

# Mapping the landscape of online job vacancies

## Background report: Poland

**Study:** Real-time labour market information on skills requirements: Setting up the EU system for online vacancy analysis

**Contract:** AO/DSL/VKVET-GRUSSO/Real-time\_LMI\_2/009/16

prepared for Cedefop by Jan Brzozowski

**Date of release:** 19 January 2018

While the original text has been thoroughly revised by Cedefop experts, it did not go through the official publication process (peer review, language editing and formatting)

**Please cite this report as:**

Cedefop (2018). Mapping the landscape of online job vacancies. Background country report: Poland, <http://www.cedefop.europa.eu/en/events-and-projects/projects/big-data-analysis-online-vacancies/publications>

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## Preface

Over the last decades, online job portals have become important features of the job market. The Internet offers a rich source of live and real-time labour market information for almost all of occupations. It can provide insight on job-specific skills required in particular occupations in different regions, combined with information on the characteristics of the job offered – i.e. much more than is available using conventional sources. However, consistent and comparative information on the use of the internet and online job market by job-seekers and employers in Europe is rather scarce.

To tap the potential of online labour market information, Cedefop started to investigate the possibility to develop a system for gathering and analysing data from online job portals in the EU to complement the centre's toolkit of skills intelligence instruments. While this is feasible, drawing meaningful conclusions from these data requires a good understanding of the features of national online job markets. Therefore, Cedefop has mapped the landscape of the online job market in all EU Member States. This publication presents one of the background country reports developed in the project - 'Real-time labour market information on skills requirements: Setting up the EU system for online vacancy analysis' (AO/DSL/VKVET-GRUSSO/Real-time LMI 2/009/16). Its findings will inform the cross country comparison published in the upcoming synthesis report.

The work was undertaken by a consortium of external contractors: CRISP (Milano/IT), Tabulaex (Milano/IT) and IWAK (Frankfurt/DE) and their network of country experts (see annex 1 for detailed list) and closely supervised by Cedefop. It presents authors' analysis of the landscape of the online job portal market in the country using a methodology developed for the purpose of the project.

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## List of Abbreviations

<b>CBOP</b>	Central Base for Job Offers (Centralna Baza Ofert Pracy)
<b>Cedefop</b>	European Centre for the Development of Vocational Training
<b>CRISP</b>	Centro di ricerca interuniversitario per i servizi di pubblica utilità, University of Milano-Bicocca
<b>EURES</b>	European Employment Services
<b>HR</b>	Human Resources
<b>ICEs</b>	International Country Experts
<b>ICT</b>	Information and Communication Technology
<b>ISCO</b>	International Standard Classification of Occupations
<b>IWAK</b>	Institute for Economics, Labour and Culture/Centre of Goethe University Frankfurt
<b>LFS</b>	Labour Force Survey
<b>NACE</b>	Nomenclature statistique des activités économiques dans la Communauté européenne
<b>NUTS</b>	Nomenclature of territorial units for statistics
<b>OJVs</b>	Online Job Vacancies
<b>PBN</b>	Polish Scholar Bibliography (Polska Bibliografia Naukowa)
<b>PES</b>	Public Employment Services
<b>PFRON</b>	Public Fund for the Rehabilitation of Disabled Individuals (Państwowy Fundusz Rehabilitacji Osób Niepełnosprawnych)
<b>PUP</b>	Powiat Employment Offices (Powiatowe Urzędy Pracy)
<b>SME</b>	Small and Medium Enterprises
<b>WP</b>	Work Package

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# Introduction

With the project “Real-time Labour Market Information on Skill Requirements: Setting up the EU System for Online Vacancy Analysis”, Cedefop explores online job-vacancies (OJVs) as a new source of real-time Labour Market Information. By crawling the most important online job-portals of the 28 EU Member States, Cedefop will further its understanding of the changing skills demand in different sectors and occupations. A systematic overview of the online job-portal landscape in each of the 28 EU Member States will identify the most relevant online job-portals and provide context for the data scraped from them. With the Landscaping Activity, Cedefop seeks to acquire insights into the structure of online job-portal markets and the extent to which online job-portals are used in recruitment and job-search. Furthermore, it aims to better understand which factors cause variation in the formats and content of OJVs in different countries.

This Country Report was compiled between April and October 2017 and constitutes a first overview of the online job-portal landscape in Poland. It is based on desk research of available data sources in Poland (e.g. public data, academic research and publications of interest groups) and expert opinions. Chapter 1 describes the methodology used for compiling the report in terms of the relevant search paths and data sources. Chapter 2 gives an overview of the main drivers for the use of online job-portals in recruitment and job-search, while Chapter 3 concentrates on the characteristics of the online job-portal market and lists the most important players. Moreover, it seeks to understand to what extent OJVs published on the online job-portals provide adequate information on the developments in the Polish labour market in terms of the number of vacancies and representation of sectors/occupations. Furthermore, it elaborates on the legal and regulatory framework guiding the activities of the job-portal owners and employers, highlights the differences between the public versus private online job-portals and delineates their relationships with one another. Chapter 4 covers the use of online job-portals in recruitment and job-search. It focuses on the differences in the behaviour of employers and job-seekers across sectors, occupations, qualification levels and regions. Chapter 5 presents the most important online job-portals in Poland for web-crawling and describes a step by step process of the OJV drafting and posting on select private and public online job portals. Chapter 6 concludes the Country Report by describing the main features of OJVs in Poland in terms of format and content. In particular, it explores to what extent OJVs contain information pertaining to hard and soft skills required for the job, how these skills are characterised and what they reveal about the nature of the job.

# 1. Methodology

This report is based on multiple sources of data, gathered between March and June 2017. First, a precise desk research was made in order to collect the most relevant reports and statistics on the Polish labour markets. Then, in-depth interviews were carried out with key stakeholders and experts about the labour market issues in Poland. The detailed description of each method is provided in the subsequent sections.

## 1.1. Search Paths

The desk research activity covered academic and practice-oriented reports as well as newspaper articles. The choice of these sources of information was motivated by the nature of the object of study, as the labour market in Poland (and the OJV market) is developing very fast and academic production does not necessarily capture all these changes<sup>1</sup>.

The search included the use of four keyword combinations:

Search term in Polish	English translation
internetowy rynek pracy	online labour market
rynek pracy online	job-market online
internetowe portale z ofertami pracy	Internet portals with job vacancies
rynek pracy Internet	job market Internet

The desk research was conducted between March and June 2017. During this exercise, three main search engines were used:

- Google;
- Google Scholar;
- The Polish Scholar Bibliography (PBN)<sup>2</sup> (the most complete and comprehensive database on Polish academic publications)<sup>3</sup>.

The search performed using PBN yielded rather modest results with just one hit in four search terms: an explorative study on IT service on the labour market (Samoraj-Charitonow and Mirosław 2011). This shows some deficiencies of the PBN, as the database is still in the early phase of development. However, the searches in Google Scholar were much more fruitful. We analysed the titles and abstracts of the papers and books generated on the first 10 pages of results, and then we reduced our focus to the first five pages and to publications from 2013 onward.

<sup>1</sup> This is due to the time lag of the academic publication process, which includes the reviewing and editing processes. Consequently, the typical academic papers available online in 2017 cover the period before 2014.

<sup>2</sup> In Polish "Polska Bibliografia Naukowa" (PBN).

<sup>3</sup> The PBN database is operated by the Ministry of Science and Higher Education and is available at: <https://pbn-test.opi.org.pl/sedno-webapp/>.

Consequently, in order to update our knowledge on the labour market situation in Poland, a Google search was performed using the same set of keyword combinations as were used with Google Scholar and PBN.

## 1.2. Data Sources

### 1.2.1. Public Data/Academic Research

The literature search yielded 34 academic resources<sup>4</sup>, mostly papers and monographs, which connected Internet use and job market issues. Within these contributions, some major topics can be identified:

- The organisation of the labour market, including the interaction between the public employment service at the local, regional and national level, private intermediaries and NGOs (Kukulak-Dolata 2008, Chondzyńska 2008, Jarmołowicz and Knapińska 2015);
- The expectations that employers have of their employees, with particular attention to skills demand (Kocór and Strzebońska 2010, Budnikowski et al. 2012, Jagodziński 2013, Sosnowska 2014, Jarmołowicz and Knapińska 2015, Jasińska and Podgórska 2015);
- The use of social media in recruitment (Grześkowiak 2011, Palonka and Porębska-Miącz 2014, Woźniak 2015, Jędrych 2015, Stefaniak 2016, Gzowska 2016, Tomczak and Balcerzak 2016);
- The role of electronic recruiting in employer branding (Budzanowska-Drzewiecka et al. 2013, Oczkowska 2015, Nazdrowicz 2015);
- Explorative analysis on how internet technology impacts the labour market in general and job matching processes in particular (Owczarz 2005, Jarecki 2005, Strzelczak, 2007, Matusiak and Szewczyk 2010, Wojtaszczyk, and Cewińska 2014, Woźniak 2014, Batorski 2015, Buchnowska 2015, Kowalik 2016, Orłowska 2016; Pater, 2017);
- The organisation and structure of internet job portals (Wiącek 2011a, Wiącek 2011b, Michałek 2011, Matusiak 2012);
- The analysis of the content of online job vacancies (Szwed 2015, Sidorkiewicz and Tokarz-Kocik 2017), with particular attention paid to the demand for the competences included in such adverts (Pater, 2017).

The results of the literature search have demonstrated a growing academic interest in the link between the internet and the labour market, focused particularly on online job vacancies. Yet, most of these analyses are explorative, and profound analyses are missing. The few exceptions are the studies by Wiącek (2011a, 2011b) on the structure of the OJV market and management models of the job portals and Sidorkiewicz and Tokarz-Kocik's study (2017) on the demand for skills in the hotel industry, using the data from online vacancies. These two studies provide an important starting point for the identification and selection of key stakeholders (private providers) of OJVs. Unfortunately, due to a time lag between the process of writing the paper and its publication, most of these academic resources only have historical value and can be used to describe the situation on the Polish labour market and the structure of the OJV market up to 2014/2015.

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<sup>4</sup> The number of hits was as follows "internetowy rynek pracy" (online labor market): 11, "rynek pracy online" (job market online): 3, "internetowe portale z ofertami pracy" (Internet portals with job vacancies): 22 and "rynek pracy Internet" (job market Internet): 8. Please note that there were overlaps, so some search items appeared more than once.

### 1.2.2. Research/Surveys of Interest Groups

The studies in this category are mainly published by online job-portals such as pracuj.pl or praca.pl and give an overview of the main trends and developments in the online job-portal market. Also, the author used well-known sources of information on the Polish labour market (Human Capital Balance Project<sup>5</sup> and Social Diagnosis<sup>6</sup>). Therefore, the list of academic references was extended by eleven reports. Not all of these resources have an academic quality, but they provide valuable and up-to-date information on the OJV market, especially regarding commercial portals and private OJV providers.

### 1.2.3. Expert Opinions

In-depth interviews were carried out with key stakeholders and experts on labour market issues in Poland, including representatives of employee and employer associations, human resources (HR) specialists, Public Employment Services and private online job vacancies operators, as well as representatives of the statistical office. A total of nine interviews were conducted between 18 April and 26 June 2017. We interviewed two HR specialists (the Head of HR for one of the biggest manufacturing companies in Poland and a representative of an HR consultancy agency). We held interviews with two representatives of the statistics office (one person from the regional statistics office and the other person representing the Central Statistics Office) as well as two representatives of the Public Employment Service (one representative of a local PES and the other with a representative of the central PES – Ministry of Family, Labour and Social Policy). Finally, two representatives of OJV portals were approached in order to account for two distinct sectors of specialisation – one representative from a blue-collar portal (E7) and the other from a white-collar portal (E8). By hearing the experiences of such a broad variety of respondents, the information on Polish labour market and on the OJV market, particularly from different perspectives (mostly regional and central) was enriched. The full list of the interviews and the detailed description of methodology is provided in the appendix.

We experienced some problems in approaching respondents from public administration offices, namely the Central Statistics Office and the Ministry of Family, Labour and Social Policy. In this regard, the biggest hurdle was that the responses to our questionnaire were treated as official public record. However, the official letters of recognition from Cedefop stating that the researcher is the official expert within the project proved to be helpful in gaining the trust of the respondents. Most of the interviews were held by telephone. But in the case of more formal interviews (E6 and E9), the responses were provided in written form.

The questionnaire provided by Cedefop was quite long and consisted of a set of questions on labour market regulations, trends and the most important actors present on the OJV market. In many cases, especially in the context of public administration officials, the respondents did not have specific knowledge on the subjects (especially on the content of job offers, the most important portals etc.). Therefore, the additional number of respondents was crucial in collecting the information and in developing a full picture on the investigated subject matter.

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<sup>5</sup> Human Capital Balance (Bilans Kapitału Ludzkiego) is a long-term project coordinated by Polish Agency for Enterprise Development, which aims to understand the needs of the employers on the Polish labour market. The results of the most recent survey will be available in the second half of 2017 (<https://bkl.parp.gov.pl/>).

