

# Employability: the employers' perspective

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# Employability: the employers' perspective

Using a stated-preferences experiment to gain insights into employers' preferences for specific competencies

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# SUMMARY

In recent years, the Executive Board of Maastricht University (UM) has become increasingly aware of the importance of promoting the employability of graduates. A study by Van Eldert et al. (2017) has given us many insights into the employability of UM graduates. Their employability over time is relatively stable, but there are differences between faculties. There are also few differences between UM graduates and graduates from other Dutch universities. The employability of UM graduates is partly explained by personal characteristics, personality, education and the level of competencies acquired.

If we want to increase the employability of UM graduates, it is important that we not only look at characteristics of the graduates, but that we also take the employer perspective into account: what characteristics and skills do employers expect from graduates and which skills are decisive when making hiring decisions?

We conducted a survey of more than 1100 employers at various firms in the Netherlands. It included a stated-preferences experiment in which employers were repeatedly asked to choose between two hypothetical job applicants for a hypothetical vacancy in the most common entry-level job. The two job applicants were said to be identical with the exception of several characteristics that varied randomly within and across the choices. This method allows for causal interpretations about which competencies influence the probability that employers will offer graduates a job, which competencies are most important and which trade-offs employers make between different competencies.

In our stated-preferences experiment, we divided academic expertise and skills into two groups: field-specific knowledge and analytical skills. Whereas specific knowledge is taught within a specific Master's programme, the second is a skill that all (UM) Master's programmes aim to teach their students. Next to these two academic competencies, we distinguish between social skills (related to social responsibility), attitudes and innovativeness (related to self-awareness) and lifelong learning (related to adaptability and focusing on the UM's mission to prepare its students for the ever-changing labour market by providing them with lifelong learning skills). Within the stated-preferences experiment, job applicants were randomly assigned an advanced, intermediate or limited value for each competency.

After the stated-preferences experiment, we asked respondents to rank the underlying specific competencies per broad category to get an idea about the competencies they value most within these broad categories. The most important underlying specific competencies are problem-solving capacity (analytical skills), collaborative skills (social skills), flexibility (attitudes and innovativeness) and taking active and own initiative in learning (lifelong learning skills).

We found that all these competencies affect the probability of an applicant being hired. The most influential factor is the extent to which an applicant has field-specific knowledge. After field-specific knowledge, employers equally value analytical skills, social skills and attitudes and innovativeness. Though still significant, an applicant's level of lifelong learning skills seems to be the least important for hiring decisions. Interestingly, developing skills to only a limited level has a greater negative impact on the likelihood of being hired than having advanced skills has on the positive side.

Based on the UM graduate survey five years after graduation, we defined sectors and occupational categories in which graduates from the specific faculties work to analyse heterogeneous effects across faculties. The main results are fairly stable across faculties, with two exceptions. First, advanced lifelong learning skills do not significantly increase the probability of being hired for graduates from FHML and FPN. Second, employers looking to hire for an FHML-related occupation do value attitudes and innovativeness. However, having a limited level of attitudes and innovativeness does not negatively affect someone's probability of being hired.

Although field-specific knowledge seems to be most important to hiring decisions (related to occupations and sectors for all faculties), additional analyses found that having advanced field-specific knowledge is not enough on its own. Employers appreciate a combination of intermediate field-specific knowledge with advanced analytical skills more than advanced field-specific knowledge alone.

The compensating effect of analytical skills is also found for social skills. The compensating role of advanced attitudes and innovativeness and lifelong learning skills is smaller than that of advanced analytical and social skills: the probability of being hired is not greater, but an applicant with advanced field-specific knowledge and limited attitudes and innovativeness or lifelong learning is equally likely to be hired as an applicant with intermediate field-specific knowledge and advanced attitudes and innovativeness or lifelong learning. This suggests that the compensating role of advanced attitudes and innovativeness is smaller than that of advanced analytical and social skills.

This suggests that it is actually important for graduates' employability that they not only acquire advanced field-specific knowledge, but also competencies related to analytical skills, social skills and attitudes and innovativeness. While advanced lifelong learning skills also increase the probability of being hired, their effect is small relative to the other competencies.

Based on the National Graduate Survey (NAE), we are able to comment on UM graduates' perceived levels of these competencies. On average, UM graduates report that they have advanced analytical skills, social skills, attitudes and innovativeness and lifelong learning skills (score 4 of 5). They also report on average that their Master's programme contributed to some or a large degree of their professional capabilities.





# 1 INTRODUCTION

In recent years, the Executive Board of Maastricht University (UM) has become increasingly aware of the importance of promoting the employability of graduates. A study by Van Eldert et al. (2017) has given us many insights into the employability of UM graduates. Their employability over time is relatively stable, but there are differences between faculties. There are also few differences between UM graduates and graduates from other Dutch universities. Moreover, the employability of UM graduates is partly explained by personal characteristics, personality, education and the level of competencies acquired.

Although these findings are interesting, it is unclear how the employability of graduates (from UM and other universities) is actually shaped. This is because employability relies not only on the graduates' characteristics (supply-side factors) but also labour demand characteristics. Graduates have specific competencies that are valued more or less by employers.

If we want to increase the employability of UM graduates, it is important that we not only look at their current employability, but also at the employer perspective: what characteristics and skills do employers expect from graduates and which skills are decisive when making hiring decisions?

This study answers the following research questions:

- Which competencies influence the probability that employers will offer UM graduates a job by 2019?
- Which competencies are most important, and how decisive are these skills relative to each other?
- Which trade-offs do employers make between different competencies?

We conducted a survey of more than 1,100 employers at various firms in the Netherlands. It included a stated-preferences experiment in which employers were repeatedly asked to choose between two hypothetical job applicants for a hypothetical vacancy in the most common entry-level job. The two job applicants were said to be identical with the exception of several characteristics that varied randomly within and across the choices.

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This method allows for causal interpretations about which competencies influence the probability that employers will offer graduates a job, which competencies are most important and which trade-offs employers make between different competencies.

This report is organised as follows. In Section 2, we briefly describe the related literature and theoretical foundation for our stated-preferences experiment. In Section 3, we describe the data collection and data set. We also show how we link sectoral and occupational information from participating firms to faculties for our faculty-specific analyses.<sup>1</sup> In Section 4, we describe the specific underlying competencies belonging to the broad competency groups which are part of the stated-preferences experiment. Moreover, we show the rankings of the underlying specific competencies per broad category to suggest which competencies employers value most within these broad categories. In Section 5, we provide the main and faculty-specific findings. Section 6 presents our conclusions.

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<sup>1</sup> Throughout this report, we abbreviate the faculties as follows: Faculty of Science and Engineering (FSE), Faculty of Psychology and Neuroscience (FPN), Faculty of Health, Medicine and Life Sciences (FHML), Faculty of Law (Law), Faculty of Arts and Social Sciences (FASoS) and the School of Business and Economics (SBE).

## 2 RELATED LITERATURE AND THEORETICAL FOUNDATION

There is extensive literature about the employment of students and workers. Research on higher education (e.g. Cole & Tibby 2013) and workplace learning (e.g. Peeters et al. 2019) address how to become and remain employable. As Römgens & Beauseart (2019) conclude, both disciplines use a competency-based approach. Based on this insight, they provide an integrated overview of employability by showing similarities and complementarities between the two views on employability. See Table 2.1 for their main findings.

**TABEL 2.1** Comparison of the dimensions of employability in workplace learning research and higher education research

Dimension/Research strand	Workplace learning	Higher education
Dimension 1	Human capital	(Applying) disciplinary knowledge
Dimension 2	Social capital	Transferable generic skills
Dimension 3		Emotional regulation
Dimension 4	Lifelong learning and (active and passive) flexibility	Career development skills
Dimension 5	Reflection on self and organisation	Self-management
Dimension 6		Self-efficacy
Dimension 7	A healthy work-life balance	

Source: Römgens and Beauseart (2019), Table 3

Based on this integrated overview and on the Dublin descriptors, Römgens and Beauseart (2016), developed an employability framework for Maastricht University specifically. This framework consists of four key competencies:

1. Academic expertise and skills
2. Self-awareness
3. Adaptability
4. Social responsibility

Therefore, it is most related to the employability literature on workplace learning. All study programmes at UM have to show how their programme and underlying courses contribute to the development of these four competencies. However, are these the four competencies that employers prefer or require?

