

The perspective of companies with R&D activities regarding the skills of PhD holders in Flanders

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The Flemish Policy Paper on Economy, Science, Innovation and Industry 2024-2029 (Diependaele, 2024) and the Flemish Productivity and Competitiveness Agenda (Diependaele, 2025) place the current and future competence needs of the Flemish labor market on the agenda. One group that can offer particular competences in this labor market are PhD holders. PhD holders possess a unique combination of specialized discipline-specific knowledge and high-quality, transferable skills, developed while independently conducting a large-scale research process. Approximately 9 out of 10 PhD holders eventually leave the university workplace for employment in other sectors of the labor market (ECOOM-Brief 39). In 2017, approximately 63% of PhD holders indicated that they were still involved in research in their first non-academic job (ECOOM-Brief 44). This raises an important question: how do companies with R&D activities in Flanders perceive the competences and skills that PhD holders can offer?

CLARIFYING COMPETENCE NEEDS FOR SMOOTH INTERSECTORAL MOBILITY IN FLANDERS

Flanders is committed to fostering productivity growth. The strategic objectives outlined in the Flemish Policy Paper on Economy, Science, Innovation and Industry 2024-2029 (Diependaele, 2024) include additional investment in research, development and innovation, as well as in the knowledge and skills of its inhabitants, enabling them to meet the needs of the (future) labor market.

Flanders ranks among the best in Europe and worldwide in several scientific disciplines (cf. Diependaele, 2024). Flanders aims to maintain and strengthen this position. Within its strategic objectives, Flanders focuses on the transfer of academic knowledge to the professional field (knowledge diffusion) aiming at knowledge valorization (making innovative technologies and knowledge accessible to the social and economic sectors) (cf. Diependaele, 2024).

This transition can be facilitated by smooth intersectoral mobility of researchers, including PhD holders. The career paths of PhD holders typically involve such mobility, they are diverse and often not linear (see, for example, ECOOM-Brief 39 and ECOOM-Brief 42). For example, PhD holders may move from the academic to the non-academic labor

market and vice versa. What knowledge, skills and attitudes do PhD holders bring with them when they return to universities after gaining experience in other sectors of the labor market (e.g. as lateral entrants from industry into research or knowledge-valorization positions, cf. Diependaele, 2024). This part of intersectoral mobility is not the focus in the current ECOOM-Brief. Instead, this ECOOM-Brief focuses on the transition of PhD holders to the non-academic sector. What skills do PhD holders bring to the non-academic labor market?

While science policy and support for academic careers have long focused primarily on optimizing research excellence, there has been a growing appreciation of – and investment in – knowledge valorization and the skills it requires. As a result, universities have increasingly committed to the broader development of PhD holders with the aim of optimizing their employability both within knowledge institutions and in non-academic sectors. The Flemish government provides financial support for this through the Support for Young Researchers (OJO) (Bongers et al., 2018). To date, however, it remains unclear to what extent PhD holders – equipped with their subject-specific and transferable knowledge, skills and competences – are sufficiently prepared for the needs of the non-academic labor market. Insights into the extent to which supply and demand are aligned – or, conversely, characterized by a mismatch – can support the government in evidence-informed policy on both intersectoral mobility and knowledge valorization towards the non-academic sectors of the labor market.

EMPLOYERS' PERCEPTIONS OF THE SKILLS OF DOCTORATE HOLDERS: WHAT DO WE ALREADY KNOW?

What insights are currently available regarding what employers seek in PhD holders? And what do we know about how employers perceive the skills of PhD holders?

In their systematic literature review, Muurlink et al. (2024) found that research on the employability of PhD holders – particularly with a focus on skills – is scarce. The body of research is even more limited when employability is examined from the perspective of non-academic employers (both in terms of the number of studies and the sample size). The available studies show that teamwork and collaboration are the

skills most valued by employers. A recent scoping review of English-language literature between 2000 and 2021 by Skakni et al. (2026) also found a lack of insight into how non-academic employers perceive PhD holders, what they expect from them, and how they could deploy them in their companies. Skakni et al. (2026) included ECOOM-Brief 32 in their review: ECOOM-Brief 32 had already provided a literature review in 2020, which likewise showed that the available research is limited. The European studies included in this ECOOM-Brief reported both negative perceptions – such as a lack of management, commercial and interpersonal skills – and positive perceptions – such as innovation capacity, learning ability, specific knowledge and communication – regarding the skills of PhD holders. A more recent study from 2022 reported that employers in non-academic sectors across various European countries require teamwork, effective communication, critical-analytical and problem-solving thinking for jobs filled by PhD holders (Boman et al., 2022).

