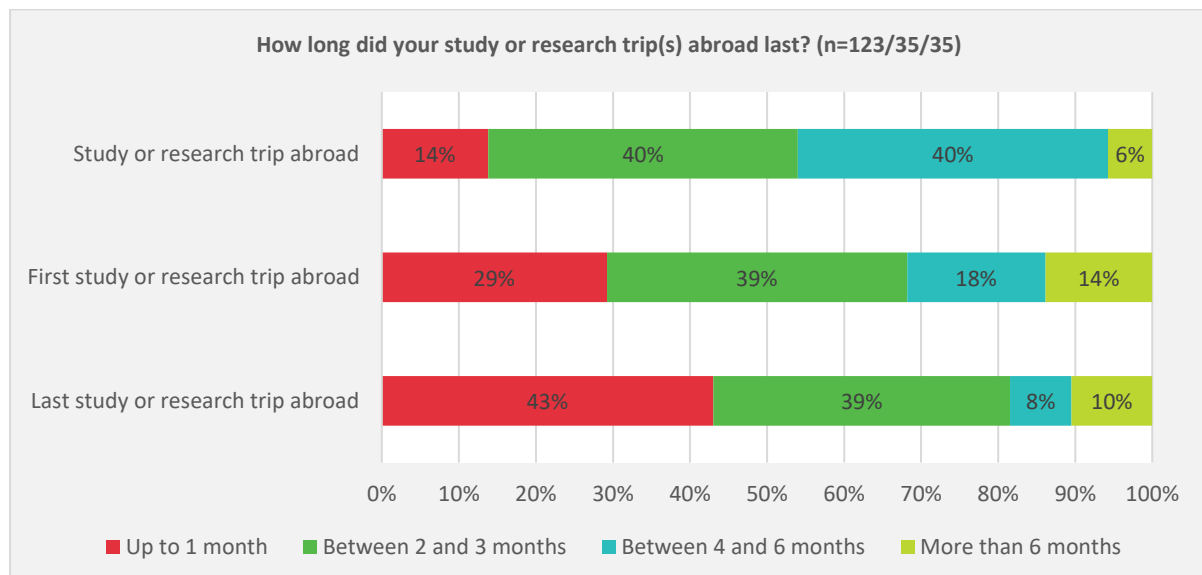
6.1 STUDYING ABROAD

Half of the graduates have studied abroad during the PhD programme. This has contributed to their professional development and network.

Half of the graduates from AAU (50%) have studied or carried out research at a different university during their PhD programme. This applies to a significantly higher degree of graduates of the ENG and TECH faculties as 51% and 61% respectively do so compared with graduates of the SUND faculty (21%). Furthermore, the analysis shows that significantly fewer Danish graduates have spent time at universities abroad compared with graduates from other countries.

The vast majority of graduates in this group (78%) took only one external study or research trip during their PhD studies, while the remaining 22% took two or more study trips. For graduates who took a single research trip, the length of the stay is typically rather short – three months or less for 54% of this group, while an additional 40% took a research trip lasting four to six months. A mere 6% enjoyed a trip lasting longer than six months.

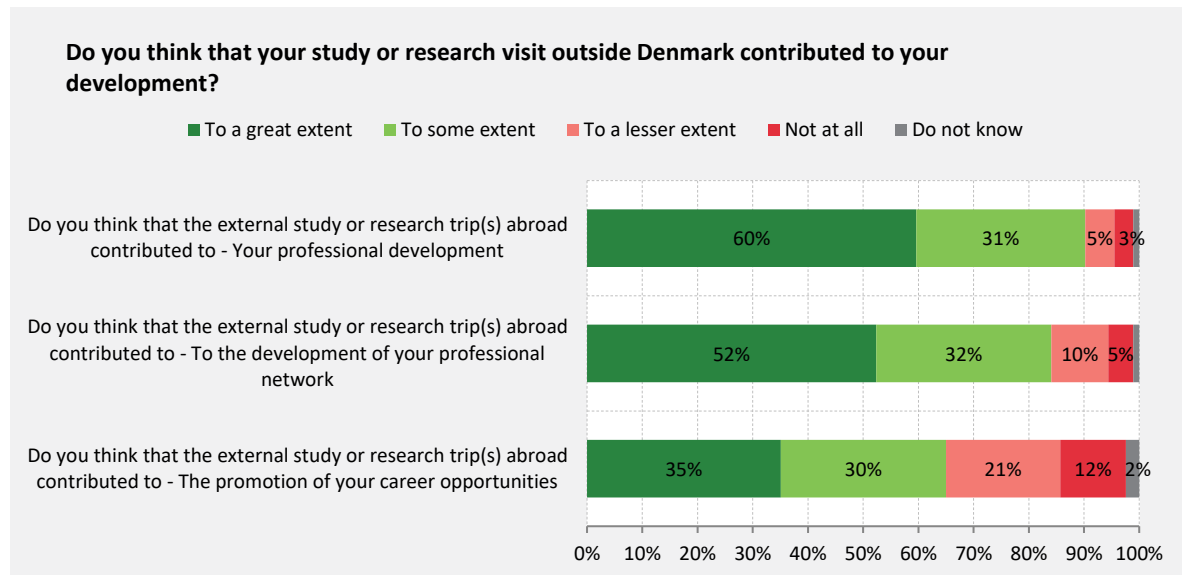
Figure 33. Length of research trips abroad



We also examine the way in which and the extent to which study or research visits abroad have contributed to graduates’ development. The figure below shows that 60% of the graduates who have studied or conducted research abroad state that this contributed to their academic development to a great extent. Additionally, 31% agree that this was the case to some extent.

Moreover, 52% of the graduates indicate that their professional network is highly developed as a result of their stay abroad. 32% consider this result to be present to some extent. Finally, a lesser share (35%) of the graduates point to the promotion of their career opportunities. 30% state that their career opportunities have improved to some extent.

Figure 34: Do you think that your study or research visit outside Denmark contributed to your development?



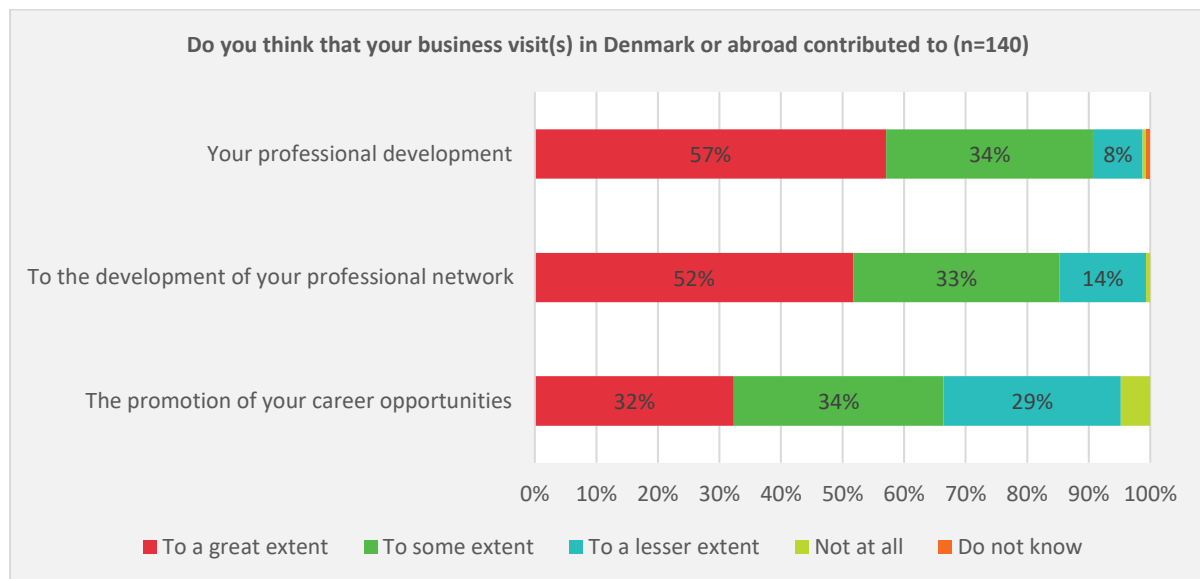
6.2 VISITS TO COMPANIES IN DENMARK AND ABROAD

One third of the graduates have visited a company during the PhD programme. This has also contributed to their professional development and network.

Around two-thirds of the graduates of AAU (64%) state that they have not visited a company as part of their PhD programme. 21% out of the remaining group have visited Danish companies, while 23% have visited companies abroad. The percentages add up to more than 100%, since respondents could list more than one type of business trip if relevant. Here, too, visits to companies are more prevalent among ENG graduates, as 33% and 26% visited Danish and foreign companies respectively. Most graduates in this group (54%) took only one business trip during their PhD programme, while 32% took more than two trips.

We also looked at the way in which and the degree to which such visits abroad have contributed to the graduates' development. The figure below shows that 60% of the graduates who have taken such a trip state that this has greatly contributed to their professional development. Additionally, 31% agree that this was true to some extent. Moreover, 52% of the graduates point to their professional network as being highly developed as a result of their stay at a Danish or foreign company. 32% deem that this is a result to some extent. Finally, and accounting for a less relevant result, 35% of the graduates point to the trip as having benefitted their career opportunities. 30% state that their career opportunities have benefitted to some extent.

Figure 35: Do you think that your business visit(s) in Denmark or abroad contributed to ... ?



6.3 INTERNATIONAL NETWORKS AND SKILL-SETS

AAU is considered an internationally oriented university

79% of the PhD graduates from AAU fully or mostly agree that AAU is an internationally oriented university in terms of the research environment. By contrast, only 6% fully or mostly disagree with this statement. Most graduates have been in contact with an international network and people with a different cultural background than their own during their PhD programme, which demonstrates the international environment at AAU.

78% of the graduates agree or mostly agree that they have obtained experience from collaborating with people with a different cultural background than their own through their PhD programme at AAU. Only 8% of the graduates disagree or mostly disagree, while 13% neither agree nor disagree. Even among those Danish graduates who have not studied or conducted research at other universities outside Denmark, 64% still agree or mostly agree with the statement that they have gained experience working with individuals from mixed cultural background. This may be a general testament to the international environment at AAU and other Danish universities.