The economics (of education) literature analyses the role of specific competencies in employability from a different point of view than the earlier mentioned research on higher education and workplace learning: it estimates *employers' preferences for specific competencies among recent graduates*.<sup>2</sup> Using a stated-preferences experiment is a sophisticated way to estimate the *employers' preferences*.

Biesma et al. (2007) performed such a stated-preferences experiment for the public health field in the Netherlands. In addition to public-health-specific knowledge, they included four generic competencies: communication skills, teamwork skills, problem-solving skills and creativity, and flexibility. In contrast to the study from Humburg & Van der Velden (2015), Biesma et al. (2007) showed that employers value generic competencies more than public-health-specific knowledge. They concluded that employers in the public health sector seem to be more interested in graduates who can apply knowledge, differentiate between major and minor points and make well-considered judgements. It should be mentioned, however, that their stated-preferences experiment distinguished between no knowledge of public health, basic knowledge and specialist knowledge. The other competencies varied between fair (0) and good (1). They also explicitly asked employers what type of degree they preferred; they found that employers prefer graduates with a Master in Public Health over graduates with a Bachelor in Public Health or a general Master's degree (e.g. economics or psychology). These seem to be two contradictory findings.

Humburg & Van der Velden (2015) assessed graduates' skill levels in the following six domains: professional expertise, general academic skills, innovative/creative skills, strategic/organisational skills, interpersonal skills and commercial/entrepreneurial skills.<sup>3</sup> Their experiments were conducted in nine European countries (including the Netherlands) and focused on the following occupational fields: electro-technology, engineering, financial services, ICT, legal services, media and communication, and policy and organisation. Humburg & Van der Velden (2015) found that above-average professional expertise is most important to employers' hiring decisions, followed by above-average interpersonal skills. Commercial/entrepreneurial skills are the least important. The penalty for having a low level of interpersonal skills is the greatest, implying that a lack of interpersonal skills harms a graduate's chances of acquiring a job.

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2 There is also literature focusing on what is expected of higher education graduates in the twenty-first century, without the experimental method of a stated-preferences experiment. Based on the identification of six trends in the labour market, Humburg & Van der Velden (2015) mention professional expertise, flexibility, innovation and knowledge management, mobilization of human resources, international orientation and entrepreneurship. In a stated-preferences experiment, it is possible to actually test the extent to which employers do indeed prefer these competencies.

3 Starting salary was the final attribute (with items 10% below average for this position, average for this position and 10% above average for this position).

In our stated-preferences experiment, we divide academic expertise and skills into two groups: field-specific knowledge and analytical skills. The contradictory findings of Biesma et al. (2007) and Humburg & Van der Velden (2015) show the need to differentiate between the two groups, as the first one is specific knowledge taught within a specific Master's programme, while the second is a skill that all (UM) Master's programmes aim to teach their students. It is important to gain insights into the relative importance of these two competencies (among others) from an employer's perspective. Next to these two academic competencies, we distinguish between social skills (related to social responsibility), attitudes and innovativeness (related to self-awareness) and lifelong learning (related to adaptability and focusing on the UM's mission to prepare its students for the ever-changing labour market by providing them with lifelong learning skills).<sup>4,5</sup> Within the stated-preferences experiment, job applicants were randomly assigned an advanced, intermediate or limited value for each competency:

- |                                |                                 |
|--------------------------------|---------------------------------|
| • Field-specific knowledge     | advanced, intermediate, limited |
| • Analytical skills            | advanced, intermediate, limited |
| • Social skills                | advanced, intermediate, limited |
| • Attitudes and innovativeness | advanced, intermediate, limited |
| • Lifelong learning skills     | advanced, intermediate, limited |

4 See Appendix A for the link between the Dublin indicators, the EMP (employability) framework of the UM and the attributes of our stated-preferences experiment.

5 The recent focus of the UM on global citizenship and well-being is reflected in the competencies social skills, attitudes and innovativeness, and lifelong learning skills. More specifically for global citizenship we added the following skills and competencies: collaborative skills, communication competencies including intercultural competencies, awareness of a broader context including global awareness, ethical competencies (related to social skills), and awareness of what one knows and can do (related to lifelong learning skills). For well-being we added: stress and time management (related to social skills), flexibility (related to attitudes and innovativeness) and perseverance in overcoming barriers and setbacks (related to lifelong learning).



## 3 DATA

We used the employer panel from Kantar, called the NIPO Businessbase. This panel includes about 11,650 firms, of which 2,000 were asked to participate in our survey about firms' hiring policies in April 2019. With a response rate of 58%, 1,135 employers in the Netherlands completed the survey.<sup>6</sup> Respondents are (co-)responsible for personal matters within the firm.<sup>7</sup> Table 3.1 provides a clear overview of the sectors in which the firms are active.<sup>8</sup> Based on the 2018 UM graduation survey five years after graduation, we added the faculties from which a relatively high percentage of alumni work in that specific sector.<sup>9</sup>

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6 Employers outside the Netherlands are not part of the project. Humburg & Van der Velden (2015), who performed analyses similar to ours, focused on different competencies and found no systematic differences in the relative importance of types of skills between employers from different countries.

7 We asked employers specific questions about their experience with UM graduates. One-third of the respondents had UM graduates among their job applicants. Of the 188 employers who currently employ or have employed UM graduates, 70% reported being (very) satisfied with these employees.

8 We decided to omit firms with fewer than 20 employees, thereby deviating from a representative sample of firms in the Netherlands. We did so because the likelihood that such firms would regularly hire Master's graduates from a UM faculty is relatively small.

9 For each faculty, we mention the sectors (SBI) that count for at least 70% of the alumni. The fact that FASoS and FSE are mentioned three times shows that the distribution of alumni from these faculties is relatively widespread. See Appendix B for an overview of the most common occupations and sectors per faculty.





We chose this group of attributes based on the literature. See Section 2 for the justification of the chosen competencies.

In addition to the stated-preferences experiment, the survey contains background questions about the employer's workforce, hiring policy and experiences with UM graduates.

### 3.1 Importance of competencies across faculties

We use two methods to explore the extent to which competency requirements differ across faculties. First, we report the (relative) role of competencies across sector. As Table 3.1 shows, graduates from the UM faculties are not equally distributed across all sectors. Those interested in the importance of competencies for graduates from the Faculty of Law, for instance, could take a specific look at the findings for the business services and public administration and defence sectors. Second, we use the survey question for the most common entry-level job where occupations are included, based on the SBC92 occupational classification. Via the transformation matrix between SBC92 and ISCO08, which is part of the 2018 UM graduation survey, we could link the most common entry-level jobs to the faculties.<sup>12</sup>

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<sup>12</sup> For each faculty, we mention the entry-level jobs that count for at least 70% of the alumni. The fact that FASoS is mentioned four times shows that the distribution of FASoS alumni is relatively widespread. See Appendix B for an overview of the most common occupations and sectors per faculty.

**TABEL 3.2** Overview of entry-level jobs linked to UM faculties

Entry-level job	%	Faculty
Higher pedagogical professions	11.9	FPN, FASoS
Higher agricultural professions	0.8	
Higher mathematical and physical sciences professions	0.7	
Higher technical professions	15.8	FSE
Higher transport occupations	2.4	
Higher (para)medical professions	5.3	
Higher administrative, commercial and economic professions	18.4	FSE, FASoS
Higher legal and administrative professions	3.4	
Higher linguistic and cultural professions	0.7	
Higher professions in the field of behaviour and society	1.9	
Higher caring professions	3.4	
Managers (university of applied sciences level)	14.2	
Academic pedagogical professions	0.7	FHML, FPN, FASoS
Academic agricultural professions	0.2	
Academic mathematical and physical sciences professions	1.0	
Academic technical professions	2.0	FSE
Academic (para)medical professions	0.9	FHML
Academic economic and administrative professions	1.6	FSE, SBE, FHML, FPN, Law, FASoS
Academic legal and administrative professions	1.2	Law
Academic professions in the field of behaviour and society	0.8	FPN
Managers (research university level)	4.4	
Other	8.5	

Note: The links between entry-level jobs and faculties are based on the 2018 UM graduation survey. See footnote 12.