<sup>6</sup> The Social Diagnosis is a project of the University of Finance and Management supporting their “diagnostic work with detailed data derived from institutional indicators concerning households and the attitudes, mind-sets and behaviours of their members. It is a diagnosis of the conditions and quality of life of the Poles as they report it” (<http://www.diagnoza.com/index-en.html>; see also Czapiński, and Panek 2015).

Table 1 provides an overview of the online job-portal landscape in Poland as well as the main gaps based on the desk research and interviews.

**Table 1: Overview of the different sources used in the Landscaping Activity**

Type of source	Title/year	Provider	Information on			Quality
			Share of existing vacancies on online job-portals (PES/private)	Use of OJVs per sector/occupation/qualification level/ region	Skill requirements in OJVs	
<b>Source 1: Public data/academic research</b>	Woźniak, J. (2014): Crowdsourcing –IV etap rozwoju rekrutacji internetowej [Crowdsourcing – the 4th stage of internet recruiting]. Zarządzanie Zasobami Ludzkimi, 1-2014 (96)), pp. 41-5.	Academic institution	Yes	Yes		Good
	Wiącek, Ab. (2011): Model zarządzania portalem rekrutacyjnym [The model of recruiting portal management], praca doktorska [doctoral dissertation], UW 2011	Academic institution		Yes		Good (list of major OJV providers)
	Sidorkiewicz, M. and Tokarz-Kocik, A. (2017): Analiza internetowych ofert pracy oraz poszukiwanych kwalifikacji w hotelarstwie na przykładzie województwa zachodniopomorskiego. Folia Turistica/Akademia Wychowania Fizycznego im. B. Czecha w Krakowie, (42), pp. 87-102	Academic institution			Yes	Good (most up-to-date list of major OJV providers)
<b>Source 2: Research/surveys of interest groups</b>	Pracuj.pl (2017a): Rynek pracy specjalistów w 2016 roku [Labour market of specialists in 2016], pracuj.pl: Warsaw.	Pracuj.pl	Yes	Yes	Yes	Good
	Pracuj.pl (2017b): Rynek Pracy Specjalistów w I kwartale 2017 roku [Labour market of specialists in 2017], pracuj.pl: Warsaw					
	Praca.pl (2016): 8 trendów rynku pracy w 2016 r. według praca.pl [8 Main Trends on the Labour Market in 2016 According to praca.pl]; praca.pl 2016-01-12,	Praca.pl			Yes	Medium

<b>Source 3: Expert opinions</b>	Expert opinions 2017	Experts 3, 7, 8, 2 (see the References for detailed information)	Yes	Yes	Yes	Good
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Source: Brzozowski (March to June 2017).

## 2. Labour Market Dynamics and Impact on the OJV Market

The Polish labour market has undergone important changes in the last few years. There are at least several factors, which changed the situation in Poland as far as the labour market issues are concerned:

- The still-ongoing impact of the **EU integration** and the continued **emigration** of Polish workers, seeking employment in Western Europe. The number of Poles staying 3 months or more abroad was estimated at 2.397 million persons in December 2015, an increase of 77 thousand persons compared to December 2014 (GUS 2016a).
- The **demographic decline** – the gradual decrease of young workers entering the market is already visible: in 2003 the number of individuals aged 19-24 was 3.945 million, while in 2015 it had decreased to 2.835 million – a reduction by 1.1 million in just 13 years (GUS 2015). This trend will become even more pronounced in the upcoming years, as predictions estimate a decrease by 0.5 million in the population of 20-24 year olds between 2014 and 2020 (GUS 2016b).
- The **rapid economic growth** connected to fast job creation results in a very low unemployment rate. While in 2004 the registered unemployment rate was at 19%, in 2016 it was 8.3% (BDL, 2016). Moreover, due to specific features of the Polish economy, such as the considerable share of moonlighting and informal employment, the real unemployment rate (according to the Labour Force Survey) is even smaller (5.6%) (cf. Saczuk et al. 2017). According to many experts it is close to frictional unemployment (Cieślak-Wróblewska 2017).
- The **external shock of the Donbas conflict** and the **economic crisis in Ukraine** has driven a considerable share of Ukrainian immigrants to Poland. In 2016, there were 220,000 foreign job applications and 1.3 notifications of employers willing to hire a foreigner, (Voivodeship of Malopolska 2017). As a consequence, Poland has recently become a new and rapidly expanding immigration country, and Ukrainians have become important stakeholders on the Polish labour markets, filling shortages not only in the traditional sectors like construction or household services (care, cleaning and cooking), but also increasingly in the skilled professions, especially in the ICT sector.

The pronounced oversupply of employees and the stronger position of employers towards employees, which was a typical feature for the last 25 years of Polish economic transformation, is no longer valid. On the contrary, according to many reports, Poland is moving towards a “market of the employee”, where many employers report increasing problems when trying to fill job vacancies (Nagel 2016; Praca.pl 2016). This trend was confirmed by all the experts interviewed within this research project. Such an important change constitutes a challenge for the OJV market, which needs to change the perspective from employer-oriented to employee-oriented, as job shortages and problems of finding the right candidates will be even more pronounced in the upcoming years (E2).

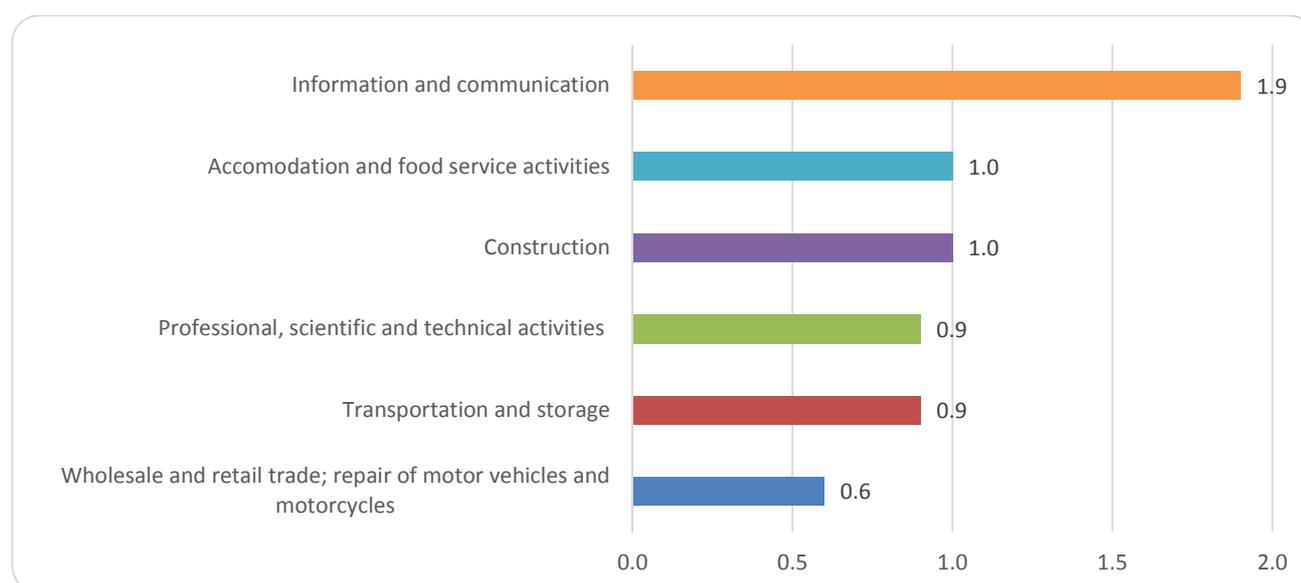
These changes became especially visible from 2014 onwards, when, according to experts from the Human Capital Balance project<sup>7</sup>, a substantial increase in demand for new workers, was noted for the first time: The number of reported vacancies increased by 26% over 2013 to 750,000 (Kocór, Strzebońska and Dawid-Sawicka 2015). Moreover, the increased demand was observed in most regions in Poland.

<sup>7</sup> See Footnote 5 for more details.

**Table 2: Sectors expected to have the strongest employment change over the period 2015-2025 in Poland (%)**

No.	NACE Rev. 2		Change in %
1	J	Information & Communication Activities	25.97%
2	N	Administrative & Support Activities	23.55%
3	H	Transport & Storage	23.30%
4	F	Construction	14.61%
5	L+M	Real Estate, Professional & Related Activities	11.06%

Source: EU Skills Panorama (downloaded on 20 January 2017).

**Figure 1: Job Vacancy Rate for different economic activities in Poland (above average), 2015**

Source: CRISP (2016): Preliminary Study on the 28 involved European countries (unpublished Annex of a Cedefop report).

The top sectors in terms of the demand for new workers were the mining and manufacturing sectors (142,000 new vacancies), the transport and construction sector (189,000), the trade, accommodation and food services sector (212,000) and the special services sector (143,000, cf. (Kocór et al. 2015). These changes are confirmed by the results of the EU Skills Panorama reports and CRISP report on vacancies in 28 EU Member States. According to these reports, the most important sectors involved in job creation in 2015 were: information and communication activities, administrative and support activities, transport and storage, construction, and real estate, professional and related activities (see Table 2). Yet, the sectors with higher share of vacancies were the information and communication sector, followed by the accommodation and food services sector, as well as the construction sector followed by the professional, scientific and technical activities (see Figure 1).

According to the Human Capital Balance report for 2014, the top three most important requirements that employers expressed in job offers were: the gender of the candidate, experience and

education<sup>8</sup>. In the case of gender preferences, these were expressed particularly for occupations needing physical strength (e.g. construction), while they were not relevant in white-collar occupations (Kocór et al. 2015). An important change in relation to previous years was the rising importance of a candidate's skills and competences, as well as formal qualifications<sup>9</sup>. The main driving force for this development was the increased demand for skilled workers, caused by both the economic growth of the Polish economy, increasing specialisation of Polish enterprises and the emigration of some specialists. This is an important change and according to the interviewed experts, the requirements for both, skills and formal qualifications will become even more widespread in job announcements, including OJVs (E7).

Another visible trend among employers was the growing challenge to find the right candidates for job offers placed between 2011 and 2014. The sectors in which those problems were the most severe were the construction and transport sector (87% of employers expressed such concerns in 2014) and the healthcare and care services sector (86%, Kocór et al. 2015). These findings align with the predictions from EU Skills Panorama report, which includes construction and healthcare among the top five sectors in which there will be large numbers of job openings between 2015 and 2025 (Table 3).

**Table 3: Occupations expected to have the largest numbers of job openings over the period 2015-2025 in Poland (number of people)**

No.	ISCO-08		Additional number of people needed
1	33	Business & administration assoc. prof.	473,457
2	71	Building & related trades workers	376,548
3	61	Skilled agricultural workers	343,858
4	24	Business & administration professionals	292,475
5	22	Health professionals	223,166

Source: EU Skills Panorama (downloaded on 20 January 2017).

Shortage of qualified candidates is already a problem in 2017, according to the experts. These problems were identified by both private and public operators of OJVs platforms and among skilled (white-collar) and semi-skilled (blue-collar) jobs. An expert from the largest private portal says, "In the last 2 months, the number of job offers has increased substantially, reaching 120,000-130,000 a month. Yet, the number of candidates applying for individual jobs remained stable. I have an impression that we are reaching the limit of the potential candidates on the market" (E7). Similarly, a description by the expert from the public employment service states: "Here in Cracow we have a shortage of workers. So if the employer wants to hire somebody, one needs to offer more or decrease the requirements" (E5).

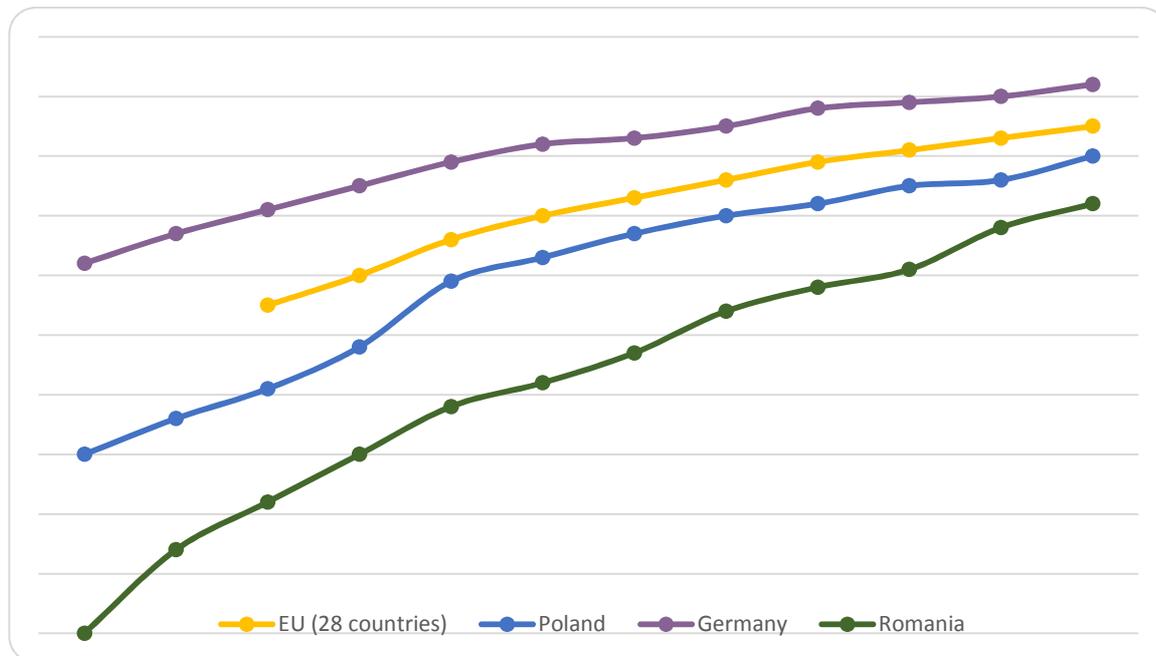
<sup>8</sup> Among the most popular educational requirements were the level of education (with particular emphasis on tertiary level attained).

