Mutual Learning Programme

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Peer Country Comments Paper - Slovenia

Competence assessment systems in Slovenia: Increasing importance and several successful examples of competence-based models

Peer Review on "Competence Assessment System: MyCompetence"

Sofia (Bulgaria), 28-29 November 2019

Written by Tjaša Redek, in collaboration with ICF.

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1 Introduction

This paper has been prepared for the Peer Review on "Competence Assessment System: MyCompetence" within the framework of the Mutual Learning Programme. It provides a comparative assessment of the policy example of the host country and the situation in Slovenia[1]. For information on the host country policy example, please refer to the Host Country Discussion Paper[2].

The Slovenian labour market is currently characterised by labour shortages and structural mismatches. The unemployment rate declined from 10.1% in 2013 (ILO) to 5.1% of the active population in 2018 as a result of a solid economic performance (Eurostat, 2019). In 2019Q2 there were 18 000 vacancies, with the highest job vacancy rate in construction (5.7). Manufacturing had most open positions (Eurostat, 2019), while the number of unemployed was around 70 000 (Zavod RS za zaposlovanje, 2019d), indicating a potential structural problem. The Occupational barometer 2018 (Zavod RS za zaposlovanje, 2018) reveals a shortage of workers for elementary occupations, operators and assemblers, associate professionals and several subgroups of professionals. There are a number of reasons why the vacancy rate remains high despite the existing unemployment levels, including skills mismatches. The mismatches are caused by a lack of suitable candidates (most important), working conditions (including wages, working hours and work load) and lack of required skills (Zavod RS za zaposlovanje, 2018). Partially, labour shortages are related to passive labour market policies in relation to minimum wage, which is now being addressed by the government (Dnevnik, 2019; eUprava Republika Slovenija, 2019).

2 Situation in the peer country

2.1 Mechanisms for skills' assessment at national level

Data on the demand for labour or needs in the labour market is available at industry level and occupational level, but required skills are also reported (Table 1 in Annex 3 provides a summary, Annex 4 provides more detailed data). The data on the job seekers, primarily the unemployed, is available primarily at education and occupational level, but further details regarding skills can also be reported and used in matching (Zavod RS za zaposlovanje, 2019a). The most important source of data on the existing mismatches is the Employment Service of Slovenia (ESS) data, which besides having the database of jobseekers also offers a good coverage (Table 1 in Annex 3) of job-openings (by level and field of education, job position, with selected skills highlighted (e.g. languages, driver's license, IT) and NACE industry). ESS also provides the only systematic and comprehensive forecasting tools including the well-established "Employment forecast" (Napovednik zaposlovanja, Zavod RS za zaposlovanje, 2019a), which examines, using a representative survey, the recruitment plans of employers by occupation for the next 6 months. Data are available by detailed occupation classification, but also aggregated by NACE industry and also provide selected skills shortage data. In 2018, the ESS also started the Occupational barometer (Zavod RS za zaposlovanje, 2018), which provides information on occupation shortages, as well as the causes of such shortages. The "Employment forecast" data can be disaggregated to regional level (but it is not published), while the Occupational barometer is available at the level of the ESS regional offices. Systematic labour market data is also available from the Statistical Office of Slovenia, but the data does not allow an in-depth analysis of mismatches. Online employment platforms also provide an insight into job openings.

[1] The author would like to thank the employees of the Ministry of Employment, Family, Social Affairs and Equal Opportunity, Ministry of Education, Science and Sport, Ministry of Public Administration, the Employment Service of Slovenia, the Institute of the Republic of Slovenia for Vocational Education and Training and the Chamber of Commerce for their valuable time and information provided during interviews.

[2] Loukanova, P. (2019) Workforce Competence Assessment - in retrospect and in perspective, Host Country Discussion Paper – Bulgaria. Peer Review on "Competence Assessment System: MyCompetence", Sofia (Bulgaria), 28-29 November 2019. European Commission, DG Employment, Social Affairs and Inclusion.

The majority of the communication on job openings is done at the level of education and occupation in combination with job positions (descriptions). Skills at the moment are limited in use, and usually represent additional requirements.

The ESS provides the best systematic overview of mismatches. Studies of the employability of graduates or partial analyses have also been done (e.g. Farčnik, 2012; Center za poklicno izobraževanje, 2012), but a systematic, coordinated approach is needed (Pavlin, 2019), such as the planned digital system for monitoring employability of higher education graduates by the Ministry of Education, Science and Sport (Eurydice, 2019).