In their study of non-academic employers in Brussels and Wallonia, Bebiroglu et al. (2022) also found that employers consider the following skills to be most important for doctorate holders: scientific and technical expertise; collaboration and teamwork; creativity and innovation; project management, research skills and methods; and initiative and autonomy. Non-academic employers in Brussels and Wallonia who employ PhD holders are most satisfied with their scientific and technical expertise; their perseverance; and their research skills and methods; while they are least satisfied with the financial, business and commercial skills of PhD holders (Bebiroglu et al., 2022). Specifically for Flemish R&D employers, De Grande et al. (2014) found that they see the following top five skills in PhD holders: technical skills, teamwork, analytical thinking, taking initiative and scientific knowledge (see also ECOOM-Brief 4). In addition, interviews conducted by ECOOM-HR in R&D with 30 key stakeholders in Flanders on the value of a PhD in the non-academic labor market revealed both positive perceptions (e.g. innovation capacity) and negative perceptions (e.g. lack of management skills) regarding the skills of PhD holders (Stassen et al., 2016).

To date, little is known about the competence needs of employers in companies with R&D activities in Flanders regarding PhD holders, nor about the skills and competences these employers believe PhD holders possess. This latter aspect has been addressed in the work of ECOOM HR in R&D, which placed the perspective of non-academic employers on PhD holders on the agenda in 2022 through the first *Survey of Employers* (see also ECOOM-Brief 48 and ECOOM-Brief 49). *The Survey of Employers* focuses on companies in Flanders with R&D activities. These companies account for the largest share of gross domestic R&D expenditure (for example, in 2023, 71% of R&D expenditure in the Flemish Region was carried out by companies; Debackere et al., 2025). One of the questions addressed in the *Survey of Employers* concerned how employers perceive certain skills of PhD holders. This ECOOM-Brief

examines the following research question: *How do companies in Flanders with R&D activities perceive the skills of PhD holders?*

A SHARED EUROPEAN COMPETENCE FRAMEWORK FOR RESEARCHERS

Flanders' focus on smooth intersectoral mobility of researchers aligns with Europe's strategic objectives (cf. European Commission, 2022; 2024). Intersectoral mobility forms part of the European Commission's broader ambition to improve researchers' careers and make them more attractive. In addition, the Commission is committed to upskilling researchers in support of a competitive and resilient *European Research Area (ERA)*. The *European Skills Agenda* takes actions to support these objectives. One of these actions is the development and use of the *European Skills, Competences, Qualifications and Occupations (ESCO)* classification. The main goal of this classification is to improve the transparency and comparability of occupations and skills across Europe. By providing a common multilingual framework, ESCO connects job seekers to vacancies, facilitates comparisons between education and labor market, and promotes workforce mobility. Another action is the development and the use of the *European Competence Framework for Researchers, ResearchComp*. The development of this framework was based on the ESCO classification (European Commission, 2022). *ResearchComp* provides a common framework for identifying the competencies researchers need to build successful careers both within and outside the academic labor market. It aims to offer inspiration and guidance for various purposes and stakeholders. For researchers, it serves as a tool to assess whether they possess certain competences and whether there's a need for adjustment or further development (*ResearchComp self-assessment tool*¹). For employers, it provides tools to better identify and describe which competences they can require in selection and recruitment. It also increases awareness of what researcher competences entail. For universities and other actors involved in training researchers, *ResearchComp* can be used as a tool for developing training programs or for drawing up personal development plans. For policymakers, it can help map the supply and demand of competences, and provide guidelines for monitoring the overall competence pool. The European Commission intends to use *ResearchComp* in various future initiatives (e.g. in the *Research Careers Observatory*) and actively promotes the use of this framework when discussing the skills and competences of researchers. Specifically for research managers, the European Commission has also provided the *European Competence Framework for Research Managers, or RM Comp*, since 2025 (European Commission, 2025).

The *ResearchComp* framework comprises seven competence areas (doing research, managing research, making an impact, self-management, cognitive abilities, working with others, managing research tools). Within these competence areas, 39 competences have been identified. In this framework, competences are defined as a combination of knowledge, skills and attitudes. *ResearchComp* provides

¹ <https://projects.research-and-innovation.ec.europa.eu/en/jobs-research/researchcomp-european-competence-framework-researchers/self-assessment-tool>

descriptions, along with four levels of proficiency (*foundational, intermediate, advanced* and *expert*), each linked to specific learning outcomes. For example, within the competence area “working with others”, the competence “working in a team” may involve collaboration at *intermediate* level, while at *expert* level it can include assuming leadership roles.

PERCEIVED SKILLS MEASURED WITH THE SURVEY OF EMPLOYERS 2022

In this ECOOM-Brief, we examine companies with R&D activities in Flanders as included in the *Survey of Employers*, conducted for the first time in 2022 by ECOOM HR in R&D. For a detailed description of this survey, the characteristics of the participating companies, and the assessment of their representativeness in Flanders, we refer to ECOOM-Brief 48.