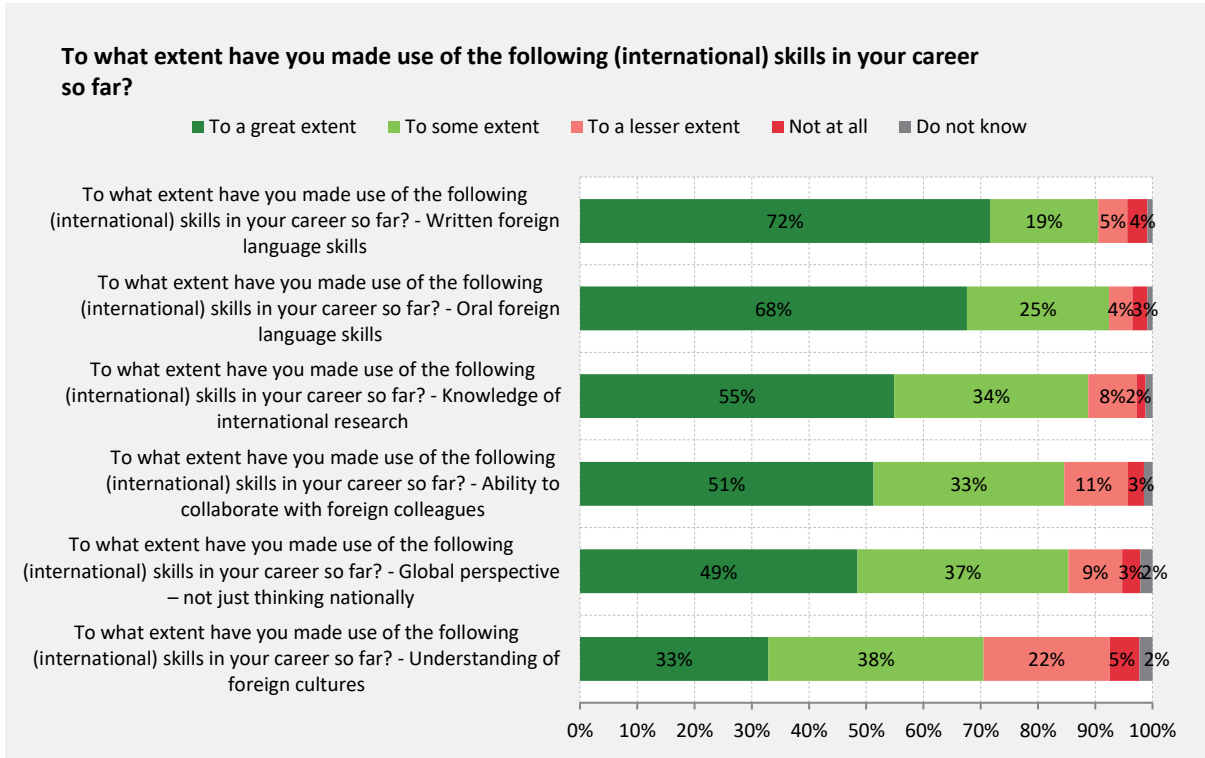
Further examination of this shows a significant difference between graduates of the ENG and SUND faculties, as significantly more graduates of the ENG faculty agree that they have experienced collaboration with people with different backgrounds (56%) compared with graduates from the SUND faculty where only 35% agree to having obtained this experience.

Graduates have not only gathered experience of working with people from different cultural backgrounds, but have at the same time built up international networks through their PhD programme. Thus, the majority (67%) of all graduates agree or mostly agree that they have *“built an international network through my PhD programme at AAU”*. 11% of the graduates disagree or mostly disagree, while 20% neither agree nor disagree.

The priority of international qualifications

Graduates were asked to rank six international and intercultural skill-sets by importance to their current job. The results are partially illustrated in the figure below. In the figure, skill-sets are specified in order of relevance to the graduates’ work. Written and spoken language skills seem to be the most important to graduates, as 72% and 68% of the graduates respectively have used these skills to a great extent in their career. Only 9% and 7% have used these skill-sets to a lesser extent or not at all.

Figure 36: To what extent have you made use of the following (international) skills in your career so far?



Generally, skill-sets relating to knowledge of international research, the ability to collaborate with foreign colleagues and having a global perspective are pointed out as skills that are often used in the graduates’ career, as 89%, 84% and 86% respectively state that they have used these skill-sets either to a great or some extent during their career.

Finally, skill-sets regarding an understanding of foreign cultures seem less relevant than the international skill-sets previously mentioned. 33% of the graduates have made use of this skill-set to a great extent while this applies to 37% to only some extent.

7. ALUMNI

7.1 FUTURE ASSOCIATION WITH THE UNIVERSITY

Most graduates have no connection to AAU

Graduates employed outside of AAU are asked what kind of association they currently have with AAU. Most graduates (60 %) state they have no connection to the university at the moment, while 40% still have some kind of connection.

These connections vary among the graduates: 7% give lectures at AAU, thus serving as external lecturers, while 4% conduct external seminars. Hence, a rather small group of graduates maintain a connection to AAU through teaching. Otherwise, most of the connections are upheld through research collaboration, as 23% of the graduates point out that they have this type of connection to AAU. Out of the graduates with no current association with AAU, 57% reply that they would like to have an association with AAU going forward.

To elaborate on the graduates' connection to AAU, it can be mentioned that the graduates are more prone to uphold professional connections rather than social connections with AAU and former colleagues. Whereas 50% of the graduates would like to maintain a professional association with AAU, only 21% are willing to participate in social associations with AAU.

Higher visibility might benefit AAU's connection to the labour market

Several of the headhunting enterprises describe well-functioning relationships with AAU. Nevertheless, a small group of enterprises explain that they would like a closer relationship with AAU to enhance collaboration and improve PhD graduates' transition to the labour market. In this respect, they emphasise AAU's low visibility, i.e. lack of information about specific research projects at the university. As an example, one enterprise makes the following suggestion:

"AAU could occasionally – perhaps once a year or every two years – organise a forum where businesses can meet PhD students and be introduced to ongoing research projects."

Such events could create opportunities for enterprises to be introduced to new scientific methods and widen the professional network between PhD students and enterprises outside the university environment at the same time. Additionally, enterprises want to be invited to events where PhD graduates defend their thesis, and they want to receive newsletters and webpages with information about PhD graduates' defence of their thesis, to stay up to date with relevant research programmes and relevant candidates for positions in the enterprises. Thus, the enterprises want AAU to heighten its profile and develop a more dynamic outreach strategy.

8. METHOD

8.1 QUANTITATIVE INTERVIEWS WITH GRADUATES

The quantitative survey among graduates was conducted in the period from 4 May to 12 June 2017. Initially – to the extent that a valid email address was available – the graduates received an e-mail with an invitation to take part in and information about the survey, providing a unique link to an online questionnaire survey. The survey was hosted via www.survey.epinion.dk/aau. Valid e-mail addresses were either unavailable or the addresses were invalid for 87 out of the total of 786 graduates.

The invitation informed participants about the purpose of the survey as follows:

Aalborg University has selected you to participate in a survey among PhD graduates.

This survey covers PhD graduates from the Faculty of Medicine, the Technical Faculty of IT and Design and the Faculty of Engineering and Science. The survey includes all PhD graduates from these three faculties within the last five years.

The focus of the survey is your job considerations during your PhD programme and your current job situation. Furthermore, the survey asks questions about how you have put your acquired skills and skill-sets to use in your work.

It is very important that you participate, as the results of this survey will be used to improve the PhD programmes at AAU.

The invitation letter also stressed that all participation was anonymous.

During the survey period, the graduates who had received an invitation by e-mail, but had not yet completed the questionnaire, received two additional reminder e-mails. After being provided with telephone numbers based on names and postal addresses – and validated via the Danish CPR office – a telephone reminder process was also implemented. Here, graduates were not only reminded to participate in the survey, but an email invitation was re-sent to the person in question. During the entire survey period, the graduates could contact Epinion by a telephone hotline or a designated e-mail (aau@epinionglobal.com) set up for this purpose. Altogether, 318 graduates took part, which resulted in a total response rate of 40%. The median completion time of all interviews was 21 minutes.

Questionnaire and pilot test

Epinion and AAU were responsible for drawing up the relevant questionnaire. After a joint working meeting, a few adjustments were made to the question-and-answer categories based on Epinion's comments and recommendations. Further, Epinion translated the final questionnaire to enable the graduates to select their preferred language (Danish or English). The questionnaire was subsequently converted into an online set-up using Epinion's SPSS-Dimension/IBM-platform, and the project manager finally carried out a thorough manual quality check of the conversion.

As additional quality assurance, Epinion carried out a pilot test involving three graduates. Immediately after the pilot respondents had completed the questionnaire, the project manager called them to ask them about their experience of responding to the questionnaire. The aim of the pilot test was to ensure that the questionnaire was unambiguous and that there were no difficulties in understanding the way individual items were formulated — such as the skill-sets which graduates were asked to give opinions of in the questionnaire. Based on the results of the questionnaire, a short memo was prepared, which gave rise to a few adjustments in the final questionnaire.

Obtainment and participant basis for e-mailing

After entering into a written contract for the processing of data, AAU delivered a population extract to Epinion. The population extract included information about all graduates from AAU’s PhD programme from the Faculty of Engineering and Science and the Faculty of Medicine at AAU in the years 2012 to 2016. In addition to details about names, addresses, gender, year of graduation, nationality, department and programme selection, the population extract also included contact details in the form of e-mail addresses wherever these were accessible. Since the survey was conducted as a population survey, the population extract served as the participant basis for e-mailing the survey at the same time. An overview of the participant basis for e-mailing used in the survey, the form of contact and the obtainment are shown in Table 2 below.

Table 2. Overview over the basis for e-mailing, including the contact form and obtainment

<i>Background characteristics</i>	<i>Population</i>	<i>Obtainment</i>	<i>Response rate (%)</i>
Form of contact			
Graduates invited via a valid e-mail address or phone	717	318	44
Graduates with no e-mail address and no phone number	69	0	0
Current residency status			
Living in Denmark	575	239	42
Living abroad	139	50	36
Incorrect CPR number	64	28	44
Status unknown	8	1	13
Total	786	318	40

Source: Epinion for AAU — Graduate Survey, 2017

As Table 2 above shows, AAU’s population extract contained information about a total of 786 graduates. Out of these, 717 graduates appeared with either a valid email addresses and a valid phone number following the enrichment. It was not possible to obtain valid contact information about 69 graduates.

