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Work Package 1

Web scraping / Job vacancies

Deliverable 1.1

Inventory and qualitative assessment of job portals

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Prepared by: Thomas Körner, Martina Rengers (DESTATIS, Germany)

Nigel Swier, Liz Metcalfe (ONS, United Kingdom)
Ingegerd Jansson, Dan Wu (SCB, Sweden)
Boro Nikic (SURS, Slovenia)
Christina Pierrakou (ELSTAT, Greece)

ESSnet co-ordinator:

Peter Struijs (CBS, Netherlands)
p.struijs@cbs.nl
telephone   : +31 45 570 7441
mobile phone   : +31 6 5248 7775

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1 Introduction

The aim of the work package 1 pilot study is "to demonstrate by concrete estimates which approaches (techniques, methodology etc.) are most suitable to produce statistical estimates in the domain of job vacancies and under which conditions these approaches can be used in the ESS". Despite the title of the work package, the pilot study is not restricted to web scraping as a data collection approach. For example, data could be provided directly by the portal owners. As explained further in the grant application, the pilot focuses on the study of the feasibility (not the creation of a full production system) and will consider a mix of sources including job portals, job adverts on enterprise websites, and job vacancy data from third party sources. For SGA-1, this work package focuses on job portals (as well as third party sources), but not job advertisements from enterprise websites. The latter approach is covered by WP2 and this may be further explored further as part of SGA-2.

The selection of portals to investigate is a first crucial step for obtaining data to test the feasibility of using data from online job portals for use in official statistics. A good knowledge of the job portal environment in a given country will enable the statistical office to determine which portals provide a basis for drawing conclusions on the level, structure and / or trend of job vacancies in the country. Due to the large variety and differentiation of job portals in most countries, it is only feasible to collect data from a small selection of job portals. The selection criteria will include the accessibility of the portals and the job portal environment in a given country. To analyse the potential of using web scraped data to measure job vacancies on the basis of statistical estimates, a sample of job portals can be used to producing figures that can be meaningfully compared with official job vacancy estimates.

Thus, the preparation of an inventory of relevant job portals in each participating country is a logical first step in the pilot study. To this end, a method to compile and maintain a list of job portals was investigated by the countries contributing to WP1. This work included the development of a conceptual framework of different types of job portals, ways to inquire the URLs of the (major) job portals in the countries, and the development of a template for the assessment of job portals. This template specifies the criteria that can be used to make systematic decisions on the inclusion or exclusion of individual job portals. This is also the basis for a qualitative assessment of the information available (e.g. the kind of information provided regarding: job title, occupation, economic activity, location, etc.) of job portals.

A further aspect concerns the dynamics of the job portal environment: How quickly do job portals evolve and how frequently do they change the services they provide? It is difficult to provide a detailed account of these changes. In large countries, such as the UK and Germany, the number of job portals is too vast and dynamic to undertake a comprehensive overview. However it is important to have an understanding about the speed of changes as such changes may require changes in the selection of the job portals, or adaptations in the approaches chosen for web scraping and data processing. In line with the approach chosen in WP1, the focus of the inventory is on the structured

(or semi-structured) information that can be found in job portals rather than on job advertisements presented as unstructured (or at least not systematically structured) text.

A further remark is of particular conceptual importance for the use of data from online job portals for the purpose of job vacancy statistics: While, analytically, the unit of interest is job vacancies[1], job portals provide information on job advertisements, i.e. job advertisements published (online) by a company in search of a new employee. It should be noted that there is not necessarily a one-to-one correspondence between a job advertisement and a job vacancy. First, not all job vacancies result in an online job advertisement (as employers may prefer to use offline or informal recruiting methods). Second, a job vacancy might be offered through more than one job advertisement, if the recruiting enterprise uses different channels or different portals on the web in order to obtain a higher visibility of the advertisement (thereby creating duplicates that later need to be removed during data processing). Third, one job advertisement can make reference to more than one job vacancy (e.g. at different locations), which may or may not be explicitly mentioned in the text of the advertisement. In such situations, it is necessary to extract the number of vacancies from the advertisement. Finally, one may think of situations in which there is no job vacancy underlying the job advertisement, e.g. in the case of enterprises that constantly look for employees, irrespective of the number of jobs that are currently vacant. To produce web-based job vacancy statistics, data processing procedures need to be developed that take such situations into account in order to not run risk to over or underestimate the number vacancies reported (see also CEDEFOP/CRISP/NVF, 2014: 30).

As far as possible given the considerable differences of the national circumstances, the case studies documented in chapter 4 of the present report followed a harmonised procedure: (1) the use of job portals in each of the countries was studied on the basis of previous studies, research reports as well as web searches. (2) Lists of job portals were subsequently established and studied in more detail. (3) A sub-group of portals was selected for a more in-depth analysis, on the basis of which (4) a limited number of portals was identified and assessed for the further work in the context of the pilot study.

2 Classification of job portals

The term job portal is a rather fuzzy one and actually covers quite diverse types of web sites that provide access to job advertisements via the internet. Since the first job advertisements were published online in the early 1990s, such platforms have become much more differentiated. An indicator of the differentiation might be that some specialised firms now charge for services to guide enterprises and job seekers through the large number of existing advertisements (see e.g. http://crosswater-job-guide.com and *http://online-recruiting.net* for the case of Germany). A basic distinction needs to be made between job boards (publishing "original" job advertisements on the demand of employers) and different types of job search engines (searching the web for job advertisements that were originally published elsewhere). In between these categories, there is a third category of "hybrid" job portals that combine some original job advertisements with a number of advertisements that were originally published earlier.

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[1] According to the European Job Vacancy Statistics, a job vacancy is defined as "a paid post that is newly created, unoccupied, or about to become vacant, (a) for which the employer is taking active steps and is prepared to take further steps to find a suitable candidate from outside the enterprise concerned; and (b) which the employer intends to fill either immediately or within a specific period of time." (EU regulation 453/2008)

2.1 Job boards

A job board is a website with two purposes. The first is to host job advertisements for enterprises either in addition to, or as an alternative to the enterprise website. These job advertisements, which may cover a range of different enterprises, can usually be accessed for free by prospective job seekers. The second purpose is to host job seekers CVs which can usually be uploaded for free. These can be accessed by enterprises, who can then select potential candidates and contact them directly. Access to this database of CVs is usually offered for a fee.

Job boards exist in different degrees of specialisation, ranging from generalist sites to job boards that specialise for job categories in different economic activities but also for specific segments of jobs (like seasonal jobs, management jobs or side jobs). Some job boards are highly specialised. For example, the web site *www.berlinreport.com* is mainly used by Korean enterprises to recruit Korean speaking staff in Germany and other European countries (see Weitzel et al. 2015: 132).

Job boards often cooperate with other web sites, including newspapers and job search engines on which the the job advertisements will appear extending the internet coverage range ("range partners"). For example, the German branch of Monster Worldwide informs enterprises who insert a job offer that the ad will equally appear on more than 100 partner web sites of which 45 are identified as "meta job search engines".

Posting a job ad on a major job board is not free of charge for the employer. In Germany, generalised job boards may charge employers between EUR 750 and EUR 1200 for the publication of a job advertisement (see www.online-recruiting.net), which may have implications on the kind of job advertisements posted there. It should be noted that the payment regimes are changing dynamically, e.g. by offering extra services like active sourcing (using CVs available at the job portal or social networks that might cooperate with the job portal). Also payment models that work on a cost-per-click basis seem to be increasing in importance, which may have important repercussions on the environment of job portals.

A specific case of job boards are the services offered by public employment agencies. These may differ in scope and size depending on national circumstances, they but they may offer a good representation of the job advertisements via the internet (see the case studies in chapter 4). In contrast to other job boards, job boards provided by the public employment agencies typically offer their services free of charge to both the employers and job seekers. In some countries (e.g. in Germany and the UK), the job portal of the public employment agency, in addition to its own job advertisements, also makes available job advertisements from other job boards, and therefore rather has to be classified as a "hybrid" job portal (see 2.3).

2.2 Job search engines

The term job search engine refers to a job portal that has no "original" job advertisements posted on its web site, but instead searches and indexes job advertisements from other portals and web sites. Sometimes job aggregators (or crawlers) are identified as a specific sub-category of job search engines. In this case job aggregators might be defined as job search engines that collect job advertisements from other sites across the web (including employer career sites and paid job boards) and store them in a very large database where they are searchable by job seekers. Job search engines typically include a larger number of advertisements than job boards, in particular if they include the job portal of the public employment agency.

Many job boards share jobs with various job search engines to increase their range and to generate additional traffic ("hit list partners"). Job search engines are typically based on a cost-per-click model, i.e. if a job seeker clicks on a job advertisement, the owner of the web site (job board or enterprise web site) to which they are referred to is charged a certain fee.

While job search engines already aggregate data from many job boards as well as enterprise web sites, there are a number of challenges for using them for statistical purposes. First, job search engines often perform some data processing of the different formats found on different web sites to produce consistent data. Thus processing may not be very transparent and the harmonisation of different formats may lead to a loss of information. Still, one may argue that this harmonisation task would have to be done anyway to consolidate data across different job boards. The question is rather whether the data harmonisation would be better guided by the objectives of statistics production if it is implemented by the statistical offices instead of relying on the work done by job search engine. Secondly, duplication is a particular problem. As job search engines combine the information from many different web sites they often apply de-duplication procedures, which again are not transparent and not necessarily guided by the objectives of statistics production. While many job search engine providers claim that they successfully de-duplicate the job advertisements made available on their site, the sheer number of job advertisements suggest that many duplicates remain. For example, some German job search engines promote themselves with indicating that they have "more than 2.5 million" job advertisements available, while according to the job vacancy survey, there are currently less than 1 million job vacancies in Germany. For this reason the sheer number of job advertisements on a job search engine does not necessarily indicate a good quality site (see www.online-recruiting.net). However, duplicate job advertisements may also be an issue for job boards. An employer may use several boards to post the same vacancy at the same time. Also the same job might be posted by both the employer and a private employment agency. However, the issue of duplication is certainly much great for job search engines. Furthermore, the fact that job advertisements can be modified by job search engines in the process of normalisation for their database (e.g. by omitting multiple locations or using a partial job title) can further increase the challenge of developing deduplication procedures.

2.3 Hybrid portals

Hybrid portals are a relatively new category of job portals that further complicate the selection of the job portals for web scraping. They combine a job search engine with a job board, as they publish jobs offered by other job boards and at the same time provide employers with the possibility to publish their own job ad on the site. Some hybrid job portals also offer enterprises the possibility to have a standard interface that makes the job advertisements posted on the enterprise web site available at the hybrid portal, and the range of business models is rather wide.

Depending on the country, hybrid portals may represent the large majority of job portals available on the internet. In order to make an informed decision on which portals to select for web scraping, it is therefore crucial to know how large the number of "original" job advertisements posted actually is (and how many job advertisements are just carried over from other web sites). Furthermore, the list of partner sites of hybrid portals with which a cooperation has been established should be investigated. Unfortunately, this type of information is not always easily available.

3 Criteria for the assessment of job portals

The first step is to develop a list of job portals. One approach is to identify job portals by using web search engines such as Google or Bing[2]. This is a simple approach, which can be helpful for the assessment and is useful for collecting website URLs. Search engines can be used to provide both direct information about job portals but also other web sites which maybe have some kind of list of job portals. Relevant keywords and phrases could include: 'online job portals', 'ranking of online job portals', 'assessment of online job portals' and, respectively, 'Competitive Recruiting', 'Jobcoach', 'Jobmarketing', 'HR Reporting', 'HR recruitment', 'trade fair for human resources management'.

The selection of job portals for web scraping should be based on a range of different criteria in order to make sure that a reliable measurement of job vacancies can be achieved. Apart from this size of the job portals further criteria need to be applied. Depending on national circumstance the relevance and relative importance of the criteria may vary between different countries. For this reason, in contrast to other studies (e.g. CEDEFOP/CRISP/NVF, 2014), no standardised scoring scheme was applied. It was decided to provide some flexibility in considering the specific recruiting practices in each country.

3.1 Size

Size, or the total number of current job advertisements available on a job portals is an obvious selection criterion. However, the true number of current, unique jobs is often difficult to determine. Some measure of the total number of job advertisements is normally provided by the website, but this may or may not be accurate, and is difficult to verify. Websites comparing job portals often rely on this information and so their assessments may not be accurate either. Some portal owners do not state the number of job advertisements at all and do not allow a search of the database without specification of job title or region (e.g. monster.com just indicates "1000+ jobs" to any search request that applies to more than 1000 job advertisements).

In addition, it is not straightforward to distinguish job advertisements that have been directly published on the site from those that have been forwarded from partner sites. Some job boards only publish original job advertisements, but the category of hybrid job portals that combine traditional job boards with job search engines seems to be increasing. One might think that a large number of job advertisements found in a job portal is an advantage per se. However, portals combining job advertisements from diverse sites may use some de-duplication procedure which may be imperfect and lacking transparency. Including large job portals that combine information from many sites will increase the complexity of removing duplicates and thereby the risk of overestimating the number of job advertisements as well as of a bias regarding the structure of the job vacancies. Against this background, the project team has agreed to focus mainly on job boards that publish original job advertisements only. Third, there is a large variation of the timeliness of the job advertisements that can be found on different job portals. Comparisons of the size need to take this into account, e.g. by referring to job advertisements that are not older than 30 days.

3.2 Popularity

Another indicator that can provide further information on the actual use of a job portal are measures of popularity. When making the selection of a job portal for statistics, preference should be given to job portals that have a high level of web traffic. The Alexa ranking is a well known metric based on

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[2] General information about the site search market can be found in Eurostat, 2014, p. 36 ff. of Annex D2

the web traffic data collected by the California-based company Alexa Internet, Inc., a subsidiary wholly owned by Amazon.com. However, this ranking refers to the main URL, of which the job portal might only be a part (e.g. Linkedin.com). Comparisons of job portals sometimes also provide indications regarding the number of monthly visits that might also provide useful information, but independently measured data are usually not available for all job portals. Still any web traffic information available should be taken into account, as it can be an important supplementary source of information for the selection of job portals in a given country.

3.3 General vs. specific

There are various types of job portals that need to be distinguished in the selection process. The main distinction usually is between general job portals, posting job ads in all areas of economic activity, and specific job portals that specialise in specific economic activities (e.g. the IT sector) or specific occupations (e.g. cooks). Job portals defined as general or specific according to this definition can be further differentiated according the main purpose of the website: Web sites specialised in recruitment services, job advertisements that appear on newspaper websites, as well as job portals that are part of web sites that generally publish small advertisements of various kinds, including job advertisements. A further distinction is between public and private providers. Generally, for the use in statistics preference should be given to web sites that specialise in recruiting services. The inclusion of public or private job portals will very much depend on the national situation in a given country.

A further frequent differentiation is between portals operation at the national level and those specialising on regional labour markets. The importance of regional job portals varies strongly between countries, so that the selection will have to consider the national circumstances as well.

3.4 Variables available

The information provided regarding the characteristics of the jobs offered differs largely from one site to another. More variables provide an opportunity to produce richer statistics and so sites that give access to more variables should be preferred. As a first step, the pilot focuses on the structured (or semi-structured) information available on the job portals. The full job advertisement may provide further information, but this would need to be extracted from the unstructured text by the use of text mining procedures.

Job characteristics that can be found on job portals include the following:

- What?
  - Title of the position as specified by the employer (e.g. "Multi-Lingual Service Desk - German/French", "Sales Rep – Riverford Organic Farmers (4 Month FTC)" or "Trainee Recruitment Consultant + £50K OTE")
  - Occupation (usually using a list of occupation titles provided by the job portal)
  - Required education of the candidate (according to a list provided by portal or as stated by the employer)
  - Contract type (e.g. permanent- temporary employment, full time-part time job)
- When?
  - Date of the advertised job
  - Date of application deadline
  - Date to fill a vacancy

- Where?
  - Location of the job
- Who?
  - Direct employer or recruitment agency
  - Economic activity of the employer (NACE groups or job portal's own, often implicit, classification)

Further items sometimes include supervisory functions or the salary, the latter however depends a lot on national circumstance. Many job advertisements on UK portals provide salary, but this is very rare in Germany and Sweden.

3.5 Technical structure

Even if the variables detailed in section 3.4 are available on a given job portal, their usefulness for statistical production depends on the way the information is provided on the web site. A crucial aspect is which variables are available in a structured format on the website. Most job portals return a summary list of search results, which only shows a limited range of variables. A list of search results usually include the job title, the employer (or a logo of the employer), the location and the date of the advertisement (see Figure 1).