In what follows, we examine the perceptions of the 226 participating companies. More specifically, we presented the following statement: “Our company believes that PhD holders (1) are experts, (2) can work autonomously, (3) are initiative takers, (4) are perseverant, (5) have a strongly developed learning ability, (6) have an innovative mindset, (7) are able to explain complex matters in a simple and understandable way, (8) prefer speed and pragmatism over accuracy and correctness, (9) have sufficient business skills/insight, (10) are sufficiently suited for leadership or management positions, (11) are sufficiently able to work together/in a team, (12) can easily adapt to the pace of business, (13) can easily work on matters outside their specialty, (14) can easily apply their knowledge and translate it into practical implications and solutions and (15) work in a sufficiently results-oriented manner”. The response options for each skill were (1) totally disagree; (2) disagree; (3) neither agree nor disagree; (4) agree; and (5) totally agree. One of the 226 participating companies did not answer this question.

Items (1) to (8) assess the presence of a specific skill, such as ‘can work autonomously’ and ‘have a strongly developed learning ability’. The formulation of the remaining items, however, include not only the presence of a skill but also an element of value judgement or assessment – for example, ‘have *sufficient* business skills/insight’ and ‘can *easily* work on matters outside their specialty’.

As we did in ECOOM-Brief 50, we have translated the skills according to the recent *ResearchComp* framework (European Commission, 2022). The *Survey of Employers* was conducted prior to the launch of *ResearchComp*. A post hoc translation of the 15 skills surveyed in the *Survey of Employers 2022* into *ResearchComp* is available in Table 1. Because not all skills could be linked unambiguously to *ResearchComp*, the *European Competence Framework for Research Managers, RM Comp* (see above), was also consulted. This applied to ‘can easily adapt to the pace of business’ and ‘can easily work on matters outside their specialty’. Both were linked to the competence area “cognitive abilities/personal attributes” as they correspond to the competence “adaptability and professional flexibility”. Two skills could not be classified: ‘have sufficient business skills/insight’ and ‘prefer speed and pragmatism over accuracy and correctness’. We therefore treat both as separate items.

Table 1. Translation of the skills surveyed in *Survey of Employers 2022* to competence areas in *ResearchComp*

Skill in <i>Survey of Employers 2022</i>	Competence area <i>ResearchComp</i>
Are experts	‘Doing research’
Can work autonomously Are initiative takers Are perseverant	‘Self-management’
Have a strongly developed learning ability	‘Cognitive abilities’
Have an innovative mindset Are able to explain complex matters in a simple and understandable way Can easily apply their knowledge and translate it into practical implications and solutions	‘Making an impact’
Are sufficiently able to work together/in a team Are sufficiently suited for leadership or management positions	‘Working with others’
Work in a sufficiently results-oriented manner	‘Managing research’
Can easily adapt to the pace of business Can easily work on matters outside their specialty	*
Have sufficient business skills/insight Prefer speed and pragmatism over accuracy and correctness	**

Note. * ‘Cognitive abilities/personal attributes’ within *RM Comp*,

** skills that cannot be classified according to *ResearchComp* or *RM Comp*

HOW DO COMPANIES WITH R&D ACTIVITIES IN FLANDERS PERCEIVE THE SKILLS OF PHD HOLDERS?

We answer this question in two ways. First, we report the share of companies per response category for each of the 15 skills, grouped into competence areas according to *ResearchComp* or *RM Comp* (Figures 1 to 5). When discussing the percentages, we group “totally agree” with “agree”. The second method examines the positioning of the shares of “(totally) disagree” in relation to “neither agree nor disagree” and in relation to “(totally) agree” to identify patterns (see Figure 6).

Figure 1 shows that within the competence area of “self-management”, 65.4% of employers “(totally) agree” that PhD holders ‘can work autonomously’, 53.8% that they ‘are perseverant’ and 43.1% that they ‘are initiative takers’.

Figure 2 shows that within the competence area of “making an impact”, 56.0% of employers believe that PhD holders ‘have an innovative mindset’, 37.3% believe they ‘can easily apply their knowledge and translate it into practical implications and solutions’, and 38.2% believe they ‘are able to explain complex matters in a simple and understandable way’.

Figure 3 focuses on the competence area “working with others”. Approximately one in three respondents believe that PhD holders are ‘sufficiently able to work together/in a team’. Approximately one in five believe that PhD holders are ‘sufficiently suited for leadership or management positions’.

Figure 4 zooms in on two skills that we classify under the *RM Comp* competence area “cognitive abilities/personal attributes”. A total of 26.7% of companies with R&D activities believe that PhD holders ‘can

easily adapt to the pace of business' and 21.7% believe that they 'can easily work on matters outside their specialty'.