Full answers were obtained from 318 graduates in total. When obtainment is compared with the gross population, i.e. the total population of 786 graduates, the response rate was 40%. If obtainment is compared with the net population, i.e. the total population excluding the 69 graduates who could not be invited or reached by other means, the response rate was 44%. Thus, regardless of whether the obtainment is compared with the gross or net population, a satisfactory response rate was achieved, on a par with other surveys of the same nature. The response rate was slightly higher for graduates currently residing in Denmark compared to graduates living abroad.

Representativeness and non-response analysis

A satisfactory response rate is not necessarily synonymous with satisfactory data quality. Even when an unusually high response rate can be assumed, systematic differences may arise between the population and the data obtained, which affects the representativeness of the survey. In other words, if one sub-population is over-represented at the expense of others, the answers from the over-represented population may have a disproportionate effect on the survey results. In this connection, for instance, graduates from one year might be over-represented at the expense of graduates from other years, and – assuming there were systematic differences between the over-represented year and the other years – would have disproportionately affected the survey results. Besides the years of graduation, it would be reasonable to test the representativeness for background characteristics such as faculty affiliation and nationality. An overview of the differences between the population and the data obtained in relation to these particular characteristics is given in Table 3 below.

Table 3. Summary of population and obtainment

Background characteristics	Population	Population (%)	Obtainment	Response rate (%)	Difference (percentage points)
PhD graduation date					
2012	131	17	50	16	-1
2013	141	18	33	10	-8
2014	157	20	66	21	1
2015	166	21	79	25	4
2016	191	24	90	28	4
Faculty					
Engineering and Science	357	45	138	43	-2
IT and Design	298	38	120	38	0
Medicine	131	17	60	19	2
Nationality					
Danish	391	50	163	51	0
Other	395	50	155	49	0
<i>Total</i>	<i>786</i>	<i>100</i>	<i>318</i>	<i>100</i>	<i>0</i>

Source: Epinion for AAU — Graduate Survey, 2017

As Table 3 above shows, there is generally a good correlation between the percentages in the population and the data obtained. When background characteristics such as *Faculty affiliation and nationality* are examined, the differences are limited to between one and two percentage points, which is highly satisfactory. In relation to the background characteristic *PhD graduation date*, a slight overrepresentation of graduates from the recent years 2015 and 2016 appears at the expense of graduates from 2013 in particular. The differences between the proportions of the population and the data obtained for year of graduation must thus be kept in mind when reading the report. In the attached table-form report there are cross tabulations for all survey questions across all key background characteristics.

8.2 QUALITATIVE INTERVIEWS WITH ENTERPRISES

Based on the questionnaire survey of PhD graduates, Epinion carried out 20 qualitative in-depth interviews with those responsible for employment or day-to-day supervisors of PhD graduates employed at relevant enterprises of PhD graduates from AAU. The qualitative in-depth interviews provide insight into how and to what extent the PhD programme at AAU lives up to the skill-sets in demand by enterprises. Enterprises were specifically asked what they consider important when they employ PhD candidates, focusing on which specific skill-sets they are looking for. Next, we examined the enterprises' view of the skill-sets of PhD graduates from AAU, specifically studying which relevant field or research skill-sets or which general or personal skill-sets (e.g. project management, ability to collaborate, etc.) PhD graduates possess and which they lack. Finally, a segment of the interview was dedicated to the employer's overall view of AAU and its advice on how AAU could strengthen its relations to enterprises.

Recruitment strategy

The interview participants were primarily selected from the questionnaire survey, where graduates could state if they were interested in being contacted for a short interview. We recruited the enterprises from this group of respondents who agreed to be contacted. In the short interviews with the PhD graduates, we asked them for the name and contact information of their supervisor, as well as for their permission to contact the enterprise.

Epinion has given priority to interviewing primarily day-to-day supervisors who are close to the graduates in work situations rather than specialised HR consultants, as the supervisors are more keenly aware of which skill-sets graduates use and of how the skill-sets generally match the enterprises' requirements.

Employers of graduates from each of the three faculties – Engineering and Science (ENG), IT and Design (TECH) and Medicine (SUND) – had to be well-represented among the 20 enterprises in question. The selection of enterprises targeted both large and small enterprises in the sectors of ENG, TECH and SUND. Only enterprises with headquarters or branches in Denmark were selected.

The enterprises were therefore selected on the basis of the following criteria:

- A number of the largest and most outstanding enterprises
- Large and small enterprises at each of the three faculties
- Large and small enterprises in other sectors
- Large and small enterprises across Denmark

Universities and research institutes were excluded as a sector in the study, since their view on skill-sets are focused on research skill-sets and these are well-known by AAU.

The table below shows the allocation of interviews.

Table 4. Allocation of interviews

ENG	TECH	SUND
10	6	4

SUND is slightly underrepresented, while ENG is overrepresented. Despite strong efforts to include more enterprises from SUND. Many PhD graduates from SUND are employed in the health service, where decisions on recruitment are handled by centralized organs and not by the local units, and at research institutes, often together with the academic staff who were responsible for their PhD education and therefore cannot participate in the interview.

Conducting the interviews

The qualitative in-depth interviews were conducted as semi-structured interviews, in which the interview guide used is structured like a funnel. The enterprises were first asked open questions, leading to the specific themes, and then more direct questions, with the focus on answering the survey questions (see the interview guide in the appendix) which were intended to uncover specific hypotheses, drawn to some extent from the quantitative survey of graduates. This approach ensured that we identified the focal points of the survey and its specific hypotheses, but at the same time we were aware of new tendencies that are not identified in the previously formulated hypotheses. The survey thus opened the way for eye-opening findings. In addition, the structured part of the interview guide ensured that all relevant themes were treated in the same way in all interviews. This specifically referred, for instance, to which skill-sets the enterprises found that PhD graduates possess compared to MSc graduates. The questions were formulated in advance, but there was still scope for clarifying questions that arose in the specific interview situations.

The interview guide was drafted by Epinion based on the assignment and results of the questionnaire survey among graduates. AAU provided input for the draft, which was subsequently included in the final interview guide.

Qualitative consultants from Epinion interviewed enterprises across enterprise sizes and sectors. The interviews with employers were divided among four interviewers. Thus, the acquired knowledge was kept among a relatively small number of people, giving depth and effectiveness to the reporting. The consultants carried out a joint briefing before and after the interviews. The briefing before the interviews ensured a common approach and implementation of the employer interviews, where, for example, the precise interview technique was determined. The debriefing ensured transparency and inclusion of tendencies and relevant points from all the conducted interviews and contributed to a unified approach in the reporting phase.

The qualitative in-depth interviews with the enterprises were held in June 2017 and typically lasted 45 minutes. All interviews but one were conducted in Danish. The interviews took the form of telephone interviews, while dictaphone recordings of the interviews were taken. Subsequently, the interviews were transcribed and then coded in the qualitative analysis program Nvivo. The sound files were treated as confidential and deleted after the report was delivered.

9.APPENDIX 1: QUESTIONNAIRE – GRADUATE SURVEY

PhD graduates could choose between a Danish and an English version of the questionnaire. The English version is shown below.

[language, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Would you prefer to answer this graduate survey in ... ?

- (_1) Danish
- (_2) English

[intro, Info]

Thank you for taking approximately 20 minutes to participate in this graduate survey.

In the survey, we will ask you about your job considerations during your PhD programme and about your subsequent job situation. Finally, the survey will also ask some questions about your use of the skills you have acquired during your PhD programme.

The results of the survey will form an important part of the work to improve the PhD programmes at AAU and your participation is therefore of great significance. Your answers will be treated as confidential and your participation is anonymous.

If you have any questions regarding the survey, you are welcome to send an email to aau@epinionglobal.com or telephone +45 3121 4259.

Click on "Next" to start the survey.

With kind regards,

AAU & Epinion

[bg2, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

When did you complete your master's degree programme?

- (_1) Enter year:<Open Textbox>

[bg3, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

At which university did you take your master's degree programme?

- (_1) Aarhus University
- (_2) University of Copenhagen
- (_3) University of Southern Denmark
- (_4) Aalborg University
- (_5) Other: <Open Textbox>

[bg5, Grid, Row, Normal, EXPANDED, Must Answer]

How important were the below reasons when you decided to begin at the PhD programme?

		(_2) To some extent	(_3) To a lesser extent	(_4) Not at all	(_5) Do not know / Not relevant

	(_1) To a great extent				
(_1) I had a passion for research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) I attach great importance to having a research-based education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) I had a relevant topic to undertake research in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_4) It was necessary to get the position I desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_5) It was a good time in my career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_6) I was encouraged by a supervisor or another tutor at university	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[q1_intro, Info]

The questions in this section relate to your job considerations during your PhD programme and immediately after graduation.

[q1_1, Grid, Row, Normal, EXPANDED, Must Answer]

When and to what extent did you consider the kind of job that your PhD programme could lead to?

	(_1) To a great extent	(_2) To some extent	(_3) To a lesser extent	(_4) Not at all	(_5) Do not know / Cannot remember
(_1) Before I started my PhD programme	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) During my PhD programme	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) Immediately before I submitted my PhD thesis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_4) Immediately after I submitted my PhD thesis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[#22] If q1_1._1.resp.ContainsAny("_1.._3") or q1_1._2.resp.ContainsAny("_1.._3")

[q1_2, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

To what extent did your job considerations influence your choice of courses?

- (_1) To a great extent
- (_2) To some extent
- (_3) To a lesser extent
- (_4) Not at all
- (_5) Do not know / Cannot remember

[q1_3, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

To what extent did your job considerations influence the general content of your PhD programme?

- (_1) To a great extent
 - (_2) To some extent
 - (_3) To a lesser extent
 - (_4) Not at all
 - (_5) Do not know / Cannot remember
-

[#22] End If

[q3, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Which of the following statements best describes your current job situation?

- (_1) I am employed / have a job (incl. part-time work, a wage-subsidised job, maternity leave or educational position etc.)
 - (_2) I am self-employed with my own business
 - (_3) I am unemployed
 - (_4) I am permanently out of the workforce (incl. retirement, early retirement etc.)
-

[#25] If q3.ContainsAny({_1})

[q3_1, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

How many jobs did you have after completing your PhD programme but before you started your current job?

- (_1) 0 (I have only had my current job)
 - (_2) 1
 - (_3) 2
 - (_4) 3
 - (_5) 4 or more
-

[#25] End If

[#26] If q3.ContainsAny({_2})

[q3_2, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

How many jobs did you have after you completed your PhD programme but before you started as self-employed with your own business?

