# All good things come in threes – required skill sets in the graduate labour market in Germany

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## Abstract

**Purpose** – Our work adds to the debate regarding higher education graduates' skills required in the labour market in Germany and beyond.

**Design/methodology/approach** – Using Q-methodology and the accompanying narrations, we explore German employers' and employees' views ($N = 26$) on characteristics required at the entry level.

**Findings** – Our findings show three areas of the labour market with different skill requirements. Whereas the first area, "The world of rules", applies more likely to the professions and academia, the two other areas, "The middle field" and "The people-oriented and critical market", can be found throughout the labour market. The disciplinary affiliation does not play a role. In all three areas, soft skills are crucial and specialised knowledge is only highly valued in the area of "The world of rules".

**Originality/value** – In contrast to previous findings, we do not focus on singular skills. Instead, we focus on skill sets and discuss their relevance from the background of their usability.

**Keywords** Higher education, Labour market, Skills, Competencies, Germany, Employability, Graduate

**Paper type** Research paper

## Introduction

Across Europe, there is an ongoing discussion on how to prevent a systematic mismatch between higher education (HE) graduates' skills and the needs and demands of the labour market. A current analysis reveals difficulties in skill matching between labour supply and demand (Dellkamm *et al.*, 2022). Furthermore, matching labour market participants' skills and businesses' demands increases with an employee's age as time spent working at a first employer after studying has become more fragmented and decreased significantly (van Hove and Kaufmann, 2017). People with a university degree change their employers faster than employees who went through a vocational training system (Schäfer and Herrmann, 2022). Digitalization and more women entering the large-scale labour market have reduced the share of permanent workers with $31+$ hour contracts. This has resulted in a more diverse and frequently job-changing workforce (Walwei, 2017), which poses challenges for businesses in terms of time for individual employees and providing adequate training for those employees. In fact, as our study will show, when employees start their careers, they are expected to already have skills.

Scholarship has differently labelled supposed future skill sets conveyed by HE, e.g. transferable skills, key competencies, core skills and general competencies (Balcar, 2014; Cinque, 2016). As noticed by Artess *et al.* (2017, p. 17), what is called graduates' soft skills (or attributes) goes beyond the requirements of the labour market: "Rather they

describe a range of skills, attributes, attitudes and behaviours that have a relevance to the workplace, but also frequently relevance to other contexts such as higher education, family life or citizenship". Additionally, there is a distinction between soft and hard skills. Hard skills are defined as specific to jobs or fields of study (Albandea and Giret, 2018) and thus cover what the European Qualification Framework subsumes under the term "knowledge". Under this term, we also subsume concrete, directly observable characteristics such as grades, level of diploma or exchange abroad.

A meta-analysis of 21st century skills has shown that skill frameworks converge on the relevance of certain skills. However, the classification of skills differs between frameworks and studies (Rolim and de Lourdes Machado-Taylor, 2016; Voogt and Roblin, 2010). Such frameworks remain largely silent on the fact that today's tremendously complex labour market might profit from various skill sets, depending on the respective industry or the specific area of responsibility. Furthermore, research has heavily relied on employers' perspective on relevant skills (e.g. Archer and Davison, 2008; Humburg *et al.*, 2013; but see, e.g. Cinque, 2016). The present study intends to overcome both shortcomings. We include both the employer's as well as the employee's perspective from a variety of different sectors of the labour market.

While the literature has either explored discipline-specific labour markets (Hirudayaraj *et al.*, 2021; Stoner and Milner, 2010) or compiled lists of skills relevant for the entire labour market (Matthews *et al.*, 2016), our study takes a meta-level approach. We ask if there are underlying dimensions of skills in the labour market that may differ not by discipline but by other aspects. Our findings show that there is no unified result on the skills required in the labour market. However, three distinctive dimensions with different sets of skills emerge: "The middle field", "The world of rules" and "The people-oriented and critical market". Before turning to our results, we discuss previous findings on skills valued in professional settings and introduce the Q-methodology used to collect the data.

## What skills are crucial in the labour market?

First, we present some general findings on soft skills from the previous literature. Secondly, we discuss certain categories of soft skills that have been found to be particularly relevant to employability. Finally, we explore the role of hard skills. These steps are crucial in identifying gaps in the literature to date and in understanding the instruments employed in this study.

There seems to be a consensus that soft skills are important in the labour market (Afroze *et al.*, 2019; European Commission, 2010; Gonzales and Wagenaar, 2005; Suleman, 2016). The importance of soft skills differs between industry branches (Hirudayaraj *et al.*, 2021; Moore and Morton, 2017; Stoner and Milner, 2010) or fields of study (Osmani *et al.*, 2019), similar to the demand for different knowledge (hard skills). Although there is no unified list of soft skills required, some have been identified as essential more frequently than others. For instance, a meta-analysis by Artess *et al.* (2017) defines decision-making capability, values, self-belief or self-efficacy, proactivity and confidence as key skills for transitioning from higher education to (self-) employability.