2.2 Assessing skills and competences' needs and the linkages to educational and training system

An assessment of labour market skills mismatches is not available at all levels, but profiling of skills and competences linked to education and occupations is available. For example, for occupational qualifications, each occupation is defined by the occupational standard, where catalogues are systematically prepared, offering a detailed insight into occupational skills obtained in education (in this case for vocational education by NRP - National Reference Point for Occupational Qualifications Slovenia, 2019). The occupational standards are the link between the occupational education and national certification system. Every occupation is defined by three dimensions: name and code of occupation, level of education and occupational competences and a detailed description of the occupational standard (field of work, key tasks and skills; see Annex 4 for the example of a welder) (Nacionalno informacijsko središče Slovenije, 2018).

Similarly, at the level of higher education, a national body NAKVIS (Nacionalna agencija Republike Slovenije za kakovost v visokem šolstvu, 2019) requires, as a systematic part of the accreditation and quality assurance, a list of skills and competences acquired by programmes and courses. Part of the assessment is focused on the cooperation between the higher education and the business and non-business sector (partnerships, applied projects, involvement of professionals in teaching, etc.), including an assessment of the match between competences and skills and the needs and the employability of graduates (Nacionalna agencija Republike Slovenije za kakovost v visokem šolstvu, 2018, p. 59).

Another important contribution has been made by the work conducted in under coordination of the Chamber of Commerce of Slovenia with its competences' centres, which was supported and co-funded by state (see Section 3 for further detail).

There is also a link between the secondary/vocational education and the business sector that allows modifications of existing programmes or the establishment of new programmes to match the needs of the labour market. For example, the education programmes can be adjusted by the in-built flexibility in courses and elective courses, which in some programmes can represent around 20% of the programme. Similarly, if a sufficient number of stakeholders request a new programme, such a request is evaluated and new training can be established quickly (within 6 months), for occupational qualifications in cooperation with ESS (OECD, 2017; Center za poklicno izobraževanje, 2019).

2.3 Policy orientation

The discussion about skills and competences in Slovenia has been present for a significant number of years and some aspects of competences have been a systematic component of the approaches in evaluating occupations and education for decades. Based on the interviews conducted for this paper, it is understood that the discussions are focusing on two (related) aspects: (1) definition of required skills and competencies for specific occupations/sectors, where several big(ger) projects have been undertaken; and (2) incorporating the skills and competences approach into the matching process in the labour market. A key role in the process will be played by ESS and the Ministry of Labour, Family, Social Affairs and Equal Opportunities, but it will have to be strongly

coordinated also with the Ministry of Education, Science and Sport as well as the employers' representatives, most likely Chamber of Commerce, which has already done a significant amount of work in the field of identifying key competences. Whilst several models have been developed, there is still a challenge of aligning them.

3 National policies and measures

Slovenia already has several competences models and is developing a model comparable to that in Bulgaria at the ESS. In addition, other models are important: (1) competences centres at the Chamber of Commerce, (2) occupational lists of competences and skills at the Centre for Vocational Education and NAKVIS, (3) other pilot projects (see Annex 2 for further detail) (Republika Slovenija Gov.si, 2018).

3.1 Balancing supply and demand in the labour market at the ESS with the competences' model similar to host country

ESS has since 2016 (ending in 2022), and under the Operational Programme for the implementation of the European cohesion policy 2014-2020 (Government Office for Development and European and Cohesion Policy of the Republic of Slovenia, 2014), been leading the development of tools to more efficiently match the supply and demand in the labour market, including skills (Zavod RS za zaposlovanje, 2019c). The legal base for the project are several laws (PISRS, 2010, pp. 80/10, 40/12, 2012, pp. 21/12, 63/13, 100/13, 2014, p. 32/14, 2015, p. 47/15). The project was awarded EUR 2.2 million, strongly (80%) co-financed by the EU. The purpose of the project is (Zavod RS za zaposlovanje, 2019c):

- to upgrade and develop the methodology of short-term needs of employers for skills and competencies model;
- develop the competence model of employment as a tool to more efficiently identify the employment potential of the unemployed; and
- plan and develop new modern combinations of communication technologies (internet, mobile, phone, personal) with activities for the unemployed, job seekers and employers.

The key goals of the project are to (Zavod RS za zaposlovanje, 2019c):

- develop a taxonomy of competencies and set up a competence-based employment model and their applied use to more efficiently match supply and demand in the labour market;
- develop a model to establish the short-term needs of employers for skills, knowledge and competences, using the "Napovednik zaposlovanja" (Forecasting employment trends); and
- develop multi-channel services, relying on modern IT technologies, so that they fit the needs of the users.