<sup>9</sup> In this report skills and competences are understood as the soft competences, which are hard to assess and define, while the formal qualifications can be verified by a specific certificate or other document.

### 3.Context and Characteristics of the Online Job-portal Market

The market of Online Job Vacancies in Poland is already well-developed, and job announcements in the internet play an increasingly important role in recruiting practices. This is due to increased access to the Internet – 80% of households had access to the web in 2016 (Figure 2). Yet, we have to keep in mind that internet-users are disproportionately young. While 97.5% of individuals aged 16 to 24 use the internet, this number drops to 92.5% among individuals aged 25 to 34, 85.2% among individuals aged 35 to 44, and 60.3% and 41.3% among individuals aged 45 to 59 and 60 to 64, respectively (Czapiński and Panek 2015).

**Figure 2: Households' level of Internet access (%)**



Source: EUROSTAT ICT Survey of Households and Individuals [tin00134] (downloaded on 19 January 2017).

As a result of rising internet use, the internet is becoming one of the most important channels to look for new workers (Kowalik 2016). In 2014, the most important channel of recruiting was personal recommendation and use of private networks (69% of employers), followed by the Public Employment Services (henceforth: PES, 58%)<sup>10</sup>. Forty-one percent of all employers posted an offer on an online portal/internet advert (see Figure 3). The use of OJVs was most widespread in the skill-intensive sectors such as private education (51% of employers), specialised services (46%)

<sup>10</sup> Yet, according to Pater (2017) the usage of PES by employers is still relatively scarce: in 2012 it was estimated that only 16.5% of employers have used PES assistance when declaring vacancies and looking for job candidates.

and healthcare and care services (46%) (cf. Kocór et al. 2015). Skills-intensive industries also use headhunting agencies, especially when recruiting for occupations with labour shortages (E2).

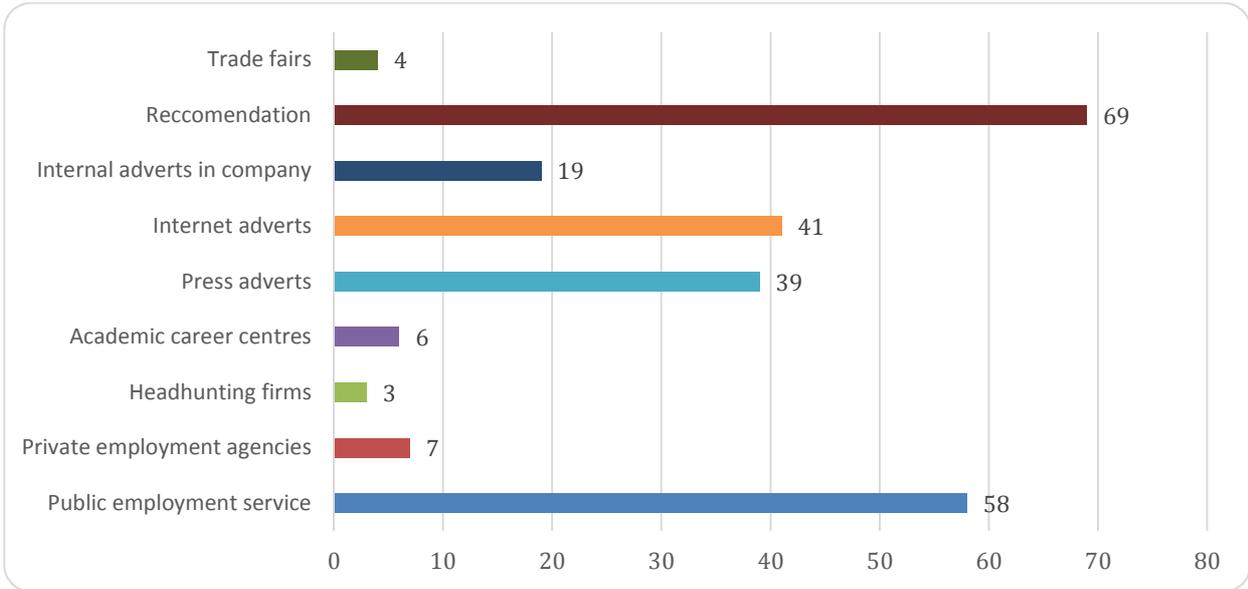
Recruitment practices also differ between large companies and SMEs (for statistical data in this regard, see WP1 report). Large companies have much more heterogeneous approaches. First, as they already have a large pool of workers, they can rely on internal recruitment by promoting an employee to a higher position or training someone for another job. Secondly, they can rely on recommendations from their employees, sometimes providing financial incentives for those whose recommendations are successful (i.e. resulted in a successful hire). Third, they recruit persons using the OJVs; among companies that employed 50 or more workers, 65% posted to an online portal. Fourth, they rely on special HR/headhunting agencies/firms, which recruit workers for them. Moreover, they usually have a well-developed HR division, which is responsible for such activities. On the other hand, SMEs rely mostly on employee recommendations and if that method is unsuccessful they turn to the PES and private portals. In the case of SMEs, cooperation with external recruitment HR agencies are less popular, because of the high costs associated.

**Table 4: Methods of finding the employees in 2014 by sector (by %, multiple answers allowed)**

	Mining and manufacturing	Construction and transport	Trade, catering and hospitality	Specialised services	Public education	Private education	Healthcare and care services
Public employment service	65	54	59	55	83	50	58
Private employment agencies	10	6	7	10	2	7	4
Headhunting firms	4	3	3	5	1	2	1
Academic career centres	5	3	4	10	5	9	7
Press adverts	44	44	38	38	22	39	32
Internet adverts	39	39	39	46	40	51	46
Internal adverts in company	22	15	22	15	21	12	18
Recommendation	71	77	70	66	24	80	59
Trade fairs	6	4	3	5	5	9	4

Source: Kocór et al. (2015).

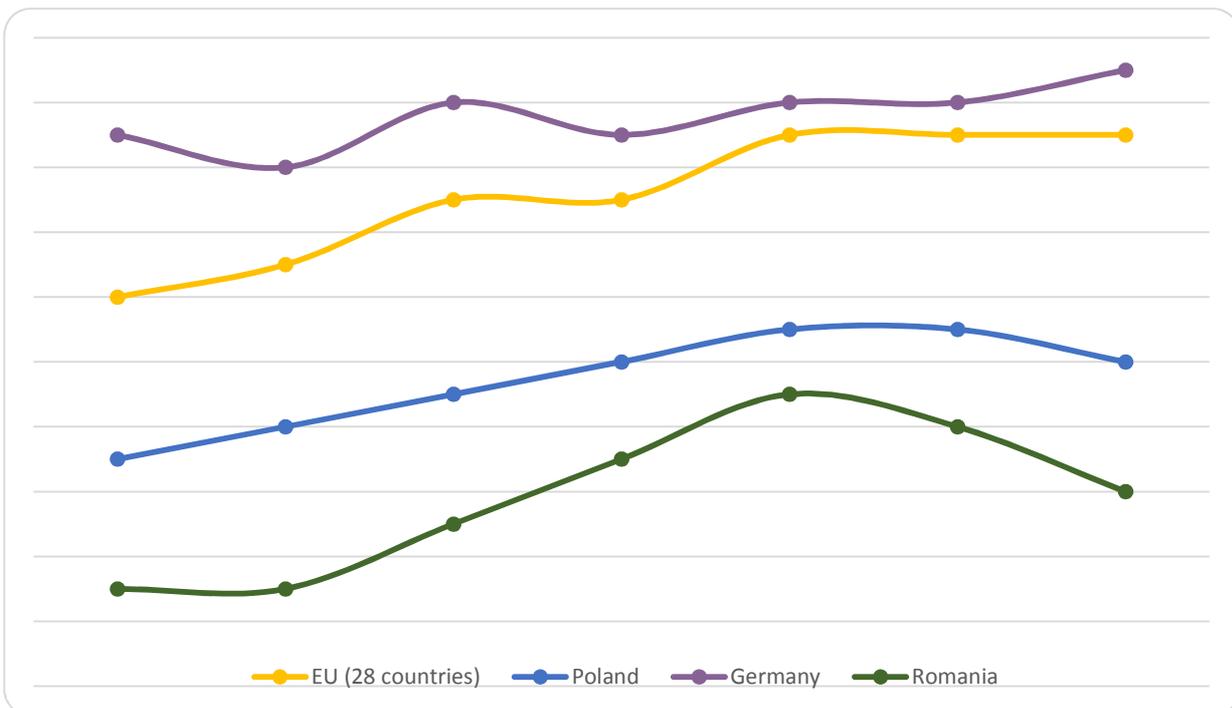
**Figure 3: Methods of finding employees in 2014 (by %, multiple answers allowed)**



Source: Kocór et al. (2015).

Despite growing interest in using OJVs among employers, the interest in searching for a job online is lower. According to Figure 4, less than 10% of Poles used the Internet to look for a job in 2016. This is below the EU-28 average (17%). An individual’s level of education is correlated with increased use of the Internet for job searching. While less than five percent of individuals with no or low formal education job search on the internet, for individuals with high formal education internet job search is close to EU-28 average (17%) (cf. Eurostat 2017). This could suggest that the types of jobs posted online target educated/skilled individuals and/or that educated/skilled individuals have greater access and ability to use the Internet for job search.

**Figure 4: Internet use: Job-search or sending an application, all individuals (%)**



Source: EUROSTAT ICT Survey of Households and Individuals [isoc\_ci\_ac\_i] (downloaded on 11 January 2017).

The year 2014 marks an important threshold in the development of the OJV market in Poland. In August 2014 the new version<sup>11</sup> of the Central Base for Job Offers (CBOP)<sup>12</sup>, managed by the Ministry of Family, Labour and Social Policy, was launched. This base aggregates offers from all local PES in the country onto one portal (Ministry of Family, Labour and Social Policy 2014).

There are a number of laws that regulate the job vacancy market. First, there are general rules stemming from EU laws: job offers cannot discriminate based on gender and age. Second, in the case of vacancies in public administration, there are a number of requirements, including:

- job announcements must be posted on the website of the administrative unit – such announcements are also immediately posted on CBOP;
- job offers from public universities must be posted on a special web page managed by the Ministry of Research and Higher Education<sup>13</sup> (E6);
- A candidate for a position in Polish administration must have Polish citizenship and a clean criminal record.

Additionally, employers must pay a special tax for the Public Fund for the Rehabilitation of Disabled Individuals<sup>14</sup> (PFRON). This tax is obligatory for every entity that employs 25 or more workers and for which the ratio of disabled employees to non-disabled employees is smaller than 6% (E4). Therefore, some of the job announcements, especially in the case of public administration, contain information on some preferences for disabled candidates (i.e. that disabled candidates are welcome to send applications for this position), as employing at least 6% disabled workers is incentivised.

The total number of online vacancies available in Poland is not easy to determine, as various sources claim a different total number of vacancies in Poland (on the Internet as well as in total) and because there are conflicting reports as to the percentage of employers that post jobs to the Internet. According to the most recent data from the Eurostat ICT survey of Households and Individuals (Eurostat 2017), 41% of Polish employers posted job announcements online in 2016. Yet, according to one of our experts, the penetration of OJVs among the total share of vacancies in Poland is higher; out of approximately 3.5 million new job offers in 2016, approximately 60% (2.1 million) are said to be available on the internet (although many are additionally advertised through a number of different channels, E7). In their report, The Adzuna Company (an operator of a secondary job-portal, which scrapes OJVs from all portals in Poland) announced that in 2016 there were approximately 5.53 million Polish job announcements on the Internet, but many of the offers may have been counted more than once (Woncisz 2017).

The market of OJVs consists of the public provider (CBOP) and private providers. CBOP connects all local PES offers in one place and is linked with the EURES service. This platform provides information on job offers, apprenticeships, internships and special employment programmes for potentially marginalised groups (mostly for disabled people, but also for long-term unemployed and young workers). The job announcements posted on CBOP usually contain very brief information on job requirements and the contact information of a PES consultant. Remuneration is also usually posted on CBOP (E6), but it is rarely posted on private portals (E1). Employers who uses the ser-

<sup>11</sup> Before that period, the system of public OJVs was more dispersed and poorly coordinated: albeit the central base existed, it was not well-connected to regional PES. Therefore, basically each of the regional and local labour office worked online separately.

<sup>12</sup> In Polish “Centralna Baza Ofert Pracy” (CBOP), available at <http://oferty.praca.gov.pl>.

<sup>13</sup> <http://www.bazaogloszen.nauka.gov.pl/>.