Finally, Figure 5 shows five skills. These include three skills classified in the *Survey of Employers* as stand-alone indicators of a specific competence area, as well as two skills that cannot be classified under either the *ResearchComp* or *RM Comp* competence areas (see also Table 1). We observe that three out of four companies believe that PhD holders have 'a strongly developed learning ability'. A majority also believe that PhD holders 'are experts': seven out of ten "(totally) agree". Regarding 'working in a sufficiently results-oriented manner', 41.8% "(totally) agree". In addition, 14.7% believe that PhD holders 'have sufficient business skills/insight'. Regarding the skill 'prefer speed and pragmatism over accuracy and correctness', 12.0% "(totally) agree".

When we drop the division into competence areas in Figure 6 and examine the 15 skills from the *Survey of Employers* individually, the following top five skills emerge based on the "(totally) agree" responses: 'have a strongly developed learning ability' (75.1%), 'are experts' (70.2%), 'can work autonomously' (65.3%), 'have an innovative mindset' (56.0%) and 'are perseverant' (53.8%).

According to the participating companies, the following skills are least present (percentage shown of "(totally) disagree"): 'prefer speed and pragmatism over accuracy and correctness' (35.1%), 'have sufficient business skills/insight' (33.8%), 'are sufficiently suited for leadership or management positions' (19.6%), 'can easily adapt to the pace of business' (18.7%) and 'can easily work on matters outside their specialty' (15.6%).

Furthermore, the position of the grey dots in Figure 6 shows that for 10 out of 15 skills, no fewer than 46.7% to 62.7% of employers indicate that they "neither agree nor disagree". These skills are: 'can easily work on matters outside their specialty', 'can easily adapt to the pace of business', 'are sufficiently suited for leadership or management positions', 'are sufficiently able to work together/in a team', 'prefer speed and pragmatism over accuracy and correctness', 'have sufficient business skills/insight', 'can easily apply their knowledge and translate it into practical implications and solutions', 'are initiative takers', 'are able to explain complex matters in a simple and understandable way' and 'work in a sufficiently results-oriented manner'.

DISCUSSION

With the *Survey of Employers 2022*, ECOOM HR in R&D investigates how companies with R&D activities in Flanders perceive PhD holders and their employability in non-academic jobs. The *Survey of Employers 2022* does not address specific competence needs these companies might have.

A crucial factor in the employability of PhD holders in non-academic jobs is the set of competences they bring from the academic world to the social and economic professional field (knowledge diffusion) and making these innovative technologies and knowledge accessible (knowledge valorization) (cf. Diependaele, 2024). In the *Survey of Employers 2022*, we asked employers in companies with R&D activities, among other things, about their perception of the skills possessed by PhD holders. For this purpose, we focused on 15 specific skills. The

selection of these skills was made before the European Commission introduced *ResearchComp* (2022) and *RM Comp* (2025) as frameworks to promote intersectoral and international mobility of researchers in the ERA. Nevertheless, this ECOOM-Brief provides a post hoc translation of the skills included in the *Survey of Employers* to these European frameworks. The responses from participating companies in the *Survey of Employers* point to three major takeaways.

Firstly, it appears that the majority of companies with R&D activities in Flanders associate PhD holders with five specific skills: 'have a strongly developed learning ability', 'are experts', 'can work autonomously', 'have an innovative mindset' and 'are perseverant'. The combination of 'are experts' and 'have an innovative mindset' can serve as a strategic lever in further optimizing both knowledge diffusion and knowledge valorization in Flanders. This raises the subsequent question of the extent to which these perceived skills of PhD holders are actually called upon and utilized within companies, and to what extent there is still room for further optimization.

Secondly, the *Survey of Employers 2022* also shows that companies with R&D activities in Flanders tend to perceive a particular set of skills as mostly lacking among PhD holders. One in three employers pointed to 'prefer speed and pragmatism over accuracy and correctness' and 'have sufficient business skills/insights'. Approximately one in five employers pointed to 'are sufficiently suited for leadership or management positions', 'can easily work on matters outside their specialty', and 'can easily adapt to the pace of business'. These findings can serve not only as leverage in optimizing training and personal development plans for junior researchers and PhD holders, but also as a source of inspiration for PhD holders when applying for non-academic positions.

Thirdly, it appears that for 10 of the 15 skills, employers in companies with R&D activities most frequently selected the response option "neither agree nor disagree". This raises the question of why this is the case. Is it because these employers do not have a clear opinion about these surveyed skills of PhD holders? Or is the person completing the survey questions on behalf of the company not sufficiently informed about "what the company thinks of PhD holders"? Is it possible that respondents have several specific PhD holders in mind, leading them to conclude that some possess the skill while others do not? Or does the answer depend on too many different factors, such as whether the PhD holder occupies a research-oriented position within the company?