Communication is a soft skill that has been identified as crucial in many studies worldwide, for example in Afghanistan (Wafa *et al.*, 2020), Bangladesh (Afroze *et al.*, 2019), Vietnam (Truong, 2016), Australia (Moore and Morton, 2017) and Austria (Haberfellner and Sturm, 2018). This is not surprising, as communication is a broad term that encompasses both oral and written communication as well as the ability to listen and body language. Proficiency in communication influences other domains such as presentation skills, etiquette, discussion, media competence (Schulz, 2008) and negotiation (Truong, 2016). Sector-specific skills, communication skills and the ability to work effectively in a team were the highest-ranked graduates' skills among employers (European Commission, 2010).

In Australia, interpersonal and communication skills were ranked highest among graduate recruitment criteria (Matthews *et al.*, 2016). Indeed, the growing demand for communication skills reflects today's labour market, which is more team-based, networked and service-oriented (Small *et al.*, 2018).

Self- and organisational reflection is another key skill that has been identified as essential in the employability context (Römgens *et al.*, 2020, p. 2593): "it is about awareness of the individual's position in the work context, including an awareness of personal goals, values, interests, expectations and motivations as well as strengths and weaknesses". Rust and Froud (2016) argue that graduates' self-awareness is the key to success as it allows them to reflect on and articulate their strengths and weaknesses. Similar results were obtained in Ireland, where emotional self-awareness and self-control as well as empathy, were rated as (very) important by around 90% of employers (Jameson *et al.*, 2016).

Andrews and Higson (2008) also listed creativity as one of the skills integral to graduate employability. Similarly, Jackson (2013), classified critical thinking, problem solving and innovation as essential skills for graduates. Hirudayaraj *et al.* (2021) report creativity (i.e. generating innovative ideas and solutions) and critical thinking (i.e. identifying, constructing and evaluating arguments; detecting inconsistencies and errors in reasoning; systematically solving problems and reflecting on underlying values and beliefs) being ranked as essential skills for entry-level engineers.

In terms of hard skills (or hard facts), research conducted in the UK revealed that 57% of organisations look for a degree or postgraduate qualification when recruiting (CIPD, 2022). Furthermore, a master's degree is essential for leadership positions in the US market (Gallagher, 2014). According to Archer and Davison (2008), employers believe work experience to be a vital component of graduate employability. Eurobarometer (European Commission, 2010) showed that sector-specific skills – gained through practical experience – are highly valued by employers. Jackson and Collings (2018) reported higher full-time employment rates for those students who had paid employment during the last year of undergraduate study.

Although we have not presented an exhaustive list, the skills discussed suggest that today's labour market is collaborative and demanding, as graduates must possess a broad skill profile. One particularity of the studies cited is the focus on singular skills. In the labour market, however, rarely is a single skill required in isolation. To close this discrepancy, our paper focuses on a set of skills and not on the singular skills demanded in the labour market. Moreover, the existing literature on graduate employability tends to focus either on the entire labour market or on a specific profession, with little discussion on how aspects such as the size of the business or organisation or sector of the labour market may impact the required skills. This study increases understanding of these aspects. Our research question is therefore "Which skill sets are relevant in the graduate labour market in Germany?".

## Methodology

We used problem-centred interviews (Witzel and Reiter, 2012) for data collection, which allowed us to capture the situation in the German labour market for academics. The main aspect, the relevance of soft and hard skills required in the labour market, was captured by Q-sort (see section *Q-Methodology*), which was integrated into the interview.

The fieldwork took place between November 2019 and July 2020, with all but seven interviews conducted face-to-face. The remaining interviews were conducted as telephone interviews due to the Corona pandemic. The analysis showed no pandemic-related bias. All interviews were audio-recorded, transcribed and anonymised. We obtained informed consent from the participants.