<sup>14</sup> In Polish “Państwowy Fundusz Rehabilitacji Osób Niepełnosprawnych” (PFRON).

vices of CBOP try to screen/filter the applications<sup>15</sup>. This screening approach is a relic of an earlier era in which the employer was in a strong position; there were many candidates for each job, and so employers needed efficient ways to sort through applications. Because of demographic changes and resulting labour shortages as well as the declining unemployment rate, job seekers are now in a position of greater strength. As a result, new trends are arising on CBOP. For example, more ads are providing direct contact to the employer organisation. Not only are employers screening candidates, but job seekers are also sorting through employers to find the positions that best suit them (cf. E4, E5).

Although CBOP is linked with the EURES database, there is no significant cooperation between CBOP and private OJV platforms. The private providers and intermediaries are not allowed to scrape vacancies from CBOP database or post them on their own portals. Therefore, most of the OJVs posted on CBOP and on the private provider's web portals do not overlap, unless employers purposefully post a job to multiple channels.

The top four private OJVs players in 2015 were goldenline, olx.pl, pracuj.pl and LinkedIn.com (see Figure 5). Together they claimed 6.1 million users, which accounts for 44% of the total number of users across Polish OJV portals<sup>16</sup> (keeping in mind that some users may be registered to multiple sites). The OJV providers can be divided into some major categories, namely:

- Vertical portals (vortals): these are providers who specialise only in job announcements. Vortals include portals that operate only on the Polish market as well as large multinational providers. The most popular players from this category include: pracuj.pl, gowork.pl, indeed.com, infopraca.pl, praca.pl, jobrapido.com, wyszukajprace.pl, nuzle.pl, jooble.org and monsterpolska.pl.
- Horizontal portals: more general portals, including multinational providers and Polish-specific providers). Most offer various thematic sections and include a subcategory labeled "job offers". Some of these are the typical online marketplaces like olx.pl or gumtree.pl, while others are news portals (Polska Press<sup>17</sup>) or a combination of news portal and news and web hosting, email and search engine portals (gazeta.pl, interia.pl, Wirtualna Polska/wp.pl). These are important actors in the OJV market, especially for blue-collar workers.
- Employment-oriented social networking services – like the global player LinkedIn and the national actor GoldenLine (Stefaniak 2016).

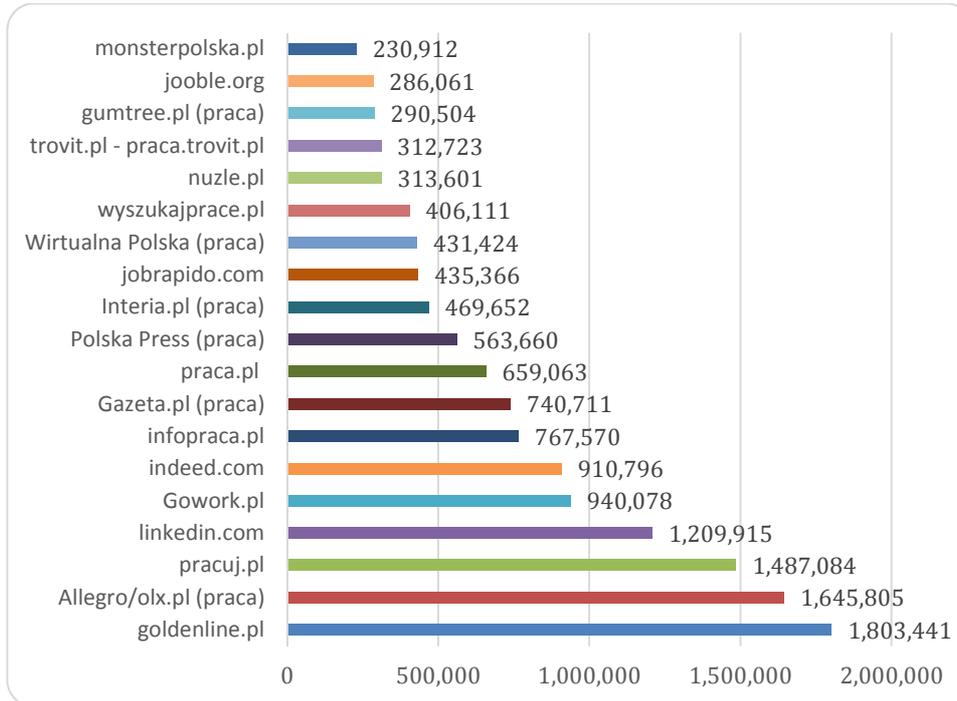
Additionally, the PES portal CBOP covers mostly blue-collar/semi-skilled jobs, as these are the dominant OJVs posted by the PES (E5). Most of the experts were unaware of the link between the

<sup>15</sup> Many of the employers want to screen the applications from the PES in order to save time. In fact, many of the "candidates" at the PES are only registered as officially unemployed in order to get the health insurance, but work illegally. Such persons are obliged to appear at the interviews for the job in order to maintain unemployed status, but from the perspective of the private firm they just constitute a burden for HR officers.

<sup>16</sup> As for December 2015, the Megapanel methodology identified „Internet user" as an individual who at least once in a month entered at one web page in the Internet. Moreover, a user is as a person using one device at a given time, therefore – for instance - one person using tablet and smartphone to check job offers online can be counted twice. According to the Megapanel study, in December 2015 there were 24.4 million Internet users in Poland, out of which 13.9 million users entered one of the OJV portals. This does not necessarily mean that a market for OJV is 13.9 million – rather we should understand it as 13.9 million individuals who at least once have entered a job portal in this month. Consequently, this number is based on a very inclusive definition of OJV users.

<sup>17</sup> Polska Press is a holding, which belongs to Verlagsgruppe Passau and owns 20 regional newspapers and internet portals, including gratka.pl (announcement website, with a category of job announcement – currently approximately 14,000 job announcements). This player was included in this ranking, but due to diversified outlets and no single platform for OJVs, this player was excluded from content analysis (WP3).

CBOP and EURES platforms. Moreover, most of the private employers are completely unaware of both the CBOP and the EURES databases, as the opinion about PES usefulness and effectiveness is rather low, especially among large companies (E3). As a result, the stock of OJVs on the PES portal does not tend to come from larger, private employers, but rather from smaller employers who have lower budgets for recruiting and therefore benefit from the free OJVs available on the PES.

**Figure 5: OJVs private providers by number of users<sup>18</sup> (2015)**

Source: Megapanel (2015) (downloaded on 20 April 2017).

The job portals usually cover different sectors of the labour market. For instance, indeed.com and gowork.pl specialise in job offers abroad, although they also cover the Polish market. These are mostly blue-collar/semi-skilled jobs, typically caregiver work with the elderly in Germany or the Netherlands or construction work in Norway. The OLX-portal also focuses on blue-collar jobs, but mostly on the Polish market. As of May 2017, the OLX portal was the largest site in terms of the numbers of job offers displayed (125,000 OJVs) and the number of registered job seekers (57,000)<sup>19</sup>. A new trend on OLX is the introduction of job offers in the Russian language directed toward Ukrainian employees. The portal has recently opened a platform dedicated to Ukraine, on which Polish employers can also post their announcements (E7).

By contrast there are also portals dedicated to skilled/white-collar jobs. The biggest players are pracuj.pl (national operator, 42,000 OJVs –24 May 2017) and LinkedIn (multinational firm, 101,000 OJVs). Both of these portals post similar job offers, with the IT and financial sector as the most popular (see the detailed description of pracuj.pl annual report in next paragraph). The most notable difference between these two portals is their usefulness in the recruitment of top-management specialists. One of the experts has indicated the dominant position of LinkedIn in this regard. There are also portals that post a mix of blue-collar and white-collar jobs (gazeta.pl or infopraca.pl) (E7).

<sup>18</sup> The user is a person who at least once in a month has entered the given Web site. Please remember that this number can include multiplications of the same users: the same person who entered for instance pracuj.pl on her PC at home, then on her smartphone while travelling to work and finally on her laptop at work will be counted as 3 different users.

<sup>19</sup> This number is very different from the number of users displayed on figure 15, but comprises real users who have created their account in the system, and not all incidental entries from Internet.

**Table 5: The Number of OJVs on Top Portals as of May 2017**

Portal Name	Portal type	Number of OJVs (May 2017)
OLX	Blue-collar/semi-skilled portal	125,000
Pracuj.pl	White-collar/skilled national-level portal	42,000
LinkedIn	Multinational social media site	101,000

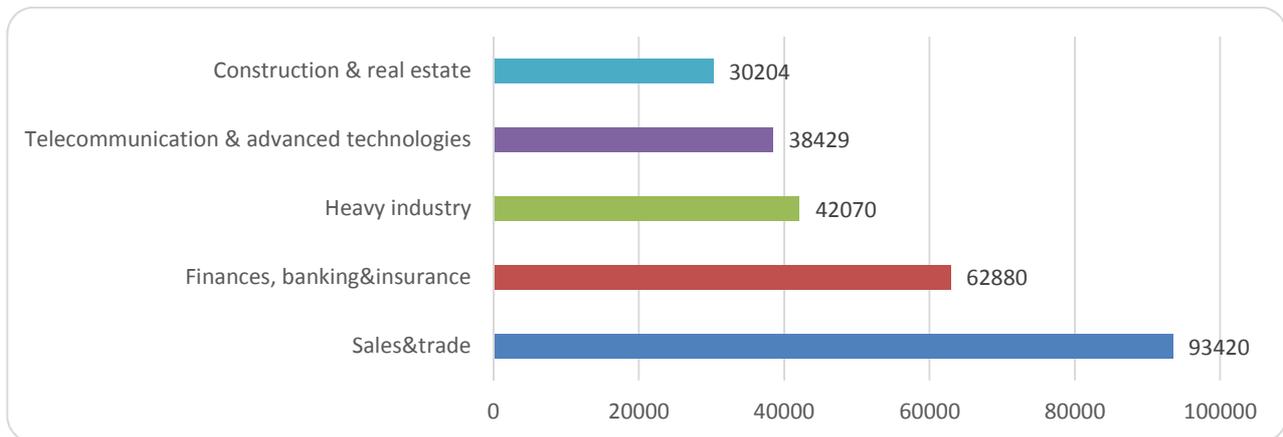
Source: Brzozowski (May 2017).

Most portals provide announcements of vacancies in the Polish language. Yet, increasingly in the skilled professions, the English language is becoming dominant, particularly on many job offers posted on pracuj.pl or LinkedIn. Posting a job offer exclusively in Polish has become a recruitment strategy, as it enables employers to filter the potential candidates to more highly educated individuals based on the knowledge of the English language. It also facilitates the recruitment of foreign workers (this situation is visible in the B2B sector in Kraków, but also in Warsaw, Poznań and Wrocław). On the other hand, in the market for semi-skilled professions, especially in the construction sector, the Russian language is also becoming an important alternative. Most of these announcements are directed either to Ukrainian workers or Moldovan workers. The announcements in Russian are mostly found on the OLX portal and the gumtree portal, which specialise in blue-collar OJVs.

## 4. Use of OJVs in Recruitment and Job-search

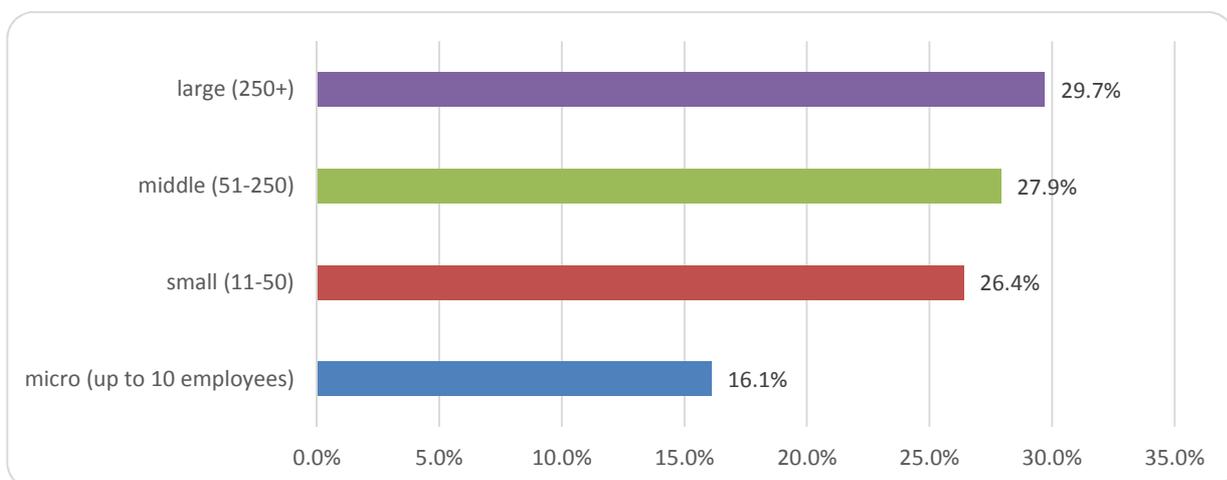
As described in the previous sections, the OJV market is structured into two major sectors: blue-collar or semi-skilled occupations (for instance: construction work, simple service work like cleaning) and white-collar or skilled work and specialised positions (for instance: IT workers, finance specialists). In terms of the white-collar sector, detailed reports have been provided by one of the key players, pracuj.pl. According to the report, in 2016 a total of 486,000 OJVs were posted on the pracuj.pl portal, an increase of 12% over 2015. The top sectors for skilled occupation vacancies were telecommunication and advanced technologies, heavy industry, finances, banking and insurance, as well as sales and trade (see Figure 6). Consequently, the most popular job offers were directed to sales and trade specialists (180,000 OJVs), client consultants (102,000), IT specialists (77,000) and financial specialists (68,000) (cf. Pracuj.pl, 2017a).