- (_1) 0 (I have only had my current job as self-employed with my own business)
 - (_2) 1
 - (_3) 2
 - (_4) 3
 - (_5) 4 or more
-

[#26] End If

[#27] If q3.ContainsAny({_3})

[q3_3, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

How many jobs did you have after completing your PhD programme?

- (_1) 0
- (_2) 1
- (_3) 2
- (_4) 3

- (_5) 4 or more
-

[#27] End If

[#29] If q3_1.ContainsAny("_2.._5") or q3_2.ContainsAny("_2.._5") or q3_3.ContainsAny("_2.._5")

[q4a_intro, Info]

The next questions relate to your first job after submission of your PhD thesis.

[q4a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

How long was the time period from the date of the submission of your PhD thesis to the date when you got your first job (signed the contract)?

- (_1) I was hired before I submitted my PhD thesis
- (_2) I was hired after I submitted my PhD thesis, but before the public defence
- (_3) I was hired less than 1 month after passing the public defence
- (_4) I was hired 1-3 months after passing the public defence
- (_5) I was hired 4-6 months after passing the public defence
- (_6) I was hired 7-12 months after passing the public defence
- (_7) I was hired more than 12 months after passing the public defence
- (_8) Do not know / Cannot remember
-

[q5a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

How many jobs did you apply for before you got your first job?

- (_1) 0 (I got the job without an actual application)
- (_2) 1-5
- (_3) 6-15
- (_4) 16-30
- (_5) More than 30
- (_6) Do not know / Cannot remember
-

[q6a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

In your opinion, are there relevant positions in North Jutland outside of Aalborg University that a person with your education can apply for?

- (_1) Yes, there are many
- (_2) Yes, there are some
- (_3) Yes, but there are only a few
- (_4) No, there are none at all
- (_5) Do not know
-

[q7a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

It is attractive for you to live in North Jutland?

- (_1) To a great extent
- (_2) To some extent
- (_3) To a lesser extent
- (_4) Not at all
- (_5) Do not know

[q8a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

How many years of relevant professional experience – acquired after your master's degree – did you have when you started your PhD programme?

- (_1) None
- (_2) Less than 1 year
- (_3) 1-2 years
- (_4) 3-4 years
- (_5) 5 years or more
- (_6) Do not know / Cannot remember

[q9a_, Categorical/Multiple, Normal, Min:1, Max:8, Must Answer]

How did you get your first job after your PhD degree? (Tick several, if required)

- (_1) By searching for a vacant job
- (_2) Via my personal network (family, friends etc.)
- (_3) Via my professional network (supervisors, business contacts from my PhD programme etc.)
- (_4) Via a research project with a company
- (_5) I was headhunted
- (_6) Via an unsolicited inquiry to the employee
- (_7) Via training (job with wage subsidy, commercial practice etc.)
- (_8) Other, please indicate:<Open Textbox>
- (_9) Do not know / Cannot remember<Exclusive>

[q10a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Where did you get your first job?

- (_1) I was employed in the private sector
- (_2) I was employed in the public sector
- (_3) I was employed as a postdoc/researcher/lecturer at AAU
- (_4) I was employed as a postdoc/researcher/lecturer at an institution other than AAU
- (_5) Other, please indicate:<Open Textbox>

[#29].[#8] If q10a.ContainsAny({_4})

[q11a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Why were you not employed at AAU?

- (_1) It was not possible for me to get a job
- (_2) I didn't want to get a job
- (_3) Other, please write here: <Open Textbox>

[#29].[#8] End If

[q12a_1, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

What type of employment did you have in your first job?

- (_1) Time-limited employment (full-time)
- (_2) Time-limited employment (part-time)
- (_3) Fixed employment (full-time)

- (_4) Fixed employment (part-time)
 - (_5) Freelance
 - (_6) Other:<Open Textbox>
-

[#29].[#10] If q10a.ContainsAny({_1,_2,_4,_5})

[q12a_2, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Where were you employed in your first job?

- (_1) Capital Region of Denmark (Region Hovedstaden)
 - (_2) Region Zealand (Region Sjælland)
 - (_3) Central Denmark Region (Region Midtjylland)
 - (_4) Region of Southern Denmark (Region Syddanmark)
 - (_5) North Jutland Region (Region Nordjylland)
 - (_6) Abroad – please indicate country:<Open Textbox>
-

[#29].[#10] End If

[#29].[#11] If q12a_2.ContainsAny({_6})

[q13a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

What was important to you in your choice of workplace outside Denmark?

- (_1) Please indicate: <Open Textbox>
 - (_2) Do not know / Cannot remember
-

[#29].[#11] End If

[#29].[#12] If q12a_2.ContainsAny("_1.._4")

[q14a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

What was important to you in your choice of workplace outside North Jutland?

- (_1) Please indicate: <Open Textbox>
 - (_2) Do not know / Cannot remember
-

[#29].[#12] End If

[q15a_, Categorical/Multiple, Normal, Min:1, Max:2, Must Answer]

Which company, institution or organisation were you employed in?

- (_1) Company / institution / organisation:<Open Textbox>
 - (_2) Department: <Open Textbox>
 - (_3) I do not wish to respond<Exclusive>
-

[q16a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Think of your first job. What was the total number of employees (including employees abroad) in the company, institution or organisation? If you were employed at a university or similar, this question refers to the institution's size.

- (_1) 1-9
- (_2) 10-49
- (_3) 50-199
- (_4) 200-499
- (_5) 500-999

- (_6) 1,000-4,999
- (_7) 5,000 or above
- (_8) Do not know / Cannot remember

[q17a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Think of your first job. What sector did you work in? From the list please select the sector within which your previous workplace primarily operates. The sectors are as defined by Danmarks Statistik's sector classification.

- (_1) Administrative services and assistance services
- (_2) Building and construction companies
- (_3) Electricity, gas and district heating supplies
- (_4) Extra-territorial organisations and bodies
- (_5) Wholesale and retail trade, repair of motor vehicles and motor cycles
- (_6) Production company (including production in the chemical and biotech areas)
- (_7) Information and communication
- (_8) Culture, entertainment or sport
- (_9) Agriculture, hunting, forestry and fisheries
- (_10) Liberal, scientific and technical services
- (_11) Public administration, defence and social insurance
- (_12) Financial institution and financial company, insurance
- (_13) Consultancy company
- (_14) Raw material extraction
- (_15) Health service and social organisations
- (_16) Transportation and goods handling
- (_17) Teaching
- (_18) University/research institution
- (_19) Water supply, sewage disposal, waste management and soil and groundwater treatment
- (_20) Other services
- (_21) Other, please indicate:<Open Textbox>

[q18a_, Categorical/Multiple, Normal, Min:1, Max:21, Must Answer]

Which job functions did you undertake in the company? (Tick several, if required)

- (_1) Specialised tasks in relation to the PhD programme (such as energy systems, building construction etc.)
- (_2) Administration (including accounting and secretarial functions)
- (_3) Data analysis
- (_4) Documentation
- (_5) Research
- (_6) HR/personnel
- (_7) Information
- (_8) IT functions
- (_9) Chemical analysis
- (_10) Management/organisation
- (_11) Middle/upper management
- (_12) Planning
- (_13) Production
- (_14) Product development/innovation
- (_15) Project management
- (_16) Advice/consultancy work
- (_17) Sales/marketing/advertising
- (_18) Service (including customer service)

- (_19) Teaching
- (_20) Clinical work
- (_21) Other, please indicate:<Open Textbox>

[q19a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

In your first job, did you work together with colleagues who had a master's degree followed by approximately three years of relevant professional experience?

- (_1) Yes
- (_2) No
- (_3) Do not remember / Cannot remember

[#29].[#18] If q19a.ContainsAny({_1})

[q20a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Did you find that you had acquired relevant skills from your PhD programme that your colleagues with a master's degree and approximately three years of professional experience did not have?

- (_1) Yes, please indicate which skills:<Open Textbox>
- (_2) No
- (_3) Do not remember / Cannot remember

[#29].[#18] End If

[q21a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Were there any of your specific work tasks in your first job that could only be performed by a person with a PhD degree?

- (_1) Yes, most of my specific work tasks could only be performed by a person with a PhD degree
- (_2) Yes, some of my specific work tasks could only be performed by a person with a PhD degree
- (_3) Yes, a few of my specific work tasks could only be performed by a person with a PhD degree
- (_4) No, my specific work tasks could also be performed by a person with a master's degree and several years of professional experience
- (_5) No, my specific work tasks could also be performed by a new graduate with no relevant professional experience
- (_6) Do not know

[q22a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

In your PhD programme, you have gained a specialized knowledge within your research field. To what extent did you use this knowledge in your first job?

- (_1) To a great extent
- (_2) To some extent
- (_3) To a lesser extent
- (_4) Not at all
- (_5) Do not know / Cannot remember

q22a_answer = LCase(q22a.Response.Label)

[#29].[#22] If q22a.ContainsAny("_1.._4")

[q23a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Can you explain in more detail how you – {#q22a_answer} – used your specialized knowledge in your first job? <style>.epinion-tpl .q-checkbox-radio-wrapper label.epinion-lbl {display: none;} </style>

- (_1) <Open Textbox>

[#29].[#22] End If

[#29].[#23] If q22a.ContainsAny({_4})

[q24a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Was it a conscious decision on your part to select a first job where there was no connection between the job and the knowledge gained during your PhD programme?

- (_1) Yes
 (_2) No
 (_3) Do not know / Cannot remember

[#29].[#23] End If

[q24a_2, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Overall, do you believe that your PhD programme equipped you to perform as expected in your first job?

- (_1) To a great extent
 (_2) To some extent
 (_3) To a lesser extent
 (_4) Not at all
 (_5) Do not know

[#29] End If

[#31] If q3_1.ContainsAny({_1}) or q3_2.ContainsAny({_1})

[q4b_intro, Info]

The next questions relate to your first job after submission of your PhD thesis.

[q4b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

How long was the time period from the date of the submission of your PhD thesis to the date when you got your first job (signed the contract)?

- (_1) I was hired before I submitted my PhD thesis
 (_2) I was hired after I submitted my PhD thesis, but before the public defence
 (_3) I was hired less than 1 month after passing the public defence
 (_4) I was hired 1-3 months after passing the public defence
 (_5) I was hired 4-6 months after passing the public defence
 (_6) I was hired 7-12 months after passing the public defence
 (_7) I was hired more than 12 months after passing the public defence
 (_8) Do not know / Cannot remember

[q5b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

How many jobs did you apply for before you got your current job?