### 3.2 Underlying specific competencies

Moreover, to make the link between these broad categories and the specific competencies Master's programmes focus on, we asked the respondents to rank specific competencies within each broad category. Results of this exercise will be discussed in Section 4.

## 4 IMPORTANCE OF SPECIFIC SKILLS

In the stated-preferences experiment, we focus on five broad competencies:

- Field-specific knowledge
- Analytical skills
- Social skills
- Attitudes and innovativeness
- Lifelong learning skills

Since these are broad categories, we showed the respondents examples of underlying specific competencies. The specific competencies were loosely taken from the Employability Framework from the UM (Römgens & Beauseart 2016), supplemented with some competencies that have recently drawn the attention of the UM Executive Board (e.g. awareness of a broader context, stress and time management) and reformulated in the language of employers. The advantage of showing these specific competencies before the stated-preferences experiment is that respondents will probably have more or less the same underlying competencies in mind while choosing between two hypothetical job applicants.

After the stated-preferences experiment, we asked respondents to rank the underlying specific competencies per broad category to get an idea about the competencies they value most within these broad categories. Tables 4.1 to 4.5 show the rankings for each skill cluster. The most important underlying skill is number one, and the skills are listed in decreasing order of importance.<sup>13</sup>

Table 4.1 shows that within the broad category of analytical skills, problem-solving capacity is the most important. 56% of all respondents said problem-solving capacity was the most important competency in the analytical skills category. Problem-solving is also often seen as an important skill for explaining wages and employment patterns across occupations and over time (Fouarge 2017). It is remarkable that data management, in a data-driven society, is ranked lowest by the employers. There seems to be no difference across sectors in this ranking.

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<sup>13</sup> Ranking was determined using the Borda Count method.

**TABEL 4.1** Ranking of analytical skills

Most important analytical skills
1. Problem-solving capacity
2. Critical thinking
3. Information processing
4. Research skills
5. Data management

Table 4.2 shows the specific social skills rankings. Collaborative skills are as the most important, followed by communication competencies. Awareness of a broader context, a competency in which the UM has deep interest, is ranked fourth and therefore higher than leadership skills or ethical competencies. Awareness of a broader context, is mentioned by 8% of the respondents to be the most important social skill. Remarkably, ethical competencies ranks lowest by the respondents.

**TABEL 4.2** Ranking of social skills

Most important social skills
1. Collaborative skills
2. Communication competencies, including intercultural competencies
3. Stress and time management
4. Awareness of a broader context, including global awareness
5. Leadership skills
6. Ethical competencies

Table 4.3 shows the ranking of competencies related to attitudes and innovativeness. Employers thought flexibility was the most important, followed by adaptability. 41% of respondents said that flexibility was the most important competency within this category.

**TABEL 4.3** Ranking of attitudes and innovativeness

Most important attitudes and innovativeness
1. Flexibility
2. Adaptability
3. Entrepreneurial orientation
4. Dealing with uncertainty

In Table 4.4 shows the rankings for lifelong learning skills. Taking initiative in learning is the most important underlying competency according to 33% of respondents. Next is the ability to reflect on one's own strengths and weaknesses. The ability to receive criticism is ranked fourth, although 9% of respondents ranked it as the most important

competency in this group. Independent learning is the least important of the six specified competencies.

**TABEL 4.4** Ranking of lifelong learning skills<sup>14</sup>

Most important lifelong learning skills
1. Taking active and own initiative in learning
2. Ability to actively reflect personal strengths and weaknesses
3. Awareness of what one knows and can do
4. Ability to receive criticism
5. Perseverance in overcoming barriers and setbacks
6. Independent learning

<sup>14</sup> When the sample was restricted to firms that employ academic employees, the relative rankings of 'perseverance in overcoming barriers and setbacks' and 'independent learning' were reversed.



# 5 IMPORTANCE OF COMPETENCIES IN HIRING DECISIONS

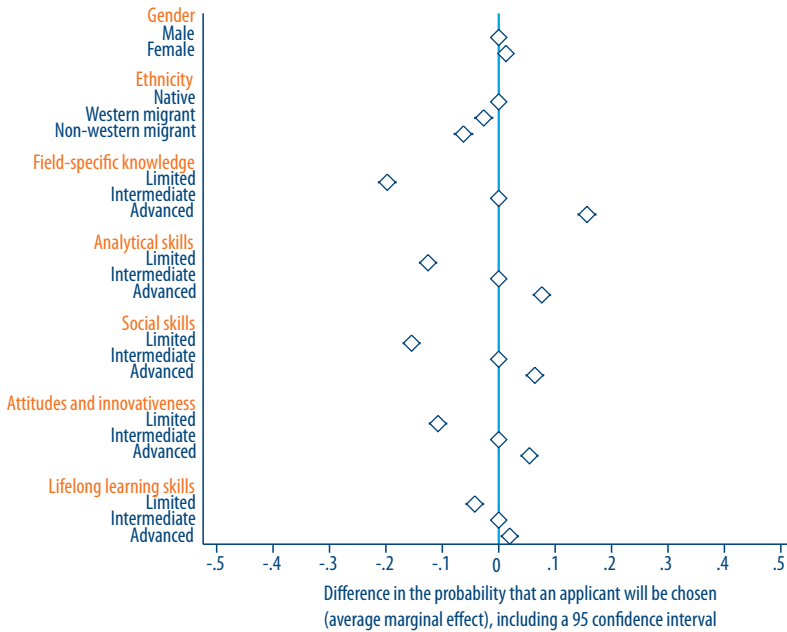
In this section, we will report the results of the stated-preferences experiment (see Section 2).

## 5.1 Relative importance of competencies in hiring decisions

The stated-preferences experiment provided insight into the (relative) importance of specific characteristics/competencies as perceived by employers. From Figure 05.01, we can draw several conclusions. First, all the listed characteristics, except for gender, appear to be relevant to applicant selection. Next to the distinguished competencies, also ethnicity turns out to be important. Applicants with a (non-Western) background have a significant lower probability of being chosen. However, this effect turns out to be relatively small compared to the role of competencies. Second, the most influential factor is the extent to which an applicant has specific knowledge of the field. After field-specific knowledge, employers equally value analytical skills, social skills, and attitudes and innovativeness. Though significant, applicants' scores for lifelong learning seem to be the least important for hiring decisions. Finally, limited skills have a greater impact on not employing someone than advanced skills have on the probability of employing someone.



**FIGUUR 5.1** Difference in the probability that an applicant will be chosen



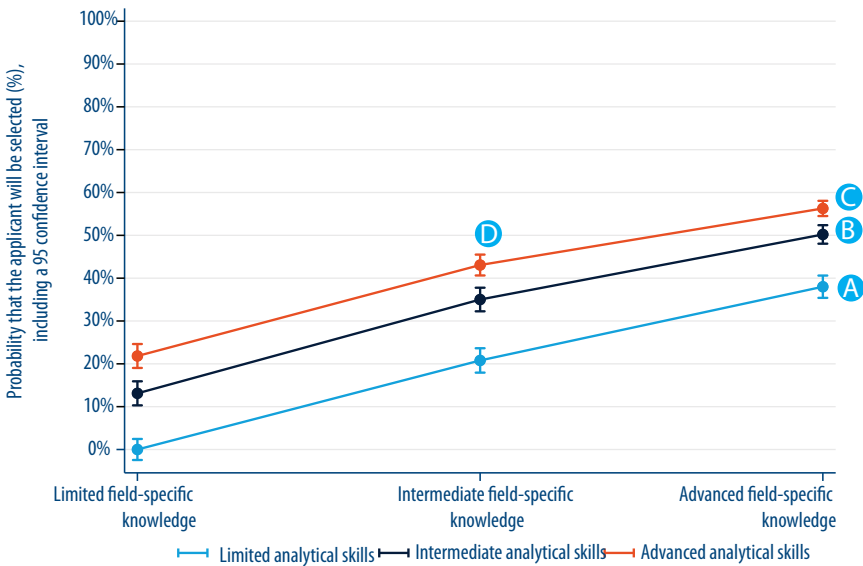
## 5.2 Compensation mechanisms

It is also possible to show the trade-offs employers make between different competencies by modelling interaction effects. Figures 05.2 to 05.6 graphically show these interaction effects. Figure 05.2 shows the trade-off between the probability that someone with a certain level of field-specific knowledge (on the horizontal axis) and a certain level of analytical skills (the lines in the figure) will be selected for the job. We chose to show the differences in opportunities compared to the 'worst' option, i.e. limited field-specific knowledge and limited analytical skills (the light blue mark in the lower left-hand corner).