The target groups represent labour market institutions and other institutions, job seekers and the unemployed, and employers.

The ESS has already set up an extensive e-support system for job seekers, which is very similar to the purposes of the Bulgarian MyCompetence model. The e-counselling platform (Zavod RS za zaposlovanje, 2019a) allows the individuals to: self-evaluate their (1) personality, skills, values, (2) self-evaluate their competences, (3) identify their interests and interest type based on Holland classification and identify suitable work environment for their work type, (4) define a list of relevant occupations for the individual based on skills, competences, work experience, background and check the occupational requirements as well as check the demand for the desired occupations in the labour market, (5) prepare an activation plan.

But the ESS is attempting to extend the tools it offers and develop a skills-based system to support matching in the labour market. ESS followed the EU guidelines (European Commission, 2018) and decided to map occupations and competences to ESCO (European Skills, Competences, Qualifications and Occupations), while the structure is based on ISCED (International Standard Classification of Education). A special project group was established, with expertise in occupational characteristics. The whole ESCO system will be adopted, but only those segments, relevant for the Slovenian labour market, will be used. The project is still in progress. For now, the mapping of ESCO to the Slovenian standard classification of occupations (SKP – Standardna klasifikacija poklicev, aligned with ISCO) has been done (two-way mapping). Two-way mapping has allowed the identification of overlaps between ESCO and SKP, as well as differences (e.g. where SKP is broader, narrower or where there is no match).

Several challenges remain though. First, competences of occupations from the same broad group are very similar or even the same, and thus their use in differentiating between occupations is limited. Second, when speaking about specifics, the level of detail regarding competences' lists is different across industries, although all sectors were given the same instructions for defining occupational competences. Third, it must be defined, which competences should be awarded to occupations and individuals automatically based on their education. These are also probably not the key competences that will be displayed on online platforms (as they are self-evident). The focus will be on those, that allow differentiation. IT support will be another challenge. It will be necessary to develop a solution that provide a user-friendly and efficient experience. For example, which level of detail should be visible to the user (e.g. waiter capable of cleaning tables and some other very basic skills, competencies or tasks). The idea is that only the key competencies will be displayed, but there will be a button "more" allowing to get more details. In the matching model, the question is still, should the initial search focus be given to the occupation or competences, and then offer the user the detail level that will allow the most efficient match (where competence match is also extremely important). The desired end product is to have a web-based platform that will allow matching in the labour market, and competence descriptions, that would allow users to more easily move between occupations. In addition, it is also critical to see, which occupations and their competences are relevant for the Slovenian labour market, since all are not. A final challenge is to link ESCO to the education system, where, according to ESS, the Ministry of Labour and the Ministry of Education will have a key role.

3.2 Competences' centres and the cooperation between the state and business sector (Chamber of Commerce of Slovenia)

The state has also actively promoted and supported financially the development of competence centres, which bring together the companies with similar skills needs or from the same sector. In the initial stages, the role of the Chamber of Commerce of Slovenia was very important, since it was actively stimulating the state to develop a systematic forecasting model, based on competences, and has developed a pilot project in cooperation with University of Ljubljana (Farčnik *et al.*, 2015) and continued to build on that experience in cooperation with industrial partners and the state (Public Scholarship, Development, Disability and Maintenance Fund of the Republic of Slovenia), which has been also actively financially supporting the efforts. So far, several competence centres (17) have been set up in order to strengthen investment in human capital and improve the matching between labour supply and demand. However, in the longer run the goal is also to develop competence profiles for job positions key for a specific competence centre (Javni štipendijski, razvojni, invalidski in preživninski sklad RS, 2019; KOC EEI 4.0, 2019; KOC hrana, 2019; KOC MAT, 2019; KOC – Kompetenčni Center Krog, 2019; Kompetenčni center za kadre kemijske industrije, 2019). The programme has so far led to the development of 11 models of competences with 79 profiles described at competence level. Over 250 companies have been involved and over 40 000 employees have been or are expected to be included into training under

the "Competent Slovenia" programmes (Javni štipendijski, razvojni, invalidski in preživninski sklad RS, 2019). The programmes are co-funded by EU and the state (around EUR 4 million). The competence centres are aligned also with the smart specialisation strategy (Republika Slovenija Gov.si, 2017).