**Figure 6: Top sectors by OJVs in 2016 on pracuj.pl**



Source: Pracuj.pl (2017a). (downloaded on 30 April 2017).

**Figure 7: OJVs by firm's size on pracuj.pl in 2016**

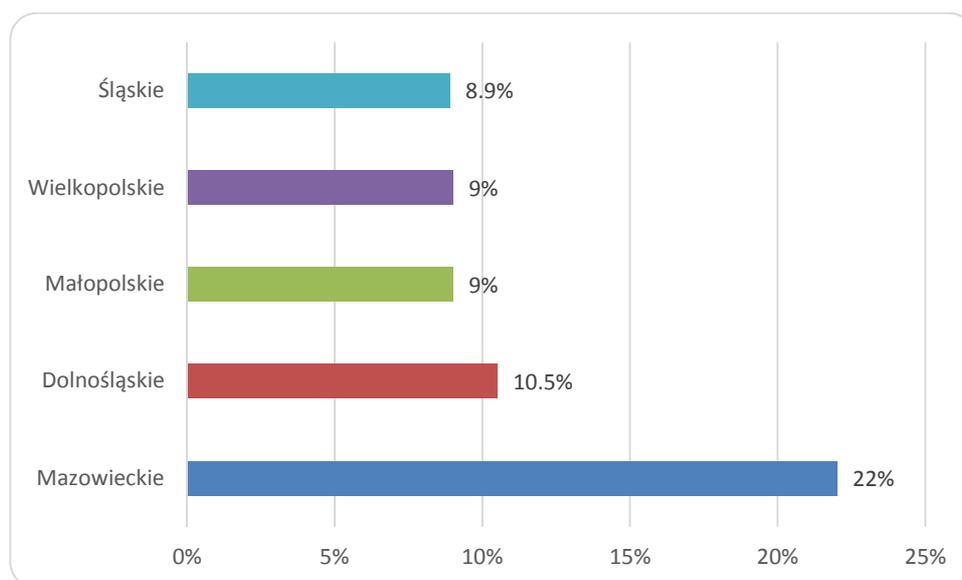


Source: Pracuj.pl (2017a) (downloaded on 30 April 2017).

The biggest companies accounted for the largest share of OJVs (29.7% of announcements on pracuj.pl, see Figure 7). Together with mid-size firms (27.9%), they accounted for more than a half of all job offers.

Analysing the geographical distribution of OJVs in the white-collar sector, one can see a clear predominance of administrative regions, which include major cities. The largest share is posted for jobs in Mazowieckie voivodeship, the administrative region in which Warsaw is located (22% of announcements), followed by Dolnośląskie, where Wrocław is located (10.5%), Małopolskie, where Krakow is located (9%), Wielkopolskie, where Poznań is located (9%) and Śląskie, where Katowice is located – 8.9%, cf. Figure 8). Those five regions from central (Małopolskie), Western (Wielkopolskie and Dolnośląskie) and southern Poland (Małopolskie and Śląskie) accounted for 59% of all OJVs for skilled occupations in the country, while the working age populations for these five regions only accounted for about 50% of the working age population of Poland, indicating that the OJV market is somewhat skewed towards these regions. Mazowieckie and Dolnośląskie voivodeships have particularly strong OJV presences, as they account for around 13.7% and 7% of the working age population, respectively, yet their percentage of OJVs is much higher. By contrast, Śląskie, which has the second largest working age population at approximately 11.8%, is somewhat underrepresented in the OJV market (GUS 2017).

**Figure 8: OJVs by firm's size on pracuj.pl in 2016**



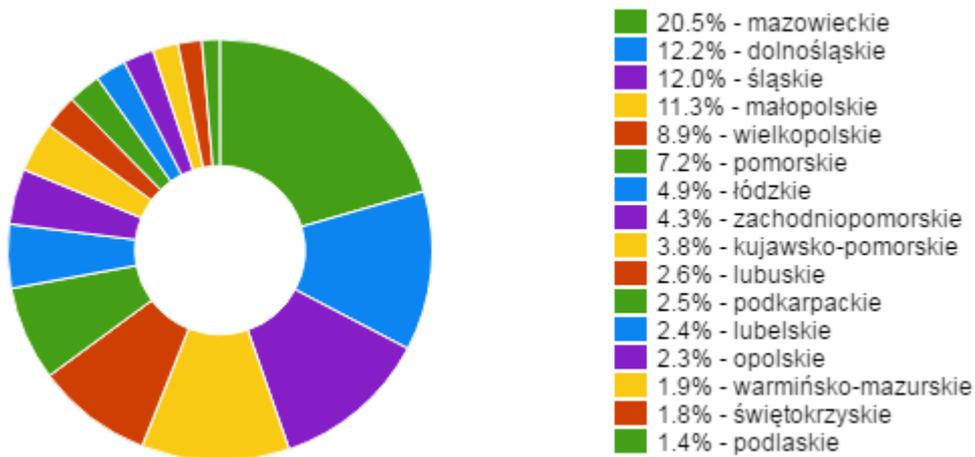
Source: Pracuj.pl (2017a) (downloaded on 30 April 2017).

A similar picture arises from the report by Adzuna, the operator of a secondary online job portal collecting job announcements from other providers (currently 250,000 OJVs –25 May 2017). According to this report, the regions with the largest number of OJVs were Mazowieckie, Dolnośląskie, Małopolskie, Śląskie, Wielkopolskie and Pomorskie. This is most likely caused by the high level of economic development in these regions. Compared to the pracuj.pl report, the general market in OJVs, including both white-collar and blue-collar positions, also includes Pomorskie voivodeship (with Gdańsk as the capital and other important cities such as Gdynia and Sopot) as one of the most important regions. The dominant position of Mazowieckie and the Warsaw capital region were confirmed, as in this region there were 830,000 online job announcements in 2016, 15% of the total 5.53 million OJVs for that year, still somewhat proportionally larger than the working age

population (13.7%). The largest number of announcements was posted in January, followed by the summer months, June and July, and finally October and November.

According to data collected from the Adzuna website, in May 2017 there was still a clear domination of Mazowieckie (20.5% of announcements), followed by Dolnośląskie, Małopolskie, Śląskie, Wielkopolskie and Pomorskie. At the time this report was written those six regions accounted for almost three quarters of the OJVs in the country (72%, Figure 9).

**Figure 9: OJVs by region, 25 May 2017 on adzuna.pl**



Source: adzuna.pl (25 May 2017).

All of the respondents interviewed in this study have declared that the OJV market will grow at the expense of the traditional non-electronic market. Yet, the predictions of how this market will evolve yielded a rather bleak picture. One of the experts has predicted the consolidation of the online job portal market, as the costs of recruitment are steadily increasing and employers would prefer to “bet on one horse only” in order to cut costs (E7). On the other hand, one expert indicated a potential niche that could be filled by new players. The traditional operators and OJVs portals have technological features which are oriented towards the employer, not the employee. In the current situation in which the employee is becoming an increasingly attractive asset, and there is a serious shortage, the portals may begin to give greater consideration to the interests and perspectives of the job seekers. Such technological changes could include “tailoring” job offers for individual job seekers based on the CV they upload to a portal. This service is already included by some of the players, but not by all (E2).

## 5. Identifying Online Job-portals for Web-crawling

The desk research and interviews carried out between April and May 2017 have developed a coherent picture of the OJV market in Poland. The top 4 private OJVs players in 2015 were gold-online, olx.pl, pracuj.pl and linkedin.com (see Figure 5). Together they had 6.1 million users, which accounted for 44% of the OJV market. Additionally, there is a public portal CBOP (described in the previous section), which covers mostly blue collar/semi-skilled jobs. This report documents the activities conducted in order to identify the most relevant online job portals. Moreover, it provides a description of two cases:

- CBOP: available at <http://oferty.praca.gov.pl> and managed by the Ministry of Family, Labour and Social Policy and connected to public employment services;
- pracuj.pl: a leading private operator of OJVs, a portal mostly dedicated to skilled/white-collar jobs.

The process of drafting an OJV to these two portals, including main characteristics of the OJVs, templates and the process of posting to the portal have been described.

### 5.1. Documentation of the Job-portal Research Process

The selection of job-portals was determined in two ways: through Google searches and through the information collected during the in-depth interviews with the relevant experts. Table 5 documents the results of the internet search using the Google search engine. Please note that we only included the first three pages of Google search results. Moreover, as many portals appear more than once, multiple hits have also been excluded. Furthermore, the regional PES and other specific PES sites (for instance, [mbopn.kuratorium.waw.pl](http://mbopn.kuratorium.waw.pl) – portal for teacher’s vacancies in Mazowieckie region) have been also excluded, as their offers are also included in CBOP. The OJV portals for work abroad were documented in the search results, but excluded from further analysis of the content, as they indicate potential skill shortages in other countries besides Poland, whereas we are interested in identifying portals that advertise jobs available in Poland. The foreign-only OJVs are marked in red in the table.

**Table 5: Grid for documenting the Google search for job-portals**

Search 1	Search term “praca oferty” (26/06/2017)	English translation: “job offers”
	Number of results per search term: 15	GazetaPraca.pl; Praca.pl; pl.indeed.com; pracuj.pl; praca.money.pl; infopraca.pl; oferty.praca.gov.pl (CBOP – PES); www.olx.pl/praca; www.gumtree.pl/s-oferty-pracy; monsterpolska.pl; goldenline.pl; praca.gratka.pl; jobs.pl; pl.jobrapido.com; pl.jooble.org
Search 2	Search term “szukam pracy” (26/06/2017)	English translation: “looking for a job”
	Number of results per search term: 25	gumtree.pl; www.olx.pl/praca; praca.pl; krakow.lento.pl > Praca; oferty.praca.gov.pl (CBOP- PES); pl.indeed.com; nuzle.pl; praca.gratka.pl; ogloszenia.krakow.pl/praca.szukam; izbalekarska.pl/ogloszenia/szukam-pracy; bialystokonline.pl > Ogłoszenia drobne; oia.krakow.pl/pl/ogloszeniaszukam.html; praca.suwalki.info; poloniusz.pl; pracuj.pl; 24opole.pl > Ogłoszenia > Praca; praca-za-granica.pl; ogloszenia.trojmiasto.pl > Ogłoszenia > Praca; gazetapraca.pl; pl.jobrapido.com; ogloszenia.trojmiasto.pl > Ogłoszenia >

		Praca; pracujwnii.pl; ottoworkforce.pl/szukam-pracy-za-granica; kidl.org.pl > Ogłoszenia; www.krosno24.pl/ogloszenia.php.
<b>Search 3</b>	Search term “praca” (26/06/2017)	English translation: “job”
	Number of results per search term: 27	praca.pl; www.olx.pl/praca; pracuj.pl; www.gumtree.pl/s-oferty-pracy; praca.gratka.pl > Praca; gazetapraca.pl; pl.indeed.com; praca.money.pl; infopraca.pl; praca.trojmiasto.pl; nuzle.pl; ogloszenia.infoludek.pl/ogloszenia/kategorie/short/praca.xhtml; gowork.pl/praca; praca.bielsko.pl; bialystokonline.pl > Ogłoszenia drobne; lento.pl/praca; goldenline.pl/praca; monsterpolska.pl; crewing.portalmorski.pl/oferty-pracy; simply-market.pl/praca; wroclaw.pl/praca; 4programmers.net/Praca; mojabraca.pl; oferty-mcdonaldspraca.pl; ino.online/praca.php; slubice24.pl > Ogłoszenia; pl.jobrapido.com.

Source: Brzozowski (June 2017).

Based on the Google searches, the following 16 job-portals were chosen for content analysis: pracuj.pl, gumtree.pl, olx.pl, monsterpolska.pl, infopraca.pl, praca.pl, money.pl, jobs.pl, pl.indeed.com, Gratka.pl, nuzle.pl, gazeta.pl, CBOP (Centralna Baza Ofert Pracy – PES), jobrapido.com, gowork.pl, and goldenline.

Additionally, two global aggregators (i.e. job portals which collect OJVs from other portals) were added, based on the knowledge of the author (Adzuna and jobtome). These two portals are not well-positioned in Google, because they are relative newcomers to the Polish market. They have been included for two reasons: first, they are multinational companies which are present in most EU countries; second, they aggregate data from other sources, which make them relevant for this project. Moreover, the Adzuna portal provides useful analyses of the OJV market, which have been used in WP3 report.

Finally, one additional portal, LinkedIn, was added, although it was never present in Google search results. Almost all of the surveyed experts (E1, E2, E3, E4, E6, E7, E8), indicated that LinkedIn is one of the leading portals, especially for recruiting highly skilled positions.