First, we can conclude that the probability of being hired increases when competencies are better developed. Second, the figure shows that the probability of being hired is 12.2% higher when someone with advanced field-specific knowledge has intermediate rather than limited analytical skills (difference between A and B). The hiring probability is 18.2% higher when someone with advanced field-specific knowledge also has advanced rather than limited analytical skills (difference between A and C). The figure also shows that the probability of being hired is 5% lower for an applicant with advanced field-specific knowledge and limited analytical skills (A) than for an applicant with intermediate field-specific knowledge and advanced analytical skills (D). These results imply that while field-specific knowledge seem to be most important in hiring decisions, only

having advanced levels of field-specific knowledge is not enough. Employers appreciate the combination of intermediate field-specific knowledge with advanced analytical skills more than advanced field-specific knowledge alone.

**FIGUUR 5.2** Probability that an applicant will be selected: field-specific knowledge versus analytical skills



A similar exchange can be demonstrated with competency in social skills. Figure 5.3 shows the trade-off between the probability that someone with a certain level of field-specific knowledge (on the horizontal axis) and a certain level of social skills (the lines in the figure) will be selected for the job. Also, this figure shows that the probability of being hired increases when competencies are better developed.

A person with advanced field-specific knowledge is 15.4% more likely to be hired when they have intermediate rather than limited social skills (difference between A and B). The probability of being hired is even 20.5% greater when someone with advanced field-specific knowledge also has advanced rather than limited social skills (difference between A and C). An applicant with advanced field-specific knowledge and limited social skills (A) is 6.9% less likely to be hired than an applicant with intermediate field-specific knowledge and advanced social skills (D). Again, this implies that, while field-specific knowledge seems to be most important, advanced scores on field-specific knowledge alone are not sufficient. Employers value the combination of intermediate field-specific knowledge with advanced social skills more than advanced field-specific knowledge alone. Next to advanced analytical skills, advanced social skills help students

compensate for a lack of field-specific knowledge (if they have intermediate field-specific knowledge) and may even give them a comparative advantage over applicants who only have field-specific knowledge.

**FIGURE 5.3** Probability that an applicant will be selected: field-specific knowledge versus social skills

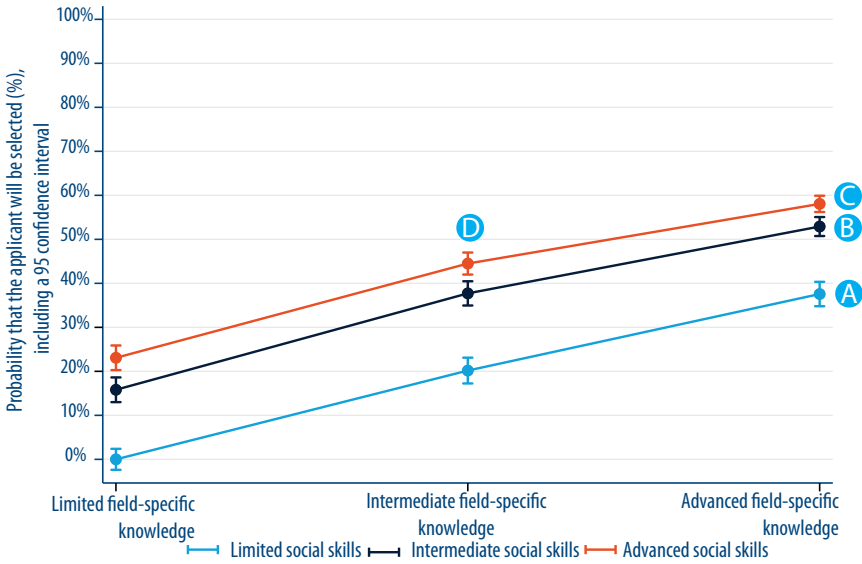


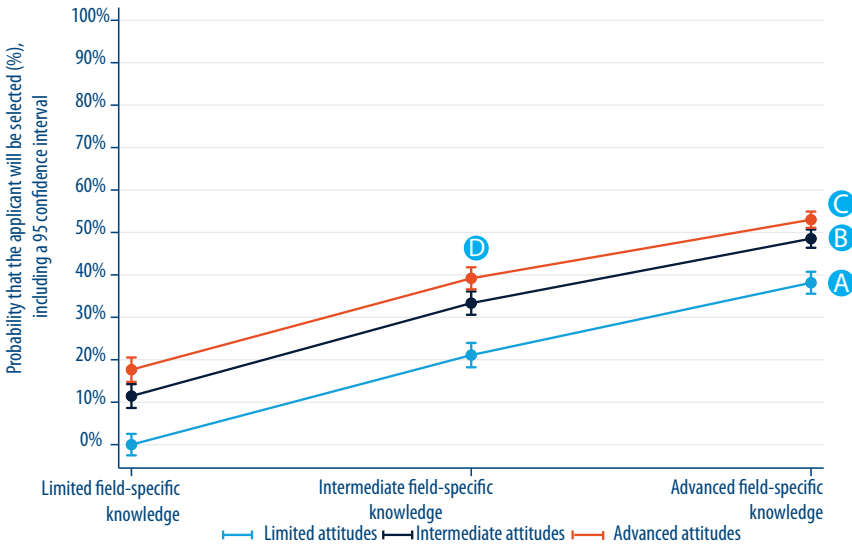
Figure 5.4 shows the trade-off between the level of field-specific knowledge and attitudes and innovativeness. In terms of structure, the figure is comparable to Figures 5.2 and 5.3.

Several things can be deduced from the figure. First, an applicant's probability of being hired increases when their competencies are better developed. That probability is 10.4% higher when someone with advanced field-specific knowledge has intermediate rather than limited competencies related to attitudes and innovativeness (difference between A and B). The probability is 14.8% higher when someone with advanced field-specific knowledge has advanced rather than limited scores for attitudes and innovativeness (difference between A and C).

Contrary to Figures 5.2 and 5.3, the probability of being hired is not greater but equally high for an applicant with advanced field-specific knowledge and limited scores for attitudes and innovativeness (A) and an applicant with intermediate field-specific knowledge and advanced scores for attitudes and innovativeness (D). This suggests that

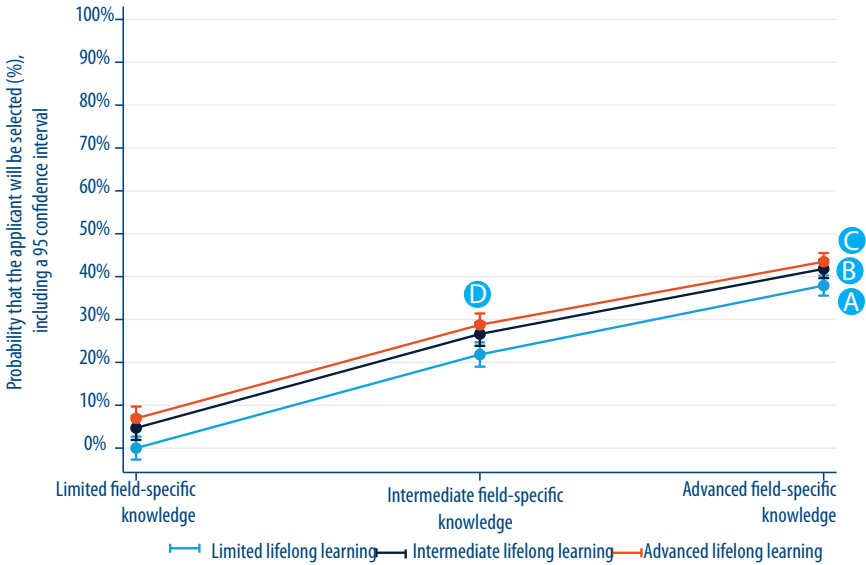
the advanced scores on attitudes and innovativeness compensate less than those for advanced analytical and social skills.