Table 2 in Annex 3 presents the competence model of KOC MAT (Competence centre Materiali (materials), which merges 20 industrial partners). This was developed in cooperation with the Chamber of Commerce. The work was supported by the Ministry of Labour, Public Scholarship, Development, Disability and Maintenance Fund of the Republic of Slovenia and the ESF. The model started from the analysis of the key challenges for the metal industry, which include materials, environment, technology and other (focus on value chain is important). The model incorporates six key profiles: machine operator, machine maintenance worker, production worker, engineer, supervisor/ production process manager, commercialist. For each of the profiles four sets of competences were identified: (1) domain-specific: materials, technologies and processes, (2) business entrepreneurial competencies, (3) competences related to digital and industry 4.0, and (4) personal and interpersonal competences. Table 2 in Annex 3 summarises the competences for a machine operator (Kompetenčni center za razvoj materialov kot končnih produktov, 2018). In comparison to the occupational standard competences list (Annex 5) these are very general. Where a mismatch between the required and actual skill level was identified, training plans were also developed.

The work in terms of developing the profiles was very systematic and included (Kompetenčni center za razvoj materialov kot končnih produktov, 2018):

- presentation of the competence model idea to partners;
- definition of key profiles;
- preparation of a wide set of competences for selected industry profiles based on different data source;
- analysing job descriptions and job position systematisation;
- narrowing the set and selecting key competencies for the selected industry profiles;
- preparation of detailed descriptions of competencies;
- development of measurement questionnaire;
- identifying skills gaps and measuring them;
- selecting training; and
- defining methodology for measuring progress.

The work of competence centres is extremely important although it differs in detail and scope from the occupational standards. The work is focused on specific industries, companies from these sectors cooperate intensely in the process, in cooperation with the Chamber and supported by the state. By doing so, this approach helps identify the gaps and also plans and delivers training. The Chamber of Commerce has been key in developing the competence centres and in preparation of the competence models and the forecasting of competence and skills' needs at sectoral/ industry level, along the value chain and focusing on also the specialisation of Slovenia, with special attention to companies strategically oriented to long term economic development. While the development of competences' models is very good within the competence centres, the average Slovenian company does not focus strongly on longer-term planning. In addition, the future work in the field of competences should, according to the Chamber of Commerce, be done in partnership with the state, companies (primarily people from business development departments, because the development trends then drive also the needs for skills), academia and the Chamber of Commerce.

3.3 Role of the Slovenian Institute for Vocational Education and Training

The Slovenian Institute for Vocational Education and Training (SI-VET, slov. Center za poklicno izobraževanje) is another important institution in the field of competences and competence-based standards. The Institute for vocational education and training monitors the development in the labour market and prepares in cooperation with employers and other stakeholder occupation profiles and occupational standards for different profiles in industries. It is a key reference point for acknowledging and ascertaining informal education by preparing also stringent standards for such procedures and developing training. In addition, when a new "profile" (not occupation) emerges in the labour market (e.g. 3D printing technician), the SI-VET prepares a list of key tasks and competences (see also example of welder in Annex 5). SI-VET also develops methodologies for standard-setting as well as contributing towards the development of "modern, module-based education programmes for pre-secondary and secondary vocational education and secondary and college expert education". It also cooperates in the preparation of new educational programmes, their implementation and evaluation of final examinations, provides training to teachers and professionals. It also acts as the Slovenian representative within the European Skills Promotion Organisation (ESPO) and at the EUROSKILLS competition in vocational skills, as well as the National Reference Point for quality assurance in the field of vocational education SIQA-VET (Center za poklicno izobraževanje, 2019)).

4 Assessment of success factors and transferability

Currently, Slovenia does not have a systematic model for monitoring skills and competences at national level or a model that would allow matching or forecasting of labour market needs and mismatches at competence level. However, Slovenia has several elements that are similar or more as the host country example. The most important or the closest to the host country example is the model being prepared by the ESS, which is also aligned with ESCO, but focuses on occupational profiles (since occupations are normally used) as well as educational classifications. The initial mapping of competences to occupations has already been completed, while the IT support and the final development of the platform is yet to be done. As such it represents the core Slovenian model, especially given that the ESS also conducts short run forecasting of employment and the Occupational barometer. Taking into account also that ESS is the central institution for conducting active labour market policies and its strong link to employers, this model is very important. The ESS also know well the models developed within the Chamber of Commerce, which might help them identify key profiles and key competences to make the model leaner and provide a better user experience. An important challenge is to align all relevant stakeholders, including the Ministry of Labour and Ministry of Education, that will have to coordinate the alignment between education and ESCO, which will simplify the work for ESS. In this context, especially for vocational training the national qualification system plays a major role (also being aligned with ESCO) and as an input for ESS. Overall, Slovenia is very well on the way of developing a more skills-based approach to improve matching in the labour market, while the challenges are similar to those listed in the host country example as well as those presented in other countries.