- (_1) 0 (I got the job without an actual application)
 (_2) 1-5
 (_3) 6-15
 (_4) 16-30
 (_5) More than 30
 (_6) Do not know / Cannot remember

[q6b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

In your opinion, are there relevant positions in North Jutland outside of Aalborg University that a person with your education can apply for?

- (_1) Yes, there are many
- (_2) Yes, there are some
- (_3) Yes, but there are only a few
- (_4) No, there are none at all
- (_5) Do not know

[q7b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

It is attractive for you to live in North Jutland?

- (_1) To a great extent
- (_2) To some extent
- (_3) To a lesser extent
- (_4) Not at all
- (_5) Do not know

[q8b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

How many years of relevant professional experience – acquired after your master's degree – did you have when you started your PhD programme?

- (_1) None
- (_2) Less than 1 year
- (_3) 1-2 years
- (_4) 3-4 years
- (_5) 5 years or more
- (_6) Do not know / Cannot remember

[q9b_, Categorical/Multiple, Normal, Min:1, Max:8, Must Answer]

How did you get your current job after your PhD degree? (Tick several, if required)

- (_1) By searching for a vacant job
- (_2) Via my personal network (family, friends etc.)
- (_3) Via my professional network (supervisors, business contacts from my PhD programme etc.)
- (_4) Via a research project with a company
- (_5) I was headhunted
- (_6) Via an unsolicited inquiry to the employee
- (_7) Via training (job with wage subsidy, commercial practice etc.)
- (_8) Other, please indicate:<Open Textbox>
- (_9) Do not know / Cannot remember<Exclusive>

[q10b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Where are you employed?

- (_1) I am employed in the private sector

- (_2) I am employed in the public sector
 - (_3) I am employed as a postdoc/researcher/lecturer at AAU
 - (_4) I am employed as a postdoc/researcher/lecturer at an institution other than AAU
 - (_5) Other, please indicate:<Open Textbox>
-

[#31].[#8] If q10b.ContainsAny({_4})

[q11b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Why are you not employed at AAU?

- (_1) It is not possible for me to get a job
 - (_2) I don't want to get a job
 - (_3) Other, please write here: <Open Textbox>
-

[#31].[#8] End If

[q12b_1, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

What type of employment do you have in your current job?

- (_1) Time-limited employment (full-time)
 - (_2) Time-limited employment (part-time)
 - (_3) Fixed employment (full-time)
 - (_4) Fixed employment (part-time)
 - (_5) Freelance
 - (_6) Other:<Open Textbox>
-

[#31].[#10] If q10b.ContainsAny({_1,_2,_4,_5})

[q12b_2, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Where are you employed in your current job?

- (_1) Capital Region of Denmark (Region Hovedstaden)
 - (_2) Zealand Region (Region Sjælland)
 - (_3) Central Jutland Region (Region Midtjylland)
 - (_4) Region of Southern Denmark (Region Syddanmark)
 - (_5) North Jutland Region (Region Nordjylland)
 - (_6) Abroad – please indicate country:<Open Textbox>
-

[#31].[#10] End If

[#31].[#11] If q12b_2.ContainsAny({_6})

[q13b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

What was important to you in your choice of workplace outside Denmark?

- (_1) Please indicate: <Open Textbox>
 - (_2) Do not know / Cannot remember
-

[#31].[#11] End If

[#31].[#12] If q12b_2.ContainsAny("_1.._4")

[q14b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

What was important to you in your choice of workplace outside North Jutland?

- (_1) Please indicate: <Open Textbox>

- (_2) Do not know / Cannot remember

[#31].[#12] End If

[q15b_, Categorical/Multiple, Normal, Min:1, Max:2, Must Answer]

Which company, institution or organisation are you employed in?

- (_1) Company / institution / organisation:<Open Textbox>
- (_2) Department :<Open Textbox>
- (_3) I do not wish to respond<Exclusive>

[q16b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Think of your current job. What is the total number of employees (including employees abroad) in the company, institution or organisation? If you are employed at a university or similar, this question refers to the institution's size.

- (_1) 1-9
- (_2) 10-49
- (_3) 50-199
- (_4) 200-499
- (_5) 500-999
- (_6) 1,000-4,999
- (_7) 5,000 or above
- (_8) Do not know / Cannot remember

[q17b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Think of your current job. What sector do you work in? From the list please select the sector within which your current workplace primarily operates? The sectors are as defined by Danmarks Statistik's sector classification.

- (_1) Administrative services and assistance services
- (_2) Building and construction companies
- (_3) Electricity, gas and district heating supplies
- (_4) Extra-territorial organisations and bodies
- (_5) Wholesale and retail trade, repair of motor vehicles and motor cycles
- (_6) Production company (including production in the chemical and biotech areas)
- (_7) Information and communication
- (_8) Culture, entertainment or sport
- (_9) Agriculture, hunting, forestry and fisheries
- (_10) Liberal, scientific and technical services
- (_11) Public administration, defence and social insurance
- (_12) Financial institution and financial company, insurance
- (_13) Consultancy company
- (_14) Raw material extraction
- (_15) Health service and social organisations
- (_16) Transportation and goods handling
- (_17) Teaching
- (_18) University/research institution
- (_19) Water supply, sewage disposal, waste management and soil and groundwater treatment
- (_20) Other services
- (_21) Other, please indicate:<Open Textbox>

[q18b_, Categorical/Multiple, Normal, Min:1, Max:21, Must Answer]

Which job functions do you undertake in the company? (Tick several, if required)

- (_1) Specialised tasks in relation to the PhD programme (such as energy systems, building construction etc.)
- (_2) Administration (including accounting and secretarial functions)
- (_3) Data analysis
- (_4) Documentation
- (_5) Research
- (_6) HR/personnel
- (_7) Information
- (_8) IT functions
- (_9) Chemical analysis
- (_10) Management/organisation
- (_11) Middle/upper management
- (_12) Planning
- (_13) Production
- (_14) Product development/innovation
- (_15) Project management
- (_16) Advice/consultancy work
- (_17) Sales/marketing/advertising
- (_18) Service (including customer service)
- (_19) Teaching
- (_20) Clinical work
- (_21) Other, please indicate:<Open Textbox>

[q19b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

In your current job, do you work together with colleagues who have a master's degree followed by approximately three years of relevant professional experience?

- (_1) Yes
- (_2) No
- (_3) Do not know / Cannot Remember

[#31].[#18] If q19b.ContainsAny({_1})

[q20b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Do you find that you have acquired relevant skills via your PhD programme that your colleagues with a master's degree followed by approximately three years of professional experience do not have?

- (_1) Yes, please indicate which skills:<Open Textbox>
- (_2) No
- (_3) Do not remember / Cannot remember

[#31].[#18] End If

[q21b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Are there any of your specific work tasks in your current job that could only be performed by a person with a PhD degree?

- (_1) Yes, most of my specific work tasks can only be performed by a person with a PhD degree
- (_2) Yes, some of my specific work tasks can only be performed by a person with a PhD degree
- (_3) Yes, a few of my specific work tasks can only be performed by a person with a PhD degree

- (_4) No, my specific work tasks can also be performed by a person with a master's degree and several years of professional experience
- (_5) No, my specific work tasks can also be performed by a new graduate with no relevant professional experience
- (_6) Do not know

[q22b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

In your PhD programme, you have gained a specialized knowledge within your research field. To what extent do you use this knowledge in your current job?

- (_1) To a great extent
- (_2) To some extent
- (_3) To a lesser extent
- (_4) Not at all
- (_5) Do not know / Cannot remember

`q22b_answer = LCase(q22b.Response.Label)`

`[#31].[#22] If q22b.ContainsAny("_1.._4")`

[q23b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Can you explain in more detail how you – {#q22b_answer} – use your specialized knowledge in your current job?
`<style>.epinion-tpl .q-checkbox-radio-wrapper label.epinion-lbl {display: none;} </style>`

- (_1) <Open Textbox>

`[#31].[#22] End If`

`[#31].[#23] If q22b.ContainsAny({_4})`

[q24b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Was it a conscious decision on your part to select a first job where there was no connection between the job and the knowledge gained during your PhD programme?

- (_1) Yes
- (_2) No
- (_3) Do not know / Cannot remember

`[#31].[#23] End If`

[q24b_2, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Overall, do you believe that your PhD programme has equipped you to perform as expected in your current job?

- (_1) To a great extent
- (_2) To some extent
- (_3) To a lesser extent
- (_4) Not at all
- (_5) Do not know

`[#31] End If`

`[#33] If q3_1.ContainsAny("_2.._5") or q3_2.ContainsAny("_2.._5")`

[q25a_intro, Info]

The next questions relate to your current job.

[q25a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Where are you employed in your current job?

- (_1) I am employed in the private sector
 - (_2) I am employed in the public sector
 - (_3) I am employed as a postdoc/researcher/lecturer at AAU
 - (_4) I am employed as a postdoc/researcher/lecturer at an institution other than AAU
 - (_5) Other, please indicate:<Open Textbox>
-

[#33].[#2] If q25a.ContainsAny({_4})

[q26a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Why are you not employed at AAU?

- (_1) It is not possible for me to get a job
 - (_2) I don't want to get a job
 - (_3) Other, please write here: <Open Textbox>
-

[#33].[#2] End If

[q27a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

What type of employment do you have in your current job?

- (_1) Time-limited employment (full-time)
 - (_2) Time-limited employment (part-time)
 - (_3) Fixed employment (full-time)
 - (_4) Fixed employment (part-time)
 - (_5) Freelance
 - (_6) Other:<Open Textbox>
-

[#33].[#4] If NOT q25a.ContainsAny({_3})

[q28a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Where are you employed in your current job?

- (_1) Capital Region of Denmark (Region Hovedstaden)
 - (_2) Zealand Region (Region Sjælland)
 - (_3) Central Jutland Region (Region Midtjylland)
 - (_4) Region of Southern Denmark (Region Syddanmark)
 - (_5) North Jutland Region (Region Nordjylland)
 - (_6) Abroad – please indicate country:<Open Textbox>
-

[#33].[#4] End If

[#33].[#5] If q28a.ContainsAny({_6})

[q29a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

What was important to you in your choice of workplace outside Denmark?

- (_1) Please indicate: <Open Textbox>
 - (_2) Do not know / Cannot remember
-

[#33].[#5] End If

[#33].[#6] If q28a.ContainsAny("_1.._4")

[q30a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

What was important to you in your choice of workplace outside North Jutland?