**FIGUUR 5.4** Probability that an applicant will be selected: field-specific knowledge versus attitudes and innovativeness



Finally, Figure 5.5 compares the level of field-specific knowledge to the level of lifelong learning skills. Once again, the probability of being hired increases when competencies are better developed. It is 3.9% higher when someone with advanced field-specific knowledge has intermediate rather than limited lifelong learning skills (difference between A and B) and it is 5.5% higher when someone with advanced field-specific knowledge has advanced rather than limited lifelong learning skills (difference between A and C). This difference is considerably smaller than the differences for the previous competencies. An applicant with advanced field-specific knowledge and limited lifelong learning skills (A) is just as likely to be hired as an applicant with intermediate field-specific knowledge and advanced lifelong learning skills (D). Similar to attitudes and innovativeness, advanced lifelong learning skills only play a modest compensating role when an applicant lacks field-specific knowledge.

**FIGUUR 5.5** Probability that an applicant will be selected: field-specific knowledge versus lifelong learning skills



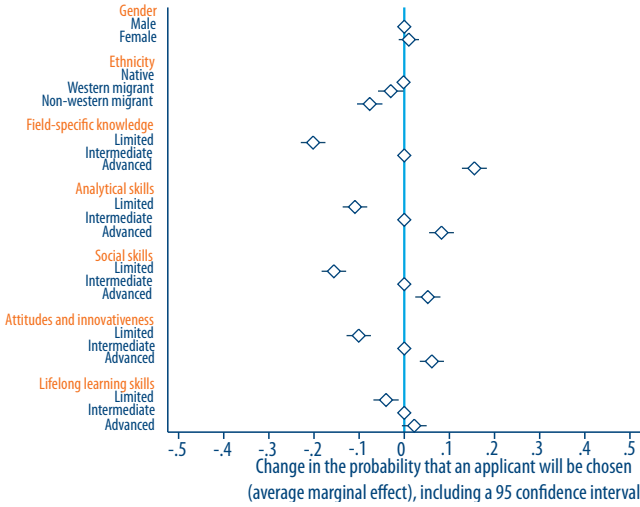
### 5.3 Heterogeneous findings across faculties

Figure 5.6 shows results that are particularly important to FSE. Panel (a) is based on firms with entry-level jobs in the occupations where FSE graduates usually end up: higher and academic technical professions and higher and academic administrative, commercial and economic professions (N=416).<sup>15</sup> The figure shows that advanced field-specific knowledge considerably increases the probability of being hired. Advanced analytical skills and, to a lesser extent, advanced social skills and advanced scores for attitudes and innovativeness are also important. Panel (b) also shows these results, but concentrated on the sectors in which FSE graduates work: business services, public administration and defence, and arts, recreation and other service activities (N=307). Panels (a) and (b) show similar results.

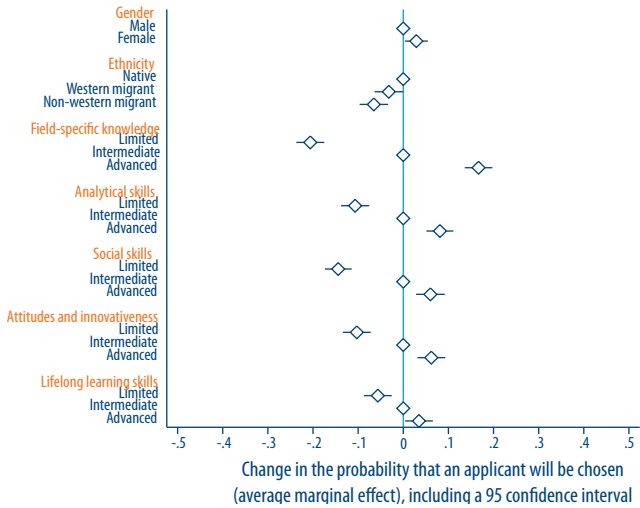
<sup>15</sup> See Section 2 for a description of how sectors and occupations are linked to UM faculties.

**FIGUUR 5.6** Findings related to FSE occupations and sectors

Panel (a) Occupations



Panel (b) Sectors

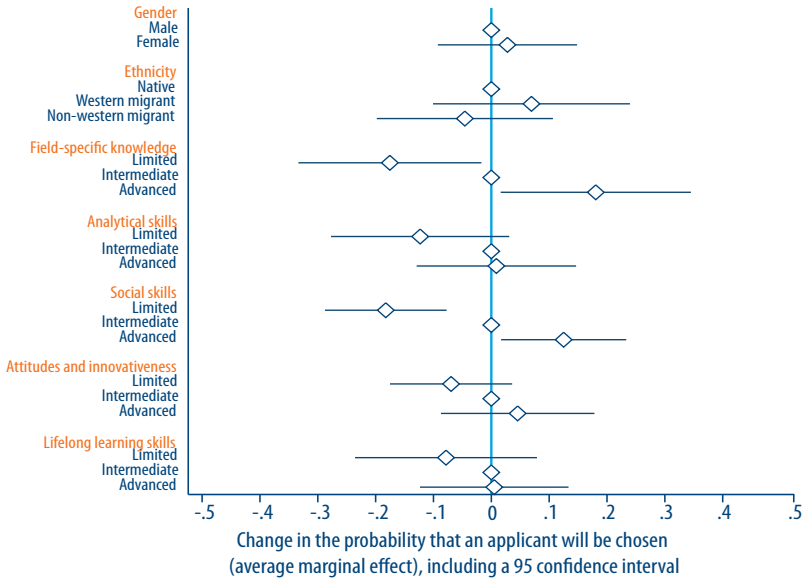


Note: Section 2 explains how occupations and sectors are related to the UM faculties. Occupational categories related to FSE graduates are higher technical professions, higher administrative, commercial and economic professions, academic technical professions, and academic economic and administrative professions (N=416). Sectors related to FSE graduates are business services, public administration and defence, and arts, recreation and other service activities (N=339).

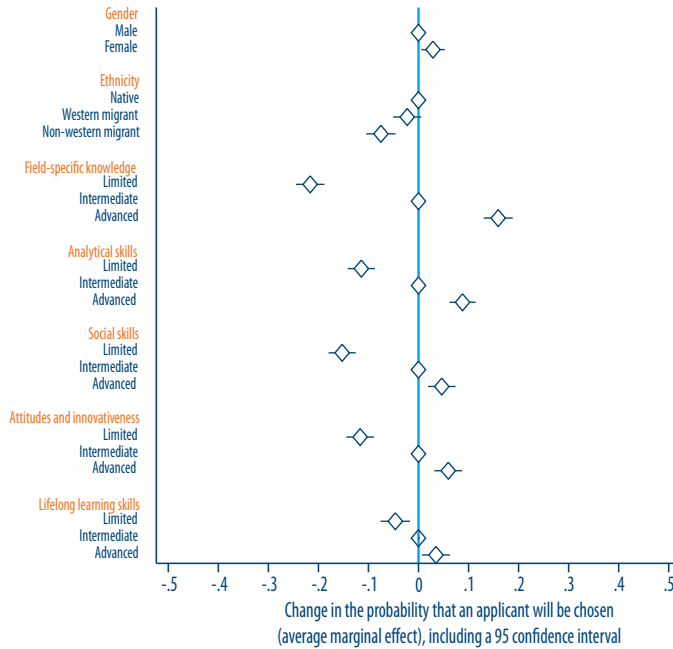
Figure 5.7 shows results that are of particular interest for SBE. Panel (a) is based on firms with entry-level jobs fitting the occupational category in which SBE graduates usually end up: academic economic and administrative professions. As the number of firms with these specific entry-level jobs is relatively small (N=18), the confidence intervals are quite big. Nevertheless, as in the basic model, advanced field-specific knowledge significantly increases the probability of being hired, as do advanced social skills (though to a lesser extent). These results are also found in panel (b), in which the results are shown for the sectors in which SBE graduates end up: manufacturing and business services (N=392). Next to advanced field-specific knowledge and social skills, hiring probability is also increased by advanced field-scores on analytical skills, attitudes and innovativeness, and life-long learning. However, the effect sizes for those competencies are much smaller than the one for field-specific knowledge.

**FIGUR 5.7** Findings related to SBE occupations and sectors

Panel (a) Occupations



Panel (b) Sectors



Note: Section 2 explains how occupations and sectors are related to the UM faculties. The occupational category related to SBE graduates is academic economic and administrative professions (N=18). Sectors related to SBE graduates are manufacturing and business services (N=392).

