
# QUALIFICATIONS OR SOFT SKILLS? STUDYING JOB ADVERTISEMENTS FOR DEMAND FOR LOW-SKILLED STAFF IN SLOVAKIA

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## Abstract

This paper analyses job advertisements to identify the specific skills and characteristics that are demanded in the Slovak labour market in selected low- and medium-skilled occupations in different sectors. It is innovative in exploring online job advertisement data and in quantifying the different skills, personal attributes and characteristics requested by employers.

The authors find that Slovak employers are fairly demanding in the low- and medium-level skilled sectors in terms of skill sets, skill intensity and formal educational levels; an 'ideal' low- to medium-skilled job-seeker in Slovakia needs to demonstrate a considerable set of skills and qualities. From the skills analysed, non-cognitive skills and specific cognitive skills were demanded more than general cognitive skills or appearance. Experience was the single most requested characteristic. The study shows that online portals that collect information about demand can be a very useful source of data about the content and specificities of demand at the micro-level. Empirical analyses of this type could thus be a valuable source of information for education, training policies and labour market policies.

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# QUALIFICATIONS OR SOFT SKILLS?

## STUDYING JOB ADVERTISEMENTS FOR DEMAND FOR LOW-SKILLED STAFF IN SLOVAKIA[1]

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### Introduction

In the process of transition from socialist to market economies, Central and Eastern European (CEE) countries have undergone a radical process of structural change. As economies have changed, new demands on the qualifications of labour force have emerged. The study of skill levels in the CEE offers mixed assessments of their quality and availability. On the one hand, the countries entered transition with high levels of secondary education among its workforce and the availability, quality and price of its workforce represented one of the key attraction factors for the inflow of foreign investors (Bohle & Greskovits, 2006; Jakubiak, Kolesar, Izvorski, & Kurekova, 2008; Mickiewicz, Radosevic, & Varblane, 2000). On the other hand, reviews of labour market performance point to mixed outcomes, with relatively low employment levels and high unemployment and inactivity. Satisfaction surveys of employers before the crisis revealed complaints about the shortage of labour supply in selected occupations, the unsuitability of skills, and the poor preparedness of school-leavers for the labour market, which have resurfaced again recently (Boeri, 2000; Hancke, 2011; Hancke & Kurekova, 2008).

This suggests that the interaction between labour market demand and supply at the micro-level needs to be better understood. While the characteristics of labour supply in the CEE have been analysed more extensively, to our knowledge no systematic analysis of labour market demand that goes beyond the analysis of aggregate data about vacancies has been carried out to date. At the same time, it would be extremely useful to understand better what types of qualifications and skills are sought by employers in the region, especially among the low-skilled individuals who find it more difficult to integrate. Currently, most research is oriented towards analysing the supply side of the labour market and only a few studies investigate the character, trends and changes in labour market demand and at the micro-level. This is partly due to a greater availability of individual data that enables us to study labour market processes from the point of view of workers. Much less is known about how the preferences of firms are framed with respect to different occupations and how these differ in labour markets with different characteristics formed by the functioning of education and skill formation institutions, as well as labour market regulation.

This paper aims to fill this gap by analysing the characteristics of labour demand by studying the *content* of job advertisements (ads) in Slovakia, concentrating on selected low- and medium-skilled occupations.

The initial decision to concentrate on this country was related to the availability of unique job ads data that we gained from the dominant online job portal in the country. The recent

[1] **Acknowledgements: t**he authors wish to thank the online job portal Profesia.sk for making their data available for analysis. All errors remain our own.

economic history of the country makes it a theoretically interesting case too. First, Slovakia was one of the fastest changing economies among the new member states. Due to its delayed reform and liberalisation process, since the late 1990s it has been through a very rapid re-structuring process. It opened up to an inflow of foreign direct investment and implemented a series of wide-ranging reforms that made the country home to a number of automotive and electronics investors, and these have been driving economic growth. Second, while fast growth was accompanied by a remarkable decline in the unemployment rate (from 19.3% in 2001 to 9.5% in 2008 (LFS/Eurostat)), the country suffers from mismatches, structural unemployment and high unemployment rates especially among the less educated and young people. In sum, the analysis of the content of job advertisements in Slovakia enables us to understand better some elements of labour demand in a fast-changing economy with a high share of skilled labour but persistent structural unemployment. The study can therefore be informative for policy-making with respect to skill provision and skill formation systems, labour market policies or labour market regulation in other countries that face similar constraints.

By delving into with this highly interesting empirical background, we seek to gain a more accurate understanding of what skills, qualifications, qualities, attributes and characteristics are being sought in the lower-skilled labour market segment in particular, selecting a range of specific occupations which can be considered as 'typical' in the lower-skilled labour market segment. The more specific questions that are addressed in our work are: "what types of skills are demanded in the low- and medium- skilled occupations?" and "how is the demand for non-cognitive skills and abilities in the low-skilled segment different across different sectors or occupation groups?" (service occupations, industry occupations and new occupations).

These questions are crucial to understanding what competences are required from workers. From the point of view of the low-skilled, it is important to understand whether formal qualifications or other non-cognitive or soft skills (and which ones) are considered (more) important by employers. We offer a deeper understanding of the types of qualifications and skills demanded and rewarded in different low-skilled occupations. We also evaluate the skill content of 'new' occupations that are not yet necessarily codified in the qualification systems or fully embedded in the labour market.

The paper is structured in the following way. Sections 2 and 3 provide a literature review of studies relevant to this paper. Section 4 explains the categorisation of skills in terms of cognitive and non-cognitive skills. Section 5 describes data source and data processing steps. Empirical analysis is presented and discussed in Section 6. The last section concludes and summarises the implications of our work.

## 1. Formal qualifications versus other skills

Our research speaks to several streams of literature. In particular, we pick up the debate about the relative importance of qualifications and their use as a proxy for the level of skills and capabilities by employers. With the rise of interactive service jobs, there is a growing interest in understanding to what extent employers' decisions revolve around the possession of formal qualifications versus other skills considered necessary for the good execution of the job such as attitude, the ability to interact, and often good appearance (Keep & James, 2010; Nickson, Warhurst, & Dutton, 2005; Warhurst & Nickson, 2007).

The notion that formal qualifications alone can be equalled with merit and is the main determinant of mobility in the labour market and society has been advanced and tested, especially by the economics literature. These works typically utilise large survey data and suggest that people with qualifications are more likely to be employed than those without (for a review see Keep & James, 2010, p .9). This premise is theoretically underpinned by the liberal theory of industrialism, also referred to as the modernisation theory, which argues for a shift from ascription to achievement (education) in the social mobility patterns in modern societies (Dörfler & van de Werfhorst, 2009; Jackson, 2001; Jackson, Goldthorpe, & Mills, 2005). It argues that it is no longer effective to recruit on the basis of social background characteristics and employers increasingly select on the basis of individual achievements. This process has been labelled the Increased Merit Selection (ISH) hypothesis. It has been tested with survey data, looking at the impact of social background on educational and occupational attainment. This strand of literature, however, is unable to provide information about the behaviour of employers and concentrates primarily on the formal qualifications while overlooking other relevant components of skills (see Dörfler & van de Werfhorst, 2009, pp. 697–698 for more). The social stratification and social mobility discourse in which they are embedded is also less relevant in the context of the CEE countries with relatively low levels of income inequality (though rising) and the high spread of secondary education attainment.[2]

The discourse about skills has in recent years shifted towards the debate about the importance of cognitive versus non-cognitive skills in the education and labour market outcomes of individuals. The studies have initially concentrated more on estimating the effect of non-cognitive skills on educational outcomes (Borghans, Meijers & Ter Weel, 2008; Leininger & Kalil, 2008), but recently more also on labour market outcomes (Brunello & Schlotter, 2010; Glewwe, Huang & Park, 2011; Heckman & Rubinstein, 2001; Heineck & Anger, 2010). We were, however, not able to identify any study that systematically analysed the importance of non-cognitive skills from the point of view of employers' demand and candidate search and recruitment and measure it at the level of position/occupation.

Literature generally proposes that non-cognitive skills and other personal characteristics are likely to matter more in interactive service work. Given the general shifts in economic structures and a growing share of services in employment (Jackson, 2001, 2007; Keep & James, 2010; Nickson et al, 2005; Warhurst & Nickson, 2007), it is crucial to understand what types of skills are needed in this segment, whether, indeed, there is a large discrepancy between industry and service occupations, and where the difference lies. Anderson & Ruhs (2008) emphasise the need to consider sectoral differentiation with respect to how policy or research defines and assesses skills. Due to the rather ambiguous and subjective nature of the perception of skills, differences might exist among different sectors and occupations. Employers may find certain qualities and attitudes desirable because they suggest that workers will be compliant, easy to discipline and cooperative. The existence of a sufficient number of people with the right formal qualifications might therefore not mean an absence of recruitment difficulties. They also highlight the need to go beyond the use of formal measures, such as national qualification registers and level of education, and critically assess the role and importance of soft skills.

[2] When using CEE, we refer to a smaller group of countries analysed in this study, not all CEE 10.

Contributing to this debate, Maxwell (2006) studied the job tasks of low-skilled occupations specifically and demonstrated a great heterogeneity of required skills generally, but also across different low-skilled sectoral segments and occupations. He links the co-existence of labour shortages and low-skilled unemployment to the fact that even low-skilled workers have skills that can be in relative shortage at a given point in time. A wide range of these skills and their mix include what he calls "new basic skills" such as problem solving, communication and computer software that are required in different low-skilled occupations (cf. Levy & Murnane 2004).

The Slovakian context should be not stand out as different with respect to the general expectation about the greater relative importance of non-cognitive and social skills in interactive service work. What makes the case interesting, however, is the fact that the share of service sector employment is lower than in the West, but has risen rapidly during the recent 20 years and this trend is expected to continue as an outcome of global structural change and trends in developed countries (Autor & Dorn, 2009).

We now turn to review how job advertisements have been used to inform the debate on skills and the importance of formal qualifications.

## 2. Job advertisements as a source of data about labour market demand

Job advertisements are the first step in a screening process that communicates an employer's view about an *ideal* candidate. While in the actual recruitment process, only a subset of specified requirements might come into play in an employer's decision, they nevertheless are highly suggestive in identifying the desired skills and qualifications for a particular position. While research about job ads is relatively scarce, most existing studies of job ads have analysed the content of demand across different skill levels with the aim of determining differences between occupational groups and classes and so to evaluate how formal education versus other qualifications are rewarded in the labour market.

Jackson (2007) analysed c. 5,000 British newspaper ads to understand how social stratification maps onto the labour market and to discern differences in the valuation of merit (qualifications, cognitive abilities, effort and technical skills) vis-à-vis non-merit (social skills and personal characteristics) characteristics among different class and occupational groups. The author took advertisements from national and local newspapers with a high circulation. The sample was chosen to be *representative of the range of occupations* in the occupational structure. The author found evidence for higher demand for merit characteristics and more specified demand as moving up through the class structure. Also, technical occupations from different class levels showed similar tendencies in terms of greater demand for merit relative to non-merit qualities. In her earlier study Jackson (2001) analysed 322 newspaper job ads chosen from national, regional and local newspapers. The selection of newspapers allowed an overview of a wide variety of occupations (national newspapers – high-end occupations; regional and local – lower class occupations). She found that only 40% of all ads contained a requirement for qualifications of any kind. Of those, educational qualifications were very important for the managerial and professional class while vocational qualifications were more important for the remaining classes.

Jackson et al (2005) study the importance of education in mediating mobility and find a declining impact of education on mobility, linking it to the fact that with expanding access to education, employers may use educational qualifications less as a tool for determining

relevant competences or as a signalling of desired but unobservable attributes. However, the signalling and certifying role of education should be judged differently across different occupations, also in the context of a high-tech, knowledge-based economy or 'high-touch' occupations. The authors perform a content analysis of c. 5,000 jobs from a sample of local and national newspapers over a period of 4 weeks from mid-February to mid-March 2000. As with the above findings, qualifications appeared as a requirement in only 26% of all advertised jobs, but were required in as many as 64% ads in the professional occupational category and only in around 10% of ads in the technical and operative, and sales and personal service occupational categories.