- (_1) Please indicate: <Open Textbox>
- (_2) Do not know / Cannot remember

[#33].[#6] End If

[q31a_, Categorical/Multiple, Normal, Min:1, Max:2, Must Answer]

Which company, institution or organisation are you employed in?

- (_1) Company / institution / organisation:<Open Textbox>
- (_2) Department: <Open Textbox>
- (_3) I do not wish to respond<Exclusive>

[q32a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Think of your current job. What is the total number of employees (including employees abroad) in the company, institution or organisation? If you are employed at a university or similar, this question refers to the institution's size.

- (_1) 1-9
- (_2) 10-49
- (_3) 50-199
- (_4) 200-499
- (_5) 500-999
- (_6) 1,000-4,999
- (_7) 5,000 or above
- (_8) Do not know / Cannot remember

[q33a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Think of your current job. What sector do you work in? From the list please select the sector within which your current workplace primarily operates? The sectors are as defined by Danmarks Statistik's sector classification.

- (_1) Administrative services and assistance services
- (_2) Building and construction companies
- (_3) Electricity, gas and district heating supplies
- (_4) Extra-territorial organisations and bodies
- (_5) Wholesale and retail trade, repair of motor vehicles and motor cycles
- (_6) Production company (including production in the chemical and biotech areas)
- (_7) Information and communication
- (_8) Culture, entertainment or sport
- (_9) Agriculture, hunting, forestry and fisheries
- (_10) Liberal, scientific and technical services
- (_11) Public administration, defence and social insurance
- (_12) Financial institution and financial company, insurance
- (_13) Consultancy company
- (_14) Raw material extraction
- (_15) Health service and social organisations
- (_16) Transportation and goods handling
- (_17) Teaching

- (_18) University/research institution
 - (_19) Water supply, sewage disposal, waste management and soil and groundwater treatment
 - (_20) Other services
 - (_21) Other, please indicate:<Open Textbox>
-

[q34a_, Categorical/Multiple, Normal, Min:1, Max:21, Must Answer]

Which job functions do you undertake in the company? (Tick several, if required)

- (_1) Specialised tasks in relation to the PhD programme (such as energy systems, building construction etc.)
 - (_2) Administration (including accounting and secretarial functions)
 - (_3) Data analysis
 - (_4) Documentation
 - (_5) Research
 - (_6) HR/personnel
 - (_7) Information
 - (_8) IT functions
 - (_9) Chemical analysis
 - (_10) Management/organisation
 - (_11) Middle/upper management
 - (_12) Planning
 - (_13) Production
 - (_14) Product development/innovation
 - (_15) Project management
 - (_16) Advice/consultancy work
 - (_17) Sales/marketing/advertising
 - (_18) Service (including customer service)
 - (_19) Teaching
 - (_20) Clinical work
 - (_21) Other, please indicate:<Open Textbox>
-

[q35a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Are there any of your specific work tasks in your current job that could only be performed by a person with a PhD degree?

- (_1) Yes, most of my specific work tasks can only be performed by a person with a PhD degree
 - (_2) Yes, some of my specific work tasks can only be performed by a person with a PhD degree
 - (_3) Yes, a few of my specific work tasks can only be performed by a person with a PhD degree
 - (_4) No, my specific work tasks can also be performed by a person with a master's degree and several years of professional experience
 - (_5) No, my specific work tasks can also be performed by a new graduate with no relevant professional experience
 - (_6) Do not know
-

[q48a, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Overall, do you believe that your PhD programme has equipped you to perform as expected in your current job?

- (_1) To a great extent
- (_2) To some extent
- (_3) To a lesser extent
- (_4) Not at all

- (_5) Do not know
-

[#33] End If

[#35] If q3_3.ContainsAny("_3.._5")

[q25b_intro, Info]

The next questions relate to your last job.

[q25b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Where were you employed in your last job?

- (_1) I was employed in the private sector
- (_2) I was employed in the public sector
- (_3) I was employed as a postdoc/researcher/lecturer at AAU
- (_4) I was employed as a postdoc/researcher/lecturer at an institution other than AAU
- (_5) Other, please indicate:<Open Textbox>
-

[#35].[#2] If q25b.ContainsAny({_4})

[q26b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Why were you not employed at AAU?

- (_1) It was not possible for me to get a job
- (_2) I didn't want to get a job
- (_3) Other, please indicate:<Open Textbox>
-

[#35].[#2] End If

[q27b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

What type of employment did you have in your last job?

- (_1) Time-limited employment (full-time)
- (_2) Time-limited employment (part-time)
- (_3) Fixed employment (full-time)
- (_4) Fixed employment (part-time)
- (_5) Freelance
- (_6) Other:<Open Textbox>
-

[#35].[#4] If NOT q25b.ContainsAny({_3})

[q28b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Where were you employed in your last job?

- (_1) Capital Region of Denmark (Region Hovedstaden)
- (_2) Zealand Region (Region Sjælland)
- (_3) Central Jutland Region (Region Midtjylland)
- (_4) Region of Southern Denmark (Region Syddanmark)
- (_5) North Jutland Region (Region Nordjylland)
- (_6) Abroad – please indicate country:<Open Textbox>
-

[#35].[#4] End If

[#35].[#5] If q28b.ContainsAny({_6})

[q29b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

What was important to you in your choice of workplace outside Denmark?

- (_1) Please indicate: <Open Textbox>
- (_2) Do not know / Cannot remember

[#35].[#5] End If

[#35].[#6] If q28b.ContainsAny("_1.._4")

[q30b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

What was important to you in your choice of workplace outside North Jutland?

- (_1) Please indicate: <Open Textbox>
- (_2) Do not know / Cannot remember

[#35].[#6] End If

[q31b_, Categorical/Multiple, Normal, Min:1, Max:2, Must Answer]

Which company, institution or organisation were you employed in?

- (_1) Company / institution / organisation:<Open Textbox>
- (_2) Department: <Open Textbox>
- (_3) I do not wish to respond<Exclusive>

[q32b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Think of your last job. What was the total number of employees (including employees abroad) in the company, institution or organisation? If you were employed at a university or similar, this question refers to the institution's size.

- (_1) 1-9
- (_2) 10-49
- (_3) 50-199
- (_4) 200-499
- (_5) 500-999
- (_6) 1,000-4,999
- (_7) 5,000 or above
- (_8) Do not know / Cannot remember

[q33b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Think of your last job. What sector did you work in? From the list please select the sector within which your last workplace primarily operates. The sectors are as defined by Danmarks Statistik's sector classification.

- (_1) Administrative services and assistance services
- (_2) Building and construction companies
- (_3) Electricity, gas and district heating supplies
- (_4) Extra-territorial organisations and bodies
- (_5) Wholesale and retail trade, repair of motor vehicles and motor cycles
- (_6) Production company (including production in the chemical and biotech areas)
- (_7) Information and communication
- (_8) Culture, entertainment or sport

- (_9) Agriculture, hunting, forestry and fisheries
- (_10) Liberal, scientific and technical services
- (_11) Public administration, defence and social insurance
- (_12) Financial institution and financial company, insurance
- (_13) Consultancy company
- (_14) Raw material extraction
- (_15) Health service and social organisations
- (_16) Transportation and goods handling
- (_17) Teaching
- (_18) University/research institution
- (_19) Water supply, sewage disposal, waste management and soil and groundwater treatment
- (_20) Other services
- (_21) Other, please indicate:<Open Textbox>

[q34b_, Categorical/Multiple, Normal, Min:1, Max:21, Must Answer]

Which job functions did you perform in the company? (Tick several, if required)

- (_1) Specialised tasks in relation to the PhD programme (such as energy systems, building construction etc.)
- (_2) Administration (including accounting and secretarial functions)
- (_3) Data analysis
- (_4) Documentation
- (_5) Research
- (_6) HR/personnel
- (_7) Information
- (_8) IT functions
- (_9) Chemical analysis
- (_10) Management/organisation
- (_11) Middle/upper management
- (_12) Planning
- (_13) Production
- (_14) Product development/innovation
- (_15) Project management
- (_16) Advice/consultancy work
- (_17) Sales/marketing/advertising
- (_18) Service (including customer service)
- (_19) Teaching
- (_20) Clinical work
- (_21) Other, please indicate:<Open Textbox>

[q35b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Were there any of your specific work tasks in your last job that could only be performed by a person with a PhD degree?

- (_1) Yes, most of my specific work tasks could only be performed by a person with a PhD degree
- (_2) Yes, some of my specific work tasks could only be performed by a person with a PhD degree
- (_3) Yes, a few of my specific work tasks could only be performed by a person with a PhD degree
- (_4) No, my specific work tasks could also be performed by a person with a master's degree and several years of professional experience
- (_5) No, my specific work tasks could also be performed by a new graduate with no relevant professional experience
- (_6) Do not know

[q48b, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Overall, do you believe that your PhD programme equipped you to perform as expected in your last job?

- (_1) To a great extent
- (_2) To some extent
- (_3) To a lesser extent
- (_4) Not at all
- (_5) Do not know

[#35] End If

[q36, Grid, Row, Randomize, EXPANDED, Must Answer]

In your opinion, what does a good job look like? Please attach importance to the following factors.

	(_1) Great importance	(_2) Some importance	(_3) Less importance	(_4) None importance	(_5) Do not know
(_1) Short distance to where I live	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) High degree of job security (fixed employment)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) International environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_4) Relevance in relation to my education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_5) Relevant sector in relation to my research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_6) Relevance in relation to my future career progression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_7) Highly professional colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_8) Good research facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_9) Professional challenges	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_10) Influence on decision-making processes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_11) Self-determination to decide work tasks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_12) Staff management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_13) Large amount of responsibility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_14) High wage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_15) Physical working environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_16) Good HR policy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

(_17) Good colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_18) Good superiors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_19) Work/life balance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_20) Opportunity for continuing/further education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[q37, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Is there anything else that you value in a good job?

- (_1) Yes, please indicate:<Open Textbox>
- (_2) No

[q38_intro, Info]

In the following questions, you are asked to evaluate, based on your PhD programme, different professional skills from the perspective of two parameters, namely:

- Whether you have acquired the relevant skills during your PhD programme at AAU?
- Whether the skills in question have been relevant in your career so far?

There will be questions connected to skills both within your research and your personal skills.