## Q-methodology in general

The Q-methodology is dedicated to measuring subjectivity and aims at identifying underlying dimensions of public opinion (Brown, 2019). It was therefore well suited for our aim to scrutinize if there were any underlying dimensions in different professions/occupations and areas of the labour market. Ramlo and Newman (2011) discuss Q-methodology in the category of mixed methods. As Q-methodology is dedicated to subjectivity, it is often attributed to a set of qualitative approaches that aim to describe meaning and understand subjects (Ramlo and Newman, 2011). In this regard, it is suitable to handle our open-end-formulated research question. Two samples are distinguished in studies guided by the Q-methodology. (I) The P-set are participants, selected for their relevance to the topic under investigation; in most studies, this is not a representative sample (McKeown and Thomas, 2013). (II) The Q-sample consists of statements regarding the research question and is a subset of the concourse, i.e. all possible subjective statements concerning the research question. Representativeness in the Q-sample, therefore, seems impossible. However, it is important to map the existing discourses on the research topic in the Q-sample as well as possible by not omitting any relevant topics. The construction of the Q-sample is a central task in the Q-method (cf. Brown *et al.*, 2019; McKeown and Thomas, 2013).

## Q-methodology in this study

Q-sample: The concourse for our study consisted of characteristics that play a role in selection processes in the labour market. We reviewed numerous studies and projects dedicated to skills and competencies in the labour market (e.g. Cinque, 2016; Haselberger *et al.*, 2012; Humburg *et al.*, 2013). We mainly analysed publications that focused on academics. To a lesser extent, we also consulted studies focusing on the labour market in general; today's labour market is changing rapidly, and the boundaries between jobs for academics and nonacademics are becoming increasingly blurred. We also reviewed academic job sites such as Stepstone and Academics.de, among others, to determine what was being requested. We selected 43 elements, mainly soft skills, as the final Q-sample (see Table 3).

P-set: To obtain not only an adequate but also heterogeneous P-set, the interview partners were selected according to the following criteria: affinity to a specific group in the labour market (employees, self-employed and employers), sector (public, private and nonprofit organisations; among employees, only those with a work contract were taken into account), gender (female and male), industry branch (covering many different branches) and duration of professional experience. The employees' work experience after their master's degree ranged from one to ten years. This range ensured that we recorded both newcomers and those with heterogeneous professional experience in the labour market. The group defined as "employers" had personal responsibility and/or were responsible for the selection of new employees. We conducted 26 interviews (see Table 1 for sample composition).

As the study was conducted for the Y at the X's career service unit, there were implications for the selection process. As graduates from the X (85% of graduates in 2016) tend to stay in City A's metropolitan region, the P-set was recruited from the region of City A (+/-50 km). As

| Criterion | | | |
| --- | --- | --- | --- |
| Job position* | Employee:14 | Employer:12 | Self-employed: 2 |
| Gender** | Female:14 | Male:12 | |
| Sector* | Private: 11 | Public: 14 | NGO: 3 |

**Note(s):** $N = 26$ * Simultaneous categories possible due to manifold jobs, ** as defined by the interviewers
**Source(s):** The authors

only a small proportion of the X's graduates pursue self-employment, employers and employees dominate the P-set.

Q-sort: The participants were asked to place all Q-sample elements they considered indispensable for the labour market on the right-hand side (see Figure 1). The elements considered less relevant to the labour market should be assigned to the left-hand side. The middle field offered space for the elements on which the participants were undecided or had no opinion. The participants were asked to sort the 43 elements from the perspective of their current job, with a special focus on entry level. The sorting process can be described as self-referential (Brown, 1980; Ramlo and Newman, 2011; Stephenson, 1953). In this way, a unique Q-sort is created for each respondent, reflecting the respondent's opinion – the subjectivity – in relation to the topic under study (Brown *et al.*, 2019). The sorting process illustrates the strength of this method – the elements to be assessed are always considered globally and interdependently – in contrast to traditional testing methods, such as surveys, where questions/items are presented and asked independently of each other (Müller and Kals, 2004).

*Analyses*
Q-methodology can be explained in simple terms as reversed factor analysis. In the familiar factor analysis, statements are evaluated and grouped into factors. In the case of Q-methodology, participants who sort their statements similarly are assigned the same factor. The different factors represent different attitude patterns towards a topic. At this point, a detailed description of the basic mathematical procedures is omitted. For a discussion, see Brown (1980) and McKeown and Thomas (2013).

The 26 Q-sorts performed by the participants were used as input for the analyses. The analyses were conducted using the PQMethod (Schmolck, 2014). We explored various factor solutions, e.g. centroid with hand-rotation and PCA with a varimax solution. We also consulted distinguishing and consensus statements while searching for the best factor representation of the data. Distinguishing statements are those items from the Q-sample that were ranked significantly differently (alpha = 0.05 or less) in one factor compared to other factors.