The *Survey of Employers 2022* allows us to further refine the initial insights presented in this ECOOM-Brief, for example by examining differences according to specific characteristics of companies engaged in R&D activities. For this, we refer the reader to future ECOOM-Briefs.

REFERENCES

- Bebiroglu, N., Dethier, B. & Ameryckx, C. (2022). *Gaining insight into transferable skills: Perspectives from doctorate holders and non-academic employers. Executive Summary*. Observatory Thematic Report Series: Recruiting Talents #1. <https://observatoire.frs-fnrs.be/media/report.employers.1.summary.pdf>
- Boman, J., Rusitoru, M., & Sanchez Barrioluengo, M. (2022). *Online stakeholder consultation: Results from the survey of non-academic*

- employers of PhD holders*. Strasbourg: European Science Foundation (ESF). <https://doi.org/10.5281/zenodo.7071262>
- Bongers, F., Rienstra, Y., Leonique, K., & Groot Beumer, T. (2018). *Evaluatie van de Omkadering van Jonge Onderzoekers (OJO) managementsamenvatting*. Dialogic. https://www.ewi-vlaanderen.be/sites/default/files/2023-03/evaluatie_2018_omkadering_jonge_onderzoekers_ojo_mangem_entsamenvatting.pdf
- Debackere, K., Hoskens, M., Pellens, M., Verheyden, L., & Viaene, P. (Juli, 2025). *Totale O&O-intensiteit in Vlaanderen 2013-2023. 3% nota*. <https://www.ecoom.be/assets/666>
- De Grande, H., De Boyser, K., Vandeveld, K., & Van Rossem, R. (2014). From academia to industry: Are doctorate holders ready? *Journal of the Knowledge Economy*, 5(3), 538-561. <https://doi.org/10.1007/s13132-014-0192-9>
- Diependaele, M. (November, 2024). *Beleidsnota 2024-2029. Economie, wetenschap, innovatie en industrie*. <https://www.vlaanderen.be/publicaties/beleidsnota-2024-2029-economie-wetenschap-innovatie-en-industrie>
- Diependaele, M. (Februari, 2025). *Vlaamse productiviteitsagenda. Visie en acties 2025*. <https://www.ewi-vlaanderen.be/nieuws/vlaamse-productiviteits-en-competitiviteitsagenda-vlaamse-versnelling>
- ECOOM-Brief 4 – De Grande, H., De Boyser, K., Vandeveld, K., & Van Rossem, R. (2011). The skills mismatch: What doctoral candidates and employers consider important. ECOOM HR in R&D.
- ECOOM-Brief 32 - Wille, L., Legrand, V., Mortier, A. & Levecque, K. (2020). PhD holders through the eyes of non-academic employers: a state-of-the-art literature review. ECOOM HR in R&D.
- ECOOM-brief 39 – Debacker, N. (2021). On the academic postdoctoral track in Flanders (Belgium) after obtaining a doctorate. ECOOM HR in R&D.
- ECOOM-Brief 42 – Mortier, A., Levecque, K., & Wille, L. (2023). Employment of PhD holders: non-academic sectors mapped. ECOOM HR in R&D.
- ECOOM-Brief 44 – Mortier, A., Levecque, K., & Wille, L. (2023). Are PhD holders still involved in research after leaving the university? ECOOM HR in R&D.
- ECOOM-brief 48 – Wille, L., Levecque, K., & Huyghe, V. (2024). The Survey of Employers: how do non-academic employers in companies with R&D activity view doctorates? ECOOM HR in R&D.
- ECOOM-brief 49 – Wille, L., Levecque, K., & Huyghe, V. (2024). Is the unknown unloved? And the known loved? On how companies with R&D perceive the added value of PhD holders. ECOOM HR in R&D.
- European Commission (August, 2022). *Knowledge ecosystems in the new ERA, Using a competence-based approach for career development in academia and beyond*. https://research-and-innovation.ec.europa.eu/jobs-research/researchcomp-european-competence-framework-researchers_en#documents
- European Commission (April, 2024). *Researchers's skills*. https://rea.ec.europa.eu/publications/researchers-skills_en#details
- European Commission (January, 2025). *The European Competence Framework for Research Managers*. https://research-and-innovation.ec.europa.eu/jobs-research/rm-comp-european-competence-framework-research-managers_en
- Muurlink, O., Chen, L., Boorman, R., Pearson, D., & Cohen, G. (2024). Stakeholder perceptions of what industry wants from doctoral students: a systematic literature review. *Higher Education Research & Development*, 43(4), 952–965. <https://doi.org/10.1080/07294360.2023.2269871>
- Skakni, I., Kereselidze, N., Parmentier, M., Delobbe, N., & Inouye, K. (2026). PhD graduates pursuing careers beyond academia: a scoping review. *Higher Education Research & Development*, 45(1), 235–254. <https://doi.org/10.1080/07294360.2025.2515211>
- Stassen, L., Levecque, K. & Anseel, F. (2016). *PhDs in transition: what is the value of a PhD outside academia?* UGent. <https://biblio.ugent.be/publication/8613201>