The study conducted on the Austrian labour market by Dörfler & van de Werfhorst (2009) moves research about job ads forward by bringing in the time dimension and analysing trends. Covering a time span of 20 years (1985, 1990 and 2005), the authors evaluate merit selection hypothesis in time. They conduct analysis of 975 newspaper ads from three daily Austrian newspapers and expand on the operationalisation of education to include field of study in addition to educational level. They note a growing diversity of required skills across as well as within occupations and over time that cannot be attributed to compositional change alone (change in the structure of economy and jobs). They find that formal qualifications were demanded in 66% of overall advertisements, giving scope for a range of other skills that are clearly demanded by employers. Among service occupations, but not exclusively, social skills were sought. Interestingly, social skills were also required among highly skilled managerial occupations where the authors expected measurable merits to be the only criterion.

Among the most recent studies that analysed job ads is the work of Kuhn & Shen (2010) who studied gender discrimination in the recruitment process in the Chinese labour market from ads posted on the online job portal. Analysing over 1 million job ads from late 2000s merged with firm data, the authors found high levels of gender preference in the job ads. This, however, decreased with rising educational requirements for the job. Highly skilled vacancies were less discriminatory in articulating gender preference. The authors explained this by the ambition of firms to hire the best candidate and therefore they were less likely to implicitly 'disinvite' an entire group of candidates.

The same source of data as in this study has been utilised in Štefánik (2010, 2012a, 2012b) who has cooperated with the job portal in accessing job advertisements as well as resumes data. Contrary to our work, his studies concentrate on highly skilled labour market segment and analyse matching of demand and supply of university graduates by studying employer demand as expressed in the pre-defined fields of the job ads form. He also quantifies data on candidates whose CVs were searched at by the skill endowments that they marked in structured resumes made available to the recruiters, linking the attributes of individuals stated in the CV with the number of displays of each CV. Unlike our study, his study concentrates on a small number of narrowly defined high-skilled professions, and he does not analyse the content of job advertisements itself (only pre-defined fields).

Due to the type of data we analyse for Slovakia, our work differs from the above studies in a number of ways. First, educational qualification is a mandatory field that vacancy advertiser needs to mark when posting a job ad online. Such setting does not allow us to test directly

the relative importance of formal qualifications vis-à-vis other skills.[3] However, such data structure enables us to test quite precisely the level of requested formal qualifications across different types of occupations and also to see how requirements for formal education are being combined with other skills, attributes, qualities and characteristics across different occupations.

Second, we focus on selected occupations that represent a wide range of low-skilled and medium-skilled jobs in the service sector, technical and manufacturing sector as well as a range of 'new' occupations to capture a large variety of lower-skilled jobs. We work with the whole range of job ads, as opposed to a sample or selection, which is likely to give us more accurate findings than the above-mentioned studies. Given the size and dominant nature of the portal in the Slovak labour market, we believe our conclusions are also fairly representative of the overall demand in the selected occupations in the country. The selection of specific occupations was guided by an attempt to choose 'typical' occupations in services and in industry sectors and for this reason we trust our results to be informative for the whole lower-skilled labour market segment in the Slovak economy. We will touch upon some limitations that might arise from the character of data in the data section.

A third difference between our work and other studies, unrelated to data but rather driven by our substantive interest, is that we concentrate on analysing labour demand at the lower end of the occupational hierarchy by selecting low and medium-skilled occupations and jobs with, typically, a lower social status. Our motivation, as already expressed, is to better understand the recruitment process in the labour market segment, which is the most problematic one in Slovakia.

## 3. Categorisation of skills and abilities

The growing body of literature about skills is characterised by the lack of any clear definition or taxonomy of what cognitive versus non-cognitive skills are. For the purpose of our study and to be able to analyse our data, we formulated a categorisation of different skills, abilities and other characteristics likely to be sought by employers (Table 1). This categorisation is based mainly on available literature: Jackson (2007); Brunello & Schlotter (2010); Dörfler & van de Werfhorst (2009); and Heckman (2008) and gathers skills into cognitive skills and cognitively acquired abilities (specific and generic), and non-cognitive skills, which we further divided into personal characteristics and social skills.

Cognitive skills are typically identified with intelligence and the ability to solve abstract problems. They are often proxied with IQ tests or standardised tests on reading, science and maths (e.g. PISA). For the purposes of our project, cognitive skills are proxied foremost by the level of formal education requested. In addition, there are sets of other types of knowledge often sought by employers that are cognitively based or related to learning efforts in a formalised learning process. These can be both specific and generic. Knowledge of foreign languages, driving licence, ICT skills and technical knowledge (ability to read technical papers/materials) are cognitively-acquired and also specific. Analytical skills, problem-solving skills, the ability to see things in context, quick, perceptive faculty, the ability to learn quickly, the ability to learn new things are also cognitively-based but *generic* skills. We hence treat these requirements as "cognitive and cognitively-acquired abilities"

[3] This is not the case for those vacancies that the portal imports from other sources, such as Labour Office vacancies, but even those typically mark the requested level of formal education.

and group them into *specific* and *generic*. The substantive difference between them is that generic abilities are unlikely to feature in job ads for low-skilled workers, while specific ones are more likely to appear.

Brunello & Schlotter (2010) define non-cognitive skills as personality traits that are weakly correlated with measures of intelligence. Non-cognitive skills are often termed as 'soft skills' and can blend into personal characteristics and attitudes ('fudging' of skills with behaviour) (Anderson & Ruhs, 2008). A broadly accepted taxonomy of non-cognitive skills is the Five Factor Model (FF) which includes the following factors: agreeableness, conscientiousness, emotional stability, autonomy, and extraversion.[4] We classify the non-cognitive skills and qualities to a set of *social skills and personal skills*. They are weakly correlated with cognitive ability but differ in the inter-relational aspect – social skills are skills typically applied in relation to the need to cooperate and communicate with other people. Personal characteristics refer to personal predispositions that characterise how one approaches work tasks.

The specific taxonomy of skills that we analysed in our data is summarised in Table 1. We did not include every possible skill or attribute, but selected a few from each category, based on the initial analysis of randomly selected ads to identify skills that appeared the most frequently. The feasibility of coding without error was also considered in the selection of skills.[5] In addition to cognitive and non-cognitive skills, we also consider an explicit mention of physical appearance and the expectation of previous work experience as not directly skill-related requirements, but which typically appear in job ads.

*Table 1. Categorisation of skills, abilities and other characteristics*

| | | |
|---|---|---|
| **Cognitive skills and cognitively-based abilities** | **Specific** | o ICT skills<br>o Language skills |
| | **Generic** | o Analytical skills<br>o Quick perceptive faculty, ability to learn quickly, ability to learn new things |
| **Non-cognitive skills** | **Social** | o Communication skills |

[4] ***Agreeableness*** is the willingness to help other people, act in accordance with other people's interests and the degree to which an individual is co-operative, warm and agreeable versus cold, disagreeable and antagonistic.

C***onscientiousness*** is the preference for following rules and schedules, for keeping engagements and the attitude of being hardworking, organised and dependable, as opposed to lazy, disorganised and unreliable.

***Emotional stability*** encompasses dimensions such as nervous versus relaxed and dependent versus independent, and addresses the degree to which the individual is insecure, anxious, depressed and emotional rather than calm, self-confident and cool.

***Autonomy*** indicates the individual propensity to decide and the degree of initiative and control.

***Extraversion*** is the preference for human contact, empathy, gregariousness, assertiveness and the wish to inspire people.

[5] For example, we did not include 'driving skills' because we include drivers as an occupational category. It would therefore not have been possible to measure the driving skill only, as in driver occupations, the word could have appeared in the job description in other contexts/meanings. This would have skewed our overall results significantly.

| | | |
|---|---|---|
| | **skills** | o Team-working skills<br>o Service skills, customer approach |
| | **Personal skills** | o Responsibility<br>o Reliability<br>o Independence<br>o Flexibility<br>o Pleasant demeanour |
| **Experience** | | o Experience – essential, desirable, proven track record of experience |
| **Personal characteristics** | | o Pleasant physical appearance |

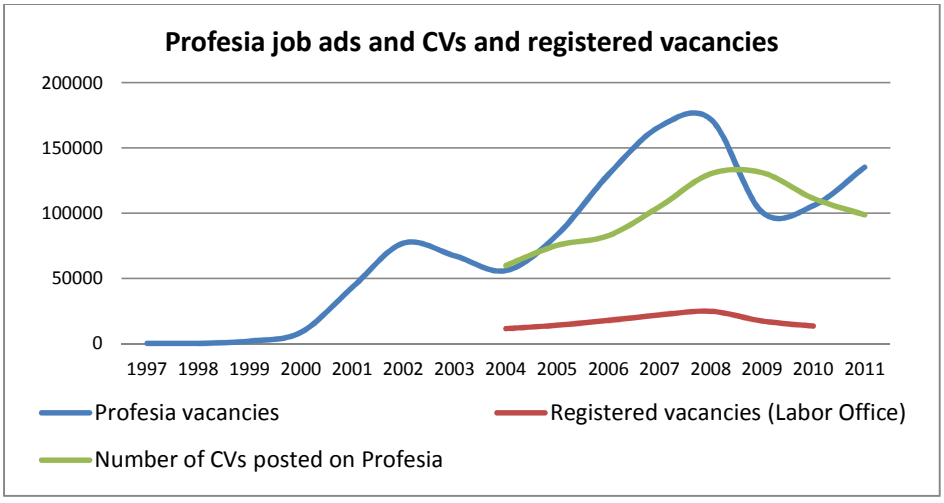
*Source*: Authors.

# 4. Data

## 4.1 Data specificities and data collection

Advertisements for job vacancies were received from the largest online job portal in Slovakia (www.profesia.sk). The company running the portal was established in 1997 and the portal became a market leader in early-to-mid 2000s, retained its status since and enjoying a market share of approximately 80% (Štefánik, 2012a). It collects both job vacancies and CVs, and runs a related portal which gathers information on wages (www.platy.sk). Figure 1 shows the development of the number of active job vacancies and CVs and reports a considerably lower number of vacancies reported by the Statistical Offices between 2004 and 2010. Fluctuations in the number of vacancies reflect labour market trends during the crisis, which in Slovakia was the harshest in 2009 and 2010.

*Figure 1. Job vacancies and CVs posted on Profesia and registered vacancies*




*Source*: Profesia and the Statistical Office of the Slovak Republic.

Profesia portal is a major player in the market and collects a sizeable number of vacancies and CVs. As Figure 1 reveals, the portal holds approximately six to eight times more job ads than the number of officially registered vacancies collected by the Slovak Statistical Office, at

any point in time since 2006. While the size of the data pool is remarkable because it is an online portal, it also has its biases. These are partly related to the profile of internet users, which is less of a concern for our study because we do not analyse the CVs posted on the portal, only the job advertisements. An extensive representative analysis comparing the structure of Profesia data of tertiary educated/high skills with the structure of people employed by occupation (ISCO) and by sector (NACE) using the European Union Labour Force Survey (EU LFS) was conducted by Štefánik (2012a). His analysis, in which he recoded the portal's own classification to ISCO and NACE classifications, revealed that in the high-skilled segment Profesia data are roughly representative of the employed population as far as occupational groups are concerned, but clerks (ISCO 4) and service workers (ISCO5) are over-represented in both ads and CV data (see Annex 1 for detailed results). His analysis uncovered biases with respect to economic sectors, where he found that public services use the portal only marginally to advertise job vacancies, while this sector carries over 50% of current employment of highly skilled people. This implies that jobs in the public sector are often advertised and recruited by internal processes, while the private sector tends to advertise more in an open market. While such bias is likely to persist in the low-skilled spectrum, the only possibility it could introduce bias into our results would be if the requirements for similar occupations differed in the private versus in the public sector, for which we see no logical support. Moreover, public sector employment of low-skilled workers is much lower than for the highly skilled workers. We are more interested in the demand created by the private sector, which is unconstrained by regulatory requirements. For these reasons, we consider the data we analyse to give a relatively accurate picture of the characteristics of overall demand in the lower-skilled labour market segment in the country. Below, we provide additional information about the structure of vacancies and employment-seekers, as well as the structure of firms posting the job ads in order to provide background information on data aspects.