**Results**
PCA with a varimax solution leading to a three-factor solution was chosen as it was best supported by the narrations and explained the most variance in the data (48%). According to this result, there is no unified view on the required skills on the labour market, as three views have been distinguished. The three factors correlate moderately to strongly with each other (see Table 2). This indicates a basic consensus regarding the importance of different skill sets in the German labour market. The weakest correlation between factors 2 and 3 signifies that the views of the participants defining these two factors differ most from each other. Out of 26



**Figure 1.**
Grid for Q-sort

**Source(s):** The authors

participants, 22 belong solely to one factor in the statistical analysis. The other four participants could be assigned to at least two factors, showing that some areas of the labour market unify characteristics from at least two out of the three labour markets presented below.

Only seven characteristics do not distinguish between any pair of factors (see Table 3 for consensus statements). These characteristics were rated similarly by most participants, with weather being rated as relevant or least relevant. The following items were rated in the middle: *Controlling one's own emotions*, *Being able to select from different sources of information and assess their quality* and *Digital skills*. The ratings in the middle were accompanied by the explanation that these characteristics are prerequisites for participation in the graduate labour market. On the contrary, *Being able to communicate with different interlocutors (supervisors, colleagues and customers)* and *Listening to others* being rated as relevant indicates the importance of communication in today's world of work. The *Willingness to learn* was also highly rated by most participants, reflecting that the university diploma is just the beginning of gaining expertise.

Despite some consensus statements and relatively high correlations between the factors, item constellations within the factors show that there is no generally applicable set of skills for all areas of the graduates' labour market. In fact, three parallel labour markets – described by three factors – exist with different demands for skills, each represented by one factor (Table 3).

*Labour market 1: the middle field*
Factor 1 is defined by ten participants, representing different areas of the labour market, mainly the private sector. Participants defining this factor have no clearly predefined career path. This factor corresponds most closely to the average of all sortings, i.e. the average of the labour market represented in the sample. Figure 2 represents the typical sorting for this factor.

Our findings suggest that hard skills such as *Academic achievements/grade* (−4) or *Degree level (bachelor, master and PhD)/Level of education* (−3) are of minor importance. On the contrary, a broad array of soft skills is crucial. Communication skills: *Formulating thoughts clearly* (4), *Being able to communicate with different interlocutors (supervisors, colleagues and customers)* (3) and *Listening to others* (2) are ranked highly. The importance of communication skills is inevitable, as work occurs not in solitude but mainly within a team and in contact with other people, e.g. customers. Thus, items such as *Handling criticism* (4) and *Being considerate of the views and feelings of others and responding appropriately* (2) also appear high in the hierarchy.

Our study found that accurately expressing one's thoughts, ideas, wishes, needs and goals is crucial. Participants emphasized the importance of dealing constructively with feedback and learning from it. Additionally, work ethic was underlined in this factor. The high ranking of *Taking responsibility for one's own work results* (4) goes hand in hand with *Taking initiative* (2) and implies that new employees should not wait for instructions but instead analyse the situation, act and take responsibility for their action; an attitude missed by many

|  | Factor 1 | Factor 2 | Factor 3 |
| --- | --- | --- | --- |
| Factor 1 | 1.00 | 0.43 | 0.49 |
| Factor 2 | | 1.00 | 0.32 |
| Factor 3 | | | 1.00 |
| **Source(s):** The authors | | | |