5 Questions

- One of the key challenges is to prepare a system, which is user-friendly. The users are most used to working at the level of occupations. The set of skills is very broad for each of the occupations. How were they filtered in order to define those that are specific to broader groups of occupations and those that are very specific?

- How did the expert group coordinate the stakeholders? Who was the original initiator and who did most of the work? The experience in the labour market probably indicates a huge role for employment service. However, these do not have the decision-making authority over other important stakeholders.
- What were the most common negative feedback, what specific user groups did they come from and how were they addressed?
- Do employers and employees in Bulgaria usually work through occupations or are they highly used to skills and competences? How horizontal is the education system in Bulgaria?

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Annex 1 Summary table

The main points covered by the paper are summarised below.

Situation in the peer country
• Continuous mismatch in the labour market with increasing job vacancy rate, problems especially with workers for elementary occupations, operators and assemblers, associate professionals and several subgroups of professionals. Mismatch caused by a lack of suitable candidates (most important), working conditions (including wages, working hours and workload) and lack of required skills
• Labour market analysis as well as supply and demand (job-seekers, employers) still primarily rely on education profiles and occupations.
• Employment Service of Slovenia key in labour market forecasting with two important projects: (1) Employment forecast - Napovednik zaposlovanja, which is an employer survey-based forecast for 6 months in advance and provides data by industry, company size and occupation, studies causes and consequences of mismatch for companies. (2) Occupational barometer (Poklicni barometer) is a pilot (since 2018) and studies the mismatch at occupation level by regions.
• Skills becoming increasingly important, but there is at the moment no operational model for systematic skills needs/mismatch assessment, although it is being developed (e.g. employability of graduates, ESS model).
Assessment of the policy measure
• Similar model to host country's developed already by Employment Service of Slovenia and is supported by government and EU financing. The model allows extensive self-assessment and preparation of action plan.
• ESS is upgrading the model to allow more efficient, skills-based matching. The ESCO competences are being matched on occupations (ISCO) and will serve as a base for more efficient matching. On-line platform will be set-up to support matching.
• The state is supporting also development of Competence centers and Career platforms, where a large coordinating role has been taken by the Chamber of Commerce, which is also developing competence-based models within Competence centres. The centres also provide training within their Career platforms (national and EU funding, cooperation of various stakeholders).
• Institute for Vocational Education and Training (CPI) for setting professional standards for vocational and technical education (National vocational qualifications) and is key in preparing new educational programs.
• In-built flexibility (20%) in educational system allows a quick adjustment of existing programs when skills' gaps are identified, in addition, new programs can be established (formal procedure required).
• Many new developments and projects done or planned, however cooperation and coordination between different institutions working on development of competence models could be strengthened to identify complementarities.
Assessment of success factors and transferability
• Similar model as the Bulgarian example is being set up in Slovenia by ESS.

- Challenges in Slovenia are similar to those in host country, where primarily the broad set of occupations and a broad set of (generic) skills is a challenge in making efficient user-friendly matching platform.
- The need for continuous development of the competences model due to changes in the economy is another challenge.
- More active cooperation of stakeholders would improve existing models and their use and allow efficient linking of segments, where complementarities exist.

Questions

- One of the key challenges is to prepare a system, which is user friendly. The users are most used to working at the level of occupations. The set of skills is very broad for each of the occupations. How were they filtered in order to define those that are specific to broader groups of occupations and those that are very specific?
- How did the expert group coordinate the stakeholders? Who was the original initiator and who did most of the work? The experience in the labour market probably indicates a huge role for employment service. However, these do not have the decision-making authority over other important stakeholders.
- What were the most common negative feedback, what specific user groups did they come from and how were they addressed?
- Do employers and employees in Bulgaria usually work through occupations or are they highly used to skills and competences? How horizontal is the education system in Bulgaria?

Annex 2 Example of additional relevant practices

Name of the practice:	Skills-based matching model
Year of implementation:	On-going
Coordinating authority:	Employment service of Slovenia, in cooperation with Ministry of labour, family, social affairs and equal opportunity (national and EU finding)
Objectives:	1. Already set-up extensive support for individuals (self-assessment of interests, evaluation of skills, competences, identification of desired career paths and comparison to situation in labour market, preparation of activation plan) (Zavod RS za zaposlovanje, 2019a) 2. Building activation model, based on skills (the work is on-going)
Main activities:	Developing skills-based matching models
Results so far:	1. On-line platform for self-evaluation and activation 2. Skills-based matching still being prepared

Source: (Zavod RS za zaposlovanje, 2019a, 2019c)