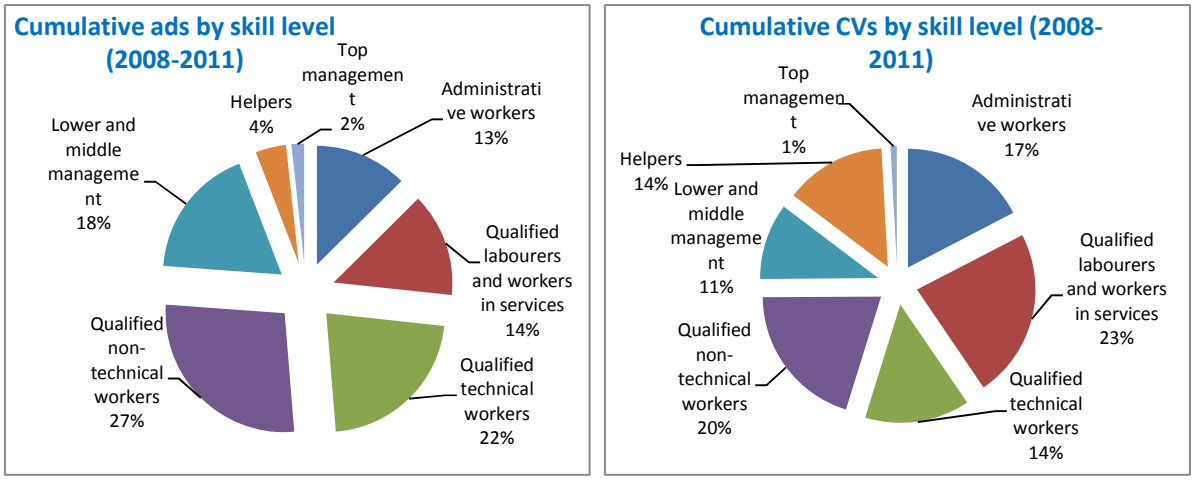
Profesia developed its own classification of vacancies and CVs into skill levels (see Annex 2). It is not directly comparable to any existing classification but is nevertheless informative in terms of providing a rough understanding of the structure of demand (vacancies offered) and supply (posted CVs) by skill levels and in comparison to each other, as the same classification is applied for job ads and for resumes. Job ads are classified based on the job title, while CVs are classified based on the occupation that the person identifies as one where s/he is seeking employment. Figure 2 shows the structure of all unique job ads[6] (left) and all CVs (right) cumulatively for 2008-2011. Data shows that Profesia does not cover the demand or supply at the very top of the skill hierarchy – top management where the recruitment and search process relies more on headhunting and professional networks. At the next skill level – lower and middle management – almost a fifth of job ads posted between 2008 and 2011 were looking to fill a position in these categories. The share of CVs falling into this skill category was lower however (11%).

'Helpers', 'administrative workers' and 'qualified labourers and workers in services' are categories for which no education or only secondary education is required, and are therefore directly related to the core focus of this paper. Low and medium-skilled workers find Profesia portal attractive and seem to use it relatively extensively as 54% of CVs fall into this segment. The share of job ads in these categories is smaller (31%), but it is still sizeable,

[6] This does not necessarily measure the number of vacancies, but rather number of job ads. A firm can look for more than one employee within one job ad.

suggesting that the portal covers both supply and demand in the lower-skilled segment on the labour market, in spite of a skewed profile of the internet user population towards more educated and younger workers.

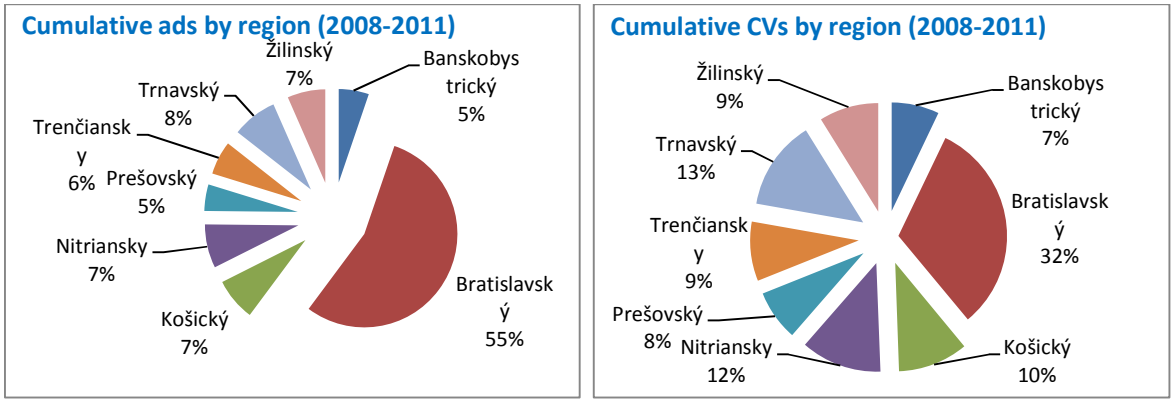
*Figure 2. Structure of vacancies and CVs by skill level*




*Source*: Profesia.

Figure 3 portrays the regional distribution of ads and CVs across the country. Region of job ad is the place that the employer marked as the place where the work is to be conducted. It shows that more than half of the total demand in the analysed occupations aims at filling the positions in Bratislava region, which is generally also characterised by the tightest labour market. The remaining job advertisements are relatively evenly distributed. "CVs by region" marks locations where the individuals looking for a job/posting the CV are seeking employment. These are more equally distributed across all regions in Slovakia, which signals a territorial mismatch between the supply and the demand of labour in the country. Štefánik (2012b) found the regional distribution of Profesia data to match the distribution of the employed population.

*Figure 3. Structure of vacancies and CVs by region*

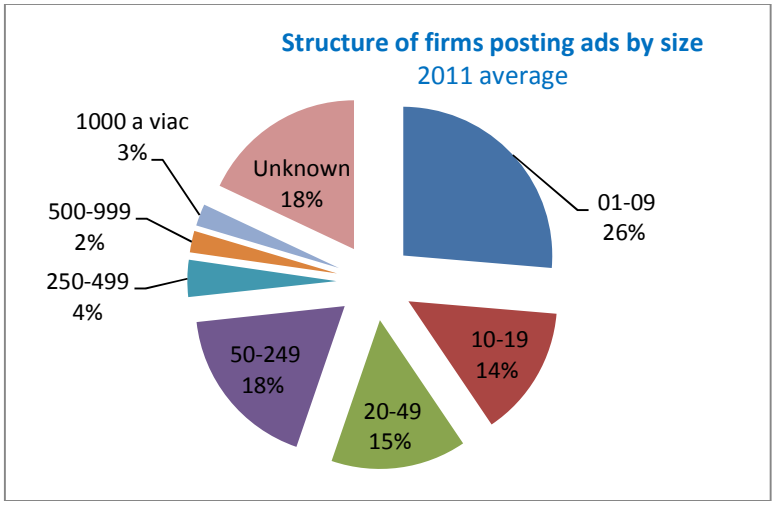



*Source*: Profesia.

Employers are not a homogenous group and their recruitment practices are extremely varied. In addition to sector (public versus private), firm size is a factor that is likely to greatly determine how particular occupations are filled and what skills might be sought. Large firms have more resources to internally train and relocate their labour force and to some extent to rely less on external hiring. On the other hand, they might be also more likely to outsource recruitment to an external provider. Smaller firms are less likely to rely on internal labour reallocation and training and therefore recruit in an open labour market. They are also less likely to outsource the process. An interesting phenomenon in the recruitment process is an increasing share of recruitment agencies, i.e. outsourcing recruitment to specialised firms. Studies for the UK show that employment agencies control the recruitment process, especially in the low-skilled segment we target (Keep & James, 2010). Analysis of our data revealed that there is a large variation across sectors and that the agencies recruit more in industry occupations, while in service occupations it is individual firms that post the ads and carry out the recruitment process (Figure 2a in Annex 4; also confirmed for all ads that Profesia holds). Given that the Slovak industry is largely dominated by big automotive or electronics companies, this is confirms the expectation that large firms are more likely to outsource the search and recruitment process. This could also be related to a higher share of labour leasing in the sectors that face fluctuations in production cycle, which has been the case in these sectors due to the economic crisis.

As to the process of posting ads and résumés on the portal, posting a CV is free of charge, while posting job vacancies is fee-based. The applicants post their CVs online by filling in a standardised CV form. Such CVs are then offered to employers who can search them and look at attributes and skills stated in the CVs for free. Payment is made for revealing the candidate's contact details. This might discriminate against small and medium-sized enterprises with potentially fewer resources for recruitment. Figure 4 however shows that nearly 75% of firms posting ads in 2011 belonged to small and medium-sized enterprises (based on the number of employees). This number does not equal the number of vacancies, as a firm might seek to fill multiple positions with one job ad. Recruitment by agencies is excluded from these statistics.

*Figure 4. Structure of firms posting job ads by size (number of employees)*




*Source*: Profesia.

## 4.2 Data-cleaning and processing

Raw data were received from the database of the portal for requested occupations and multiple years from 2007-2011. This is a time period when the portal was able to gather a large number of job ads. An important attribute of the data is that filling the job requirements and job description was a mandatory part of the vacancy-posting process. The portal imports vacancies from public employment services for which this was not a mandatory criterion, but even these ads generally entailed a job description.

We used multiple techniques to process and code the data. The job description field was analysed with text analysis software. First, a random selection of ads was taken to analyse the frequencies of words appearing in the body of the job ad. We mapped the most frequently appearing words in the random selection of ads on our theoretical Categorisation of skills prepared earlier. We then composed a narrower selection of skills to systematically analyse across the job ads. The text field in the ads was then recoded to mark those where a particular skill or capability was mentioned using a binary code (1/0). Finally, we proceeded with the analysis of data to calculate frequencies and simple statistics. Job-seekers and firms posting job ads can select from a predefined list of skills. These were also considered and added to the calculation of skill frequencies where relevant (e.g. language skills, IT skills). Similarly, the choices for selecting the relevant education level were predefined but not exclusive, which led to companies often selecting a number of education levels for the same vacancy. In the analysis itself we therefore took the lowest education level required by the employer, treating it to indicate the minimum educational requirements.

## 4.3 Selection of occupations

The requested occupations were chosen to cover a wide range of 'typical' low and medium-low skilled occupations from industry and services and a small subset of 'new occupations'. Table 2 summarises the selection of occupations and their classification into services, industry and new occupations. ISCO codes are also included to compare general skill levels and skill complexity as framed in the International Standard Classification of Occupations (ISCO 88). This selection represented on average 7.4% of all vacancies posted in 2007-2011. The share in total grew in 2010 and 2011, signalling that the recovery of the labour market in Slovakia was stronger in the medium to low-skilled labour market segment (Table 3).

*Table 2. Requested and analysed occupations by category*

| Services occupations | Industry occupations | New occupations |
|---|---|---|
| • Cleaner & room staff (ISCO 9/91, 9132)<br>• Barman & waiter (ISCO 5/5123)<br>• Cook (ISCO 5/5122)<br>• Handyman & maintenance (ISCO 7/7126)<br>• Plumber and pipe-fitter (ISCO 7/7126)<br>• Salesperson & shop assistant (ISCO 5 / 522)<br>• Driver (bus, truck, engine & forklift) (ISCO 8/ 83) | • Seamstress/tailor (ISCO 7/7433)<br>• Labourer (ISCO 9/92+93)<br>• Assembler (ISCO 8 / 828)<br>• Electrician (electrical assembler) (ISCO 7 / 724) | • Security guard (ISCO 5 / 5169)<br>• Messenger (courier) & postman (ISCO 9)<br>• Porter & doorkeeper (ISCO 9 / 915)<br>• Au-pair (ISCO 5)<br>• Caretaker (ISCO 5/ 513) |

After cleaning the data and leaving only job ads where a job description was filled in, we arrived at over 50,000 distinct job ads (Table 3). Most ads – nearly a third – referred to the occupation of salesperson, followed by labourers with over 10% representation. As an illustration, Figure 1A (Annex 4) shows the number of ads per occupational category and over time and reveals that service occupations are the most represented while the new occupations are least represented in our data. This is due to the initial selection of occupations, which is not balanced with respect to the number of analysed occupations across the three groups, but resembles even more closely the demand that is very different across the occupations. In the actual analysis of the data we do not consider the time dimension and pool data across years both to ensure a greater number of observations in cells but also because we do not expect that the content of job ads should significantly differ in the relatively short period we consider (but we intend to test this assumption in a further analysis on the selected widely represented occupations).