Figure 1: Example for a typical list of search results

Source: http://www.monster.co.uk/jobs
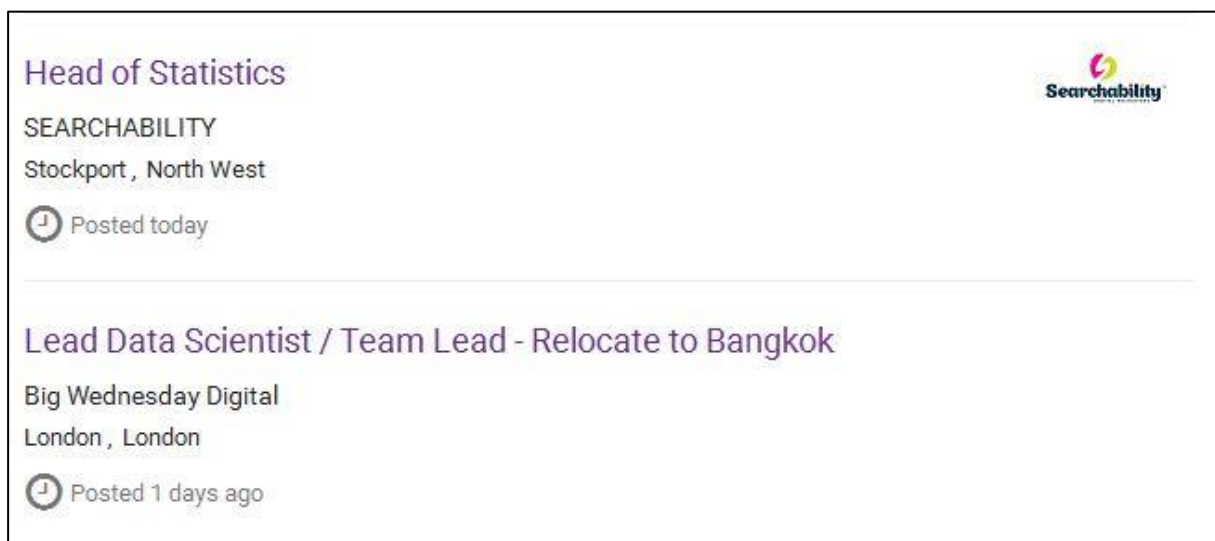
Further information might be obtained using filter or advanced search functions offered by the job portals that provide the opportunity to select, for example, only full-time posts or only specific occupations. The algorithms behind these filters are however not transparent, and it is not clear whether the filtered results exhaustively represent all job advertisements posted on the job portal. The analysis of how much filter or advanced search functions can be used for web scraping is one of the major issues to be analysed in the next stage of the pilot.

The entries on the list of job advertisements found are linked to job advertisements that provide more detailed information. Depending on the job portal, there is however a large variation of practices which may have strong implications on how much effort needs to be taken to use a job portal for statistics production:

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- Some job portals (for instance job boards) have links from the job advertisements to a second level of standardised information which often consists of the full-text of the job advertisement plus further (semi-)structured information. This is the easiest case for web scraping since the variables of interest can be defined without major issues (see Figure 2, that, in addition to the list of search results indicates the contract type and the full-time status).

Figure 2: Additional information specified on a standardised second level of the list of search results

Source: http://www.stepstone.de/jobs

- Other job portals do not show any standardised information when following the link in the list of search results, but just show the full text of the job advertisement, either in a format specified by the job portal or in the format provided by the employer. The readiness of employers to use a format provided by a job portal seems to vary between countries. For example, German employers seem to be particularly interested in publishing the whole job advertisement in the format of their corporate design.[3] These job advertisements may also contain structured information, but this structure will differ according to the employer.
- Most job search engines redirect links from the list of search results directly to original job board from which the advertisement was forwarded. In this case the information in addition to the one provided in the list of search results is only standardised to a very limited degree.

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[3] See *http://www.online-recruiting.net/was-ist-eine-online-jobboerse/* (accessed 25 May 2016).

3.6 Activity of the portal in more than one country

Several of the job portals have web sites in several countries in Europe as well as in non-European countries. For example, Monster.com has job portals in more than 40 countries[4] and Stepstone.com runs job portals in six European countries.[5] Also job search engines like indeed.com or Adzuna.co.uk have national web sites in various countries. Since the technical structure of the web sites of the same provider in different countries often seems to be similar, one may want to make the presence of a job portal in several countries a criterion for its selection, in order to be able to reuse the procedures developed in one country also in other countries. However, since most job portals originally started in one country, their importance can vary strongly from one country to another. For this reason, the fact that the URL sounds similar does not necessarily imply an increase of international comparability to use data from the same portal also in other countries. Still, experiences gained in one country with a job portal should equally be used in others interested in using data from this portal.

4 Case studies regarding the job portal infrastructure in the participating countries

4.1 Germany

As a result of a first general analysis of the job market by using web search engines – the first action mentioned above – (state: January 2016) there were found some important URLs of other websites which have rankings or assessment analysis of job portals. In Germany, worth mentioning are (i) deutschlandsbestejobportale.de, (ii) crosswater-job-guide.com, (iii) online-recruiting.net and (iv) jobboersen-im-test.de.

(i) deutschlandsbestejobportale.de

This web site contains ranking lists of job portals or job search machines from 2010-2015. The initiators of the test called "DeutschlandsBesteJobportale" (best job portals of Germany) are ICR, Institute für Competitive Recruiting (competitiverecruiting.de) and the joint project CrossPro Research (crosspro-research.com). The latter project is a corporation project of Cross Water Systems and PROFILO Rating GmbH.

(ii) crosswater-job-guide.com

The web sites crosswater-job-guide.com and crosswater-systems.com belong to the company Crosswater Systems. According to the company's own information it is dedicated to assist job searcher by providing web guides on a selected range of topics, including annotated links and web resources, to allow the surfer a pre-selection of his next destination. They provide, among others things an own assessment of online job portals on the sub web site: jobbörsen-kompass.de.

(iii) online-recruiting.net

This web site contains many freely available research results, e.g. description of job portals and job portal rankings. It also names job portal URLs of the following 27 countries: Australia, Austria, Belgium, Bosnia Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, France, Germany, Great Britain, Greece, Hungary, India, Italy, Japan, Jordan, Netherlands, Norway, Poland, Portugal, Romania, Russia, South Africa, Spain and Switzerland.

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[4] See *http://www.monster.com/about/our-company*
[5] See *http://www.stepstone.com/about-stepstone/* Stepstone equally co-founded the job portal network "The Network", a cooparation of 55 career websites in all continents (see *http://www.the-network.com/job-board/member-job-boards/all-members/*).

(iv) jobboersen-im-test.de

This web sites is run by a private individual interested in the topics of online job-placements and -recruiting.

According to the information from *deutschlandsbestejobportale.de* in 2015 there were more than **1600** job portals for the German labour market. *Crosswater-job-guide.com* lists no less than **1794** job portals of various kinds, of which **1088** are earmarked as being currently active. *Jobboersen-im-test.de*/ („Jobbörsen A-Z") lists altogether **781** job portals (only classified by „target group, profession or sector", but not by „kind of job portal"). Of these 781 job portals **34** are ranked among the best job portals. *Online-recruiting.net* lists **99** job portals; some of them are not included in the above mentioned 781-list. Similarly, also the 1088-list of *Crosswater-job-guide.com* does not include all the job portals shown in the other lists.

Figure 3:   Compilation of ranking lists

No.	Name of job portal	Target group	Number of job advertisements (April 2011)	Alexa popularity ranking (April 2011) *	Number of job advertisements (April 2010)	Employer satisfaction according to Profilo Ranking (March 2011) 7 = very good 1 = absol. not good	User satisfaction according to Crosspro-Research (March 2011) 1 = very good to 4 = absol. not good	Quality of search according to Crosspro-Research (March 2011) 1 = very good to 4 = absol. not good
	Name der Jobbörse	Zielgruppe	Anzahl der Stellenanzeigen (April 2011)	Reichweite Alexa-Ranking (April 2011)	Anzahl der Stellenanzeigen (April 2010)	Arbeitgeber-Zufriedenheit laut Profilo-Ranking (März 2011) Skala: 7 = sehr gut bis 1 = überhaupt nicht gut	Nutzer-Zufriedenheit laut Crosspro-Research (März 2011) Skala: 1 = sehr gut bis 4 = überhaupt nicht gut	Suchqualität laut Crosspro-Research (März 2011) Skala: 1 = sehr gut bis 4 = überhaupt nicht gut
Nr.	Allgemeine Jobbörsen							
1	Meinestadt.de	Allgemein	428.813	1.571	265.222		1.87	2.07
2	Arbeitsagentur	Allgemein	373.192	2.255	202.697	4.91	2.13	2.26
3	Jobmonitor	Allgemein	364.001	59.139	124.355			
4	Rekruter.de	Allgemein	279.606	87.295	152.423			
5	Arbeit-Regional	Allgemein	267.749	943.057	288.324			
6	Jobinfo24	Allgemein	263.066	643.503	102.681			
7	Gigajob	Allgemein	195.450	14.072	166.995		1.93	2.14
8	Jobomat.de	Allgemein	94.500	88.972	65.405			
9	Monster Deutschland	Allgemein	68.300	4.915	49.800	4.98	1.96	2.17
10	StepStone	Allgemein	55.282	3.379	36.650	5.62	1.73	1.94

*This ranking is according to the Internet statistics provider Alexa (www.alexa.com), a subsidiary of Amazon.

Source: personalmagazin 06 / 11

At the end of this action neither the precise number of job portals nor their importance for the job market was really clear. Figure 3 shows that, depending on the ranking criteria and/or the reference date quite diverging rankings can result. Besides the number of job advertisements, there are four other ranking criteria, namely the Alexa popularity ranking, the employer satisfaction according to Profilo ranking, the user satisfaction according to Crosspro-Research and the quality of search according to Crosspro-Research.

These ambiguous situation leads to the requirement of a second action with the URLs identified in the first action. On the basis on the number of job advertisements as indicated in the results of the first action, **56** job portals were selected and examined in more detail. Table 1 shows these portals alphabetically sorted and classified by type of job portal, specifying the job portals according to the categories introduced in chapter 2 and 3 with the three categories (1) job search engines, (2) general job portals or (3) specialized online job portals. Categories two and three include both job boards and hybrid portals. More details for the job search engines are shown in Table 2; beside the name and the URL the owner of the portal, that is, company name and registered office address were displayed. Moreover, all 25 job search engines were ranked by the given number of job advertisements in Germany (if this number was provided by the portal owner). This was also done for the 16 specific job portals. The results are shown in Table 3. In addition, an additional column in table 3 specifies for the area, in which the specific job portal is specialised in.

Table 1:   **Germany – 56 general job portals, job search engines and specialized online job portals sorted in alphabetical order**

No.	Name	URL	Type of job portal
1	Absolventa Jobnet	https://www.absolventa.de/	specific job portal
2	Adzuna	https://www.adzuna.de/	Job search engine
3	arbeiten.de	http://www.arbeiten.de/	Job search engine
4	backinjob	http://www.backinjob.de/	Job search engine
5	Betriebs-Berater-Jobs	http://www.betriebs-berater-jobs.de/	specific job portal
6	Careerjet	http://www.careerjet.de/	Job search engine
7	Cesar	http://www.cesar.de/	Job search engine
8	Connecticum	http://www.connecticum.de/	specific job portal
9	Experteer	http://www.experteer.de/	specific job portal
10	fazjob.net	http://fazjob.net/	specific job portal
11	Gigajob	http://de.gigajob.com/index.html	general job portal
12	goodmonday	http://www.goodmonday.de/	Job search engine
13	hotelcareer	http://www.hotelcareer.de/	specific job portal
14	Indeed	http://de.indeed.com/	Job search engine
15	Jobanzeigen.de	https://www.jobanzeigen.de/	Job search engine
16	Jobbörse Bundesagentur für Arbeit	http://jobboerse.arbeitsagentur.de	general job portal
17	Jobbörse.com	https://www.jobbörse.com/	Job search engine
18	Jobbörse.de	https://www.jobbörse.de/	Job search engine
19	Jobcluster	https://www.jobcluster.de/	general job portal
20	Jobkralle	http://www.jobkralle.de/	Job search engine
21	Jobkurier	http://www.jobkurier.de/	specific job portal
22	Jobleads	https://www.jobleads.de/	specific job portal
23	Jobmonitor	http://de.jobmonitor.com/	general job portal
24	Jobrapido	http://de.jobrapido.com/	Job search engine
25	JobRobot	http://www.jobrobot.de/	Job search engine
26	JobScout24 / Jobs.de	http://www.jobs.de / www.jobscout24.de	general job portal
27	JobStairs	https://www.jobstairs.de/	general job portal
28	Jobsterne	http://www.jobsterne.de/	specific job portal
29	Jobsuma	http://www.jobsuma.de/	Job search engine
30	Jobturbo	http://jobturbo.de/	Job search engine
31	Jobvector	http://www.jobvector.de/	specific job portal
32	Jobware	http://www.jobware.de/	specific job portal
33	Jobworld	http://www.jobworld.de/	Job search engine
34	Jooble	http://de.jooble.org/	Job search engine
35	Kalaydo	http://www.kalaydo.de/jobboerse/	general job portal
36	Kimeta	http://www.kimeta.de/	Job search engine
37	LinkedIn	https://de.linkedin.com/job/	general job portal
38	Meine Stadt.de	http://jobs.meinestadt.de/deutschland	general job portal
39	Monster	http://www.monster.de/	general job portal
40	njobs	https://www.njobs.de/	Job search engine
41	Online-Jobs.de	http://www.online-jobs.de/	specific job portal
42	Opportuno	http://www.opportuno.de/	Job search engine
43	Placement24	http://www.placement24.com/de/	specific job portal
44	Rekruter	http://www.rekruter.de/	general job portal
45	Renego	https://www.renego.de/	Job search engine
46	Staufenbiel	https://www.staufenbiel.de/startseite.l	specific job portal
47	Stellenanzeigen.de	http://www.stellenanzeigen.de/	general job portal
48	stellenanzeigen.net	http://www.stellenanzeigen.net/	Job search engine
49	StepStone	https://www.stepstone.de/	general job portal
50	Süddeutsche Zeitung	http://stellenmarkt.sueddeutsche.de/	general job portal
51	Trovit Jobs	http://de.trovit.com/jobs/	Job search engine
52	Unicum Karrierezentrum	http://karriere.unicum.de/	specific job portal
53	XING	https://www.xing.com/jobs/	general job portal
54	xljob.de	http://www.xljob.de/	Job search engine
55	Yourfirm.de	http://www.yourfirm.de/	specific job portal
56	yovadis	http://www.yovadis.de/	Job search engine

Table 2:   Germany – 25 job search engines, ranked by number of job advertisements

No.	Name	URL	Company	registered office	job adver-tisements in Germany
				Owner of the portal	
1	Jobbörse.com	https://www.jobbörse.com/	XING AG	Hamburg (DE)	2,500,000
2	Kimeta	http://www.kimeta.de/	kimeta GmbH	Darmstadt (DE)	2,126,977
3	Cesar	http://www.cesar.de/	cesar Internetdienste GmbH	Hamburg (DE)	1,800,000
4	Jobrapido	http://de.jobrapido.com/	Jobrapido Srl	Milan (IT)	1,714,177
5	Jobbörse.de	https://www.jobbörse.de/	CareerNetwork JOBBÖRSE.de GmbH & Co KG	Wiesbaden (DE)	1,677,214
6	Careerjet	http://www.careerjet.de/	Careerjet Ltd	London (UK)	1,325,511
7	Jobkralle	http://www.jobkralle.de/	Webintegration IT Service GmbH	Wien (AT)	1,044,069
8	Renego	https://www.renego.de/	Renego - Nikolay Nikolov	Köln (DE)	1,000,000
9	JobRobot	http://www.jobrobot.de/	JobRobot e.K.	Hamburg (DE)	918,754
10	Trovit Jobs	http://de.trovit.com/jobs/	Trovit Search, S.L.	Barcelona (ES)	761,651
11	Adzuna	https://www.adzuna.de/	Adhunter ltd.	London (UK)	492,951
12	Jooble	http://de.jooble.org/	Ladoburn Europe LTD	Limassol (CY)	418,810
13	Jobworld	http://www.jobworld.de/	Internext GmbH	Karlsruhe (DE)	400,000
14	Indeed	http://de.indeed.com/	Indeed Ireland Operations Limited	US, Amsterdam (NL), Dublin (IE), Düsseldorf (DE), Hyderabad (IN), London (UK), Paris (FR), Sydney (AU), Tokio (JP), Toronto (CA)	389,211
15	Jobanzeigen.de	https://www.jobanzeigen.de/	classmarkets gmbH	Berlin (DE)	334,539
16	Opportuno	http://www.opportuno.de/	Opportuno GmbH	Erlangen (DE)	312,377
17	Jobsuma	http://www.jobsuma.de/	JOBSUMA GmbH	Köln (DE)	286,119
18	Jobturbo	http://jobturbo.de/	karriere.de / lookas GmbH	Köln (DE)	267,897
19	stellenanzeigen.net	http://www.stellenanzeigen.net/	JobValue GmbH	München (DE)	204,637
20	yovadis	http://www.yovadis.de/	Diekmeyer Medienagentur	Rödental (DE)	123,753
21	xljob.de	http://www.xljob.de/	HR4YOU Solutions GmbH & Co. KG	Großefehn/Timmel (DE); Eberman	30,249
22	arbeiten.de	http://www.arbeiten.de	StepStone Deutschland GmbH	Düsseldorf (DE)	???
23	backinjob	http://www.backinjob.de/	Ideenkraftwerk GmbH	Herford (DE)	???
24	njobs	https://www.njobs.de/	njobs Ltd	London (UK)	???
25	goodmonday	http://www.goodmonday.de/	platron	Berlin (DE)	???