This list of 19 job-portals was validated by two experts (E2, E3). One of the experts (E3) suggested an additional job-portal, jooble.org. This portal had been previously identified but unintentionally omitted by the author. It was added back in, bringing the final list of total selected portals to 20: pracuj.pl, gumtree.pl, olx.pl, monsterpolska.pl, infopraca.pl, praca.pl, money.pl, jobs.pl, pl.indeed.com, Gratka.pl, nuzle.pl, gazeta.pl, CBOP (Centralna Baza Ofert Pracy – PES); jobrapido.com, gowork.pl, goldenline, adzuna, jobtome, LinkedIn and jooble.org. This list of portals was compared to the list provided by Sidorkiewicz and Tokarz-Kocik (2017) in their recent research on the skills demand in the OJV announcements, but no major disparities were found. Therefore, the author believes that the current list of job portals is fully representative for the Polish OJV market.

A detailed description of selected portals is provided in the Appendix. Twelve portals are categorised as primary job-portals. Four portals combine the characteristics of primary portals with some secondary functions. Our list includes only four secondary job portals (aggregators). The inclusion of the aggregator portals might be problematic, as some of the primary job-portals (including the most popular white-collar portal pracuj.pl) do not cooperate with secondary portals like Adzuna or jobtome (E8). The number of vacancies on the portals depends on the type of operator and on sectoral specialisation. For instance, the most popular primary portal for white-collar jobs, pracuj.pl, hosted 42,418 OJVs as of June 2017, while the most popular portal for semi-skilled/blue-collar jobs, OLX, hosted 123,579 OJVs. Some portals cannot be used to assess the real demand for jobs in Poland, as they combine national and international offers – the most typical examples of such

include money.pl and gowork.pl. In the case of the language used in OJVs, as previously mentioned in Section 3, OJVs for specialists are often written in English, because the use of a foreign language works as a first screening tool. A relatively new trend is the use of Russian, for blue-collar jobs such as household/care services, construction work etc. These offers are mostly directed to Ukrainian immigrants, whose importance for the Polish labour market has increased in the past two years (see WP1 report for further explanation).

As the OJV market in Poland is highly segmented, an obvious area of interest for this project is the activity on secondary job portals, described in Polish terminology as “aggregatory” (aggregators). The most popular ones (in terms of Google hits) are money.pl and jobtome, while the biggest number of offers is available on Adzuna (297,000 OJVs for 17 June 2017). Still, in terms of potential for web scraping, such engines suffer from a number of limitations. The first limitation is technical: most of the ads from money.pl, jobtome and Adzuna are simply taken from other portals without copying the content. Therefore, when opening such ads, the client is redirected to the original offer, posted either on the company’s website or on the primary job portal. The second issue is of a more delicate matter, as it is connected to legal framework. For instance, the representative of a major white-collar job portal (pracuj.pl) clearly stated in the interview that their company is not cooperating with any of the secondary job portals. Moreover, they expressed reservations about the possibility of posting information on such vacancies elsewhere, as it violates the formal agreement between employer and job portal, for instance by the usage of company’s logo, which is regulated by the law. Yet, my investigation has shown clearly that the OJVs posted by pracuj.pl were available on at least one of the aforementioned secondary portals.

## 5.2. Conditions for Drafting and Posting OJVs in the Selected Job-portals

For this exercise, two portals have been selected: the PES CBOP portal and the private pracuj.pl.

### 5.2.1. Drafting and Posting an OJV on the PES Online Job-portal

CBOP is a PES portal launched in 2014 and managed by the Ministry of Family, Labour and Social Policy. It hosts all the OJVs which are crafted by regional and local public employment offices (mostly from PUPs – Powiatowe Urzędy Pracy – Poviats Employment Offices, a second-level unit of local administration, corresponding to former NUTS-4 classification). Additionally, public administration jobs at the central level are posted here along with the offers from the Voluntary Labour Corps (Ochotnicze Hufce Pracy), a public agency supervised by the Ministry of Family, Labour and Social Policy, which is responsible for employment and training of young persons at risk of unemployment, or socio-economic marginalization. Moreover, CBOP hosts international job offers from the EURES network (E9): such offers are usually translated into Polish by the employment units of voivodeships, the biggest regional administrative units in Poland

As of 28 June 2017, the portal included 42,823 job offers, among which 36,172 were provided through the PES. The remaining approximately 6,000 announcements were available through direct contact with the potential employer. On the same day, CBOP had a total of 105,638 vacancies, indicating that in many cases the job offer includes information on more than one job vacancy.

The template for CBOP includes the following features:

- Whether the job specifies an interest in recruiting a foreigner (if so, various conditions apply);

- Whether the PES should preselect the candidates and inform those who apply about the conditions of the interviews. An applicant can, in that case, be instructed to provide his/her contact information;
- Detailed information on employer (name, address, fiscal number, registration number);
- Contact person for the job and the form of contact (e-mail, phone etc.);
- The legal status, sector of the economic activity of employer, number of employees;
- Whether this is a job posted by a temporary job agency on behalf of an employer;
- Job title (structured – to be chosen from drop down list);
- Job position;
- The number of vacancies including potential information on special vacancies for handicapped persons. Additionally, the applicant can indicate how many candidates can be pre-selected by the PES for an interview (this is left over from the period in which the employer had the upper hand in recruiting);
- Information about the work to be performed: place of work (detailed address, structured info), contract (full time, contract work etc., structured info), timeframe, workload (structured 1/1, 1/2, 1/4, 3/4 other – please specify), working hours, working time system (structured; for instance, if work is on time shifts), information if work is needed on Sundays and holidays (structured), pay system (structured), offered pay, date when work can be started (structured), information if work is temporary (structured);
- Requirements: level of education (structured, drop-down list of skills required; if specific skills are required, the employer can either choose from a drop-down list or write specific requirements in a text box), certificates required (if specific certificates are required the employer can either choose from a drop-down list or write specific requirements in a text box), information on foreign language proficiency (structured), information on professional experience (years and months), other requirements (free text), description of job activities and obligations (free text);
- Additional statistical reporting – if an applicant wants to know how many registered candidates at PES fulfil such criteria (structured) or some more refined help in candidates' search should be offered (free text);
- How long the job offer is valid (structured) and on the desired intensity/frequency of contacts with the PES (free text), whether it is of a special interest to candidates from European Economic Area, whether the offer should be also placed in other PES (If yes, please specify – structured);
- Consent to publish the name of the employer online;
- If EEA (i.e. non-Polish) candidates will be considered additional information is required: Information on Polish language proficiency requirements; information on the language of documents that should be submitted in application; information whether the accommodation; whether meals or costs of transport will be covered partially or fully by the employer (free text); a list of countries where the offer should be advertised through the EURES network;
- Other important information (free text).

Completed templates are then sent to the relevant PES, where they are checked for consistency and relevance. For instance, the PES must verify that the offer does not use discriminatory language, according to Polish law. The PES also verifies the existence of the employer. Once these two steps have been carried out, the OJV can be posted to CBOP.

### 5.2.2. Drafting and Posting an OJV on a Private Online Job-portal

Pracuj.pl is one of the most important job portals for specialists, particularly for white-collar occupations. As of 28 June 2017, the portal hosted 41,341 OJVs in Poland and 1,061 abroad, with a clear dominance of OJVs in central Mazowieckie voivodeship (9,844 OJVs), where the capital Warsaw is located, followed by Dolnośląskie (4,485 OJVs), Małopolskie (3,954 OJVs) and Wielkopolskie (3,653 OJVs). The most typical and simplest job offer costs 427 złoty without VAT tax (approximately EUR 100). The template for this standard job offer posts an OJV to one region only and is valid for three weeks. Standard OJVs contain the following elements:

- The name of the job position (textual);
- The name of the company (there is an option to hide the name for an additional fee, in which case the OJV contains info on “hidden recruitment”);
- Place of the work (country, city, address – structured);
- E-mail address where the applications will be sent;
- Language of the advert (Polish or English and other - structured);
- Company description (free text);
- Job position description (free text);
- Requirements for the position (skills, experience etc. – free text);
- What the employer is offering (information on pay, type of contract etc. – free text);
- Information on required documents (CV, motivation letter, scanned certificates etc. – free text);
- Provision information on consent to use personal data from CV in recruitment process and further data administration;
- Categories of job positions (structured: HR, sales, marketing, insurances etc., includes subcategories if needed);
- Level of the position (structured: from internship to a director);
- Detailed information box – if marked, then the information on: form of employment (structured drop down list), expected pay (structured), education (structured), experience (structured), knowledge of foreign languages (just tick box option, without specifying the level of proficiency), key words (free text);
- Additional options for positioning the advert and extra graphic design (additional fees apply).

The more refined version (Business Level) costs 499 złoty without VAT (approximately EUR 120) and allows the employer to post either three ads in one region each or to post one ad in three regions. A single ad can advertise in up to two sectors, so, for example, one ad can be posted for both an accountant and a lorry driver. Additionally, there are some positioning advantages, so the ad will be more visible. These ads are also only active for three weeks (21 days). The premium ad class (Business Plus) costs 799 złoty without VAT (almost EUR 200). With this premium package the employer can include the same amount of information as with the Business Level ads (three job offers or three regions, and up to two sector categories), but it includes better positioning, use of the company’s logo, and the ad is visible for 37 days.

### 5.3. Contacting the Online Job-portal Owners

We contacted the owners of the 20 selected online job-portals to inform them about the planned scraping activities and to ask them whether it would be possible for them to provide direct access for CRISP IT specialists to extract data. The representatives of OJV portals were contacted using

the electronic form<sup>20</sup> provided on their websites. The providers were contacted between 24 June and 1 July 2017. Unfortunately, the private portals either did not respond or they responded negatively. In the case of CBOP public portal, however, the response was very positive – privileged access has been granted to CRISP in order to scrap the data.

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<sup>20</sup> In many cases there was no e-mail provided on the portal, just an electronic form for contact.

## 6. Format and Content of OJVs

Most OJV portals seem to include a similar baseline of information, which makes them a potentially valuable source of labour market data (E6). The typical content includes information on the position, company/employer, city where work should be performed, region, date when the announcement was posted and for how long the offer is valid. Yet, the additional content and format of OJVs can differ greatly depending on the portal, sector and employer.

### 6.1. Legal/Regulatory Framework

The first factor that influences the content of OJVs is the legal framework. There are no special regulations on job announcements posted on the internet, however there are some laws that influence the behaviour of employers who are looking for new workers. The first obvious rule which applies to all EU countries is the prohibition of discriminatory wording or content based on age, gender, religious and ethnic origin of the candidate (E5). Some portals provide information about anti-discrimination policies when the template for the job announcement appears. Secondly, there is a special tax for the Public Fund for Rehabilitation of Disabled Individuals<sup>21</sup> (PFRON). This tax is obligatory for every entity that employs 25 or more workers with a ratio of disabled employees is below six percent. Some job announcements, especially in public administration, contain information on some preferences for disabled candidates.

Public administration units have much more rigid hiring rules or requirements than the private companies: the candidate needs to have Polish citizenship and must provide a document proving the person seeking employment is not convicted of a crime (E4). Finally, the vacancies in public administration have to be posted on BIP (the Bulletin of Public Information), a special section on web pages of each institution. Through this system they are automatically added to CBOP. Moreover, as the job positions in public administration usually have wage grids, such OJVs have usually a similar structure and contain the information on wages, which is not as often the case in OJVs from the private sector (E6).

### 6.2. Format of OJVs

In most cases, the job announcements made by the PES contain only basic information on the job position, place of work, and basic requirements such as working hours, type of contract, etc. The section on required skills is rather short, as the candidate has been traditionally expected to come to the PES office in person to learn more about the jobs. The traditional approach was that the consultant from the PES received all relevant information from the employer, and such information on the position was only given to the candidate during the personal visit in the office. In such a case, the employer had higher bargaining power and could control the entire process.

OJVs are also influenced by the size of the company that posts the announcement. There is a growing trend among large, usually multinational companies to develop their own dedicated templates or layouts for OJVs, which are visually distinctive. Such announcement not only contain information on the job position, but also on the company's activities, values and expectations. Some-

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<sup>21</sup> Państwowy Fundusz Rehabilitacji Osób Niepełnosprawnych (PFRON).

times these announcements are even complemented with a short video presenting the company as an attractive, dedicated, friendly and sustainable employer, a result of an employer's branding strategy. In the announcements, large companies also include additional, non-financial incentives for workers, such as leisure and sport packages such as a special club card that enables use of gyms, swimming pools and other sport facilities; private health insurance, etc. (E1). Ads posted by the SMEs are usually much more modest.