*Table 3. Number of job ads by occupation and year*

| | 2007 | 2008 | 2009 | 2010 | 2011 | Total | Share on total |
|---|---|---|---|---|---|---|---|
| **Salesperson** | 4114 | 3936 | 2452 | 2931 | 2817 | 16250 | **32.3%** |
| **Labourer** | 1035 | 1479 | 583 | 954 | 1273 | 5324 | **10.6%** |
| **Waiter** | 817 | 1033 | 647 | 899 | 1014 | 4410 | **8.8%** |
| **Cook** | 706 | 824 | 538 | 700 | 910 | 3678 | **7.3%** |
| **Driver** | 970 | 1091 | 372 | 542 | 596 | 3571 | **7.1%** |
| **Assembler** | 526 | 748 | 286 | 452 | 738 | 2750 | **5.5%** |
| **Maintenance** | 464 | 646 | 261 | 382 | 568 | 2321 | **4.6%** |
| **Barman** | 333 | 438 | 316 | 459 | 526 | 2072 | **4.1%** |
| **Forklift driver** | 362 | 523 | 145 | 332 | 626 | 1988 | **3.9%** |
| **Security guard** | 184 | 215 | 127 | 241 | 425 | 1192 | **2.4%** |
| **Room staff** | 106 | 347 | 220 | 244 | 269 | 1186 | **2.4%** |
| **Cleaner** | 213 | 290 | 186 | 210 | 271 | 1170 | **2.3%** |
| **Caretaker** | 244 | 230 | 250 | 214 | 194 | 1132 | **2.2%** |
| **Truck driver** | 13 | 122 | 100 | 223 | 353 | 811 | **1.6%** |
| **Courier** | 192 | 197 | 89 | 67 | 57 | 602 | **1.2%** |
| **Tailor** | 68 | 119 | 63 | 90 | 139 | 479 | **1.0%** |
| **Plumber** | 76 | 75 | 52 | 49 | 77 | 329 | **0.7%** |
| **Au pair** | 95 | 56 | 49 | 41 | 41 | 282 | **0.6%** |
| **Postman** | 1 | 31 | 84 | 99 | 46 | 261 | **0.5%** |
| **Electrician** | 1 | 1 | 2 | 0 | 159 | 163 | **0.3%** |
| **Porter** | 30 | 25 | 33 | 28 | 35 | 151 | **0.3%** |
| **Bus driver** | 32 | 42 | 17 | 15 | 27 | 133 | **0.3%** |
| **Engine driver** | 3 | 9 | 29 | 9 | 42 | 92 | **0.2%** |
| **Total** | **10, 585** | **12, 477** | **6, 901** | **9, 181** | **11, 203** | **50, 347** | 100.0% |
| **Job ads total** | 166,326 | 171,808 | 100,689 | 105,711 | 135,224 | 679,758 | - |
| **Share of total job ads** | **6.4%** | **7.3%** | **6.9%** | **8.7%** | **8.3%** | **7.4%** | - |

## 5. Empirical analysis

We begin our analysis by providing an overview of the share of requested skills as classed in occupational categories (Figure 5) and then conduct a disaggregated analysis on the level of occupations and individual skills (Table 4). Figure 5 portrays the share of ads where a skill was mentioned and by the number of skills requested. It reveals quite a significant variation between the service occupations, industry occupations and new occupations in the content of job ads and employer expectations with respect to the qualities and capabilities of the candidates.

*Figure 5. Appearance of skill categories, appearance and experience in occupational groups*

**Figure A**

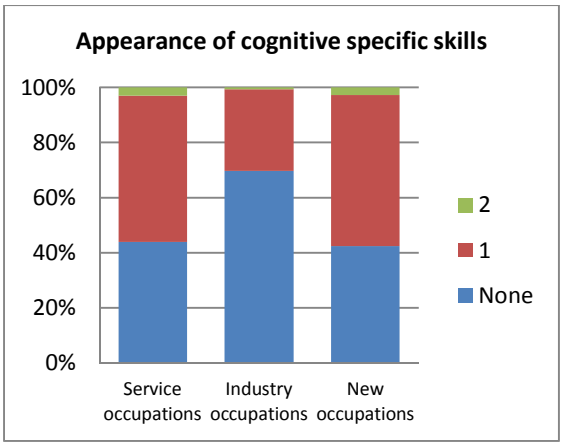



**Figure B**

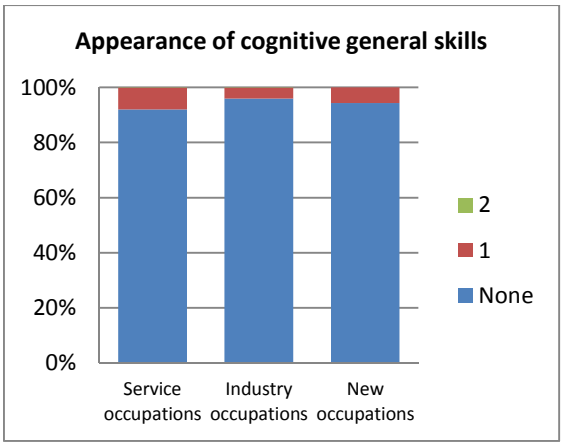



**Figure C**

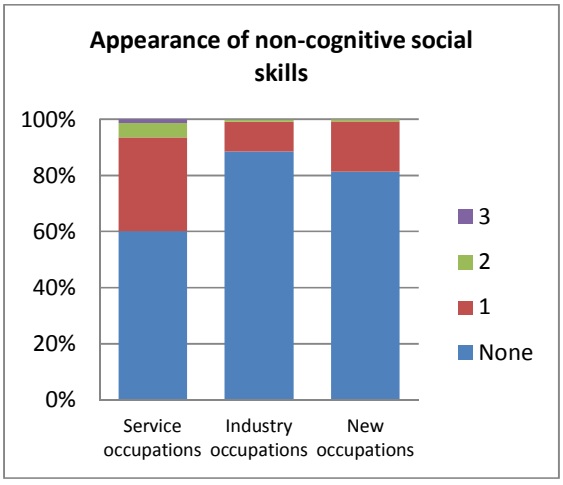



**Figure D**

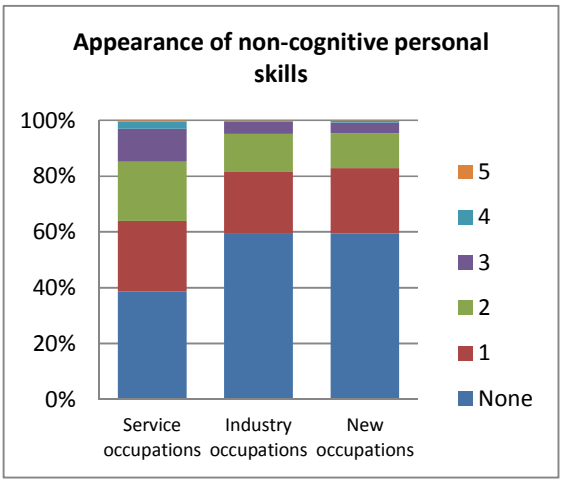


**Figure E**

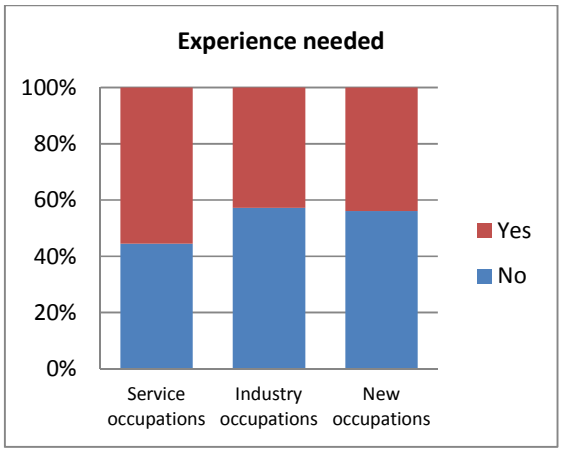
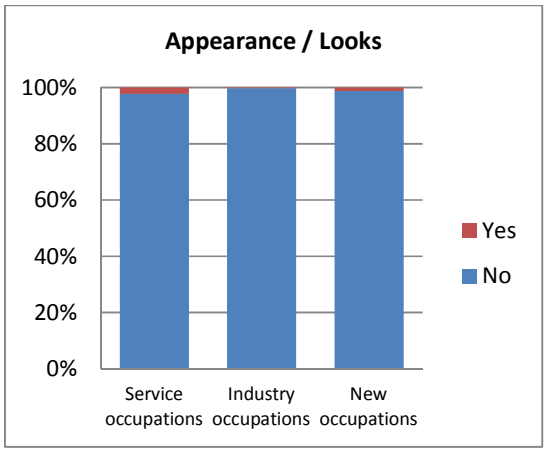



**Figure F**




*Source*: Profesia.

As expected, the least demanded skills in the low-skilled labour market segment are cognitive general skills (Figure B); in our analysis these were analytical skills and the ability to learn. These appeared only in a small number of ads regardless of the occupational group. Even less frequently requested was a certain physical appearance or (good) looks (Figure F). For the remaining skill groups and experience differences are marked. Service occupations stand out compared to two other occupational groups with a higher share of job ads requesting non-cognitive skills, both social skills and personal characteristics (Figure C and Figure D) in particular. Experience is also generally in greater demand in the service occupations (Figure E). Interestingly, overall, cognitive specific skills (computer literacy and languages) and non-cognitive personal skills (responsibility, reliability, independence, flexibility and pleasant demeanour) seem to be more important than social skills (communicativeness, team work, and pro-client approach). The data presented below give a general picture but are also skewed to represent those occupations with the highest number of job ads. A disaggregated analysis is therefore necessary (Table 4).

*Table 4. Share of ads that requested skills and abilities in occupations (% of total in the occupation)*