Figures 5.8 show results that are particularly important for FHML. Again, panel (a) is based on firms with entry-level jobs that fit the occupational categories in which FHML graduates usually end up: academic (para) medical professions and academic pedagogical professions. Since the number of firms with these specific entry-level jobs is relatively small (N=36), the confidence intervals are quite big. As in the basic model, however, advanced field-specific knowledge significantly increases the probability of being hired, as does having advanced social skills and advanced scores for attitudes and innovativeness (though to a lesser extent). Remarkably, despite the low number of observations, we still found a significant positive effect of advanced scores for attitudes and innovativeness on the probability of being hired in panel (a).

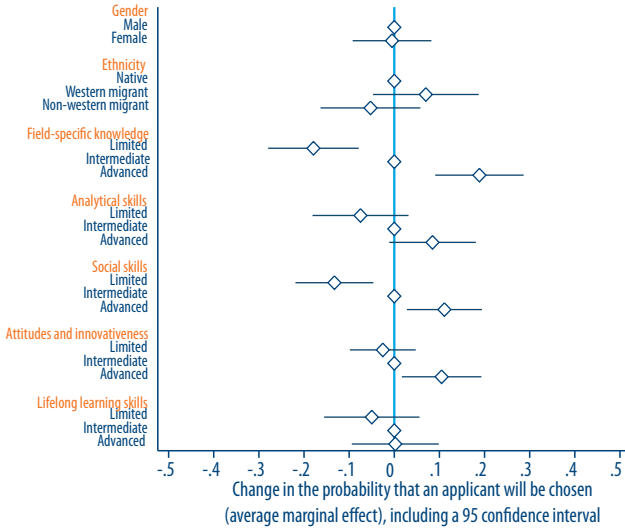
Panel (b) shows the results when concentrating on companies working in the sectors where FHML graduates end up: human health and social work activities and education (N=307). Again, advanced field-specific knowledge significantly increases the probability of being hired, followed by advanced analytical skills, social skills and attitudes and innovativeness. Interestingly, a limited score for attitudes and innovativeness does not negatively affect someone’s probability of being hired. For sectors in which FHML graduates



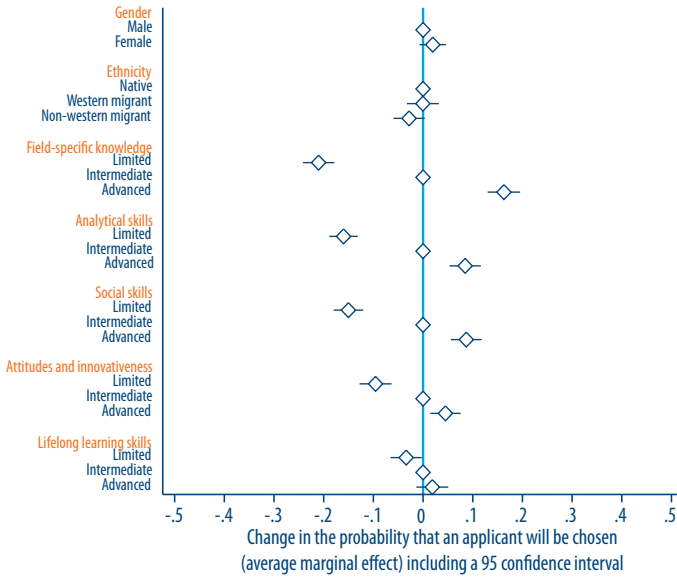
are represented, we found no significant effect for advanced lifelong learning skills. This might be due to the required lifelong learning activities in various medical professions.

**FIGUUR 5.8** Findings related to FHML occupations and sectors

Panel (a) Occupations



Panel (b) Sectors

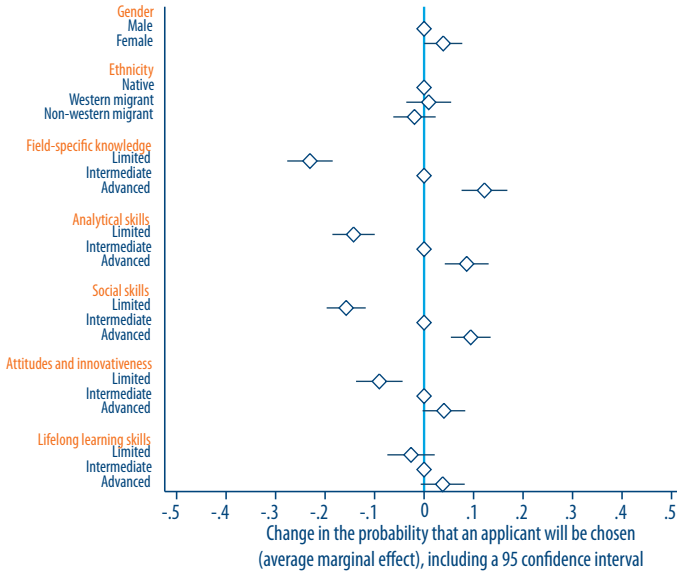


Note: The way occupations and sectors are related to the UM faculties is explained in Section 2. Occupational categories related to FHML graduates are academic (para) medical professions and academic pedagogical professions (N=36). Sectors related to FHML graduates are human health and social work activities and education (N=307).

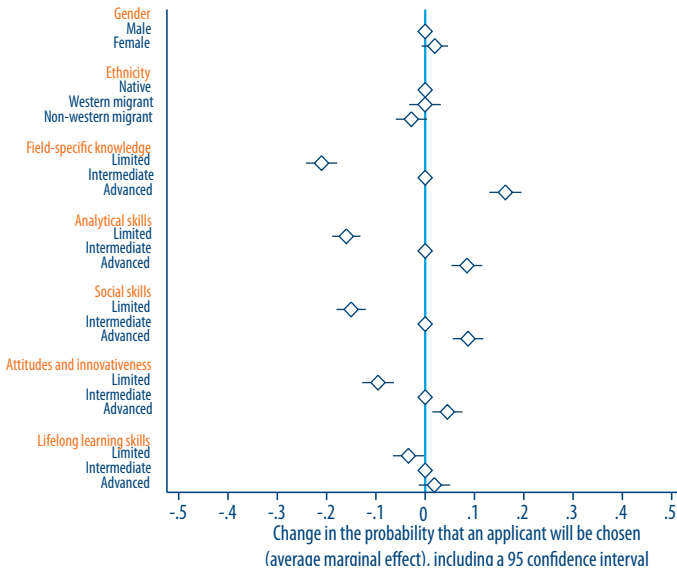
Figures 5.9 show the extent to which a graduate with a certain level of these attributes has a greater or lesser probability of being hired. Once again, panel (a) shows the data of firms with entry-level jobs that fit the occupational categories in which FPN graduates usually find themselves: academic professions in the field of behaviour and society, higher pedagogical professions, academic pedagogical professions and academic economic and administrative professions (N=167). As in the basic model, advanced field-specific knowledge considerably increases the probability of being hired, as do advanced social and analytical skills. Panel (b) also shows these results, now concentrated on sectors where FPN graduates end up: human health and social work activities and education (N=307). Advanced field-specific knowledge significantly increases the probability of being hired. Advanced social skills, analytical skills and attitudes and innovativeness also increase the probability of being hired, though to a lesser extent.

**FIGUUR 5.9** Findings related to FPN occupations and sectors

Panel (a) Occupations



Panel (b) Sectors

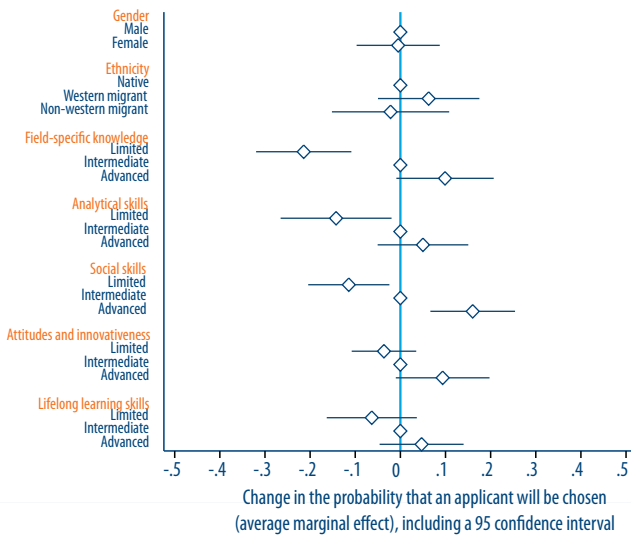


Note: The way occupations and sectors are related to the UM faculties is explained in Section 2. Occupational categories related to FPN graduates are academic professions in the field of behaviour and society, higher pedagogical professions, academic pedagogical professions and academic economic and administrative professions (N=167). Sectors related to FPN graduates are human health and social work activities and education (N=307).