Name of the practice:	Career platform for the employed
Year of implementation:	On-going (co-financed by state, EU funds)
Coordinating authority:	Ministry of labour, family, social affairs and equal opportunity, in cooperation Chamber of Commerce
Objectives:	Develop a model of forecasting skills' needs and a standardised model of individual's career plan that will help employers identify skills gaps, taking into account also forecasted skills needs. This will help the employers support the development of their employees for joint satisfaction and success. Based on identified gaps, training will be prepared at firm level, but also input for educational system will be prepared
Main activities:	Developing skills-based models, providing training
Results so far:	Developed a skills-based forecasting system for pilot industries, cooperating within SRIP (key industries as identified by the Slovenian Smart specialization strategy), developed competences models for key profiles, provide training. The activity is closely linked to Chamber's KOC (competence centres).

Source: Gospodarska zbornica Slovenije, 2019; Rihar et al., 2019

Name of the practice:	"Development of competency model in public administration"
Year of implementation:	2018-2019
Coordinating authority:	Ministry of public administration
Objectives:	Identify the structure and skills of workers in the public administration today and in the future (stressing also that formal education and training are not necessarily sufficient to perform the required tasks, but other skills and competences are needed).
Main activities:	Developing a competence-based model of skills for public administration to support HR and HR development, setting up a catalogue of competences for a set of key positions and support training.
Results so far:	The project identified four basic/general competencies (focus on user, proactivity, focus on cooperation and professionalism), leadership competencies (focus on future, dedication to goals, efficient organisation of work, team and personal development), domain-specific which are either specific to job positions or groups of job positions

Source: Republika Slovenija Gov.si, 2018

Name of the practice:	Acknowledging competences acquired with student work*
Year of implementation:	2015
Coordinating authority:	Student organization of Slovenia
Objectives:	Set up a national system for monitoring work experience, obtained by student work and identify key competences acquired by student-work within the areas of work, where students work most often
Main activities:	
Results so far:	Research project completed.15 key competencies, developed with student work identified and evaluated: acquisition and transfer of knowledge, customer-oriented behaviour, oral communication, written communication, foreign language communication, computer literacy, analytical thinking and problem solving, teamwork and collaboration, leadership, expertise, flexibility, planning and organising, ability to seek information and interpret, mathematical literacy, hand skills, flexibility, teamwork and collaboration and oral communication While these competences are not domain-specific, they are important personal, business/entrepreneurial and digital competencies.

** Students in Slovenia can work during their studies (with limitations); the work is recognised towards pension insurance and job experience.*

Source: Atama, 2015; Kohont, Ruperčič and Hren, 2015

Annex 3 Summary tables

Table 1. Summary of key data sources on supply and demand side in the labour market and possible mismatch

Data source	Job openings/job seekers	Data type	Availability
Statistical office of the Republic of Slovenia	Job openings	Industry level (NACE) Occupation till 2012	Quarterly
	Unemployed/employed	By occupation, education, NACE	Quarterly, annual (depending on data type)
	Education data	Graduates of different programs (level and field), enrolled to different programs (level and field)	Annual
Employment service of Slovenia	Employment forecast (Zavod RS za zaposlovanje, 2019b)	NACE, Occupation, selected skills data (skills most often reported as insufficient by employers, grouped)	Bi-annual (spring, fall)
	Occupational barometer (Poklicni barometer) (Zavod RS za zaposlovanje, 2018)	Occupation (surplus, equilibrium, deficit, causes of deficit)	Pilot module 2018 in 7 ESS regional offices
	Job openings* (PDM_1 form submission)	Job position, education (field and level, ISCED) or national occupational classification code, selected skills	Continuous, database published on-line
On-line platforms (private)	Mojedelo.com, deloglasnik.com, zaposlitev.net, other	Job position, education (field, level), additional needed skills	Continuously advertising job openings

**Since 2013 not all job openings have to be reported also at ESS, consequently the ESS does not necessarily have all relevant data. Job openings, which are reported/advertised at ESS are submitted on form PDM-1 (Zavod RS za zaposlovanje, no date).*

Table 2. Machine operator competences as defined at KOC MAT

Domain specific	Personal and inter-personal
Machine management Technological, manufacturing processes and processes	Economising, responsibility and conscientiousness Effective stress management and changes

Traditional and contemporary materials and their development Sustainable development and the circular economy Production and use of technical documentation	Problem solving, critical thinking and innovation Independence and organisation of work and decision making Teamwork, collaboration and accepting diversity Effective communication Knowledge transfer competencies Professional and personal development
Competences related to digital and industry 4.0	**Business entrepreneurial competencies**
Production process management smart tools and systems (automation and robotisation) Digital literacy	Working standards and regulations areas and occupational safety and health Care for quality Organising, planning and monitoring

Source: (Kompetenčni center za razvoj materialov kot končnih produktov, 2018).