### 6.3. Content of OJVs

The most significant differences in terms of OJV content are visible between the white-collar portals (pracuj.pl, goldenline, LinkedIn) as compared to the blue-collar portals (OLX, gumtree, CBOP). The blue-collar portals generally have less developed structures. For example, the biggest private provider on the market (OLX) does not offer a structured template. Sometimes the ads contain one sentence describing the job/position, sometimes even with orthographic errors. For instance, one of the job announcement for a hairdresser position posted on the OLX portal on 16 June 2017 it simply says: "I will hire hairdressers for male and female clients in a fast-growing hairdressing salon in Olsztyn (city in northeastern Poland). Good employment conditions and nice working atmosphere. More information about us on [the Web address] or on Facebook". A similar announcement can be found on the gumtree portal on 16 June 2017: "A popular café on Szczepański square [author's remark: a square in historical centre of Kraków, a city in southern Poland] is looking for confectioner. We offer a full-time contract, flexible working hours (2/2 system or 5 days a week in the morning or in the afternoon) and a high salary. We offer a job in a young team and cultural working atmosphere". Such typical announcements do not contain any information on formal skills and competences required from the candidates. Yet, this may change in the coming years, as it is becoming challenging to find blue-collar workers. Moreover, the offers for blue-collar jobs on the internet are expected to change and improve in terms of content.

The OJVs for semi-skilled jobs contain information on formal requirements, such as driver's licences for specific categories of vehicles, certificates, completed courses and working experiences. Paradoxically, more formal announcements are more frequent on the CBOP, a platform operated by PES, than on the private platforms for blue-collar work (E6). This is the result of the changing employer/employee dynamics. When the employers had a stronger position, initial screenings for jobs posted to CBOP were made in the PES, and only the best candidates were sent to a job interview with the employer. But, due to labour force shortages, the employers who cooperate with the PES are having increasing problems finding candidates. Consequently, for offers placed on CBOP, information regarding the minimum expected wage is almost standard. Moreover, the descriptions of formal requirements are becoming much more detailed. For instance, there are the necessary competences, such as a special driver's licence, level of education, etc. and desirable competences, such as command of a foreign language. The final section on a CBOP OJV contains information on soft skills, such as communication skills. There is an obvious segmentation of OJVs, as the offers placed in the PES mostly cover the blue-collar sector and low-or-un-skilled jobs, which may request fewer skills and competences of potential candidates (E5).

For instance, an announcement for the operator of an automated production line posted by a private company from Gdańsk on 17 June 2017 contains the following precise description:

- The workplace ("Setting the parameters and preparing the injection moulding machine for operation, assembling and disassembling injection moulds, carrying out trial production series, product approval for serial production, documenting the value of injection parameters"),
- Information on the type of contract (commission),

- Pay (13 Polish zloty gross per hour, minimum 20 hours a week),
- The competences of the candidate (minimum 6 months working experience on automated production line, secondary vocational education, physical fitness, control, patience and good organization of work).

More detailed content of OJVs is also available on portals which mix blue-collar ads and white-collar ads, like infopraca. For instance, the advertisement for a simple job in a warehouse in Kraków posted on 17 June 2017 includes a clear description of the job tasks (placing goods in proper order, work in magazine, keeping the workplace clean), but also some more precise requirements for the candidate, including some soft skills (sanitary-epidemiological certificate, commitment and responsibility, willingness to work and availability).

Of course the more developed OJVs, in terms of the content, are presented for white-collar jobs, as this sector is much more specialised and skill-oriented. The typical announcement for an IT specialist in Warsaw (Java programmer) posted on 2 June 2017 contains on the following information:

- The company – its specialisation, geographical and sectoral areas of operations and size;
- Main tasks and responsibilities associated with the position (development of applications supporting the company's activity, including business layer & frontend elements, collaboration in creating requirements and creating functional solutions, creating technical specifications for applications and designing solutions, caring for code's high quality);
- Necessary requirements including hard and soft skills (knowledge of Java/J2SE, Spring, HTML, CSS, JavaScript, jQuery); analytical capabilities and the ability to creatively solve complex logic problems, willingness to acquire new knowledge, ability to work in a team, English language proficiency);
- Facultative requirements (knowledge of .Net technology, SVN or GIT, knowledge of relational databases, ability to create SQL queries, knowledge of security aspects of web applications, software development for mobile platforms);
- Terms of contract (full-time contract, attractive pay – but no precise amount given<sup>22</sup>, creative work and possibilities for self-development, private healthcare plan etc.).

## 6.4. Main Differences between the Public and Private Online Job-Portals

As stated before, the usual templates for drafting a job announcement on blue-collar portals are flexible and do not have many mandatory fields, which makes it difficult for systematic web scraping. This is unfortunately the case for leading operators in this sector, such as OLX and gumtree. The templates, and thus the content of the job announcements in the white-collar sector, are more orderly and detailed. Finally, the CBOP public database is almost perfect for the purpose of web-scraping, as it contains a detailed, but very precise template with some mandatory fields on competences required for the job.

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<sup>22</sup> The OJV merely states that the employer will pay competitively, and then the candidate is expected to request a specific salary during the interview and selection process. The employer and candidate can then negotiate to find a salary that matches both of their expectations.

## 6.5. Expected Trends in the Format and Content of OJVs

In general, most of the experts interviewed expect more detailed and formalised contents of OJVs in a near future. This is especially visible in the case of the OLX portal, whose representative understands that a loose template is one of the deficiencies of the portal and has to be improved (E7). Three specific aspects of OJVs will likely change.

The first element that probably will become standard in upcoming years is the information on salary. The advertisements that contain information on remuneration receive approximately 50% more applications than those that do not. The second element that may become standard is the telephone contact of the recruiter, as candidates often want to get additional information before they formally apply. Third, the job offers may begin to contain more information on additional benefits for workers such as private insurance, sports and leisure packages, training programmes and more (E7).

## References

- Batorski, D. (2015): Warunki życia gospodarstw domowych. Wpływ nowych technologii na rynek pracy-pozycja użytkowników i bezrobocie technologiczne. *Contemporary Economics*, 9(4), 186-199.
- Buchnowska, D. (2015): Ocena poziomu e-rekrutacji wśród największych firm w Polsce–Projekt badania. *Współczesna Gospodarka*, 6(4).
- Budnikowski, A./Dabrowski, D./Gąsior, U./Maciół, S. (2012): Pracodawcy o poszukiwanych kompetencjach i kwalifikacjach absolwentów uczelni–wyniki badania. *E-mentor*, 4(46), 4-17.
- Budzanowska-Drzewiecka, M./Lipińska, A./Stańczyk, I. (2013): Ocena działań podejmowanych przez pracodawców w zakresie zewnętrznego Employer Branding w Internecie z perspektywy osób poszukujących pracy. *Zarządzanie i Finanse*, 2013, 11(1): 91-105.
- Chondzyńska, J. (2008): Organizacje pozarządowe na rynku usług pracy. *Biuletyn Bezrobocie* 10/2008, FISE: Warszawa.
- Gałęcka-Burdziak, E., Pater, R. (2015). Ile jest wolnych miejsc pracy w Polsce? *Gospodarka Narodowa*, 5(279), 171-186.
- Grześkowiak, U. M. (2011): Portale społecznościowe-wybrane aspekty. *Zeszyty Naukowe. Studia Informatica/Uniwersytet Szczeciński*, (28), 359-367.
- Gzowska, W. (2016): Wybrane media społecznościowe jako narzędzie wspierające rekrutację. *Human Resource Management/Zarządzanie Zasobami Ludzkimi*, 112(5).
- Jagodziński, A. (2013): Oczekiwania pracodawców w zakresie kompetencji absolwentów wyższych uczelni. *Zeszyty Naukowe PWSZ w Płocku. Nauki Ekonomiczne Economic Notes*, tom XVII, 2013.
- Jarecki, W. (2005): Internet jako narzędzie pracobiorcy na rynku pracy. *Przegląd Organizacji*, (10), 40-43. (TU JESZCZE – niewystarczające wykorzystanie Internetu do tego celu!!!)
- Jarmołowicz, W./Knapińska, M. (2015): Regionalne zróżnicowanie poziomu i dynamiki wzrostu wydajności pracy w Polsce w latach 2003–2013. *Studia Prawno-Ekonomiczne*, (XCIV (94)), 291-302.
- Jasińska, M./Podgórska, K. (2015): Między oczekiwaniami a rzeczywistością. Umiejętności miękkie osób wchodzących na rynek pracy. *e-mentor*, (5 (62)), 16-20.
- Jędrych, E. (2015): Wykorzystanie mediów społecznościowych w zarządzaniu pracownikami w organizacjach gospodarczych. *Zeszyty Naukowe Uczelni Vistula*, 44 (6) *Ekonomia IX. Kształtowanie wizerunku pracodawcy*, 120-132.
- Kocójowa, M. (Ed.) (1997): Rynek pracy a studia bibliotekoznawstwa i informacji naukowej w Polsce. *Materiały Edukacyjne Bibliotekoznawstwa i Informacji Naukowej Uniwersytetu Jagiellońskiego* (1st ed.). Kraków: Wydawnictwo Uniwersytetu Jagiellońskiego.
- Kocór, M./Strzebońska, A. (2010): Jakich pracowników potrzebują polscy pracodawcy. Raport z badań pracodawców i ofert pracy realizowanych w ramach projektu „Bilans Kapitału Ludzkiego”, PARP: Warszawa.

- Kowalik, P. (2016): Rola Internetu w procesie rekrutacji online [The role of the Internet in the online Recruitment process] [w/in:] K. Pujer (Ed.) Rynek pracy w Polsce – szanse i zagrożenia [Labour Market in Poland: Challenges and Opportunities, Exante, Wrocław.
- Kukulak-Dolata, I. (2008): Współpraca między urzędami pracy a agencjami zatrudnienia w obsłudze rynku pracy. *Polityka Społeczna*, 1/2008.
- Matusiak, J. (2012): Ekstrakcja i agregacja zawartości stron internetowych na przykładzie portali pracy. *Zeszyty Naukowe. Studia Informatica/Uniwersytet Szczeciński*, (30), 59-73.
- Matusiak, M. S. J./Szewczyk, A. (2010). Jak badać rynek pracy efektywniej–nowa metoda analiz rynku pracy oparta na e-informacji. *Nierówności Społeczne a Wzrost Gospodarczy*, (nr 17), 406-412.
- Michałek, N. (2011): Społecznościowy charakter serwisów z ofertami pracy – budowa i ich funkcjonalność. *Zeszyty Naukowe. Studia Informatica/Uniwersytet Szczeciński*, (28), 301-309.
- Nazdrowicz, J. (2015): Employer branding w IT. *Zeszyty Naukowe Uczelni Vistula*, (44 (6) *Ekonomia IX. Kształtowanie wizerunku pracodawcy*), 165-179.
- Oczkowska, R. (2015): Kreowanie wizerunku organizacji jako pracodawcy. *Education of Economists & Managers/Edukacja Ekonomistów i Menedżerów*, 38(4) 369—375.
- Orłowska, M. (2016): Co czwarty Polak nie korzysta z internetu–społeczny kontekst wykluczenia–wybrane problemy. *Edukacja–Technika–Informatyka* nr 1/15/2016.
- Owczarz, A. (2005). *Jak wykorzystać internet w poszukiwaniu pracy?*. Wyd. Helion, Gliwice.
- Pater, R., (2017). Internetowe oferty pracy jako źródło informacji o zapotrzebowaniu na kompetencje [Internet job offers as a source of information on the demand for worker's competences], *Polityka Społeczna*, nr 3/2017, 32—39.
- Palonka J./Porębska-Miąc T. (2014): Rekrutacja w mediach społecznościowych (Social Recruiting), (w:) *Innowacje w Zarządzaniu i Inżynierii Produkcji*, (red.) R. Knosala, Oficyna Wydawnicza PTZP, Opole 2014, 978-989.
- Sidorkiewicz, M./Tokarz-Kocik, A. (2017). Analiza internetowych ofert pracy oraz poszukiwanych kwalifikacji w hotelarstwie na przykładzie województwa zachodniopomorskiego. *Folia Turistica/Akademia Wychowania Fizycznego im. B. Czecha w Krakowie*, (42), 87-102.
- Sosnowska, M. (2014). Europejski model monitorowania osób młodych na rynku pracy w dobie przemian społeczno-gospodarczych. *Studia Ekonomiczne*, 167, 211-220.
- Stefaniak, I.M. (2016): Profesjonalne i eksperckie media społecznościowe a rynek pracy [Professional and expert social media and the Labour market], *Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach*, Nr 258/2016.
- Strzelczak, J. (2007): Internetowe pośrednictwo pracy i zbiorowość jego użytkowników w Polsce. *Studia Socjologiczne*, 186/3.
- Szwed, I. (2015): Styl internetowych ofert pracy w ujęciu kontrastywnym polsko-niemieckim. *Stylistyka*, 24, 403-422.
- Tomczak, M./Balcerzak, D. (2016): Internet i media społecznościowe w procesie rekrutacji–perspektywa rekruterów. *Marketing i Rynek*, (3 /2016), 958-967.
- Wiącek, A. (2011a): Ocena przydatności wybranych funkcjonalności i elementów architektury stron głównych portali rekrutacyjnych [In:] M. Pańkowska (red.) *Wiedza i komunikacja w innowacyjnych organizacjach. Komunikacja elektroniczna*, Uniwersytet Ekonomiczny w Katowicach: 478- 496.

Wiącek, A (2011b.): Model zarządzania portalem rekrutacyjnym, praca doktorska, UW 2011.

Wojtaszczyk, K./Cewińska, J. (2014): Nowe sposoby komunikowania się kandydatów do pracy z pracodawcami. *Marketing i Rynek*, (4 /2014), 369-375.