| | Sales person | Barman | Waiter | Electrician | Currier | Au-pair | Room staff | Cook | Driver | Forklift driver | Maintenance | Porter | Plumber | Bus driver | Cleaner | Truck driver | Caretaker | Assembler | Security guard | Taylor | Labourer | Engine driver | Postman | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Sum of skills* | **291.8** | **235.5** | **232.4** | **222.7** | **220.6** | **206.4** | **182.4** | **176.8** | **165.5** | **162.8** | **156.5** | **154.3** | **149.2** | **147.4** | **146.2** | **142.4** | **135.3** | **134.6** | **125.8** | **122.5** | **95.6** | **75.0** | **77.8** | **204.0** |
| *Sum of all criteria* | **345.7** | **296.5** | **289.4** | **292.6** | **272.3** | **266.0** | **241.7** | **235.8** | **228.6** | **226.5** | **224.9** | **172.8** | **214.0** | **198.5** | **180.9** | **221.8** | **195.3** | **191.4** | **159.5** | **185.4** | **128.8** | **155.4** | **96.2** | **258.3** |
| *Cognitive specific* | | | | | | | | | | | | | | | | | | | | | | | | |
| **Computer** | **35.6** | 5.0 | 5.5 | 11.0 | 10.1 | 1.8 | 3.3 | 3.8 | 8.8 | 12.3 | 19.7 | 7.9 | 10.6 | 3.0 | 2.5 | 2.2 | 2.2 | 9.3 | 18.5 | 2.9 | 3.8 | 2.2 | 5.7 | 16.4 |
| **Language** | 28.2 | **73.8** | **73.3** | **66.3** | **57.3** | **84.4** | **79.2** | **46.8** | **28.8** | **25.5** | **27.3** | **26.5** | **31.3** | **39.8** | **28.5** | **48.2** | **82.5** | **25.1** | **19.7** | 17.3 | **24.6** | 2.2 | **18.0** | **37.9** |
| **Aver** | 31.9 | 39.4 | 39.4 | 38.7 | 33.7 | 43.1 | 41.2 | 25.3 | 18.8 | 18.9 | 23.5 | 17.2 | 21.0 | 21.4 | 15.5 | 25.2 | 42.4 | 17.2 | 19.1 | 10.1 | 14.2 | 2.2 | 11.9 | 27.1 |
| *Cognitive general* | | | | | | | | | | | | | | | | | | | | | | | | |
| **Analytical** | 1.0 | 0.0 | 0.0 | 0.6 | 23.3 | 0.0 | 0.1 | 0.0 | 0.1 | 2.2 | 3.3 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.5 | 1.3 | 0.4 | 0.0 | 0.1 | 0.0 | 6.1 | 1.0 |
| **Learn** | 10.0 | 6.9 | 5.9 | 1.8 | 1.0 | 3.2 | 8.5 | 7.2 | 2.5 | 4.0 | 4.1 | 0.7 | 5.8 | 0.8 | 4.9 | 0.2 | 1.3 | 4.5 | 0.7 | 6.7 | 2.8 | 0.0 | 0.0 | 6.1 |
| **Aver** | 5.5 | 3.5 | 3.0 | 1.2 | 12.1 | 1.6 | 4.3 | 3.6 | 1.3 | 3.1 | 3.7 | 0.3 | 3.0 | 0.4 | 2.4 | 0.1 | 0.9 | 2.9 | 0.5 | 3.3 | 1.4 | 0.0 | 3.1 | 3.5 |
| *Non-cognitive social* | | | | | | | | | | | | | | | | | | | | | | | | |
| **Communic** | **59.0** | **29.3** | 28.2 | 14.7 | **38.2** | 14.9 | 9.1 | 15.2 | 14.5 | 3.9 | 10.6 | **22.5** | 16.7 | 12.8 | 8.3 | 5.8 | 7.2 | 8.4 | 18.9 | 12.9 | 2.8 | 13.0 | **12.3** | 28.4 |
| **Team work** | 9.3 | 6.9 | 7.3 | 8.6 | 1.7 | 0.0 | 3.9 | 7.3 | 2.5 | 8.9 | 7.1 | 1.3 | 3.3 | 2.3 | 2.1 | 0.9 | 0.9 | 9.0 | 1.0 | 14.6 | 4.5 | 1.1 | 1.1 | 6.7 |
| **Pro-client** | 9.8 | 5.7 | 5.1 | 3.1 | 2.8 | 0.0 | 5.3 | 3.9 | 0.5 | 0.3 | 0.1 | 0.7 | 0.3 | 0.8 | 3.3 | 0.6 | 0.0 | 1.4 | 0.3 | 1.0 | 0.0 | 0.0 | 0.0 | 4.6 |
| **Aver** | 26.0 | 14.0 | 13.5 | 8.8 | 14.2 | 5.0 | 6.1 | 8.8 | 5.8 | 4.4 | 5.9 | 8.2 | 6.8 | 5.3 | 4.6 | 2.4 | 2.7 | 6.3 | 6.7 | 9.5 | 2.4 | 4.7 | 4.5 | 13.2 |
| *Non-cognitive personal* | | | | | | | | | | | | | | | | | | | | | | | | |
| **Responsible** | 31.5 | 25.0 | 27.1 | **35.6** | 18.6 | **35.8** | 18.0 | **29.5** | **35.6** | **40.1** | **27.6** | **27.2** | **28.3** | 19.5 | **34.2** | **24.9** | **14.3** | **25.7** | **24.9** | **30.9** | **23.7** | 13.0 | 5.4 | **28.8** |
| **Reliable** | 16.9 | 9.1 | 9.4 | 20.2 | 13.3 | 20.2 | 7.5 | 10.6 | 22.5 | 21.5 | 9.2 | 21.2 | 8.2 | 11.3 | 21.5 | 17.5 | 3.7 | 13.1 | 14.4 | 6.1 | 12.4 | 2.2 | 5.0 | 14.3 |
| **Independent** | 25.6 | 14.1 | 14.4 | 33.1 | 8.8 | 10.6 | 7.6 | 19.2 | 14.7 | 19.8 | **27.3** | 6.0 | 19.8 | 15.8 | 12.0 | 16.8 | 6.0 | 19.3 | 3.6 | **20.9** | 8.8 | **21.7** | 4.6 | 18.3 |
| **Flexible** | 32.7 | 28.3 | 26.2 | 26.4 | 15.9 | 23.4 | **26.1** | 23.5 | 24.6 | 24.1 | 18.8 | 19.2 | 19.8 | **26.3** | 17.4 | 19.4 | 12.5 | 15.1 | 5.7 | 5.6 | 11.6 | **19.6** | 11.1 | 23.9 |
| **Demeanour** | 32.3 | 31.3 | **29.9** | 1.2 | 29.6 | 12.1 | 13.7 | 9.6 | 10.6 | 0.3 | 1.3 | 21.2 | 4.9 | 15.0 | 11.5 | 5.9 | 4.1 | 2.4 | 17.6 | 3.5 | 0.4 | 0.0 | 8.4 | 17.9 |
| **Aver** | 27.8 | 21.6 | 21.4 | 23.3 | 17.2 | 20.4 | 14.6 | 18.5 | 21.6 | 21.2 | 16.8 | 18.9 | 16.2 | 17.6 | 19.3 | 16.9 | 8.1 | 15.1 | 13.3 | 13.4 | 11.4 | 11.3 | 6.9 | 20.6 |
| *Appearance* | 2.2 | 6.8 | 5.4 | 0.0 | 1.0 | 0.0 | 4.4 | 1.0 | 0.5 | 0.0 | 0.0 | 1.3 | 0.0 | 0.0 | 1.2 | 0.0 | 0.0 | 0.1 | 3.2 | 0.8 | 0.2 | 0.0 | 0.0 | 1.8 |
| *Experience* | **51.7** | **54.2** | **51.6** | **69.9** | **50.7** | **59.6** | **54.9** | **58.0** | **62.5** | **63.6** | **68.4** | 17.2 | **64.7** | **51.1** | **33.5** | **79.4** | **60.0** | **56.7** | **30.5** | **62.0** | **33.0** | **80.4** | **18.4** | **52.4** |

*Note*: Red marks the three most requested skills or qualities within a given occupation.

Data in Table 4 show the share of ads within an occupational category in which a specific skill was expressed in the job ad. The first two rows in Table 4 estimate the 'skill intensity' of an occupation by summing up the percentages of individual skills and characteristics. The 'sum of skills' is the sum of the percentage of the two cognitive and two non-cognitive skill subgroups, 'sum of all criteria' includes appearance and experience. Occupations are ordered according to the most skill-intensive 'sum of skills' criterion to the least skill intensive. These summary measures help show in which of the selected occupations the demand is most specific but also the most varied (the higher the number, the higher the share of job ads where the analysed skills were requested) and can be interpreted as the overall occupational skill intensity. Our findings are multiple.

First, a disaggregated analysis of requested skills on the level of each occupation shows that employers in the Slovak labour market are relatively demanding of these occupations. The variety of skills that workers in the low and medium-skilled labour market segment should have is quite extensive. This general observation is in line with the work of Maxwell (2006) who studied the job tasks of low-skilled occupations (performed tasks in real jobs) and noted a great heterogeneity of required skills generally but also across different low-skilled sectoral segments and occupations. Our results differ from his in the type of skills that prevail in the job description. While analysing the US labour market Maxwell argues that "new basic skills" such as problem-solving, communication and computer software are widely demanded in different low-skilled occupations (cf. Levy & Murnane, 2004), in our analysis these seem less important than non-cognitive social skills and personal attitudes and characteristics (see again Figure 5). In the analysed job ads generally, the most frequently requested requirement was previous experience (52%), followed by knowledge of languages (38%), responsibility (29%), communication skills (28%) and flexibility (24%). Experience-focused demand could signal that employers use experience as a proxy of hard-to-measure skills.

Second, data reveal great variation across the occupations analysed. Salesperson is the most demanding and postman the least skill-demanding occupation on our list. Demand in service occupations generally is more skill intensive, which implies a greater range of skill, aptitudes and qualities that an ideal candidate should possess. While greater skill intensity of service occupations could be because technical skills were not included in the analysis of cognitive specific skills, these occupations do score higher on average in all non-cognitive skills. In particular, interactive service occupations – waiter, barman and salesperson – appear to be the most skill demanding. An ideal candidate applying for such jobs should have a range of varied skills which include foreign languages proficiency (lower for salespersons), communication skills, pleasant demeanour, and flexibility. In the case of salespersons over a third of job ads also requested computer skills. The least skill-demanding jobs are engine driver, postman and labourer. An engine driver should be independent and flexible but the most demanded criterion is experience (four fifths of ads). A postman is expected to have a knowledge of (some) foreign languages, be able to communicate and have some experience, but in comparison to other occupations, significantly less. So from the analysed skills, the most sought-after when recruiting labourers are languages, responsibility and reliability, while a third of ads expected previous experience. The job of engine-driver becomes a more demanding occupation once experience is included.

Particularly striking are the shares of job ads requiring knowledge of a foreign language, which are very high for au pairs (84%), caretakers (83%), room staff (79%) and waiters and bar staff. These numbers suggest that recruitment is partly taking place for a foreign labour market, and this includes not only au pairs and caretakers, but also room staff. Languages

are also in demand when recruiting cooks, couriers, truck drivers and bus drivers. Foreign language knowledge is a general requirement even when a job is performed on the domestic labour market. Previous experience is expected foremost in occupations that are also vocations and require specific knowledge – drivers (engine, truck, forklift), maintenance, plumber, electrician, cook and tailor. We now turn to compare how skill requirements map on to formal qualifications – educational requirements.

*Table 5. Minimum educational requirements: various statistics*

| Occupation | Mean | Mode | Variance | Skewness | Std. Error of Skewness | Range | Minimum | Maximum | N | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Valid | Missing |
| **Engine driver** | 3,66 | 4 | 0,431 | -2,429 | 0,254 | 3 | 1 | 4 | 90 | 2 |
| **Salesperson** | 3,56 | 4 | 0,947 | 0,278 | 0,02 | 7 | 1 | 8 | 15635 | 615 |
| **Courier** | 3,39 | 4 | 0,703 | -0,533 | 0,106 | 7 | 1 | 8 | 527 | 75 |
| **Maintenance** | 3,36 | 3 | 1,013 | 1,221 | 0,052 | 7 | 1 | 8 | 2239 | 82 |
| **Electrician** | 3,20 | 3 | 0,792 | 0,015 | 0,19 | 6 | 1 | 7 | 163 | 0 |
| **Plumber** | 3,03 | 3 | 0,859 | 0,524 | 0,141 | 7 | 1 | 8 | 300 | 29 |
| **Caretaker** | 3,03 | 4 | 1,681 | -0,212 | 0,074 | 7 | 1 | 8 | 1082 | 50 |
| **Au pair** | 3,01 | 4 | 1,344 | -0,661 | 0,147 | 5 | 1 | 6 | 274 | 8 |
| **Driver** | 2,96 | 3 | 0,824 | -0,766 | 0,042 | 7 | 1 | 8 | 3333 | 238 |
| **Waiter** | 2,93 | 3 | 0,848 | -0,784 | 0,038 | 6 | 1 | 7 | 4207 | 203 |
| **Assembly worker** | 2,90 | 3 | 0,902 | -0,576 | 0,048 | 7 | 1 | 8 | 2558 | 192 |
| **Postman** | 2,87 | 3 | 0,669 | -0,905 | 0,154 | 3 | 1 | 4 | 250 | 11 |
| **Barman** | 2,85 | 3 | 0,953 | -0,712 | 0,055 | 6 | 1 | 7 | 1999 | 73 |
| **Bus driver** | 2,82 | 3 | 0,888 | -0,932 | 0,217 | 3 | 1 | 4 | 125 | 8 |
| **Cook** | 2,81 | 3 | 0,776 | -0,931 | 0,041 | 6 | 1 | 7 | 3534 | 144 |
| **Forklift driver** | 2,70 | 3 | 0,891 | -0,871 | 0,056 | 3 | 1 | 4 | 1912 | 76 |
| **Porter** | 2,66 | 3 | 1,681 | 0,267 | 0,202 | 5 | 1 | 6 | 144 | 7 |
| **Tailor** | 2,58 | 3 | 0,996 | -0,697 | 0,127 | 3 | 1 | 4 | 368 | 111 |
| **Truck driver** | 2,48 | 3 | 1,135 | -0,427 | 0,087 | 4 | 1 | 5 | 785 | 26 |
| **Room staff** | 2,34 | 3 | 1,241 | 0,078 | 0,073 | 7 | 1 | 8 | 1137 | 49 |
| **Labourer** | 2,33 | 3 | 1,147 | -0,164 | 0,035 | 6 | 1 | 7 | 4895 | 429 |
| **Security guard** | 2,31 | 1 | 1,957 | 0,912 | 0,072 | 7 | 1 | 8 | 1170 | 22 |
| **Cleaner** | 2,03 | 1 | 1,471 | 0,711 | 0,077 | 7 | 1 | 8 | 1005 | 165 |

***Legend for educational classification***: 1 = primary education, 2=secondary school student, 3=secondary without leaving examination, 4=secondary with leaving examination, 5=higher professional education, 6=university student, 7=BA-level degree, 8=MA-level degree, 9=PhD-level degree.

Table 5 maps minimum educational requirements for each occupation. Education is classified in nine categories that represent levels of education and include 'high school student' and 'university student', which were also the options available to firms when designating possible qualification levels of job candidates. Educational field allowed companies to select multiple education levels. Table 5 maps the lowest education level marked in each job ad and can be interpreted as the minimum education standards or expectation on the side of the employers in a particular occupation. We present the mean, which should be interpreted with caution, and the mode as the most often (majority) marked level of education. Variance can be interpreted as the degree of agreement between firms with respect to minimum formal education requirements in a particular occupation. Higher variance means lesser consensus among the firms posting ads with respect to what is the minimum education corresponding to a given position. Annex 3 displays frequencies for minimum education requirements for each occupation for a graphical illustration.