Annex 4 Data annex

Table 3. Number of job vacancies and job vacancy rate (%) in Slovenia in total and in firms with 10 or more employees

	Number of job vacancies	Job vacancy rate %	Number of job vacancies - 10+ employees	Job vacancy rate % - 10+ employees
Activity - Total [B to S]	18 060	2.3	11 828	1.8
B Mining and quarrying	9	0.4	7	0.3
C Manufacturing	3 603	1.8	2 877	1.6
D Electricity, gas, steam and air conditioning supply	47	0.6	38	0.5
E Water supply, sewerage, waste management and remediation activities	124	1.3	115	1.3
F Construction	3 547	5.7	1 687	4.4
G Wholesale and retail trade, repair of motor vehicles and motorcycles	2 515	2.4	1 589	2.1
H Transportation and storage	1 124	2.3	728	1.9
I Accommodation and food service activities	1 811	5.6	757	4.0
J Information and communication	467	1.9	342	1.8
K Financial and insurance activities	188	1.0	155	0.9
L Real estate activities	N	2.1	32	0.8
M Professional, scientific and technical activities	1 038	2.5	535	2.5
N Administrative and support service activities	1 580	4.4	1 531	4.8
O Public administration and defence, compulsory social security	184	0.4	179	0.4
P Education	506	0.7	403	0.6
Q Human health and social work activities	759	1.3	626	1.1

R Arts, entertainment and recreation	172	1.5	92	1.0
S Other service activities	260	2.8	135	3.5

Data: (SURS, 2019).

Table 4. Number of unemployed by main occupation groups (according to their last employment, army occupations and those unemployed 8 years or more have been excluded).

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total	45,5	61,0	75,4	83,2	89,6	101,8	98,1	90,3	79,6	67,4	52,8
Managers	1,1	1,8	3,0	0,7	0,6	0,7		1,3		1,0	0,5
Professionals	2,4	2,5	3,2	2,6	2,6	3,0		4,3	2,4	2,7	1,7
Technicians and associate professionals	2,7	5,1	6,6	1,5	2,7	2,3		5,4	2,2	3,2	2,0
Clerical support workers	2,9	3,5	5,6					4,3	1,8	2,5	1,4
Service and sales workers	5,3	8,0	10,0	2,4	3,1	3,3		8,7	3,3	5,2	4,2
Skilled agricultural, forestry and fishery workers			0,5	4,7	5,7	5,7			0,8	0,6	
Craft and related trades workers	3,7	6,4	8,1	7,3	7,9	10,0		6,8	3,3	3,9	1,9
Plant and machine operators and assemblers	5,3	10,3	10,3	4,4	3,8	6,3		4,4	2,8	3,4	1,2
Elementary occupations	3,8	5,6	6,4	1,2	1,0	2,2		6,5	2,7	3,6	2,1
Armed forces occupations											
Not applicable - no employment in the last 8 years	17,4	16,0	21,1	21,3	24,4	27,4	31,5	24,5	27,2	17,5	15,3
No response	0,7	1,3	0,6	37,0	37,4	40,5	65,3	23,5	32,8	23,8	22,3

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018

Managers	2,42	2,95	3,98	0,84	0,67	0,69	0,00	1,44	0,00	1,48	0,95
Professionals	5,27	4,10	4,24	3,13	2,90	2,95	0,00	4,76	3,02	4,01	3,22
Technicians and associate professionals	5,93	8,36	8,75	1,80	3,01	2,26	0,00	5,98	2,76	4,75	3,79
Clerical support workers	6,37	5,74	7,43	0,00	0,00	0,00	0,00	4,76	2,26	3,71	2,65
Service and sales workers	11,65	13,11	13,26	2,88	3,46	3,24	0,00	9,63	4,15	7,72	7,95
Skilled agricultural, forestry and fishery workers	0,00	0,00	0,66	5,65	6,36	5,60	0,00	0,00	1,01	0,89	0,00
Craft and related trades workers	8,13	10,49	10,74	8,77	8,82	9,82	0,00	7,53	4,15	5,79	3,60
Plant and machine operators and assemblers	11,65	16,89	13,66	5,29	4,24	6,19	0,00	4,87	3,52	5,04	2,27
Elementary occupations	8,35	9,18	8,49	1,44	1,12	2,16	0,00	7,20	3,39	5,34	3,98
Armed forces occupations	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Not applicable - no employment in the last 8 years	38,24	26,23	27,98	25,60	27,23	26,92	32,11	27,13	34,17	25,96	28,98
No response	1,54	2,13	0,80	44,47	41,74	39,78	66,56	26,02	41,21	35,31	42,23