Table 3:   Germany – 16 specific job portals, ranked by number of job advertisements

No.	Name	URL	Company	registered office	Number of job adver-tisements	Area
				Owner of the portal		
1	Experteer	http://www.experteer.de/	Experteer GmbH	München (DE)	175,046	specialists and managers
2	Jobleads	https://www.jobleads.de/	JobLeads GmbH	Hamburg (DE)	83,090	specialists and managers
3	Placement24	http://www.placement24.com/de/	Placement24 GmbH	Düsseldorf (DE)	75,395	specialists and managers
4	Jobsterne	http://www.jobsterne.de/	Matthaes Verlag GmbH	Stuttgart (DE)	46,392	hotel and catering industry
5	Connecticum	http://www.connecticum.de/	connecticum GmbH	Berlin (DE)	34,207	students, alumni, young professionals (SAY´s)
6	Betriebs-Berater-Jobs	http://www.betriebs-berater-jobs.de/	Deutscher Fachverlag GmbH	Frankfurt a. M. (DE)	25,746	legal, tax and financial consulting
7	Jobware	http://www.jobware.de/	Jobware Online-Service GmbH	Paderborn (DE)	15,105	specialists and managers
8	hotelcareer	http://www.hotelcareer.de/	YOURCAREERGROUP GmbH	Düsseldorf (DE)	14,082	hotel and catering industry
9	Absolventa Jobnet	https://www.absolventa.de/	Absolventa GmbH	Berlin (DE)	7,330	students, alumni, young professionals (SAY´s)
10	fazjob.net	http://fazjob.net/	Frankfurter Allgemeine Zeitung GmbH	Frankfurt a. M. (DE)	6,983	specialists and managers
11	Staufenbiel	https://www.staufenbiel.de/startseite.html	Staufenbiel Institut GmbH	Köln (DE); Frankfurt a. M. (DE)	6,117	students, alumni, young professionals (SAY´s)
12	Jobkurier	http://www.jobkurier.de/	CHECKPOINT HRnetworks GmbH	Bretten (DE)	4,891	specialists and managers
13	Online-Jobs.de	http://www.online-jobs.de/	CareerNetwork JOB-BÖRSE.de GmbH & Co KG	Wiesbaden (DE)	2,800	information technology
14	Jobvector	http://www.jobvector.de/	Capsid GmbH	Düsseldorf (DE)	1,122	natural scientists, medical doctors and engineers
15	Yourfirm.de	http://www.yourfirm.de/	yourfirm GmbH	München (DE)	???	mid-sized sector
16	Unicum Karrierezentrum	http://karriere.unicum.de/	UNICUM GmbH & Co KG	Bochum (DE)	???	students, alumni, young professionals (SAY´s)

Finally, the 15 general job portals listed in Table 1 were assessed in more detail. Table 4 shows them ranked by number of job advertisements (for an easier orientation column B contains the numbers used in Table 1). The name and URL were supplemented by information on the owner and the number of job advertisements in Germany (see column D and G in Table 4). Moreover, in column E, a distinction was added whether the general job portals are job boards or hybrid portals (in the case of Xing and LinkedIn a clear classification was not possible). Column F shows (based on information that was publicly available) whether the portal cooperates with partners. According to the purpose of the partnerships two different categories can be distinguished: range partners for own job advertisement and hit list partners for job search results. The aim in the first case is to extend the range and the scope of its own job advertisements by allowing partners to publish them on their web sites as well. In the second case the aim is to expand the portal's own hit list for job seeker by reporting additional job advertisements form other portals.

To achieve a comparable assessment of the size of the general job portals, as a next step, it was tried to find out the number of job advertisements that are not older than 30 days (column H in Table 4). This analysis has been conducted by the use of web scraping techniques. Unfortunately, due to technical reasons in programming styles of the different portals, it was not always possible to get this information. For the assessment of hybrid job portals an additional web scraping result was needed: the number of job advertisements *not* older than 30 days *and not* carried over from other portals or enterprise websites. The results are shown in column I of Table 4. A comparison between column G and column I shows, that the ranking order is changing when these results are taken into account.

The comprehensiveness of the structured information of the job descriptions was another element of high interest for the assessment of general job portals. That is the reason why it was examined how many descriptive job criteria are available as structured information (column J and K). The more there is, the better, as unstructured information requires the development of complex text mining technologies which is a highly complex task that requires considerable effort. As shown in table 4, the general hit lists of the job portals rarely provide more than four descriptive job criteria (usually including the title of the job, the publication date of the job advertisement, the location and the name of the employer). Some portals provide up to 9 criteria on a second level (accessed when clicking on the job advertisement in the general hit list), while others just provide the job advertisement in unstructured form without additional criteria (indicated by a "0" in column K of table 4).

The selection of the job portals for the further course of the pilot study under WP 1 was mainly based on the size of the job portal (i.e. the number of job advertisements). At the same time, both job boards and hybrid portals were included. As one of the hybrid portals, the job portal of the German Federal Employment Agency (Jobbörse Bundesagentur für Arbeit) needs to be included as it combines the by far largest job board with job advertisements from around 100 partners and job advertisements detected by a job robot on more than 400,000 enterprise web sites. This approach is at the same time of large interest regarding the methodology developed in the pilot study. Apart from that another large, but privately run, hybrid portal (gigajob) was selected, together with the two largest job boards (Stepstone and Monster).

As a result of the additional assessment analyses shown in Table 4 for the ESSnet pilot study the following portals were selected:

1. Jobbörse Bundesagentur für Arbeit (hybrid)
2. Gigajob (hybrid)
3. StepStone (job board)
4. Monster (job board)

Table 4: Germany – 15 general job portals ranked by number of job advertisements and further differentiated between job boards and hybrid portals

Numbers		Name of job portal	Owner of the portal	Type of job portal - job board - hybrid	Partner - range partners for own job advertisement - hit list partners for job search results	Number of job advertisements in Germany			Number of descriptive job criteria from structured information	
according to column G	referring to table 1					altogether	not older than 30 days	own job ad AND not older than 30 days	available on general hit list	available by clicking on the ad link
A	B	C	D	E	F	G	H	I	J	K
1	16	Jobbörse Bundesagentur für Arbeit (public employment agency) http://jobboerse.arbeitsagentur.de	Bundesagentur für Arbeit (Federal Employment Agency)	hybrid	around 100 range partners and hitlist partners sharing (parts of) the job advertisements (upon the request of the employer) in addition a job robot captures job advertisements on more than 400,000 enterprise websites	1,083,929	NA	NA	5	9
2	53	XING https://www.xing.com/jobs/	XING AG	hybrid	interface to the job advertisement database of the Federal Employment Agency (hit list partner)	570,797	NA	NA	4	6
3	11	Gigajob http://de.gigajob.com/index.html	Netzmarkt Internetservice GmbH & Co. KG	hybrid	16 hit list partners (most of them job search engines)	531,112	417,229	212,157*	4	4
4	37	LinkedIn https://de.linkedin.com/job/	LinkedIn Ireland	hybrid	interface to the job advertisement database of the Federal Employment Agency (hit list partner)	488,098	486,791	NA	4	8
5	38	Meine Stadt.de http://jobs.meinestadt.de/deutschland/stellen	meinestadt.de GmbH	hybrid	job advertisements from established business partners and directly from enterprise websites => hit list partners	466,680	360,086	6,287	4	0
6	44	Rekruter http://www.rekruter.de/	FM-Studios GbR www.fm-studios.de	hybrid	interface to the job advertisement database of the Federal Employment Agency (hit list partner)	NA	NA	NA	4	5
7	26	Jobs.de / JobScout24 http://www.jobs.de www.jobscout24.de	CareerBuilder Germany GmbH	hybrid	a lot of advertisements from personnel recruiting persons and temporary work agenies; 9 range partners	115,867	115,194	28,618	4	0
8	23	http://de.jobmonitor.com	Harald Stückler	hybrid	also hit list results form "Monster" and "youfirm"	105,905	105,905	50,130	4	0-4
9	49	StepStone https://www.stepstone.de	StepStone Deutschland GmbH	job board		61,119	60,938	60,938	4	6
10	19	Jobcluster https://www.jobcluster.de	Jobcluster Deutschland GmbH	hybrid	cooperation partner of the Federal Employment Agency (hit list partner)	43,741	NA	NA	6	8
11	39	Monster http://www.monster.de	Monster Worldwide Deutschland GmbH	job board	merger between Monster and Jobpilot; 167 range partners	39,213	NA	NA	4	0
12	27	JobStairs https://www.jobstairs.de	milch & zucker - Talent Acquisition & Talent Management Company AG	job board	8 "target-group-specific" partnerships 53 enterprises; this job board operates under "Top Company Portal"	25,900	NA	NA	4	0
13	47	Stellenanzeigen.de http://www.stellenanzeigen.de	stellenanzeigen.de GmbH & Co. KG	job board	350 range partners; including well-known meta search engines	9,029	9,029	9,029	4	0
14	50	Süddeutsche Zeitung http://stellenmarkt.sueddeutsche.de	Süddeutscher Verlag	job board		8,972	8,972	8,972	4	0
15	35	Kalaydo http://www.kalaydo.de/jobboerse/	Kalaydo GmbH & Co. KG	job board	range partners: 51 daily newspapers and 7 more advertising papers	6,063	5,958	5,958	4	0

* According to an estimation based on web-scraped data, among these job advertisements designated as „own",
there are more than two-thirds that were original posted on the job board of the public employment agency (no. 1 according to column A).

4.2 Greece
Introduction

Till recently, management in Greece had been characterised by concentration of power and control by the top management, with the majority of firms being small businesses and regularly family owned companies (Myloni et al, 2002).

The market is dominated by the presence of seasonal offered jobs and small-medium sized firms. As in other countries under these market conditions, in Greece a significant proportion of the jobs are filled via social networking (Villar et al, 2000; Moira et al, 2004). Nevertheless, companies in Greece are using the modern technology and particularly the internet sites to communicate with potential job applicants. The online recruitment is attracting a growing number of companies (Galanaki, 2002) as it has low cost and is widely used by job applicants (Caers & Castelyns 2010; Anastasiou, S. 2014).

The distance of the Greek sites to the foreign ones are not so great. Regarding the numbers of job seekers and offers, it is expected to be low due to the small job market(Terzis, V. & Economides, A.A. (2005).

The current situation in the contents of online job advertisements in Greece is characterized by limited information the description of the work, the location of the job, the salary offered, the working hours, the size of the organization, its equal opportunities policies, the provisions for child care and several other parameters (Anastasiou, S. 2014).

As a first step of our research, an internet investigation of job portals, job search engines and specialist job sites, was carried out across Greece. According to http://www.greek-sites.gr, which is a site that ranks the greek sites popularity, 28 job portals with domains ".gr" were found. This list is presented in Annex.

Studies regarding the job portals

After an extensive search of the bibliography, few studies using greek job portals have been found. The following two papers, produced by academics, were chosen because they give a quite clear picture about the greek case during the last decate.

1. Terzis, V. & Economides, A.A. (2005). Job Site Evaluation Framework (JSEF) and comparison among Greek and foreign job sites. Human Systems Management, Human Systems Management, Vol. 24, No 3, p.p. 223-237. This paper provides a Job Site Evaluation Framework (JSEF) both from the job seeker and the recruiter point of view. Furthermore, the paper evaluates the state of Greek job sites in comparison to foreigner ones.

2. Anastasiou, S. (2014). Recruitment communication practices in job adverts in Greece through a snapshot of internet sites for job vacancies. International Journal of Economics and Management Sciences, Vol. 3, No. 2, p.p. 09-17 This is a more recent paper, which contains a description about communication practices in the job market and it includes a snapshot of Greek job portal sites. The purpose of this paper is to draw attention to the importance of human factors in the activities of organizations and examine the prevailing practices regarding on what employers offer and seek when advertise their job vacancies

in Greece. Data were collected from major job vacancy sites operating in Greece (http://www.skywalker.gr, http://www.kariera.gr, http://www.mycarriera.gr).

Job vacancy selection for the pilot study

In order to determine which web sites should be focused on within the pilot study, the 14 major job portals are sorted based on the following criteria: a) the number of advertisements (size); b) monthly visitors (June 2016) and c) the Alexa popularity ranking. The results are presented in the Table 5 bellow.

Table 5:   Greece – List of 14 major job portals

A/A	Name	Number of advertisements (7 June 2016)	Target group	Monthly visitors(X1000) June 2016	Alexa Ranking
1	kariera.gr	1,900	General Job board	855	10,920
2	oaed.gr	_	Recruitment agency	1,400	21,217
3	skywalker.gr	3,300	General Job board	647	27,086
4	proson.gr	1,000	National public website	286	31,709
5	asep.gr	_	National public website	248	73,894
6	jobfind.gr	500	General Job board	163	85,166
7	diorismos.gr	>500	Newspaper Website	172	110,586
8	careernet.gr	350	General Job board	156	112,689
9	randstad.gr	200	Recruitment agency	63	253,594
10	proslipsis.gr	200	Newspaper Website	110	273,287
11	neuvoo.gr	12,000	Job search engine	49	317,627
12	mycarriera.gr	150	Job search engine	22	358,217
13	yourse.gr	3,000	Greek Job search engine	33	615,639
14	jobseeker.gr	50	General Job board	16	873,686

It is difficult to assess the quality of the different job web sites. However, taking into account the above mentioned analysis the site "Skywalker.gr" was selected for our initial web scraping experiment in the ESSnet pilot study.

The selection of this portal for further analysis was mainly based on the size of the job portal, the Alexa popularity ranking, the comprehensiveness of the structured information of the job vacancy descriptions and the national level coverage. Moreover, it is mentioned as one of the major job vacancy sites operating in Greece (Anastasiou, S. (2014); http://www.greek-sites.gr).

For the public sector, there are two sites (i.e. oaed.gr and asep.gr). These are considered more easily accessible sources. However, ELSTAT is exploring the possibility of collecting data from the public administrative sources (Social Insurance Institute – IKA, "ERGANI" project) in order to enhance the quality of data and reduce the administrative burden of enterprises. First experiences

In our initial web scraping experiment, the aim was to scrape very specific structured information selected from web site ("Skywalker.gr"). The software https://www.import.io/ was used. Since both structure and content of the selected web site ("Skywalker.gr") was perfectly known, crawler, which is a component of import.io, just had to replicate the behaviour of a human being visiting the web site and collecting the information of interest.

The selected job portal has links from the job offers to a second level of standardised information which consists of the full-text of the job advertisements plus further semi-structured information. The data collected from Skywalker.gr cover the following fields:

- Company name
- Job category
- Contract type (permanent/temporary)
- Working hours (part time/full time)
- Date created
- Location
- Job title
- Salary

The first results reveals that missing data problems exist especially for salary and contract type. Also, taxonomy problems exist in the Job Category and Location fields.

Unfortunately, there is no available data for the Greek case at Cedefop.