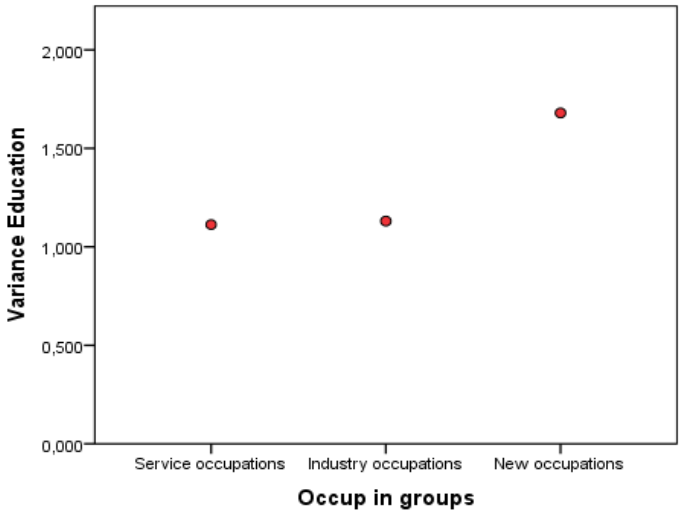
In the majority of occupations analysed employers expect as a minimum standard secondary education without a leaving examination (in effect meaning a 3-year specialised vocational study). There are two occupations where the lowest education level – primary education – prevailed: security guard and cleaner. Interestingly, these two occupations have different ISCO 88 classifications – while cleaner is considered as an unskilled job (ISCO 9), a security guard belongs to service workers (ISCO 5) and is medium-skilled. It seems that in the Slovak labour market, formal requirements for this 'new' occupation, that came to exist on a larger scale only in the last two decades, are lower than the internationally expected standard. This occupation also shows a large variation in the expected minimum standard which we interpret to be the result of a shorter presence in the labour market, and thus a lesser degree of codification or 'embeddedness', which results in less consensus among potential employers. On the other hand, in the occupations that ISCO marks as unskilled (ISCO 9) – porter, postman and courier, and labourer – the Slovak employers require a relatively high level of formal education – secondary with leaving examination (vocational licence).

In a number of occupations the majority of employers requested complete secondary education (4-year general or specialised with a leaving examination): courier, caretaker, au pair, salesperson and engine driver. The first three of these occupations we initially classified as 'new' occupations. This suggests that demand in the labour market might have adapted to supply, which continues to be better educated; this is reflected in the expectation of a high initial formal qualification, even in the medium-skilled labour market segment, at least in comparison to the more typical medium-skilled occupations. At the same time, these occupations also have a higher variance than more codified or traditional service or industry occupations (Figure 6). Expectations with respect to the education level of an engine driver and salesperson are similar but differ markedly in the skill intensity analysed earlier. A high share of ads for salesmen required non-cognitive skills, in comparison to a much lower share of ads requiring these skills of engine drivers. This is in line with the findings in other studies that emphasised that skill requirements are likely to differ across different sectors but could also be related to the role of a particular educational field (or professional tests/licensing) and the extent to which it signals certain characteristics. Employers would then use the educational level or certificate to carry out an occupation as a primary criterion in selecting a person and put less emphasis on other skills and abilities. Such questions could be further analysed in a cross-country comparative work.

The final observation from the data is that there are differences in the types of skills or education levels requested by employers in relatively similar occupations, such as room staff versus cleaner or postman versus courier. This could be related to the relative social position

and status of a given occupation or history of given occupation (courier as a new occupation, which also requires more skills than those demanded of a classic postman). This is one of the questions that could be analysed in future research.

*Figure 6. Variance in expected minimum educational standards*




## 5.1 Summary of main empirical findings

A general finding of our analysis is that the 'ideal' low and medium-skilled worker in Slovakia needs to demonstrate a considerable set of skills and qualities. We posed two key questions in the study of job ads content in selected low- and medium-skilled occupations. The first question sought to understand *what types of skills are demanded in the low- and medium- skilled occupations*. We found that Slovak employers are quite demanding in this segment with respect to diversity of skills and skill intensity but also as far as formal educational level is concerned. From the skills analysed, aptitudes and characteristics, non-cognitive skills and cognitive specific skills were more demanded than cognitive general skills or appearance. Experience was the single most requested characteristic. With respect to specific skills, language abilities are required to a large extent across a majority of occupations, including those where a low-level of education is expected (such as room staff). In some occupations this might suggest that recruitment is organised for a foreign labour market (au pairs, caretakers, and potentially waiters and barmen), but it also reflects the more general importance of language knowledge related to the fact that Slovakia is a small, export-oriented and highly internationalised economy. Among the non-cognitive personal skills, being responsible and flexible were the most pronounced characteristics. As for social skills, on average, the ability to communicate was the most requested social skill across occupations.

The second question we investigated in depth was *how the demand for non-cognitive skills and abilities in the low-skilled segment differs across different sectors or occupation groups,* which we grouped into service occupations, industry occupations and new occupations. On the one hand, we found that in interactive service occupations – salesmen, waiters and barmen in particular – employers expected a higher skill intensity than in the remaining occupations. On the other hand, previous experience was expected by a large share of employers in occupations which are also vocations and require specific knowledge – driver (engine, truck and forklift), maintenance, plumber, electrician, cook and tailor.

In the occupations analysed, the minimum education requirement measured as the lowest educational level marked by most employers varied considerably and did not necessarily correspond well to the ISCO 88 classification. Several occupations classified as unskilled by the international standard required secondary education. We also identified differences in the intensity of skill demand and expected education in relatively similar occupations (postman versus courier), which we linked to the history of occupations or their social status. With respect to new occupations we also found that employers' expectations about minimum education standards were more varied than in more traditional occupations that have been codified, for which curricula exist and are certified.

## 6. Conclusions and implications

This paper analysed labour demand at the micro-level by studying the content of job advertisements to identify the specific skills and characteristics that are demanded in the Slovak labour market in selected low and medium-skilled occupations. Our work is innovative in exploring online job ads data and quantifying different skills, personal attributes and characteristics. It shows that online portals that collect information about demand can be a useful source for gathering information about the content of labour demand and in improving the generally weak statistics on vacancies generated through other sources (Quintini, 2011). We thus contribute to works that emphasise the need to analyse labour market demand at the micro-level and use job advertisements as a source of information about the details of the employer demand. So far these are scarce but essential to fully understand recruitment processes and labour matching (Keep & James, 2010). The implications of our work spill over into a number of areas and contexts.

First, our findings are informative for the Slovak education and skill formation system. The country suffers from structural unemployment, so an adjustment of the skill provision systems is needed. Knowing more about employers' skill preferences can stimulate a provision of skill sets that are closer to the expectations and needs of employers to make workers more successful in the labour market. More specifically, after refining the methodology, similar analyses could serve as a partial input into the preparation of new curricula, for adjusting the current education and skill formation system or in the framework of in-firm training and learning. Of further relevance is our finding that experience was the single most requested characteristic. It puts into a broader context the youth unemployment problem, signalling that the difficult situation of labour market entrants might be improved by providing more opportunities to gain practice.

Second, the contribution of this work is potentially also more general. Learning more about demand for competences is a fundamental question that needs to be considered in order to reveal the complex relationship between employee selection, different strands of education and training policy, and labour market regulation. It can help to better understand the link between formal education and other skill requirements sought for different types of occupation in a particular institutional context. Further, reducing mismatches, which has been placed high on the EU agenda, requires consideration of broader labour market processes and circumstances, including recruitment processes, job structures and employer demand more generally (Anderson & Ruhs, 2008).

The analysis we conducted can be considered an initial feasibility test for a larger comparative cross-country project that would apply similar methodology to understand labour demand in different EU countries. That would allow an analysis of how job requirements are conditioned on a particular institutional background, for example, and

bring deeper insights into the issues of intra-EU mobility and limits on 'skills union' essential for the completion of the European single market project.

Finally, from the policy perspective, analysis such as this one could be used more directly as input in designing labour market policy and life-long learning programmes, especially to integrate hard-to-place jobless people or the inactive. The existing active labour market policy has been criticised for being too oriented towards individuals and lacking a closer interaction with demand (Gore, 2005). A systematic investigation of job ads is one road towards a more demand-led approach to labour market policy. For example, it provides a tool to match disadvantaged workers to jobs for which they possess greater capabilities or to help them develop skills that might be a key for a given occupation, but which might not be easily transferable through the formal education system.

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## Annex 1. Representatives analysis

*Table A. Occupation groups (ISCO 88)*

| | Labour force survey | | Advertisements | | CVs | |
|---|---|---|---|---|---|---|
| | Frequency | % | Frequency | % | Frequency | % |
| Managers and legislators | 16 144 | 18.19 | 16 758 | 16.65 | 3 125 | 12.65 |
| Professionals | 48 714 | 54.90 | 42 550 | 42.26 | 11 155 | 45.17 |
| Technicians and associate professionals | 16 715 | 18.84 | 21 507 | 21.36 | 4 282 | 17.34 |
| Clerks | 2 723 | 3.07 | 11 622 | 11.54 | 3 886 | 15.73 |
| Service workers | 3 035 | 3.42 | 6 077 | 6.04 | 1 817 | 7.36 |
| Skilled agricultural workers | 40 | 0.05 | 24 | 0.02 | 1 | 0.00 |
| Craft and related trades workers | 393 | 0.44 | 835 | 0.83 | 169 | 0.68 |
| Operators and assemblers | 371 | 0.42 | 286 | 0.28 | 18 | 0.07 |
| Elementary occupations | 593 | 0.67 | 1 018 | 1.01 | 245 | 0.99 |
| Total | 88 728 | 100.00 | 100 677 | 100.00 | 24 698 | 100.00 |

*Table B. Economic Sectors (NACE)*

| | Labour force survey | | Advertisements | | CVs | |
|---|---|---|---|---|---|---|
| | Frequency | % | Frequency | % | Frequency | % |
| Agriculture and mining (A-C) | 1 969 | 2.28 | 2 780 | 2.67 | 356 | 1.39 |
| Industry and utilities (DA-DJ+DN) | 4 490 | 5.19 | 3 512 | 3.37 | 548 | 2.14 |
| Electro-machinery and utilities (DK-DM +E) | 6 590 | 7.62 | 6 345 | 6.10 | 2 138 | 8.34 |
| Construction (F) | 2 983 | 3.45 | 3 431 | 3.30 | 748 | 2.92 |
| Sales (G-H) | 7 120 | 8.23 | 18 258 | 17.54 | 1 798 | 7.01 |
| Services (I-K) | 16 753 | 19.37 | 61 846 | 59.42 | 17 383 | 67.81 |
| Public Services (L-O) | 46 567 | 53.85 | 7 911 | 7.60 | 2 663 | 10.39 |
| Total | 86 472 | 100.00 | 104 083 | 100.00 | 25 634 | 100.00 |

*Note*: LFS 1998-2009. Job ad data: 2009-2010, CV data: 2009.

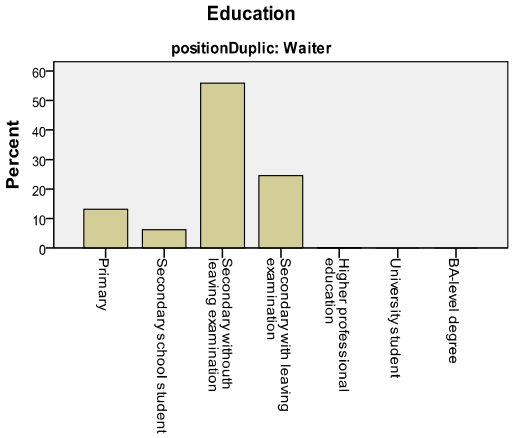
*Source*: Štefánik, 2012a.