Data: (Eurostat, 2019)

Annex 5 Example of occupational standard

Table 5. MIG/MAG-welder 86881700, Klasius-P16 code: Metallurgy, machinery (0715), Level IV

Field of work	Occupational key competences	Skills and knowledge
Preparation of work workplace	Reviews documentation, prepares workplace and necessary equipment, tools and materials	• Determines technological requirements on the basis of supporting documentation (product plan, welding process inventory, instructions, etc.) • Checks the suitability of the work environment for safe and quality work • Selects the necessary tools, equipment and basic, auxiliary and auxiliary welding materials based on the requirements of the supporting documentation • Selects suitable protective work equipment and accessories for safe work • Knows the basics of electrical engineering (electrical current and voltage, conductivity of various materials, insulators, etc.) and potential hazards • Knows the basic division of materials (metals, plastics…) and their basic properties (specific gravity, melting point, stainless, weldability…) • Understands basic geometric concepts (volume, surface, angles, etc.) and uses basic mathematical operations (addition, multiplication, etc.) • Differentiates between different basic welding methods and welding devices (TIG, MIG / MAG…) • Knows the shielding gases used for welding in various joining processes • Knows the basic methods of cutting and mechanical processing of materials • Knows basic, auxiliary and auxiliary welding materials • Regularly inspects and maintains the ease of maintenance of the devices, tools, machines and accessories that he or she uses at work
Operational work	Performs welding work with the MIG /	• Prepare and, if necessary, clamp welds to clamping devices

Field of work	Occupational key competences	Skills and knowledge
	MAG welding method in accordance with the requirements of the documentation or the WPS	• Recognizes the requirements of the supporting documentation, in particular the Welding Procedure List (the so-called WPS) • Prepares welding edges and clean the welding surface • Preheats welders if necessary • Sets the required welding parameters and the flow of shielding gases • Welds in accordance with the requirements of the supporting documentation (takes into account welding parameters, welding sequence, inter-welding temperature ...) • Measures inter-warmer temperature when needed • Checks the consistency of the weld dimension against the requirements of the supporting documentation • Cleans welds and product after welding • If required, fill in the required sections in the accompanying product documentation • Knows basic welding parameters (welding current and welding strength, welding speed, gas flow, etc.) • Knows how to use different options of MIG / MAG welding mode (forms of transition of feed material, techniques of feed material…) • Knows the welding temperature measurement procedures during welding • Understands the importance of labels for basic and supplementary materials and their applicability • Knows the purpose of preheating and basic heat treatments • Is familiar with dimensional control equipment and its use
Quality assurance	Checks the quality of his work using the basics of visual investigation and	• Inspects and checks the surface of the weld • Marks welds manufactured with their identification mark in accordance with the quality assurance system

Field of work	Occupational key competences	Skills and knowledge
	dimensional control	• Includes elements of self-control in accordance with the quality assurance system • Knows the existence and purpose of welding standards and regulations • Knows the existence and purpose of the quality assurance system for welding works • Is familiar with the education and training system of welding staff • Knows the role of welding investigations and controls • Knows the possible forms of irregularities in welds and understands the root causes of their occurrence • Considers the importance of the aesthetic appearance and function of the product • Knows the role of welding staff
Maintenance and repairs	Maintains work and personal and other protective equipment	• Regularly inspects work and personal safety equipment • Informs superiors of defects in equipment, tools and appliances • Performs minor maintenance work of personal and personal safety equipment as per manufacturer's instructions or internal instruction
Communication	Communicates with co-workers	• Collaborates with welders and engineers, technologists and quality services, and with superiors and other associates • Meets the working documentation • Receives, understands and implements instructions on workflow, safe work and use of appropriate equipment • Can work in a group
Protecting health and the environment	Performs work in such a way that he/she does not endanger him-her-self and surroundings	• Complies with regulations on occupational safety and health, environmental protection and fire safety • Takes care of the orderliness of the work environment and work equipment

Field of work	Occupational key competences	Skills and knowledge
		• Follows the instructions for safe work with work equipment • Uses personal and other protective equipment • Protects the environment from radiation, harmful gases and other hazards • Follows fire safety instructions at work and in the surrounding area • Collects and disposes of waste material separately

Source: Translated from (NRP - National Reference Point for Occupational Qualifications Slovenia, no date)


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