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Figure 1: Percentage of companies per response category for skills in the competence area "self-management" (Survey of Employers 2022, N=225)

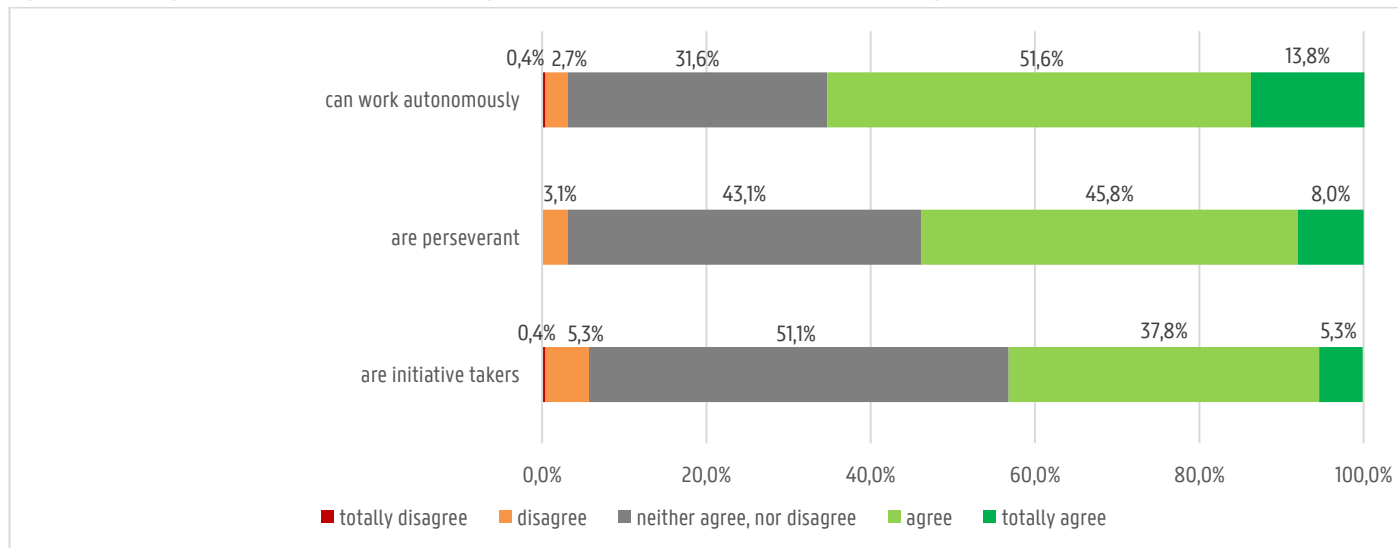


Figure 2: Percentage of companies per response category for skills in the competence area "making an impact" (Survey of Employers 2022, N=225)