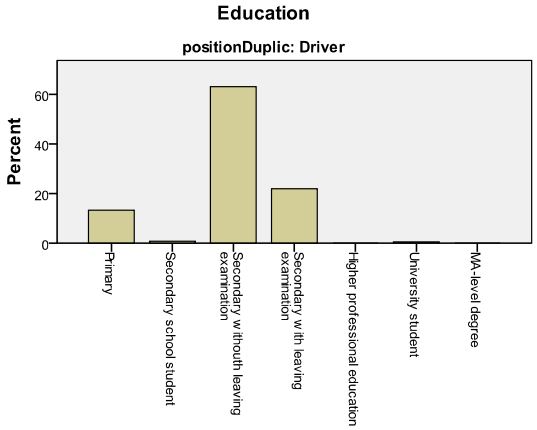
## Annex 2. Profesia classification of skill levels

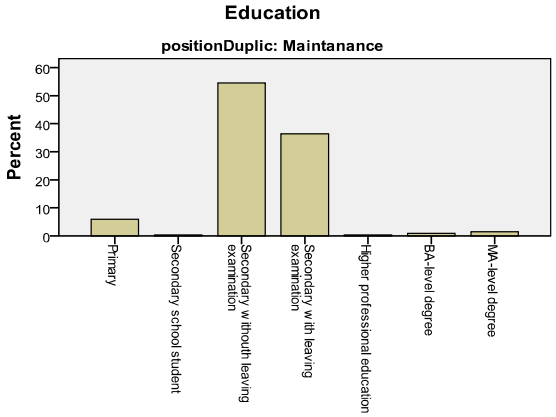
| |
|---|
| **Helpers** |
| - does not require any education |
| - *e.g.: helper, au pair* |
| **Qualified labourers and workers in services** |
| - requires secondary education with certificate (lower-level specialisd or vocational) |
| - *e.g: miller, hairdresser, machine operator, waiter* |
| **Administrative workers** |
| - requires secondary education without specialisation |
| - *e.g.: secretary, administrative worker (sekretarka, administrativny pracovnik), accountant, salesman/businessman* |
| **Qualified technical workers** |
| - requires complete secondary education or university education of technical orientation |
| - *e.g.:* technologist, (machine) designer, web designer |
| **Qualified non-technical workers** |
| - requires complete secondary education or university education without technical orientation |
| - (*napriklad): account manager, reporting specialist, teacher* |
| **Lower and middle management** |
| - requires university education and experience in a given position |
| - *e.g.: head of unit, project manager, product manager* |
| **Top management** |
| - requires university education and extensive experience in a given position |
| - *e.g.: director of logistics, director of school* |

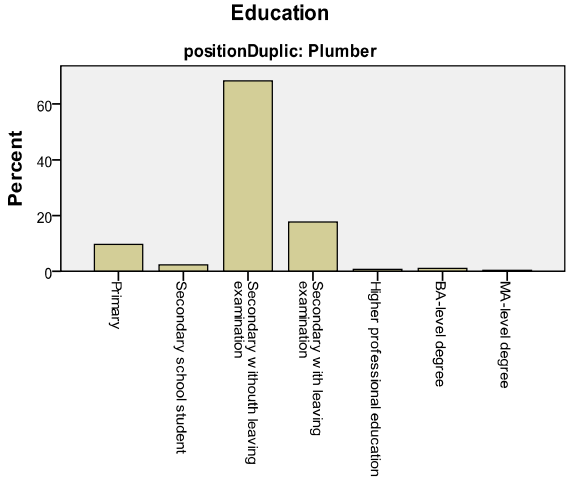
*Source*: Profesia.

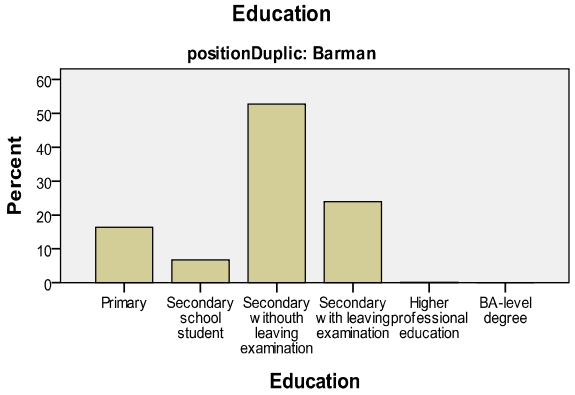
## Annex 3. Positions/occupations requested education profiles

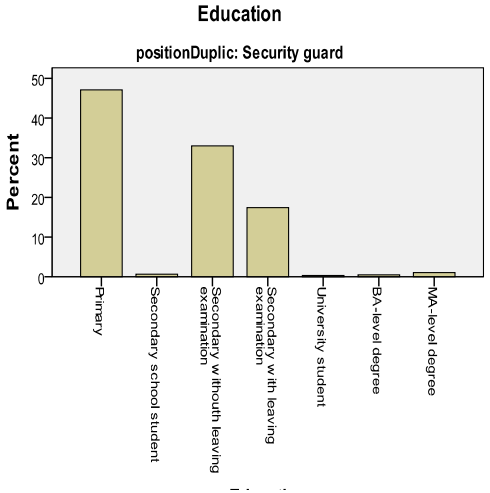


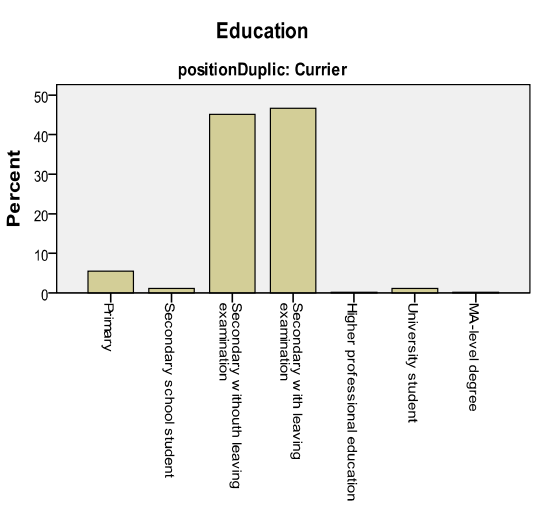



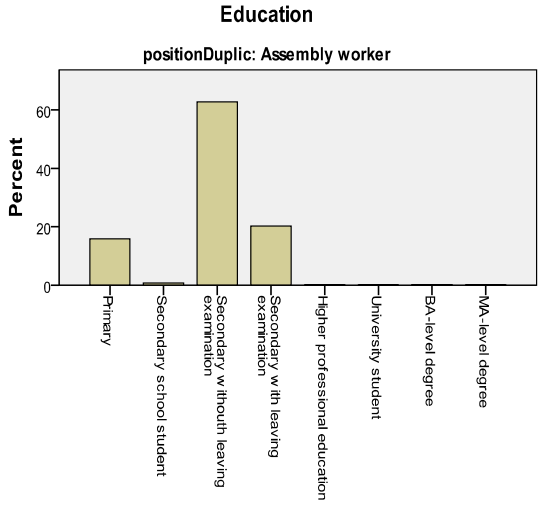



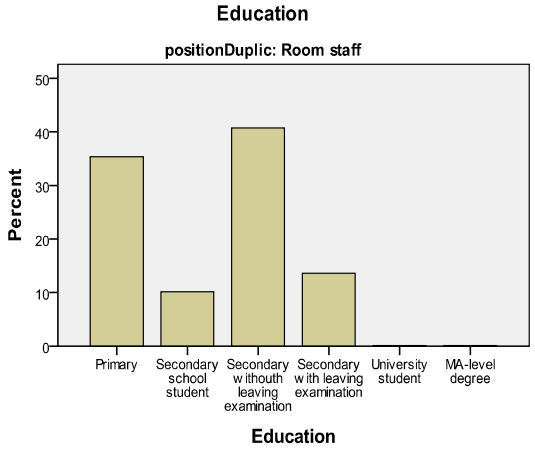



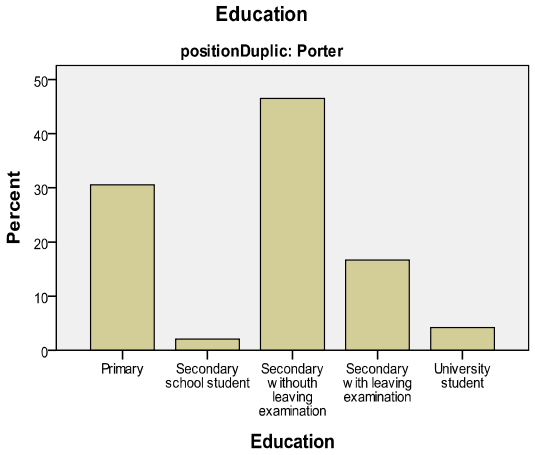



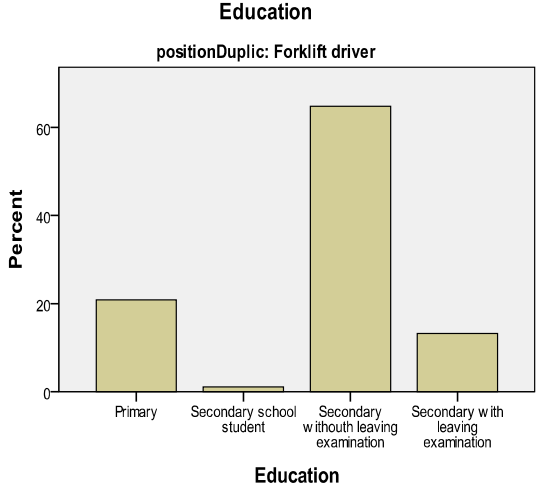



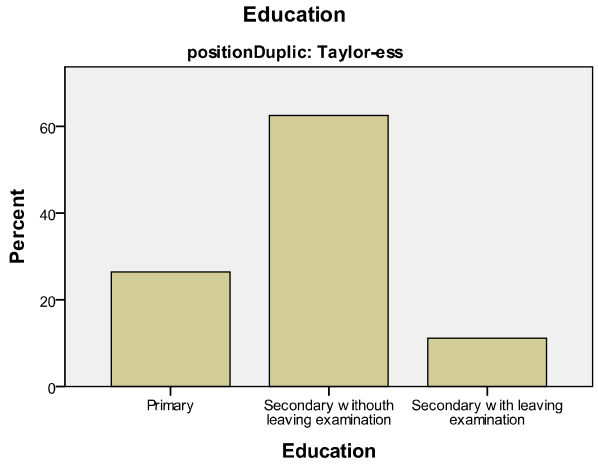

Education
positionDuplic: Currier
Percent
0
10
20
30
40
50
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary with leaving examination
Higher professional education
University student
MA-level degree

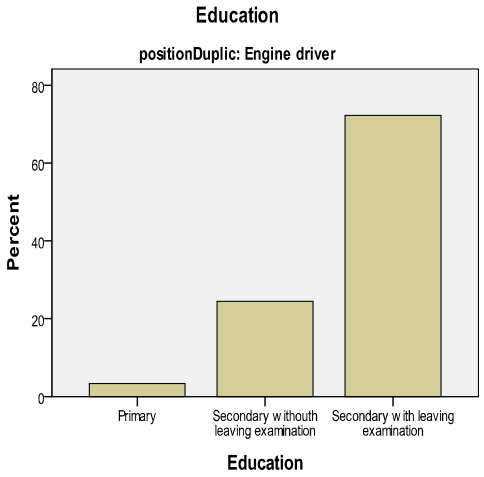

Education
positionDuplic: Assembly worker
Percent
0
20
40
60
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary w ith leaving examination
Higher professional education
University student
BA-level degree
MA-level degree

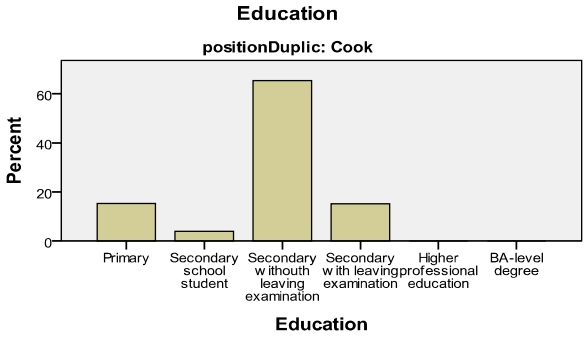

Education
positionDuplic: Room staff
Percent
0
10
20
30
40
50
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary w ith leaving examination
University student
MA-level degree
Education

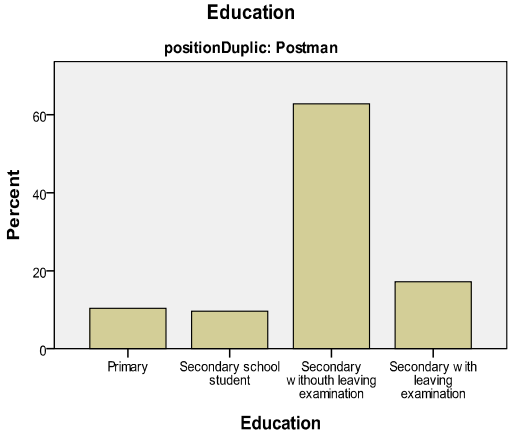

Education
positionDuplic: Porter
Percent
0
10
20
30
40
50
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary w ith leaving examination
University student
Education