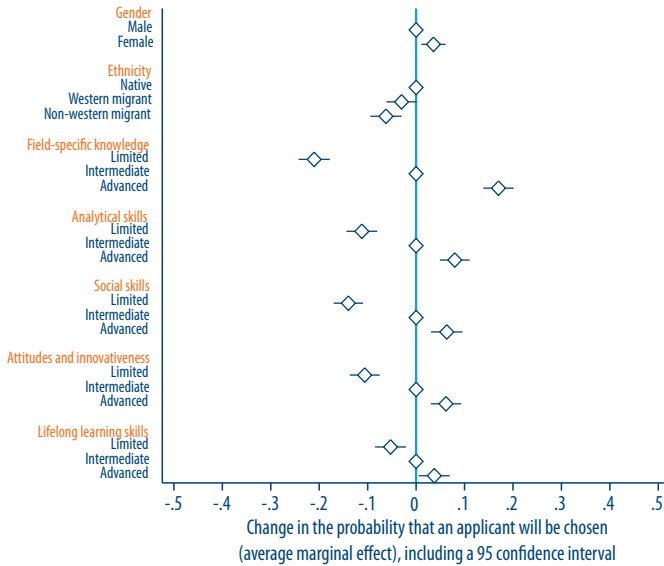
Figures 5.10 show the results that are particularly important to Law. Panel (a) shows the data of firms with entry-level jobs that fit the occupational categories where Law graduates usually work: academic legal and administrative professions and academic economic and administrative professions. As the number of firms with these specific entry-level jobs is very small (N=31), the confidence intervals are quite big. In contrast to the basic model, advanced social skills is the only skill that significantly increases the probability of being hired. Panel (b) shows that next to social skills, having advanced field-specific knowledge and analytical skills significantly increases the probability of being hired in sectors in which law graduates are represented: business services and public administration and defence (N=322). This figure shows that having advanced field-specific knowledge significantly increases the probability of being hired the most. Advanced scores for attitudes and innovativeness and advanced lifelong learning skills are least important.

**FIGUR 5.10** Findings related to LAW occupations and sectors

Panel (a) Occupations



Panel (b) Sectors

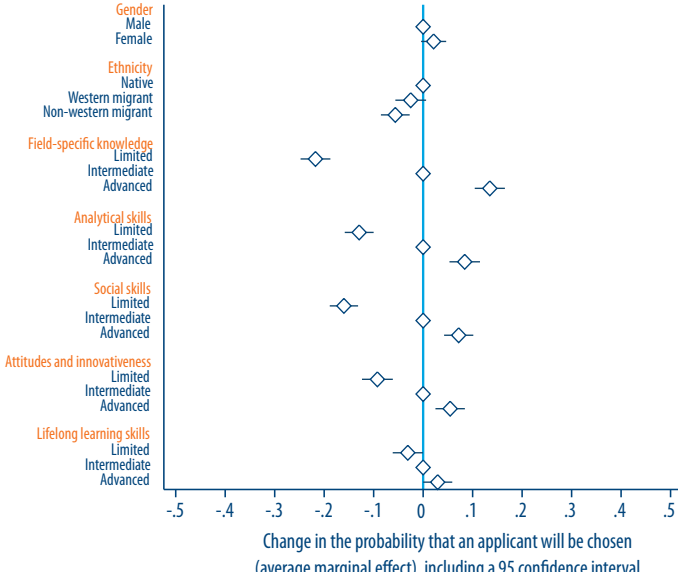


Note: The way occupations and sectors are related to the UM faculties is explained in Section 2. Occupational categories related to Law graduates are academic legal and administrative professions and academic economic and administrative professions (N=31). Sectors related to Law graduates are business services and public administration and defence (N=322).

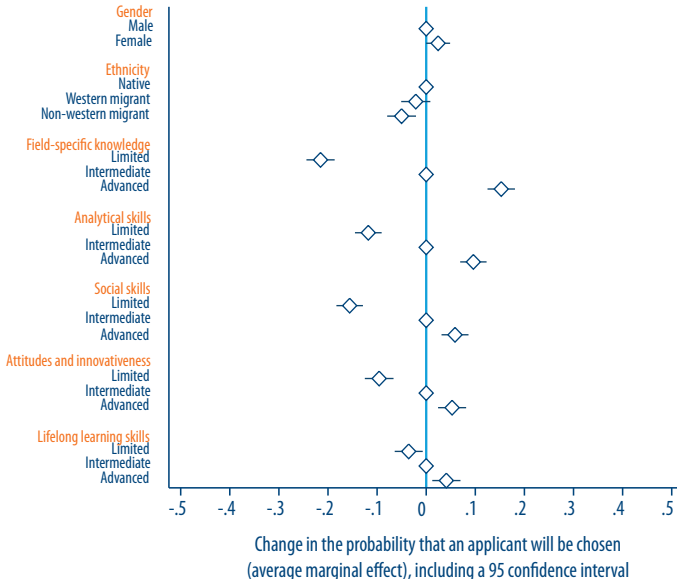
Figure 5.11 shows the extent to which a FASoS graduate with a certain level of these attributes has a greater or lesser probability of being hired. Again, panel (a) shows the data of firms with entry-level jobs that fit the occupational categories where FASoS graduates usually work: higher pedagogical professions, higher administrative, commercial and economic professions, academic pedagogical professions and academic economic and administrative professions (N=361). Once again, an advanced level of field-specific knowledge increases the probability of being hired, as do (to a lesser extent) advanced social skills, analytical skills and attitudes and innovativeness. Panel (b) shows the results for the sectors in which FASoS graduates work: business services, education, and arts, recreation and other service activities (N=393). This panel shows a similar result as panel (a), with one exception: advanced lifelong learning skills increase the probability of being hired in sectors in which FASoS graduates are represented.

**FIGUUR 5.11** Findings related to FASoS occupations and sectors

Panel (a) Occupations



Panel (b) Sectors



Note: The way occupations and sectors are related to the UM faculties is explained in Section 2. Occupational categories related to FASoS graduates are higher pedagogical professions, higher administrative, commercial and economic professions, academic pedagogical professions and academic economic and administrative professions (N=361). Sectors related to FASoS graduates are business services, education, and arts, recreation and other service activities (N=393).

## 6 CONCLUSION AND DISCUSSION

UM wants to increase the employability of its graduates. Therefore, it is important to also consider employers' perspectives. We conducted a survey of more than 1100 employers at various firms in the Netherlands, which included a stated-preferences experiment to answer the research questions. The experiment looked at field-specific knowledge, analytical skills (e.g. problem-solving capacity), social skills (e.g. collaborative skills), attitudes and innovativeness (e.g. flexibility) and lifelong learning skills (e.g. taking active and own initiative in learning). These competencies are based on the university's extended employability framework.

We found that all these competencies affect the probability of an applicant being hired. The most influential factor is the extent to which an applicant has field-specific knowledge. After field-specific knowledge, employers equally value analytical skills, social skills and attitudes and innovativeness. Though still significant, an applicant's level of lifelong learning skills seems to be the least important for hiring decisions. Interestingly, developing skills to only a limited level has a greater negative impact on the likelihood of being hired than having advanced skills has on the positive side.

Based on the UM graduation survey five years after graduation, we defined sectors and occupational categories in which graduates from the specific faculties work to analyse heterogeneous effects across faculties. The main results are fairly stable across faculties, with two exceptions. First, advanced lifelong learning skills do not significantly increase the probability of being hired in sectors where a lot of FHML and FPN graduates work as well as for FHML and FPN related occupations. Second, employers looking to hire for an FHML-related occupation do value attitudes and innovativeness. However, having a limited level of attitudes and innovativeness does not negatively affect someone's probability of being hired.