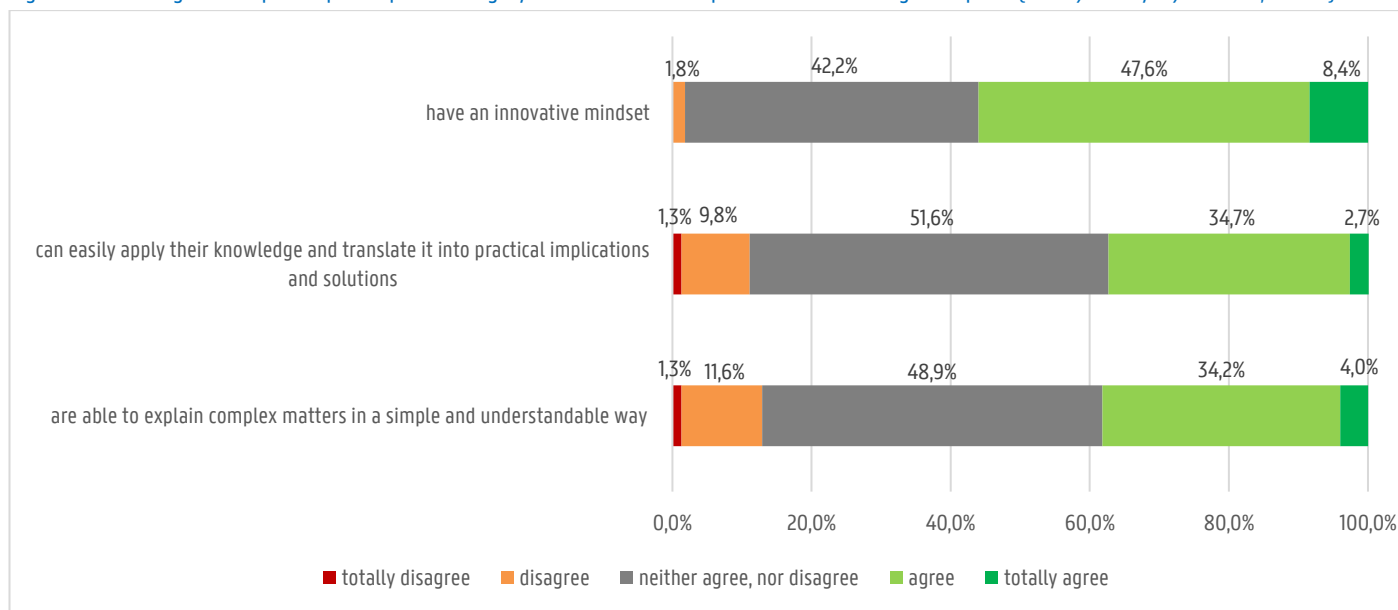


Figure 3: Percentage of companies per response category for skills in the competence area "working with others" (Survey of Employers 2022, N=225)

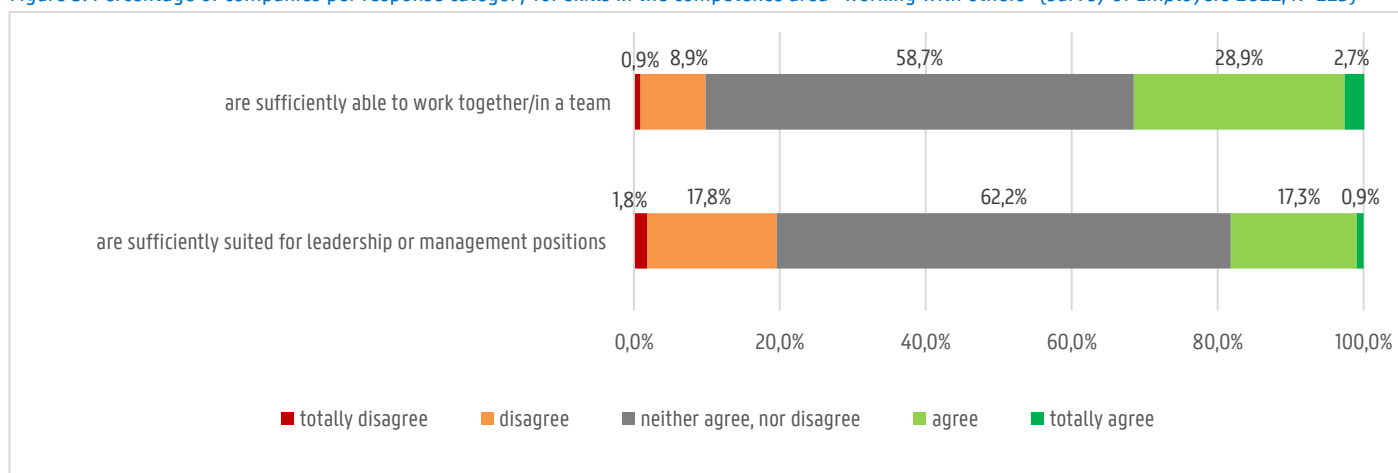


Figure 4: Percentage of companies per response category for skills in the competence area "cognitive abilities/personal attributes" (Survey of Employers 2022, N=225)