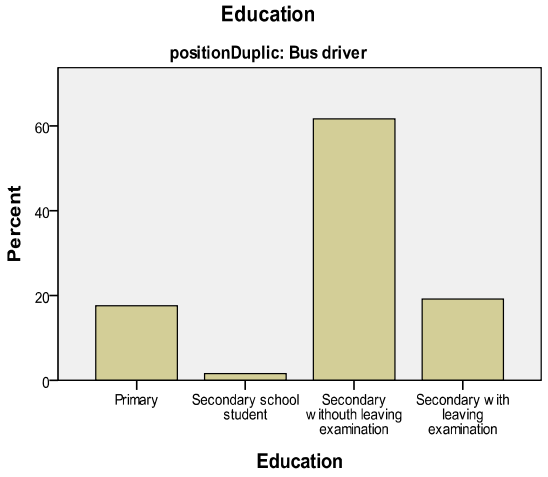

Education
positionDuplic: Forklift driver
Percent
0
20
40
60
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary w ith leaving examination
Education

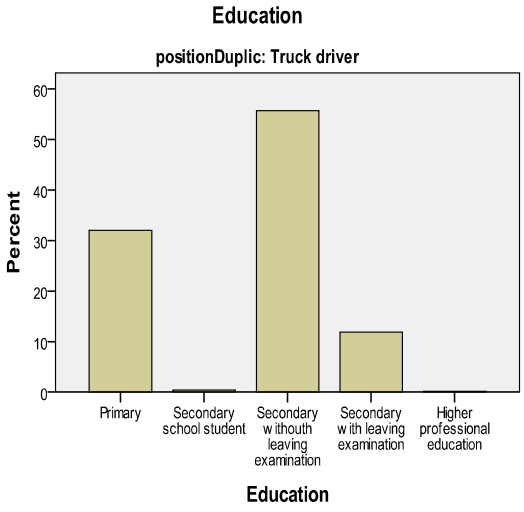

Education
positionDuplic: Taylor-ess
Percent
0
20
40
60
Primary
Secondary w ithouth leaving examination
Secondary w ith leaving examination
Education

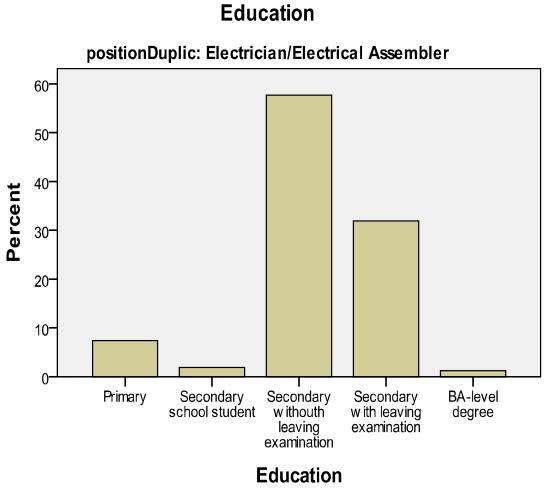

Education
positionDuplic: Engine driver
Percent
80
60
40
20
0
Primary
Secondary w ithouth leaving examination
Secondary w ith leaving examination
Education

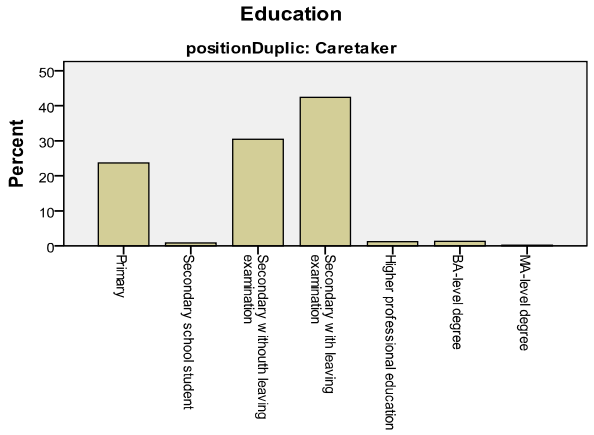

Education
positionDuplic: Cook
Percent
60
40
20
0
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary w ith leaving examination
Higher professional education
BA-level degree
Education

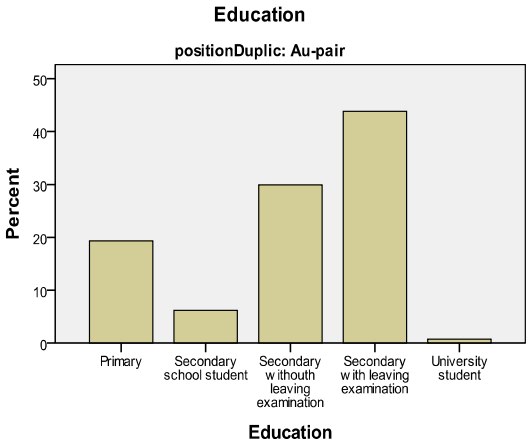

Education
positionDuplic: Postman
Percent
60
40
20
0
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary w ith leaving examination
Education

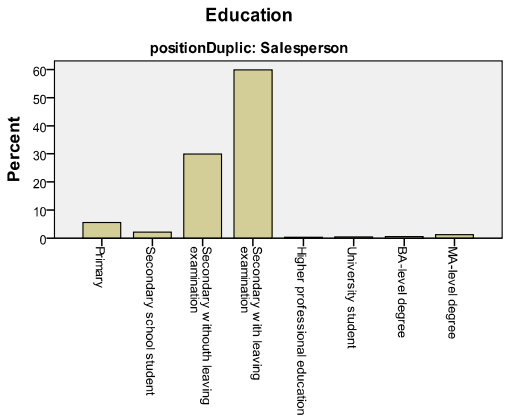

Education
positionDuplic: Bus driver
Percent
60
40
20
0
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary w ith leaving examination
Education

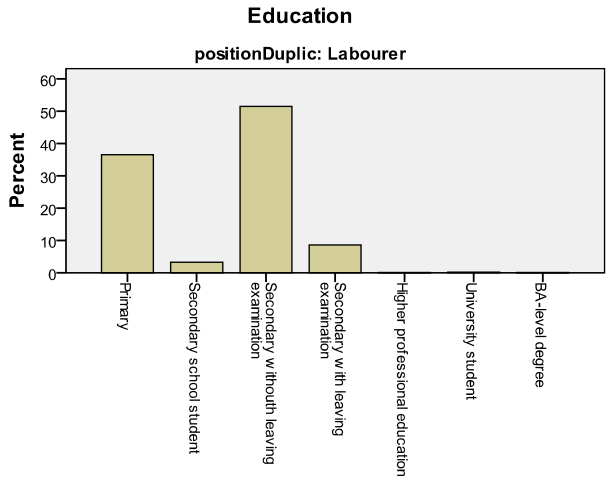

Education
positionDuplic: Truck driver
Percent
60
50
40
30
20
10
0
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary w ith leaving examination
Higher professional education
Education

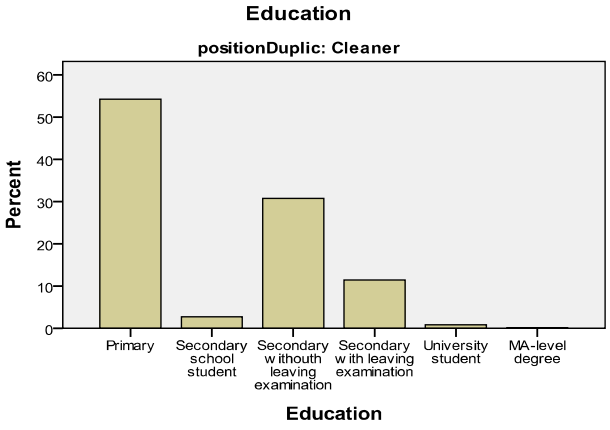

Education
positionDuplic: Electrician/Electrical Assembler
Percent
60
50
40
30
20
10
0
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary w ith leaving examination
BA-level degree
Education


Education
positionDuplic: Caretaker
Percent
0
10
20
30
40
50
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary w ith leaving examination
Higher professional education
BA-level degree
MA-level degree


Education
positionDuplic: Au-pair
Percent
0
10
20
30
40
50
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary w ith leaving examination
University student
Education

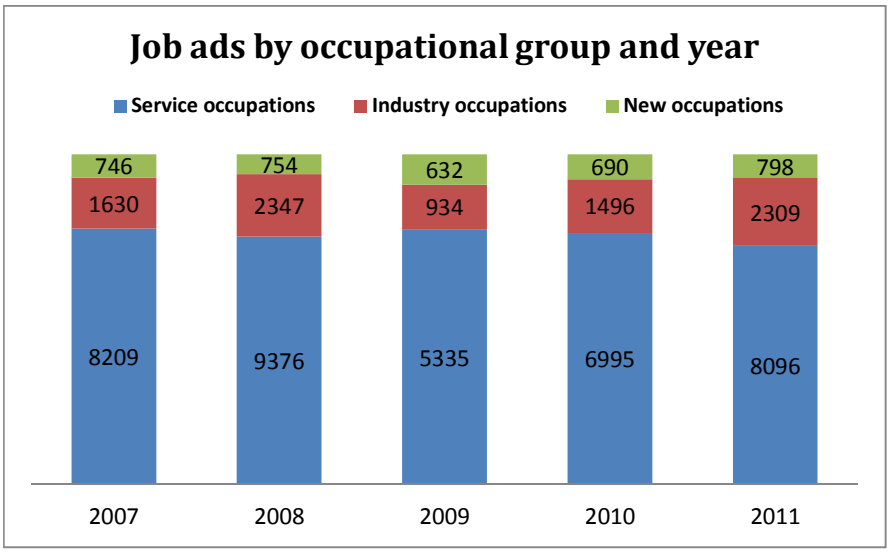

Education
positionDuplic: Salesperson
Percent
0
10
20
30
40
50
60
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary w ith leaving examination
Higher professional education
University student
BA-level degree
MA-level degree


Education
positionDuplic: Labourer
Percent
0
10
20
30
40
50
60
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary w ith leaving examination
Higher professional education
University student
BA-level degree


Education
positionDuplic: Cleaner
Percent
0
10
20
30
40
50
60
Primary
Secondary school student
Secondary w ithouth leaving examination
Secondary w ith leaving examination
University student
MA-level degree
Education

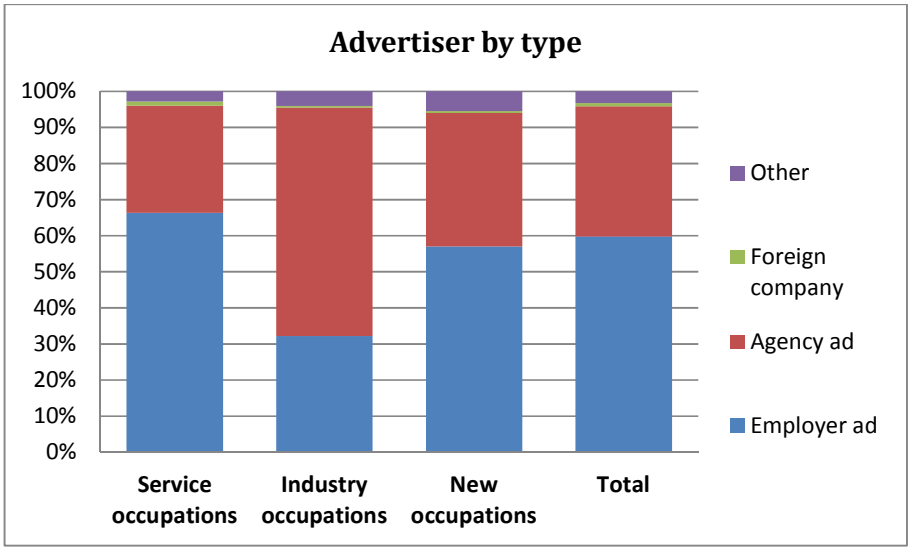
## Annex 4. Job advertisements by group and year

*Figure 1A. Job ads by occupational group and year*




*Source*: Profesia.

*Figure 2A. Who posts ads across occupation groups*




*Source*: Profesia.