Table 2.
Factor correlations

| Statement Number | Statement | Factor 1- Labour Market 1 | Factor 2- Labour Market 2 | Factor 3- Labour Market 3 |
|---|---|---|---|---|
| 1 | Being considerate of the views and feelings of others and responding appropriately | 2 | 0 | 1 |
| 2 | **Controlling one's own emotions** | 0 | 0 | −1 |
| 3 | Work experience | −2 | 2 | −4 |
| 4 | Assertiveness | 0 | −1 | −4 |
| 5 | Working efficiently even under heavy loads | 3 | 4 | 0 |
| 6 | Decisiveness | 1 | −2 | −1 |
| 7 | Motivating others to achieve goals together | 0 | −3 | 2 |
| 8 | Academic achievements/grade | −4 | −1 | −2 |
| 9 | Formulating thoughts clearly | 4 | 4 | −2 |
| 10 | Degree level (Bachelor, Master, PhD)/Level of education | −3 | 1 | −3 |
| 11 | Loyalty to the business and its guiding principles | 1 | −3 | −1 |
| 12 | Ambition | -1 | −2 | −4 |
| 13 | **Math skills** | −3 | −4 | −3 |
| 14 | Practically applying theoretical knowledge | −2 | 3 | 2 |
| 15 | Planning and executing work processes in a structured manner | 3 | 1 | 2 |
| 16 | Creativity | 1 | −3 | 0 |
| 17 | Taking initiative | 2 | −2 | 0 |
| 18 | **Being able to select from different sources of information and assess their quality** | 0 | 0 | 0 |
| 19 | **Digital skills** | 1 | −1 | −1 |
| 20 | **Willingness to learn** | 1 | 3 | 3 |
| 21 | Recognition of hierarchies and rules | −2 | −1 | −3 |
| 22 | **Listening to others** | 2 | 2 | 1 |
| 23 | Foreign languages | −3 | 0 | −1 |
| 24 | **Being able to communicate with different interlocutors (supervisors, colleagues, customers)** | 3 | 3 | 3 |
| 25 | Setting priorities | 3 | 3 | 1 |
| 26 | Adapting to changing circumstances | −1 | 1 | 2 |
| 27 | Decision-making: Selecting the best alternative based on adequate criteria | 0 | 0 | 2 |
| 28 | Openness to new ideas | 0 | 0 | 4 |
| 29 | Specialised knowledge | −2 | 4 | 1 |
| 30 | Volunteering | −4 | −4 | −2 |
| 31 | Working productively in a team despite the lack of physical proximity | −3 | −2 | 0 |
| 32 | Taking responsibility for one's own work results | 4 | 1 | 4 |
| 33 | Holistic thinking | 2 | 0 | 1 |
| 34 | Reflecting critically on the circumstances | −2 | 1 | 4 |
| 35 | Working accurately | 2 | 2 | 0 |
| 36 | International experience | −4 | −3 | −2 |
| 37 | Integrating social responsibility into work processes | −1 | −4 | 3 |
| 38 | Delegating tasks | −1 | −2 | 0 |
| 39 | Expressing criticism | 1 | −1 | −1 |
| 40 | Negotiation skills | −1 | −1 | −3 |
| 41 | Being able to work with people of other religions, sexes, ages, sexual orientations and with people with disabilities | 0 | 2 | 3 |
| 42 | Analytical thinking | −1 | 2 | −2 |
| 43 | Handling criticism | 4 | 1 | 1 |

**Table 3.**
Factor array for each of the three factors

**Note(s):** Consensus statements in bold, distinguish statements in colour
**Source(s):** The authors

participants. Our findings also underscored the importance of finding and following one's own path, as success must be earned and is not handed to individuals on a silver platter. This contrasts with university life, where courses of study, content and exam materials are

| Least relevant −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 | Most relevant 4 |
|---|---|---|---|---|---|---|---|---|
| 8 Academic achievements/ grade −1.878 | 31 Working productively in a team −1.143 | 14 Practically applying theoretical knowledge −0.609 | 26 Adapting to changing circumstances −0.234 | 41 Working with diverse people 0.197 | 20 Willingness to learn 0.724 | 17 Taking initiative 1.107 | 24 Communicating with different interlocutors 1.363 | 43 Handling criticism 1.506 |
| 30 Volunteering −1.921 | 23 Foreign languages −1.292 | 21 Recognition of hierarchies and rules −0.654 | 12 Ambition −0.241 | 28 Openness to new ideas 0.180 | 11 Loyalty to the business 0.564 | 35 Working accurately 0.886 | 15 Planning and executing work processes 1.247 | 32 Taking responsibility for one's own work results 1.477 |
| 36 International Experience −2.321 | 10 Level of education −1.347 | 29 Specialised knowledge −0.690 | 40 Negotiation skills −0.346 | 7 Motivating others 0.121 | 39 Expressing criticism 0.549 | 1 Being considerate 0.828 | 5 Working efficiently even under heavy loads 1.235 | 9 Formulating thoughts clearly 1.457 |
| | 13 Math skills −1.671 | 34 Reflecting critically −0.709 | 42 Analytical thinking −0.397 | 2 Controlling one's own emotions 0.063 | 6 Decisiveness 0.451 | 22 Listening to others 0.810 | 25 Setting priorities 1.131 | |
| | | 3 Work experience −0.744 | 38 Delegating tasks −0.542 | 27 Decision-making 0.050 | 16 Creativity 0.445 | 33 Holistic thinking 0.736 | | |
| | | | 37 Social responsibility −0.557 | 4 Assertiveness 0.030 | 19 Digital skills 0.351 | | | |
| | | | | 18 Selecting from different sources of information −0.210 | | | | |

**Source(s):** The authors

prescribed. In working life, the rules differ and employees must be proactive in solving problems instead of waiting for external help.

Although grades or study diplomas are not ranked highly in this factor, time at the university is not wasted. The high ranking of *Planning and executing work processes in a structured manner* (3), *Setting priorities* (3), *Working efficiently even under heavy loads* (3) and *Working accurately* (2) underlines that work processes learned at the university are sought after in solution-oriented work as autonomy must be reached quickly.