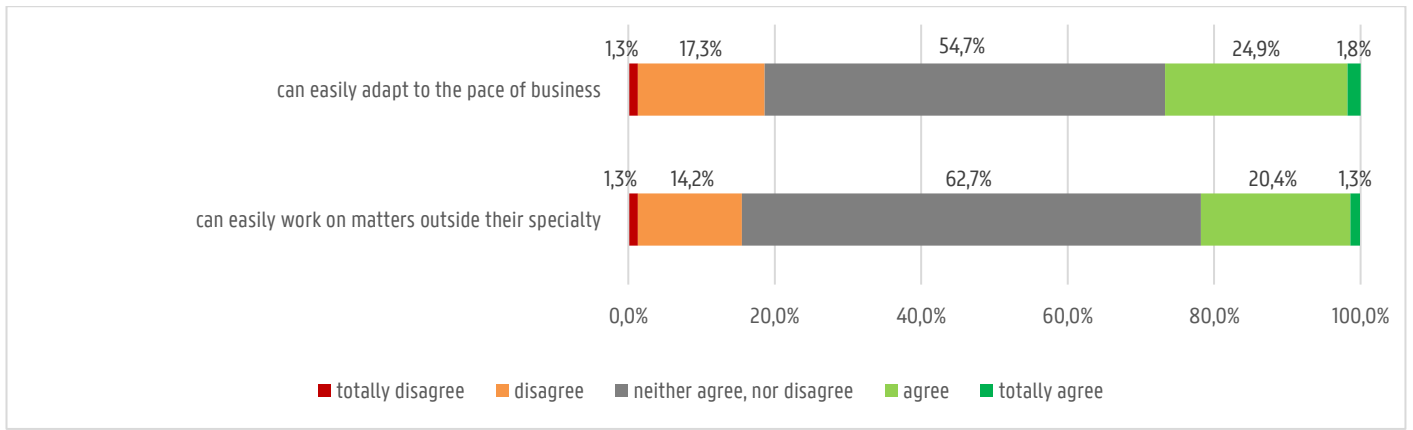


Figure 5: Percentage of companies per response category for skills in the competence areas "cognitive abilities", "doing research", "managing research", and the separate skills 'have sufficient business skills/insight' and 'prefer speed and pragmatism over accuracy and correctness' (Survey of Employers 2022, N=225)

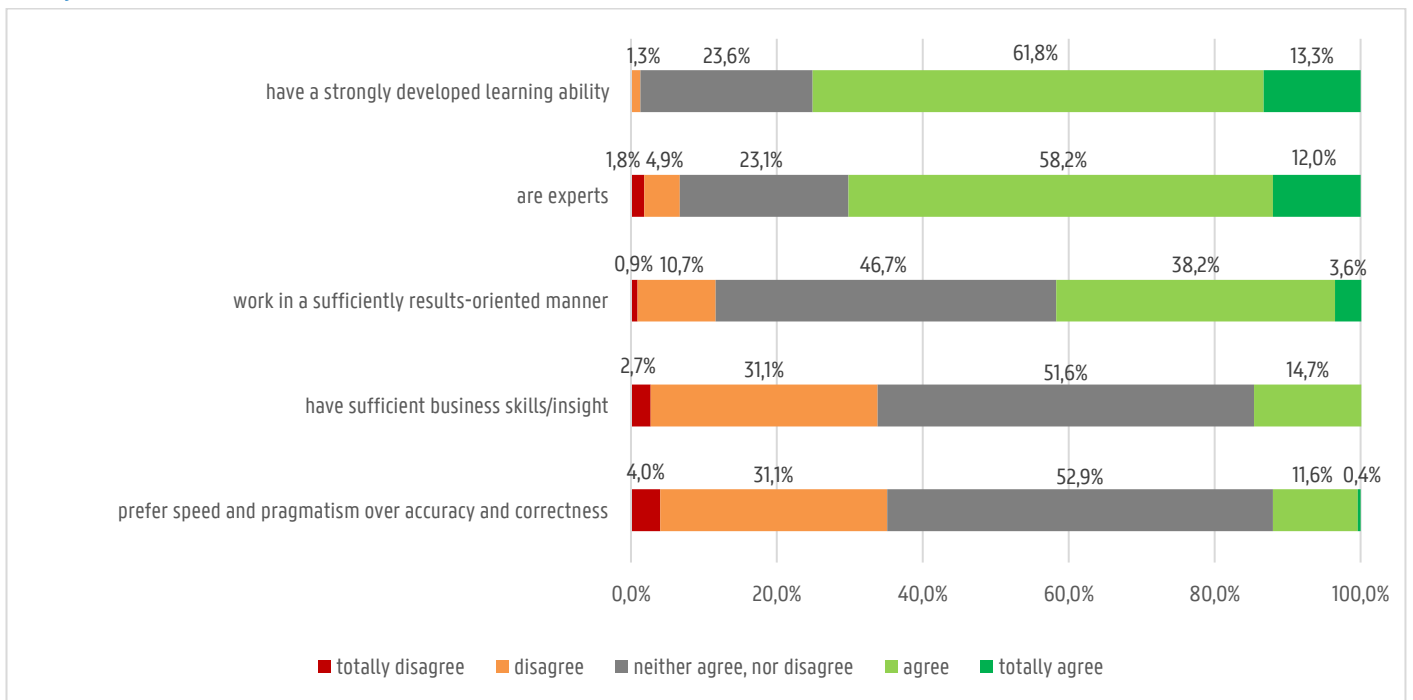


Figure 6: For each skill the percentage of companies “(totally) disagree”, “neither agree, nor disagree” and “(totally) agree” (Survey of Employers 2022, N=225)