[q39_1, Grid, Row, Normal, EXPANDED, Must Answer]

To what extent have you acquired the following skills by virtue of your PhD programme?

Acquired the ability to...

	(_1) To a great extent	(_2) To some extent	(_3) To a lesser extent	(_4) Not at all	(_5) Do not know
(_1) acquire knowledge at the highest international level within my field of research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) contribute to the development of new knowledge within my field of research on the basis of scientific studies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) master the scientific methods that are connected to research and development tasks within my field of research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_4) analyse and evaluate new ideas in my field of research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_5) design and develop new techniques within my field of research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[#42] If q3_1.ContainsAny("_1.._5") or q3_2.ContainsAny("_1.._5") or q3_3.ContainsAny("_2.._5")

[q39_2, Grid, Row, Normal, EXPANDED, Must Answer]

Have you made use of the following skills in your career so far?

Do you make use of your ability to...

	(_1) To a great extent	(_2) To some extent	(_3) To a lesser extent	(_4) Not at all	(_5) Do not know
(_1) acquire knowledge at the highest international level within my field of research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) contribute to the development of new knowledge within my field of research on the basis of scientific studies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) master the scientific methods that are connected to research and development tasks within my field of research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_4) analyse and evaluate new ideas in my field of research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_5) design and develop new techniques within my field of research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[#42] End If

[q40_1, Grid, Row, Normal, EXPANDED, Must Answer]

To what extent have you acquired the following skills by virtue of your PhD programme?

Acquired the ability to...

	(_1) To a great extent	(_2) To some extent	(_3) To a lesser extent	(_4) Not at all	(_5) Do not know
(_1) participate in international discussions in the field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) verbally convey scientific news and progress to a broad audience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) convey research results in writing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_4) organise research projects with limited scope and duration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_5) manage research projects with limited scope and duration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_6) initiate collaboration with companies and other research institutions with the aim of producing new knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

(_7) create growth and employment in Denmark's economy through research, development and innovation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
---	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

[#44] If q3_1.ContainsAny("_1.._5") or q3_2.ContainsAny("_1.._5") or q3_3.ContainsAny("_2.._5")

[q40_2, Grid, Row, Normal, EXPANDED, Must Answer]

Have you made use of the following skills in your career so far?

Do you make use of your ability to...

	(_1) To a great extent	(_2) To some extent	(_3) To a lesser extent	(_4) Not at all	(_5) Do not know
(_1) participate in international discussions in the field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) verbally convey scientific news and progress to a broad audience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) convey research results in writing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_4) organise research projects with limited scope and duration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_5) manage research projects with limited scope and duration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_6) initiate collaboration with companies and other research institutions with the aim of producing new knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_7) create growth and employment in Denmark's economy through research, development and innovation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[#44] End If

<Q41>:

[q41, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Due to your PhD programme, have you developed technologies, software etc. that have been patented?

- (_1) Yes
- (_2) No

[q42, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Did you collaborate with private or public companies regarding your PhD programme?

- (_1) Yes
- (_2) No

<Q43>:

[q43_, Categorical/Multiple, Normal, Min:1, Max:2, Must Answer]

Have you been on a business visit as part of your PhD programme? Business visits can be shorter or longer stays at both private and public companies.

- (_1) Yes, in Denmark
- (_2) Yes, abroad
- (_3) No<Exclusive>

[#48] If q43_.ContainsAny({_3})

[q43_1, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Why have you not been on a business visit?

- (_1) Please write:<Open Textbox>
- (_2) Not relevant in my PhD programme

[#48] End If

[#49] If q43_.ContainsAny({_1})

[q43_2_1, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

How many business visits have you had in Denmark?

- (_1) 1
- (_2) 2
- (_3) More than 2

[#49] End If

[#50] If q43_.ContainsAny({_2})

[q43_2_2, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

How many business visits have you had abroad?

- (_1) 1
- (_2) 2
- (_3) More than 2

[#50] End If

[#51] If q43_.ContainsAny({_1})

q43_3_1.QuestionFilter = ""

if q43_2_1.ContainsAny({_1}) then q43_3_1.QuestionFilter = q43_3_1.QuestionFilter + {_1}

if q43_2_1.ContainsAny({_2,_3}) then q43_3_1.QuestionFilter = q43_3_1.QuestionFilter + {_2,_3}

q43_3_1.QuestionTemplate = epirsd_not_responsive

[q43_3_1, Grid, Row, Normal, EXPANDED, Must Answer]

How long did your business visit(s) in Denmark last, and how would you evaluate the length of the visit(s)?

	Duration in months:	(_1) Too long	(_2) Appropriate length	(_3) Too short
(_1) Business visits in Denmark	[Long]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) First business visit in Denmark	[Long]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) Last business visit in Denmark	[Long]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[#51] End If

```
[#52] If q43_.ContainsAny({_2})
    q43_3_2.QuestionFilter = ""
    if q43_2_2.ContainsAny({_1}) then q43_3_2.QuestionFilter = q43_3_2.QuestionFilter + {_1}
    if q43_2_2.ContainsAny({_2,_3}) then q43_3_2.QuestionFilter = q43_3_2.QuestionFilter + {_2,_3}
    q43_3_2.QuestionTemplate = epirsd_not_responsive
```

[q43_3_2, Grid, Row, Normal, EXPANDED, Must Answer]

How long did your business visit(s) abroad last, and how would you evaluate the length of the visit(s)?

	Duration in months:	(_1) Too long	(_2) Appropriate length	(_3) Too short
(_1) Business visits in Denmark	[Long]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) First business visit in Denmark	[Long]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) Last business visit in Denmark	[Long]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[#52] End If

```
[#53] If q43_.ContainsAny({_1})
```

[q43_4_1, Grid, Row, Normal, EXPANDED, Must Answer]

Do you think that your business visit(s) in Denmark contributed to:

	(_1) To a great extent	(_2) To some extent	(_3) To a lesser extent	(_4) Not at all	(_5) Do not know
(_1) Your professional development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) To the development of your professional network	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) The promotion of your career opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[#53] End If

```
[#54] If q43_.ContainsAny({_2})
```

[q43_4_2, Grid, Row, Normal, EXPANDED, Must Answer]

Do you think that your business visit(s) abroad contributed to:

	(_1) To a great extent	(_2) To some extent	(_3) To a lesser extent	(_4) Not at all	(_5) Do not know
(_1) Your professional development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) To the development of your professional network	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) The promotion of your career opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[#54] End If

[q44, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Have you studied or carried out research at a university abroad as part of your PhD programme? For example via a study trip or as a visiting scholar.

- (_1) Yes
- (_2) No

[#56] If q44.ContainsAny({_2})

[q44_1, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

Why have you not been on a study or research trip abroad?

- (_1) Write please:<Open Textbox>
- (_2) No relevant in my PhD programme

[#56] End If

[#57] If q44.ContainsAny({_1})

[q44_2, Categorical/Single, Normal, Min:1, Max:1, Must Answer]

How many external study or research trips abroad have you had?

- (_1) 1
- (_2) 2
- (_3) More than 2

```

q44_3.QuestionFilter = ""
if q44_2.ContainsAny({_1}) then q44_3.QuestionFilter = q44_3.QuestionFilter + {_1}
if q44_2.ContainsAny({_2,_3}) then q44_3.QuestionFilter = q44_3.QuestionFilter + {_2,_3}
q44_3.QuestionTemplate = epirsd_not_responsive
    
```

[q44_3, Grid, Row, Normal, EXPANDED, Must Answer]

How long did your study or business trip(s) abroad last, and how would you evaluate the length of the trip(s)?

	Duration in months:	(_1) Too long	(_2) Appropriate length	(_3) Too short
(_1) Study or research trip abroad	[Long]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) First study or research trip abroad	[Long]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) Last study or research trip abroad	[Long]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[q44_4, Grid, Row, Normal, EXPANDED, Must Answer]

Do you think that the external study or research trip(s) abroad contributed to:

	(_1) To a great extent	(_2) To some extent	(_3) To a lesser extent	(_4) Not at all	(_5) Do not know

(_1) Your professional development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) To the development of your professional network	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) The promotion of your career opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[#57] End If

[q46, Grid, Row, Normal, EXPANDED, Must Answer]

To what extent do you agree or disagree with the following statements:<style>@media only screen and (min-width: 768px) {table.q-grid tr:first-child th {width: 10%;}}</style>

	(_1) Agree	(_2) Mostly agree	(_3) Neither agree nor disagree	(_4) Mostly disagree	(_5) Disagree	(_6) Don't know
(_1) During my PhD programme I have collaborated with individuals with various cultural backgrounds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) During my PhD programme I have had the opportunity to work within different disciplines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) I have built up an international network through my PhD programme at AAU	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_4) I regard AAU as an internationally oriented university in terms of its research environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[#59] If q3_1.ContainsAny("_1.._5") or q3_2.ContainsAny("_1.._5") or q3_3.ContainsAny("_2.._5")

[q47, Grid, Row, Normal, EXPANDED, Must Answer]

To what extent have you made use of the following (international) skills in your career so far?

	(_1) To a great extent	(_2) To some extent	(_3) To a lesser extent	(_4) Not at all	(_5) Do not know
(_1) Oral foreign language skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_2) Written foreign language skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_3) Global perspective – not just thinking nationally	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_4) Knowledge of international research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(_5) Understanding of foreign cultures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

(_6) Ability to collaborate with foreign colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
---	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

[#59] End If
 [#61] If NOT(q10b.ContainsAny({_3}) or q25a.ContainsAny({_3}))
 [q49_, Categorical/Multiple, Normal, Min:1, Max:4, Must Answer]
 What kind of association do you currently share with AAU?

- (_1) External lecturer
- (_2) External examiner
- (_3) Research collaboration
- (_4) Other:<Open Textbox>
- (_5) I have no connection with AAU<Exclusive>

[#61] End If
 [#62] If q49_.ContainsAny({_5})
 [q50, Categorical/Single, Normal, Min:1, Max:1, Must Answer]
 Would you like to share an association with AAU?

- (_1) Yes
- (_2) No
- (_3) Do not know

[#62] End If
 [q51_, Categorical/Multiple, Normal, Min:1, Max:4, Must Answer]
 Do you have any interest in an alumnus association with AAU?