*Labour market 2: the world of rules*
Factor 2 is determined by seven participants, working in professions (e.g. lawyer and medical doctor) and/or in academia. This section of the labour market is characterised by structured career pathways, clearly defined entrance criteria (e.g. the bar exam) and demand for specialised knowledge. Figure 3 represents the typical sorting for this factor.

Compared to the other factors, factor 2 represents a (more) conservative view on the labour market. In this factor, workplaces are hierarchical and have clearly defined rules, e.g.

| Least relevant −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 | Most relevant 4 |
|---|---|---|---|---|---|---|---|---|
| 37 Social responsibility −1.698 | 11 Loyalty to the business and its guiding principles −1.073 | 6 Decisiveness −0.639 | 19 Digital skills −0.112 | 27 Decision-making 0.208 | 10 Level of education 0.698 | 41 Working with diverse people 0.929 | 25 Setting priorities 1.520 | 29 Specialised knowledge 1.891 |
| 13 Math skills −1.879 | 7 Motivating others −1.080 | 31 Working productively in a team −0.648 | 8 Academic achievements/grade −0.129 | 18 Selecting from different sources of information 0.178 | 26 Adapting to changing circumstances 0.566 | 22 Listening to others 0.832 | 14 Practically applying theoretical knowledge 1.132 | 5 Working efficiently even under heavy loads 1.700 |
| 30 Volunteering −2.235 | 36 International Experience −1.542 | 12 Ambition −0.869 | 21 Recognition of hierarchies and rules −0.358 | 28 Openness to new ideas 0.147 | 34 Reflecting critically 0.363 | 3 Work experience 0.801 | 24 Communicating with different interlocutors 1.111 | 9 Formulating thoughts clearly 1.530 |
| | 16 Creativity −1.620 | 38 Delegating tasks −0.968 | 40 Negotiation skills −0.478 | 23 Foreign languages 0.106 | 32 Taking responsibility for one's own work results 0.328 | 35 Working accurately 0.739 | 20 Willingness to learn 1.095 | |
| | 17 Taking initiative −0.632 | 39 Expressing criticism −0.494 | 33 Holistic thinking 0.074 | | 15 Planning and executing work processes 0.267 | 42 Analytical thinking 0.706 | | |
| | | 4 Assertiveness −0.582 | | 2 Controlling one's own emotions −0.037 | 43 Handling criticism 0.251 | | | |
| | | | | 1 Being considerate −0.100 | | | | |

**Figure 3.**
Composite Q-sort for factor 2 "The world of rules", z-values included

**Source(s):** The authors

milestones on the career ladder. These rules serve as signposts and impart objectivity. *Taking responsibility for one's own work results* (F2:1, F1:4, F3:4) and *Taking initiative* (F2:-2, F1:2, F3:0) are ranked lower than in the two other factors. Initially, graduates are expected to adjust to the system and only carry out specific tasks. This requirement has a positive side: specific criteria can make it easier for new employees to navigate the new system.

*Specialised knowledge* (4) is the be-all and end-all; in contrast to other factors, it is seen as the most important criterion for success in this labour market (F1:-2, F3:1) and cannot be replaced by any other skill. Knowledge obtained at the university is indispensable for work. All participants defining this factor emphasize this knowledge provides a solid foundation but is not sufficient throughout an entire career. Thus, *Willingness to learn* (3) is ranked highly, as professional knowledge quickly becomes outdated.

Communication skills are also important in this part of the labour market, as knowledge-based work requires precision (*Formulating thoughts clearly* (4)). Furthermore, *Being able to communicate with different interlocutors (supervisors, colleagues and customers)* (3) is ranked

highly, as employees must communicate with other professionals using technical terms as well as with laymen in a comprehensible manner.

It may be surprising that participants with an academic background are allocated to this factor, given that academia is often associated with innovation. While this may be true for the content of the work, the scientific career path is clearly defined: completing a doctorate, winning third party-funded projects and publishing relevant scientific papers in high-ranking journals.

However, some participants working in the area represented by factor 2 disapprove of the system. Nevertheless, they (and all potential employees) must conform. This is reflected in the placement of *Loyalty to the business and its guiding principles* (F2:-2, F1:1, F3:-1). While it is crucial to play by the rules, employees do not necessarily have to internalise them.

### Labour market 3: people-oriented and critical market
Factor 3 is defined by five participants. Two out of three participants from an NGO belong to this factor, both in a supervisory position. The other three participants come from both the private and public sectors. Factor 3 correlates highly with factor 1 ($r = 0.49$). In both factors, soft skills are more crucial than hard skills. The importance of *Specialised knowledge* (1) in factor 3 lies between the two other factors (F1:-2, F2:4). Figure 4 represents the typical sorting for this factor.