Summary

ELSTAT's strategy for this pilot is to consider Skywalker.gr as one of sources for web scraping. This experiment will be expanded to include more job portals (such as kariera.gr), in order to understand the Greek case its potential and its challenges. The comparison of data of vacancies extracted from the web with official data, is going to reveal to what extent these data might be used as a primary or a supplementary source and to assess some key quality aspects.

4.3 Slovenia

There are currently about 30 job portals (or agencies) in Slovenia (See Annex). They can be divided the in three main types:

1. **Job portals** which advertise job vacancies(JV) for enterprises or specialized employment agencies
2. **Specialized employment agencies** which advertise job vacancies mostly for themselves (they "borrow" employees for limited time to other enterprises)
3. **Job portals** that mostly advertise job vacancies abroad

There are two main job portals in Slovenia, MOJE DELO (https://www.mojedelo.com/) and MOJA ZAPOSLITEV (https://www.mojazaposlitev.si/). The remaining portals either advertise very few job vacancies, or have job vacancies that mostly can be found on one of the two main portals.

MOJE DELO is the largest job portal in Slovenia with around 1300 available job vacancies. The structured part of the job advertisement contains the following:

- Publication date of job advertisement
- Job title
- Name of enterprise
- Location of work
- Gender

The text part (unstructured part of advertisement) it could be found:
- Deadline for application
- Skills needed
- Experience needed
- Information about whether the job is permanent or part time
- Level of education
- Contact information for employer

MOJA ZAPOSLITEV is the second largest job portal in Slovenia with around 900 job vacancies. Around 10% of job vacancies are ineligible (student work or work abroad). The content is highly structured. In the structural part of the site it is possible to find:

- Publication date of job advertisement
- Job title
- Name of enterprise
- Location of work
- Gender
- information about whether the JV is permanent or part time
- Contact information of employer
- Skills needed
- Experience needed
- Deadline for application
- Level of education

It is estimated that only about 25% of all jobs advertised in Slovenia are advertised through job portals and that MOJE DELO and MOJA ZAPOSLITEV together cover more than 95% of all job vacancies advertised on job portals.

4.4 Sweden

To build up the Swedish job portal inventory, we started with keywords search using Google and Bing. Keywords such as "jobb portal", "jobb portal rank" and "sök jobb" have been used. Many hits were returned, including job portals, a few lists of job portals and job search engines. Since the information on the portal lists have no references, they are not presented directly as sources. The portals in the lists were nevertheless examined together with other returned job portals. A list of job portals presented on the Job Security Foundation are also included.

After the keywords search, we combined the result with another search approach. Five sources were used for the search: 1) Swedish Employment Agency, 2) the main newspapers, 3) labour unions; 4) job hunters' websites; 5) social media. In total, 18 job portals have been identified as potentially of interest for the project (see Annex for URLs).

Our ranking of the job portals focus on size, that is, the total number of job advertisements available on a job portal on the examining date.

Table 6 ranks the twelve largest job portals according to number of advertisements as of June 10, 2016. The job portals are classified according to if they are general job boards or specific job portals.

Table 6:   Sweden – List of twelve largest job portals by June 12 2016 (number of advertisements)

Name of job portal	Numer of ads	Comment
Platsbanken	43,720	Job board, Swedish Employment Agency
Jobbsafari	31,216	Job board
Careerbuilder	7,034	Job board, can be accessed with API with agreement
Karriärguiden	3,477	Job board
Metrojobb	40,929	Job board, largest Swedish free newspaper
LokusJobb	1,080	Job board, collect ads from more than 50 Swedish newspapers.
DN Lediga jobb	~1,000	Job board, largest Swedish newspaper
Dagens Industri	~1,000	Swedish economy newspaper
Medrek	1,301	Specific job board for medical care and life sciences
Ingenjörsjobb	1,441	Specific job board for engineers
Sveriges Veterinärförbund	16	Swedish veterinary union job board
Flygtorget	21	Specific job board for work in air travel industry

In this first trial, to investigate job boards were the main goal. Job search engines and hybrid portals were of secondary importance, in order to avoid scraping duplication of job offers and following the agreed procedure to focus mainly on websites that publish original job offers only. There are still likely to be duplicates, i. e. different advertisements pertaining to the same job offer or the same advertisement being published more than once at a web site or at different web sites, and this will being investigated in the following task of WP 1.

For the pilot study, the job portal of the Swedish Employment Agency (Platsbanken) has been selected as the main source. This choice has several reasons. The legal situation regarding web scraping is still unclear at Statistics Sweden, but since Platsbanken is run by a government agency, access to data could be granted with reference to the Statistics Act. Further, Platsbanken is the largest job portal in Sweden and contains a rich amount of data. In addition, business identification is avalaible in the data, making it possible to link the Platsbanken data with the Swedish business register, maintained by Statistics Sweden, and data from the job vacancy survey.

No previous studies have been found regarding assessment or classification of job portals in Sweden. Data from Platsbanken have been analysed in a previous study (Larsson and Lindgren 2011, Platsannonser som informationskälla) where text analysis was used to find patterns in 400 000 advertisements during 2009 and 2010. The main question was to find the most important qualities and competencies that employers asked for, and to find any relations between categories of professions.

The Platsbanken test data comprise all advertisements published over the years 2012 to 2015, about 1.85 million advertisements in total. This includes specific variables (company identification and name, contact information, profession, type of employment, date of publication, etc.) as well as the complete texts of the advertisements. The focus of the analysis will be on structured or semi-structured variables, but text analysis will also be tested. Figure 4 shows the professional areas of the four year data set, indicating that the data set covers a good range of professions

Figure 4:   Sweden – Professional areas represented in the dataset[6]

Pie Chart of Professional Areas
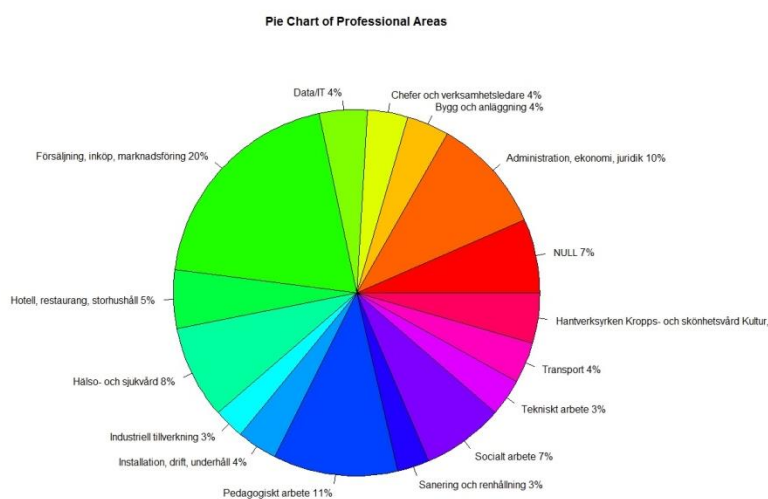
Our strategy is to view the Platsbanken data base as our main source, further analyse the data, and identify gaps, i. e. industries or types of businesses that appear not to use Platsbanken. For these gaps, we plan to contact other job portals in order to complement the data. The other job portals are not public sector, so other types of agreements have to be negotiated with them (if possible). Access to data may be granted by API or other arrangements. Only Careerbuilder provides information of API on the website.

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[6] The complete name of slice "Hantverksyrken Kropps- och skönhetsvård Kultur …" is " Hantverksyrken Kropps- och skönhetsvård Kultur, media, design Militärt arbete Naturbruk Naturvetenskapligt arbete Säkerhetsarbete 4%". The slice "Null" represents the advertisements missing their professional names and id's.

4.5 United Kingdom

An extensive internet search of job portals, job search engines, and specialist job sites was conducted across UK websites (using Google and Bing), finding 35, 43, and 72 websites respectively. This is not an exhaustive list and will be updated as and when new websites are found. The majority of these sites have domains ".co.uk" or ".com". A list of the major UK job portals can be found in the Annex.

This search also uncovered a number of websites including job portal rankings, these include: http://www.splashfind.co.uk/Top_100_UK_Job_Websites.html which contains a ranked list of 100 job web sites: http://www.bestjobwebsites.co.uk/ which contains a list of the 10 of the top jobsites; http://theundercoverrecruiter.com/top-uk-job-boards/ which contains a list of the top 10 job sites for 2014 to 2016. Within these sites there is no distinction made between job portals and job search engines.

Based on these results, and to determine which web sites should be focused on within the pilot studies the top of the job portals, job search engines, and specialised online job websites were selected based on the number of job vacancies available and examined in more detail. A list of these can be found in the Annex.

The quality of the different job web sites is difficult to assess, especially the job search engines. The job web sites chosen for the pilot studies were chosen based on the number of job advertisements of the site and the preserved quality of the web site.

A small number of studies using job portals have been found within the UK. These have been produced by academics, Government, and job portal companies. Referenced below are a number of these studies:

- Indeed.com blog (ongoing). Available online at: http://blog.indeed.co.uk/ [Accessed 24/6/2016]
- Citizens Advice (2015). Job adverts How they can be improved for job hunters and recruiters. Available online at: https://www.citizensadvice.org.uk/Global/CitizensAdvice/Work%20Publications/Jobadvertsrecommendations FINAL.pdf [Accessed 24/6/2016]
- Davies, K. (2008) Job hunting in the UK using the internet: finding your next information professional role in the health care sector and the skills employers require, Health Information and Libraries Journal, 25, 106–115.
- Capiluppi A, Baravalle A (2010) Matching Demand and Offer in On-line Provision: a Longitudinal Study of Monster.com. In: WSE 2010 Proceedings the 12th IEEE International Symposium on Web Systems Evolution (WSE 2010), Timisoara,17-18 September 2010. http://roar.uel.ac.uk/995/

Selected pilot study job portals/search engines

CV_library, Monster, Reed and Total Jobs are part of the pilot study as the UK has access to pre-collected data by a third party (CEDEFOP, more details below). These job portals have large quantities of job advertisements making them suitable selections.

Adzuna (https://developer.adzuna.com/) and Indeed.com (http://www.indeed.co.uk/publisher) have also been selected for the pilot study because they both have large amounts of job advertisements on their web sites and open API's which makes data collection more efficient.

Public employment office job portal

Universal job match: https://jobvacancies.businesslink.gov.uk/IndexDwp.aspx. This should be considered in the pilot study as it is a large, easily accessible source of data.

First experiences with data access

API's

Adzuna and Indeed.com are large job search engines which have open API's. This enables fast, efficient data collection from these websites. Information collected:

- Job category
- Company name
- Contract type
- Contract time
- Date created
- ID
- Location (down to longitude and latitude)
- Salary (minimum and maximum)
- Job title
- Job description

A request can pull down 1,174,885 and 602,391 job vacancies for Adzuna and Indeed.com respectively (on 24 June 2016). This can be updated daily with the most recent job vacancies added to the websites. These data can then be analysed for example, the graphs below show the locations and distribution of minimum salaries (above and below average) for the job vacancies put onto the Adzuna site on the 20 June 2016.

Figure 5: UK – Distribution of offered salaries for job adverts from Adzuna on the 20 June 2016
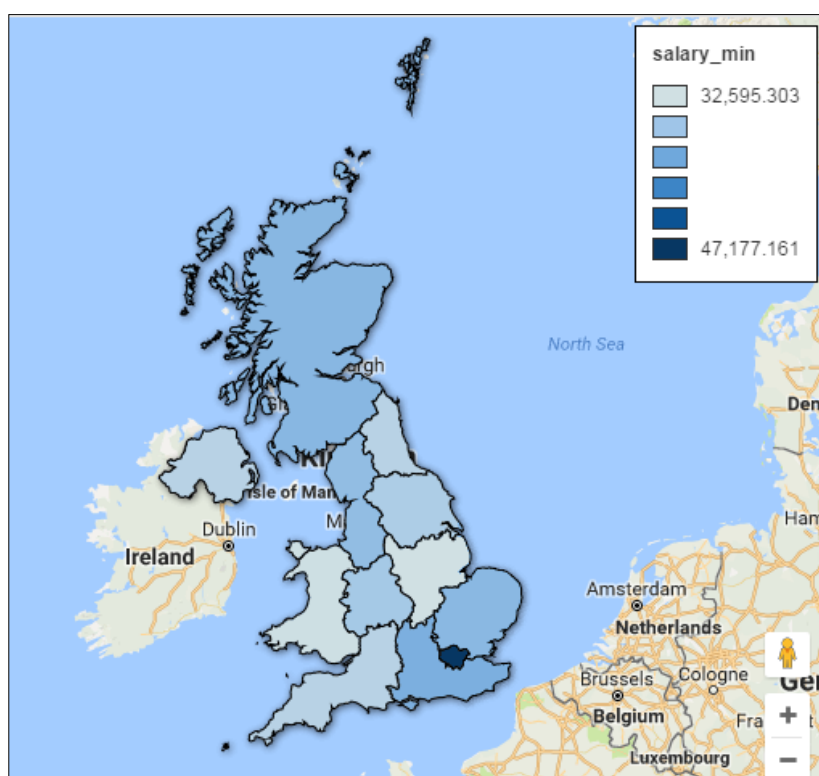
The limitations include missing data, especially for salary and location variables, misclassifications of occupations. There are also some limits to the amount of requests that can be made for data. For example, only 240 requests can be made to Adzuna per minute. This increases the time it takes to pull down the data but does not hinder the process. Indeed.com does not limit pull requests but multiple requests are necessary as certain search terms (API parameters) need to be passed to obtain results.For example, if the search terms is query = "Data Scientist" and country = "Great Britain", the outcome job count is 1891 (as per June 24 2016).

It is clear that duplication is a complex issue. Duplicate job advertisement can be found both across multiple job portals and engines, but also within them. However, duplicate job advertisements do not contain identical information and so

Third party data acquisition:

The European Centre for the Development of Vocational Training (Cedefop) was founded in 1975 and based in Greece. Since 1995, Cedefop supports development of European vocational education and training (VET) policies and contributes to their implementation.

In 2015, Cedefop concluded a pilot study on real-time labour market information with the aim to determine the feasibility of utility and effectiveness of real time data collection of labour market information from web portals. This ran from June 2015 to September 2015 and the system collected 4,228,488 job advertisements, after quality control and duplicate removal, the number of vacancies has been reduced to 2,980,546 (70%).

Cedefop collected data for three to four job portals for the UK; Republic of Ireland; Germany, Czech Republic and Italy. These were selected based on the number of job advertisements and their accessibility.

CV library, Monster, Reed and Total jobs were selected for the UK. Figure 6 shows the distribution of job adverts across these job portals.

Figure 6:   UK – Distribution of job advertisements across Cedefop data collection for the UK
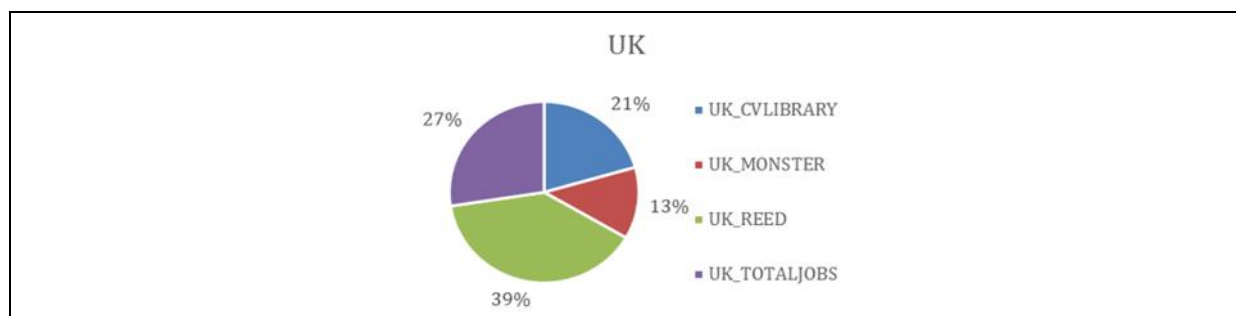
Data has been collected for:

- Occupation: ISCO classification up to level 4
- Territorial units: Up to Nuts 3
- Sector of economic activity: NACE classification up to level 2
- Type of contract: permanent vs. temporary
- Working hours: part time vs. full time
- Skill (ESCO classification plus additional skills category)

Cedefop have faced a number of challenges in setting up this piloted which are briefly listed below. For further details see CEDEFOP/CRISP/NVF, 2014.

- Web scraping can put a large load on a website. Cedefop scrape over long period of time (up to a week for the most complicated) to reduce the load.