- (_1) Yes, with respect to professional events
- (_2) Yes, with respect to social events
- (_3) Yes, I already have an alumnus association to AAU due to my master's degree.
- (_4) Other:<Open Textbox>
- (_5) No<Exclusive>
- (_6) Do not know<Exclusive>

[#64] If q3.ContainsAny({_1,_2})
 [#64].[#0] If NOT(q10b.ContainsAny({_3}) or q25a.ContainsAny({_3}))
 [q52, Categorical/Single, Normal, Min:1, Max:1, Must Answer]
 Would you be interested in being an ambassador in respect to new joint research projects between your company and AAU?

- (_1) Yes
- (_2) No
- (_3) Do not know

[#64].[#0] End If
 [q53, Categorical/Single, Normal, Min:1, Max:1, Must Answer]
 Would you be interested in participating in a brief telephone interview regarding your current position?

- (_1) Yes, please write your email address and telephone number:<Open Textbox>
 - (_2) No
-

[#64] End If

[outro, Text, Min:0, Max:4000, Must Answer]

This was the last question. Thank you for taking the time to answer the survey. If you have any comments regarding the survey, you can write them here, or click on 'Finish'.

10. APPENDIX 2: INTERVIEW GUIDE

Below is the Danish version of the qualitative interview guide. The qualitative in-depth interviews were carried out as semi-structured interviews.

Tema og spørgsmål	Varighed	Sluttid
<p>1. INTRODUKTION</p> <p><i>Kursiveret tekst er information til interviewer og læses ikke op.</i></p> <p>Præsentation og rammesætning</p> <ul style="list-style-type: none"> • <i>Præsentation af Epinion og interviewer</i> • <i>Præsentation af undersøgelsen:</i> <p>Vi vil gerne undersøge om ph.d.er fra AAU opfylder virksomhedernes kompetencebehov, herunder de kompetencer, der er særlig vigtige for netop din virksomhed.</p> <p>Dine svar vil blive anvendt til at udvikle ph.d.-uddannelsen på AAU.</p> <p>Afgrænsning: Vi beder dig om at tænke på ph.d.er, der har fået deres grad fra AAU inden for de senest 4-5 år, og som er ansat/har været ansat hos jer i din afdeling.</p> <p>De formelle og etiske rammer:</p> <ul style="list-style-type: none"> • <i>Referat og lydoptagelse</i> • <i>Anonymitet</i> • <i>Ingen rigtige eller forkerte svar – vi vil gerne have alle nuancer og forskellige oplevelser med</i> <p>Præsentation</p> <p>Inden vi starter helt, kunne jeg godt tænke mig, at du lige præsenterede dig selv og virksomheden.</p> <ul style="list-style-type: none"> • Vil du ikke starte med at præsentere dig selv? <ul style="list-style-type: none"> ○ <i>Navn</i> ○ <i>Virksomhed/arbejdsområder</i> ○ <i>Stilling i firmaet og relation til AAU-dimittender? (nærmeste chef, HR, top-chef ...)</i> ○ <i>Phd selv</i> ○ <i>Anciennitet</i> ○ <i>Rolle/relation til ph.d.erne i virksomheden</i> ○ <i>Med til at ansætte medarbejdere, herunder ph.d.er?</i> • Virksomheden <ul style="list-style-type: none"> ○ <i>Branche, primære aktiviteter, antal ansatte, internationalt/dansk etc.</i> 	5	5

<p>2. BRUGEN AF PH.D.'ER PÅ ARBEJDSPLADSEN</p> <p><i>I dette afsnit afdækkes antallet af ph.d.er på arbejdspladsen og deres typiske jobfunktion samt interviewpersonens syn på det fremtidige behov for ph.d.-uddannede</i></p> <p>Til at starte med kunne jeg godt tænke mig at høre lidt om jeres medarbejdere med en ph.d.-grad.</p> <ul style="list-style-type: none"> • Hvor mange ansatte med ph.d.-grad er der hos jer? • Hvad er deres typiske jobfunktioner? • Har I nogle jobfunktioner eller stillinger, som kun ph.d.'er kan varetage? • Hvilket universitet kommer de fra? Fakultet? • Har I (haft) erhvervsph.d.-studerende hos jer? <ul style="list-style-type: none"> ○ Hvis ja, hvad er erfaringen med det? ○ Hvis nej, hvorfor ikke? • Har I en ansættelsespolitik eller strategi med hensyn til ansættelse af ph.d.er – fx at I gerne vil tiltrække flere, eller at en bestemt andel gerne skal have en ph.d.? <ul style="list-style-type: none"> ○ I hvilken grad ønsker I at ansætte ph.d.er? ○ Hvordan oplever I udbuddet? Kan I tiltrække dem I ønsker at ansætte? • Da du ansatte din første phd, hvad var så dine forventninger eller fordomme om at få en medarbejder med phd.-grad? • Levede personen op til fordommene eller forventningerne? • Hvad er dit perspektiv på efterspørgslen af ph.d.-uddannede inden for jeres felt fremadrettet? <ul style="list-style-type: none"> ○ Hvor mange ph.d.ere tror du I vil få brug for fremadrettet i din afdeling? ○ Uddannes der nok ph.d.er inden for dit felt (matcher udbuddet efterspørgslen)? 	10	15
<p>3. KOMPETENCER</p> <p><i>Her undersøges det generelle kompetencebehov blandt aftagervirksomhederne, hvordan ph.d.erne matcher dette behov, samt hvordan AAU ph.d.er klarer sig sammenlignet med ph.d.er fra andre universiteter.</i></p> <ul style="list-style-type: none"> • Hvad lægger I generelt vægt på, når I ansætter ingeniørfaglige/naturvidenskabelige/it-tekniske/medicinske akademiske medarbejdere (kandidater og ph.d.'er) i din afdeling? <i>(henvis til den type ansat, som interviewpersonen har nævnt tidligere)</i> • Hvilke tre kompetencer er mest vigtige i din virksomhed/afdeling? <p><i>Probe på nedenstående kompetencer:</i></p> <ul style="list-style-type: none"> ○ Snævre, faglige kompetencer ○ Praktisk erfaring 	15	30

<ul style="list-style-type: none"> ○ IT-kompetencer ○ Projektledelse ○ Forskning ○ Design og udvikling ○ Analyse af data ○ Indhente og anvende ny viden ○ Mestring af videnskabelige metoder ○ Formidling ○ Samarbejde ○ Personaleledelse <p><i>Herefter spørges ind til i hvilken grad ph.d.erne besidder disse kompetencer.</i></p> <ul style="list-style-type: none"> ● I hvilken grad besidder en ph.d. disse kompetencer? ● Er der nogle andre kompetencer, som ph.d.erne er særligt gode til? ● Oplever du, at der er nogle kompetencer, som ph.d.erne mangler. <p><i>Slutteligt sammenlignes ph.d.er med kandidater</i></p> <ul style="list-style-type: none"> ● Hvis du nu skulle sidestille en ph.d. med en kandidat – hvad ville så være en rimelig sammenligning? Er det en kandidat med to/tre års erhvervs-erfaring? ● I hvilken grad besidder en ph.d. de kompetencer, som du pegede på som vigtige for jer, sammenlignet med en kandidat med to/tre års erhvervs-erfaring? <ul style="list-style-type: none"> ○ Hvorfor? Hvad er det, som ph.d.erne kan/ikke kan? ● Mangler ph.d.erne viden eller kompetencer, som kandidatuddannede med tre års relevant erhvervs-erfaring besidder? Eller oplever du dem som overkvalificerede til størstedelen af stillingerne hos jer? ● Er der nogle typer af stillinger, hvor du i højere grad efterspørger en ph.d.-dimittend end en med kandidatgrad? 		
<p>4. AAU PHD'ER SAMMENLIGNET MED ANDRE PHD'ER</p> <p><i>Vi vil nu spørge ind til virksomhedernes konkrete erfaringer med AAU ph.d.-dimittender sammenlignet med ph.d.-dimittender fra andre universiteter.</i></p> <ul style="list-style-type: none"> ● Har I phd.'ere fra flere forskellige universiteter? ● Foretrækker I ph.d.er fra bestemte universiteter? <ul style="list-style-type: none"> ○ Hvorfor/hvorfor ikke? (<i>probe: Bygger det på konkrete erfaringer?</i>) ● Hvordan er AAU ph.d.ers kompetencer sammenlignet med ph.d.er fra andre universiteter? <ul style="list-style-type: none"> ○ Besidder ph.d.erne fra AAU i højere grad eller mindre grad de tre vigtigste kompetencer, som I efterspørger, sammenlignet med ph.d.er fra andre universiteter? 	5	35

<ul style="list-style-type: none"> • Er der områder, hvor AAU ph.d.er kunne blive bedre ift. jeres kompetencebehov? Sammenlignet med ph.d.er fra andre universiteter? • Har du andre input/forslag til hvad AAU kunne gøre anderledes ift. deres ph.d.-uddannelse eller samarbejde med virksomheder? 		
<p>5. OVERGANG FRA PHD TIL ARBEJDSMARKEDET <i>I dette tema afdækkes ph.d.ernes overgang fra uddannelse til arbejdsmarked</i></p> <ul style="list-style-type: none"> • Hvordan oplever I, at ph.d.ernes overgang er fra uddannelse til arbejdsmarked? • Er der noget, som de hurtigt bliver gode til? Som AAU evt. kunne forberede dem på? <ul style="list-style-type: none"> ○ Hvilke udfordringer oplever I typisk (hvis nogen)? ○ Er der noget, som AAU kan gøre for at lette overgangen? ○ Er der noget, som du synes, at de allerede gør godt i dag, og som eventuelt kan styrkes eller blot fortsættes? 	5	40
<p>6. AFSLUTTENDE SPØRGSMÅL <i>I afslutningen gengives de primære kompetencer, som en ph.d. ifølge interviewpersonen besidder, for at sikre, at det er rigtigt forstået, og at der ikke er noget, som er blevet overset undervejs.</i></p> <ul style="list-style-type: none"> • Så er vi gennem de spørgsmål, som jeg havde. Du har givet mig et rigtig godt billede af de kompetencer, som en ph.d. fra AAU besidder. Er det rigtig forstået, at for dig så er de primære kompetencer [<i>gentag konklusion</i>]? • Har du nogen afsluttende kommentarer til vores snak? Er der noget du sidder og brænder inde med? <p>Tak for din hjælp! Du har bidraget med mange værdifulde input.</p>	0	45

EPINION

OM OS

Vi er et af Skandinaviens største konsulent- og analysefirmaer med kontorer i Danmark, Norge, Storbritannien, Sverige, Tyskland, Vietnam og Østrig.

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