Factor 3 emphasises the importance of social responsibility, respect for others and personal development on the job. This is reflected in items ranked highly in this factor, but not in factors 1 and 2: *Openness to new ideas* (F3:4, F1:0, F2:0), *Reflecting critically on the circumstances* (F3:4, F1:-2, F2:1) and *Integrating social responsibility into work processes* (F3:3, F1:-1, F2:-4). In this factor, individuals are required to look at the world critically and find new approaches. This requires holistic thinking and openness to new ideas.

In this part of the labour market, individuals – and not profit – are relevant. Therefore, *Working efficiently even under heavy loads* is rated lower (0) than in the other factors (F1:3, F2:4). Gains for the business or organisation are achieved through development at the personal level. Every person is an individual; therefore, personal interaction is important, whether it be with colleagues or customers.

As in factor 1, teamwork is emphasised in factor 3. However, in factor 1, teamwork is important for practical reasons as it allows for the division of labour to be more efficient. In contrast, in factor 3, the cohesion of the group is central; the team must pursue a common goal and support each other.

### Discussion
Our results are in line with the previous literature: The range of skills needed in the labour market is extremely wide (Cinque, 2016). Our study aimed to locate relevant skill sets for graduates that are necessary to navigate the world of work. By questioning existing views on the skills needed, where often only one particular skill is in focus, we found three underlying areas of the entire labour market with particular skill sets: "The middle field", "The world of rules" and "The people-oriented and critical market". The advantage of presenting a relevant set of skills rather than ratings of singular skills is that it reflects the labour market more accurately. Rarely are skills demanded in isolation.

By analysing three areas of the labour market with requirements for a specific set of skills, we gained insights into why those (and not other) skills are relevant in their respective contexts. The analysis also helped to identify differences and similarities between these three parallel labour markets. Whereas "The world of rules" applies mostly to the professions and academia, "The middle field" and "The people-oriented and critical market" can be found

**52**

| Least relevant −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 | Most relevant 4 |
|---|---|---|---|---|---|---|---|---|
| 12 Ambition −1.686 | 40 Negotiation skills −1.183 | 9 Formulating thoughts clearly −0.727 | 19 Digital skills −0.230 | 17 Taking initiative 0.418 | 29 Specialised knowledge 0.676 | 26 Adapting to changing circumstances 0.917 | 41 Working with diverse people 1.176 | 28 Openness to new ideas 1.749 |
| 4 Assertiveness −1.694 | 10 Level of education −1.572 | 42 Analytical thinking −0.764 | 39 Expressing criticism −0.231 | 16 Creativity 0.230 | 43 Handling criticism 0.662 | 27 Decision-making 0.899 | 24 Communicating with different interlocutors 1.175 | 32 Taking responsibility for one's own work results 1.672 |
| 3 Work experience −1.792 | 21 Recognition of hierarchies and rules −1.590 | 8 Academic achievements/grade −0.832 | 6 Decisiveness −0.293 | 35 Working accurately 0.116 | 1 Being considerate 0.629 | 7 Motivating others 0.804 | 37 Social responsibility 1.057 | 34 Reflecting critically 1.504 |
| | 13 Math skills −1.633 | 30 Volunteering −0.994 | 2 Controlling one's own emotions −0.514 | 31 Working productively in a team 0.063 | 22 Listening to others 0.617 | 15 Planning and executing work processes 0.802 | 20 Willingness to learn 1.015 | |
| | 36 International Experience −1.008 | 11 Loyalty to the business and its guiding principles −0.543 | | 5 Working efficiently even under heavy loads 0.045 | 25 Setting priorities 0.614 | 14 Practically applying theoretical knowledge 0.710 | | |
| | | 23 Foreign languages −0.648 | | 18 Selecting from different sources of information −0.034 | 33 Holistic thinking 0.511 | | | |
| | | | | 38 Delegating tasks −0.091 | | | | |

**Figure 4.**
Composite Q-sort for factor 3 "People oriented and critical market", z-values included

**Source(s):** The authors

throughout the labour market. The disciplinary affiliation is irrelevant. "The middle field" requires a wide range of soft skills. Moreover, in this area of labour market, specialised knowledge is unnecessary, as employees can gain expertise on the job. The work's outcome, product and profit are more important here than the individual. "The people-oriented and critical market" represents a mindset that sees work as an integral part of life. The individual is an entity and should be critical of the world. The labour market representation in this factor may seem idealistic; it reflects the ideal working world of today – project-based work, team-oriented work, interdisciplinarity and an agile mindset. "The world of rules" represents yesterday's world of work, which is still practiced in certain areas, especially professions with linear career paths, clear rules and defined positions and areas of responsibility. In these fields, specialised knowledge acquired at the university is an inevitable skill. Thus, a university degree is seen as a guarantee of expertise and is essential for success. Soft skills are also important here, but not prioritised.