- As API access is more efficient than web scraping Cedefop started by trying to get direct access. In several cases there has been a formal agreement put in place, in some cases webmasters allowed the scraping without entering a formal agreement, in a few cases there has been no reply. In no case there has been a refusal.

- Machine learning techniques were necessary to map variables such as occupation to taxonomies (e.g. SIC). This is time consuming and requires maintenance.

- De-duplication within and across sources has a large impact on the final results (see Table 7):

- The choice of sources is a time consuming exercise involving website pre-investigation to determine the most popular and most used job boards in the respective countries. Websites were ranked based on a set of criteria's and then chosen based on this rank.

For each attribute the subsequent tables show the number of vacancy downloaded, the number of non-null records (i.e. the vacancies that have a non-null value for the specific attribute), and the number of records that were matched with the reference taxonomy.

Table 7:   Amount of data collected by Cedefop, non-null records and matched records

	(A) # of Vacancies	(B) Non-null Records	(C) Matched Records	% (B)/(A)	% (C)/(A)	% (C)/(B)
Area (NUTS starting from level 3)	2,142,942	2,142,942	1,325,548	100.0	61.9	61.9
Industry (NACE starting from level 2)	2,142,942	1,664,102	1,582,023	77.7	73.8	95.1
Working hours (custom taxonomy)	2,142,942	1,554,267	1,125,167	72.5	52.5	72.4
Education (ISCED taxonomy)	2,142,942	79,839	79,839	3.7	3.7	100.0
Salary (no taxonomy)	2,142,942	2,042,074	NA	95.3	NA	NA
De-duplication (same source)	4,228,491	2,980,546	NA	70.5	NA	NA

Summary

The UK strategy for this pilot is to consider Cedefop as a core source as it has already gone through extensive processes of cleaning, deduplication and enrichment. Therefore, this is an opportunity to accelerate past some of the complex issues of data collection and processing and to more quickly answer more fundamental questions about the feasibility of using this kind of data for statistical purposes. Although we already have an agreement to access the Cedefop online system, this has some limitations and so we will investigate the feasibility of gaining access to the underlying data.

In addition, the UK will supplement these sources with data from two job search engines (i) Adzuna and (ii) Indeed. The main justification for this choice is that these websites both offer access to the data using APIs, which is an easier and more robust method than using web scraping robots. The main disadvantage of this approach is that the problem of duplication with these job search engines will be more problematic. However, deduplication is an issue for any approach that combines multiple job portals and so if we can identify a method for de-duplicating job offers from job engines, then this would offer significant benefits.

These data will be combined and used to identify the level of coverage of these data sources, and how these data relate to the currently collected job vacancy survey data. The intention is that this knowledge will then be used to select additional job portals to increase coverage where it may be lacking. This would probably involve some kind of targeted web scraping approach.

5 Conclusions

The study of the job portals in the countries participating in the ESSnet pilot study has shown that the online recruitment environment is complex in many of the countries. In some of the countries there are a large number of job portals in place that exhibit a considerable variability regarding the business models applied by the portal owners. The inventory provided by the present report shows that job portals do not follow a uniform pattern. On the contrary, there are different types of job portals that are quite different as regards the services they provide. Job boards need to be distinguished from job search engines. The fuzzy category of hybrid job portals combines both types is probably the most challenging to assess. Even within these models there are differences in the business models of the portals. For example, some charge enterprises a fixed fee for the publication of job advertisements, others offer flat rate arrangements, and still others use cost-per-click models. In addition to that, there are numerous interrelationships between job boards, job search engines and hybrid job portals. Job boards usually have a (high) number of range partners (job search engines as well as hybrid portals) that allow them to increase their internet coverage range. Job search engines and hybrid portals have an (equally high) number of hit list partners aiming at increasing the own hit list by including job advertisements from other job boards. While job boards usually have range partners and job search engines (by definition) hit list partners, hybrid job portals typically have both range and hit list partners. All this leads to a situation in which each job advertisement can be found on (much) more than one job portal.

Understanding the infrastructure, business models and interrelationships of job portals in each country therefore is vital for producing reliable job vacancy statistics on the basis of online job advertisements. The quality of the statistics and the efficiency of its production will largely depend on making the right decisions when selecting job portals for analysis. Sound knowledge of the business models and the interrelationships between the portals are necessary to make the right decisions when tailoring, e.g., de-duplication procedures and other data cleaning processes.

Also technologically, there is some diversity between the portals, which makes them not all equally suitable to be used for web scraping. This is probably not a major issue if data access could be granted by agreements with the portal owners. The technological diversity of the portals nevertheless implies that the effort needed to collect and process the data may increase considerably with an increasing number of job portals included for statistics production.

An important insight from the present inventory is that there are important differences in the job portal environment between the countries participating in the pilot study. This concerns not only the number of job portals (ranging from less than 50 to more than 1000 per country) and the preferred business models used by the portal owners. Also the design of job advertisements, both regarding contents and style varies between countries. The differences between countries are an important input for future guidelines and can impose some limits regarding the international comparability of job vacancy statistics based on online job advertisements.

Another essential element is the time dimension, as the provision of short-term trend data is one of the aspirations connected with job vacancy statistics based on online job advertisements. As the analysis has shown, job portals are evolving rapidly. Producing statistics based on such data requires closely following the developments on this market, to understand changes regarding, e.g. the

business models and the popularity of the job portals selected, in order to be able to modify the statistical production system when needed and to limit breaks of time series to a minimum. Moreover, it needs to be considered that the number of players on the recruitment market is not stable: Some portals might be bought by competitors, URLs that were once popular can disappear and entirely new players, as in the case of online social network services (that were recently particularly active in the recruitment market) may enter the scene and make new forms of job portals appear (but also change the terms for data access). For all these reasons, raising an inventory of job portals is not a one-off exercise, but a constant task.

The selection proposed on the basis of the present inventory tried to make sure that, despite the differences in national context, similar criteria have been applied. Generally, job boards were preferred job search engines and hybrid portals (still, for reasons of data access and comparisons also few search engines and hybrid portals were included). Job portals with a larger number of job advertisements were preferred to those with a smaller number of advertisements. Furthermore the possibility to access the data and the completeness of the structured information provided in the job advertisements have been used as supplementary criteria. In countries, in which the job portal of the public employment agency was of high relevance this source was included in the selection of portals for the further course of the pilot study. Table 8 summarises the portals that have been selected.

Table 8:   **Summary of the job portals selected for the pilot study**

Country	Job portal name	Type
Germany	Jobbörse Bundesagentur für Arbeit (*https://jobboerse.arbeitsagentur.de*)	Hybrid (public employment agency)
	StepStone (*https://www.stepstone.de/*)	Job board
	Monster (*http://www.monster.de/*)	Job board
	Gigajob (*http://de.gigajob.com*)	Hybrid
Greece	Skywalker (*http://www.skywalker.gr/*)	Job board
	Kareira (*http://www.kariera.gr/*)	Job board
Slovenia	*To be completed*	
Sweden	Platsbanken (*http://www.arbetsformedlingen.se/platsbanken*)	Job board (public employment agency)
United Kingdom	Cedefop data	Data collected and cleaned by Cedefop from job boards and hybrid job portals
	Adzuna (*https://www.adzuna.co.uk/*)	Job search engine
	Indeed (*http://www.indeed.co.uk/*)	Job search engine

The establishment of the job portal inventories already revealed a number of issues that require further attention when analysing the job portals selected in detail in the further course of the pilot study:

- How many duplicate job advertisements can be found within an in between the job portals selected? The issue of duplicates is a crucial one for the feasibility of using online job advertisement data for the production of statistics. It therefore needs to be investigated whether duplicates can be identified with the help of the structured information available

from the job boards and how much effort is required to develop suitable de-duplication tools.

- Does the occupational and economic activity structure of the job advertisements on the selected portals differ and how does it relate to the structure reported by the established Job Vacancy Statistics? The structure of the job advertisements posted on the job portals selected has to provide a sufficient basis for an unbiased measurement. Again, this requires that different types of jobs are equally well covered on the portals selected (or that suitable models can be developed to account for the differences). The further course of the pilot will need to analyse the structural differences and look for appropriate methods to produce statistics.

- How large is the scope of variables that can be collected from the structured information made available by the job portals? Already during the work on the inventory it became clear that the richness of the information available in structured form tends to be rather limited on many job portals. The further work in the project will have to analyse to what extend filters or advanced search functions offered by the portal owners may help to enlarge the number of variables that can be made available. A further interesting question is whether an access by agreement with portal owners may not only facilitate the data access but also make a higher number of variables with structured information available (which may not be publicly accessible on the portal).

- Can the similarly complete data be obtained in different countries and how harmonised would such a data collection be? Given the considerable differences of the job portal environment across countries, the issue of cross-country comparability will have to be addressed. This relates to the possibilities of data access, the number of variables available, but also the feasibility of implementation of the necessary methods and procedures in different countries. Even if the focus of the pilot study is first and foremost on the feasibility of producing job vacancy statistics based on online job advertisement data at national level, the possibility of establishing a harmonised statistics will need to be assessed at the end of the pilot study.

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Annex

Lists of all (major) job portals by country

Germany

Table 9: Germany – List of currently active job portals (500 and more job advertisements posted)

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
1	Link	Personalberaterportal	11.01.2014	General job portals	1,234,343	15,000	1,009,660
2	Link	PKO	17.01.2016	General job portals	1,108,309	1	11,531,169
3	Link	JobJet	11.01.2014	General job portals	1,031,113	1	29,999,999
4	Link	Xing Stellenmarkt	31.12.2015	General job portals	1,000,000	14,000,000	1,049
5	Link	Jobcluster	11.01.2016	General job portals	535,535	20,000	4,538,579
6	Link	Bankjob24	23.01.2016	General job portals	515,836	1	20,153,870
7	Link	Quoka	30.01.2016	General job portals	479,324	3,200,000	5,797
8	Link	EURES The European job mobility portal	23.09.2015	General job portals	470,232	0	860
9	Link	Arbeitsagentur	23.12.2015	General job portals	451,392	10,000,000	2,347
10	Link	Meinestadt	12.02.2016	General job portals	431,048	1,400,000	3,332
11	Link	Stellen24.de	07.01.2016	General job portals	385,411	1	5,696,957
12	Link	0049-jobs.de	06.02.2013	General job portals	350,000	1	10,798,494
13	Link	Online-Stellenmarkt.net	06.01.2016	General job portals	333,754	130,000	178,230
14	Link	MeineStellenboerse.de	03.02.2016	General job portals	332,180	15,000	587,100
15	Link	Jobnetzwerk 50plus.de	06.01.2016	General job portals	321,484	1	6,291,987
16	Link	Jobinfo24	30.01.2016	General job portals	284,497	8,000	1,079,937
17	Link	Rekruter.de	17.01.2016	General job portals	259,679	20,000	664,615
18	Link	Cylex Jobs	03.02.2016	General job portals	251,430	15,000	636,900
19	Link	Jobomat.de	31.12.2015	General job portals	210,150	120,000	154,894
20	Link	Jobscout24	22.01.2016	General job portals	201,705	510,000	50,752
21	Link	UP2City	23.12.2015	General job portals	191,370	4,000	3,381,927
22	Link	Jobhunter.de	11.04.2012	General job portals	190,090	1	6,252,821
23	Link	Azubitage Ausbildungsplätze	13.04.2012	Specific job portals (apprenticeships, trainees)	180,710	1	2,588,746

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
24	Link	MyHammer	07.04.2013	Specific job portals (crafts)	171,695	270,000	44,657
25	Link	MV Job	14.01.2016	Regional job portals	171,252	1	2,385,176
26	Link	1A-Stellenmarkt	29.01.2016	General job portals	154,743	4,000	1,172,605
27	Link	LinkedIn Deutschland	23.09.2015	General job portals	126,611	2,400,000	14
28	Link	D-Job.de	03.03.2014	General job portals	126,105	1	291,931
29	Link	Jobboerse-direkt.de	08.02.2016	General job portals	116,061	30,000	621,118
30	Link	Oberpfalznet	16.01.2016	Regional job portals	107,938	10,000	83,408
31	Link	Logistikjobs24.de	05.02.2016	Specific job portals (transport, logistics)	107,466	1	29,999,999
32	Link	XING Projects	05.02.2016	Specific job portals (IT)	100,001	12,700,000	1,116
33	Link	Deutschlandstellen24.de	05.02.2016	Regional job portals	99,946	1	13,894,440
34	Link	Stellenanbieter	11.01.2014	General job portals	94,628	10,000	831,539
35	Link	Jobevolution	24.10.2015	Specific job portals (apprenticeships, trainees)	86,000	10,000	1,123,987
36	Link	RegioBizz.de	04.02.2016	General job portals	77,863	2,000	7,011,608
37	Link	Anonza	29.01.2016	General job portals	74,019	20,000	527,733
38	Link	IT-Jobs.net	05.02.2016	Specific job portals (IT)	72,765	1	29,999,999
39	Link	jobconsult.de	05.02.2016	Specific job portals (managers, experts)	72,661	1	29,999,999
40	Link	JobLeads	30.01.2016	Specific job portals (managers, experts)	70,000	170,000	124,041
41	Link	Placement24	29.01.2016	Specific job portals (managers, experts)	68,450	35,000	432,071
42	Link	KleinLink eBay	29.01.2016	Regional job portals	66,643	49,800,000	291
43	Link	Timeworkers.de	02.02.2016	Specific job portals (temp agencies, side jobs)	60,452	20,000	761,465
44	Link	Kununu Stellenmarkt	31.01.2016	General job portals	58,997	1,600,000	16,357
45	Link	Jobstimme / Heilbronner Stimme	30.08.2013	Regional job portals	58,160	25,000	435,797

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
46	Link	StepStone	31.12.2015	General job portals	57,498	4,600,000	4,639
47	Link	Karrieresprung.de	28.03.2016	Specific job portals (graduates, young professionals)	57,108	1	2,595,897
48	Link	Nordclick	02.02.2016	Regional job portals	55,877	3,900,000	5,048
49	Link	jobs.automobilwoche.de	01.04.2016	Specific job portals (Car retail and repair)	55,741	51,100	178,081
50	Link	Jobhamster.de	07.02.2016	General job portals	55,740	1	3,809,157
51	Link	Karriere-WELT	23.01.2016	General job portals	53,913	1	823
52	Link	Workpool Jobs DE	08.02.2016	General job portals	53,343	1	11,044,004
53	Link	cleantechjobs	06.02.2016	Specific job portals (energy, renewable energy)	52,720	1	10,990,070
54	Link	fapool.de	08.02.2016	General job portals	51,875	1	18,521,310
55	Link	Jobalisten.de	08.02.2016	General job portals	51,873	1	5,378,938
56	Link	German Personnel	30.01.2016	Specific job portals (temp agencies, side jobs)	51,471	350,000	71,038
57	Link	Stellenmarkt.de	22.01.2016	General job portals	49,372	90,000	158,063
58	Link	Locanto Jobs	24.03.2013	General job portals	48,656	40,000	156,104
59	Link	Jobsterne.de	07.03.2016	Specific job portals (hotels, restaurants)	47,544	86,400	316,694
60	Link	Berufsstart	20.09.2012	Specific job portals (graduates, young professionals)	46,490	55,000	180,988
61	Link	Fast-Alles	18.07.2013	General job portals	45,051	30,000	391,670
62	Link	Audimax	01.02.2016	Specific job portals (graduates, young professionals)	42,500	100,000	214,820
63	Link	Jobs-in-mittelhessen.de	03.02.2016	Regional job portals	40,429	9,000	1,019,806
64	Link	medizinjob.net	05.02.2016	Specific job portals (health)	38,637	1	13,357,157