Woźniak, J. (2014): Crowdsourcing–IV etap rozwoju rekrutacji internetowej. *Zarządzanie Zasobami Ludzkimi*, 1-2014(96), 41-55.

Woźniak, J. (2015): Internetowa rekrutacja społecznościowa i jej rozpowszechnienie, *ZESZYTY NAUKOWE WSES w Ostrołęce* 1/2015(16), 9-23.

## Statistics

BDL (2016): Bank Danych Lokalnych [Local Data Bank], <https://bdl.stat.gov.pl/BDL/dane/podgrup/tablica>.

EUROSTAT (2017): EUROSTAT ICT survey of Households and Individuals [isoc\_ciweb] (downloaded on 19 January 2017).

GUS (2015): Stan i struktura ludności według wieku w latach 1989 – 2015 [State and the structure of the population by age in 1989-2015] Główny Urząd Statystyczny/Central Statistical Office, Warsaw 2015 <http://stat.gov.pl/obszary-tematyczne/ludnosc/ludnosc/struktura-ludnosci,16,1.html>

GUS (2016a): Informacja o rozmiarach i kierunkach czasowej emigracji z Polski w latach 2004 – 2015 [Information on the size and directions of temporary migration from Poland in 2004-2015 period], Główny Urząd Statystyczny/Central Statistical Office, Warsaw 2016, [http://stat.gov.pl/download/gfx/portalinformacyjny/pl/defaultaktualnosci/5471/2/9/1/informacja\\_o\\_rozmiarach\\_i\\_kierunkach\\_czasowej\\_emigracji\\_z\\_polski\\_w\\_latach\\_2004-2015.pdf](http://stat.gov.pl/download/gfx/portalinformacyjny/pl/defaultaktualnosci/5471/2/9/1/informacja_o_rozmiarach_i_kierunkach_czasowej_emigracji_z_polski_w_latach_2004-2015.pdf).

GUS (2016b): Prognoza ludności rezydującej dla Polski na lata 2015 – 2050 [The forecast of residing population in Poland for 2015-2050], Główny Urząd Statystyczny/Central Statistical Office, Warsaw 2016, <http://stat.gov.pl/obszary-tematyczne/ludnosc/prognoza-ludnosci/prognoza-ludnosci-rezydujacej-dla-polski-na-lata-2015-2050,8,1.html> (last accessed on 4 January 2018).

GUS (2017): Rocznik Demograficzny [Demographic Yearbook of Poland], Główny Urząd Statystyczny/Central Statistical Office, Warsaw 2017, <https://stat.gov.pl/en/topics/statistical-yearbooks/statistical-yearbooks/demographic-yearbook-of-poland-2017,3,11.html> (last accessed on 4 January 2018).

Megapanel, (2015): Najpopularniejsze serwisy tematyczne w grudniu 2015 roku [Most popular thematic services in December 2015], Megapanel PBI/Gemius, Warsaw, <http://www.wirtualnemedi.pl/artukul/najpopularniejsze-serwisy-tematyczne-w-grudniu-2015-roku> (last accesses on 4 January 2018).

## Reports and Surveys

Cieślak-Wróblewska (2017): Mimo poprawy na rynku pracy spadek bezrobocia do 3 proc. jest mało realny [In spite of the improvement on the Labour market the decrease of unemployment to three percentis rather unlikely], *Rzeczpospolita*, 3 January 2017.

Czapiński, J./Panek, J. (Eds.) (2015): Social Diagnosis 2015. Objective and subjective quality of life in Poland. *Contemporary Economics*, Volume 9 Issue 4, November 2015.

Kocór, M./Strzebońska, A./Dawid-Sawicka, M. (2015): Rynek pracy widziany oczami Pracodawców. Na podstawie badań pracodawców i ofert pracy zrealizowanych w 2014 roku w ramach V

edycji projektu Bilans Kapitału Ludzkiego. [The Labour Market in the Eyes of Employers. Based on the employers survey and investigation of job offers, carried out in 2014 within the 5th editio of Human Capital Balance Project], Polska Agencja Rozwoju Przedsiębiorczości, Warszawa.

Ministry of Family, Labour and Social Policy (2014): Centralna Baza Ofert Pracy w nowej odsłonie [New version of Central Base for Job Offers], <http://www.mpips.gov.pl/aktualnosci-wszystkie/art,5543,6857,centralna-baza-ofert-pracy-w-nowej-odslonie.html> (last accessed on 4 January 2018).

Nagel, K. (2016): Wybrane mierniki określające niedopasowanie kwalifikacji i umiejętności na przykładzie Polski [Selected indexes for measuring skills and qualifications mismatch: the case of Poland], Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach, Nr 258/2016.

Praca.pl (2016): 8 Trendów rynku pracy w 2016 r. według praca.pl [8 main trends on the Labour market in 2016 according to praca.pl]; praca.pl 2016-01-12, [http://www.praca.pl/centrum-prasowe/komunikaty-prasowe/8-trendow-ryнку-pracy-w-2016-r-według-praca-pl\\_cp-1283.html](http://www.praca.pl/centrum-prasowe/komunikaty-prasowe/8-trendow-ryнку-pracy-w-2016-r-według-praca-pl_cp-1283.html) (last accessed on 4 January 2018).

Pracuj.pl (2017a): Rynek pracy specjalistów w 2016 roku [Labour market of specialists in 2016], pracuj.pl: Warsaw.

Pracuj.pl (2017b), Rynek Pracy Specjalistów w I kwartale 2017 roku [Labour market of specialists in 2017], pracuj.pl: Warsaw.

Saczuk, K./Strzelecki, P./Wyszyński, R./Tyrowicz, J. (2017): Kwartalny raport o rynku pracy - IV kw. 2016 r. [The Quarterly Report on Labour Market – IVQ 2016], Instytut Ekonomiczny, Narodowy Bank Polski, Warszawa.

Voivodeship of Malopolska (2017): Information on foreigners working in Poland, internal report of the Department for Citizenship and Foreigners' Issues, Kraków.

Woncisz, K. (2017): Raport rynku pracy Adzuna - Podsumowanie 2016r. Gdzie i kiedy szukać pracy? [Report of the labour market by Adzuna – summary of 2016. Where and when to look for a job?] <https://biznes.newseria.pl/komunikaty/gospodarka/raport-ryнку-pracy-adzuna,b785320518> (last accessed on 4 January 2018).

## Expert Interviews

No.	Name of organisation	Type of organisation	Expert's position	Interview date
1	Large multinational company (one of the biggest employers in Poland, which has an interesting mix of semi-skilled and skilled workforce)	Employer	HR specialist	18 April 2017
2	Confederation of Private Employers (Lewiatan)	Employers' association	Labour market specialist	20 April 2017
3	One of the oldest and most established HR consultancy companies on Polish market	HR company	HR specialist	26 April 2017
4	Regional Statistical Office	Regional public statistical office	Director	4 May 2017

5	Regional Employment Office	Local Public Employment Service Job-portal observatory/network for the Polish OJV market	Director of the Employment Consultancy Department	10 May 2017
6	ESSnet Big Data/Central Statistical Office	Statistical Office	Polish member of ESSnet Big Data team, Central Statistical Office	09 May 2017
7	Private online job-portal	One of the major private OJV services in Poland (horizontal portal, i.e. covers job vacancies but also other categories, e.g. apartment rental)	Head of job unit	15 May 2017
8	Private online job-portal	Major online job-portal for white-collar employment in Poland	OJV representative	31 May 2017
9	PES/ Ministry of Family, Labour and Social Policy	IT Department, responsible for CBOP portal/database	Specialist from IT Department of the Ministry	26 June 2017

No.	Name of the job-portal	Website address	Rough position in the Google ranking	Type of job-portal	approximate number of OJV	Target audience
1	pracuj.pl	<a href="http://www.pracuj.pl">www.pracuj.pl</a>	first page	Primary job-portal	43,000	Mostly white-collar, highly-skilled jobs posted by multinational corporations and large national firms (IT, B2B services, financial specialists)
AO/DSL/VKVET-GRUSSO/Real-time LMI 2/009/16						
2	gumtree.pl	<a href="http://www.gumtree.pl">www.gumtree.pl</a>	first page	Primary job-portal	22,000	Mostly blue-collar (truck drivers, construction workers, welding specialists) and even unskilled jobs (au-pairs and elderly care workers)
3	olx.pl	<a href="http://www.olx.pl/praca/">www.olx.pl/praca/</a>	first page	Primary job-portal	115,000	Mostly blue-collar (truck drivers, construction workers, welding specialists) and even unskilled jobs (au-pairs and elderly care workers)
4	monsterpolska.pl	<a href="http://www.monsterpolska.pl/">www.monsterpolska.pl/</a>	Business ad	Primary job-portal	184,000 but including all countries in EU	Mostly white-collar, highly-skilled jobs posted by multinational corporations and large national firms (IT, B2B services, financial specialists)
5	infopraca.pl	<a href="http://www.infopraca.pl/">www.infopraca.pl/</a>	first page	Primary job-portal	18,400	Mostly blue-collar, special emphasis on caregivers and recruitment for job abroad (Germany, Netherlands etc.)
6	praca.pl	<a href="http://www.praca.pl">http://www.praca.pl</a>	first page	Primary job-portal	30,000	Heterogenous job offers, for white-collar (eg. IT specialists), pink-collar (eg. salespersons, consultants) and blue-collar (eg. forklift drivers)
7	money.pl	<a href="http://praca.money.pl/">http://praca.money.pl/</a>	first page	Secondary job-portal	183,000 including international	Aggregator, so mixed job offers both for skilled and unskilled workers
8	jobs.pl	<a href="http://www.jobs.pl">www.jobs.pl</a>	first page	Primary job-portal	25,700	Heterogenous job offers like praca.pl, but most popular for recruitment for jobs abroad. Currently (as for 13 January 2018) only 3700 OJV for Poland and over 100 thousand abroad, including – Germany (33 thousand), the UK (30 thousand)
9	pl.indeed.com	<a href="http://pl.indeed.com">pl.indeed.com</a> ; <a href="http://www.indeed.jobs">www.indeed.jobs</a>	first page	Combination of primary job-portal and secondary functions	Warsaw alone 34,000, Kraków 15,000, Poznan 10000 - ca. 100,000 in Poland only	Mostly white collar (eg. data management specialist) and pink-collar (eg. Secretary) jobs. Many of the aggregated, secondary OJV taken from public sites (public administration announcements).
10	Gratka.pl	<a href="http://praca.gratka.pl">http://praca.gratka.pl</a>	first page	Primary job-portal	13,300	Mostly blue-collar (eg. drivers, construction workers) and unskilled jobs (eg. call-center consultant, salesperson)
11	nuzle.pl	<a href="http://www.nuzle.pl">http://www.nuzle.pl</a>	from third page on	Combination of primary job-portal and secondary functions	369,000 (update: as for 13 Jan 2018 – 708 thousand)	Very heterogenous portal, now mostly aggregator which contains predominantly secondary OJVs. It is difficult to identify OJVs for foreign countries like Germany.
12	gazeta.pl	<a href="http://gazetapracaj.pl">http://gazetapracaj.pl</a>	first page	Primary job-portal	22,000 (update – only 5 thousand as for 13 Jan 2018)	Heterogenous: white collar and blue collar jobs, but seems that the popularity of this service is declining.
13	Centralna Baza Ofert Pracy	<a href="https://oferty.praca.gov.pl/">https://oferty.praca.gov.pl/</a>	first page	Primary job-portal	41,000	Mostly blue-collar jobs advertised by SME sector + OJV from public administration (mostly pink-collar jobs)

14	jobrapido.com	<a href="http://pl.jobrapido.com">http://pl.jobrapido.com</a>	Business ad	Combination of primary job-portal and secondary functions	> 100,000 (30,000 Warsaw, 20,000 Kraków)	Dominance of aggregation functions, very heterogeneous job offers (both white and blue collar), moreover chaotic mixture of locations (for instance – after choosing Kraków as location you can get an advert for truck driver in Aachen, Germany). OJVs scrapped mostly from indeed and infopraca.pl.
15	jobtome	pl.jobtome.com	Business ad	Secondary job-portal	92,000 (update:46 thousand as for 13 Jan 2013)	Combination of white and blue collar OJVs, but mostly white-collar
16	gowork.pl	<a href="http://www.gowork.pl/">http://www.gowork.pl/</a>	second page	Primary job-portal	116,000 (update – 54 thousand as for 13 Jan 2018)	Combination of white (IT specialists) and blue collar (construction worker, Call center consultant) OJVs + jobs abroad, mostly in Germany.
17	linkedin	linkedin.com	from third page on	Primary job-portal	not available	Mostly white-collar, highly-skilled workers – OJVs added by multinational corporations and large national firms
18	goldenline	<a href="http://www.goldenline.pl">http://www.goldenline.pl</a>	Business ad	Combination of primary job-portal and secondary functions	ca. 20,000	Mostly white-collar, highly-skilled workers – OJVs added by multinational corporations and large national firms
19	adzuna	adzuna.pl	from third page on	Secondary job-portal	300,000 (280 thousand as for 13 Jan 2018)	Heterogenous job offers. Scrapped OJVs from goldenline, infopraca.pl, praca.pl.

Appendix