Although field-specific knowledge seems to be most important to hiring decisions (related to occupations and sectors for all faculties), additional analyses found that having advanced scores on field-specific knowledge is not enough on its own. Employers appreciate a combination of intermediate field-specific knowledge with advanced analytical skills more than advanced field-specific knowledge alone.



The compensating effect of analytical skills is also found for social skills. The compensating role of advanced scores for attitudes and innovativeness and lifelong learning skills is smaller than that of advanced analytical and social skills: the probability of being hired is not greater, but an applicant with advanced field-specific knowledge and limited scores for attitudes and innovativeness or lifelong learning is equally likely to be hired as an applicant with intermediate field-specific knowledge and advanced scores for attitudes and innovativeness or lifelong learning. This suggests that the compensating role of advanced scores for attitudes and innovativeness is smaller than that of advanced analytical and social skills.

This suggests that it is actually important for graduates' employability that they not only acquire advanced field-specific knowledge, but also competencies related to analytical skills, social skills and attitudes and innovativeness. While advanced lifelong learning skills also increase the probability of being hired, their effect is small relative to the other competencies.<sup>16</sup>

Based on the National Graduation Survey (NAE), we are able to comment on UM graduates' perceived levels of these competencies.<sup>17</sup> On average, UM graduates report that they have advanced analytical skills, social skills, attitudes and innovativeness and lifelong learning skills (score 4 of 5).<sup>18</sup> They also report on average that their Master's programme contributed to some or a large degree of their professional capabilities.<sup>19</sup>

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<sup>16</sup> Moreover, advanced lifelong learning skills only seem to play a modest compensating role in combination with intermediate field-specific knowledge (compared to advanced field-specific knowledge). At the same time, it is important to note that this competency might be more relevant later in working life; in the early years after graduation, employers might expect that learning processes are not yet necessary or a by-product of learning-by-doing.

<sup>17</sup> See Appendix A for the relationship between the Dublin indicators, the EMP framework and the attributes of our stated-preferences experiment.

<sup>18</sup> Though the difference is small, lifelong learning skills score a little higher (4.4).

<sup>19</sup> The average scores were 3.8 for social and analytical skills, 3.7 for attitudes and innovativeness and 4.1 for lifelong learning.

# REFERENCES

- Biesma, Pavlova, Van Merode & Groot (2007). Using conjoint analysis to estimate employers' preferences for key competencies of master level Dutch graduates entering the public health field. *Economics of Education Review*, 26(3), 375-386.
- Cole & Tibby (2013). *Defining and Developing Your Approach to Employability*. York: The Higher Education Academy.
- Eggers, Fowler, Hainmueller, Hall & Snyder (2015). On the validity of the regression discontinuity design for estimating electoral effects: New evidence from over 40,000 close races, *American Journal of Political Science*, 59(1), 259-274.
- Fouarge (2017). *Veranderingen in werk en vaardigheden*. Maastricht: Maastricht University.
- Humburg & Van der Velden (2017). What Is Expected of Higher Education Graduates in the Twenty-First Century?. *The Oxford Handbook of Skills and Training*, 201.
- Humburg, & Van der Velden (2015). Skills and the graduate recruitment process: Evidence from two discrete choice experiments. *Economics of Education Review*, 49, 24-41.
- Peabody, Luck, Glassman, Dresselhaus, Lee, (2000). Comparison of vignettes, standardized patients, and chart abstraction: A prospective validation study of 3 methods for measuring quality. *Journal of the American Medical Association*, 283, 1715-722.
- Peeters, Nelissen, De Cuyper, Forrier, Verbruggen & De Witte (2019). Employability Capital: A Conceptual Framework Tested Through Expert Analysis. *Journal of Career Development*, 46 (2): 79-93.
- Rao (2010). *Applied conjoint analysis*. New York: Springer.
- Römgens, Scoupe, & Beusaert (2019). Unraveling the concept of employability, bringing together research on employability in higher education and the workplace. *Studies in Higher Education*, 1-16.
- Römgens & Beauseart (2016). *The Employability Scanner. Identifying and strengthening the development of employability competencies in UM curricula*.
- Van Eldert, Künn-Nelen & Mommers (2017). *Employability van UM-afgestudeerden*. ROA-R-2017/3



# APPENDIX A: LINK BETWEEN VIGNETTE ATTRIBUTES, EMP COMPETENCIES AND DUBLIN DESCRIPTORS

Table A.1 gives an overview of how the attributes from the vignette are linked to the EMP competencies and the Dublin descriptors.

**TABEL A.1** Link between vignette attributes, EMP competencies and Dublin descriptors

Dublin descriptor	Knowledge and understanding	Applying knowledge and Understanding	Making Judgements	Communication Skills	Learning skills	
EMP competency	Academic expertise and skills		Social responsibility		Self-awareness	Adaptability
Vignette attributes	Field-specific knowledge	Analytical skills	Social skills		Lifelong learning skills	Attitudes and innovativeness

Source: Römgens & Beauseart (2016) for the link between EMP competency and Dublin descriptors



# APPENDIX B: IMPORTANT OCCUPATIONS AND SECTORS PER FACULTY<sup>19</sup>

**TABEL B.1** Important occupations and sectors related to FSE

FSE occupations (ISCO -08)	%	FSE sectors (SBI)	%
Business and Administration Professionals	52.8	Business services	36.8
Business and Administration Associate Professionals	13.9	Public administration and defence	21.1
Information and Communications Technology Professionals	5.7	Arts, recreation and other service activities	18.4
Science and Engineering Associate Professionals	5.7		

Note: The 2018 UM graduation survey (graduation cohort 2012-2013) was used to link the occupations and sectors to the UM faculty.

**TABEL B.2** Important occupations and sectors related to SBE

SBE occupations (ISCO -08)	%	SBE sectors (SBI)	%
Business and Administration Professionals	76.4	Business services	52.3
		Manufacturing	23.9

Note: The 2018 UM graduation survey (graduation cohort 2012-2013) was used to link the occupations and sectors to the UM faculty.

## Important occupations and sectors related to FHML

FHML occupations (ISCO -08)	%	FHML sectors (SBI)	%
Health Professionals	61.4	Human health and social work activities	63.7
Business and Administration Professionals	9.2	Education	14.2
Teaching Professionals	7.4		

Note: The 2018 UM graduation survey (graduation cohort 2012-2013) was used to link the occupations and sectors to the UM faculty.

<sup>19</sup> For each faculty, we mentioned the entry-level jobs held by at least 70% of the alumni, as well as the sectors in which at least 70% of the alumni work.

**TABEL B.3** Important occupations and sectors related to FPN

FPN occupations (ISCO -08)	%	FPN sectors (SBI)	%
Legal, Social and Cultural Professionals	47.4	Human health and social work activities	45.4
Business and Administration Professionals	18.0	Education	27.8
Teaching Professionals	10.3		
Business and Administration Associate Professionals	6.4		

Note: The 2018 UM graduation survey (graduation cohort 2012-2013) was used to link the occupations and sectors to the UM faculty

**TABEL B.4** Important occupations and sectors related to Law

Law occupations (ISCO -08)	%	Law sectors (SBI)	%
Legal, Social and Cultural Professionals	50.0	Business services	45.5
Business and Administration Professionals	25.0	Public administration and defence	27.3

Note: The 2018 UM graduation survey (graduation cohort 2012-2013) was used to link the occupations and sectors to the UM faculty

**TABEL B.5** Important occupations and sectors related to FASoS

FASoS occupations (ISCO -08)	%	FASoS sectors (SBI)	%
Business and Administration Professionals	43.3	Business services	27.6
Business and Administration Associate Professionals	19.4	Arts, recreation and other service activities	25.0
Teaching Professionals	10.5	Education	22.4
Legal, Social and Cultural Professionals	7.5		

Note: The 2018 UM graduation survey (graduation cohort 2012-2013) was used to link the occupations and sectors to the UM faculty

## APPENDIX C: EXAMPLE VIGNETTE

Suppose you have to hire a new employee, which person do you prefer?

	Applicant A	Applicant B
Gender	Male	Male
Ethnicity	Western migration background	Non-western migration background
Field-specific knowledge	Intermediate	Advanced
Analytical skills	Intermediate	Intermediate
Social skills	Advanced	Advanced
Attitudes and innovativeness	Limited	Intermediate
Lifelong learning skills	Advanced	Limited

Applicant A

Applicant B