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
65	Link	Aubi-Plus	01.02.2016	Specific job portals (apprenticeships, trainees)	38,050	190,000	84,507
66	Link	Study-Plus	02.04.2013	Specific job portals (graduates, young professionals)	37,856	190,000	82,562
67	Link	jobfair24.de	31.05.2011	Specific job portals (graduates, young professionals)	35,798	1	1,525,518
68	Link	Arbeitsmarkt-ostfriesland.de	24.12.2015	Regional job portals	35,371	1	15,550,957
69	Link	Stadtlist.de	23.07.2012	General job portals	35,101	140,000	160,271
70	Link	Connecticum	23.01.2016	Specific job portals (graduates, young professionals)	34,881	110,000	173,458
71	Link	Berufsstart.de	30.01.2016	Specific job portals (graduates, young professionals)	33,623	55,000	5,811,534
72	Link	Arbeitsmarkt Ostfriesland	17.01.2016	Regional job portals	33,256	1	6,396,577
73	Link	technische-berufe.net	05.02.2016	Specific job portals (engineers)	33,110	1	10,408,361
74	Link	Ingenieur24.de	22.01.2016	Specific job portals (engineers)	31,769	2,000	7,916,472
75	Link	Jobmorgen.de	13.01.2016	Regional job portals	30,340	20,000	613,400
76	Link	Mediakarriere	05.02.2016	Specific job portal (other)	30,129	1	29,999,999
77	Link	Deutsches Pflegepersonal.de	28.01.2013	Specific job portals (health)	30,000	9,000	567,793
78	Link	Monster Deutschland	31.12.2015	General job portals	29,461	2,000,000	11,527
79	Link	LogistikJob24	26.01.2016	Specific job portals (transport, logistics)	29,379	1	29,999,999
80	Link	Karriere.com	23.09.2015	General job portals	28,424	1	6,092,410
81	Link	Careerbuilder Deutschland	29.12.2015	General job portals	25,809	270,000	121,128
82	Link	NWZ Nordwestzeitung Oldenburg	16.01.2016	Regional job portals	25,765	45,000	31,308
83	Link	BBV-net	05.02.2016	Regional job portals	25,213	100,000	233,117

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
84	Link	GT-JObs.de	02.01.2016	Regional job portals	25,056	7,000	1,923,639
85	Link	digap.de	24.03.2013	General job portals	24,740	1	29,999,999
86	Link	Vermittlungswerk	30.01.2016	Specific job portals (temp agencies, side jobs)	23,446	1	29,999,999
87	Link	Jobeinstieg.de	15.04.2012	Specific job portals (graduates, young professionals)	22,497	230,000	107,774
88	Link	CNC-Arena	07.04.2013	Specific job portals (engineers)	22,320	0	225,789
89	Link	Tools-Arena	07.04.2013	Specific job portals (engineers)	22,320	0	225,789
90	Link	Blech-Arena	07.04.2013	Specific job portals (engineers)	22,320	0	225,789
91	Link	Schleif-Arena	07.04.2013	Specific job portals (engineers)	22,320	0	225,789
92	Link	PLM-Arena	07.04.2013	Specific job portals (engineers)	22,320	0	225,789
93	Link	Robotik-Arena	07.04.2013	Specific job portals (engineers)	22,320	0	225,789
94	Link	Experteer	29.12.2015	Specific job portals (managers, experts)	22,240	350,000	68,689
95	Link	Jobstairs.de	23.09.2015	General job portals	22,202	150,000	148,507
96	Link	IHK-Lehrstellenbörse	04.02.2016	Specific job portals (apprenticeships, trainees)	22,140	100,000	161,499
97	Link	JobHai	29.01.2016	General job portals	21,724	1	29,999,999
98	Link	Arbeit24.de	30.01.2016	Specific job portals (crafts)	21,613	1	4,218,815
99	Link	Textination	01.06.2011	Specific job portals (fashion)	21,174	3,000	2,339,869
100	Link	Zeitarbeit-Job-Netzwerk.de	03.02.2016	Specific job portals (temp agencies, side jobs)	20,847	5,000	1,597,196
101	Link	Ingenieursjob.de	08.04.2016	Specific job portals (engineers)	20,269	1	14,610,987
102	Link	Qpur	23.07.2012	General job portals	20,000	1	29,999,999

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
103	Link	Freelancermap	26.01.2016	Specific job portals (IT)	18,672	60,000	136,957
104	Link	Job1.de	04.02.2016	General job portals	18,370	4,000	2,423,879
105	Link	MyJobnextdoor	31.05.2011	General job portals	18,217	15,000	708,271
106	Link	Blauarbeit.de	15.04.2012	Specific job portals (crafts)	18,092	60,000	169,957
107	Link	Karriere.Net	24.10.2015	General job portals	18,082	1	9,608,182
108	Link	Deutschlands100.de	17.07.2012	General job portals	17,826	15,000	732,918
109	Link	LVZ Online Leipziger Volkszeitung	02.01.2016	Regional job portals	17,793	35,000	386,393
110	Link	Jobs-München	05.02.2016	Regional job portals	17,477	1	13,622,851
111	Link	Jobothek	29.01.2016	Regional job portals	17,076	1	3,798,266
112	Link	HAZ Hannoversche Allgemeine	02.01.2016	Regional job portals	17,047	35,000	398,513
113	Link	Neue Presse	14.01.2016	Regional job portals	16,830	2,000	8,259,594
114	Link	Jobzone24	31.03.2013	General job portals	16,497	1	29,999,999
115	Link	SIFATipp.de	31.01.2016	General job portals	16,100	15,000	404,199
116	Link	Ostsee-Zeitung	17.01.2016	Regional job portals	16,090	6,000	2,484,575
117	Link	CampusLink	24.10.2015	Specific job portals (graduates, young professionals)	16,047	10,000	1,300,123
118	Link	HotelCareer	31.12.2015	Specific job portals (hotels, restaurants)	16,014	370,000	58,009
119	Link	GastronomieCareer.de	29.12.2015	Specific job portals (hotels, restaurants)	15,994	10,000	964,136
120	Link	E-Commerce-Jobs.de	07.04.2016	Specific job portals (marketing, sales)	15,701	1	17,619,123
121	Link	Meister.de	04.01.2016	Specific job portals (crafts)	15,680	45,000	379,836
122	Link	StellenLink.de	31.12.2015	General job portals	15,606	880,000	24,475
123	Link	Jobs-Berlin	05.02.2016	Regional job portals	15,420	1	16,840,944
124	Link	Schaumburger Nachrichten	13.01.2016	Regional job portals	15,358	1	1,534,752

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
125	Link	eUNi Career Portal	15.04.2012	Specific job portals (graduates, young professionals)	15,291	85,000	175,318
126	Link	jobpilot	23.09.2015	General job portals	14,700	25,000	203,437
127	Link	Alle-Muenchen-Jobs.de	09.04.2016	Regional job portals	14,521	1	29,999,999
128	Link	Berlin-Jobs	23.01.2016	Regional job portals	14,286	1	16,268,017
129	Link	Spiegel Online Stellenmarkt	20.01.2016	General job portals	14,182	60,800,000	345
130	Link	Jobware.de	31.12.2015	Specific job portals (managers, experts)	14,037	101,000	66,379
131	Link	Berlinjobs.de	09.04.2016	Regional job portals	14,015	1	22,187,123
132	Link	Alle-Bremen-Jobs.de	09.04.2016	Regional job portals	14,015	1	29,999,999
133	Link	Arbeitsmarkt Franken	31.05.2011	Regional job portals	14,000	1	29,999,999
134	Link	Meinpraktikum.de	23.09.2015	Specific job portals (apprenticeships, trainees)	13,903	180,000	120,955
135	Link	Medirandum	17.04.2013	Specific job portals (health)	13,485	0	3,354,123
136	Link	Vertriebsjobs.com	07.04.2016	Specific job portals (marketing, sales)	13,483	1	17,628,123
137	Link	Recruitment Specialist	02.02.2016	General job portals	13,219	30,000	242,449
138	Link	Arbeiten.de	07.04.2012	Specific job portals (crafts)	12,888	20,000	553,941
139	Link	Entwickler.com	31.03.2013	Specific job portals (IT)	12,671	170,000	163,904
140	Link	Deltajobs.de	08.04.2016	Regional job portals	12,653	1	14,610,987
141	Link	Top-Hoteljobs.de	25.03.2013	Specific job portals (hotels, restaurants)	12,268	0	24,987,987
142	Link	AZUBIYO	02.02.2016	Specific job portals (apprenticeships, trainees)	11,612	460,000	34,893
143	Link	Aller Zeitung	02.01.2016	Regional job portals	11,197	180,000	129,792
144	Link	Ingenieurline.de	20.01.2016	Specific job portals (engineers)	11,141	1	18,153,167

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
145	Link	Sanojobs.de	04.01.2013	Specific job portals (health)	11,110	1	2,685,499
146	Link	runningoffice.com	17.01.2016	Specific job portals (office)	11,048	1	8,630,015
147	Link	Wolfsburger Allgemeine Zeitung	13.01.2016	Regional job portals	10,688	2,000	2,161,781
148	Link	eFinancialCareers Deutschland	30.12.2015	Specific job portals (financial services)	10,380	20,000	508,116
149	Link	MeinChef	02.02.2016	General job portals	10,000	85,000	199,533
150	Link	local24 Jobs	03.02.2016	Specific job portals (temp agencies, side jobs)	10,000	290,000	78,978
151	Link	Finanz-Stellenmarkt	30.01.2016	Specific job portals (financial services)	9,046	1	13,413,799
152	Link	Fobber Meta Jobs	15.04.2012	Specific job portals (hotels, restaurants)	8,900	1	20,931,270
153	Link	BITKOM-Jobworld	03.02.2016	Specific job portals (IT)	8,900	1	19,999,999
154	Link	JoinVision	30.01.2016	Specific job portals (IT)	8,796	6,000	1,311,935
155	Link	Der heisse Draht dhd24	29.01.2016	General job portals	8,658	800,000	19,215
156	Link	Südwestpresse Ulm	20.01.2016	Regional job portals	8,641	20,000	25,679
157	Link	pharmazone	17.01.2016	Specific job portals (life sciences)	8,582	1	18,526,903
158	Link	Stellenportal.de	26.01.2016	General job portals	8,559	1	3,218,064
159	Link	Randstad	17.01.2016	Specific job portals (temp agencies, side jobs)	8,487	100,000	134,068
160	Link	Unicum Stellenbörse	26.01.2016	Specific job portals (graduates, young professionals)	8,421	320,000	55,839
161	Link	Süddeutsche Zeitung Stellenmarkt	17.04.2016	General job portals	8,402	196,500	1,673
162	Link	Alle-Hambureg-Jobs.de	09.04.2016	Regional job portals	8,277	1	29,999,999
163	Link	StepStone-IT	02.01.2014	Specific job portals (IT)	8,182	7,000	4,857
164	Link	Münchner Merkur Online	14.01.2016	Regional job portals	7,923	7,000	11,866

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
165	Link	UNICUM Karrierezentrum	07.02.2016	General job portals	7,784	320,000	58,477
166	Link	Tagesspiegel Berlin	20.01.2016	Regional job portals	7,691	4,000	5,974
167	Link	Absolventa	23.09.2015	Specific job portals (graduates, young professionals)	7,643	490,000	44,763
168	Link	Recruitingjobs.de	02.02.2016	Specific job portals (recruiting)	7,391	1	29,999,999
169	Link	Vertriebs-Jobs.de	21.01.2016	Specific job portals (marketing, sales)	7,275	1	4,438,680
170	Link	4freelance.de	04.01.2014	Specific job portals (IT)	7,205	0	461,295
171	Link	Ausbildung.de	14.05.2014	Specific job portals (apprenticeships, trainees)	7,131	750,000	29,840
172	Link	HamburgerJobs	06.02.2016	Regional job portals	7,054	5,000	1,623,605
173	Link	Jobverde	05.02.2016	Specific job portal (other)	6,880	15,000	531,099
174	Link	CIO IT Stellenmarkt	06.02.2016	Specific job portals (IT)	6,783	110,000	153,514
175	Link	Trierischer Volksfreund	21.01.2016	Regional job portals	6,762	690,000	25,350
176	Link	Mainpost	13.01.2016	Regional job portals	6,648	690,000	25,138
177	Link	Computerwoche Projektbörse	29.01.2016	Specific job portals (IT)	6,560	910,000	32,497
178	Link	Alle-Frankfurt-Jobs.de	09.04.2016	Regional job portals	6,484	1	21,116,321
179	Link	Kreativ-Jobs.com	07.04.2016	General job portals	6,469	1	14,779,123
180	Link	Schwarzwälder Bote	17.01.2016	Regional job portals	6,318	2,000	39,895
181	Link	Praktikum.info	17.01.2016	Specific job portals (internships)	6,313	130,000	181,955
182	Link	Kalaydo	31.12.2015	General job portals	6,210	2,200,000	9,591
183	Link	Stuttgarter Zeitung	20.01.2016	Regional job portals	6,101	15,000	18,049
184	Link	Hays	31.12.2015	Specific job portals (IT)	5,959	80,000	270,118
185	Link	Persona-Service Zeitarbeit	22.01.2016	Specific job portals (temp agencies, side jobs)	5,840	45,000	334,274
186	Link	MedizinischerStellenmarkt.de	13.01.2016	Specific job portals (health)	5,800	1	7,639,530

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
187	Link	Marketing-Stellenmarkt	26.01.2016	Specific job portals (marketing, sales)	5,789	1	17,925,407
188	Link	Officejobs.de	07.04.2016	Specific job portals (office)	5,637	1	13,931,987
189	Link	Gastronomie.de	26.03.2013	Specific job portals (hotels, restaurants)	5,630	1	2,852,449
190	Link	Hamburger Abendblatt	31.01.2016	Regional job portals	5,291	1	5,019
191	Link	Alle-Stuttgart-Jobs.de	09.04.2016	Regional job portals	5,199	1	29,999,999
192	Link	Staufenbiel	23.09.2015	Specific job portals (graduates, young professionals)	5,129	490,000	48,024
193	Link	Rhein Main Presse	04.04.2013	Regional job portals	5,068	10,000	360,247
194	Link	Studis-Online	29.01.2016	Specific job portals (graduates, young professionals)	5,001	630,000	36,399
195	Link	dasauge	29.12.2015	Specific job portals (publishers)	4,905	220,000	114,963
196	Link	Medi-Jobs	13.01.2016	Specific job portals (health)	4,845	65,000	227,684
197	Link	T5-Karriereportal	31.12.2015	Specific job portals (sciences, mathematics)	4,620	10,000	1,017,708
198	Link	IT-Positionen.de	30.01.2016	Specific job portals (IT)	4,524	1	6,011,206
199	Link	JOB AG Personaldienstleistungen	29.01.2016	General job portals	4,516	15,000	703,788
200	Link	Berliner Morgenpost	20.07.2013	Regional job portals	4,431	2,000,000	16,306
201	Link	access	20.09.2015	Specific job portals (graduates, young professionals)	4,207	35,000	475,787
202	Link	DICE (ehemals The IT Job Board)	31.01.2016	Specific job portals (IT)	4,126	70,000	4,702
203	Link	Unicum Praktikumsbörse	26.01.2016	Specific job portals (internships)	4,099	320,000	55,839
204	Link	Job-Consult	22.01.2016	General job portals	3,990	4,000	937,605
205	Link	Alle-Koeln-Jobs.de	09.04.2016	Regional job portals	3,973	1	29,999,999

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
206	Link	ITjobboard.de	26.07.2013	Specific job portals (IT)	3,784	0	325,193
207	Link	Berlin-Job	04.05.2010	Regional job portals	3,751	0	1,765,448
208	Link	Unicum Azubibörse	02.02.2016	Specific job portals (internships)	3,749	320,000	57,935
209	Link	Silicon.de	05.02.2016	Specific job portals (IT)	3,721	500	201,017
210	Link	IT-Sicherheit	30.01.2016	Specific job portals (IT)	3,705	25,000	2,256,353
211	Link	iBusiness HightText	31.12.2015	Specific job portals (publishers)	3,598	50,000	63,943
212	Link	iBusiness Stellenmarkt	05.02.2016	Specific job portal (other)	3,564	40,000	83,781
213	Link	HR-Jobs.de	07.04.2016	Specific job portals (recruiting)	3,555	1	5,706,342
214	Link	Passauer Neue Presse	05.02.2016	Regional job portals	3,453	30,000	31,173
215	Link	HRM.de Jobbörse	02.02.2016	Specific job portals (recruiting)	3,433	6,000	1,202,739
216	Link	Karriere31 DEWEZET Deister-Leine-Zeitung	29.12.2015	Regional job portals	3,359	1	4,017,773
217	Link	Mittelstandskarriere	31.01.2016	General job portals	3,342	1	3,819,329
218	Link	Experis Deutschland	05.02.2016	Specific job portals (engineers)	3,317	4,000	313,524
219	Link	DocCheck	26.01.2016	Specific job portals (health)	3,212	3,000	10,955
220	Link	Manpower	13.01.2016	Specific job portals (temp agencies, side jobs)	3,155	35,000	355,175
221	Link	Talentfrogs	27.06.2012	General job portals	3,111	0	430,749
222	Link	Unicum Nebenjobbörse	21.01.2016	Specific job portals (internships)	3,050	320,000	53,559
223	Link	Lausitzer Rundschau	02.01.2016	Regional job portals	3,001	1	24,512
224	Link	Oberbayerisches Volksblatt	16.01.2016	Regional job portals	3,001	1	3,964,330
225	Link	Offenbach Post	16.01.2016	Regional job portals	3,001	320,000	25,355
226	Link	Westfalenpost	21.01.2016	Regional job portals	3,001	65,000	25,350
227	Link	Westfälische Rundschau	21.01.2016	Regional job portals	3,001	4,000	25,350
228	Link	Medizin1 MedXnet	05.01.2013	Specific job portals (health)	3,000	1	9,234,531
229	Link	Jobwelt NOZ	24.09.2015	Regional job portals	3,000	10,000	17,484