Despite the differences between these three areas, some similarities appear. Communication is a crucial skill in all three areas. Communication skills range from writing an e-mail or a report to giving a presentation, communicating with different stakeholders or knowing what can be communicated to whom. The importance of communication skills has been discussed before (see, e.g. Matthews *et al.*, 2016) and is not surprising as work in solitude is extremely rare (Small *et al.*, 2018). Methodological skills, understood as analytical skills or the ability to set priorities, structure work and solve problems, are mentioned as further important common aspects (Jackson, 2013). These were described as skills learned at the university.

The three areas discussed differ not only regarding skills but also in terms of underlying values. While "The people-oriented and critical market" prioritises individual and personal growth on the job, "The middle field" places profit first, despite those two areas requesting similar soft skills. Furthermore, "The world of rules" emphasises hierarchy and adaptability. Thus, it is important for students and then graduates – ideally already during their studies – to discover their core values and make an informed choice regarding the labour market area in which they will work. This requires self-reflection as well as professional experience (see, e.g. Archer and Davison, 2008; Rust and Froud, 2016). This experience can be gained in the form of student jobs, internships or theses written under academic and professional supervision. In general, there is a desire for more practical time to be allotted by the universities. However, tight curricula, at least at most German universities, mean this does not happen. Thus, the responsibilities and risks of collecting experiences stay mostly with students, who are future employees (see individuum as "planning office" in Beck (1992)).

In light of our findings, the term "graduate labour market" seems inappropriate as there are so many differences between different areas of the labour market. A unified list of indispensable skills does not seem to reflect the current labour market either. Instead, we should ask: skilled (or employable or qualified) for what? Only knowing the context, we can turn to the questions regarding the skills demanded for particular tasks. Our study focused specifically on a set of skills from the perspective of their usability. This way, we added to the existing literature. However, some limitations can be mentioned. One of the limitations of the study may be the choice of Q-sample. Despite extensive research, relevant skills for the sorting process could have been omitted. We counteracted this limitation by asking open-ended questions about the situation in the labour market in general and also about skills that the interviewees missed on our list. Not many were mentioned; however, the importance of knowing one's own values did emerge, as discussed above.

Furthermore, the choice of the P-set was guided by only three criteria. While we focused on gender, status in the labour market (employee or employer) and the sectors of the labour market, it is possible that other aspects, e.g. the type of industry, are crucial for the formation of factors and therefore the skill sets required. Future studies could add to this. Additionally, although this paper has focused on skills for the labour market, it is conceivable that the skills in question are also crucial in other areas, e.g. civil society. Further research could contribute by examining whether the distinction "skills for a labour market" is only an analytical one or whether labour markets are indeed different in terms of the skills required.

## Implications

Despite the limitations, and although this study was conducted in a German context, we saw some overlap with international findings (see discussion), hinting that our results can be transferred to other contexts and allow application for different user groups. For students, our research provides insights into the skill sets required in a particular labour market context. Students would benefit from understanding the differences between parallel labour

markets in advance. It also implies that future graduates need to reflect on their values against the background of the employment they seek. In addition, our study can be a good starting point for undecided students and graduates to gain some clarity on the skills required in general.

We acknowledge that students do not primarily consume research papers. For our findings to be more accessible to students, their institutions could make them available. Career Services, based at universities, support the transition between the university and the labour market. Many of them offer training in particular skills. To provide appropriate training, Career Services must know what skills are needed, where and why – this is where our findings step in, discussing different skill sets for different areas of the labour market.

Upskilling through specialised training is a common practice in the labour market. One way to achieve skill matching between employer expectations and the factual level of employee skills is through specific training, e.g. through externally validated certificates or badges (Buchem *et al.*, 2019). Therefore, certificate-awarding courses at universities are a good opportunity for students and graduates not only to acquire skills but also to make them visible to potential employers. For employers, the results can provide a basis for reflection on what is feasible during university training and what needs to be learned on the job or from the industry. The comparison between the skills needed and the skills "received" by a graduate could lead to skills-based courses run by companies for university students.

Our study also raises the question of responsibility for graduate skills. Does it lie with the graduates, the companies or the universities, in Germany funded by the state? What is the role of politics in, for example, securing budgets for students' skill acquisition? This paper cannot give a concrete answer to these questions, but it contributes with a partial answer: There is no one-size-fits-all solution, and different models may be preferable for different areas of the labour market.

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