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
230	Link	multimedia.de	14.01.2016	Specific job portals (publishers)	2,989	1	6,226,055
231	Link	Promotionbasis	22.01.2016	Specific job portals (marketing, sales)	2,961	80,000	63,468
232	Link	LKW-Fahrer-gesucht.com	03.01.2016	Specific job portals (transport, logistics)	2,954	20,000	377,957
233	Link	wiederarbeiten	22.01.2016	General job portals	2,854	120,000	106,441
234	Link	Oekoportal.de	12.01.2013	Specific job portal (other)	2,850	10,000	435,905
235	Link	phpforum.de	31.01.2016	Specific job portals (IT)	2,803	65,000	169,641
236	Link	hogapage	02.02.2016	Specific job portals (hotels, restaurants)	2,794	30,000	470,290
237	Link	Südkurier Konstanz	20.01.2016	Regional job portals	2,729	15,000	24,774
238	Link	Blue-Card-Jobs.com	04.02.2016	General job portals	2,602	1	7,397,289
239	Link	Ausbildungsstelle.com	03.02.2016	Specific job portals (apprenticeships, trainees)	2,525	6,000	1,797,828
240	Link	Jobs-im-Allgäu	08.02.2016	Regional job portals	2,477	30,000	504,522
241	Link	Airliners	30.01.2016	Specific job portals (aviation)	2,468	280,000	82,238
242	Link	health-job.net	29.12.2015	Specific job portals (health)	2,464	1	29,999,999
243	Link	Get in IT	07.02.2016	Specific job portals (IT)	2,435	25,000	704,569
244	Link	Praktikums-Börse	21.04.2012	Specific job portals (internships)	2,409	0	315,401
245	Link	Akademiker-online.de	30.03.2016	Specific job portals (graduates, young professionals)	2,384	5,000	1,725,502
246	Link	Kienbaum Jobportal	02.01.2013	Specific job portals (managers, experts)	2,370	4,000	1,033,696
247	Link	Orizon	08.02.2016	General job portals	2,350	35,000	679,619
248	Link	ingenieurweb	31.12.2015	Specific job portals (engineers)	2,326	8,000	80,623

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
249	Link	BigRed Online Praktikum	28.12.2015	Specific job portals (internships)	2,316	1	1,707,711
250	Link	KJS Kölner-Job-Stellenmarkt	01.06.2011	Regional job portals	2,267	1	8,900,418
251	Link	Jobs-rhein-main.de	12.01.2016	General job portals	2,260	1	29,999,999
252	Link	INTERAMT.de	02.02.2016	Specific job portal (other)	2,245	170,000	112,516
253	Link	DIS Deutscher Industrie Service	29.12.2015	Specific job portals (temp agencies, side jobs)	2,235	65,000	279,153
254	Link	Persys	22.01.2016	General job portals	2,158	1	7,829,123
255	Link	Jobs-im-Nordschwarzwald.de	08.02.2016	Regional job portals	2,081	4,000	19,568,879
256	Link	Jobpoint-Berlin	22.01.2016	Regional job portals	2,075	15,000	649,547
257	Link	Regiojobs24	31.01.2016	Regional job portals	2,075	1	15,196,129
258	Link	OberfrankenJobs.de	02.02.2016	Regional job portals	2,050	30,000	422,245
259	Link	Talents-in-Berlin.de	16.07.2012	Regional job portals	2,012	1	29,999,999
260	Link	e-fellows.net	08.02.2016	Specific job portals (graduates, young professionals)	2,001	20,000	117,254
261	Link	Careerjobs.de	02.02.2016	General job portals	1,998	1	2,026,423
262	Link	azubister	13.04.2012	Specific job portals (apprenticeships, trainees)	1,986	15,000	601,243
263	Link	Career-Account	26.01.2016	Specific job portals (hotels, restaurants)	1,928	4,000	2,380,849
264	Link	FashionUnited	29.12.2015	Specific job portals (fashion)	1,925	75,000	155,885
265	Link	semica	03.01.2014	Specific job portals (engineers)	1,919	20,000	710,656
266	Link	UnterfrankenJobs	08.02.2016	Regional job portals	1,838	25,000	713,242
267	Link	Medizinerjobs.com	07.04.2016	Specific job portals (health)	1,797	1	17,624,123
268	Link	Berufswelt-Logistik.de	31.01.2016	Specific job portals (transport, logistics)	1,792	3,000	2,477,778

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
269	Link	Hallobabysitter.de	02.01.2013	Specific job portals (temp agencies, side jobs)	1,750	10,000	810,297
270	Link	Newsroom.de	14.01.2016	Specific job portal (other)	1,748	25,000	546,243
271	Link	BZjobs.de Berlin	20.07.2013	Regional job portals	1,708	20,000	679,226
272	Link	Bund.de	29.12.2015	Specific job portals (public sector)	1,661	2,000,000	12,924
273	Link	PageGroup (früher: Michael Page)	03.01.2013	Specific job portals (managers, experts)	1,641	30,000	300,194
274	Link	Stellen-Online.de	20.01.2016	General job portals	1,602	30,000	273,674
275	Link	Academics	23.09.2015	Specific job portals (sciences, mathematics)	1,592	170,000	177,354
276	Link	Spocross	07.05.2010	Specific job portals (start-ups)	1,575	1	2,317,020
277	Link	med3 Medizin und mehr	05.01.2013	Specific job portals (health)	1,570	0	7,467,123
278	Link	IT-Jobweb	26.03.2011	Specific job portals (IT)	1,565	1	20,693,648
279	Link	TheSAPjobboard	31.01.2016	Specific job portals (IT)	1,561	15,000	4,702
280	Link	Expertia	27.04.2010	Specific job portals (silver workers)	1,510	0	1,141,222
281	Link	Stellenwerk-Hamburg	30.01.2016	Specific job portals (graduates, young professionals)	1,505	75,000	222,703
282	Link	medicaltopjobs.de	13.01.2016	Specific job portals (health)	1,497	2,000	8,377,913
283	Link	INFO SOZIAL Stellenmarkt	22.01.2016	Specific job portals (charities)	1,487	30,000	570,301
284	Link	Ingenieurkarriere	31.12.2015	Specific job portals (engineers)	1,451	95,000	273,377
285	Link	Tempo-Team.com	07.02.2016	Specific job portals (temp agencies, side jobs)	1,450	8,000	1,388,353
286	Link	Freelancer-Suche.com	17.07.2012	Specific job portal (other)	1,431	1	7,382,237
287	Link	Handelsvertreter-jobs	09.04.2013	Specific job portals (marketing, sales)	1,426	1	3,355,342

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
288	Link	itsteps	31.12.2015	Specific job portals (IT)	1,400	2,000	1,490,123
289	Link	Medical Topjobs	05.02.2016	Specific job portals (health)	1,376	2,000	5,373,115
290	Link	Kommunal-Jobs.de	30.03.2016	Specific job portals (public sector)	1,368	1	17,508,123
291	Link	romling.de	07.04.2012	Specific job portals (graduates, young professionals)	1,361	1	13,582,607
292	Link	mcm-web.de	02.02.2016	Specific job portals (health)	1,343	2,000	5,695,654
293	Link	Zeitarbeit-Jobs Hamburg	02.02.2016	Specific job portals (temp agencies, side jobs)	1,330	1	15,240,412
294	Link	Dozenten-Börse	30.08.2013	Specific job portals (education)	1,320	1	2,755,978
295	Link	Jobruf.de	03.02.2016	Specific job portals (temp agencies, side jobs)	1,319	70,000	225,599
296	Link	Manager-Magazin	29.01.2016	Specific job portals (managers, experts)	1,312	1,800,000	14,171
297	Link	Medizinerkarriere.de	03.02.2016	Specific job portals (health)	1,307	3,000	2,263,680
298	Link	Alle-Düsseldorf-Jobs.de	09.04.2016	Regional job portals	1,306	1	29,999,999
299	Link	Job-Hotel.eu	30.01.2016	Specific job portals (hotels, restaurants)	1,301	2,000	4,855,648
300	Link	Stack Overflow Careers 2.0	08.02.2016	Specific job portals (IT)	1,289	830,000	57
301	Link	MyScience.de	08.02.2016	Specific job portals (sciences, mathematics)	1,287	20,000	809,960
302	Link	Alle-Bielefeld-Jobs.de	09.04.2016	Regional job portals	1,287	1	29,999,999
303	Link	Alle-Hannover-Jobs.de	09.04.2016	Regional job portals	1,287	1	29,999,999
304	Link	Personalvermittlung.de	03.01.2016	General job portals	1,285	3,000	1,670,609
305	Link	Bufdi.EU	08.02.2016	Specific job portals (charities)	1,282	20,000	952,435

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
306	Link	Hoteljob-Deutschland.de	26.01.2016	Specific job portals (hotels, restaurants)	1,277	6,000	1,986,527
307	Link	XISA	02.02.2016	Specific job portals (IT)	1,275	1	18,017,523
308	Link	WAZ Westdeutsche Allgmeine Zeitung	31.01.2015	Regional job portals	1,266	4,000	25,792
309	Link	Gelegenheitsjobs	03.01.2016	Specific job portals (temp agencies, side jobs)	1,262	60,000	243,162
310	Link	Alle-Leipzig-Jobs.de	09.04.2016	Regional job portals	1,260	1	29,999,999
311	Link	KWP Consult	05.02.2016	Specific job portals (health)	1,259	1	3,860,138
312	Link	Faircompany	05.02.2016	Specific job portals (internships)	1,250	6,000	1,926,187
313	Link	RosenheimJobs	02.02.2016	Regional job portals	1,248	15,000	419,493
314	Link	Praktikum.de	02.02.2016	Specific job portals (internships)	1,245	30,000	420,024
315	Link	ChiemgauJobs	02.02.2016	Regional job portals	1,241	4,000	2,047,565
316	Link	BGLandJobs	02.02.2016	Regional job portals	1,241	4,000	2,047,565
317	Link	Job-Gess	30.01.2016	General job portals	1,237	5,000	1,990,299
318	Link	InnsalzachJobs	02.02.2016	Regional job portals	1,237	1	4,566,994
319	Link	Analytik.de	20.09.2015	Specific job portals (sciences, mathematics)	1,217	5,000	1,366,731
320	Link	praktika.de	17.01.2016	Specific job portals (internships)	1,197	30,000	399,358
321	Link	HOGASTJOB	05.02.2016	Specific job portals (hotels, restaurants)	1,188	60,000	272,606
322	Link	Officeteam-interim	30.01.2016	Specific job portals (office)	1,185	45,000	400,651
323	Link	Mediabiz-Jobs.de	13.01.2016	Specific job portal (other)	1,182	1	72,093
324	Link	Heise Jobs	02.01.2014	Specific job portals (IT)	1,166	15,000	1,168
325	Link	Solaranlage	03.02.2016	Specific job portal (other)	1,146	40,000	314,007
326	Link	Ictjob.de	02.02.2016	Specific job portals (IT)	1,138	6,000	999,999,999

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
327	Link	jobvector	31.12.2015	Specific job portals (sciences, mathematics)	1,130	130,000	65,870
328	Link	Alle-Dresden-Jobs.de	09.04.2016	Regional job portals	1,122	1	29,999,999
329	Link	Jobmagazin	22.01.2016	General job portals	1,115	1	9,508,389
330	Link	Autohaus Online	25.12.2015	Specific job portals (Car retail and repair)	1,102	75,000	156,671
331	Link	Empfehlungsbund.de	28.03.2016	Specific job portals (IT)	1,092	6,600	2,786,123
332	Link	Die Zeit Stellenmarkt	30.01.2016	General job portals	1,076	100,000	1,711
333	Link	ZEIT Jobs	30.01.2016	Specific job portals (sciences, mathematics)	1,070	100,000	1,711
334	Link	Altenarbeit	31.01.2016	Specific job portals (charities)	1,052	1	13,187,519
335	Link	Gulp	23.09.2015	Specific job portals (IT)	1,052	95,000	180,744
336	Link	Journalist	24.03.2013	Specific job portals (publishers)	1,050	20,000	489,928
337	Link	Studentjob.de	02.02.2016	Specific job portals (internships)	1,046	60,000	292,305
338	Link	Jobs.Biologie.de	03.03.2014	Specific job portals (life sciences)	1,040	1	3,388,094
339	Link	Rhein-Neckar-Zeitung	22.01.2016	Regional job portals	1,028	490,000	68,987
340	Link	stellenmarkt.faz.net (früher: FAZjob.net)	07.05.2016	Specific job portals (managers, experts)	1,001	76,000	2,080
341	Link	kazini	04.02.2016	General job portals	1,001	3,000	2,983,114
342	Link	TalentsConnect	25.09.2015	Specific job portal (other)	1,001	25,000	593,047
343	Link	Südjobs	25.09.2015	Regional job portals	1,000	1	29,999,999
344	Link	optikerjob	17.01.2016	Specific job portals (health)	993	1	17,724,735
345	Link	Randstad Professionals	07.02.2016	Specific job portals (temp agencies, side jobs)	992	15,000	1,367,526
346	Link	projektwerk IT Freelancer	15.04.2012	Specific job portals (IT)	987	15,000	353,777
347	Link	Darmstädter Echo	20.07.2013	Regional job portals	978	300,000	73,023

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
348	Link	Iserlohner Kreisanzeiger	25.03.2013	Regional job portals	959	4,000	24,475
349	Link	Marketing-Börse	01.02.2016	Specific job portals (marketing, sales)	956	20,000	114,638
350	Link	bonding	08.05.2010	Specific job portals (graduates, young professionals)	952	30,000	663,598
351	Link	C-CN Campus Career Network	08.05.2010	Specific job portals (graduates, young professionals)	951	3,000	4,360,524
352	Link	Trenkwalder.com	30.01.2016	Personalvermittler-Jobbörsen	922	10,000	284,001
353	Link	feelgood@work	08.02.2016	General job portals	920	25,000	453,316
354	Link	Alle-Nürnberg-Jobs.de	09.04.2016	Regional job portals	907	1	29,999,999
355	Link	Handwerkerstellen	30.01.2016	Specific job portals (crafts)	905	1	3,165,098
356	Link	PraktikumsLink.info	01.02.2016	Specific job portals (internships)	900	15,000	645,411
357	Link	Oekojobs.de	03.01.2016	Specific job portals (green jobs)	895	6,000	2,463,645
358	Link	My-Trainee	03.02.2016	Specific job portals (internships)	894	1	11,443,529
359	Link	Saphir Consulting	29.01.2016	Specific job portals (IT)	890	15,000	2,172,102
360	Link	Universität Mannheim Career Service	04.02.2016	Specific job portals (graduates, young professionals)	887	5,000	53,268
361	Link	Mittelbayerische Zeitung	26.01.2016	Regional job portals	877	10,000	590,729
362	Link	Alle-Essen-Jobs.de	09.04.2016	Regional job portals	863	1	29,999,999
363	Link	JobTicket	14.04.2012	Specific job portals (financial services)	840	4,000	312,676
364	Link	Sticks & Bones	14.06.2013	Specific job portals (gender specific jobs)	840	1	2,737,657
365	Link	Stellenwerk-Köln	30.01.2016	Specific job portals (graduates, young professionals)	839	55,000	273,095

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
366	Link	Studieren.de	23.07.2012	Specific job portals (graduates, young professionals)	835	100,000	142,290
367	Link	Yousty	05.02.2016	Specific job portals (apprenticeships, trainees)	832	2,000	2,636,352
368	Link	Horizontjobs	31.12.2015	Specific job portals (marketing, sales)	831	10,000	873,223
369	Link	Logistikplatz	03.02.2016	Specific job portals (transport, logistics)	828	1	6,083,134
370	Link	Legal Tribune Online Stellenmarkt	02.02.2016	Specific job portals (law)	813	300,000	75,102
371	Link	personal total	17.01.2016	General job portals	794	6,000	1,627,128
372	Link	Lookajob	02.02.2016	General job portals	793	1	13,042,778
373	Link	APLICATO	14.10.2013	Specific job portals (trade)	788	0	21,591,987
374	Link	RollingPin	17.01.2016	Specific job portals (hotels, restaurants)	746	35,000	359,885
375	Link	Ingenieur1	27.01.2016	Specific job portals (engineers)	745	1	29,999,999
376	Link	Unique Personal	02.02.2016	Specific job portals (temp agencies, side jobs)	741	8,000	1,476,543
377	Link	Adecco	02.01.2016	Specific job portals (temp agencies, side jobs)	737	7,000	422,633
378	Link	Nachwuchsmarkt.de	02.02.2016	Specific job portals (graduates, young professionals)	735	1	2,880,414
379	Link	Gastrojobs.de	06.05.2014	Specific job portals (hotels, restaurants)	734	1	4,762,431
380	Link	Handelsvertreter-Jobs.de	05.02.2016	Specific job portal (other)	733	1	3,291,566
381	Link	onMarketing.de	08.02.2016	Specific job portals (publishers)	732	5,000	3,903,244
382	Link	Medidoo	03.02.2016	Specific job portals (health)	728	1	13,280,432

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
383	Link	IT-Treff	31.12.2015	Specific job portals (IT)	723	6,000	1,577,669
384	Link	Jobs-Hotel	31.01.2016	Specific job portals (hotels, restaurants)	716	10,000	602,111
385	Link	Alle-Dortmund-Jobs.de	09.04.2016	Regional job portals	705	1	29,999,999
386	Link	LMU München Universität	07.02.2016	Specific job portals (graduates, young professionals)	690	20,000	14,880
387	Link	greenjobs.de	31.12.2015	Specific job portal (other)	681	65,000	338,060
388	Link	Jobwiwi	12.01.2013	Specific job portals (financial services)	675	0	1,105,123
389	Link	RobertHalf	25.01.2011	Specific job portals (financial services)	671	45,000	400,651
390	Link	sekretaerin.de	31.12.2015	Specific job portals (office)	660	25,000	440,786
391	Link	Neue Ruhr Zeitung	29.08.2013	Regional job portals	657	0	19,209
392	Link	askstudents.de	05.02.2016	Specific job portals (graduates, young professionals)	649	6,000	1,816,027
393	Link	Agrarjobboerse	13.12.2015	Specific job portals (agriculture)	634	8,000	1,483,477
394	Link	Webentwickler-jobs.de	04.04.2013	Specific job portals (IT)	625	7,000	1,236,310
395	Link	Yourfirm	31.12.2015	Specific job portals (managers, experts)	619	300,000	49,244
396	Link	OTZ-Jobs	17.01.2016	Regional job portals	619	7,000	2,158,537
397	Link	Projektwerk Engeneering Freelancer	02.02.2016	Specific job portals (engineers)	615	1	359,766
398	Link	Karista.de	14.05.2014	Specific job portals (graduates, young professionals)	608	140,000	190,437
399	Link	Pflege.de	03.02.2016	Specific job portals (health)	605	55,000	203,888
400	Link	RegioAlbJobs	08.02.2016	Regional job portals	601	7,000	1,310,796

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
401	Link	StagePool	25.09.2015	Specific job portals (events, sports)	600	50,000	301,273
402	Link	Jobsintown	31.12.2015	General job portals	596	25,000	515,568
403	Link	Vesterling Personalberatung	21.01.2016	Specific job portals (IT)	596	10,000	1,364,259
404	Link	Logistic-people	26.01.2016	Specific job portals (transport, logistics)	592	3,000	2,562,361
405	Link	Competitionline	08.02.2016	Specific job portals (construction)	590	140,000	201,099
406	Link	Thüringische Landeszeitung	26.08.2013	Regional job portals	590	1	8,221,139
407	Link	TUJA	19.01.2016	Specific job portals (temp agencies, side jobs)	590	10,000	748,322
408	Link	Alle-Bonn-Jobs.de	09.04.2016	Regional job portals	589	1	29,999,999
409	Link	IT-Arbeitsmarkt	24.10.2015	Specific job portals (IT)	586	1	4,749,300
410	Link	Pforzheimer Zeitung	29.08.2013	Regional job portals	584	350,000	56,091
411	Link	AWO Stellenbörse	20.10.2015	Specific job portals (charities)	580	45,000	511,390
412	Link	Jobbörse der Volkswagen Partner	13.04.2012	Specific job portals (Car retail and repair)	575	0	2,396,123
413	Link	Ingenieurjobs.de	05.02.2016	Specific job portals (engineers)	575	8,000	1,910,119
414	Link	BigRed Jobbörse	28.12.2015	General job portals	574	1	1,707,711
415	Link	RegensburgJobs.de	03.02.2016	Regional job portals	574	15,000	883,087
416	Link	BLAK Bayerische Landes-Apotheken-Kammer	29.12.2015	Specific job portals (pharmacies)	568	15,000	831,944
417	Link	Bauingenieur24.de	29.12.2015	Specific job portals (construction)	566	25,000	497,201
418	Link	TouristikCareer	31.12.2015	Specific job portals (tourism)	564	15,000	404,956
419	Link	Entwicklungsdienst.de	01.02.2016	Specific job portals (charities)	562	20,000	1,123,027
420	Link	t3n	02.02.2016	Specific job portals (IT)	559	2,800,000	10,016
421	Link	Saarbrücker Zeitung	24.03.2013	Regional job portals	554	10,000	25,428

No.	Link	Name	aktualisiert	Target group	Number of job advertisements	Monthly visitors	Alexa Ranking
422	Link	Gründerszene	07.02.2016	Specific job portals (start-ups)	552	950,000	15,538
423	Link	Medicaljob-Europe.com	05.01.2013	Specific job portals (health)	550	1	3,506,398
424	Link	Foodjobs	07.12.2015	Specific job portals (food)	543	35,000	307,371
425	Link	Antenne Thüringen	23.12.2015	Regional job portals	534	70,000	272,180
426	Link	Trainee-Geflüster.de	02.02.2016	Specific job portals (graduates, young professionals)	525	30,000	469,177
427	Link	Consulting-Stellen.de	15.07.2012	Specific job portals (managers, experts)	521	1	19,664,361
428	Link	GWA	29.01.2016	Specific job portals (marketing, sales)	520	3,000	1,339,186
429	Link	HNA Online Hessische Niedersächsische Allgemeine	30.08.2013	Regional job portals	510	3,000	17,886
430	Link	Fashionjobs.de	03.02.2016	Specific job portals (fashion)	509	9,000	27,297
431	Link	mobileJob	25.09.2015	Specific job portals (crafts)	500	4,000	1,055,158
432	Link	Officeteam	04.02.2016	Specific job portals (office)	500	45,000	404,145
433	Link	Berlinstartupjobs.com	24.10.2015	Specific job portals (start-ups)	500	250,000	73,970

Source: *www.crosswater-job-guide.com*

Greece

Table 10:   Greece – List of major job portals

A/A	Name	Target group	Alexa Ranking
1	kariera.gr	General Job board	10,920
2	oaed.gr	Recruitment agency	21,217
3	skywalker.gr	General Job board	27,086
4	proson.gr	National public website	31.709
5	asep.gr	National public website	73,894
6	jobfind.gr	General Job board	85,166
7	diorismos.gr	Newspaper Website	110,586
8	careernet.gr	General Job board	112,689
9	randstad.gr	Recruitment agency	253,594
10	proslipsis.gr	Newspaper Website	273,287
11	neuvoo.gr	Job search engine	317,627
12	mycarriera.gr	Job search engine	358,217
13	yourse.gr	Greek Job search engine	615,639
14	jobseeker.gr	General Job board	873,686
15	jobigator.gr	General Job board and consulting	1,161,495
16	careerinprogress.gr	General Job board and consulting	1,168,865
17	adecco.gr	General Job board	1,209,078
18	getthejobdone.gr	General Job board	2,243,918
19	aggeliologio.blogspot.gr	Newspaper Website	2,476,269
20	cosmosjobs.com	General Job board	3,166,161
21	aggelies.pro	Newspaper Website	3,173,993
22	intrajobs.com	Recruitment agency	4,775,993
23	voucher.gr	Specialised website	6,814,850
24	diktuo-ergasias.gr	Job search engine	7,944,150
25	apasxolisi.gr	General Job board	9,032,494
26	upsidedownabout.gr	General Job board and consulting	10,898,752
27	careerplanner.gr	General Job board and consulting	50,000,000
28	inspiringcareer.gr	General Job board and consulting	50,000,000

Slovenia

Table 11:   Slovenia – List of major job portals

Job portala	URL link	Agency/Job searcher	Remark
Adecco	http://www.adecco.si/iscetedelo/index.asp	Agency	JV mostly for Manpower
Agencija M servis		Agency/Job portal	No JV available
Atama	http://atama.si/S2200/Ponudba+dela	Agency	few JV
careerjet.si	http://www.careerjet.si/zaposlitve-slovenija-126001.html	Job searcher	JV from other Job portals
CollegeGrad		Agency/Job searcher	Jobs in USA
Cerca lavoro.com		Agency/Job searcher	Jobs in Italy
Dela.si	trenutno ne deluje - preveri še enkrat	Job searcher	Redirects on storitve.si
Hill International		Agency	Few JV for Slovenia
Idejnik.si	http://www.idejnik.si/	Job searcher	pozor: objavljena PDM tudi za nazaj
Iščem-delo.com		Job searcher	Very few JV
Kadis		Job searcher	Very few JV
Manpower		Agency	JV for Manpower.
Moje delo.com	https://www.mojedelo.com/isci/vsa-podrocja	Job searcher	Very important Job portal
MojaZaposlitev.si	http://www.mojazaposlitev.si/prosta-delovna-mesta/?1=1&_action=submit&adsPerPage=50&_action=submit#jobsAds	Job searcher	Very important Job portal
Mojapriloznost.si		Job searcher	No JV available
najZaposlitev	http://najzaposlitev.si/prosta-delovna-mesta/	Job searcher	Very few JV

.si			
Profil	http://www.profil.si/sl/Ponudba_delovnih_mest/	Agency	Very few JV
Stepstone		Job searcher	International Job portal page which redirects na www.the-network.com and then MojeDelo
Trenkwalder	https://my.trenkwalder.com/SI/SL/job/	Agency	JV for Trankwalder
Trummer	http://www.trummer.eu/sl/ponudbe-za-delo/	Job searcher	Very few JV
Xpress Job	http://sl.xpress-job.com/sl/zaposlitveni-oglasi	Job searcher	Very few JV
Zaposlim delodajalca		Job searcher	Site does not currently work
Zaposlitev.info	http://www.zaposlitev.info/prosta-delovna-mesta/	Job searcher	Very few JV
Zaposlitev.net	http://www.zaposlitev.net/delo.php?m=iskalci&tip=dn	Job searcher	Very few JV
Zaposlitev.ws	http://delo.zaposlitev.ws/search/job/occupational-field/strojni%C5%A1tvo-orodjarstvo-avtomehanika	Job searcher	Very few JV
Delo		Newspaper	Very few JV
Dnevnik		Newspaper	Few JV
TOP JOB Finance		Newspaper	Few JV
Večer		Newspaper	Few JV
Zaposlitev1a	http://www.zaposlitev1a.com/index.php	Job searcher	Very few JV

Sweden

Table 12:   Sweden – List of URLs

Website name	Coverage	URL
Platsbanken	General	www.platsbanken.se
DN Lediga jobb	General	www.dn.se
Metrojobb	General	www.metrojobb.se
LokusJobb	General	www.lokusjobb.se
Careerbuilder	General	www.careerbuilder.se
Jobbsafari	General	www.jobbsafari.se
Karriärguiden	General	www.karriarguiden.se
Stepstone	General	www.stepstone.se
Monster	General	www.monster.se
Medrek	Specific	www.medrek.se
Sveriges Veterinärförbund	Specific	www.svf.se
Poolia	Specific	www.poolia.se
SJR	Specific	www.sjr.se
Manpower	General	www.manpower.se
Flygtorget	Specific	www.flygtorget.se
Ingenjörsjobb	Specific	www.ingenjorsjobb.se
EURES	General	www.ec.europa.eu/eures
Indeed	Search engine	http://se.indeed.com/
Toppjobbet	Search engine	www.toppjobbet.se
Jobrapido	Search engine	www.jobrapido.com
Workey	Search engine	www.workey.se

United Kingdom

Table 13:   UK – Top job portals ranked by number of job advertisements

Website name	Coverage	No of jobs advertised on 24 June 2016	URL
Universal job match	General	873,172	https://jobsearch.direct.gov.uk/JobSearch/
Reed	General	257,557	http://www.reed.co.uk/
Totaljobs	General	131,985	http://www.totaljobs.com/
cv-library	General	115,141	http://www.cv-library.co.uk/
Top jobs	General	102,556	http://www.topjobs.co.uk/
All jobs UK	General	53,079	http://www.alljobsuk.com/
Careers4a	General	50,926	http://www.careers4a.com/
Careerbuilder	General	47,788	http://www.careerbuilder.co.uk/
Jobsite	General	47,457	http://www.jobsite.co.uk/
fish4jobs	General	35,045	http://www.fish4.co.uk/jobs/
Monster	General	1,000 +	http://www.monster.co.uk/

Table 14:   UK – Top job search engines ranked by number of job advertisements

Website name	Coverage	No of jobs advertised	URL
Jobhits	General	3,020134	http://jobhits.co.uk/
careerjet	General	2,360,687	http://www.careerjet.co.uk/
Job centre UK	General	2,319,190	http://www.jobcentreuk.co.uk/
Jora	General	1,489,774	https://uk.jora.com
Jobisjob	General	1,432,858	http://www.jobisjob.co.uk/about-us.html
Renego	General	1,208,325	http://www.renego.co.uk/
Adzuna	General	1,116,464	https://www.adzuna.co.uk/
Work circle	General	1,014,288	http://www.workcircle.co.uk/
Clickajob	General	1,011,783	http://www.clickajob.co.uk/
jobijoba	General	955,843	http://www.jobijoba.co.uk/
All the top bananas	General	811,165	http://www.allthetopbananas.com/
Brick7	General	606,052	http://www.brick7.co.uk/
Indeed	General	594,167	http://www.indeed.co.uk/
Jooble	General	531,576	http://uk.jooble.org/jobs
Glassdoor	General	413,292	https://www.glassdoor.co.uk
Adview	General	182,152	http://www.adview.co.uk/jobs

Table 15:   UK – Top job specialised websites ranked by number of job advertisements

Website name	Coverage	No of jobs advertised	URL
British-itjobs	Computer jobs	36,549	http://www.british-itjobs.co.uk/
xpatjobs	Expat jobs	2,181,974	https://uk.xpatjobs.com/
Simply sales jobs	Sales jobs	291,375	http://www.simplysalesjobs.co.uk/jobs
Simply marketing jobs	Marketing jobs	182,661	http://www.simplymarketingjobs.co.uk/jobs
london4jobs	London jobs	65,639	http://www.london4jobs.co.uk/
Savethegraduate	Graduates	42,421	http://www.savethegraduate.org/
e4s	Students	31,801	http://www.e4s.co.uk/
Engineering jobs	Engineering jobs	22,473	http://www.engineeringjobs.co.uk/
strike-jobs	Strike-jobs	20,267	http://www.strike-jobs.co.uk/
Sales vacancies	Sales jobs	19,382	http://www.salesvacancies.com/
Sales vacancies	Sales jobs	19,182	http://www.salesvacancies.com/
best it jobs	IT jobs	18,897	http://www.bestitjobs.co.uk/
Caterer	Hospitality jobs	16,981	http://www.caterer.com/JobSearch/Results.aspx?Keywords=&LTxt=uk&Radius=10
Technojobs	Technology jobs	16,841	https://www.technojobs.co.uk/
NHS jobs	Health sector	13,958	https://www.jobs.nhs.uk/
computerjob	Computer jobs	13,373	http://www.computerjobs.com/
Best admin jobs	Admin jobs	12,800	http://www.bestadminjobs.co.uk/
efinancialcareers	Financial careers	11,282	http://www.efinancialcareers.co.uk/
cwjobs	IT jobs	10,496	http://www.cwjobs.co.uk/